

ANNEX A

STATEMENT OF WORK (SOW)

FOR THE

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Table of Contents

1. SCOPE	5
1.1. Project Management	5
1.2. Requirement	5
1.3. Design Service Requirement (Infrastructure)	6
1.4. In-Service Support (Option)	7
1.5. Terminology	7
1.6. Applicable Documents	7
1.7. Safety and the Environment	8
1.8. Contract Data Requirements List (CDRL) and Data Item Description (DID)	9
1.9. Disposal	9
2. PROJECT MANAGEMENT	10
2.1. General	10
2.2. Project Management Plan (PMP)	10
2.3. Master Project Schedule (MPS)	10
2.4. Project Monitoring and Reporting	11
2.5. Reports	12
2.6. Meetings	13
2.7. Project Management Reviews and Meetings	13
2.8. Quality Assurance Program (QAP)	15
2.9. Configuration Management (CM)	15
2.10. Data Management	16
2.11. Approved Software Applications	17
Table 2-1: Approved Applicable Software	17
3. INTEGRATED LOGISTICS SUPPORT (ILS)	17
3.1. Integrated Logistics Support (ILS)	17
3.2. TCR System Support Concept	17
3.3. ILS Program	17
3.4. Supportability	19
3.5. Logistics Support Analysis (LSA)	19
3.6. Maintenance Planning	21
3.7. Provisioning	23
3.8. Engineering Data	25
3.9. Packaging, Handling, Storage and Transportability (PHST)	26
3.10. Support Equipment	28
3.11. Training	28
3.12. Technical Publications	31
4. EQUIPMENT	32
4.1. Government Supplied Material (GSM)	32
4.2. Government Supplied Material (GSM) / Government Furnished Equipment (GFE)	32
4.3. Contractor Supplied Material	33
5. SYSTEMS ENGINEERING	34
5.1. General	34
5.2. System Engineering Management Plan (SEMP)	34
5.3. Requirements Traceability	35
5.4. Baseline Requirement	35
5.5. System Design Document (SDD)	35
5.6. Product Specifications (PS)	35

5.7.	Interface Management.	35
5.8.	Site Data Packages (SDPs).	36
5.9.	Electromagnetic Environmental Effect (E3) Management.	36
5.10.	Emanations Security (EMSEC) Engineering.	39
5.11.	Security Management and Planning.	41
5.12.	Design Reviews and Audits.	42
5.13.	Integration and Installation.	46
5.14.	Frequency Spectrum Management and Bandwidth Requirements.	48
6.	TEST AND EVALUATION (T&A)	48
6.1.	Planning and Conduct of Tests.	48
6.2.	Requirements Verification Matrix (RVM).	49
6.3.	Test Readiness Review (TRR).	50
6.4.	Factory Acceptance Tests (FATs).	50
6.5.	Site Acceptance Tests (SATs).	52
7.	TECHNICAL REQUIREMENTS	53
7.1.	Operational.	53
	Table 7 – 1: Applicable Related Projects.	55
7.2.	TCR System Performance and Design.	59
	Table 7-2: Modes S Features	68
7.3.	Radar Console and Display.	71
7.4.	Miscellaneous System Requirements.	76
7.5.	Communications. All operator positions must be functionally identical.	78
7.6.	Recording.	83
7.7.	Satellite Communications.	85
7.8.	Tactical Data Link.	86
7.9.	Misc. Equipment.	86
7.10.	Antennas.	87
7.11.	Radar Head Infrastructure and Ancillary Equipment.	88
7.12.	RTOC Infrastructure and Ancillary Equipment.	92
7.13.	Grounding, Bonding and Lightning Protection (See Appendix 20).	93
8.	SPARES OPTION.	93

LIST OF APENDICES

APPENDIX 1 – Contract Data Requirements List (CDRL).
APPENDIX 2 – Data Item Description (DID).
APPENDIX 3 – Publications List.
APPENDIX 4 – Acronyms and Abbreviations.
APPENDIX 5 – Description of Buildings and Vehicles.
APPENDIX 6 – Clutter Models and Processing.
APPENDIX 7 – Government Supplied Material (GSM).
APPENDIX 8 – Government Furnished Equipment (GFE).
APPENDIX 9 – Government Furnished Information (GFI).
APPENDIX 10 – Government Furnished Resources (GFR).
APPENDIX 11 – Visio Drawings (available on request).
APPENDIX 12 – 12 ER Cross-Connect Sheets (ICD) (available on request).
APPENDIX 13 – 42 Radar Sqn Cross-Connect Sheets (ICD) (available on request).
APPENDIX 14 – 12 ER Test Equipment List.
APPENDIX 15 – 42 Radar Sqn Test Equipment List.
APPENDIX 16 – Instructions for Completing DND 552 Application for Frequency Supportability.
APPENDIX 17 – Commercial Engineering Drawings and Associated Lists.
APPENDIX 18 – Activities and Deliverables.
APPENDIX 19 – Optional Third System.
APPENDIX 20 – Installation Standards.
APPENDIX 21 – Publication Authorship Service (PAS).
APPENDIX 22 – Contractor Specialized Test and Support Equipment.
APPENDIX 23 – 12 ER Infrastructure Drawings (available on request).
APPENDIX 24 – 42 Rdr Sqn Infrastructure Drawings (available on request).
APPENDIX 25 – Design Service Requirement (Infrastructure).
APPENDIX 26 – Definitions.
APPENDIX 27 – In-Service Support Requirements Option.

1. SCOPE

1.1. Project Management.

1.1.1. The Contractor will manage the Tactical Control Radar (TCR) Modernization project (the TCR Project or project), which is to replace Canada's aging tactical control radar systems with two or three new TCR Systems. A TCR System is a modern, solid-state, transportable 3D long-range air defence tactical control radar system, subsystem and associated equipment (which includes the initial provision of spares) and which consists of fully tested, accepted, configured and integrated Hardware, Software, Firmware, and Systems (excluding Final Integration as defined below) and services as specified in this Contract, and includes any and all licenses necessary to use such goods as intended by Canada. The TCR Systems will be delivered by the Contractor to 42 Radar Squadron (Rdr Sqn) 4 Wing, Cold Lake and 12 escadron de radar (ER) 3 Wing, Bagotville. The TCR Systems will interface with and support Main Operating Base (MOB) Force Generation (FG) flying activities, North American Air Defence (NORAD) operations and Ground Control Intercept (GCI) training, and must provide the deployment for any required operations or training exercises. As part of the project the Contractor will replace the aging AN/TPS-70 radars as well as ancillary equipment required for radar operations and capabilities such as radios, satellite communications, data link equipment and system control panels. The project also requires the satisfaction, by the Contractor, of an infrastructure design requirement identifying the necessary modifications to the existing buildings to accommodate all or part of the TCR System.

1.2. Requirement.

This Statement of Work (SOW) states the overall effort that the Contractor is required to perform to successfully deliver the TCR System and services related to it. In accordance with this SOW and the Contract's terms and conditions, the Contractor must deliver the goods and services specified under the Contract to Canada, including:

- (a) Project Management Services for the TCR Project as detailed in Section 2;
- (b) Design and Site Review goods and services (including all deliverable documents such as plans, reports, analysis, drawings and data lists) as detailed in section 5.12;
- (c) Factory Acceptance Test goods and services for the two TCR Systems (including all deliverable documents such as agendas presentations, plans, procedures and reports) as detailed in section 6.4;
- (d) Training Services (including all deliverables documents such as presentations, plans and training materials) as described in section 3.11;
- (e) Site Preparation, Testing and Acceptance (including all deliverables documents and Software) for the installation of the two TCR Systems as specified in sections 5.13, 6.5, 7.5, 7.10, 7.12 and appendix 25;
- (f) Two Tactical Control Radar Systems (TCR Systems);
- (g) Final Integration of the TCR Systems if such an option is exercised by Canada - Final Integration consists of the integration, installation, testing and acceptance of the TCR Systems in the radar towers at 42 Rdr Sqn, Cold Lake and 12 ER, Bagotville as detailed in section 7.11;

- (h) Integrated Logistics Support (ILS) Services for all TCR Systems delivered as described in section 3, and as further specified in this Contract, including all Manuals, Plans and Technical Publications for all TCR Systems delivered ;
- (i) In-Service Support for any TCR System as described in Appendix 27, and as further specified in this Contract as Hardware Maintenance Services and Software Maintenance Services, if such option is exercised by Canada;
- (j) One TCR System additional to the two already ordered, including all related acceptance testing, ILS Services and associated deliverables, and delivery of such TCR System to Cold Lake in a state prepared for deployed operation, if such option is exercised by Canada; and
- (k) If not otherwise specified in this list of deliverables, any Milestone Deliverable stated in Annex B.

1.2.1. In order to minimize the deliverable requirements, the SOW allows the Contractor the flexibility to provide the product in the most cost-effective manner. Accordingly, the Contractor must make full use of Commercial- Off-The Shelf (COTS) / Military-Off-The Shelf (MOTS) equipment and existing engineering procedures to achieve the technical objectives.

1.2.2. This SOW is organized into the following sections:

- (a) Scope (Section 1);
- (b) Project Management (Section 2);
- (c) Integrated Logistics Support (Section 3);
- (d) Equipment and Infrastructure (Section 4);
- (e) Systems Engineering (Section 5);
- (f) Test & Evaluation (T&E) (Section 6);
- (g) Technical Requirements (Section 7); and
- (h) Spares Option (Section 8).

1.3. Design Service Requirement (Infrastructure).

1.3.1. The Design Service Requirement (Appendix 25 refers) describes specifically the services and deliverables required from the Contractor to undertake the site design effort; including (1) definition, pre-design and design phases, (2) produce construction drawings and specifications, (3) provide services during the tender phase and (4) provide services during the construction phase up to and including providing the as-built drawings of the Infrastructure for the TCR at Primrose Lake Evaluation Range (PLER), Alberta and Lac Castor, Quebec.

1.4. In-Service Support (Option).

1.4.1. The In-Service Support Requirements (Appendix 27 refers) details the tasks and deliverables required to enable Canada to maintain the systems in its operational role for its estimated life of 20 years, with the full functionality and performance present in the delivered system. The Work described in the In-Service Support Requirements includes Configuration Management, Obsolescence Management, Technical Data Management, Repair and Overhaul and Engineering Services which must be provided should the option for these services be exercised.

1.5. Terminology.

1.5.1. Acronyms and Abbreviations. See Appendix 4 attached.

1.5.2. General. DND will provide Government Supplied Material (GSM) and Government Furnished Equipment (GFE) to be integrated with Contractor Supplied Material (CSM) and interfaced with Existing Government Infrastructure & Equipment (EGIE) to produce the replacement TCR Systems. Government Furnished Information (GFI) will be provided by DND. The Contractor must sign appropriate loan documentation for GFE and GFI. The Contractor must produce a GFE and GFI Inventory List in accordance with CDRL item C025. Government Furnished Resources (GFR) will be available for use by the Contractor (Appendix 10 refers).

1.5.3. Definitions. See Appendix 26 attached.

1.5.3.1. The following definitions must be used for equipment and infrastructure:

- (a) GSM is material to be supplied by DND, to the Contractor, for integration/inclusion into the TCR System. A list of GSM is provided in Appendix 7;
- (b) GFE are items that will be made available, by DND, to the Contractor. A list of GFE is provided in Appendix 8;
- (c) EGIE currently at 42 Rdr and 12 ER include fixed satellite dishes, radar head building, Remote Training Operations Centre (RTOC) etc;
- (d) CSM is the material to be supplied by the Contractor. GSM/GFE must be integrated with the CSM and interfaced with EGIE;
- (e) GFI is information on existing support equipment, special tools and any other information provided in the appendices to this SOW that will be provided by DND. See Appendix 9; and
- (f) GFR includes aircraft, vehicles, microwave system, etc. and are listed in Appendix 10.

1.6. Applicable Documents.

The documents listed in all appendices form a part of this SOW to the extent specified herein.

1.6.1. Unless otherwise specified in the Contract, the document version currently in effect will apply. If a document is referenced without indicating any specific paragraphs as being applicable, the document is applicable in its entirety.

1.6.2. When a specific version of an applicable document is listed, no other version will be used without prior written permission from the DND Technical Authority (TA) or designated representative.

1.6.3. When the listed documents are referenced in the SOW text, the short form citing only the basic number of the document is used. Revision letters, amendment indicators, notices and supplements may be used. If a document is invoked by reference within the SOW text, but not listed below, it is applicable as cited but notice of such an occurrence should be brought to the attention of the DND TA or a designated representative.

1.6.4. In the event of any conflict or discrepancy between the provisions of the SOW and the provisions of any of the specifications, standards, manuals and other documents referenced in the SOW, the provisions of the SOW must prevail.

1.7. Safety and the Environment.

1.7.1. Overview.

The Contractor must practice due diligence with respect to safety and environmental concerns. The Contractor must ensure that all federal, provincial, territorial and other applicable laws are strictly adhered to. Prime importance must be given to the health and safety of all persons maintaining, operating, transporting or otherwise in the vicinity of the systems. Any potential hazards to people or the environment, must be identified, documented and clearly conveyed to all of the aforementioned persons.

1.7.2. General Safety.

The Contractor must adhere to all safety rules, regulations and labour codes in force in all jurisdictions where the Work is to be performed. All Contractor supplied equipment must be certified or approved by the Nationally Recognized Testing Laboratory (NRTL) such as Underwriters Laboratories (UL), Canadian Safety Standards (CSA) or TÜV Rheinland.

1.7.2.1. For any Contractor supplied equipment not certified as specified in Para. 1.8.2, the Contractor must be responsible for both the conduct of CSA special inspection in accordance with SPE-1000 and to obtain CSA certificate of compliance to be delivered at the first TCR System Factory Acceptance Test (FAT).

1.7.3. Radioactive Materials.

In the event that the CSM equipment contain(s) a nuclear substance, the equipment must be certified by the Canadian Nuclear Safety Commission (CNSC). Certification under the Nuclear Safety and Control Act (NSCA)/ Nuclear Substances and Radiations Device Regulations (NSRDR) is mandatory before DND can proceed.

1.7.3.1. The Contractor must conform to current transport regulations i.e. Packaging and Transport of Nuclear Substances Regulations and Transportation of Dangerous Goods Regulations.

1.7.3.2. In the event that there are secondary X-Rays generated by the device, the Contractor must conform to the Radiation Emitting Device Act (RED Act). The Act may not have specific regulations for radars, however, where specific RED Act regulations are not available for a class of x-ray equipment, the general provisions of the RED Act respecting prohibition, deception and notification apply within the scope of ensuring worker and public safety.

1.7.3.3. Once the technical details of the device or ionization radiation source are provided by the Contractor, the DND TA or a designated representative will seek Director General Nuclear Safety (DGNS) technical approval before proceeding.

1.7.4. Radio Frequency (RF) Radiation Safety.

1.7.4.1. The Canadian Armed Forces (CAF) RF safety program are detailed in DAOD 3026-0 Radio Frequency Safety, DAOD 3026-1 Radio Frequency Safety Programme and C-55-040-001/TS-002, Radio Frequency Safety Standards and Requirements. Maximum Exposure Limits (MELs) for protection of personnel from adverse health effects of electromagnetic radiation are specified in Health Canada Safety Code 6 (Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz). Compliance of the TCR System with requirements of the DND/CAF Radio Frequency Safety Program (RFSP) for protection against Hazards of Electromagnetic Radiation to Personnel (HERP) and Hazards of Electromagnetic Radiation to Fuel (HERF) must be met in accordance with DAOD 3026-0, DAOD 3026-1, Canadian Forces Technical Orders (CFTO) C-55-040-001/TS-002 and Health Canada Safety Code 6 (HC SC6). The Contractor must adhere to the current version of the C-55-040-001/TS-002 and HC SC6.

1.7.5. Environment.

The Contractor must be familiar with the requirements of this section. The following codes and regulations must be adhered to:

- (a) Canadian Environmental Protection Act (CEPA); and
- (b) (Canadian) Transportation of Dangerous Goods Act.

1.7.5.1. The Contractor's site design must be compliant with all of the requirements of the Canadian Environmental Assessment Act, (CEAA) for CSM and work required at both 12 ER and 42 Rdr. Additionally, compliance is mandated with all applicable environmental regulations including, but not wholly restricted to, the Canadian Environmental Protection Act, (CEPA), the Species at Risk Act, (SARA), the Federal Halocarbon Regulations (FHR) and the Fisheries Act. .

1.7.5.2. The Contractor is advised to pay particular attention to the Federal Halocarbon Regulations in the CEPA. Care should be exercised in choosing a refrigerant to ensure compliance beyond 2025.

1.7.5.3. In the event that the CEAA Environmental Impact Assessment (EIA) is not mandatory then a Due Diligence EIA, utilizing CEAA framework, must be produced and submitted at PDR.

1.8. Contract Data Requirements List (CDRL) and Data Item Description (DID).

1.8.1. These documents can be found in Appendices 1 and 2 respectively.

1.9. Disposal.

1.9.1. The disposal of all DND equipment will be the responsibility of the appropriate DND authority. The Contractor must not dispose of any DND equipment without the approval of the DND TA or a designated representative.

2. PROJECT MANAGEMENT

2.1. General.

2.1.1. Requirements. The Contractor must provide the necessary personnel, management systems and infrastructure to ensure efficient and accurate monitoring, control, reporting, implementation and management of all elements of the Contract.

2.1.2. Project Manager (PM). The Contractor must designate a single individual to serve as PM for this Contract. As such, this individual must have cognizance and full responsibility for overall performance and resource aspects of the Contract, and must serve as the Contractor's primary Point of Contact (POC). The PM must have the corporate authority to commit the Contractor to specific courses of action where Contract modifications are not required. The Contractor PM must have direct interface with the DND TA or a designated representative.

2.2. Project Management Plan (PMP).

The Contractor must deliver and update a PMP in accordance with CDRL item A001. The PMP must detail the Contractor's management practices, approaches and processes to be used for the delivery of the requirements under this Contract. It must be maintained and amended as required throughout the duration of the project to reflect the current project activities and progress. This PMP is to be followed by the Contractor in accomplishing the tasks identified in the SOW.

2.2.1. The Contractor must identify internal organizational elements and major sub-contractors responsible for accomplishing the Work detailed in the SOW. The Contractor must ensure that their internal project organization:

- (a) Plans, organizes, conducts, and manages the activities required by the contract;
- (b) Establishes the policies, procedures and schedules by which the management organization will operate, report status, evaluate performance, allocate work and resources and manage subcontracts; and
- (c) Establishes the processes defined in this SOW for management of this contract.

2.3. Master Project Schedule (MPS).

2.3.1. The Contractor must prepare, deliver and maintain a MPS in accordance with CDRL item A007, using a commercially available software product that is mutually agreed upon by Canada and the Contractor. Upon request of Canada, the Contractor must provide an electronic copy of the most recent MPS within five (5) calendar days.

2.3.2. The MPS must show the activities for the Program Management, System Engineering (SE), Test and Evaluation (T&A) and Integrated Logistic Support (ILS) portions of this SOW, and must show the Contract Deliverables.

2.3.3. The MPS must include major events and milestone representing Canada and Contractor decision points necessary to maintain continuity of the project. Progress indications and planned or actual slippage/accelerations of the current schedule must be clearly presented in relation to the baseline schedule at

each Progress Review Meeting (PRM). If requested, the MPS must be presented at Management Interchange Meetings (MIMs) or Technical Interchange Meetings (TIMs) to provide further planning and schedule visibility.

2.3.4. All approved changes affecting the schedule must be reflected in schedule documentation within 30 calendar days of the approval by Canada.

2.3.5. The Contractor must prepare a MPS showing the Project tasks, the planned duration of each task and the inter-dependencies among tasks and with other aspects of the Contract. The Contractor must advise the Canada of any potential or actual failure to achieve a major Project event or milestone.

2.3.6. The Contractor must prepare, deliver and update a MPS in accordance with CDRL item A007. The Contractor must either:

- (a) submit MPS data to Canada in electronic media; or
- (b) share electronic access to this data with Canada.

2.4. Project Monitoring and Reporting.

2.4.1. Project Planning and Control System. The Contractor must implement and maintain a project planning and control system to be used as the monitoring and reporting tool for all Work to be performed under the Contract. The monitoring and reporting tool must provide a forecast of completion dates for all milestones, including delinquent or unplanned tasks and milestones. Key milestones and activities must be identified, which will enable both the Contractor and Canada to adequately measure progress, performance and accomplishments against the established baseline. The monitoring and reporting information must be presented at the PRMs.

2.4.2. Prerequisites. When prerequisites are specified in the MPS for the completion of an event, the Contractor must meet all prerequisites prior to that event unless otherwise agreed upon by Canada. An event will be considered complete only when all the related action items for that event are met and complete. Canada will determine if the Contractor has conducted each event according to contractual requirements, and if action items have been closed as per the action plan.

2.4.3. Monitoring and Reporting Information. The monitoring and reporting information, provided by the Contractor, must:

- (a) identify all Work and related resources, including sub-contracts, to meet the project schedule requirements using a Work Breakdown Structure (WBS) framework;
- (b) schedule Work in a manner that describes the sequence of tasks and their interdependencies. The MPS must be prepared and updated as required. This schedule must be followed by the Contractor in accomplishing the tasks identified in the SOW;
- (c) provide effective tracking of all Work along the critical path, defining responsibility and required completion date;
- (d) provide milestone schedules;

- (e) provide estimated dates for the completion of major milestones against the established baseline; and
- (f) provide a quarterly comparison at PRMs of the Work planned to the Work completed in order to determine if the project is on schedule and budget.

2.4.4. Milestones.

2.4.4.1. The TCR Milestone Description and Achievement Criteria for the TCR Project can be found in Annex B of the Request for Proposal (RFP) and provides a comprehensive detailed listing of the milestones. Milestones have pre-determined criteria for completion and these criteria consist of major events, tasks or deliverables. Mandatory project milestones are:

- (a) Preliminary Design Review (PDR);
- (b) Critical Design Review (CDR);
- (c) Site Design Reviews (Site DRs);
- (d) Subsystems FATs;
- (e) System FATs;
- (f) Training;
- (g) SATs;
- (h) Acceptance of Bilingual Documentation; and
- (i) Contract Completion.

2.5. Reports.

2.5.1. Issue Tracking Database.

The Contractor must establish and maintain an Issue Tracking Database that must be used to monitor issues. The database must, as a minimum, identify the issue, who the issue has been assigned to, action required and current status. Outstanding issues from the Issue Tracking Database must be included as part of the PRM Package in accordance with CDRL item A004.

2.5.2. Hot Line Reports/Discrepancy Reports.

2.5.2.1. The Contractor must provide Hot Line Reports in accordance with CDRL item A005 for the immediate reporting of items that may have serious impact or represent a new Medium or High risk on the project progress. Such problems must be identified immediately by a telephone call or e-mail to the Public Works and Government Services Canada (PWGSC) Contracting Authority (CA) and the DND TA or a designated representative followed by a Hot Line Report/Discrepancy Report on the next working day by e-mail. Furthermore, the Contractor must submit a risk mitigation worksheet for all new Medium and High risks No Later Than (NLT) three (3) working days after they are found. For the purpose of this Hot Line Report, a medium risk

is considered as a potential variance of a milestone in the project schedule of two (2) to four (4) weeks, and over four (4) weeks for a high risk.

2.6. Meetings.

2.6.1. Required Meetings.

The Contractor must conduct project reviews, design reviews, technical reviews, conferences, audits, working groups and other meetings to provide Canada with visibility into the conduct and consequences of the various efforts being undertaken by the Contractor. The Contractor may propose a different but equivalent approach to Canada with the required visibility of progress against the PMP in accordance with CDRL item A001. The majority of meetings and reviews must take place at the Contractor's facility unless all parties involved mutually agree upon another location. It is anticipated that the Contractor will be required to attend meetings at DND facilities twice a year. In addition, teleconferencing may be used as a meeting medium when approved by Canada.

2.6.1.1. The Contractor must provide reasonable conference facilities and arrange for the necessary support for all reviews/meetings.

2.6.2. Agendas and Minutes.

The Contractor must prepare and deliver agendas and minutes for all reviews, meetings, conferences, audits, working groups in accordance with CDRL item A002 and CDRL item A003. If a meeting is carried out over a period greater than one day, a progressive draft of the action items/minutes must be compiled at the end of each day of the meeting. At the end of every meeting, both the Contractor and Canada must agree in principle on the draft meeting minutes. However, Canada will have final approval for all agendas and minutes of meetings / reviews.

2.6.3. Emergency Meetings.

A critical event that adversely impacts the project will trigger an emergency meeting, which will be held at DND Facilities in the Ottawa/Gatineau region within five (5) working days of notice. An emergency meeting may be requested by Canada or by the Contractor, and will require representation by the Contractor's PM as well as the DND TA or a designated representative.

2.7. Project Management Reviews and Meetings.

2.7.1. Initial Project Review (IPR).

The Contractor must host an IPR at the Contractor's facility. The Contractor must conduct the IPR with the participation of the DND Technical Authority (TA), DND Procurement Authority (PA), PWGSC Contracting Authority (CA) and other DND representatives as determined by the DND TA. See Appendix 18 for timings. The IPR must serve as the kick-off meeting to introduce staff and to review project schedules and requirements as detailed in this SOW and the Requirement for Design Services (Appendix 25). The purpose of the IPR is to solidify the Contractor's understanding of the tasks being initiated and the relevant specification / operational requirements. The Contractor must provide a draft MPS. Canada will provide feedback, as appropriate, to clarify the Contractor's understanding and interpretations. An IPR package must be prepared and delivered in accordance with CDRL item A006. The Contractor must issue an agenda and record and distribute minutes, in accordance with CDRL items A002 and A003.

2.7.1.1. The Contractor must also prepare and submit a Pre-Design Report in accordance with CDRL item E004 and as detailed in Section 3 of the DND Documentation and Submission Standards, Attachment E of the Design Services Requirements (Appendix 25).

2.7.1.2. The IPR package is a prerequisite for this review.

2.7.2. Progress Review Meetings (PRM).

The Contractor must conduct regular PRMs with the participation of the DND TA, DND Procurement Authority (PA), PWGSC Contracting Authority (CA) and other DND representatives as determined by the DND TA. These reviews must be convened at least once every three months until the CDR. See Appendix 18 for timings. A PRM presentation package must be prepared and delivered in accordance with CDRL item A004. The frequency of PRMs post CDR will be determined by Canada at CDR, though the frequency will not exceed four (4) PRMs per calendar year. The Contractor must present technical, schedule, and performance status and any additional information as may be requested by Canada including any problem areas and recommended corrective actions. The Contractor must issue an agenda and record and distribute minutes, in accordance with CDRL items A002 and A003.

2.7.2.1. The topics for presentation and discussion at these review meetings must also include:

- (a) Technical progress;
- (b) Technical issues;
- (c) ILS Issues;
- (d) Progress on issues from previous project reviews;
- (e) Project management issues;
- (f) Planned activities for next reporting period;
- (g) 180 day outlook;
- (h) MPS Progress/Issues;
- (i) Scheduled tasks, their status, and manpower assignment to these tasks;
- (j) Progress towards milestones and critical path analysis;
- (k) Risk issues and risk mitigation strategy;
- (l) Integrated logistics support issues;
- (m) Review of completed items, open action items, current action items and forecasted items;
- (n) Review of the adequacy of the PMP; and

- (o) Arrangements for the next meeting.

2.7.2.2. At PRM, the Contractor must provide an ongoing comparison of the Work planned to the Work completed in order to determine if the Project is on schedule.

2.7.3. Final Project Review (FPR).

After final system acceptance and delivery of all data, the Contractor must hold a FPR. The purpose of the FPR must be to provide a complete review of all contractual requirements, and remaining action items. A FPR meeting presentation package must be prepared and delivered in accordance with Contract Data Requirement List (CDRL) item A004. The FPR package is a prerequisite for this review. The Contractor must issue an agenda and record and distribute minutes, in accordance with CDRL items A002 and A003.

2.8. Quality Assurance Program (QAP).

The Contractor must be in compliance with the International Organization for Standardization (ISO) Quality Management System ISO 9001. All Work must be subject to Quality Assurance (QA) including that performed at the Contractor's and the designated subcontractor's facilities as deemed appropriate Canada.

2.8.1. Quality Plan (QP).

The Contractor must prepare and deliver a QP in accordance with ISO 10005 – Quality Management Guidelines. The Contractor must develop, document, implement and maintain a quality program that is fully compliant with the Quality requirements of the ISO 9001 – Quality Management Systems Requirements. The QP must be prepared and submitted as part of the PMP in accordance with CDRL item A001.

2.8.1.1. DND reserves the right to witness and review, any of the inspections, demonstrations or tests where deemed necessary to confirm conformance to requirements. Note: DND witnessing and sign-off of all formal test results demonstrating compliance to the requirements will be required.

2.8.2. Methods of Verification.

2.8.2.1. Verification of the TCR QA requirements must be accomplished by the National Defence Quality Assurance Representative (NDQAR) Directorate of Quality Assurance (DQA) performing Government Quality Assurance (GQA) surveillance activities. The Contractor must indicate in the QP (part of the PMP) the approach for verification/validation of all the mandatory requirements of this SOW.

2.9. Configuration Management (CM).

2.9.1. Configuration Management Plan (CMP).

The Contractor must prepare, submit and maintain a CMP in accordance with D-01-002-007/SG-001 "DND Requirements for the Preparation of Configuration Management Plans". The CMP must be delivered as part of the PMP in accordance with CDRL item A001. DND must review and provide comments on the CMP at PDR. The CMP must, as a minimum, address the following:

- (a) Relationship and integration of Contractor's Project Management and CM organizations;
- (b) The authority and responsibility of the Contractor configuration control boards;

- (c) Sub-Contractor/Contractor control to ensure CM compliance;
- (d) CI identification;
- (e) Engineering release system;
- (f) Contractor configuration control procedures;
- (g) Contractor plans for Configuration Status Accounting (CSA) information management system;
- (h) Identification and interface control management; and
- (i) Configuration Audits and CM Program audits.

2.9.2. Requests for Waivers and Deviations.

Before CDR, the Contractor must submit Requests for Waivers and Deviations (DND 675 Form) for any waiver/deviation from the contracted requirements, including changes to accepted documentation, and system and site design elements in accordance with CDRL item B001. All waivers and deviations require PWGSC Contracting Authority (CA) and DND Technical Authority (TA) or a designated representative approval.

2.9.3. Requests for Engineering Change Proposal (ECP) and Specification Change Notice (SCN).

After CDR, any changes (waivers and deviations) to the established baseline must follow the ECP process as detailed in the Contractor provided PMP. Changes and updates to the Functional, Allocated and Product Baselines must be submitted to the DND TA and PWGSC CA for approval as ECPs and SCNs in accordance with B019 and B020 respectively.

2.10. Data Management.

The Contractor must establish and maintain a current electronic documentation data bank for all documents, generated and distributed under the Contract.

2.10.1. The Contractor must deliver all data requirements (as specified in the CDRLs) in softcopy, unless otherwise specified under this Contract. After approval of final deliverables by Canada, the Contractor must re-submit the data requirements in hard copy.

2.10.2. The Contractor must submit the Contract deliverables using the appropriate software applications as indicated in the table below. This is subject to mutually agreed changes to reflect any new software releases (with enhanced capabilities), as they become available to both the Contractor and DND during the course of the Contract.

2.11. Approved Software Applications.

Table 2-1: Approved Applicable Software

Product	MFR / Version	Application
Word 2010 for Windows	Microsoft	Word Processing
Excel 2010 for Windows	Microsoft	Spreadsheet
PowerPoint 2010 for Windows	Microsoft	Presentation
Access 2010 for Windows	Microsoft	Relational Databases
VISIO 2010 or latest version.	Visio	Flowcharting/Technical Drawings
Adobe Acrobat Reader V12	Adobe Corporation	PDF
Project 2010 or latest version	Microsoft	Schedule and timeline
WinZip V16	WinZip	File Compression
Windows Media Player	Microsoft	Media File Player
AutoCAD 2005 or latest version	AutoDesk	CAD (readable with AutoCAD Lite)
Omega PS TM		

3. INTEGRATED LOGISTICS SUPPORT (ILS)

3.1. Integrated Logistics Support (ILS).

The Contractor must ensure that all aspects of ILS are integrated to meet all logistics requirements stated in this SOW.

3.2. TCR System Support Concept.

3.2.1. Guiding Principle.

The TCR System support must be sufficient to enable the system to meet the operational availability requirements stated in Section 7 while minimizing maintenance requirements.

3.3. ILS Program.

The Contractor must plan and conduct an ILS program to implement all Integrated Logistics Support Services as detailed in this SOW. At a minimum, the ILS Program must require the Contractor to:

- (a) Logistics Engineering – design a system that can be supported easily and at minimum cost;
- (b) Maintenance Planning – identify the tasks that must be performed to maintain a TCR System and the logistics resources needed to perform these tasks;

- (c) Logistics Acquisition – facilitate the acquisition of all needed logistics support resources; and
- (d) Product Support – provide ILS to the extent and for the duration detailed in the SOW from Contract Award through to the end of any applicable warranty period, such that any transition to in service support services is seamless and without additional cost to Canada.

3.3.1. ILS Plan (ILSP).

The Contractor must prepare, submit and maintain an ILS Plan in accordance with CDRL item C001. This Plan must describe and document the ILS Program, its interrelationship with other project plans, the Logistic Support Analysis Program, the plan for the acquisition of each element of logistics support, and the Contractor's product support capability. Once approved by the DND TA or a designated representative, the ILSP must be used by the Contractor to manage and implement the ILS activities. The preliminary ILSP must be discussed at the IPR.

3.3.2. ILS Management.

The Contractor must manage the ILS program in accordance with the MPS.

3.3.2.1. ILS Manager. The Contractor must designate an ILS Manager for the Project who will be responsible for implementation of the Contractor's ILS program. This person will be DND's single point of contact for ILS matters.

3.3.2.2. ILS Management Team. DND and the Contractor will establish a joint ILS Management Team that will meet regularly in conjunction with PRMs to discuss ILS and Logistics Support Analysis (LSA) progress and resolve problems as they arise. The Contractor must make available to the Canada all relevant data required to support each review. The Contractor's Team members must have the necessary authority to make decisions on behalf of the Contractor as well as technical expertise on the CSM portion of the TCR System in order to make this forum effective. The ILS Management Team may establish joint DND/Contractor Working Groups to resolve problems. The Contractor must provide an agenda prior to each ILS Management Team meeting in accordance with CDRL item A002. The Contractor must prepare and distribute a record of the meeting's action items with assigned responsibilities in accordance with CDRL item A003. The Contractor must track the progress of action items assigned to the Contractor and Canada will track the status of action items assigned to DND.

3.3.2.3. ILS Subcontractors. The Contractor must identify to Canada, in the ILS Plan, all major subcontractors involved with the ILS program including the Work to be performed or material to be purchased. Where subcontractors are employed, the Contractor must address in the ILS Plan how quality and CM will be applied.

3.3.2.4. ILS Progress Reporting. The Contractor must report ILS program progress as part of the PRMs.

3.3.2.5. ILS Hot-Line Reports. The Contractor must promptly inform the DND TA or a designated representative of significant problems or concerns regarding the ILS Program by electronically transmitting a Hot Line Report in accordance with CDRL item A005.

3.3.2.6. ILS Issue Tracking Database. The Contractor must establish and maintain an ILS Issue Tracking Database to monitor ILS issues. The database must identify the issue, who the issue has been assigned to, action required, current status and any other information deemed relevant to assist in the resolution of the issue. Outstanding items from the ILS Issue Tracking Database must be included with the PRMs in accordance with CDRL item A004.

3.3.2.7. ILS Change Control. The Contractor must ensure that:

- (a) any ILS Program data is controlled;
- (b) those performing the Work are notified of changes and take corrective action;
- (c) traceability exists between the data, the tasks using these data and the products of these tasks;
- (d) the Logistics Support Analysis Record (LSAR) is updated to reflect changes in source data;
- (e) any proposed engineering changes are evaluated to determine impact on each affected element of logistics support. The Contractor must document the impact in the Contractor form used to authorize the engineering change; and
- (f) each approved engineering change is followed up with an internal Logistics Change Record (in Contractor format) recording and confirming the specific action taken to bring each affected aspect of logistics support into line with the engineering change.

3.4. Supportability.

3.4.1. Pre-Operational Support.

The Contractor must provide complete ILS support, including consumables, through to the successful completion of the TCR System SAT milestone. Consumables are defined as items that are depleted during the course of normal system operation (e.g. fuel, oil, lubrication, printer cartridges, computer paper, recording media, etc).

3.4.2. Changes and Revisions.

3.4.2.1. The Contractor must provide service bulletins as required in order to notify Canada of safety issues, changes to maintenance procedures as well as product upgrades that may become available during the Contract. Contractor format for the service bulletins is acceptable.

3.4.2.2. The Contractor must submit a Material Change Notice (MCN) in accordance with CDRL item C010 for provisioning data changes affecting parts identification data.

3.5. Logistics Support Analysis (LSA).

3.5.1. Overview.

The LSA must include the needed data for the verification or follow-on support of the delivered system, associated equipment or services.

3.5.2. Scope of LSA.

It is envisaged that detailed LSA data will be available since the TCR System is non-developmental and COTS based. Therefore the LSA Program should not need to recreate any LSA data and should focus on scrutinizing,

tailoring and provisioning of selected LSA data that would support the TCR maintenance philosophy. Canada has no intent of procuring LSA data that would not be used for the verification or follow-on support of the delivered system, subsystems and associated equipment or services.

3.5.3. Logistics Support Analysis Plan (LSAP).

The Contractor must provide, maintain and implement a LSAP for approval by Canada that addresses all content identified within the Integrated Logistic Support Plan (ILSP). The Contractor must also include recommendations for additional LSA data or analysis, as well as exclusions to the ILSP. The Contractor must prepare and submit a LSAP in accordance with CDRL item C034.

3.5.4. LSA Record (LSAR).

The Contractor must maintain and keep the LSAR database current for the duration of the Contract. There must be no restriction or limitation on the use of LSAR data by DND during the in-service phase of the CSM life cycle. The Contractor must use analytical computer tools to support the conduct of LSA. (Examples are: level of repair analysis, sparing analysis and life cycle costing.) The LSAR analytical models must be identified in the ILSP.

3.5.4.1. LSAR.

3.5.4.2. The Contractor must provide the LSAR electronically (CD-ROM or download) in accordance with CDRL item C012. The Contractor must electronically transfer LSAR data to the DND TA or a designated representative on a monthly basis.

3.5.4.3. The Contractor must ensure that organizations (Contractor personnel, subcontractors and vendors) providing LSA data use standard data definitions and formats. The Contractor must implement a process for vetting data when electronically importing it into the Contractor's LSAR to ensure that this data is free of logically detectable errors.

3.5.4.4. The LSA data format must be compatible with GEIA-STD-0007 to facilitate the use of in-house analysis tools such as Omega P/S Analyzer. The Contractor must provide Canada with a minimum of two licensed copies of the software required to view and analyze the data if LSAR data is not formatted In Accordance With (IAW) GEIA-STD-0007.

3.5.4.5. LSA Candidate Items List (CIL). The Contractor must recommend which items in the system's Equipment Breakdown Structure (EBS) are to be subjected to LSA reporting, including the recommended LSA tasks, and must prepare an LSA CIL for review and approval by Canada. The Contractor must develop and deliver a Logistics Support Analysis CIL in accordance with CDRL item C014.

3.5.5. Logistics Configuration Baseline (LCB). The Contractor must establish and maintain a LCB. Specifically, the Contractor must:

- (a) define the EBS;
- (b) identify items for which maintenance resources will be (are) defined i.e. Maintenance Significant Items (MSIs);
- (c) assign Logistics Support Analysis Control Number (LSACN);

- (d) enter data into the LSAR in the fields mandatory for operation of the LSAR; and
- (e) maintain the LCB under configuration control for duration of this Contract.

3.5.5.1. The Contractor must include in the ILSP:

- (a) the initial EBS; and
- (b) preliminary identification of MSIs.

3.5.5.2. As the system equipment becomes more fully defined, or as the LSA work progresses, it may be necessary to add MSIs. In this case, the Contractor must update the ILSP and submit to Canada for approval.

3.6. Maintenance Planning.

3.6.1. Reliability and Maintainability (R&M) Predictions Data.

The Contractor must obtain R&M data on MSIs and must provide R&M predictions in accordance with CDRL item C015.

3.6.2. Economic Level of Repair Analysis (LORA).

The Contractor must perform Economic LORA, on selected items, as per the approved LSA CIL. The LORA computer program must take into consideration essential costing data, the overall maintenance concept, the geographic dispersal of equipment and maintenance and supply facilities, the planned annual equipment/system usage, item failure rate and cost, repair turn-around times and the support equipment cost. The Contractor must prepare and submit a LORA Report in accordance with CDRL item C016.

3.6.2.1. LORA includes the following steps:

- (a) Enter maintenance scenario data into the LORA model;
- (b) Enter item data into the LORA model;
- (c) Run the model to compute the life cycle cost of each option;
- (d) Perform sensitivity analysis as appropriate;
- (e) Recommend the optimal maintenance approach; and
- (f) Enter the Source Maintenance and Recoverability (SMR) code into the LSAR.

3.6.2.2. LORA data for existing non-developmental equipment may be used.

3.6.3. Sparing Analysis.

The Contractor must perform Sparing Analysis, using the latest version of Omega PS™, on selected items as per the approved LSA CIL and must enter the resulting recommended quantity of spares into the LSAR. The

Sparing Analysis computer program must take into consideration the maintenance concept, the geographic dispersal of equipment and maintenance and supply facilities, the planned annual equipment/system usage, item failure rate and cost, repair turn-around times, and weight and volume constraints during deployments.

3.6.3.1. The objective of Sparing Analysis is to identify the required number of spares to sustain the TCR System for three (3) years in accordance with the concept of operations. In addition, the analysis must identify the consumables required to sustain operations for a period of three (3) years.

3.6.3.2. Sparing Analysis, includes the following steps:

- (a) Enter maintenance scenario data into the Sparing Analysis model;
- (b) Enter item data into the Sparing Analysis model;
- (c) Run the model to compute the optimum selection, quantity and distribution of spares; and
- (d) Enter the recommended quantity into the LSAR.

3.6.3.3. The Contractor must prepare and submit a Sparing Analysis Report in accordance with CDRL item C017. Sparing analysis results for existing non-developmental equipment may be use.

3.6.4. Maintenance Plan (MP).

The Contractor must prepare a MP for the TCR Contractor supplied systems in accordance with CDRL item C002.

3.6.4.1. Maintenance Support. The maintenance support will be provided using a 3 level maintenance approach. For the purpose of this SOW, the term "level of maintenance" (first, second or third) is used to define the complexity and scope of maintenance work. The level of maintenance denotes the technical capability of the maintenance organization. These levels of maintenance are defined in Appendix 26 "Definitions".

3.6.4.2. Maintenance Concept. The TCR System maintenance concept is based upon experience with similar equipment under similar conditions. DND technicians will be performing first and second level maintenance on the TCR System. All third level maintenance will be contractor performed. The maintenance concept is based on the premise that all TCR equipment will incorporate the necessary design features (e.g. redundancy, automatic re-configuration, remote monitoring, Built-In-Test-Equipment (BITE), and diagnostics) to keep site maintenance requirements and associated manning to a minimum. It is expected that each system will be operated on average of three thousand (3000) hours per year.

3.6.5. Repair and Overhaul (R&O) Plan.

The Contractor must advise Canada as early as possible of the system's R&O requirements. The Contractor must provide R&O planning information for each item requiring R&O, as soon as this information is known, in accordance with CDRL item C023.

3.6.5.1. The Contractor must update the LSAR to reflect R&O requirements.

3.6.6. Sustainment Plan.

The Contractor must provide a long-term twenty (20) year sustainment plan for all CSM, including recommended technology insertion points and mid-life upgrades. This Sustainment Plan must cover the period that commences upon DND's acceptance of the second TCR System, exclusive of the warranty period in accordance with CDRL item C003.

3.7. Provisioning.

For the purpose of provisioning, it is expected that each system will be operated on average three thousand (3000) hours per year.

3.7.1. Initial Provisioning Guidance Conference (IPGC).

The purpose of the IPGC is to clarify and explain the requirements of the Provisioning Documentation (PD) referred to in the Contract. The Contractor must contact National Defence Headquarters (NDHQ)/Director Supply Chain and Operations (DSCO) 5-2 at (819) 939-8783 within 30 calendar days after Contract Award to establish whether or not an IPGC is necessary. If required, the IPGC must be conducted at the Contractor's facility. The Contractor must issue an agenda and record and distribute minutes, in accordance with CDRL items A002 and A003.

3.7.2. Provisioning Documentation (PD).

The Contractor must provide the PD needed by DND to select, catalogue, procure and distribute spare parts required to maintain the CSM portion of the TCR System.

3.7.3. Provisioning Parts Breakdown (PPB).

The Contractor must prepare and submit a PPB in accordance with D-01-100-214/SF-000 and CDRL item C005.

3.7.3.1. Long Lead Time Items List (LLTIL). The Contractor must enter LLTILs data into the LSAR. The Contractor must prepare and submit LLTILs in accordance with CDRL item C033 and D-01-100-214/SF-000 early enough to enable procurement and delivery of each long lead time item prior to DND assuming full logistic responsibility for the system. Furthermore, long lead time items with a delivery time greater than twelve (12) months are to be clearly identified. The associated Supplementary Provisioning Technical Documentation (SPTD) must also be provided in accordance with CDRL item C022.

3.7.3.2. Common Bulk Items List (CBIL). This list contains those items that are difficult or impractical to list on a topdown/disassembly sequence Provisioning Parts List, but for which provisioning is essential to support the operation of the end item/equipment. This list may include small electronic components, hardware, lubricants, conformal coating, etc. These items are subject to wear or failure, or otherwise required for maintenance, including planned maintenance, of the end item/equipment. The Contractor must supply a list of all common bulk items required to support the TCR System in an operational role in accordance with CDRL item C011. The associated Supplementary Provisioning Technical Documentation (SPTD) must also be provided in accordance with CDRL item C022.

3.7.3.3. Interim Spares List (ISL). The Contractor must provide an ISL to enable timely procurement of sufficient spare parts to support operations until DND's automated supply system can replenish stocks. The associated SPTD must also be provided in accordance with CDRL item C022. The Contractor must develop and submit an ISL in accordance with CDRL C032 and D-01-100-214/SF-000.

3.7.4. Supplementary Provisioning Technical Documentation (SPTD).

The Contractor must provide SPTD with manufacturer's data in accordance with D-01-100-214/SF-000 and CDRL item C022 in order to uniquely identify, for cataloguing purposes, each provisioning list item that has not already been assigned a valid NATO Stock Number (NSN). The SPTD must be sufficiently comprehensive to allow cataloguers to identify, classify and fully describe any item being procured by DND.

3.7.4.1. The SPTD must be delivered at the same time as the respective provisioning lists that they supplement.

3.7.5. Initial Provisioning Conference (IPC).

3.7.5.1. The purpose of an IPC is to allow DND to verify that the PD reflects the current and complete configuration of the equipment being procured by comparing it against full assembly drawings, and to select the range of spares required to support the system/equipment.

3.7.5.2. The IPC must be held at the Contractor's facilities after consultation with the DND TA or a designated representative and NDHQ/DSCO 5-2 (819) 939-8783. The Contractor must issue an agenda and must record and distribute minutes, in accordance with CDRL items A002 and A003. For the IPC, the Contractor will be required to have available:

- (a) A suitable conference facility w/ IT equipment (overhead projector, workstation, etc.);
- (b) Engineering and product support assistance;
- (c) The equipment for physical examination, if feasible;
- (d) Engineering, R&M data;
- (e) Modification data, if applicable; and
- (f) SPTD as defined in Specification D-01-100-214/SF-000.

3.7.5.3. The IPC team will normally consist of DND TA and project team representatives /DSCO representatives.

3.7.6. Material Change Notice (MCN).

The purpose of MCNs is to provide as much notification as possible to NDHQ/DSCO of additions, deletions, substitutions or obsolescence of components of the equipment being procured which may affect the provisioning of support spares. The Contractor must use CDRL item C010 for this purpose, and must provide a clear explanation in the "remarks" block of this form.

3.7.6.1. The Contractor must prepare MCNs subsequent to the IPC and continuing to Full Operational Capability (FOC). The Contractor must prepare and provide MCNs in accordance with CF Specification D-01-100-215/SF-

000 (Preparing Material Change Notice) and CDRL item C010 (Material Change Notices) to inform the DND TA or a designated representative of each change to previously submitted provisioning data. MCNs will be required until delivery of provisioned items is complete.

3.7.6.2. SPTD for the NATO Codification of each new item listed on an MCN is called up in CF Specification D-01-100-215/SF-000 and must be supplied as specified in that document.

3.7.6.3. Questions regarding the preparation, format or contents of an MCN are to be directed to:

National Defence Headquarters
MGen George R. Pearkes Building
Ottawa, Canada
K1A 0K2

Attention: DSCO 5-2
Telephone: (819) 939-8783

3.7.7. Parts Obsolescence.

The Contractor must be cognizant of the availability of the parts comprising the system. After CDR approval by Canada, and continuing until the commencement of the In-Service Support phase, the Contractor must advise the DND TA or a designated representative of parts, which form part of the Product Baseline or which are recommended for provisioning, that are no longer manufactured, have become obsolete or are expected to become obsolete. The Contractor must advise in writing the DND TA or a designated representative of parts obsolescence issues within 30 calendar days of a manufacturer/supplier announcement of such issues and identify the planned substitution using an MCN or ECP, as applicable.

3.8. Engineering Data.

3.8.1. Engineering Drawings and Associated Lists.

3.8.1.1. The Contractor must provide a complete set of level 2 engineering drawings and associated data lists as defined in D-01-400-002/SF-000. Engineering drawings and associated data lists must be prepared in accordance with Appendix 17 and CDRL item C020. Approved Final Engineering drawings and associated lists must be delivered in English language (both hard and soft copy).

3.8.1.2. If new drawings must be prepared, the Contractor must, in accordance with Para 17.1.1 of Appendix 17, use a Technical Data Action Notice (TDAN) number to identify the new drawings. A TDAN number is to be requested from DSCO 4-6 at (819) 939-5038.

3.8.1.3. The Contractor must convert existing drawings that do not meet the specified requirements as detailed in Para 17.1.3 of Appendix 17.

3.8.1.4. The Contractor must ensure that the management of engineering data is closely coordinated with the Configuration and Data Management functions.

3.8.1.5. The Contractor must provide an index of all engineering data that comprise the Product Baseline, including drawings, specifications and software documentation in accordance with CDRL item C021.

3.8.2. Request for Nomenclature.

The Contractor must prepare and submit a Request for Nomenclature in accordance with CDRL item C018 and D-01-000-200/SF-001 "Military Nomenclature Assignment and Procedures" for each item requiring assignment of Joint Electronics Type Designation System (JETDS) nomenclature.

3.8.3. Equipment Identification Plate Data.

The Contractor must submit data plate designs for approval by Canada in accordance with CDRL item C019 and Specification D-02-002-001/SG-001, "Canadian Forces Standard Identification Marking of Canadian Military Property" prior to manufacturing the identification plates.

3.8.3.1. The Contractor must provide and affix identification plates on the following types of equipment:

- (a) Prime equipment;
- (b) Line Replaceable Units (LRUs) (including spares);
- (c) Training equipment;
- (d) Support equipment (excluding tools); and
- (e) Automatic test equipment.

3.8.4. Software.

The Contractor must identify Computer Software Configuration Items (CSCIs) in the LSAR database.

3.8.4.1. The Contractor must prepare and provide the documentation needed for system software maintenance and support in accordance with CDRL item C013.

3.8.4.2. The Contractor must identify and prepare Software User Manuals (SUMs) in accordance with CDRL item C004.

3.9. Packaging, Handling, Storage and Transportability (PHST).

3.9.1. Packaging Methods and Levels.

The Contractor must use best commercial practice for:

- (a) preparing items for shipment;
- (b) packaging items for transportation; and
- (c) preservation of items for storage.

3.9.1.1. The Contractor must ensure that packaging of provisioned items will provide adequate protection, consistent with good economy, against damage, deterioration and loss of identification during storage, handling

and shipment. The Contractor must replace at no cost to Canada any part rendered unserviceable due to improper Contractor packaging, preservation, dunnage or restraining system.

3.9.2. Special Packaging, Handling, Storage and Transportability (PHST).

The Contractor must prepare and submit a Special PHST Consideration Items List in accordance with CDRL item C026. The Contractor must include advice regarding how to deal with the special considerations in its packaging data submissions.

3.9.3. Packaging Data.

The Contractor must prepare and submit Packaging Data in accordance with CDRL item C027 for each item to be shipped to or stored at a DND facility (such as spare parts, bulk items, special tools, support equipment, test equipment and training equipment) including the items shipped as part of the LLTIL, ISL, CBIL and PPB. Items having a line item value of less than \$100 are exempt, unless that item requires special packaging to prevent damage or deterioration or has hazardous characteristics.

3.9.3.1. The Contractor must prepare and provide packaging sketches or drawings for items for which the packaging is too complicated to be described by coding or by reference to general specifications.

3.9.3.2. To reduce the need for redundant data, similar items may be grouped with the same packaging data applying to the entire group.

3.9.4. Dangerous/Hazardous Items and Material Safety Data Sheets (MSDS).

Dangerous/hazardous material is defined as any substance which is capable of posing a risk to health, safety, property or the environment when stored, handled or transported, and is so classified in regulations governing transportation. Hazardous materials include (but are not limited to) dangerous goods identified in the Canadian Transportation of Dangerous Goods Act.

3.9.4.1. The Contractor must submit an MSDS in English and in French that conforms to the Hazardous Products Act and Controlled Products Regulations for each hazardous material in accordance with CDRL item C028. The Contractor will also enclose a hard copy of the MSDS with the shipment.

3.9.5. Marking of Packages. The Contractor must mark all packages, shipping containers and consolidation containers in accordance with D-LM-008-002/SF-001, Specification for Marking for Storage and Shipment.

3.9.5.1. The Contractor must mark dangerous/hazardous items as follows:

- (a) Shipping container – in accordance with the (Canadian) Transportation of Dangerous Goods Act; and
- (b) Immediate product container – in accordance with the Hazardous Products Act, Controlled Products Regulation (CPR).

3.9.6. Shelf-Life Items.

The Contractor must identify shelf-life items/packages and label in accordance with D-LM-008-002/SF-001 (Specifications for Marking for Storage and Shipment), paragraph 3.9, with information including date of

manufacture, manufacturer's part number, marking specification number and shelf-life expiry date. The Contractor must also identify the shelf-life items within the associated Provisioning Documentation.

3.9.7. Bar Coding.

The Contractor must permanently affix a bar code to each LRU and each Maintenance Selection Item (MSI) within the LRU. The bar code must uniquely identify each item so marked as such and must comply with GS1-128 and D-02-002-001/SG-001 – Canadian Forces Standard Identification Marking of Canadian Military Property. The NATO Stock Number (NSN) must also be bar coded and included as Human-Readable Interpretation (HRI) markings as well.

3.9.7.1. The Contractor must affix a bar code to each shipping package/container to identify its contents. Unit containers are to be bar coded with NSNs. Shipping containers must be bar coded with NSN, contract number and quantity.

3.9.8. Reusable Shipping Containers.

The Contractor must determine for which items the use of reusable containers is practical and economically justified. For these items, the Contractor must provide reusable shipping containers.

3.9.8.1. The Contractor must provide SPTD in accordance with CDRL item C022 to enable DND to catalogue reusable containers.

3.9.8.2. The Contractor must include drawings of these containers with the Engineering Drawings and Associated Lists in accordance with CDRL item C020.

3.9.8.3. These containers will be provisioned items, with their own nomenclature and NSN. The Contractor must identify reusable shipping containers in the PPB in accordance with CDRL item C005.

3.10. Support Equipment.

Support equipment requirements must be identified in the MP.

3.10.1. Support Equipment Identification.

The Contractor must provide the Specialized Test and Support Equipment listed in Appendix 22. The Contractor must also provide technical manuals for support of CSM Specialized Test and Support Equipment in accordance with CDRL items C008 and C009.

3.10.2. Support Equipment Calibration Requirements.

The Contractor must prepare and submit a Calibration/Measurement Requirement Summary (CMRS) for each item of support equipment requiring periodic calibration in accordance with CDRL item C029. The Contractor must list calibration standard items required to calibrate support equipment in the Consolidated Support Equipment Provisioning List.

3.11. Training.

The Contractor must:

- (a) provide Initial Cadre Training for DND personnel on the CSM portion of the TCR System including interfaces to GSM/GFE; and
- (b) ensure that course instructors are experienced and fully conversant with the CSM portion of the TCR System and interfaces to GSM/GFE.

3.11.1. Training Plan.

The Contractor must submit a comprehensive Training Plan for both Operator and Technician training in accordance with CDRL item C030.

3.11.2. Personnel to be Trained.

Training requirements must take into account the existing knowledge and skill levels of the military personnel who operate and maintain the current TCR System. Canada will provide, as GFI, the trade specifications for the following military personnel who will require training on the new TCR System:

- (a) Technicians with the Military Occupation Code (MOC) 226, Aerospace Telecommunications Information Systems (ATIS) Technician, MOSID 00109;
- (b) Operators are designated as Tactical Fighter Controllers (TFC). The MOC is Aerospace Control (AEC) and the MOSID is 00184; and
- (c) The operator assistants are designated as Weapons Assistant Sensor Operator (WASO). The MOC is Aerospace Control Operator (AC OP) and the MOSID is 00337.

3.11.2.1. Operator Training.

The Contractor must provide three (3) formal operator training courses. Each course will have a course load of ten (10) operators and one (1) observer (not an official student, e.g. Life Cycle Material Manager (LCMM), A6 RCS Rdns, and PM staff) per course.

3.11.2.2. Technician Training.

The Contractor must provide three (3) formal technician courses. Each course will have a course load of ten (10) technicians, and one (1) observer (not an official student, e.g. LCMM, A6 RCS Rdns, and PM staff) per course.

3.11.3. Level of Training.

The level of training must be consistent with the second level maintenance philosophy and in accordance with the Maintenance Plan CDRL C002.

3.11.3.1. Operator Training.

Upon completion of operator training, DND personnel must be fully proficient in the operation of the CSM portion of the TCR System. Training must also address any safety factors associated with operating the CSM portion of the TCR System and interfaces to GSM/GFE.

3.11.3.2. Technician Training.

Technician training must be at a level suitable for electronics technicians with a minimum of two (2) years' experience maintaining Canadian Armed Forces (CAF) Radar and Communications Systems (R&CS). Upon completion of technician training, DND technicians must:

- (a) possess the skills and knowledge necessary to analyze system operation;
- (b) diagnose system problems;
- (c) perform first and second level maintenance on the CSM portion of the TCR System and interfaces to GSM/GFE;
- (d) demonstrate the ability to dismantle and prepare the CSM portion of the TCR System for deployment; and
- (e) demonstrate the ability to reassemble and test the CSM portion of the TCR System.

3.11.3.3. Training must also address any safety factors associated with maintaining/operating the CSM portion of the TCR System.

3.11.4. Training Method.

3.11.4.1. Training methods must take into account the tasks, sub-tasks and task elements that trainees must be able to perform, the conditions under which they must be performed as well as the acceptable standards of performance.

3.11.4.2. A combination of classroom, On-the-Job Training (OJT), Computer Based Training (CBT), and self-study packages is acceptable.

3.11.4.3. Training must be conducted in English.

3.11.5. Training Location.

All Initial Cadre Training must take place at the Contractor's facilities. DND will pay for all DND personnel's transportation and living expenses.

3.11.6. Course Schedule.

Training courses must be provided in advance of each of the SATs, based on the delivery schedule of the TCR Systems in consultation with Canada.

3.11.7. Training Material.

Upon completion of Operator and Technician training, the Contractor must provide Canada with copies of all training material, including training standards, instructor's notes and lessons specifications & plans, in accordance with CDRL item C031.

3.12. Technical Publications.

The Contractor must, in accordance with Appendix 21, provide (in English and French) and clearly label all technical publications required for TCR System description, operation, installation, maintenance and repair of the deliverable end items (e.g. equipment operations instructions, theory of operations, troubleshooting instructions, illustrated parts breakdowns, preventive maintenance instructions, storage/handling procedures and safety precautions). The Contractor must maintain the master copy of technical publications and must keep these current. The Contractor must issue an updated copy of change pages and instructions until the end of warranty. DND will be responsible for reproduction and distribution of these change pages.

3.12.1. Technical Publications Requirements List (TPRL).

The Contractor must prepare and submit a TPRL in accordance with CDRL item C006. The Contractor must request CFTO numbers through the DND TA or a designated representative upon finalization of the TPRL.

3.12.2. Use of Existing Technical Manuals.

3.12.2.1. The Contractor must modify all existing technical publications to reflect the Canadian TCR System equipment, nomenclature, Part Numbers (P/N), modifications and maintenance procedures. All documentation must be edited to reflect only the specific version and system delivered to DND.

3.12.2.2. The Contractor must verify and evaluate all existing manuals in accordance with CDRL item C007 and specification C-01-100-100/AG-005 Acceptance of Commercial and Foreign Government Publications.

3.12.3. Development of New TCR System Publications.

The Contractor must develop new technical publications in standard Canadian Forces Technical Order (CFTO) format. These technical publications must conform to the C-01-100-100/AG-006 and D-01-100-200 series of DND specifications and Appendix 21 and must be delivered in accordance with CDRL items C008 and C009.

3.12.4. Electronic Technical Manuals.

The Contractor must develop and deliver technical publications as Interactive Electronic Technical Manuals (IETMs) that can be used in an electronic medium or used to print hard copy manuals. The technical publications should be developed as Continuous Acquisition and Life Cycle Support (CALS) compliant Standard Generalized Markup Language (SGML) documents. These documents should be developed using Document Type Definitions (DTDs) and Format Output Specification Insurance (FOSIs) acceptable to the DND TA or a designated representative.

3.12.5. Contractor Validation of Technical Publications.

The Contractor must perform engineering validation (independent of the technical writing process) to confirm that each technical publication is valid, current, easy to understand in accordance with Appendix 21 and accurately reflects only the TCR System being delivered.

3.12.6. In-Process Review of Technical Publications.

The Contractor must convene joint Contractor/DND In-Process Reviews of technical publication development activity in accordance with Para. 21.4 of Appendix 21. These Reviews will provide an opportunity for on-going review and comment on the format and content of the technical publications being developed and the progress of the Work. The Reviews will be scheduled every three (3) months in the period during which technical publications are being developed. They will be held at the facility where the Work is being done or the system/equipment and technical data are available.

3.12.6.1. The Contractor must provide the DND TA or a designated representative with an electronic copy of each technical publication to be reviewed at least thirty (30) calendar days before the respective review.

3.12.7. Validation, Reproducible Copy and Compliance.

The Contractor must provide Certificates of Validation (DND 590), Reproducible Copy (DND 642) and Compliance (DND 591) for all technical publications.

3.12.8. Technical Accuracy Check (TAC) of Translation.

The Contractor must perform TAC of Translation in accordance with Appendix 21 to confirm through independent audit that each translated technical publication is semantically correct and consistent with the original. The Contractor must provide a Certificate of Translation Accuracy Check (TAC) for each translated technical publication.

4. EQUIPMENT

4.1. Government Supplied Material (GSM).

The GSM listed in Appendix 7 will be provided to the Contractor for two TCR Systems. For the optional third TCR System Appendix 19 refers

4.1.1. Site Reset Panel.

The existing Low Level Comms System reset panel at the 42 Rdr RTOC must be retained, installed and integrated into a rack in the RTOC Equipment Room by the Contractor. The present configuration consists of three simple panel mounted Single Pole Single Throw (SPST) toggle switches mounted on a one (1) rack unit panel (1 RU).

4.2. Government Supplied Material (GSM) / Government Furnished Equipment (GFE).

The Contractor must provide a GSM / GFE Status/Shortage Report to report GSM / GFE receipts, shortages and rejections in accordance with CDRL item C024. The GSM and GFE are listed in Appendix 7 and 8 respectively provided to the Contractor.

4.3. Contractor Supplied Material.

4.3.1. Audio Sharing.

The Audio Sharing capability must be Contractor supplied. Para 7.5.5.1 describes the functional requirements. In the event that the Contractor's design calls for a dedicated Audio Sharing Unit, it must be comprised of the following Audior Communications products:

- (a) Three (3) each Card Cage, P/N 75755500;
- (b) Twenty-five (25) each Control Cards, P/N 75755500-SA;
- (c) Four (4) each Power Supplies, 75755552;
- (d) Three (3) each Fuse Panels, P/N 75755551; and
- (e) Two (2) each Extender Card, P/N 75755556.

4.3.2. Antennas.

Unless otherwise indicated, the Contractor must provide all antennas. Note that the antennas listed with the radios are included as part of the radio checklist and are, for the most part, to be used for the radio manpack configuration. Antennas listed as CSM are for TCR System static operations.

4.3.2.1. Deployment Antennas.

The Contractor must provide the following antennas for both of the deployable TCR Systems:

- (a) Nine (9) each UHF/VHF Antennas; D2211 TACO;
- (b) Two (2) Sloping V Antennas (with N type connectors); 5985-21-895-5483;
- (c) Three (3) UHF Satcom Antennas; any combination may be used of 5985-01-485-4672, (Trivec Avant P/N AV-2040-02 or Harris Corporation P/N RF-3080-AT001) or the preferred High Gain UHF Satcom Antenna, Harris Corporation P/N12006-9000-01;
- (d) Two Global Positioning System (GPS) antennas; and
- (e) Two (2) UHF/VHF General Purpose use antennas; D2211 TACO.

4.3.2.2. Garrison Antennas.

4.3.2.2.1. The garrison antennas are to be permanently installed. The following are the required garrison CSM antennas:

- (a) Nine (9) each UHF/VHF Antennas; D2211 TACO;
- (b) Two GPS antennas; and

(c) Two (2) UHF/VHF General Purpose use Antennas; D2211 TACO.

4.3.3. Signaling Unit.

The single-channel radios, currently in service with the TCR, utilize a Carrier Operated Device, Anti-Noise (CODAN) unit. The CODAN unit provides a signal that acknowledges a transmit or receive signal in North Bay. This signal uses a single lead on the 4 Wire E&M ('M' lead at TCR and 'E' lead at North Bay) card on the TCR Satcom model 3600 Multiplexer (MUX). The AN/PRC-117 radios, installed as part of the TCR project, are transceivers. The Contractor must provide a signaling unit for each radio that interfaces this signaling unit with North Bay via the Satcom 3600 MUX to provide the transmit and receive acknowledge indication.

5. SYSTEMS ENGINEERING

5.1. General.

5.1.1. The Contractor must employ systems engineering procedures to integrate, manufacture, install, test, qualify, certify and support the TCR System, subsystems, CIs, and external / key internal interfaces (subsystems to subsystems, subsystems to CI, CI to CI) identified in this SOW.

5.1.2. The systems engineering procedures and processes must be based on guidance provided in these following documents:

- (a) Institute of Electrical and Electronic Engineers (IEEE) standards IEEE STD 1220-2005: Application and Management of the Systems Engineering Process.
- (b) Electrical Industries Alliance (EIA) standards EIA-632: Processes for Engineering a System; and Electrical Industries Alliance (EIA) standards EIA 731-1 Systems Engineering Capability Model (SECM).

5.1.3. Systems Engineering (SE) Manager.

The Contractor must designate an SE Manager for this project who will be responsible for the implementation of the Contract SE and Test & Evaluation (T&E) Programs. This person will be the single point of contact for SE and T&E matters.

5.2. System Engineering Management Plan (SEMP).

5.2.1. The Contractor must develop and deliver a SEMP for the management of all engineering efforts during the project in accordance with CDRL item B002. The Contractor must document all of the SE Management processes, policies, procedures and instructions in the SEMP.

5.2.2. The Contractor must manage project tasks such as software engineering, hardware engineering, communications engineering, test engineering, production engineering and activities involved during transition to the new system.

5.2.3. The Contractor must plan for the integration of all engineering specialties such as Reliability, Maintainability and Availability (RMA), human factors, interface requirements and controls, data

communications, safety, security, Electromagnetic Environmental Effects (E3), EMSEC and any other applicable specialties.

5.3. Requirements Traceability.

5.3.1. The Contractor must identify, assign and trace requirements from higher level to lower level, through an engineering process that allocates requirements to the system, sub-systems, CIs and products that constitute the TCR design.

5.3.2. Traceability and allocation of all technical requirements must be demonstrated through systems' engineering documentation to the allocated baseline.

5.3.3. Requirements Traceability procedures and processes must be documented in the SEMP.

5.3.4. The requirements traceability matrix must be created using a commercially available software product that is mutually agreed upon by the DND TA or a designated representative and the Contractor.

5.4. Baseline Requirement.

5.4.1. The Contractor must establish and maintain Functional, Allocated and Product Baselines.

5.4.2. The Allocated Baseline must consist of the initial System Design Document (SDD) and initial Interface Control Documents (ICDs). The Product Baseline must consist of the final SDD, final Product Specifications (PS), final ICD, final Engineering Drawings, final Site Data Package (SDP) and final Equipment Support Publications.

5.5. System Design Document (SDD).

5.5.1. The Contractor must develop and deliver an SDD in accordance with CDRL item B003. The SDD must describe how their design meets the system requirements within the SOW. The SDD describes the allocation of system requirements to sub-systems and CIs.

5.6. Product Specifications (PS).

5.6.1. The Contractor must develop and deliver PS in accordance with CDRL item B004.

5.7. Interface Management.

5.7.1. The Contractor must ensure that interface management processes are in place to identify and control all external and key internal interfaces. The Contractor must, in the SDD, identify each interface and describe its purpose. The Contractor must develop, deliver and maintain an ICD covering all external and key internal interfaces. Once approved by Canada, the SDD and ICDs form part of the baselines.

5.7.2. The Contractor must develop and deliver an ICD in accordance with CDRL item B005. The ICD must detail all external and key internal interfaces in garrison and for a deployed TCR System.

5.8. Site Data Packages (SDPs).

5.8.1. The purpose of the SDPs is to define and detail the installation / modification requirements of the existing RTOCs and to the 22 Wing North Bay Command and Control (C&C) Centre to accommodate the installation of a new TCR System and its associated equipment.

5.8.2. The SDPs must detail all of the Work (civil, electrical, mechanical, plumbing, HVAC, etc.) that must be accomplished by Canada. The SDPs must cover all installation work requirements at the RTOCs and to the 22 Wing North Bay C&C Centre Radar sites, such as routing and interconnection of power, and control and communication cables.

5.8.3. The SDPs must also detail the interface requirements for any GSM/GFE and services such as electrical power and control/data communications.

5.8.4. The SDPs must include the engineering drawings and plans that detail any other required work items to enable set-up, installation and commissioning of the TCR System and associated equipment at the RTOCs, and at the 22 Wing North Bay C&C Centre. All drawings and data lists must be in accordance with the references provided in Appendix 17 of the SOW.

5.8.5. The SDPs must be prepared and submitted in accordance with CDRL B021 for the RTOCs and for 22 Wing North Bay C&C Centre. All SDPs engineering plans, documentation and drawings must be stamped by a certified Professional Civil Engineer in the province (Alberta and Quebec) where the Work will be accomplished (if applicable).

5.9. Electromagnetic Environmental Effect (E3) Management.

The Contractor must design, integrate and qualify the TCR System, subsystems and equipment such that it meets the E3 performance requirements detailed below. The Contractor must perform inspections, analyses and tests, as necessary, to verify that the TCR System, subsystems and equipment meets E3 performance requirements. E3 discipline is required for:

- (a) Subsystems and Equipment EMC / EMI;
- (b) External RF EME;
- (c) Lightning;
- (d) Electrostatic Charge Control and Electrostatic Discharge (ESD);
- (e) Electromagnetic Radiation Hazards (EMRADHAZ);
- (f) Life Cycle, E3 Hardness;
- (g) Electrical Bonding;
- (h) External Grounding;
- (i) System Radiated Emissions;

- (j) EMSEC (detailed in Section 5.10); and
- (k) Frequency spectrum management, including Supportability and Licensing (detailed in Section 5.14.1).

5.9.1. Electromagnetic Environmental Effect (E3) Control Plan (E3CP).

The Contractor must prepare and deliver an E3 Control Plan (E3CP) in accordance with US DID DI-EMCS-81540B and CDRL item B006. The E3 Control Plan must describe implementation of E3 interface and performance requirements into system hardware / software and provides the means for the government to evaluate E3 compliance with requirements throughout the life cycle of the system.

5.9.2. Electromagnetic Environmental Effect (E3) Test Plan (E3TP).

The Contractor must prepare and deliver an E3 Test Plan (E3TP) in accordance with US DID DI-EMCS-81541B and CDRL item B022. The E3TP describes the methods of test, analysis, and inspection used by the Contractor to verify compliance with the electromagnetic environmental effects (E3) interface and performance requirements of a system.

5.9.3. Electromagnetic Environmental Effect (E3) Test Report (E3TR).

The Contractor must prepare and deliver an E3 Test Report (E3TR) in accordance with US DID DI-EMCS-81542B and CDRL item B023. The E3TR describes the tests, analyses, and inspection used by the Contractor and documents the results verifying compliance with the E3 interface and performance requirements of a system.

5.9.4. Subsystems and Equipment Electromagnetic Compatibility (EMC)/ Interference (EMI)

5.9.4.1. The TCR System must be electromagnetically compatible within itself such that the system operational performance requirements are met.

5.9.4.2. The electronic, electrical and electromechanical equipment that comprise the deployable components of the TCR System must comply with the requirements for the control of electromagnetic interference as detailed in sections 4 and 5 of Military Standard (MILSTD) 461.

5.9.4.3. Individual subsystems and equipment must meet MIL-STD-461 Table V Requirements Matrix, (i) conducted emissions CE102, (ii) radiated emissions RE102, (iii) conducted susceptibility CS101, CS114, CS115, CS116 for Ground Air Force, (iv) radiated susceptibility RS103 for Ground Army so that the overall system complies with all applicable requirements of this standard.

5.9.4.4. Furthermore, in accordance with sections 4.3 and 5.0 of MILSTD 461 the TCR must be electromagnetically compatible with the environment in which it will be operated and that the operational performance of the TCR equipment and subsystems is not degraded when the TCR System equipment and subsystems are operating together.

5.9.4.5. In lieu of the formal testing detailed in Para 5.9.4.4, the Contractor may provide the DND TA or a designated representative with proof of compliance data to sections 4.2, 4.3 and 5 of MILSTD 461. To minimize the test effort whenever possible, the use of existing test data/results is encouraged. If the use of existing test data/results is proposed, the request with the proposed test data/results must be submitted to the DND TA or a

designated representative at CDR. Should the DND TA or a designated representative consider that the existing test data is not sufficient to prove compliance, new tests or complementary tests must be conducted as requested by DND TA or a designated representative.

5.9.5. External Radio Frequency (RF) Electromagnetic Environment (EME).

5.9.5.1. The TCR System must be electromagnetically compatible with its defined external RF EME such that its operational performance requirements are met. The TCR System must not exhibit any malfunction or degradation of performance when exposed to the field levels described in MIL-STD-461 Table VII (RS103 limits) for Ground Army. All receivers, including antenna-connected receivers at their respective tuned frequencies, must not be permanently damaged (i.e. replacement of components or sub-systems) when exposed to the external RF EME.

5.9.6. Lightning.

The TCR System must meet its operational performance specifications for electromagnetic environmental effects of direct and indirect lightning strikes IAW MIL-STD-464C paragraph 5.5.

5.9.7. Electrostatic Charge Control .

The TCR System must safely control and dissipate the build-up of electrostatic charges caused by exhaust gas flow, personnel charging and other charge generating mechanisms to avoid fuel ignition, to protect personnel from shock hazards and to prevent performance degradation to the system or damage to its electronics.

5.9.7.1. Electrostatic Discharge.

All electrical and electronic devices within the TCR System must not be damaged by electrostatic discharges during normal installation, handling, maintenance and operation, in accordance with IEC 61000 4-2 (2008).

5.9.8. Electromagnetic Radiation Hazards (EMRADHAZ).

5.9.8.1. Hazards of Electromagnetic Radiation to Personnel (HERP). The TCR System must comply with the requirements of Health Canada Safety Code 6 and DND/CAF RFSP for the protection of personnel against the adverse health effects of electromagnetic radiation and achieved in accordance with CFTO C-55-040-001/TS-002 (Radio Frequency Safety Standards and Requirements). The contractor must adhere to the current version of the Health Canada Safety Code 6 and CFTO C-55-040-001/TS-002.

5.9.8.2. Hazards to Electromagnetic Radiation to Fuel (HERF). Fuels must not be inadvertently ignited by radiated EMEs. Inadvertent ignition of fuels and flammable materials by electromagnetic radiation produced by the TCR System must be prevented in accordance with CFTO C-55-040-001/TS-002 (Radio Frequency Safety Standards and Requirements). The Contractor must adhere to the current version of the Health Canada Safety Code 6 and CFTO C-55-040-001/TS-002.

5.9.8.3. Hazards of Electromagnetic Radiation to Ordnance (HERO). Electrically initiated devices (EIDs) in ordnance must not be inadvertently actuated during or experience degraded performance characteristics after exposure to the EME levels generated by the TCR System IAW CFTO C-09-153-009/TS-000.

5.9.9. Life Cycle, E3 Hardness.

The system operational performance and E3 requirements of this standard must be met throughout the rated life cycle of the system and must include, but not be limited to, the following: maintenance, repair, surveillance, and corrosion control.

5.9.10. Electrical Bonding.

The TCR System electrical bonding must be in accordance with MIL_STD-464C paragraph 5.11.3 and provide for the control of E3 such that system operational performance requirements are met. Additionally, the direct current (DC) bonding level of 10 milliohms or less from antennas to system structure, including the cumulative effect of all faying surface interfaces, must also apply throughout the life of the system.

5.9.10.1. Bonding of all electrically conductive items subject to electrical fault currents must be provided to control shock hazards voltages and allow for the proper operation of circuit protection devices.

5.9.11. External Grounding. The system and associated subsystems must provide external grounding provisions to control electrical current flow and static charging for the protection of personnel from shock, the prevention of inadvertent ignition of ordnance, fuel and flammable vapors, and the protection of hardware from damage.

5.9.12. Systems Radiated Emissions.

The system must control radiated fields necessary to operate with the other co-located systems and to limit threat capability to detect and track the system commensurate with its operational requirements.

5.9.12.1. Inter-System EMC. Unintentional radiated emissions from the system must not exceed -90 dBm (using a 10 kHz bandwidth resolution) when measured from the communications antennas of the installed radios in their respective locations in accordance with NATO AECTP 500, ed. 4, January 2011, Category 507, para 5.2.12.

5.9.12.2. Antenna placement compatibility. The antenna footprint for a physically confined space as currently existing at the radar site and for minimal deployment space must be optimized such that the antenna placement does not degrade its performance. The antenna footprint must incorporate the antennas listed in Section 4.

5.10. Emanations Security (EMSEC) Engineering.

5.10.1. General. The Contractor must conduct EMSEC Engineering to ensure that the TCR System meets the security requirements of:

- (a) INFOSEC 601, Technical Communications Security (COMSEC) Instructions for the Installation of IT Systems;
- (b) CID/09/14 Tactical HIJACK/NONSTOP Test Requirements and Procedures or Centre for National Security Studies (CNSS) Advisory Memorandum TEMPEST 01-02; and
- (c) CID/09/15A Compromising Emanations Laboratory Test Requirements, Electromagnetics or their US/NATO equivalents.

5.10.1.1. All Information Technology (IT) Systems use for the processing of classified/Protected C information onboard TCR System must meet the electromagnetic radiation limits of Level III in accordance with CID/09/15A (or an equivalent specification).

5.10.2. EMSEC Control Plan.

The Contractor must prepare and submit an EMSEC Control Plan, in accordance with the CDRL item B011.

5.10.3. TEMPEST Testing.

5.10.3.1. For TEMPEST Qualification Testing, the Contractor must use personnel who have been qualified by either the Communication Security Establishment (CSE), the United States National Security Agency (NSA) or the British Government's Communication Headquarters (GCHQ) and hold a current Certified TEMPEST Professional – Level II (CTP II) certificate or the UK equivalent.

5.10.3.2. The Contractor can use equipment which has been certified by sub-contractors who are accredited by CSE, NSA or GCHQ, such that the individuals who performed the TEMPEST design and testing are certified to meet the qualification requirement stated in 5.10.3.1.

5.10.3.3. TEMPEST Qualification Test Planning, Application and Reporting.

5.10.3.3.1. TEMPEST Test Facility Certification Report. The Contractor must submit a TEMPEST Test Facility Certification Report for each TEMPEST qualification test facility, which does not have a current Canadian Industrial TEMPEST Program (CITP) certification, equivalent US Industrial TEMPEST Program (ITP) or UK Industrial TEMPEST Scheme (ITS) certification. The Certification Report must be prepared in accordance with CDRL item B013. Except for 5.10.3.2, TEMPEST testing must not commence until the facility has been certified and the Facility Certification Report was accepted by the DND TA or a designated representative.

5.10.3.3.2. Equipment TEMPEST Test Reports. The Contractor must submit test reports on all Equipment TEMPEST testing cross-referenced to the TEMPEST Requirements for the TCR System in accordance with CDRL item B014. The Equipment TEMPEST Test Reports can be submitted in the Contractor's format, but the content must be as detailed in CDRL item B014; including all required test planning information.

5.10.4. Technical COMSEC Inspection (TCI).

The TCR System must undergo a TCI for both configurations (garrison and deployment) at each site by the DND Technical COMSEC Authority (ADM (IM)) prior to the start of the NONSTOP Testing. Canada will be responsible for applying for and attaining a TCI, however, the Contractor must correct any deficiencies of the CSM of the TCR System identified during the TCI. The Contractor will not be responsible for deficiencies specific to GFE.

5.10.5. NONSTOP System Testing.

5.10.5.1. The TCR System must undergo a NONSTOP System Testing in accordance with CID/09/14 for both configurations (garrison and deployment configurations) by Quality Engineering Test Establishment (QETE), the DND EMSEC Testing Technical Authority (TA).

5.10.5.2. DND EMSEC Testing TA will perform platform level NONSTOP testing prior to the first article site acceptance. The Contractor must make available a full operational TCR System (with all accessories and GFE/GSM installed) in both configurations (garrison and deployment) for the duration of the testing (approx. five (5) working days for each configuration).

5.10.5.3. System configuration for the TCI survey and NONSTOP testing must be exactly the same as the final deliverable systems. Any changes made after the TCI and NONSTOP System Test may result in the need to conduct additional (partial or full) TCI survey and NONSTOP System Test.

5.10.5.4. The Contractor must provide technical representative(s) and an on-site repair capability in order to support operation of the system for the duration of the NONSTOP System Test.

5.10.5.5. If the NONSTOP System Test reveals that the system does not conform to the TCR System EMSEC requirements and the source of non-conformance is identified as part of the Contractor-supplied deliverables, then the Contractor must conduct all necessary analysis and evaluation to determine the source of failure and the Contractor must undertake all Work necessary to rectify the condition. A full re-test (TCI and NONSTOP) of the system must be performed to re-qualify the system and demonstrate compliance.

5.10.5.6. Deficiencies, which must be rectified in order for the TCR System to be accepted, will be the subject of a Contractor initiated ECP. All other functional deficiencies identified by the NONSTOP System Test that fall outside the provisions of the System Security Requirements will be noted, and may be addressed separately from this Contract.

5.11. Security Management and Planning.

5.11.1. System Security Management Plan.

The Contractor must review the requirements of the TCR System Specification and must prepare, submit and adhere to a System Security Management Plan to meet the security requirements of the TCR System in accordance with CDRL item B007.

5.11.2. Security Anomaly Reporting.

The Contractor must, on a quarterly basis, provide Canada with a report of any security anomalies found during the implementation of the TCR System. This report must be prepared in accordance with CDRL item B008.

5.11.3. Security Functional Specification.

The Contractor must prepare and submit a Security Functional Specification for the TCR System in accordance with CDRL item B009. Any changes to the Security Functional Specification, after approval by Canada, must follow the ECP process as detailed in the Contractor provided PMP.

5.11.4. Security Architectural Design.

5.11.4.1. The Contractor must prepare and submit a Security Architectural Design for the TCR System in accordance with CDRL item B010 based upon the approved security functional specifications. Any changes to the Security Architectural Design must follow the ECP process as detailed in the Contractor provided PMP (CM section).

5.11.5. Security Reviews.

5.11.5.1. Preliminary Security Design Review.

After the delivery of the Security Functional Specification and Security Architectural Design, a review must be carried out to identify and clarify security issues prior to the Contractor continuing on to the detailed design and implementation. Contractor corrective actions may be required as a result of this activity. This review may be conducted in conjunction with another design review (PDR).

5.11.5.2. Security Detailed Design Review.

The Contractor must deliver a Security Detailed Design in accordance with CDRL item B012. After delivery, a review must be carried out to identify and clarify security issues prior to the Contractor continuing on to the system implementation. Contractor corrective actions may be required as a result of this activity. This review may be conducted in conjunction with another design review (CDR).

5.11.5.3. Security Acceptance Review.

Final Security Acceptance Review must be carried out following the completion of all security activities by the Contractor, including functional testing, TEMPEST testing, flaw analysis and System NONSTOP Qualification Testing in accordance with CDRL item B012. The purpose of this review is to resolve any outstanding issues in order to accept or defer the system. Acceptance of the system must be based upon demonstrated compliance of the TCR System to the security requirements specifications. Contractor corrective actions may be required as a result of this activity prior to security acceptance of the system and SAA security authorization to operate (ATO).

5.11.5.4. DND Security Assessment and Authorization (SAA).

All information systems used in the TCR System must undergo SAA by departmental security organizations and obtain a security authorization to operate (ATO).

5.11.5.4.1. The TCR System has been attributed a DND/CAF baseline security profile of secret confidentiality, high integrity and high availability (SHH).

5.11.5.4.2. The Contractor's TCR System (CSM only) must satisfy the security controls and meet the security objectives of DND/CAF IT Security Control Catalogue for a DND/CAF SHH baseline security profile.

5.11.5.4.3. Canada will be responsible for applying for and attaining a SAA Authority to Operate (ATO). However, the Contractor must ensure that any deficiencies to Contractor-supplied deliverables identified during SAA are corrected in order to obtain an ATO.

5.12. Design Reviews and Audits.

5.12.1. Conduct of Reviews and Audits.

5.12.1.1. The Contractor must conduct design reviews and audits to integrate, document, and present the results of the TCR SE process. The objective of design reviews and audits is to incrementally demonstrate readiness to proceed with production and delivery of a turn-key system that meets the TCR SOW.

5.12.1.2. The TCR design reviews and audits must be based on guidance provided in MIL-STD-1521B. In keeping with the COTS equipment baseline and limited development activity, the formal design reviews that are conducted by the Contractor may be a subset of those defined in MIL-STD-1521B; however, the Contractor is expected to address the applicable elements listed in Appendix D, E, F and H of MIL-STD-1521B. Canada must approve the Contractor's list of applicable elements for all reviews and audits, including the applicable elements from MIL-STD-1521B Appendix D, E, F and H.

5.12.1.3. The Contractor must, as a minimum, schedule and conduct the following design reviews and audits:

- (a) PDR;
- (b) CDR;
- (c) Site DRs;
- (d) Functional Configuration Audit (FCA) and Formal Qualification Review (FQR); and
- (e) Physical Configuration/Installation Audits (PCIA's).

5.12.2. Preliminary Design Review (PDR).

5.12.2.1. The Contractor must conduct a PDR at the Contractor's facility. The PDR must be a formal review of the proposed system and site design approach and based on MIL-STD-1521B Appendix D. The Contractor must prepare a PDR Package in accordance with CDRL item B015. The Contractor must be the chairperson of the PDR. After the PDR, DND will provide comments within 30 calendar days. The PDR may be held in conjunction with a PRM, with the approval of Canada.

5.12.2.2. The Contractor must provide an agenda in accordance with CDRL item A002. During the PDR, the Contractor must record minutes of the meeting and then prepare formal minutes of the PDR in accordance with CDRL item A003.

5.12.2.3. The Contractor must report the status of work in each discipline of the SE process. The Contractor must present how the system will meet the requirements of the DND TCR SOW. The PDR must address the objectives of the Specification Requirements Review, including functional breakdown of requirements and allocation of requirements/functions to system level.

5.12.2.4. The PDR must also address the following aspects of preliminary design:

- (a) prepare and deliver the ICD for the TCR interface to North Bay;
- (b) prepare and deliver the Preliminary Site Preparation Report in accordance with CDRL item E001 for the RTOCs and 22 Wing North Bay C&C Centre to address common site-specific requirements including, as a minimum, legacy equipment removals and new equipment layouts, non-radar support equipment (security, lighting and electrical) and site preparation requirements; and
- (c) prepare and deliver a Preliminary Concept Design Report (see Appendix 25), detailing three (3) different architectural options for the accommodation of the functional and technical requirement for the infrastructure design of the Garrison Sites (PLER and Lac Castor) and a multi-disciplinary

option for the selected architectural option. The Concept Design Report must be supplemented with Indicative, Class D construction cost estimate in accordance with CDRL item E005 and Section 4 of the DND Documentation and Submission Standards, Attachment E of the SOW for Design Services.

5.12.2.5. The PDR must also address the following site acceptance and transition issues relating to each TCR garrison and deployment site locations:

- (a) confirm that the TCR requirements, as detailed in the SOW, will be met;
- (b) report on potential impacts that the construction /modifications and installation phase for the new TCR may have on operation of the existing TCR radar;
- (c) report on potential impacts that the existing radar may have on operation and testing of the new TCR; and
- (d) describe recommended actions to minimize potential impacts during each site transition period.

5.12.2.6. The PDR must be held at the Contractor's facility. The Contractor must rectify all design deficiencies noted by Canada. Canada's acceptance of the design will be limited to an evaluation of the compliance of the presented design to the contractual specifications.

5.12.2.7. Contractor must make available at the PDR all engineering data, specifications, and design concepts, test plans, installation plans, results of analyses, and any engineering notes necessary to support the meeting.

5.12.3. Critical Design Review (CDR).

5.12.3.1. Contractor must conduct a CDR (based on MIL-STD 1521B Appendix E), which must be a formal technical review confirming that the proposed system and site designs satisfy all TCR System and subsystem requirements delineated in the SOW. The CDR must be held at the Contractor's facility. The CDR may be held in conjunction with a PRM with approval by Canada. The Contractor must prepare and deliver a CDR package and all associated documentation in accordance with CDRL item B016. After the CDR, DND will provide comments electronically within 30 calendar days.

5.12.3.2. The Contractor must provide an agenda in accordance with CDRL item A002. During the CDR, the Contractor must record minutes of the meeting and then prepare formal minutes of the CDR in accordance with CDRL item A003. The Contractor must rectify all design deficiencies noted by DND. Canada's approval of the design will be limited to an evaluation of the compliance of the presented design to the contractual specifications. The Canada's approval of CDR will be the authority for the Contractor to proceed to system integration and implementation.

5.12.3.3. The detailed design must be baselined after CDR. Any changes to the established baseline must follow the ECP and SCN process as detailed in the PMP in accordance with CDRL item A001.

5.12.3.4. The Contractor must conduct a CDR for all CIs, Subsystems and Systems, for both hardware and software, to evaluate the ability of the detailed designs of all CIs to meet the requirements of the DND TCR SOW. The Contractor must provide a formal technical review confirming that the detailed design satisfies all

TCR System and subsystem requirements delineated in the SOW. The Contractor must also deliver the PS for the CIs.

5.12.3.5. The CDR must be held at the Contractor's facility. The CDR may be held in conjunction with a PRM with Canada's approval. During the CDR, the Contractor must record minutes of the meeting and then prepare formal minutes of the CDR in accordance with CDRL item A003. The Contractor must rectify all design deficiencies noted by Canada. The Canada's approval of the design will be limited to an evaluation of the compliance of the presented design to the contractual specifications. Canada's approval of the CDR will be the authority for the Contractor to proceed to system integration and implementation.

5.12.3.6. The Contractor must provide a preliminary Design Development Report (DDR) (see Appendix 25) for Canada's approval at CDR. The DDR must detail the final resolution of all major components and the selection of all building systems with respect to type, size and other material characteristics. The DDR must be in accordance with CDRL item E006 and as indicated in Section 5 of Attachment E (DND Documentation and Submission Standards) to Appendix 25. The DDR must be supplemented with the updated indicative, Class D construction cost estimate.

5.12.3.7. The design presented at CDR must not use parts that are no longer manufactured or that the Original Equipment Manufacturer (OEM) has advised will no longer be manufactured.

5.12.4. Site Design Review (Site DR).

5.12.4.1. The Contractor must conduct a Site DR which must be a formal technical review confirming that the proposed site designs satisfy all technical, functional and operational requirements delineated in this SOW and in the Design Services attached as Appendix 25.

5.12.4.2. It is anticipated that two Site DRs must be held at both, 4 Wing Cold Lake and 3 Wing Bagotville. These Site DRs will be coordinated by the DND TA (or a designated representative) and Director Construction Projects Delivery (DCPD) with the participation of Defence Construction Canada (DCC), Wing Construction Engineering (CE), Wing Telecommunications and Information Services (WTIS), Wing Operations (W Ops), and 1 Canadian Air Division (Cdn Air Div) Representatives.

5.12.4.3. The Contractor must provide an agenda in accordance with CDRL item A002. During the Site DR, the Contractor must record minutes of the meeting and then prepare formal minutes of the Site DR in accordance with CDRL item A003.

5.12.4.4. The Contractor must prepare and deliver 30 calendar days before the 1st Site DRs, the 66% complete construction documents with indicative Class C construction estimates in accordance with CDRL item E007 and Section 6 of the DND Documentation and Submission Standards, Attachment E of the Design Services at Appendix 25.

5.12.4.5. The Contractor must prepare and deliver a preliminary SDP in accordance with CDRL item B021 30 calendar days to the 1st Site DRs.

5.12.4.6. The Contractor must prepare and deliver 30 calendar days before the 2nd Site DRs, the 99% complete construction documents with substantive Class B construction estimates in accordance with CDRL item E007 and Section 6 of the DND Documentation and Submission Standards, Attachment E of the Design Services at Appendix 25.

5.12.4.7. The Contractor must prepare and deliver a final SDP in accordance with CDRL item B021 30 calendar days prior to the 2nd Site DRs.

5.12.4.8. The Site DR must cover all of the Work that must be accomplished by Canada to implement the required infrastructure construction/modifications to support the future installation of TCR System and associated equipment at the RTOCs, Garrison Radar Sites and 22 Wing North Bay C&C Centre.

5.12.4.9. The Site DR must cover all construction and electrical work requirements, such as foundations/bases for towers and shelters, routing and interconnection of power, control and communication cables, and must include all plans, drawings, specifications and all other supporting documentation.

5.12.4.10. The Site DR must recommend work to be performed by Canada to prepare spaces below the antenna platform and review the adequacy of the design for the HVAC system, lighting, electrical system and grounding for the new equipment, optimum equipment operation and illumination for the performance of maintenance activities.

5.12.4.11. The Contractor must submit the completed Construction Document Report, 100% complete construction documents and substantive Class A (tender) construction cost estimates in accordance with CDRL item E007 and Section 6 of the DND Documentation and Submission Standards, Attachment E of Appendix 25 for Design Services.

5.12.5. Functional Configuration Audits (FCAs) and Formal Qualification Reviews (FQRs).

5.12.5.1. The Contractor must perform the FCA after completion of FAT. The audit results will be provided to the DND TA and Certificates of Conformance (C of C) will be provided for COTS hardware and software. The Contractor must conduct FQR for requirements that have not been verified by FCA of individual CIs. The FQR may be combined with the FCA. The FQR results must be provided to the DND TA or a designated representative.

5.12.6. Physical Configuration /Installation Audits (PCIAAs).

5.12.6.1. The Contractor must prepare for and support PCIAAs prior to conducting SATs at each site (guidance is available within MIL-STD-1521B, Appendix H).

5.12.6.2. The PCIA must include a detailed audit of engineering drawings, specifications, technical data and manuals, including the contents of the SDPs (if applicable), released engineering documentation and quality control records (to make sure the final as-built configuration/installation is reflected in the documentation).

5.12.6.3. The Contractor must provide an agenda in accordance with CDRL item A002. During the PCIA, the Contractor must record minutes of the meeting and then prepare formal minutes of the PCIA in accordance with CDRL item A003.

5.12.6.4. The Physical Configuration/Installation Audit Plan must be documented in the SEMP.

5.13. Integration and Installation.

5.13.1. GSM and GFE Integration Plan.

The Contractor must provide a detailed plan describing the integration of GSM and GFE with the Contractor supplied equipment in accordance with CDRL item B017.

5.13.1.1. GSM and GFE Integration Report. The Contractor must prepare and submit a GSM and GFE Integration Report in accordance with CDRL item B018.

5.13.2. Installation Guidelines.

Installation must adhere to the standards detailed in Appendix 20 unless otherwise approved by Canada.

5.13.3. Canada's Responsibilities.

5.13.3.1. The DND TA or a designated representative will coordinate with the Contractor for the installation at the RTOCs, Radar Heads and North Bay C&C Centre.

5.13.3.2. Canada will forecast the site construction schedule to minimize disruptions to operations and will give consideration to factors such as: site preparatory work, seasonal climatic variations, CAF operational requirements and the availability of temporary radar services to sustain operations during system installations.

5.13.3.3. The following are known factors that, depending on the contract start date and delivery schedule, will influence in which Garrison construction / modifications will commence:

- (a) Seasonal climatic conditions; which vary by location;
- (b) Primrose Lake and Lac Castor are on local high ground, outside the main aerodrome area, and access may be limited at certain times of year;
- (c) operational restrictions, notably the Cold Lake "Maple Flag" exercise which may affect on-site construction/installation work during May and June;
- (d) the existing TCR equipment at Lac Castor and PLER must remain available and operational as much as possible until the new TCR Systems have been installed and accepted at Radar Head sites; and
- (e) The availability of TCR radar backup services for transition from the legacy radar in Lac Castor and Primrose Lake to the new TCR Systems.

5.13.3.4. Canada reserves the right to make adjustments to the schedule to accommodate operational requirements or other external factors.

5.13.3.5. For planning purposes, the Contractor must assume that Canada will provide the Contractor access to the sites only after the site readiness has been confirmed.

5.13.4. Installation Plan.

The Contractor must provide an Installation Plan in accordance with CDRL item E002.

5.13.5. Transition Plan (TP).

The Contractor must provide a TP in accordance with CDRL item E003.

5.14. Frequency Spectrum Management and Bandwidth Requirements.

5.14.1. Frequency Spectrum Management.

5.14.1.1. All RF emitters in the TCR System must be IAW DAOD 6003-0 Radio Frequency Spectrum Management and B-GT-D35-001/AG-001 Spectrum Management.

5.14.1.2. As required by the Radiocommunication Act, all RF CSM equipment must be certified to ensure that minimum National Standards are met. This is done through the Certification (Frequency Supportability) process using form DND 552 (Appendix 16 refers) and submission of the necessary documentation to the DND TA or a designated representative.

5.14.1.3. No equipment must be operated without equipment certification (or Frequency Supportability) process using the Department of Defense (DoD) 1494 or DND 552 Forms and in accordance with CDRL item B024.

5.14.1.4. The Contractor must submit the Frequency Allocation and Emitter Data in accordance with US DI-MISC-81174 and CDRL item B024.

5.14.2. Bandwidth Requirements. At PDR, the Contractor must provide an estimate of the RTOC to Radar Head bandwidth required to provide full TCR System functionality between the RTOCs and the Radar Sites. The Contractor must provide precise bandwidth requirements at CDR.

6. TEST AND EVALUATION (T&A)

6.1. Planning and Conduct of Tests.

6.1.1. The Contractor must prepare and deliver for approval by Canada, an Integrated Master Test Plan (IMTP) in accordance with CDRL item D001.

6.1.2. The Contractor must address the planning, development and conduct of requirements and functional level tests to include, as a minimum:

- (a) Integration tests (hardware and software);
- (b) System level, sub-system level and CI level tests;
- (c) Interface tests (internal and external);
- (d) Communications tests;
- (e) Performance tests;
- (f) E3 tests;

- (g) EMC/ EMI tests;
- (h) EMSEC tests;
- (i) Integrity and reliability tests;
- (j) Environmental tests;
- (k) System Security Tests;
- (l) System verification tests to establish readiness for formal acceptance tests;
- (m) Formal acceptance tests: FATs and SATs;
- (n) Regression tests and retests, as necessitated by changes/modifications to the hardware or software and by test failures; and
- (o) Other tests as required.

6.1.3. FATs and SATs must be formal tests with mandatory DND representation. The Contractor must notify Canada at least 30 calendar days prior to the conduct of each FAT, and 60 calendar days for each SAT.

6.1.4. The Contractor must also plan, develop and conduct factory integration/qualification tests and site acceptance testing in accordance with test methodologies (procedures) pre-approved by Canada. A Flight Inspection (Operational Test and Evaluation (OT&E)) based on B-GA-164-001/AA-001 Chapters 3 and 4 must form part of SAT. In cases where the performance parameters conflict between the SOW and B-GA-164-001/AA-001, the SOW will take precedence. The Contractor must record radar data during the Flight Inspection (OT&E) and must collaborate with Canada in evaluating the results.

6.2. Requirements Verification Matrix (RVM).

6.2.1. The Contractor must provide a Requirements Verification Matrix (RVM) clearly indicating how each technical and operational requirement will be verified, and the stage(s) of testing (FAT, SAT or other) when the verification will take place. This matrix must also be used to record the status and subsequently close the verification effort for each individual requirement. The preferred verification method must be by demonstration unless otherwise authorized by Canada. Every test must be assessed on a pass/fail basis, with the pass/fail criteria documented in the test procedures (D005).

6.2.2. The Contractor may propose to verify the requirement by the use of existing test data/results where the required performance has already been demonstrated and documented in the same equipment configuration and test environment in the RVM. The proposed test data/results must be submitted to Canada in conjunction with RVM submissions. If Canada considers that the existing test data is not sufficient to prove compliance, full or partial retesting must be conducted.

6.2.3. The Contractor must develop and submit an RVM in accordance with CDRL item D002.

6.3. Test Readiness Review (TRR).

6.3.1. The Contractor must conduct a TRR prior to the start of each formal test (CIs & Subsystems FATs, System FATs and SATs). Guidance is available in MIL-STD 1521B, Appendix F.

6.3.2. The TRR is a formal review of the Contractor's readiness to begin formal acceptance testing of CIs & sub-systems FATs, system FATs and SATs.

6.3.3. The TRR must be held prior to commencement of the tests and only if the Acceptance Test Procedures (ATPRs) are approved by Canada.

6.3.4. The Contractor must provide an agenda and minutes of the TRR in accordance with CDRL items A002 and A003.

6.3.5. The following items must be presented, as a minimum, for review at the TRR:

- (a) Evidence of the conduct of a 48 hour 'burn-in' period;
- (b) Test plans, procedures, scenarios and test cases;
- (c) Test facility and equipment readiness;
- (d) Status of problem reports from previous tests and engineering changes;
- (e) Scope of tests;
- (f) Test limitations; and
- (g) Guidance is available within the DoD Defence Acquisition Guidebook, Chapter 4, section 4.3.3.4.3.

6.4. Factory Acceptance Tests (FATs).

6.4.1. The Contractor must plan and conduct a full formal FAT on each subsystem and system to be delivered. The FAT must fully demonstrate the functionality and performance as detailed in the TCR SOW.

6.4.2. FAT must be conducted incrementally at the CIs/subsystems level, as detailed in the IMTP and as approved by Canada. The subsystem FAT must not commence until all CIs within that subsystem have successfully passed their respective FATs. The TCR System FAT must not commence until all subsystems/CIs of the TCR System have successfully passed their respective FATs.

6.4.3. Prior to any formal acceptance testing, the Contractor must prepare and deliver a Factory Acceptance Test Plan (FATP) and Factory ATPRs in accordance with CDRL items D003 and D005 respectively to Canada for approval.

6.4.4. For those characteristics and features that are not prone to vary from item to item, FATs may only be conducted on a first article basis. These features and characteristics must be clearly identified in the FATP. Canada must have final approval on what items may be conducted on a first article basis as detailed in the RVM and Factory ATPRs.

6.4.5. FAT must be conducted on all items for those characteristics and features that could vary from item to item, such as signal levels, propagation/detection parameters, performance and characteristics.

6.4.6. All internal and external interfaces must be tested at the FATs, using simulated inputs only if live feeds are not possible or practical.

6.4.7. Tests that are physically not possible or practical to conduct in a factory / plant environment must be performed during SATs.

6.4.8. System Verification Tests and Processing Performance Tests.

FAT for the first TCR System must include System Verification Tests and Processing Performance Tests. System Verification Tests and Processing Performance Tests must be conducted using a complete, integrated suite of the hardware and software (as per the approved baseline) that will be delivered to the sites.

6.4.8.1. System Verification Tests. The purpose of the System Verification Tests is to demonstrate the functional characteristics of the TCR operating modes, including PSR/SSR operating modes, the PSR-only operating modes and SSR-only operating modes. The System Verification Test results must form a baseline for the design. The results of the System Verification Tests must be documented in the Factory ATR in accordance with item CDRL item D006 for the first delivered TCR System.

6.4.8.2. Processing Performance Tests. The purpose of the Processing Performance Tests is to measure, document and baseline the complete TCR System processing capacity. Processing Performance Tests must include a fixed-period simulated exercise (not less than 1 hour in duration) that operates the TCR System at 50%, 75% and 100% of TCR Radar Subsystem Processing as detailed in Section 7.2.5. Subsystem utilization information and on-site processing time must be recorded, and analyzed by the Contractor for problems that cause instability or degrade TCR System performance to the extent that requirements are not satisfied. Subsystem utilization information must include, as a minimum: computer processor utilization, computer memory, and disk space usage. Response times must be reported in mean, 99th percentile and maximum observed figures. The results of the Processing Performance Tests must be documented in the Factory ATR in accordance with CDRL item D006 for the first delivered TCR System.

6.4.9. FAT must verify those performance parameters critical to system acceptance, which cannot be verified by analysis or during on-site testing. FAT must only include tests that are practical to conduct at the factory/plant. Tests determined not to be practical, and therefore not completed during FAT, must be conducted as part of the SAT.

6.4.10. FAT must be a formal test in the sense that at least one representative of Canada must witness and verify the test(s). The Contractor must notify Canada at least 30 calendar days prior to conducting FAT

6.4.11. Subsequent hardware or software changes must require approval by Canada, and FAT Tests (including System Verification Tests and Processing Performance Tests) must be repeated at the discretion of Canada. After completion of TCR System FAT, any software or hardware changes can only be implemented with approval by Canada in accordance with the established CM procedures.

6.4.12. Upon completion of acceptance testing, the Contractor must prepare and deliver the Factory ATR in accordance with CDRL item D006 to Canada for approval.

6.5. Site Acceptance Tests (SATs).

6.5.1. The Contractor must plan and conduct formal testing at each site to demonstrate compliance to the requirements of this SOW. The SAT must verify system functionality and performance in both configurations (garrison and deployment).

6.5.2. Tests that are not physically possible or practical to conduct in a factory/plant environment must be performed during SATs.

6.5.3. Certain tests performed during FAT must be repeated for those parameters that could potentially behave differently from the factory to the field. All internal and external interfaces must be tested at the SAT, using live feeds. Both garrison and deployment specific interfaces must be tested also at SAT.

6.5.4. The Contractor must conduct an RF survey to ensure that no hazards exist to personnel, including RF measurements at potential fuel and ordnance storage areas as identified by DND.

6.5.5. Prior to any formal acceptance testing, the Contractor must prepare and deliver a SAT Plan (SATP) and Site ATPR in accordance with CDRL items D004 and D005, respectively to Canada for approval.

6.5.6. Scheduling of SATs must be closely coordinated with the DND TA or a designated representative to ensure proper coordination with supporting agencies. The Contractor must allow a minimum of 60 calendar days between the completion of SAT at one site and the commencement of SAT at the next site.

6.5.7. The Contractor must provide Canada with at least 60 calendar days' notice prior to the formal commencement of SAT.

6.5.8. DND will be responsible for arranging the availability of live target aircraft in support of SAT (including Commissioning Flight Checks (CFC) and OT&E).

6.5.9. The Contractor must be responsible for Canada's costs associated with additional flight inspections or extended flight times at SAT resulting from deficiencies in the Contractor's CSM and work (refer to Appendix 10 GFR).

6.5.10. SAT must include testing of the fully deployed TCR System. In addition, SAT must include testing of load trials, set-up, teardown, mobility, transportability, load balancing, remote connectivity, transport configuration transitions, and full operations of the RTOCs, garrison and deployed configurations.

6.5.11. Load Trials.

The Contractor must demonstrate that the system meets the transportability requirements detailed in Para 7.1.1. Existing documentation proving successful load trials on identical vehicles (trucks, trains, commercial shipping) may be acceptable. Nevertheless, load trials will be conducted to develop appropriate CC-130/CC-17 Load Charts.

6.5.12. Load Balancing.

The equipment in all Shelters must be load-balanced. Initially, the Contractor must provide documentation and analysis at CDR to confirm that this requirement will be met. The centre of gravity must be kept as low as possible to permit safe transportation of the TCR System by land, sea or air.

6.5.13. Site Test Equipment.

Appendix 14 lists the test equipment available at 12 ER. Appendix 15 lists the test equipment available at 42 Rdr.

6.5.14. The SAT must demonstrate system performance through satisfactory completion of Site ATPRs designed to verify overall system operational performances in accordance with SOW requirements. SAT must verify that the site installation conforms to the specified installation standards, demonstrate the compatibility and live operations of major external and key internal interfaces. Canada and the Contractor must agree upon all testing, procedures and processes prior to the installation of the systems and as required to satisfy the DND TCI, SAA and any other security authorization processes. SAT must be a formal test in the sense that at least one representative of Canada must witness the test(s).

6.5.15. Upon completion of site acceptance testing, the Contractor must prepare and deliver the Site ATR in accordance with CDRL item D006 to Canada for approval.

6.5.16. The Contractor must correct all SAT deficiencies (including CFC and OT&E deficiencies) prior to formal site acceptance by Canada.

6.5.17. Operational Test and Evaluation (OT&E).

6.5.17.1. The Contractor must support the OT&E of the system, which is a prerequisite to acceptance of the system by operations staff and part of the SAT. The Contractor must as a minimum provide:

- (a) Direct support including review, comment and assistance in developing the OT&E Test Plan;
- (b) Direct support during the conduct of OT&E such as system maintenance & optimization;
- (c) Perform recording and analysis of flight data for OT&E test results;
- (d) Applicable manuals, supporting plans and documentation defined during planning; and
- (e) Investigation and resolution of system/equipment deficiencies during OT&E.

6.5.17.2. The TCR System must satisfy all 1 Cdn Air Div OT&E requirements which are primarily based on 1 Cdn Air Div B-GA-164-001/AA-001 Flight Inspection Procedures Manual. There is an operational requirement to obtain at least a Provisional Operational Airworthiness (POA). Commissioning Flight Checks (CFC) will be accomplished as part of the SAT (1 Cdn Air Div OT&E).

7. TECHNICAL REQUIREMENTS

7.1. Operational.

The Contractor must provide operationally accepted Non-Developmental Item (NDI) transportable 3D Long-Range Air Defence Tactical Control Radars. The installation and operating requirements of all GFE must be incorporated in the overall TCR System design.

7.1.1. Transportability.

The TCR System must be transported by land, sea and air using the existing fleet of CAF vehicles, CC-130 and CC-117 transport aircrafts and commercial rail. The complement of trucks and trailers at the Squadrons available to transport the TCR System will not be increased nor will they be modified, such that their role as a primary mission equipment mover is not compromised.

7.1.1.1. The system must be capable of all forms of transport without concern for damage. All equipment must be easily securable for transport.

7.1.1.2. The CAF uses the CC-130 and CC-117 for air transport; nevertheless, the design of the TCR System must respect the load constraints of the CC-130 and the CC-117. The CC-130 normal landing weight of 130,000 lbs translates into a useful load (or chalk) of 44,000 lbs. The TCR System must not exceed the 44,000 lbs per chalk limitation. Furthermore, ISO container size must be limited to a maximum of 20 ft length in accordance with the ISO 6346 Standard.

7.1.1.3. The TCR System must be compatible with the existing HESV Pallet Loading System (PLS) and road transport vehicles as detailed in Appendix 5. The complement of trucks and trailers at the Squadrons available to transport the TCR System will not be increased nor will they be modified. 12 ER and 42 Rdr are equipped with heavy vehicles and trailers designed for the transportation of delicate electronic equipment. In order to maintain compatibility with the existing truck fleet and PLS, a single pallet must weigh no more than 30,000 pounds (15 tons) and must be compatible with ISO corners.

7.1.1.4. The TCR System must be assembled from transport configuration and put into operation by a trained crew of no more than six personnel in a maximum of two (2) hours during daylight or by a trained crew of no more than nine in a maximum of three (3) hours at night.

7.1.1.5. The TCR System must be configured safely and securely from/to different transport configuration (air, road, ship) without any external loading equipment (eg. crane, K-loader).

7.1.1.6. Individual small-scale equipment must be light, compact, ruggedized and provided with protective hard cases (if not rack mounted). Individual small-scale components must be designed so that they can be carried and lifted into the back of a standard military pattern (10 ton) truck by a maximum of two (2) persons.

7.1.1.7. TCR System Shelters must be equipped with mobilizers for easy manoeuvrability in garrison. In addition, the Contractor must provide detachable mobilizers for road moves. In addition, the Contractor must provide detachable mobilizers for road moves certified for speed of up to 80 km/h (50 mph).

7.1.2. Certification/Interoperability.

The TCR System must be designed to maintain interoperability between Canada and the U.S. in the NORAD environment, as well as Canada and NATO in accordance with the applicable NATO Standardization Agreements (STANAGs) and MILSTDs listed in Appendix 3.

7.1.3. Interrelated Projects.

The Contractor must be required to ensure compatibility/interoperability with four interrelated projects. As follows:

Table 7 – 1: Applicable Related Projects

Project #	Project Title
C.000995	Canadian Air Defence Sector Modernization
C.000405	Air Force Canadian Advanced Synthetic Environment Project (CASE)
C.000451	Primrose Lake Evaluation Range (PLER) Time Space Position and Information (TSPI) System Project
C.000113	CF-18 Advanced Distributed Combat Training System (ADCTS)

7.1.3.1. Project C.000995, Canadian Air Defence Sector (CADS) Modernization. The CADS Modernization Project replaced the aging CADS Air Defence Command and Control system at North Bay. This Project includes the construction of a new Above Ground Complex, replacement of the existing processing and display systems, replacement of voice communications capabilities, and closure of the Under Ground Complex. The existing TCR System is interoperable with the new CADS configuration. The TCR Systems will interact with the CADS and must provide selectable Common Digitizer 2 (CD-2) /All Purpose Structured Eurocontrol Radar Information Exchange (ASTERIX) radar data. This communications link will be used for the following purposes:

- (a) to send radar data to North Bay (selectable CD-2 or ASTERIX);
- (b) to provide TCR System control for North Bay;
- (c) to provide radio system control for North Bay; and
- (d) to provide voice communications between North Bay and TCR Systems.

7.1.3.2. Project C.000405, Canadian Advanced Synthetic Environment (CASE) Project. The aim of the CASE Project is to implement a persistent Modeling, Simulation and Training capability for National Defence. The CASE Project is establishing a distributed Synthetic Environment (SE) to support the Royal Canadian Air Force (RCAF) and Joint force generation. SE domains eligible for this service include: Research and Development, Concept Development and Experimentation, Acquisition, T&A, OT&E, and Training/Mission Rehearsal, often called, "Distributed Mission Operations". In accordance with the CAS Planning Guidance, "All staff engaged in AF Capital Projects and other Force Generation activities must make maximum use of Modeling and Simulation (M&S) to shorten project duration, reduce project risk, and optimize joint and combined training". Therefore, the TCR Modernization Project must also make optimal use of MS technologies. Through NATO committees and working groups, the CAF fully supports NATO efforts to address simulation requirements with regard to digital architectural standardization and interoperability. Combat capability and readiness of our aerospace forces is directly linked to the efficiency, cost effectiveness, interoperability and interactive realism of our simulation training programs. With respect to Advanced Mission Distributed Simulation (AMDS) technologies, the new TCR System will need to encompass interoperability, that is, the ability of a model or simulation to provide services (data and functionality) to, and accept services from other models and simulations and to use the services so exchanged to enable them to operate effectively together. The TCR Modernization Project aims to resolve some of these challenges by using modern PC-based hardware that conforms to current and planned international digital communication, M&S, security and geospatial information standards. In addition, networking protocols and the system architecture must conform to the U.S. DMSO standardization program, which includes

compliance with High Level Architecture (HLA) and IEEE 1516-2000 standards. Specific implementation details regarding integration into a CASE federation are constantly evolving to keep in step with technology, existing standards, vendor's product evolution and the Federation Execution and Development Process (FEDEP). The TCR must achieve maximum possible integration with CASE.

7.1.3.2.1. The Contractor must provide a simple means to switch from Live operation to Virtual operation in CASE at both RTOCs. All controller positions within an individual RTOC must be switched simultaneously. There must be no option provided to individually select Live operations. A clearly visible indication must be provided on each display in the RTOCs showing that CASE has been selected.

7.1.3.2.2. In Virtual mode, the TCR must be configured to be capable of operating on both classified and unclassified networks, but not on both simultaneously.

7.1.3.2.3. The TCR Virtual mode must be configured to utilize the latest version of Mäk Technologies software for its Run Time Infrastructure (RTI), network Data Logger, VR-Exchange and Gateway to the CASE network, which must be provided as an integral part of the TCR Virtual mode. The Contractor must provide all initial equipment software licences (latest version).

7.1.3.2.4. The TCR Virtual mode characteristics as described in its Simulation Object Model (SOM) must be documented and delivered in compliance with the IEEE-1516.2-2000 Object Model Template.

7.1.3.2.5. In Virtual mode, the TCR must be configured to be compatible with Real-time Platform Reference Federation Object Model (RPR FOM) 2.0D17 and follow the guiding principles of the Guidance, Rationale and Interoperability Manual for the Real-time Platform Reference Federation Object Model (GRIM-RPR), Version 2.0D17v3, dated 3 October 2003.

7.1.3.2.6. In Virtual mode, the TCR must be configured to represent playing terrain and cultural objects provided in a format specified in the OpenFlight Scene Description Database Specification, Version 16.3 Document Revision A, dated November 2007.

7.1.3.2.7. In Virtual mode, the TCR must be configured to interoperate with Army Secure Tactical Initiative (ASTi) Telestra 4 virtual radio systems, which must be provided by the Contractor as an integral part of the TCR Virtual mode equipment. Radio control for the Telestra 4 Virtual radio must utilize the operational communications panel at each display. The communications panel must be electronically disconnected from the live radios during CASE operations.

7.1.3.2.8. In Virtual mode, the TCR must be configured to accept and represent the effects of weather data from a Weather Server based on the United States Joint Forces Command's (JFCOM) Ocean, Atmospheric and Space Environment Service (OASES), which is based on the Source for Environmental Data Representation & Interchange (SEDRIS) infrastructure technology.

7.1.3.2.9. In Virtual mode, the TCR must be configured to connect to a Network Time Protocol (NTP) server (GFR), which will typically be a Stratum 2 device.

7.1.3.2.10. In Virtual mode, the TCR must be configured to connect to a network using an IP Multicast routing protocol.

7.1.3.2.11. Every CASE federation will operate under the terms of a Federation Agreement Document (FAD) and must follow the CASE Federate Induction Process (attached in the GFI). The FAD expresses details

that are jointly agreed to by the entire participant federate managers. As a participant federate in a CASE federation, the TCR federate manager is one source of input to the FAD. Since FADs can differ from each other, it is not possible to specify the requirements for the TCR immediate turnkey operation with a specific CASE federation in advance of the final FAD issue. Notwithstanding this limitation, the requirements specified above are intended to bring the TCR federate as close to CASE compatibility as possible in all common areas.

7.1.3.3. Project # 00000451 - Primrose Lake Evaluation Range Time Space Position and Information (TSPI) System Project. The TCR System must have an interface that is fully compatible with the PLER TSPI System.

7.1.3.4. Project # 00000113 - CF-18 Advanced Distributed Combat Training System (ADCTS). The new TCR System must be fully interoperable with the CF-18 Advanced Distributed Combat Training System (ADCTS). The TCR System must interoperate with the CF-18 ADCTS HLA Federation Object Model and the CF-18 ADCTS Federation Agreements Document (FAD). The TCR System must e interoperate with the HLA Run-Time Infrastructure (RTI) being used by the CF-18 ADCTS. The CF-18 ADCTS is currently using the Virtual Technologies Corporation (VTC) RTI NG Pro v2.0.

7.1.4. Reliability, Maintainability, and Availability (RMA).

7.1.4.1. Radar System.

The RMA requirements are for CSM only. The system availability/reliability must be sufficient to support 24/7 operations under minimally attended conditions for an indefinite period of time.

7.1.4.2. Availability.

The CSM must have an availability of 99% under all operating conditions, 24 hours per day, 7 days per week, excluding downtime for preventive maintenance as defined below.

7.1.4.3. Preventive Maintenance. Preventive maintenance of CSM must not exceed 24 hrs per month.

7.1.4.4. Built-in Test/Fault Isolation (BIT/FI). The radar system BIT/FI requirements are as follows:

- (a) The BIT/FI system must isolate system faults down to three or less LRUs at least 90% of the time;
- (b) The BIT/FI system must isolate system faults down to one LRU at least 70% of the time;
- (c) BIT/FI data must be available at the local and RTOC console displays and at the North Bay maintenance terminal; and
- (d) Critical failure information must be incorporated within the radar status messages.

7.1.4.5. Mean Time Between Critical Failure (MTBCF).

The MTBCF for the CSM portion of the TCR System must be greater than 1500 hours. A critical failure, by definition, is a failure that prevents the system from performing its assigned mission. This includes all critical hardware and software failures that occur.

7.1.4.6. Mean Time to Repair (MTTR).

The MTTR critical failures for the CSM portion of the TCR System must be less than or equal to 45 minutes.

7.1.5. Survivability/Robustness.

7.1.5.1. The radar antenna and transmitters must be physically distanced within 250 feet from the radar operations shelters/area.

7.1.5.2. The Contractor must provide a removable protective cover for the antenna for use during transportation and storage.

7.1.5.3. Electronic Counter Counter Measures (ECCM).

The radar must have ECCM features to minimize the impact of Electronic Counter Measures (ECM) activities, for example:

- (a) Sensitivity Time Control (STC);
- (b) Low Side-lobe Antenna;
- (c) Side-lobe Blanking;
- (d) Dynamic Range;
- (e) Constant False Alarm Rate (CFAR);
- (f) Moving Target Indicator (MTI);
- (g) Jamming analysis capability; and
- (h) Frequency agility.

7.1.5.4. The operator interface must be operable with Nuclear Biological Chemical (NBC) protective outerwear.

7.1.5.5. CSM must be designed to provide graceful degradation capabilities. Graceful degradation is defined as degradation of a system in such a manner that it continues to operate, but provides a reduced level of service rather than failing completely.

7.1.5.6. The TCR System (CSM only) must be designed to operate in various climatic regions such as desert, arctic, high altitude and tropical and under the extremes of temperature, humidity, rain, sand, dust, snow, ice and winds to be expected when operating in these various climatic regions.

7.1.5.7. The TCR System must operate in the following ambient temperature ranges:

- (a) Outside Ambient Temperature: -30°C to $+43^{\circ}\text{C}$;
- (b) Radome Ambient Temperature: -30°C to $+43^{\circ}\text{C}$; and
- (c) Equipment Room Ambient Temperature: 0°C to $+35^{\circ}\text{C}$.

7.1.5.8. The radar set must be capable of normal operation after being in storage for one (1) year at ambient temperatures between -40o and + 70oC.

7.1.5.9. The TCR must be operable in winds of up to 56 knots. The Contractor must provide the necessary instrumentation to provide wind speed, wind direction and temperature to the operators.

7.1.5.10. Weather.

The TCR System, excluding GSM, must have the necessary fixes to minimize the effects of adverse weather conditions on system operation.

7.1.5.11. Humidity.

The TCR System, excluding GSM, must operate within the following Relative Humidity (RH) Ranges:

(a) Outside Ambient: Minimum:

- i. 20% RH from -40° C to +16° C; and
- ii. Above +16° C the RH is based on +7° C dew point.

(b) Outside Ambient: Maximum:

- i. 100% RH (including condensation) from +4° C to +27° C; and
- ii. Above +27° C the RH is based on +27° C dew point.

(c) Equipment Room: 5% to 50% RH; optimally 30% RH.

7.2. TCR System Performance and Design.

7.2.1. General TCR System Requirements.

7.2.1.1. The TCR System must be equipped with a North finding/alignment system that allows relocation and realignment of the TCR System at any time of the day.

7.2.1.2. The TCR System must be equipped with a GPS system to provide precise Latitude/Longitude (Lat/Long) or geographical reference information. The GPS system must have an adjustable offset feature to allow for the correction of deliberate GPS errors. Alternate means of providing GPS error correction are acceptable.

7.2.1.3. The TCR must be able to provide a True and Magnetic North output simultaneously. Magnetic North must be adjustable. During normal operations, the TCR scopes operate in Magnetic North and output to North Bay would be True North.

7.2.1.4. AC Power.

The system and subsystems must operate between 58Hz and 62Hz – nominally 60Hz. System and subsystems voltage must be 120/208 VAC + 2%, three (3) phase. DND will provide the power generating system required to support the TCR System for deployed operations.

7.2.1.4.1. At CDR, the Contractor must provide the detailed system power requirements for each Shelter, including maximum peak load and steady-state running load for the radar, radio, heating, ventilation and air conditioning (HVAC) and ancillary equipment. All support equipment (e.g. HVAC, heating, motors) must operate in a balanced three (3)-phase configuration. All heavy starting load equipment must be equipped with soft start or frequency drive systems.

7.2.1.5. Transmit Blanking.

The radar must have a minimum of five (5) operator selectable blanked azimuth sectors (PSR and Monopulse Secondary Surveillance Radar (MSSR) separately). Sector width must be adjustable in increments from 0 to 360 degrees.

7.2.1.6. Automation Interface.

The TCR System must be designed to provide a minimum of eight (8) radar data feeds. These ports are to provide simultaneous and independent radar data feeds with the following characteristics:

- (a) Each port must include either ASTERIX or CD-2 format (selectable by port) as a minimum;
- (b) Each port must have a selectable data transfer rate starting at 2400 bps and must have the option to be externally clocked;
- (c) The ports must receive Mode 4/5 requests including Mode 4 loop tests; and
- (d) The data ports must support balanced line operation. The connections must be compatible with the RS530 standard.

7.2.2. Hardware and Software.

7.2.2.1. Hardware.

7.2.2.1.1. TCR System Computer Resource Capacity. All volatile and non-volatile memory and processor capacity must be upgraded by at least 50% with only minor hardware changes. A minor change is a field-level hardware change/addition.

7.2.2.1.2. Hardware Upgrades. Hardware upgrades must be easily accomplished by, but not limited to, adding memory, adding chips, installing new processors, adding cards to the existing motherboards, and installing associated drivers.

7.2.2.1.3. The system must include the necessary interfaces to transmit and receive data over various communications mediums such as serial, Ethernet, Fibre Optic and satellite.

7.2.2.2. Software.

7.2.2.2.1. The Contractor must provide all required licenses for CSM software.

7.2.2.2.2. Software must be Graphical User Interface (GUI) based and should be non-proprietary where practicable.

7.2.2.2.3. All new software upgrades must be backwards compatible.

7.2.2.2.4. Analytical Software. The system must have a mission planner/radar optimizer tool to allow the operator to determine optimum radar configuration and TCR System placement based upon factors such as potential threats (e.g. theatre ballistic missiles, cruise missiles, aircraft), environment (e.g., atmosphere, terrain, and clutter), and operational status of the radar including degraded system operation. The mission planner/radar optimizer tool should also be able to determine coverage patterns for a single radar, as well as, scenarios where multiple radars are available to provide overlapping coverage.

7.2.2.2.5. Calibration and Performance Evaluation. The system must perform self-calibration and real time performance monitoring, to include performance monitoring in an ECM environment. The calibration and performance evaluation tool must analyze and record radar information/parameters.

7.2.3. Primary Surveillance Radar (PSR).

7.2.3.1. Detection Volume.

The PSR must detect and report targets and on or off selectable clutter information during continuous radar operation and without shifting within the minimum coverage volume defined below:

- (a) Range: Minimum range < 5 Nautical Miles (NM); Maximum range □ 200 NM;
- (b) Azimuth: 360 degrees coverage;
- (c) Altitude: 0 to 100,000 feet above Mean Sea Level (MSL);
- (d) Minimum Upper Limit: 20 degrees from the horizontal plane of the radar;
- (e) Minimum Lower Limit: -6 degrees; and
- (f) Antenna Scan Rate: 5 RPM minimum.

7.2.3.2. Target Definition.

The PSR must detect targets with the following characteristics:

- (a) Radar Cross-Section: 1 square meter (m²) Swerling 2 up to 60 000 feet at 160 NM;
- (b) Radar Cross-Section: 2 square meters (m²) Swerling 2 up to 100 000 feet at 200 NM; and
- (c) Radial Speed: 25 to 2200 knots.

7.2.3.2.1. Unless otherwise specified, all values of Radar Cross Section (RCS) are for linear polarization.

7.2.3.3. PSR Target Capacity. The PSR must process and report 1000 target reports per 360-degree azimuth scan.

7.2.3.4. Detection Performance Requirements.

7.2.3.4.1. Detection Performance in the Clear. In the clear, the PSR must detect a 2 square meter Swerling 2 target at 200 NM with a single scan Probability of Detection (Pd) greater than or equal to 0.8 at a Probability of False Alarm (PFa) of 10^{-6} over 98 percent of the radial velocities from 25 up to 2200 knots while maintaining the detection volume specified in para. 7.2.3.1.

7.2.3.4.2. Terrain Following Capability. The PSR must have terrain following capability on an adjustable sector basis, in order to provide a 360-degree terrain following capability adjustable to the radar site location while maintaining continuous radar coverage and the specified Pd as well as the detection volume specified in 7.2.3.1. The PSR must have sufficient volumetric coverage to cover the surface from the PSR min range (5 NM) to the radar horizon for site elevations up to 3,000 feet above MSL.

7.2.3.4.3. Detection Performance in Clutter. The PSR must suppress combinations of fixed and moving clutter while detecting targets. The PSR must detect targets within the target detection volume specified in para. 7.2.3.1 when subjected to clutter as specified in Appendix 6.

7.2.3.4.4. Range Accuracy. For the specified targets as defined in 7.2.3.2 from 5 to 160 NM, the range error must not exceed 50 metres, including bias.

7.2.3.4.5. Azimuth Accuracy. For any specified targets as defined in 7.2.3.2 within the detection volume defined in 7.2.3.1, the azimuth error must not exceed 0.3 degrees Root Mean Square (RMS), including bias.

7.2.3.4.6. Height Accuracy. For any specified target as defined in 7.2.3.2, up to 180 NM and heights below 100,000 ft, the height error must not exceed 3000 ft RMS including all biases.

7.2.3.5. Range Resolution. When returns are detected from two Swerling 2 targets as defined in 7.2.3.2 on the same azimuth, separated in range by at least 300 meters, with the same or different radial velocities and located at any point in the coverage volume defined in 7.2.3.1, the PSR must resolve the two targets and generate two unique target reports 80 percent of the time for any combination of RCS from 1 m² to 20 m² provided that the larger target's RCS is not more than 8 dB greater than the smaller target's RCS.

7.2.3.6. Azimuth Resolution. When returns are detected from two Swerling 2 targets as defined in 7.2.3.2, separated in azimuth by 3 degrees, at the same range with the same or different radial velocities and located at any point in the coverage volume defined in 7.2.3.1, the PSR must resolve the two targets and generate two unique target reports 80 percent of the time for any combination of RCS from 1 m² to 20 m² provided that the larger target's RCS is not more than 8 dB greater than the smaller target's RCS.

7.2.3.7. Target Splits. The single scan probability of a split report must not exceed 0.01 for all targets.

7.2.3.8. False Alarms. The radar must average 45 or less false reports per antenna scan in clutter. Under worst-case clutter conditions, false reports must not exceed 100 reports per scan for any single scan. As a minimum, signal processing and search target extraction must address clutter conditions of thermal noise (< 5), terrain, sea, sea ice, weather, ground vehicle, and bird clutter (as specified in Appendix 6). Bird clutter reduction features must be selectable on or off. The radar must detect and process Anomalous Propagation

(AP) in accordance with Appendix 6. A low velocity filter with an adjustable and/or automatic speed threshold from, as a minimum, 0 to 120 knots must be provided for eliminating stationary or slow moving targets.

7.2.3.8.1. The TCR System must mitigate the adverse effects of wind turbines and wind farms on aircraft target detection, target resolution, and target tracking so that radar performance is not compromised.

7.2.3.9. Subclutter Visibility (SCV). The average SCV of a non-fluctuating target must be equal to or greater than 47 dB with non-fluctuating clutter under the following conditions:

- (a) Pd: 0.5;
- (b) PFa: 10⁻⁶;
- (c) Radial Velocities: 25 to 2200 knots;
- (d) Range: 5.0 to 100 NM; and
- (e) Antenna Rotation: 5 RPM minimum.

7.2.3.10. Operating Frequency. The PSR must have a minimum of 50 operating frequency options within the operating band so that the TCR System can be configured to prevent interference with other systems.

7.2.3.11. Tunability. The PSR frequencies and frequency options must be operator-selectable.

7.2.4. Secondary Surveillance Radar (SSR).

7.2.4.1. The SSR must be an AIMS certified MSSR system at the box level.

7.2.4.2. Applicable Documents for MSSR. The Contractor must comply with:

- (a) AIMS 03-1000; The MSSR must have the capability of interrogating and processing replies on Modes 1, 2, 3/A, C, 4, 5 and Mode S level 2 as defined in AIMS 03-1000. The MSSR must meet the spectrum requirements of AIMS 03-1000;
- (b) AIMS 04-900; The MSSR must interface with the cryptographic computer in accordance with AIMS 04-900;
- (c) International Civil Aviation Authority (ICAO) ANNEX 10; The MSSR must have the capability of interrogating and processing replies on Modes 1, 2, 3/A, C, and Mode S level 2 as defined in ICAO Annex 10 Volume IV. The MSSR must meet the spectrum requirements of ICAO Annex 10 Volume IV;
- (d) STANAG 4193; The MSSR must have the capability of interrogating and processing replies on Modes 1, 2, 3/A, C, and Mode S level 2 as defined in STANAG 4193. The MSSR must meet the spectrum requirements of STANAG 4193; and
- (e) In the event of conflict between the above documents AIMS 03-1000 must take precedence.

7.2.4.3. Performance.

7.2.4.3.1. Definition of Coverage Area A: The coverage area A is defined to be 1 NM thru 200 NM in range, from ¼ degree above radar horizon up to 60,000 feet MSL in height for 360-degrees in azimuth, with the exception of a cone of silence. The cone of silence consists of the air space above the radar that is above 30 degrees in elevation above the radar horizon. Achieving this coverage requirement must not rely on RF link margin improvement associated with Identification Friend or Foe (IFF) Mode 5 operation.

7.2.4.3.2. Definition of Coverage Area B: The coverage area B is defined to be 1 NM to the MSSR maximum range (minimum 200 NM), from radar horizon up to 100,000 feet MSL in height for 360-degrees in azimuth, with the exception of a cone of silence, and also excluding coverage area A. The cone of silence consists of the air space above the radar that is above 40 degrees in elevation above the radar horizon. The cone of silence consists of the air space above the radar that is above 40 degrees in elevation above the radar horizon. Achieving this coverage requirement must not rely on RF link margin improvement associated with IFF Mode 5 operation.

7.2.4.3.3. Data from ground-based devices (e.g. Position Adjustable Range Reference Orientation Transponder (PARROT)), used to monitor an MSSR's range and azimuth accuracy must be received, processed, and made available for display.

7.2.4.4. Probability of Target Detection (Pd) and Probability of False Target Detection.

7.2.4.4.1. The MSSR must achieve a Pd per 360 degree azimuth scan of at least 98% for targets, carrying a certified transponder, throughout the coverage area A defined in 7.2.4.3.1 that are responding on at least half of the interrogated modes (1 of 1, 1 of 2, 2 of 2, 2 of 3, or 3 of 3) in the presence of a steady state environment of 10,000 Air Traffic Control Radar Beacon System (ATCRBS) and 600 Mode S Friendly Replies Unsynchronized In Time (FRUIT) replies per second of which 30 percent are in the main beam. The total of all ATCRBS false targets (reflections, multipath, splits, and FRUIT) disseminated by the MSSR must not exceed one for every 400 real ATCRBS target reports disseminated (<0.25% of all ATCRBS targets disseminated can be false). The MSSR must report or disseminate <0.01% false MODE S target reports.

7.2.4.4.2. The MSSR must achieve a Pd per 360 degree azimuth scan of at least 90% for targets, carrying a certified beacon transponder, throughout the coverage area B defined in 7.2.4.3.2 that are responding on at least half of the interrogated modes (1 of 1, 1 of 2, 2 of 2, 2 of 3, or 3 of 3) in the presence of a steady state environment of 10,000 ATCRBS and 600 Mode S FRUIT replies per second, of which 30 percent are in the main beam. The total of all ATCRBS false targets (reflections, multipath, splits, and FRUIT) disseminated by the MSSR must not exceed one for every 400 real ATCRBS target reports disseminated (<0.25% of all ATCRBS targets disseminated can be false). The MSSR must report or disseminate <0.01% false Mode S target reports.

7.2.4.5. Accuracy/Resolution.

7.2.4.5.1. Target Range Resolution. The MSSR must handle closely spaced and garbled replies as follows:

- (a) Two (2) beacon replies interleaved must be decoded correctly when corresponding code pulses are non-interfering pulses. In addition, two (2) closely spaced ATCRBS aircraft, with uniform random distribution within a window described by a slant range less than 1.7 NM and a simultaneous azimuth separation of less than 2.4 degrees, must each be detected and reported a

minimum of 90% of the time. The Code and altitude must be correct a minimum of 85% of the time; and

- (b) Pulse position from overlap replies will be sensed and the garbled replies affected must be declared as not valid. When the replies are garbled over the entire target run length, the associated target report must be sent with a not valid BIT included in the victim code field.

7.2.4.5.2. Range Accuracy. For sites with certified PARROTS, the RMS range error, including biases, must not exceed ± 30 feet bias including long-term drift and the standard deviation of the range errors must not exceed 25 feet. For all remaining sites, the RMS range error, including bias, must not exceed 0.125 NM.

7.2.4.5.3. Azimuth Accuracy.

7.2.4.5.3.1. Azimuth accuracy applies to the coverage from five nautical miles to the MSSR maximum range (minimum 200 NM) extending from $\frac{1}{2}$ degree above radar horizon to 30 degrees above radar horizon with a limit of 100,000 feet in height.

7.2.4.5.3.2. For sites with certified PARROTS, the long term combined sensor plus antenna azimuth accuracy must not exceed the following values for the indicated antenna elevation angles.

7.2.4.5.3.3. Bias For Coverage Area A. For elevation angles < 2 degrees, the bias must be within ± 0.05 degrees RMS for elevation angles equal or greater than 2 degrees, the bias will be permitted to change as a function of the elevation angle due to the antenna beam widening. The sensor and antenna reported azimuth bias component change must not exceed the change attributable to the antenna only.

7.2.4.5.3.4. Bias For Coverage Area B: ± 0.18 degrees RMS.

7.2.4.5.3.5. Jitter. For coverage area A and all elevation angles less than 20 degrees, the standard deviation of the azimuth errors must not exceed 0.15 degrees.

7.2.4.5.3.6. For deployed operations, where PARROTS are not available, the MSSR must be able to determine the true azimuth of a target with accuracy of 0.18 degrees RMS, or less (meaning better than 0.18 degrees).

7.2.4.6. False Reports.

7.2.4.6.1. When operating in the specified ATCRBS FRUIT environment, (Selective Identification Feature (SIF) FRUIT 10,000 per second/Mode 4/5, 2500 per second), false target reports generated from true target replies must not exceed 0.25% of total targets per scan.

7.2.4.6.2. False emergency reports must not exceed one per 48-hour period.

7.2.4.6.3. For Mode S, the System must report $< 0.01\%$ false Mode S target reports. The ability to detect targets and negate false targets must be achieved in the presence of a steady state environment of 10,000 ATCRBS and up to 600 Mode S FRUIT per second.

7.2.4.6.4. Sensitivity Time Control (STC) and Gain Time Control (GTC) functions or functionally equivalent gain control adjustments must be provided to minimize the occurrence of false replies arising from reflections. Performance measurements should be done digitally to support higher reliability.

7.2.4.6.5. A Side Lobe Suppression (SLS) function must be provided to minimize false target reports. Performance measurements should be done digitally to support higher reliability.

7.2.4.7. Beacon Tracker. The MSSR tracker must support all modes of interrogation. The actual target position detected must be the target position reported.

7.2.4.8. ECCM. The MSSR system must meet the anti-jamming requirements of DoD AIMS 03-1000.

7.2.4.9. Code Reliability and Validation. The ATCRBS Mode 3/A code detected and disseminated from the MSSR must be correct (the same as what the aircraft transmitted) greater than 98 percent of the time. The MSSR must validate Mode 3/A codes a minimum of 99 percent of the time when the code is correct. Validation must be declared less than 1 percent of the time when an incorrect code is disseminated. The MSSR system must validate the Mode C codes for each aircraft reported in the coverage volume a minimum of 95 percent of the time, when the code is correct. The MSSR must correctly report the Mode S aircraft address greater than 99.9 percent of the time for Mode S equipped aircraft.

7.2.4.10. Capacity. The MSSR must process and report 1000 target reports per 360-degree azimuth scan.

7.2.4.10.1. The radar data transfer must degrade gracefully when the number of reports input is in excess of either its output or processing capacities or when the number of output target reports for one scan exceeds 1000 reports.

- (a) Status reports must not be delayed by more than two (2) seconds or deleted under excessive load conditions;
- (b) It must be possible to detect replies from targets employing a maximum capability of 4096 Mode 3/A and Mode 2 codes when the target is challenged by any combination of mode commands identified in Interrogation modes paragraph;
- (c) The delay for a detected MSSR target must be no more than 2.0 seconds from antenna passing the target until the data is displayed on the site screen; and
- (d) Mode S Processing. The interval from the time when the antenna boresight passes a target-measured azimuth to the time that a target report is output to TCR display must be no more than 2.0 seconds. Each surveillance report must be time tagged with minimum resolution of 1/128th of a second.

7.2.4.11. Interrogation. The MSSR must interrogate on Mode 1, Mode 2, Mode 3/A and C, Mode S, Mode 4 and Mode 5 as defined in DoD AIMS 03-1000.

7.2.4.11.1. The operators must interrogate targets in one mode, two modes, three modes, and super mode interface patterns from the RTOC, Shelter consoles and North Bay.

7.2.4.11.2. The MSSR transmit power function must be electronically adjustable from all positions between 0 to 12 dB in increments of 1 dB or less in order to minimize over interrogation within the overall detection envelope, with no interruption or degradation of the system.

7.2.4.11.3. It must be possible to detect, process, and make available for display special replies including emergency (7700), radio failure (7600) and hijack (7500), Mode 4/5, Military Four Train Emergency, Special Position Indicator (SPI) codes, and X-pulse (M2X, M3/AX).

7.2.4.11.4. The beacon processor must incorporate a Mode 4/5 Friend Level evaluator to provide accurate identification of Mode 4/5 equipped aircraft. The beacon processor will accurately report true, near, possible, and NULL Friend Levels. The beacon must correctly process the Mode 4/5 "loop test" message and respond to Mode 4/5 loop test messages.

7.2.4.12. The Mode-4/5 Crypto units must be integrated into the MSSR.

7.2.4.13. MSSR Monitoring and Fault Isolation (MFI) Specifications.

7.2.4.13.1. The MFI function must detect faults at least 98% of the time and provide FI capable of supporting an on-site MTTR of 0.5 hrs.

7.2.4.13.2. All performance indications are based upon operating within standard conditions such as ambient inlet air temperature between 50°F and 70°F. The MFI function of the interrogator system must produce, on request, a performance report at the local and remote maintenance terminals for the following performance parameters:

- (a) MSSR monitors and initiates an alarm if the transmitted signal pulse duration tolerance, in accordance with Table 3-9 of ICAO Annex 10 Volume IV, is exceeded;
- (b) The MSSR monitors and initiates an alarm if the transmitted signal pulse amplitude tolerance, in accordance with Table 3-9 of ICAO Annex 10 Volume IV, is exceeded;
- (c) The MSSR monitors and initiates an alarm if the transmitted signal pulse rise and decay time tolerance, in accordance with Table 3-9 of ICAO Annex 10 Volume IV, is exceeded; and
- (d) The interrogator must provide an indication of the automatic gain control settings.

7.2.4.14. Maintainability.

7.2.4.14.1. The MSSR is considered to have failed when the operational user can no longer provide full service using the MSSR. This means the loss of MSSR data or degradation of MSSR performance parameters to a level outside the limits stated in this specification.

7.2.4.14.2. If field adjustments are required for any system parameter, the control must be easily accessible without disassembling system components, e.g. via the front panel or behind a front panel access door.

7.2.4.14.3. For any required field measurements there must be easily accessible test points.

7.2.4.14.4. The MSSR must detect and report run time failures.

7.2.4.15. Availability. In the event of an external power interruption, barring component failure, the time to restore system operation to a non-failed condition must be less than three (3) minutes.

7.2.4.16. Miscellaneous.

7.2.4.16.1. The MSSR must allow the selection of Pulse Repetition Frequencies (PRFs) over a minimum range of 180 to 450 Hz, inclusive, with at least 15 discrete steps at the system level.

7.2.4.16.2. The MSSR system must provide Mode 5 Level 1, Level 2 and Lethal Mode capability when connected to the TCR System. This configuration must fully support the requirements of STANAG 4193 and DoD AIMS 3-1000.

7.2.4.16.3. The system must interrogate aircraft equipped with Mode S transponders. Mode S interrogations must be interlaced with all other Military and ATCRBS interrogations (Mode 1, Mode 2, Mode 3/ A and C, Mode 4/Mode 5) to include roll call, all call, and selective interrogation in the coverage volume.

Table 7-2: Modes S Features

Mode S Feature	“Yes” indicates feature is supported and the data must be provided to the Radar Data Processor (RDP) for each associated reply message dependent on aircraft ability to reply.
Interrogation Mode “Mode S -all call	Yes
Interrogation Mode “Mode S Broadcast”	Yes – See Note 1
Interrogation Mode “Mode S Addressed”	Yes
Uplink Format 4	Yes – Mode S Level 1 & 2
Uplink Format 5	Yes – Mode S Level 1 & 2
Uplink Format 11	Yes – Mode S Level 1 & 2
Uplink Format 20	Yes – Mode S Level 2
Uplink Format 21	Yes – Mode S Level 2
Downlink Format 4	Yes – Mode S Level 1 & 2
Downlink Format 5	Yes – Mode S Level 1 & 2
Downlink Format 11	Yes – Mode S Level 1 & 2
Downlink Format 20	Yes – Mode S Level 2
Downlink Format 21	Yes – Mode S Level 2
Downlink Format 17 (Extended Squitter)	Yes
GICB Messages	See Note 2 for the GICB Messages below
Data Link Capability report – Aircraft Identification (ID), uplink ELM	Yes
Aircraft Identification – 8 character ID	Yes

Mode S Feature	“Yes” indicates feature is supported and the data must be provided to the Radar Data Processor (RDP) for each associated reply message dependent on aircraft ability to reply.
Automatic Crash Avoidance System (ACAS) Active Resolution Advisory – threat type, threat identity etc...	Yes

Note 1: Interrogation in response to a broadcast (e.g. change in BDS1, 0).

Note 2: GICB messages should be queued in a 3-message group for automatic extraction by the MSSR. RDP and MSSR Mode S message content must be defined as part of the ICD effort.

7.2.5. Radar Subsystem Processing.

7.2.5.1. Target Processing. The TCR System target report delay is defined as the interval from the time that a PSR or SSR target is at azimuth boresight until the target is displayed on the operator display. Under peak capacity (max load) conditions when the tracking mode is not engaged the TCR System target report delay must be no greater than 2.0 seconds.

7.2.5.2. Priority Filtering. The Radar Subsystem must accomplish priority filtering by message type (RTQC/M4T, STATUS, BEACON, EMERGENCY, STROBE, M4, SEARCH/BEACON, BEACON, and SEARCH) must be implemented when the radar target peak capacity as defined in 7.2.5.4 is exceeded in order to allow system controllers to continue to provide close control of aircraft.

7.2.5.3. Target Reports. The target reports must indicate range and azimuth relative to the radar coordinates, and height relative to MSL.

7.2.5.4. Target Capacity. The target-processing capacity at the output of the Radar in the presence of an additional three hundred (300) false PSR reports and one hundred (100) false SSR reports, uniformly or non-uniformly distributed in azimuth for a 360 degree scan, and not be impacted by clutter processing must be as defined below:

- (a) A minimum one thousand (1000) real aircraft tracks in any mix of PSR only, PSR/SSR/Link merge, or SSR only targets;
- (b) A peak of four hundred (400) targets uniformly distributed in a 90-degree sector;
- (c) A peak of one hundred twenty-five (125) targets uniformly distributed across two (2) contiguous 11.25-degree sectors;
- (d) A peak of twenty-five (25) targets in a 1.3-degree wedge lasting for not more than two (2) contiguous wedges; and
- (e) Targets per radial greater than or equal to sixty (60).

7.2.5.5. Scan-to-Scan Correlated Target Reports. The primary radar scan-to-scan correlation with operator selectable range/azimuth/height gating may be used to reduce false alarms and assure a high confidence in reported aircraft targets.

7.2.5.5.1. If primary radar scan-to-scan correlation is used, the radar must satisfy the following requirements:

- (a) Report no more than fifteen (15) false scan-to-scan correlated search report per scan averaged over ten (10) scans under normal clutter conditions. Normal clutter conditions include thermal noise, terrain, permanent echoes, sea, and distributed rain;
- (b) Report no more than forty-five (45) false scan-to-scan correlated search reports per scan averaged over ten (10) scans when the clutter environment exceeds normal conditions. Excessive clutter conditions include surface vehicles, AP, and cellular rain;
- (c) Report no more than one (1) false beacon target report per scan in the steady FRUIT condition of 20,000 ATRBS and 600 Mode S FRUIT per second of which 30 percent are in the main beam;
- (d) Provide operator selection for tracked position report or actual target detected position report;
- (e) Provide operator selection for primary radar only (if not merged with beacon) minimum velocity threshold, of 0 to 120 knots; and
- (f) No more than three (3) scan delay in target reporting must occur due to correlator/track initiation time.

7.2.5.6. Search/Beacon Merge Function.

- (a) The TCR System must merge MSSR and PSR target reports when both radars detect the same aircraft target. These PSR and MSSR targets should be successfully merged 98 percent of the time scan to scan;
- (b) Target merge function must be operator selectable; and
- (c) The TCR System should provide the following site-selectable sources for range and azimuth position data for merged target reports:
 - i. range and azimuth of the MSSR target; and
 - ii. range and azimuth of the PSR target.

7.2.5.7. Target Overload Processing. When the target load exceeds capacity, as per Para 7.2.5.4, the TCR System must have internal processing capable of automatically decreasing the number of reports. In severe overload cases, the TCR System must incrementally reduce target load in accordance with the criteria established in Para 7.2.5.2. When the overload condition clears, full reporting of all targets must be restored.

7.2.5.8. The system must be capable of processing passive detection information, e.g. Electronic Support Measures (ESM).

7.2.5.9. Tactical Data Link (TDL) Processing.

7.2.5.9.1. The TDL C2 processor must process, displaying and transmitting NATO Link 1 in accordance with STANAG 5501.

7.2.5.9.2. The TDL C2 processor must process, displaying and transmitting Link 11A and Link 11B in accordance with MILSTD 6011.

7.2.5.9.3. The TDL C2 processor must process, displaying and transmitting Link 16 in accordance with MILSTD 6016.

7.2.5.9.4. The TDL C2 processor must be compliant with MILSTD 6016 and MILSTD 6020 for data forwarding capability between Link 11, Link 11B, and Link 16 as a minimum.

7.2.5.9.5. The TDL C2 processor must be compliant with MILSTD 3011 annex A, B and C - Joint Range Extension Application Protocols (JREAP).

7.2.5.9.6. The TDL C2 processor must have an interface to the GPS.

7.3. Radar Console and Display.

All operator positions must be comprised of a functionally identical radar display and communications suite.

7.3.1. Data Link Display.

7.3.1.1. Tactical Data Link tracks (Link 1, Link 11, and Link 16) must be selectably displayed on all operator consoles located in the Shelters and RTOCs.

7.3.1.2. All operators' consoles must manipulate, filter, transmitt and forward Tactical Data Link information.

7.3.1.3. Link 16. From all operator consoles located in the Shelters and RTOCs, the operator must have the capability to:

- (a) display Link 16 tracks;
- (b) send or receive free text messages over Link 16;
- (c) transmit engagement/commit orders;
- (d) initiate and monitor tracks on Precise Position Location Identification (PPLI);
- (e) handover tracks;
- (f) accept or reject weapons track handovers;
- (g) verify bull's eye location via Link 16 with participating fighters when performing Link 16 Fighter Control; and
- (h) change call sign and ID of a Link 16 track.

7.3.1.3.1. Link 16 tracks must be clearly identified as Link 16 tracks (including the identity of the originator).

7.3.1.3.2. The operator must have access to the following Link 16 functions from individual positions: engagement orders; attention arrows; ID declaration.

7.3.1.3.3. For all Links the system must filter redundant tracks to and from Link participants. The system must also highlight and force telling tracks of high importance to Link participants.

7.3.1.4. Link 11. From all operator consoles located in the Shelters and RTOCs the operator must have the capability to:

- (a) display Link 11 tracks;
- (b) change call sign and ID of Link 11 tracks;
- (c) accept or reject weapons track handovers; and
- (d) handover Link 11 tracks.

7.3.1.4.1. Link 11 tracks must be clearly identified as Link 11 (including the identity of the originator).

7.3.2. AFCCIS Display. 12 ER and 42 Rdr will be equipped with two (2) AFCCIS laptops. The Contractor must provide tabletop space for these laptops in the Operations (Ops) Area. The AFCCIS requires a connection to the Satcom system. These laptops must have no direct connection to the radar processing and display system. In the event that AFCCIS data is required to be displayed on the TCR System, it will be downloaded to removable media and subsequently uploaded to radar processing and display system.

7.3.3. Console – General.

7.3.3.1. The displays and console positions must be functionally identical in the Shelter and RTOC. A surveillance display must be provided to display selected PSR and SSR target reports. In addition, all displays must provide the functionality required for command, tactical control and surveillance of aircraft.

7.3.3.2. All consoles must have, as a minimum, 22" displays/monitors and must have a minimum resolution of 1280 X 1024 pixels.

7.3.3.3. The system signal and data processor must display plots, tracks, maps, passive tracking, and any information relating to these items.

7.3.3.4. The radar display must have a minimum of five (5) PSR and five (5) MSSR operator selectable blanked azimuth sectors. Sector width must be selectable in increments commensurate with the system's beam width from 0 to 360 degrees.

7.3.3.5. Blanking areas must be graphically outlined on displays.

7.3.3.6. The system must display passive detection information in support of Passive Tracking, e.g. ESM.

7.3.3.7. The system must simultaneously display up to four (4) different radar feeds (selectable ASTERIX or CD-2) including the Terminal Radar And Communications System (TRACS) radar data.

7.3.4. Display Requirements. The system must have a comprehensive C2 software suite capable of managing and displaying PSR, SSR and Link data.

7.3.4.1. The system must display radar and beacon track data.

7.3.4.2. A plot is the original PSR and SSR return. Tracks are initiated from the plot data and display additional system information gathered from the PSR and SSR. Targets must be displayed in either plot or track, or both formats, selectable by the individual operator.

7.3.4.3. The default colour coding must be in accordance with MIL-STD-2525 Common Warfighting Symbology. Colours assigned to all displayed information must also be independently selectable at any time at each operator console.

7.3.4.4. The track block is information displayed adjacent to each target. The track block must be operator selectable on or off. The information in the track block should be operator selectable from the Tabular Display (TD) box; the Track Block must display a maximum of four operator selectable items from the TD. Track block information should be colour adjustable, as a minimum, the same colour as the operator selections in the TD box should be available.

7.3.4.5. The operator must have the capability of manually assigning a Call Sign (minimum 2 letters and 2 numbers) to a Track. The assigned Call Sign must be displayed in the Track Block/TD box.

7.3.4.6. Auto-deconfliction of track blocks must be selectable on or off. The operator must have the option of manually inserting the track block in a quadrant close to the track.

7.3.4.7. Track history trails must be selectable zero to ten and on or off.

7.3.4.8. The system must allow the operator to manually initiate/drop a track and update track heading, speed, altitude, and position independent of the presence of PSR/SSR data.

7.3.4.9. The system must have "auto-tracking".

7.3.4.10. The operator must manually initiate an Identification Friend or Foe (IFF)/SIF code search.

7.3.4.11. The operator must have the ability to change the track symbol ID to conform to all Link 16 ID's (hostile, friendly, etc).

7.3.4.12. Emergency codes must be displayed with special plots and track symbols.

7.3.4.13. The operator must be able to locate a specific, manually entered, IFF/SIF code.

7.3.4.14. The system must support and display passive tracking information.

7.3.4.15. Weather data, chaff and bird information should be available on the displays.

7.3.5. Mode 4/5.

7.3.5.1. The operator must have two (2) options for Mode 4/5 operation: automatic interrogation or operator selectable. With automatic interrogation, the system will interrogate all tracks, in a specified sector. With operator selectable, the system will interrogate the sector selected by the operator initiating the request. The operator must be able to select which option is active.

7.3.5.2. If the track had previously been evaluated, the system must retain the previous status until the new Mode 4 evaluation is complete. Mode 4/5 interrogation status must be displayed in the TD box.

7.3.5.3. The system must automatically generate Mode 4/5 interrogations to eligible tracks until a Mode 4/5 status is determined. The system must display an in-process indicator for the track while the Mode 4/5 evaluation process is in progress. This feature must be selectable.

7.3.6. Tabular Display (TD).

7.3.6.1. TD boxes must be displayed in an area so as not to cover the radar picture. The operator should also have the option to move the selected TD boxes anywhere on the display. TD boxes must be either colour coded, or labelled by name, or both. TD box area should be page/tab selectable.

7.3.6.2. The operator must be able to select items for display in the TD box. The operator should be able to select the colour and character size of the items selected from the TD box. The bull's-eye position, altitude, and transponder codes must be displayed together as much as possible. The display must update continuously and must include, as a minimum:

- (a) track name (call sign);
- (b) track number;
- (c) track bull's-eye position (bearing and range);
- (d) track altitude (radar height and Mode C);
- (e) Mode 1, Mode 2, Mode 3A, Mode 3C, Mode 4 / Mode 5, Mode S;
- (f) track source;
- (g) track speed (Mach, knots);
- (h) track heading;
- (i) type of aircraft;
- (j) track quality; and
- (k) track Lat/Long.

7.3.7. Maps.

7.3.7.1. The operator must be able to import maps from the CF Geomatics map database or equivalent databases e.g. National Imagery and Mapping Agency (NIMA).

7.3.7.2. The operator must be able to create a map by using the cursor or by specifying Lat/Long co-ordinates.

7.3.7.3. The operator must be able to create and save a map at any console. These maps must be accessible from all consoles. Maps must be colour selectable and have options to select the degree of fill as well as the degree of transparency.

7.3.7.4. The operator must be able to edit existing maps and save the edited map under a new name.

7.3.7.5. Any maps that are created by the operator must be transferable between the TCR displays/Joint Mission Planning Suite (JMPS) or the JMPS/TCR displays.

7.3.7.6. The system must display a Lat/Long grid (selectable on or off) utilizing the following two methods:

- (a) Degrees, minutes, seconds; and
- (b) Degrees, minutes, decimal.

7.3.7.7. The map datum system must be based on World Geodetic System (WGS) 84, NAD 83.

7.3.7.8. The system must display a geographical grid map (selectable on or off) with up to a ten-figure grid reference.

7.3.8. Special Points.

7.3.8.1. A minimum of 100 special points must be available. It must be possible to create special points using the cursor or by specifying Lat/Long. A minimum of fifty (50) symbols must be available to choose from for special points. These points must be accessible from all console displays.

7.3.8.2. The operator must be able to create irregular shaped routes between selected special points using the cursor or by entering Lat/Long coordinates.

7.3.8.3. The operator must have the ability to insert a text message next to a special point. Text blocks must automatically de-conflict (selectable on or off) when in close proximity to another point.

7.3.8.4. Special points associated with weapons systems or detection systems must have operator selectable range rings.

7.3.8.5. Any special points and other mission details that are created by the operator must be transferable between the TCR displays/JMPS or the JMPS/TCR displays.

7.3.9. Bearing/Range.

7.3.9.1. The operator must be able to select the bearing and range between any two (2) points/tracks/or combinations thereof, at any time by mouse click and drag.

7.3.9.2. The operator must be able to select the origin of the bearing and range to the bull's-eye or any special point. The range must be displayed in NM, kilometres or metres.

7.3.9.3. The operator must have the option of selecting to have a line appear between the bull's-eye or special point and the cursor. The bearing and range must appear beside the cursor and be selectable on or off.

7.3.9.4. The operator must have the option of displaying the bearing and range in a designated box (e.g. cursor box), which must be selectable on or off.

7.3.10. Zoom. The operator must be able to zoom the display in and out using either the pre-select or the continuously variable option. The zoom expansion must be indicated on the display. The pre-select option must have a minimum of five (5) pre-set zoom scales. Operators must have the option to offset and view a selected portion of the air picture.

7.3.11. Latitude/Longitude (Lat/Long). The operator must be able to determine the Lat/Long of any point on the display; this function must be selectable on or off. The position of the cursor must be indicated in Lat/Long either at the cursor or in a specific Lat/Long box. Furthermore, when an object is hooked, the Lat/Long of the object must also be displayed in the TD box.

7.3.12. Display - Miscellaneous.

7.3.12.1. The compass rose must be visible at all scales and must be selectable on and off.

7.3.12.2. The system must display a GPS synchronized clock, in local or ZULU times (selectable). Display of the clock must be selectable on or off.

7.3.12.3. Login must be available for individual users. A minimum of twenty (20) user profiles must be available on each display system. Individual profiles will save that particular operator's scope set up. Passwords must be optional; however if used, the administrator must have the capability of resetting passwords.

7.3.12.4. The resolution of the display must be sufficient to ensure a clear and legible presentation under various conditions and display settings, e.g. dense clutter, jamming, adverse weather, high traffic conditions, zoom.

7.3.12.5. The system must have range rings. All display items e.g. maps, Areas Of Responsibility (AOR), range rings, etc. must be selectable on or off. The colour of these items must also be selectable.

7.4. Miscellaneous System Requirements.

7.4.1. System Monitoring and Control.

7.4.1.1. Radar Subsystem Control.

7.4.1.1.1. Radar Subsystem Remote Control. The TCR System must provide the capability for full operational control from the RTOC, Shelter or North Bay when in garrison. When deployed, full operational control from North Bay is required. Radar remote control must be provided:

- (a) from North Bay on one (1) position;
- (b) from all RTOC consoles; and
- (c) from all Shelter consoles.

7.4.1.1.2. Radar Remote Master Control. Once radar remote master control has been assigned to a user, control must remain with that user until relinquished. All consoles within the Shelter and RTOC, as well as the maintenance console in North Bay, must provide an indication of which user has been assigned master control of the system.

7.4.1.1.3. The TCR System must allow the user to configure, as a minimum, the following:

- (a) Site Elevation; and
- (b) Site Location Parameters.

7.4.2. Operator and Maintenance Controls.

7.4.2.1. Operator Controls. The operator must have full operational control of the radar from the Shelter and RTOC consoles.

7.4.2.2. Maintenance Controls.

7.4.2.2.1. Maintenance Features/Controls. The maintenance console must have full control of all operational features as well as control of the radar and radar sub-systems maintenance features from the Shelter and RTOC consoles.

7.4.2.2.2. Performance/FI Status for all major radar subsystems must be available on all consoles.

7.4.2.2.3. Maintenance personnel must select the radar control menu from any console. Changes to radar settings must be password protected.

7.4.2.2.4. Troubleshooting and diagnostics must be available at all console positions. Access to this capability must be determined by the mode of operation selected by the user. (e.g. if user logs on as a maintainer the user gets maintainer privileges, if the user logs on as an operator only operator privileges will be available).

7.4.2.2.5. Maintenance instructions and procedures should be available from all console positions.

7.4.2.2.6. The TCR System must run fault detection and FI (troubleshooting) diagnostics while the radar is in both on line and off line modes.

7.4.2.2.7. The TCR System must indicate which display has maintenance control and whether the radar is on or off-line when running system diagnostics.

7.4.2.2.8. The system must have a remote dial-in diagnostic/maintenance capability.

7.4.3. Performance Monitoring.

7.4.3.1. The TCR System must provide the user with selectable local or remote monitoring and diagnostic capabilities from any of the Shelters or RTOC consoles.

7.4.3.2. The TCR System must display performance parameters. When a radar system parameter is out of tolerance, a visual and audio alarm must be activated. The audio alarm must be selectable on or off.

7.4.3.3. The monitoring and control system must:

- (a) display whether the PSR and MSSR is on-line or off-line;
- (b) run on-line and off-line fault detection and FI (troubleshooting) diagnostic processes;
- (c) report site status including, but not limited to, Shelter temperatures, power generation status, Shelter door entry/exit alarms, and fire/smoke alarms; and
- (d) display fault indicators, and where applicable, candidate failed line replaceable units (LRUs).

7.4.4. Real-Time Quality Control (RTQC) Target(s). The TCR System must provide performance monitoring capabilities, generate search and beacon RTQC targets in accordance with ESD 2433-968-1B. The search RTQC will be reported at 5 NM when the antenna passes 0 degrees azimuth, and the beacon RTQC must be reported at 1 NM when the antenna passes 180 degrees azimuth.

7.4.5. Time Space Position and Information (TSPI) System. The TCR System in Cold Lake currently provides a CD-2, RS-422 radar feed from the Radar Shelter to the TSPI system. The TCR replacement system must provide a CD-2, RS-422 interface from the Radar Shelter to T6, the DND demarcation point. The Visio drawing of the TSPI (Appendix 11), the cross connect sheets (ICD) (Appendices 12 and 13) and the technical document can be provided on request as GFI.

7.5. Communications. All operator positions must be functionally identical.

7.5.1. Interconnectivity/ Communications.

7.5.1.1. Interconnectivity. The TCR System must provide North Bay with full access and operational control of the Shelter radios and radar both while the system is deployed and in garrison. The demarcation point for the Contractor is up to and including the Satcom systems at 42 Rdr and 12 ER.

7.5.1.1.1. Remote Control of Radios. The TCR System must:

- (a) Provide the RTOC with full operational access and control, including Have Quick, nine (9) UHF/VHF AN-PRC-117 family shelter while in garrison;
- (b) Provide North Bay with full operational access and control, including Have Quick, of the Shelter radios whether deployed or in garrison;
- (c) Ensure North Bay retains access to the existing range radios at 42 Rdr and 12 ER;
- (d) Provide the Shelter with full operational access and control of the Shelter radios whether deployed or in garrison;

- (e) Ensure that the RTOC retains the current functionality with regards to the existing range radios (42 Rdr multi-channel radios are accessed via console selection; the frequency management capability is controlled from a separate console in the RTOC. Single channel radios at 12 ER are also accessed via console selection);
- (f) Supply and integrate all necessary 4 E&M radio trunking equipment; and
- (g) Ensure the RTOC at 42 Rdr retains access to the high power, UHF multi-channel radios. The AN/GRC-171 radios are located at the Communication Consolidation Building (CCB) at PLER.

7.5.1.1.2. Radio Control. Once control of a radio has been assigned to a user, control must remain with that user until relinquished. Visual display of the radio user must be available at the RTOC, the Shelter and North Bay. AN/PRC-117 frequency management functions must be available at all consoles within the RTOC and Shelter. Control of the Shelter radios must be provided from:

- (a) a single console in North Bay;
- (b) all consoles in the RTOC; and
- (c) all consoles in the Shelter.

7.5.1.1.3. Radar Remote Control. The Contractor must supply the necessary equipment for full remote control of the radar from North Bay. The Contractor remote control capability must be tested at the individual sites prior to installation at North Bay. DND will install this equipment at the North Bay end.

7.5.1.1.4. Demarcation Point. Each existing DND facility has a wall-mounted demarcation point for cable connection and signal routing. Interface overview documentation will be provided as GFI by DND. Cross connect sheets for 12 ER and 42 Rdr (Appendices 12 and 13) will be provided by DND as GFI upon request.

7.5.1.1.5. External Interfaces. The radar and radio systems must be designed to provide external interfaces to the RTOC and North Bay (via Satcom) in accordance with ICDs. The Contractor, in conjunction with Canada, must develop the ICD.

7.5.2. RTOC Integrated Communications System (ICS) Suite. This suite of equipment must be fully integrated, via the existing satellite system, with the ICS presently installed at North Bay. The interconnectivity from the RTOCs to the Shelters at the respective Radar Heads is via DND microwave communication links.

7.5.2.1. General RTOC ICS Characteristics. The RTOC ICS must include six (6) console positions at 42 Rdr and 12 ER. Each console position must have the following characteristics:

- (a) The ICS must allow any position to monitor, but not override, the voice communications of any other position. The supervisor must have the additional functionality to override the voice communications of others;
- (b) Each position must be equipped, at a minimum, with two (2) user Jacks; one (1) for the operator and one (1) for the 'supervisor' monitor and over-ride capability;

- (c) As a minimum, radios, landline and Guard audio must be available at each console, with a volume control for each. The Guard audio must be available at all times;
- (d) Each console must be equipped with a Push To Talk (PTT) footswitch jack and a footswitch;
- (e) The ICS must have intercom capabilities between all console positions at the RTOC. There must be intercom capability between the RTOC, North Bay and the Shelter;
- (f) Each position must have a visual and audible call indicator (ringer) that can be turned on or off. The operator must be able to answer calls (hear ringer) with or without the headset and from anywhere in the RTOC Ops area;
- (g) All consoles must be equipped with Contractor supplied Active Noise Reduction (ANR) headsets and headset;
- (h) The Contractor must supply 15 ANR David-Clarkson headsets (Model #5965-01-578-9964) per system (2);
- (i) The ICS must have a visual "in-use" indication;
- (j) All headset positions must be equipped with a volume control; and
- (k) The ICS must meet DND COMSEC requirements, also for RED/BLACK.

7.5.2.2. 42 Rdr RTOC ICS Requirements. The RTOC Integrated Communications Suite (ICS) at 42 Rdr must integrate/interface with the following at each console position:

- (a) Eight (8) PABX circuits connected to a Public Switched Telephone Network (PSTN);
- (b) Four (4) "Ring Down" and two 4 Wire E&M circuits;
- (c) Link 16 J-Voice circuits;
- (d) Canadian Switched Network (CSN); and
- (e) Access to a minimum of thirty-six (36) Air/Ground/Air (A/G/A) Radios; twenty (20) are existing range radios at PLER, eleven (11) will be new Shelter radios, also at PLER, and five (5) expansion positions.

7.5.2.2.1. There are a total of two (2) C7999 Remote Control heads (for use with AN/GRC171 UHF A/G/A Transceivers) installed in a console at 42 Rdr. The Contractor must make provision for these devices in the console design.

7.5.2.3. 12 ER RTOC ICS Requirements. The RTOC Integrated Communications Suite (ICS) at 12 ER must integrate/interface with the following at each console position:

- (a) Five (5) PABX circuits connected to a (PSTN);
- (b) Four (4) "Ring Down" and two 4 Wire E&M circuits;

- (c) Link 16 J-Voice circuits;
- (d) CSN access; and
- (e) Access to a minimum of twenty-eight (28) A/G/A Radios positions; thirteen (13) are existing range radios at Lac Castor, eleven (11) will be new Shelter radios, also at Lac Castor, and four (4) expansion positions.

7.5.3. Shelter ICS Suite. This suite of equipment must be integrated, via the satellite system, with the integrated communication system presently installed at North Bay and via DND communication links to the RTOCs. This integrated system must provide North Bay with access to all communications facilities.

7.5.3.1. Shelter ICS Requirements. The Shelter ICS must include six (6) console positions each at 42 Rdr and 12 ER radar shelter(s). Each console position must have the following characteristics:

- (a) The ICS must allow any position to monitor, but not override, the voice communications of any other position. The supervisor position must have the additional functionality to override the voice communications of others;
- (b) Each position must be equipped with a minimum of two (2) user Jacks; one (1) for the operator and one (1) for the 'supervisor' over-ride capability;
- (c) At a minimum, radios, landline and Guard audio must be available at each console, with a volume control for each. The Guard audio must be available at all times ;
- (d) Each console must be equipped with a PTT footswitch jack and a footswitch;
- (e) The ICS must have intercom capabilities between all console positions within the Shelter(s). There must be intercom capability between the shelter, North Bay and the RTOC;
- (f) Each position must have a visual and audible call indicator (ringer) that can be turned on or off. The operator must be able to answer calls (hear ringer), with or without the headset, from anywhere in the shelter;
- (g) All consoles must be equipped with Contractor supplied ANR headsets and headset interfaces; and
- (h) The Contractor must supply 15 ANR David-Clarkson headsets Model # 5965-01-578-9964 per system (2).

7.5.3.2. Shelter ICS Interface Requirements. The Shelter ICS must integrate/interface with the following communications devices at each console position:

- (a) Each of the six (6) TCR shelter positions must have access to one or more of the following:
 - i. One (1) commercial access phone;
 - ii. One (1) Ring-down;

- iii. One (1) 4 Wire E&M;
- iv. Link 16 J-Voice Circuit; and
- v. One (1) CSN phone.

- (b) Each of the six (6) TCR positions must have access to one or more of the eleven (11) Shelter radios. Nine (9) of these radios are for UHF/VHF and two (2) for HF.

7.5.4. Radio Equipment. All radio functions must be controllable from the Shelter, RTOC and North Bay.

7.5.4.1. UHF/VHF Radios. These radios will be GSM. The radios are Harris AN/PRC117 based. There will be nine (9) of these radios at 42 Rdr and 12 ER for a total of eighteen (18) radios. The Transmit, Receive and PTT must be connected to the ICS via the audio sharing unit described in 7.5.5.1 and patch panel described in 7.5.5.3. The following radios will include a 40-Watt amplifier shelf:

- (a) UHF Guard;
- (b) VHF Guard;
- (c) AICC; and
- (d) One (1) Operator selectable.

7.5.4.2. HF Radios. The HF radios will be GSM. The HF radios are Rockwell Collins RT-2200 based. There will be two (2) of these radios at 42 Rdr and 12 ER for HF voice. Each radio will include a 1kW linear power amplifier shelf. The Transmit, Receive and PTT must be connected to the ICS, via the audio sharing unit and patch panel listed below.

7.5.4.3. Radio Control. Each console position in the Shelter and RTOC must have the capability to select any radio, and must have frequency control of the selected radio.

7.5.5. Radio Ancillary Equipment.

7.5.5.1. Audio Sharing. Both TCR Systems must be designed to allow sharing of the Transmit, receive and PTT lines of the newly installed AN/PRC117 and RT-2000 series radios between the North Bay, RTOC and Shelter operators. The TCR System must provide all consoles with an indication of which party controls the radio in question. Each TCR System must be configurable to provide priority to the shared radio channels (North Bay, RTOC or the Shelter operators) and must accommodate up to 24 radios. In the event that a dedicated Audio Sharing Unit is required, the Audor Communications model Audio Sharing Unit which is currently in-service must be used. If this unit is used, it must be installed adjacent to the radios in the Shelters.

7.5.5.2. Ground/Air/Ground (GAG) and Ground/Ground Trunking. Constraints on Satcom bandwidth dictate that the radios and telephones must be "trunked". The Contractor must provide trunking to enable operator access to the various radio and landline capabilities.

7.5.5.3. Patch Panel. An Audio (Voice) miniature (Bantam) patch panel (jackfield) must be installed and wired in circuit between the Audio Sharing Unit and shelter radios as well as between the North Bay signals and the

Audio Sharing Unit. A patch panel will be installed and wired by DND between the Audio Sharing Unit and North Bay, RTOC and shelter signals.

7.5.5.4. Radio Control (42 Rdr and 12 ER). The GSM radios have their frequency selection accomplished by software control. This software control must be accomplished by using laptops or other similar devices. If a keyboard is required, it must be drawer-mounted and retractable at each console position in the RTOC and Shelter(s). The input device, such as a keyboard, must provide a means of selecting and controlling each individual radio.

7.5.5.5. Existing Radio Controls (42 Rdr only). There is a separate console in the RTOC control room, which includes up to eight (8) hard drives, a keyboard, modems, a terminal and a Proconnect 8 Station Central Processing Unit (CPU) switch. These components comprise the remote control system for the current low-level communication system at PLER.

7.5.5.6. Signaling Unit. The single-channel radios, currently in service with the TCR, utilize a CODAN unit. The CODAN unit provides a signal that acknowledges a transmit or receive signal in North Bay. This signal uses a single lead on the 4 Wire E&M ('M' lead at TCR and 'E' lead at North Bay) card on the TCR Satcom model 3600 MUX. The AN/PRC-117 radios, installed as part of the TCR project, are transceivers. The Contractor must provide a signaling unit for each radio that interfaces this signaling unit with North Bay via the Satcom 3600 Multiplexer to provide the transmit and receive acknowledge indication.

7.6. Recording.

7.6.1. Console Recording.

7.6.1.1. Recorder Capabilities. The recording device must provide the following functionality for both the RTOC and the Shelter:

- (a) All voice/data/video must be recorded and must be displayed in the playback mode at any console or on a separate playback device. A clear indication must be visible when in playback mode. The operator must have the option to view the playback from any console. The recorder must provide time stamping, time display, and a time search capability. Video and audio information must be available in the playback mode and must be synchronized;
- (b) Recorder must be equipped with uninterrupted, continuous recording technology during radar operations;
- (c) Voice/video/data recorder must be equipped with long-term storage devices such as CD/DVD drives. Universal Serial Bus (USB) ports must be made available for memory stick data transfer;
- (d) The recording device must record, at each individual console, all images on the display, communications at that particular console, as well as console keystrokes. Each console must have a default setting of continuous recording with a two (2) hour buffer of past activity similar to a Personal Video Recorder (PVR);
- (e) Voice/video/data recording must be saved in a platform independent software format that can be played on any PC or DVD player (e.g. Windows Media Player);
- (f) The recorder must be compact and must be securely mounted inside the shelter;

- (g) The recorder must have sufficient backup media (e.g. DVDs) for eight hundred (800) hours of storage;
- (h) The recorder must exactly reproduce image video on any standard 22" monitor (minimum); and
- (i) The recorder must record for a minimum of twenty-four (24) hours between media changes.

7.6.2. Radar Core (Source) Recording.

7.6.2.1. Maintenance and operator personnel must be able to activate the radar core recording, which will record the radar feed at the source. The recorder must record a minimum of twenty-four (24) hrs of radar data before requiring transfer to a backup storage media such as DVD. Radar core (source) recording must provide the following functionality:

- (a) Core recording must be protected with a password;
- (b) When the recording device is not recording, an alert must be sent to the operator console/consols;
- (c) A clear indication must be visible when in playback mode. Playback may be viewed from any console. The recorder must provide time stamping, time display, and a time search capability;
- (d) The radar data recording must be interactive in the playback mode on the consoles. On the playback, all the display functions must be operational; the operator can access the TD boxes etc;
- (e) Recorder must be equipped with uninterrupted, continuous recording technology during radar operations;
- (f) The radar data recorder must be equipped with long-term storage devices such as CD/DVD drives. USB ports must be made available for memory stick data transfer;
- (g) The radar data recording must be saved in a common software format that can be played on any PC or DVD player;
- (h) The recorder must be compact to save room and securely mounted in such a manner as to prevent any damage;
- (i) The recorder must have sufficient backup media (e.g. DVDs) for eight hundred (800) hours of storage;
- (j) The recorder must exactly record and playback image video on any standard 22" monitor (minimum); and
- (k) The recorder must record for a minimum of twenty-four (24) hours between media changes.

7.6.3. RTOC Channelized Voice Recording.

7.6.3.1. In addition to the recording features listed above, provision must be made to integrate the current Commlog Voice Recorder (CVDS DL2410), installed in the RTOC, to record all A/G/A and designated

Ground/Ground signals. This recorder provides channelized voice recording. The Contractor must be responsible to interface all console voice channels to this recorder at each site.

7.6.3.2. The Contractor may propose, subject to Canada's approval, the replacement of the CVDS Voice Recorder with a state-of-the-art/user friendly device, which retains the functionality of the CVDS. This device would be required for both the RTOC and the Shelter.

7.6.4. Shelter Channelized Voice Recording.

7.6.4.1. The Contractor must provide a channelized voice recorder for not less than twenty (20) channels. This recorder must be mounted adjacent to the radios and provide all radio, and designated landline recording for the Shelter equipment.

7.7. Satellite Communications.

The Contractor must ensure that all Satcom systems are identical.

7.7.1. Integration. The Contractor must provide a 20-foot ISO Shelter. This shelter will be used to house Satcom and associated ancillary equipment (radios, MUX(s), link communications equipment as detailed in Appendix 7 of the SOW) for each TCR System. These Shelters can be used to install any TCR System equipment. The Contractor must optimize Shelter layout for the most effective use of all available space.

7.7.1.1. The Contractor must integrate two (2) of the GSM AN/TSC-510 ground stations, including the ancillary equipment, in the Satcom Shelters.

7.7.1.2. The Contractor must provide the ancillary equipment required to provide the additional satellite connectivity requirements identified in Section 7.5.

7.7.1.3. The existing fixed Satcom system antennas must be used at 12 ER and 42 Rdr.

7.7.1.4. The AN/TSC-510 Satcom system is limited to a 512 kbps data rate. Utilizing technology (e.g. trunking equipment), the Contractor must keep bandwidth usage to a minimum.

7.7.1.5. The Contractor must integrate the GSM components of the AN/TSC-510 Satcom ground terminals to produce a system capable of communicating with North Bay.

7.7.2. North Bay Satellite Communications (Satcom).

7.7.2.1. The Contractor must supply all of the necessary MUX equipment required in North Bay to satisfy bandwidth requirements and to interface with the TCR Satcom systems. The Contractor must install and integrate the Satcom equipment at the TCR end of the system. The Contractor must coordinate end-to-end testing with DND of the North Bay to TCR links in order to demonstrate that the reconfigured Satcom system maintains compatibility with North Bay.

7.7.2.2. The Contractor must submit their system Satcom bandwidth requirements to Canada as part of the TCR PDR Package. Note: Frequency and bandwidth allocations will be provided by DND 60 calendar days after PDR acceptance.

7.8. Tactical Data Link.

7.8.1. Data Link Equipment Requirements. Each TCR System requires identical Data Link systems. The Contractor must integrate the Link 1, Link 11 and Link 16 equipment with the TCR System. The existing Data Link equipment details can be provided as GFI upon request.

7.8.2. Tactical Data Link – General.

7.8.2.1. The Data Link operator requires ready access to the Data Link equipment. The Data Link operator position must be equipped with the following:

- (a) The Air Defence Systems Integrator (ADSI) or functionally equivalent Command and Control Processor (C2P);
- (b) A collapsible work station (desk);
- (c) Access to the ICS;
- (d) Stationary-size Storage Drawers; and
- (e) An optimally sized safe, approved to store crypto and information designated up to Secret.

7.8.2.2. Standards. The following standards are applicable to the Tactical Data Link:

- (a) STANAG 5501. The Tactical Data Link Command and Control (TDL C2) processor /display unit must process, display and transmitt NATO Link 1 in accordance with STANAG 5501;
- (b) MILSTD 6020. The TDL C2 processor unit must be compliant with MILSTD 6020 for data forwarding capability;
- (c) MILSTD 6011. The TDL C2 processor /display unit must process, display and transmitt Link 11A and Link 11B in accordance with MILSTD 6011;
- (d) MILSTD 6016. The TDL C2 processor /display unit must process, display and transmitt Link 16 in accordance with MILSTD 6016; and
- (e) MILSTD 3011 Annex A, B and C. The TDL C2 processor unit must be compliant with MILSTD 3011 Annex A, B and C, known as the JREAP.

7.9. Misc. Equipment.

7.9.1. System Synchronization. The TCR System must be synchronized to Universal Time Coordinated (UTC) with at least Stratum Level 2 accuracy via GPS. Four (4) complete GPS synchronized master clocks complete with distribution systems are required and must be installed by the Contractor as follows:

- (a) One (1) distribution system for each RTOC; and
- (b) One (1) distribution system for the each of the deployable systems.

7.9.1.1. Have Quick Radio Synchronization. The current TCR uses the MXF-409G Timing System, NSN 5895-01-433-6667 along with an URC-200 radio to acquire, maintain and distribute the Time-Of-Day (TOD) to the TCR Have Quick radios. The Contractor must be responsible for designing a TOD synchronization system for the replacement Have Quick-capable radios (GSM Harris AN/PRC-117) on the TCR Systems.

7.9.1.2. In order for the RTOC operator to initiate Have Quick Word of the Day (WOD) and TOD information, the synchronization system must be fully remoted from the Radar Shelter radios.

7.9.2. Air Force Command and Control Information System (AFCCIS). DND will supply four (4) TEMPEST Level 1 AFCCIS laptops, two for 12 ER and two for 42 Rdr. The Contractor must provide a tabletop space for this unit in each operations shelter. These laptops must have no direct connection to the radar processing and display system. Some AFCCIS data, however, will be downloaded to disk and subsequently uploaded to radar processing and display system. The following data will be transferred for this purpose: ATO's and ACO's in US Message Text Format (USMTF) 2000 Extensible Markup Language (XML) format, geomatics data in a variety of formats such as Global Navigation Chart (GNC), Jet Navigation Chart (JNC), ONC, Tactical Pilotage Charts (TPC), and 100m IRS satellite imagery.

7.10. Antennas.

7.10.1. Deployment Antennas. While deployed the system must f operate with, but will not be limited to, the antennas listed in Section 4.

7.10.1.1. Antenna Masts. The Contractor will provide all antenna masts. Masts must be compact, collapsible, lightweight, easily erected and manageable by two (2) persons.

7.10.1.2. Antenna Cabling. The Contractor will provide all antenna cabling and reels. Antenna cabling must be low loss, lightweight, flexible, weatherproof and housed on reels not exceeding two (2) person lift restriction. The concept of operations dictates that up to 250 feet of cable must be required for each remoted antenna. As such, the size of the reels may have to be decreased to a manageable size, and a low loss connection capability incorporated, to satisfy the 250-foot requirement.

7.10.1.3. The Contractor must provide a proposed deployed antenna layout plan as part of the PDR package. The final deployed antenna layout plan must be provided as part of the CDR package.

7.10.1.4. Unless otherwise indicated, all antennas must be Contractor supplied.

7.10.2. Garrison Antennas. While in garrison the TCR System must operate with the antennas listed in Section 4. The same complement of antennas must be mounted on the building or on freestanding mast(s) in the Radar Head compound at both 42 Rdr and 12 ER.

7.10.2.1. The freestanding antenna mast(s) to house the above-mentioned antennas must be supplied and installed by the Contractor.

7.10.2.2. The Contractor must supply all antenna cabling. Antenna cabling must be low loss and weatherproof. The Contractor must also provide weatherproofing for any and all antenna cabling building egress points.

7.10.2.3. The Contractor must provide a proposed garrison antenna lay-out/location plan as part of the PDR package.

7.10.2.4. Unless otherwise indicated, all antennas must be supplied by the Contractor.

7.11. Radar Head Infrastructure and Ancillary Equipment.

The existing facility has the following characteristics:

- (a) The lift assembly currently used to raise and lower the antenna, is rated at a max 8000 lbs. See Appendix 5;
- (b) The existing radome floor has an opening of 106"W X 232"L to fit the antenna. See Appendix 5;
- (c) The ESSCO radome used at the existing fixed installations meets S32-75 standards;
- (d) While operating in garrison, the current radar antenna rests on existing tower leg supports. See Appendix 5; and
- (e) HVAC. The existing in-garrison HVAC system. See Appendix 5.

7.11.1. Site Preparation and System Installation. The existing site infrastructure drawings can be provided as GFI on request. In order for the Contractor to complete a Site Preparation Plan, the Contractor must conduct a detailed site survey of the Garrison Radar Sites and RTOC at each site. Recommendations of infrastructure changes/modifications for both locations must be provided part of Site Preparation Report. Canada is required to coordinate site infrastructure changes through DND Engineering authorities.

7.11.1.1. The Contractor must identify RTOCs, Garrison Radar Sites and North Bay C&C Centre requirements for the TCR replacement system equipment and must include these requirements in the Site Preparation Report in accordance with CDRL item E001.

7.11.1.2. During the Site Survey, the Contractor must also review the adequacy of the existing HVAC system, lighting, electrical system and grounding for the new equipment, and make recommendations as required ensuring optimum equipment operation and illumination for the performance of maintenance activities.

7.11.1.3. Site Cleanup. The Contractor must be responsible for the dismantling, removal and disposal of waste materials required to modify the infrastructure to accept the Contractor's solution.

7.11.1.4. Existing Radar Head Building Power. The Contractor must:

- (a) Remove the existing 60hz to 400hz converters at the Radar Head Buildings at 42 Rdr Sqn and 12 ER;
- (b) Co-ordinate with Canada the disposal of the equipment removed; and
- (c) Rewire the Radar Head Buildings as required to accommodate the new TCR System.

7.11.1.4.1. All wiring and installation must be in accordance with the references provided in Appendix 25 of the SOW.

7.11.1.5. RTOC Building Modifications. The Contractor must identify all modifications required for the new TCR System equipment to be installed in the RTOC Buildings at 42 Rdr Sqn and 12 ER. All infrastructure modifications must be in accordance with the references provided in Appendix 25 of the SOW.

7.11.2. Shelter Design. The Shelter design must take into account Human Factors Engineering (HFE) and Computer Human Interfacing (CHI) considerations in accordance with MILSTD 1472. The Contractor must present how the Shelter layout addresses the HFE and CHI considerations at the PDR.

7.11.2.1. Due to the transport limitations of the Squadrons, the new TCR System must be housed in a maximum of four (4) ISO containers (including radar antenna) or three (3) ISO containers and one (1) radar antenna pallet. The ISO containers must not exceed 20 ft x 8 ft.

7.11.2.2. All Shelters must be load-balanced to satisfy the load trial requirements of Section 7.

7.11.2.3. The Contractor shall provide for securing and mounting of all GFE Data Link equipment in the present transit case system in the Shelter.

7.11.2.4. When in garrison, all Shelters provided should be housed in the Radar Head building, if possible.

7.11.2.5. The Contractor must provide the mobilizers for each Shelter (and antenna).

7.11.2.6. The deployable TCR System configuration must have a total of six (6) positions all with the same radar console and communication suite. There must be four (4) co-located positions for the operators, one (1) for maintenance and one (1) for the Link operator. The Link operator position may be collocated with the operator positions.

7.11.2.7. All keyboards and peripheral equipment in the Shelter must be retractable and storable.

7.11.2.8. All Shelter cabinets/racks must be shock-mounted and grounded.

7.11.2.9. Unless otherwise approved by Canada, all Shelter cabling must be, at a minimum:

- (a) FT 4 Rated;
- (b) Double shielded;
- (c) Category 5 or better; and
- (d) Meet COMSEC criteria as required.

7.11.2.10. All Shelter filters and 'feed-through' connections must be equipped with screw-on protective weatherproof connector caps secured to the shelter.

7.11.2.11. Shelters should have side entry to allow permanent attachment of the Cargo Handling Unit (CHU).

7.11.2.12. All Shelters must be equipped with the provision for proper exterior grounding and an interior grounding distribution system. Shelters must also have easily accessible personnel grounding points.

- 7.11.2.13. The Shelters must be equipped with dissipative anti-static matting/flooring.
- 7.11.2.14. A method to secure equipment for loading and transportation must be provided and installed.
- 7.11.2.15. The Contractor must install the same form-fit-function audio and data jackfields/patch panels as are currently installed. These patch panels/jackfields must be 'in-circuit' for the radar, satellite and ICS (radios predominately) systems. These patch panels must be clearly labelled.
- 7.11.2.16. HVAC. When deployed, the TCR must have the necessary HVAC equipment to maintain proper room temperature in any climate. When in garrison, the Contractor can utilize the existing heavy-duty HVAC systems currently utilized by the Shelters at the Radar Heads.
- 7.11.2.17. Emergency Radio. In the event of a power or ICS failure, the Operator requires access to one (1) of the installed UHF/VHF radios. The Contractor must provide an "Emergency Jack" to bypass the ICS directly to the radio. The "Emergency Jack" must be identical to the console radio jacks. (Note: An "Emergency Switch" may also be required.)
- 7.11.2.18. Shelter Equipment Racks. The Contractor must supply standard 19-inch equipment racks. The rack spacing must be 1-3/4 inch for one (1) rack unit. Blank spaces must be fitted with blank panels.
- 7.11.3. Power. The Contractor must identify and document the power requirements for the TCR System including maximum peak load as part of the CDR package.
- 7.11.3.1. DND will provide power generator systems including distribution system, cables and transfer switches for the deployment of the TCR Systems. The generator power cables will be equipped with "Hubbell" brand connectors.
- 7.11.3.2. The Contractor must ensure that a "Hubbell" bulkhead AC power connector is installed on each shelter. The AC power connector must be a five (5) conductor, pin and sleeve, watertight bulkhead receptacle equipped with a tethered closure cap or cover. The bulkhead connector rating must match or exceed the Shelter's AC circuit breaker panel load rating.
- 7.11.3.3. The Contractor must supply an AC distribution system within the Shelters that includes a UL/CSA certified circuit breaker panel.
- 7.11.3.4. The Contractor must install a properly labelled and covered Emergency Shutdown Switch. The Emergency Shutdown Switch and Circuit Breaker Panel must both be mounted adjacent to the Shelter entry door.
- 7.11.3.5. The Contractor must install, in each Shelter provided, dimmable lighting with tactical red light lighting.
- 7.11.3.6. The Contractor must ensure proper grounding, bonding and lightning protection in accordance with the standards identified in Appendix 20.
- 7.11.3.7. Primary Mission Systems and Equipment (PME). PME is defined as all of the equipment, which delivers the primary mission and prime function of the TCR. For the TCR System, the PME is identified as the Radar and Communications equipment and systems. The Contractor must provide Uninterruptible Power

Supply (UPS) for all processor based PME without embedded power backup to minimize system re-initialization following loss of power.

7.11.3.8. Emergency Radio. The Contractor must provide UPS for one (1) UHF/VHF radio to ensure continued communication in the event of a power failure.

7.11.4. Shelter Interface Cabling. The Contractor must supply, the inter-shelter communications system cabling, which must be Tactical Grade Fibre-Optic cable. This cable must be 'reel mounted'. The reel must not exceed two (2) persons lift restriction. The concept of operations dictates that up to 250 feet of cable must be required for each remoted Shelter.

7.11.4.1. Presently, in garrison, the Satcom Shelter interfaces to the existing range radios via the Radar Head wall mounted terminals. This connection is via copper. The terminals are considered the demarcation point. In garrison, the inter-shelter cabling connections must be tailored for site-specific requirements and permanently installed.

7.11.4.2. All copper cabling must terminate, and cross connect, at the demarcation point on the Radar Head wall. The QDF EB1D type interconnect terminals, manufactured by ADC Telecommunications Inc., are designated T3 at Bagotville and T6 at Cold Lake. The Contractor must comply with the standards listed in Appendix 20. Any other standards must be approved by Canada prior to implementation. DND will provide upon request, as GFI, the cable records of the present configuration; the Contractor must provide up-dated cable records for the completed installation. As a minimum, a draft copy of the Contractor supplied cable records must be left on site by the Contractor at SAT. Final copies of the Contractor cable records must be delivered to Canada at least 30 calendar days prior to FPR.

7.11.4.3. All cabling must be neatly dressed, and routed utilizing existing cable tray systems in accordance with Treasury Board Information and Technology Standards (TBITS) <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=15746>.

7.11.4.4. All cabling must be labelled at both ends in a manner agreed to by both the DND TA or a designated representative and the Contractor.

7.11.4.5. Cabling from all Shelters to the distribution frame(s) at the Radar Heads at 12 ER and 42 Rdr must be supplied by the Contractor. The final layout of the distribution frame(s) must conform to existing DND protocol provided upon request as GFI. The Contractor must supply, as a minimum, connectors, cables, crimping tools, pins, back shells, cable ties, cross-connect wire, and termination tool(s). The Contractor must supply replacement termination blocks for the existing radar head distribution frame(s) terminals.

7.11.4.6. Each TCR System must be equipped with all the necessary connectorized shelter-to-shelter cabling for deployed operations. All cabling must be weatherproof for deployed operations.

7.11.5. Fixed Satellite Equipment. The fixed Satellite system provides the Long Haul Communications Network (LHCN) between North Bay and PLER (aka Cold Lake Air Weapons Range (CLAWR) in Cold Lake and between North Bay and Lac Castor in Bagotville. Each system consists, in part, of the following:

- (a) Fixed satellite antenna;
- (b) Antenna radome;

- (c) Radome pressurizer;
- (d) Dehumidifier; and
- (e) Dehydrator.

7.12. RTOC Infrastructure and Ancillary Equipment.

There is an existing fibre optic (long haul) connection between the RTOC at 3ere Bagotville (12 ER) and the Radar site at Lac Castor. There is also a microwave connection between the RTOC at 4 Wing Cold Lake and the CCB at the PLER Cold Lake.

7.12.1. Existing Infrastructure. Any modifications to the existing infrastructure must be in accordance with federal, provincial, and DND codes and the most stringent must take precedence. Any modifications prior to implementation will require Canada's approval. All infrastructure drawings and documentation must be modified to reflect any changes.

7.12.1.1. RTOC AC Power. The Contractor must modify the existing building power, as required, to support the new TCR System.

7.12.2. RTOC Design. The RTOC design must take into account HFE and CHI considerations in accordance with MILSTD 1472 . The Contractor must document in the PDR Package and present how the RTOC layout addresses the HFE and CHI considerations at the PDR.

7.12.2.1. The Contractor must install the same form-fit-function audio and data jackfields/patch panels as are currently installed. These patch panels/jackfields must be 'in-circuit' for the radar and ICS (radios predominately) systems. These patch panels must be properly labelled.

7.12.2.2. The RTOC in 42 Rdr and 12 ER must have a total of six (6) positions all with the same radar console and communication suite. These positions must be functionally identical to the consoles and communications suites in the shelters.

7.12.2.3. All keyboards and peripheral equipment in the RTOC must be retractable and storable.

7.12.2.4. RTOC Equipment Racks. The Contractor must supply standard 19-inch equipment racks. The rack spacing must be 1-3/4 inch for one (1) rack unit. Blank spaces must be fitted with blank panels.

7.12.3. RTOC Cabling. Unless otherwise approved by Canada, all RTOC cabling must be, at a minimum:

- (a) FT 4 Rated;
- (b) Double shielded;
- (c) Category 5 or better; and
- (d) Meet COMSEC criteria.

7.12.3.1. All cabling must terminate, and cross connect, in the building equipment room on the "Bix" interconnect terminals. The Contractor must provide Canada with the proposed standards that will be used for

this installation; these standards must be approved by Canada. DND will provide the cable records of the present configuration (Appendices 12 and 13); the Contractor must provide up-dated cable records for the completed installation. As a minimum, the Contractor must provide a draft copy of all installation cable records as part of SAT.

7.12.3.2. All cabling must be neatly dressed and routed utilizing existing cable tray systems.

7.12.3.3. All cabling must be labelled at both ends in a manner agreed upon by both Canada and the Contractor.

7.12.3.4. All cabling from the operations room in the RTOC to the RTOC Main Distribution Frame (MDF) at 42 Rdr and 12 ER must be supplied by the Contractor. The final layout of the MDF will be approved by Canada prior to installation. The Contractor must supply, as a minimum, connectors, cables, crimping tools, pins, back shells, cable ties, cross-connect wire, and termination tool(s). The Contractor must supply replacement termination blocks for the existing MDF terminals.

7.13. Grounding, Bonding and Lightning Protection (See Appendix 20).

7.13.1. The Contractor must provide Canada with specific building ground requirements to support the TCR System for both the RTOC and Radar Head.

7.13.2. Grounding must utilize a facility single-point ground system.

7.13.3. Bonding must be accomplished by methods that provide the proper mechanical strength, achieves and maintains a low impedance value and is not subject to deterioration through vibration or corrosion in normal use.

7.13.4. Transient protection devices must be provided by the Contractor at each point where data or signal lines are connected to cabling entering or leaving the Shelter. These protection devices must be tailored to the equipment to be protected.

7.13.5. The Contractor must install lightning protection on each Shelter delivered. The lightning protection must meet best commercial standards.

8. SPARES OPTION.

8.1. The Contractor must package, mark and deliver Spare Parts as detailed in the PPB consistent with the second level maintenance concept and Section 3 of this SOW.

8.2. The Contractor must provide a list of the manufacturer's recommended spare parts and consumables for all of the supplied systems, including those that require replacement more frequently (e.g. fast moving items or such as may be exposed to heavy duty use), long lead items, and components with long repair cycle, in quantities needed for two years of normal operation.

8.3. This option must also take into account the ISL and the three levels of spares: site spares, deployment spares and depot spares.

8.4. The spares must be based on each system being operated on average of three thousand (3000) hours per year. The spares must be based on the procurement of two TCR Systems and associated equipment.

8.5. The price of the option must incorporate the following:

- (a) Supplies provided under the terms of this option must be packed to permit the application of the lowest available shipping classification and to ensure safe arrival at destination;
- (b) Preservation, Packaging and Packing must be to Level B packaging with marking in accordance with the latest issue of the United States Department of Defence (US DOD) MIL-2073 or NATO equivalent;
- (c) All spares are marked in accordance with the latest issue of US DOD MIL-STD-129 or the NATO equivalent;
- (d) All repairables which require special packing and/or handling must be identified; and
- (e) DND supplied spares (Bonded Inventory) will be accounted for in either a manual or an automated system. Regardless of the system used, the Contractor must maintain an audit trail acceptable to DND. Also, any automated materiel accounting system must first be approved by Canada. Supply accounting records for DND materiel must be maintained separately from other company.

APPENDIX 01
CONTRACT DATA REQUIREMENTS LIST
(CDRL)
FOR
TACTICAL CONTROL RADAR (TCR) MODERNIZATION PROJECT

APPENDIX 1 – Contract Data Requirements List (CDRL)

TCR PROJECT

DEFINITIONS

BLOCK A – System / ITEM

The System / Item represents the project to which the CDRL is applicable.

BLOCK B – CONTRACT / RFP NUMBER

PWGSC's internal filing or document number is entered in this block.

BLOCK C – SOW / IDENTIFIER

A unique TCR Project Statement of Work identifier is entered in this block as required.

BLOCK D – DATA CATEGORY

The category under which the CDRL is classified is entered in this block.

BLOCK E - CONTRACTOR

The name of the Contractor is entered in this block.

BLOCK 1 – ITEM NUMBER

An alphanumeric allocation representing a functional area of responsibility. They are expressed as follows:

- a. A000 Project Management;
- b. B000 System Engineering;
- c. C000 Integrated Logistics Support;
- d. D000 Test and Evaluation; and
- e. E000 Site Design & Transition.

BLOCK 2- TITLE OR DESCRIPTION OF DATA

The title of the DID is entered in this block.

BLOCK 3 - SUBTITLE

The subtitle for the DID is entered in this block as required.

BLOCK 4 – AUTHORITY (DATA ITEM NUMBER)

The Data Item Number is entered in this block (e.g. PM-001).

BLOCK 5 – CONTRACT REFERENCE

The specific paragraph number of the Contract, Statement of Work, Request for Proposal, Specifications, or other applicable document, which will assist in identifying the effort associated with the data item, is entered in this block.

BLOCK 6 – REQUIRING OFFICE

The technical office of primary interest, i.e., the TA responsible for the adequacy of the data, is entered in this block (e.g., PMO TCR Project).

BLOCK 7 – INSPECTION AND ACCEPTANCE METHOD

If applicable, the inspection and acceptance method of the data is entered in this block according to the following codes (otherwise this block will be left blank):

CODE	INSPECTION	ACCEPTANCE
SS	Source	Source
DD	Destination	Destination
SD	Source	Destination
DS	Destination	Source

Table A1-1 - Inspection and Acceptance Methods

BLOCK 8 - APPROVAL CODE (APP CODE)

An "A" in this block identifies items of critical data requiring specific advanced written approval. Unless otherwise specified, PMO TCR will provide its comments to the Contractor within 30 calendar days of the date the Data Item was due (in accordance with the CDRL), or within 30 calendar days of receipt of the Data Item - whichever is later. Early submission of Data Items does not necessarily mean that DND will provide comments earlier. DND may provide comments sooner, if PMO workload permits, Approval and / or comments by PMO TCR on Data Items will be forwarded via letter format. Data Items against which the Contractor has received comments from PMO TCR must be resubmitted with PMO TCR comments addressed within 20 calendar days of receipt of the comments. Amendments or revisions to approved documents require the prior approval of PMO TCR.

BLOCK 9 - INPUT

If data are the integrated results of specific inputs from associated Contractors, an "X" is entered in this block. Otherwise this block is left blank.

BLOCK 10 - FREQUENCY

This block indicates the frequency of the delivered data. The frequency codes are as follows:

- a. ANNLY Annually;
- b. ASGEN As generated;
- c. BI-MO Each 2 months;
- d. BI-WE Each 2 weeks;
- e. DAILY Daily;
- f. DFDEL Deferred delivery;
- g. DFREQ Deferred requisitioning;
- h. MNTHY Monthly;
- i. ONE/R One time with revisions;
- j. OTIME One time;
- k. QRTLY Quarterly;
- l. R/ASR Revisions as required;
- m. SEMIA Semi Annually; and
- n. WKLY Weekly.

BLOCK 11 - AS OF DATE

If the data are submitted only once, the "as of" date will be entered in this block as follows: day/month/year (e.g., "03 November 2002"). If submittal is constrained by a specific event or milestone, this constraint/milestone is entered using the abbreviations (e.g. PROPOSAL), as follows:

- a. PROPOSAL Submitted with Contractors' proposals;
- b. ASGEN As generated;
- c. ASREQ As required;
- d. DACA/MACA Days/Months after contract award;
- e. DFDEL Deferred delivery;
- f. DFREQ Deferred requisitioning;
- g. EOC End of contract;
- h. EOM End of month; and
- i. EOQ End of quarter.

If there is insufficient space in block 11, the phrase "SEE BLOCK 16" is entered in block 11 and block 16 will have the constraint/milestone entered (e.g., Final draft due 2 weeks prior to System Design Review (SDR). DND comments on final draft will be discussed at DR. Final due four weeks after receipt of review comments.)

BLOCK 12 - DATE OF 1ST SUBMISSION

The initial submission date is entered in this block as follows: day/month/year (e.g., 03 November 2004). If submittal is constrained by a specific event or milestone, this constraint/milestone is entered using the abbreviations as listed above (e.g. PROPOSAL). If there is insufficient space in block 12, the phrase "SEE BLOCK 16" will be entered in block 12 and block 16 will have the constraint/milestone entered. Abbreviations, as listed above, for Block 11 are to be used.

BLOCK 13 - DATE OF SUBSEQUENT SUBMISSION / EVENT

If data are submitted more than once, the date(s) of subsequent submission(s) is entered in this block. If submittal is constrained by a specific event or milestone, this constraint/milestone is entered using the abbreviations as listed in above (e.g. PROPOSAL). If there is insufficient space in block 13 the phrase "SEE BLOCK 16" is entered in block 13 and block 16 will have the constraint/milestone entered.

BLOCK 14 - DISTRIBUTION AND ADDRESSES

The addresses and number of regular/hard copies (REG) and reproducible/soft copies (REP) to be provided to each (e.g. TA TCR Project 3/1) is entered in this block.

* Note - The regular/hard copy is only required once the DID has been approved by Canada. Once the DID has been approved, the contractor must re-submit the approved DID in both hard / soft copies.

SUB-BLOCK A specifically identifies the addressee to whom either the regular or the reproducible copy to be provided to each (e.g. CA, PM).

SUB-BLOCK B specifically identifies the format and the number of copies to be provided to each (e.g.

14. Distribution and Addressees			
A. Address	B. Copies		
	Draft	Final	
	REP	REP	REG
PM	1	1	1
CA	1	1	

BLOCK 15 - TOTAL

The total number of regular/reproducible copies required by block 14 is entered in this block.

BLOCK 16 - REMARKS

This block is used to provide additional or clarifying information for blocks 1 through 15. Any forms that further define deliverable data requirements will be referred to in this block.

BLOCKS 17 - 20

These blocks will be completed by the Contractor/bidder if required by the RFP, as follows:

- a. Block 17 - CONTRACT FILE NUMBER/DOCUMENT NUMBER. The Contractor's internal filing or document number is entered in this block, if applicable;
- b. Block 18 - ESTIMATED NUMBER OF PAGES. The estimated number of pages, drawings, etc., for a single preparation is entered in this block;
- c. Block 19 - ESTIMATED PRICE. The total estimated price attributable to the production or development of the data item is entered in this block; and
- d. Block 20 - TOTAL PRICE. The sum of blocks 19 for the page is entered in this block.

IDENTIFICATION INFORMATION AT BOTTOM OF PAGE

The identification information at the bottom of the page is completed as follows:

PREPARED BY. The originator's name and/or designation of the person by whom the CDRL was prepared is entered in this block

DATE. The date this CDRL was approved.

APPROVED BY. The individual responsible for approving the CDRL is entered in this block.

CONTRACT DATA REQUIREMENTS LIST (CDRL)

CDRL ITEM NUMBER	DID ID NUMBER	TITLE
A001	PM-001	Project Management Plan (PMP)
A002	PM-002	Agendas
A003	PM-003	Minutes
A004	PM-004	Progress Review Meeting (PRM) Package
A005	PM-005	Hot Line Reports/Discrepancy Reports
A006	PM-006	Initial Project Review (IPR) Meeting Presentation Package
A007	PM-007	Master Project Schedule (MPS)
B001	SE-001	Request for Waivers and Deviations
B002	SE-002	System Engineering Management Plan (SEMP)
B003	SE-003	System Design Document (SDD)
B004	SE-004	Product Specifications (PS)

CDRL ITEM NUMBER	DID ID NUMBER	TITLE
B005	SE-005	Interface Control Document (ICD)
B006	SE-006	Electromagnetic Environmental Effects (E3) Control Plan
B007	SE-007	System Security Management Plan
B008	SE-008	Security Anomaly Report
B009	SE-009	Security Functional Specification
B010	SE-010	Security Architectural Design
B011	SE-011	Emanations Security (EMSEC) Control Plan
B012	SE-012	Security Detail Design
B013	SE-013	TEMPEST Test Facility Certification Report
B014	SE-014	Equipment TEMPEST Qualification Test Report
B015	SE-015	Preliminary Design Review (PDR) Package
B016	SE-016	Critical Design Review (CDR) Package
B017	SE-017	Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Integration Plan
B018	SE-018	Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Integration Report
B019	SE-019	Engineering Change Proposal (ECP)
B020	SE-020	Specification Change Notice (SCN)
B021	SE-021	Site Data Package (SDP)
B022	SE-022	Electromagnetic Environmental Effects (E3) Test Plan (E3TP)
B023	SE-023	Electromagnetic Environmental Effects (E3) Test Report (E3TR)
B024	SE-024	Frequency Allocation and Emitter Data
C001	ILS-001	Integrated Logistics Support (ILS) Plan
C002	ILS-002	Maintenance Plan (MP)
C003	ILS-003	Sustainment Plan
C004	ILS-004	Software User Manual (SUM)
C005	ILS-005	Provisioning Parts Breakdown (PPB)
C006	ILS-006	Technical Publications Requirements List (TPRL)
C007	ILS-007	Acceptance of Commercial and Foreign Government Publications
C008	ILS-008	New System Operating Instruction Manual(s)

CDRL ITEM NUMBER	DID ID NUMBER	TITLE
C009	ILS-009	New TCR System Technical Manuals
C010	ILS-010	Material Change Notice (MCN)
C011	ILS-011	Common Bulk Items List (CBIL)
C012	ILS-012	Logistic Support Analysis Records (LSAR)
C013	ILS-013	System Software
C014	ILS-014	LSA Candidate Items List (CIL)
C015	ILS-015	Reliability and Maintainability (R&M) Predictions Data
C016	ILS-016	Level of Repair Analysis Report (LORA)
C017	ILS-017	Sparing Analysis Report
C018	ILS-018	Request for Nomenclature
C019	ILS-019	Equipment Identification Plate Data
C020	ILS-020	Engineering Drawings and Associated Lists
C021	ILS-021	Engineering Data List
C022	ILS-022	Supplementary Provisioning Technical Documentation (SPTD)
C023	ILS-023	Repair and Overhaul (R&O) Plan
C024	ILS-024	Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Status/Shortage Report
C025	ILS-025	Government Supplied Material (GSM), Government Furnished Equipment (GFE) and Government Furnished Information (GFI) Inventory List
C026	ILS-026	Special Packaging, Handling, Storage and Transportability (PHST) Consideration Items List
C027	ILS-027	Packaging Data
C028	ILS-028	Material Safety Data Sheet (MSDS)
C029	ILS-029	Calibration/Measurement Requirements Summary (CMRS)
C030	ILS-030	Training Plan
C031	ILS-031	Training Material
C032	ILS-032	Interim Spares List (ISL)
C033	ILS-033	Long Lead Time Items List (LLTIL)
C034	ILS-034	Logistic Support Analysis Plan (LSAP)
D001	TE-001	Integrated Master Test Plan (IMTP)
D002	TE-002	Requirements Verification Matrix (RVM)

CDRL ITEM NUMBER	DID ID NUMBER	TITLE
D003	TE-003	Factory Acceptance Test Plan (FATP)
D004	TE-004	Site Acceptance Test Plan (SATP)
D005	TE-005	Acceptance Test Procedures (ATPR)
D006	TE-006	Acceptance Test Report (ATR)
E001	TR-001	Site Preparation Report
E002	TR-002	Installation Plan
E003	TR-003	Transition Plan (TP)
E004	TR-004	Pre-Design Report
E005	TR-005	Concept Design Report
E006	TR-006	Design Development Report
E007	TR-007	Construction Document Report
E008	TR-008	Post Construction Phase Report



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Project Management		E. CONTRACTOR					
1. ITEM NUMBER A001			2. TITLE OR DESCRIPTION OF DATA Project Management Plan (PMP)		3. SUBTITLE					
4. AUTHORITY (Data Item Number) <u>PM-001</u>			5. CONTRACT REFERENCE SOW paragraphs 2.2, 2.6.1, 2.8.1, 2.8.2, 2.9.1, 2.9.3, 5.11.3, 5.11.4 and 5.12.3.3		6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION 1 MACA	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES				
16. REMARKS 16.1 The draft Project Management Plan (PMP) must be submitted at the Initial Project Review (IPR) meeting (1 MACA). 16.2 The final PMP with agreed changes must be submitted two (2) months after the Initial Project Review (IPR) meeting. 16.3 The PMP details the project management practices and procedures that the Contractor will follow in order to meet the objectives of the project. The PMP must detail the procedures for project planning, quality assurance, organizing, directing, monitoring, controlling, providing for the orderly resource management of and reporting on all work with respect to the project. The PMP is used to provide the DND TA insight into Contractor's project management practices and procedures as they apply to the Contract.					REP		REP	REG		
					PM TCR Project		1	1	1	
					CA		1	1	1	
					OTHER					
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Project Management			E. CONTRACTOR					
1. ITEM NUMBER A002			2. TITLE OR DESCRIPTION OF DATA Agendas			3. SUBTITLE					
4. AUTHORITY (Data Item Number) PM-002			5. CONTRACT REFERENCE SOW paragraphs 2.6.2, 2.6.3, 2.7.1, 2.7.2, 2.7.2.1, 2.7.3, 2.8.1, 2.8.1.1, 2.8.2, 3.3.2.2, 3.7.1, 3.7.5.1, 5.12.2.2, 5.12.3.2, 5.12.4.3, 5.12.6.3 and 6.3.4			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ASREQ	12. DATE OF 1ST SUBMISSION 0.5 MACA		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE SEE BLOCK 16	13. DATE OF SUBMISSION		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The agenda must be submitted to the DND TA at least fifteen (15) calendar days prior to each meeting, conference, review, audit and test, etc. (electronically, via internet e-mail).						DRAFT		FINAL			
						REP		REP		REG	
						1					
						1					
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Project Management		E. CONTRACTOR					
1. ITEM NUMBER A003			2. TITLE OR DESCRIPTION OF DATA Minutes		3. SUBTITLE					
4. AUTHORITY (Data Item Number) PM-003			5. CONTRACT REFERENCE SOW paragraphs 2.6.2, 2.6.3, 3.7.1, 2.7.2, 2.7.3, 3.3.2.2, 3.7.5.1, 5.12.2.2, 5.12.3.2, 5.12.3.5, 5.12.4.3, 5.12.6.3 and 6.3.4		6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ASGEN	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft minutes must be submitted at the end of the IPR meeting (1 MACA). 16.2 The draft minutes must be submitted at the end of each formal meeting, conference, review, test and audit to the DND PM. 16.3 The final minutes with the agreed changes must be submitted to the DND TA and PWGSC Contract Authority (CA) for approval no later than fifteen (15) calendar days following each meeting, conference, review, test and audit to the DND TA or a designated representative.					PMO TCR Project		1	1	1	
					CA		1	1	1	
					OTHER					
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT												
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257							
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Project Management			E. CONTRACTOR						
1. ITEM NUMBER A004			2. TITLE OR DESCRIPTION OF DATA Progress Review Meeting (PRM) Package			3. SUBTITLE						
4. AUTHORITY (Data Item Number) PM-004			5. CONTRACT REFERENCE SOW paragraphs 2.5.1, 2.7.2, 2.7.2.2, 2.7.3, 3.3.2.2, 3.3.2.6, 5.12.2.1, 5.12.3.1 and 5.12.3.5			6. REQUIRING OFFICE PMO TCR Project						
7. INSPECTION DD	9. INPUT		10. FREQUENCY QRTLY	12. DATE OF 1ST SUBMISSION 2 MACA	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1 A. ADDRESS DAEPM (R&CS) B. COPIES DRAFT FINAL REP REP REG							
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16								
16. REMARKS 16.1 A Progress Review Meeting (PRM) Package must be submitted one (1) month prior to each PRM. 16.2 Final PRM Package with agreed changes must be submitted one (1) month after each PRM. 16.3 A PRM Presentation Package must be submitted one (1) month prior to the Final Project Review (FPR). 16.4 PRMs must be convened at least once every three (3) months until CDR. PRM frequency post CDR to be determined by the DND TA or a designated representative.					PMO TCR Project						1	1
					CA						1	1
					OTHER							
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD							
17. CONTRACT FILE / DOCUMENT NUMBER W8475-155257		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL			2	2		

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Project Management			E. CONTRACTOR			
1. ITEM NUMBER A005			2. TITLE OR DESCRIPTION OF DATA Hot Line Reports / Discrepancy Reports			3. SUBTITLE			
4. AUTHORITY (Data Item Number) PM-005			5. CONTRACT REFERENCE SOW paragraphs 2.5.2 and 3.3.2.5			6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT		10. FREQUENCY ASGEN	12. DATE OF 1ST SUBMISSION ASREQ	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A					A. ADDRESS DAEPM (R&CS)		B. COPIES		
			11. AS OF DATE SEE BLOCK 16	13. DATE OF SUBMISSION SEE BLOCK 16			DRAFT	FINAL	
							REP	REP	REG
16. REMARKS 16.1 Hot Line Reports / Discrepancy Reports must be submitted to DND within one (1) working day of identification by the Contractor. 16.2 This CDRL must be used for reporting items or risks that may have a serious impact on the TCR project progress.					PMO TCR Project			1	1
					CA			1	1
					OTHER				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT							
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257			
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Project Management		E. CONTRACTOR			
1. ITEM NUMBER A006		2. TITLE OR DESCRIPTION OF DATA Initial Project Review (IPR) Meeting Presentation Package		3. SUBTITLE			
4. AUTHORITY (Data Item Number) <u>PM-006</u>		5. CONTRACT REFERENCE SOW paragraphs 2.7.1 and 2.7.1.2		6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT	10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION 0.5 MACA	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A		11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES	
16. REMARKS 16.1 IPR Presentation Package must be submitted no later than fifteen (15) calendar days prior to the Initial Project Review (IPR). 16.2 The final IPR Presentation Package with agreed changes must be submitted one (1) month after the IPR meeting. 16.3 The first TIM must be held in conjunction with IPR to review technical detail concerning the integration of Government Supplied Material (GSM) and Government Furnished Equipment (GFE). 16.4 If required, the Initial Provisioning Guidance Conference (IPGC) must be held in conjunction with the IPR.				DRAFT		FINAL	
				REP		REP	
				REG		REG	
				OTHER		OTHER	
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER W8475-155257	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE	15. TOTAL			
					2	2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Project Management			E. CONTRACTOR				
1. ITEM NUMBER A007			2. TITLE OR DESCRIPTION OF DATA Master Project Schedule (MPS)			3. SUBTITLE				
4. AUTHORITY (Data Item Number) PM-007			5. CONTRACT REFERENCE SOW paragraphs 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.3.5, 2.3.6, 2.4.2, 2.4.3, 2.7.1, 2.7.2.1 and 3.3.2			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION 1 MACA		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES		
16. REMARKS 16.1 The draft Master Project Schedule (MPS) must be submitted one (1) month after contract award (MACA). 16.2 The final MPS with agreed changes must be submitted one (1) month after the first (1 st) Progress Review Meeting (PRM). 16.3 The MPS must be submitted electronically upon request within five (5) calendar days. 16.4 The MPS must be presented and reviewed at all PRMs and resubmitted if changed / modified after Final MPS approval.						PMO TCR Project		1	1	1
						CA		1	1	1
						OTHER				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER W8475-155257		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR					
1. ITEM NUMBER B001			2. TITLE OR DESCRIPTION OF DATA Request for Waivers and Deviations			3. SUBTITLE					
4. AUTHORITY (Data Item Number) SE-001			5. CONTRACT REFERENCE SOW paragraphs 2.9.2 and 2.9.3			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ASGEN	12. DATE OF 1ST SUBMISSION ASREQ		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION ASREQ		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 Deviations require prior approval by both the DND TA and the PWGSC CA.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR				
1. ITEM NUMBER B002			2. TITLE OR DESCRIPTION OF DATA System Engineering Management Plan (SEMP)			3. SUBTITLE				
4. AUTHORITY (Data Item Number) <u>SE-002</u>			5. CONTRACT REFERENCE SOW paragraphs 5.2, 5.2.1, 5.3.3 and 5.12.6.4			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION 2 MACA	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1 A. ADDRESS B. COPIES DAEPM (R&CS) DRAFT FINAL REP REP REG					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16						
16. REMARKS 16.1 The draft submission of the SEMP is due two (2) months after contract award (2 MACA). 16.2 The final SEMP with the agreed changes must be submitted four (4) months after contract award (4 MACA).					PMO TCR Project CA OTHER					
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR					
1. ITEM NUMBER B003			2. TITLE OR DESCRIPTION OF DATA System Design Document (SDD)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) SE-003			5. CONTRACT REFERENCE SOW paragraphs 5.4.2, 5.5., 5.5.1 and 5.7.1			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft System Design Document (SDD) must be submitted one (1) month prior to the Preliminary Design Review (PDR) meeting. 16.2 The final SDD with agreed changes must be submitted one (1) month after the Critical Design Review (CDR) meeting.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2		2	
								2		2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR					
1. ITEM NUMBER B004			2. TITLE OR DESCRIPTION OF DATA Product Specifications (PS)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) SE-004			5. CONTRACT REFERENCE SOW paragraphs 5.4.2, 5.6, 5.6.1 and 5.12.3.4			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 All draft Product Specifications (PS) must be submitted one (1) month prior to the Critical Design Review (CDR) meeting. 16.2 Product Specifications (PS) must be submitted for each TCR Subsystem / Configuration Item detailed in the System Design Document (SDD). 16.3 All final Product Specifications (PS) with agreed changes must be delivered two (2) months after the last Critical Design Review (CDR) meeting.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL					
						2		2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR					
1. ITEM NUMBER B005			2. TITLE OR DESCRIPTION OF DATA Interface Control Document (ICD)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) SE-005			5. CONTRACT REFERENCE SOW paragraphs 5.4.2, 5.7.1, 5.7.2, 5.12.2.4, 7.2.4.16.3, 7.4.5 and 7.5.1.1.5			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft Interface Control Document (ICD) must be submitted one (1) month prior to the Preliminary Design Review (PDR). 16.2 The final Interface Control Document (ICD) with agreed changes must be submitted one (1) month after the Critical Design Review (CDR).						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL					
						2		2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR					
1. ITEM NUMBER B006			2. TITLE OR DESCRIPTION OF DATA Electromagnetic Environment Effects (E3) Control Plan			3. SUBTITLE					
4. AUTHORITY (Data Item Number) SE-006			5. CONTRACT REFERENCE SOW paragraph 5.9.1.1			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft Electromagnetic Environmental Effects (E3) Control Plan must be submitted one (1) month prior to the Preliminary Design Review (PDR) meeting. 16.2 The final Electromagnetic Environmental Effects (E3) Control Plan with agreed changes must be submitted two (2) months after the last Preliminary Design Review (PDR) meeting.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2			
								2			
								2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR				
1. ITEM NUMBER B007			2. TITLE OR DESCRIPTION OF DATA System Security Management Plan			3. SUBTITLE				
4. AUTHORITY (Data Item Number) SE-007			5. CONTRACT REFERENCE SOW paragraph 5.11.1			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES		
16. REMARKS 16.1 The draft System Security Management Plan must be submitted three (3) MACA. 16.2 The final System Security Management Plan with agreed changes must be submitted two (2) months prior to Critical Design Review (CDR).						REP		REP	REG	
						PMO TCR Project		1	1	1
						CA		1	1	1
OTHER										
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT																			
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257														
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering		E. CONTRACTOR														
1. ITEM NUMBER B008			2. TITLE OR DESCRIPTION OF DATA Security Anomaly Report		3. SUBTITLE														
4. AUTHORITY (Data Item Number) SE-008			5. CONTRACT REFERENCE SOW paragraph 5.11.2		6. REQUIRING OFFICE PMO TCR Project														
7. INSPECTION DD	9. INPUT		10. FREQUENCY ASGEN	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1														
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	<table border="1"> <tr> <td colspan="2">A. ADDRESS</td> <td colspan="3">B. COPIES</td> </tr> <tr> <td>DAEPM (R&CS)</td> <td>DRAFT</td> <td colspan="3">FINAL</td> </tr> <tr> <td></td> <td>REP</td> <td>REP</td> <td>REG</td> <td></td> </tr> </table>		A. ADDRESS		B. COPIES			DAEPM (R&CS)	DRAFT	FINAL				REP	REP
A. ADDRESS		B. COPIES																	
DAEPM (R&CS)	DRAFT	FINAL																	
	REP	REP	REG																
16. REMARKS 16.1 The Contractor must, on a quarterly basis, provide DND with a report of the security anomalies found in the implementation of the TCR System.					PMO TCR Project			1	1										
					CA			1	1										
					OTHER														
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD														
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2										



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR				
1. ITEM NUMBER B009			2. TITLE OR DESCRIPTION OF DATA Security Functional Specification			3. SUBTITLE				
4. AUTHORITY (Data Item Number) SE-009			5. CONTRACT REFERENCE SOW paragraph 5.11.3			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION 3 MACA		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES		
16. REMARKS 16.1 The draft Security Functional Specification must be submitted one (1) month prior to Preliminary Design Review (PDR). 16.2 The final Security Functional Specification with agreed changes must be submitted one (1) month after the Preliminary Design Review (PDR) Meeting.						REP		REP	REG	
						PMO TCR Project		1	1	1
						CA		1	1	1
						OTHER				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR				
1. ITEM NUMBER B010			2. TITLE OR DESCRIPTION OF DATA Security Architectural Design			3. SUBTITLE				
4. AUTHORITY (Data Item Number) SE-010			5. CONTRACT REFERENCE SOW paragraphs 5.11.4 and 5.11.5.1			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES		
16. REMARKS 16.1 The draft Security Architectural Design must be submitted one (1) month after Preliminary Design Review (PDR) Meeting. 16.2 The final Security Architectural Design must be submitted one (1) month prior to the Critical Design Review (CDR) Meeting						REP		REP	REG	
						PMO TCR Project		1	1	1
						CA		1	1	1
						OTHER				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR					
1. ITEM NUMBER B011			2. TITLE OR DESCRIPTION OF DATA Emanations Security (EMSEC) Control Plan			3. SUBTITLE					
4. AUTHORITY (Data Item Number) SE-011			5. CONTRACT REFERENCE SOW paragraph 5.10.2			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft Emanations Security (EMSEC) Control Plan must be submitted one (1) month prior to the Preliminary Design Review (PDR) meeting. 16.2 The final EMSEC Control Plan with agreed changes must be submitted two (2) months after Preliminary Design Review (PDR) meeting. 16.3 The EMSEC Control Plan must be prepared in accordance with INFOSEC 601.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR					
1. ITEM NUMBER B012			2. TITLE OR DESCRIPTION OF DATA Security Detail Design			3. SUBTITLE					
4. AUTHORITY (Data Item Number) SE-012			5. CONTRACT REFERENCE SOW paragraph 5.11.5.3			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION See block 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft Security Architectural Design must be submitted one (1) month prior to Critical Design Review (CDR) Meeting. 16.2 The final Security Architectural Design must be submitted two (2) months after Critical Design Review (CDR) Meeting.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR				
1. ITEM NUMBER B013			2. TITLE OR DESCRIPTION OF DATA TEMPEST Test Facility Certification Report			3. SUBTITLE				
4. AUTHORITY (Data Item Number) SE-013			5. CONTRACT REFERENCE SOW paragraph 5.10.3.3.1			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY OTIME	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A					A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The TEMPEST Test Facility Certification Report must be submitted two (2) months prior to start of the equipment TEMPEST testing.					REP		REG			
					1		1		1	
					1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT														
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257									
C. SOW IDENTIFIER SOW			D. DATA CATEGORY System Engineering			E. CONTRACTOR								
1. ITEM NUMBER B014			2. TITLE OR DESCRIPTION OF DATA Equipment TEMPEST Qualification Test Report			3. SUBTITLE								
4. AUTHORITY (Data Item Number) <u>SE-014</u>			5. CONTRACT REFERENCE SOW paragraphs 5.10.3.3 and 5.10.3.3.2			6. REQUIRING OFFICE PMO TCR Project								
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1								
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES						
16. REMARKS 16.1 The equipment TEMPEST Qualification Test Report must be submitted one (1) month after the completion of the equipment TEMPEST test.						DRAFT		FINAL						
						REP		REP		REG				
						PMO TCR Project		1		1		1		
						CA		1		1		1		
						OTHER								
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD									
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2		2		2		



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT																			
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257														
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Project Management		E. CONTRACTOR														
1. ITEM NUMBER B015			2. TITLE OR DESCRIPTION OF DATA Preliminary Design Review (PDR) Package		3. SUBTITLE														
4. AUTHORITY (Data Item Number) SE-015			5. CONTRACT REFERENCE SOW paragraphs , 5.12.1.3, 5.12.2.1, 7.732.2, 7.10.1.3, 7.10.2.3 and 7.12.2		6. REQUIRING OFFICE PMO TCR Project														
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1														
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	<table border="1"> <tr> <td colspan="2">A. ADDRESS</td> <td colspan="3">B. COPIES</td> </tr> <tr> <td>DAEPM (R&CS)</td> <td>DRAFT</td> <td colspan="2">FINAL</td> <td></td> </tr> <tr> <td></td> <td>REP</td> <td>REP</td> <td>REG</td> <td></td> </tr> </table>		A. ADDRESS		B. COPIES			DAEPM (R&CS)	DRAFT	FINAL				REP	REP
A. ADDRESS		B. COPIES																	
DAEPM (R&CS)	DRAFT	FINAL																	
	REP	REP	REG																
16. REMARKS 16.1 Draft must be submitted one (1) month prior to Preliminary Design Review (PDR). 16.2 Final Preliminary Design Review Package must be submitted one (1) month after the Preliminary Design Review (PDR) meeting.					PMO TCR Project														
					CA														
					OTHER														
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD														
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2									



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Project Management			E. CONTRACTOR					
1. ITEM NUMBER B016			2. TITLE OR DESCRIPTION OF DATA Critical Design Review (CDR) Package			3. SUBTITLE					
4. AUTHORITY (Data Item Number) <u>SE-016</u>			5. CONTRACT REFERENCE SOW paragraphs 5.11.5.2, 5.12.1.3, 5.12.3, 7.10.1.3 and 7.11.3			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 Draft must be submitted one (1) month prior to Critical Design Review (CDR) meeting. 16.2 Final CDR Package must be submitted one (1) month after the Critical Design Review (CDR) meeting.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL					
						2		2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR				
1. ITEM NUMBER B017			2. TITLE OR DESCRIPTION OF DATA Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Integration Plan			3. SUBTITLE				
4. AUTHORITY (Data Item Number) SE-017			5. CONTRACT REFERENCE SOW paragraph 5.13.1			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION 1 MACA		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES		
16. REMARKS 16.1 The draft GSM and GFE Integration Plan must be submitted one (1) MACA. 16.2 The final GSM and GFE Integration Plan is due at CDR.						DRAFT		FINAL		
						PMO TCR Project		1	1	1
						CA		1	1	1
						OTHER				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST										
LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering			E. CONTRACTOR				
1. ITEM NUMBER B018			2. TITLE OR DESCRIPTION OF DATA Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Integration Report			3. SUBTITLE				
4. AUTHORITY (Data Item Number) SE-018			5. CONTRACT REFERENCE SOW paragraph 5.13.1.1			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION 1 MACA		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)	B. COPIES			
16. REMARKS 16.1 Draft version must be submitted one (1) month after Preliminary Design Review (PDR). 16.2 Final version to be submitted one (1) month after Critical Design Review (CDR).										
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT															
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257										
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering		E. CONTRACTOR										
1. ITEM NUMBER B019			2. TITLE OR DESCRIPTION OF DATA Engineering Change Proposal (ECP)		3. SUBTITLE										
4. AUTHORITY (Data Item Number) <u>SE-019</u>			5. CONTRACT REFERENCE SOW paragraphs 2.9.3, 3.7.7, 5.10.5.6, 5.11.3, 5.11.4 and 5.12.3.3		6. REQUIRING OFFICE PMO TCR Project										
7. INSPECTION DD	9. INPUT		10. FREQUENCY ASGEN	12. DATE OF 1ST SUBMISSION ASREQ	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1										
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION ASREQ	<table border="1"> <tr> <td>A. ADDRESS</td> <td colspan="3">B. COPIES</td> </tr> <tr> <td rowspan="2">DAEPM (R&CS)</td> <td>DRAFT</td> <td colspan="2">FINAL</td> </tr> <tr> <td>REP</td> <td>REP</td> <td>REG</td> </tr> </table>		A. ADDRESS	B. COPIES			DAEPM (R&CS)	DRAFT	FINAL		REP
A. ADDRESS	B. COPIES														
DAEPM (R&CS)	DRAFT	FINAL													
	REP	REP	REG												
16. REMARKS 16.1 Engineering Change Proposals (ECP) require DND TA and PWGSC CA approval.					PMO TCR Project		1	1	1						
					CA		1	1	1						
					OTHER		1	1	1						
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD										
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		3	3						



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT																		
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257													
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering		E. CONTRACTOR													
1. ITEM NUMBER B020			2. TITLE OR DESCRIPTION OF DATA Specification Change Notice (SCN)		3. SUBTITLE													
4. AUTHORITY (Data Item Number) SE-020			5. CONTRACT REFERENCE SOW paragraphs 2.9.3 and 5.12.3.3		6. REQUIRING OFFICE PMO TCR Project													
7. INSPECTION DD	9. INPUT		10. FREQUENCY ASGEN	12. DATE OF 1ST SUBMISSION ASREQ	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1													
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION ASREQ	<table border="1"> <tr> <td colspan="2">A. ADDRESS</td> <td colspan="3">B. COPIES</td> </tr> <tr> <td rowspan="2">DAEPM (R&CS)</td> <td>DRAFT</td> <td colspan="2">FINAL</td> <td></td> </tr> <tr> <td>REP</td> <td>REP</td> <td>REG</td> <td></td> </tr> </table>		A. ADDRESS		B. COPIES			DAEPM (R&CS)	DRAFT	FINAL			REP	REP
A. ADDRESS		B. COPIES																
DAEPM (R&CS)	DRAFT	FINAL																
	REP	REP	REG															
16. REMARKS 16.1 Specification Change Notice (SCN) requires DND TA and PWGSC CA approval.					PMO TCR Project		1	1	1									
					CA		1	1	1									
					OTHER		1	1										
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD													
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		3	3	2								



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering		E. CONTRACTOR						
1. ITEM NUMBER B021			2. TITLE OR DESCRIPTION OF DATA Site Data Package (SDP)		3. SUBTITLE						
4. AUTHORITY (Data Item Number) SE-021			5. CONTRACT REFERENCE SOW paragraphs 5.4.2, 5.8, 5.8.1, 5.8.2, 5.8.3, 5.8.4, 5.8.5, 5.12.4.5, 5.12.4.7 and 5.12.6.2		6. REQUIRING OFFICE PMO TCR Project						
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1						
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES					
16. REMARKS 16.1 The draft Site Data Package must be submitted one (1) month prior to the Site Design Review (DR). 16.2 The final SDP must be submitted one (1) month after the Site Design Review (DR). 16.3 DND will provide its comments to the Contractor within one (1) month of receiving the Data Item SE-021.					PMO TCR Project				1	1	1
					CA				1	1	1
					OTHER				2	2	2
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		4	4	4	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT								
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY System Engineering		E. CONTRACTOR				
1. ITEM NUMBER B022		2. TITLE OR DESCRIPTION OF DATA Electromagnetic Environmental Effects (E3) Test Plan (E3TP)		3. SUBTITLE				
4. AUTHORITY (Data Item Number) SE-022		5. CONTRACT REFERENCE SOW paragraph 5.9..2		6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT	10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A		11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES		
16. REMARKS 16.1 The draft E3 Test Plan (E3TP) must be submitted four (4) months prior to the the conduct of the applicable E3 Tests. 16.2 The final E3 Test Plan (E3TP) must be submitted two (2) months prior to the conduct of the applicable E3 Tests.				DRAFT		FINAL		
				REP		REP	REG	
				PMO TCR Project		1	1	1
				CA		1	1	1
				OTHER		1	1	1
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	3	3	3



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT																			
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257														
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering		E. CONTRACTOR														
1. ITEM NUMBER B023			2. TITLE OR DESCRIPTION OF DATA Electromagnetic Environmental Effects (E3) Test Report (E3TR)		3. SUBTITLE														
4. AUTHORITY (Data Item Number) SE-023			5. CONTRACT REFERENCE SOW paragraph 5.9..3		6. REQUIRING OFFICE PMO TCR Project														
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1														
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	<table border="1"> <tr> <td colspan="2">A. ADDRESS</td> <td colspan="3">B. COPIES</td> </tr> <tr> <td>DAEPM (R&CS)</td> <td>DRAFT</td> <td colspan="2">FINAL</td> <td></td> </tr> <tr> <td></td> <td>REP</td> <td>REP</td> <td>REG</td> <td></td> </tr> </table>		A. ADDRESS		B. COPIES			DAEPM (R&CS)	DRAFT	FINAL				REP	REP
A. ADDRESS		B. COPIES																	
DAEPM (R&CS)	DRAFT	FINAL																	
	REP	REP	REG																
16. REMARKS																			
16.1 The draft E3 Test Report (E3TR) must be submitted one (1) month after the conduct of applicable E3 Tests.					PMO TCR Project														
16.2 The final E3 Test Report (E3TR) must be submitted three (3) months after the conduct of applicable E3 Tests.					CA														
					OTHER														
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD														
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		3	3										



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT																			
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257														
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY System Engineering		E. CONTRACTOR														
1. ITEM NUMBER B024			2. TITLE OR DESCRIPTION OF DATA Frequency Allocation and Emitter Data		3. SUBTITLE														
4. AUTHORITY (Data Item Number) SE-024			5. CONTRACT REFERENCE SOW paragraphs 5.14.1.3 and 5.15.1.5		6. REQUIRING OFFICE PMO TCR Project														
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1														
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	<table border="1"> <tr> <td colspan="2">A. ADDRESS</td> <td colspan="3">B. COPIES</td> </tr> <tr> <td>DAEPM (R&CS)</td> <td>DRAFT</td> <td colspan="2">FINAL</td> <td></td> </tr> <tr> <td></td> <td>REP</td> <td>REP</td> <td>REG</td> <td></td> </tr> </table>		A. ADDRESS		B. COPIES			DAEPM (R&CS)	DRAFT	FINAL				REP	REP
A. ADDRESS		B. COPIES																	
DAEPM (R&CS)	DRAFT	FINAL																	
	REP	REP	REG																
16. REMARKS 16.1 The Frequency Allocation and Emitter Data must be submitted one (1) month prior to the Preliminary Design Review (PDR). 16.2 The revised Frequency Allocation and Emitter Data must be submitted one (1) month prior to the Critical Design Review (CDR).					PMO TCR Project			1	1										
					CA			1	1										
					OTHER			2											
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD														
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		4	2										



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR				
1. ITEM NUMBER C001			2. TITLE OR DESCRIPTION OF DATA Integrated Logistics Support (ILS) Plan		3. SUBTITLE				
4. AUTHORITY (Data Item Number) <u>ILS-001</u>			5. CONTRACT REFERENCE SOW paragraphs 3.3.1, 3.3.2.3, 3.5.2, 3.5.3, 3.5.4.1 and 3.5.4.2		6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION 1 MACA	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES		
16. REMARKS 16.1 The draft ILS Plan must be submitted at IPR. 16.2 The final ILS Plan must be submitted one (1) month after PDR.					DRAFT		FINAL		
					REP		REP	REG	
					1		1	1	
					1		1	1	
PREPARED BY Mr. B. Stokes, TCR System PM					DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD		
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2
								2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR				
1. ITEM NUMBER C002			2. TITLE OR DESCRIPTION OF DATA Maintenance Plan (MP)		3. SUBTITLE				
4. AUTHORITY (Data Item Number) ILS-002			5. CONTRACT REFERENCE SOW paragraphs 3.6.4 and 3.10		6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES			
16. REMARKS 16.1 The draft Maintenance Plan must be submitted one (1) month prior to PDR. 16.2 Final Maintenance Plan must be submitted two (2) months after PDR.									
					PMO TCR Project		1	1	1
					CA		1	1	1
					OTHER				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	2	2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR			
1. ITEM NUMBER C003			2. TITLE OR DESCRIPTION OF DATA Sustainment Plan			3. SUBTITLE			
4. AUTHORITY (Data Item Number) ILS-003			5. CONTRACT REFERENCE SOW paragraph 3.6.6			6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES	
16. REMARKS 16.1 The draft Sustainment Plan must be submitted three (3) months prior to Final Project Review. 16.2 Final Sustainment Plan must be submitted at Final Project Review. 16.3 The Contractor must provide a long-term twenty (20) year Sustainment Plan for the installed system, including recommended technology insertion and mid-life upgrades. This Sustainment Plan must cover the period that commences upon DND's acceptance of the second TCR system, exclusive of the warranty period.						DRAFT		FINAL	
						REP		REP	
						REG		REG	
						1		1	
PMO TCR Project						1		1	
CA						1		1	
OTHER									
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2	

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT															
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257										
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR									
1. ITEM NUMBER C004			2. TITLE OR DESCRIPTION OF DATA Software User Manuals (SUM)			3. SUBTITLE									
4. AUTHORITY (Data Item Number) ILS-004			5. CONTRACT REFERENCE SOW paragraph 3.8.4.2			6. REQUIRING OFFICE PMO TCR Project									
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1									
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES								
16. REMARKS 16.1 Draft Software User Manuals (SUMs) must be submitted six (6) months prior to the first (1 st) Site Acceptance Test. 16.2 Final SUMs must be submitted three (3) months prior to the first (1 st) SAT. 16.3 Final version submitted in accordance with Appendix 21. The Software User Manuals must be translated into French, including Translation Accuracy Check, 30 calendar days prior to the SAT for 12 ER, 3 Wing Bagotville.						DRAFT		FINAL							
						REP		REP		REG					
						1		1		1					
						1		1		1					
						OTHER		2		2		2			
						PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD	
17. CONTRACT FILE / DOCUMENT NUMBER			18. ESTIMATED NUMBER OF PAGES			19. ESTIMATED PRICE		15. TOTAL		4		4		4	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT							
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257			
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR			
1. ITEM NUMBER C005		2. TITLE OR DESCRIPTION OF DATA Provisioning Parts Breakdown (PPB)		3. SUBTITLE			
4. AUTHORITY (Data Item Number) <u>ILS-005</u>		5. CONTRACT REFERENCE SOW paragraphs 3.7.3, 3.9.3 and 3.9.8.3		6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT	10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/0			
8. APP CODE A		11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES	
16. REMARKS 16.1 Draft Provisioning Parts Breakdown (PPB) must be submitted (1) month prior to PDR. 16.2 Final delivery of the Provisioning Parts Breakdown (PPB) must be submitted one (1) month prior to CDR and must be subject to DSCO approval. 16.3 This CDRL must be cross-referenced with the Supplementary Provisioning Technical Documentation (SPTD) CDRL C022.				DRAFT		FINAL	
				REP		REP	
				REG		REG	
				REG		REG	
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE	15. TOTAL	4	4	4



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR				
1. ITEM NUMBER C006			2. TITLE OR DESCRIPTION OF DATA Technical Publications Requirements List (TPRL)			3. SUBTITLE				
4. AUTHORITY (Data Item Number) ILS-006			5. CONTRACT REFERENCE SOW paragraph 3.12.1			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES				
16. REMARKS 16.1 The draft Technical Publications Requirement List (TPRL) must be submitted one (1) month after Preliminary Design Review (PDR). 16.2 The final TPRL must be submitted two (2) months after Critical Design Review (CDR).					DRAFT		FINAL			
					REP		REP		REG	
					1		1		1	
					1		1		1	
					OTHER					
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR					
1. ITEM NUMBER C007			2. TITLE OR DESCRIPTION OF DATA Acceptance of Commercial and Foreign Government Publications			3. SUBTITLE					
4. AUTHORITY (Data Item Number) ILS-007			5. CONTRACT REFERENCE SOW paragraph 3.12.2.2			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft manuals must be provided one (1) month prior to Critical Design Review (CDR). 16.2 DND comments to be submitted three (3) months after receipt of manuals. 16.3 Final evaluation will be completed following the initial training course. 16.4 The final manuals must be submitted one (1) month after completion of the 1 st training courses. Changes required as a result of training courses to be incorporated in the final manuals.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						CA		1		1	
OTHER											
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR					
1. ITEM NUMBER C008		2. TITLE OR DESCRIPTION OF DATA New TCR System Operating Instruction Manual(s)		3. SUBTITLE					
4. AUTHORITY (Data Item Number) ILS-008		5. CONTRACT REFERENCE SOW paragraphs 3.10.1 and 3.12.3		6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT	10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A		11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft New TCR System Operating Instruction Manual(s) in English must be submitted one (1) month prior to CDR. 16.2 DND comments to be provided three (3) months after receipt of draft documentation. 16.3 The final manuals must be submitted one (1) month after completion of the 1 st training courses. Changes required as a result of training courses to be incorporated in the final manuals.				DRAFT		FINAL			
				REP		REP		REG	
				1		1		1	
				1		1		1	
OTHER						2			
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	2	2		
						4			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics			E. CONTRACTOR				
1. ITEM NUMBER C009			2. TITLE OR DESCRIPTION OF DATA New TCR System Technical Manuals			3. SUBTITLE				
4. AUTHORITY (Data Item Number) ILS-009			5. CONTRACT REFERENCE SOW paragraphs 3.10.1 and 3.12.3			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft New TCR System Technical Manuals in English must be submitted one (1) month prior to Critical Design Review (CDR). 16.2 DND comments to be provided four (4) months after receipt of draft documentation. 16.3 The final manuals must be submitted 30 calendar days after completion of the 1 st training courses. Changes required as a result of training courses to be incorporated in the final manuals.					REP		FINAL			
					1		1		1	
					1		1		1	
					OTHER				2	
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	4



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT													
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257								
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR							
1. ITEM NUMBER C010			2. TITLE OR DESCRIPTION OF DATA Material Change Notices (MCN)			3. SUBTITLE							
4. AUTHORITY (Data Item Number) ILS-010			5. CONTRACT REFERENCE SOW paragraphs 3.4.1.2, 3.7.6 3.7.6.1, 3.7.6.2, 3.7.6.3 and 3.7.7			6. REQUIRING OFFICE PMO TCR Project							
7. INSPECTION DD	9. INPUT		10. FREQUENCY ASGEN	12. DATE OF 1ST SUBMISSION ASREQ	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1								
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION ASGEN	A. ADDRESS DAEPM (R&CS)	B. COPIES							
16. REMARKS 16.1 Material Change Notices must be prepared and actioned in accordance with D-01-100-215/SF-000.					DRAFT		FINAL						
					REP		REP		REG				
					1		1		1				
PREPARED BY Mr. B. Stokes, TCR System PM					DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD		CA				
									1		1		1
									OTHER				
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2					
								2					
								2					



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR					
1. ITEM NUMBER C011			2. TITLE OR DESCRIPTION OF DATA Common Bulk Items List (CBIL)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) ILS-011			5. CONTRACT REFERENCE SOW paragraph 3.7.3.2			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The Common Bulk Items List (CBIL) must be delivered two (2) months prior to Critical Design Review (CDR). 16.2 The revised Common and Bulk Items List (CBIL) is due one (1) month before the 1 st System Factory Acceptance Test (FAT) and must be subject to DSCO approval.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						CA		1		1	
OTHER											
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT																					
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER																
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR																
1. ITEM NUMBER C012			2. TITLE OR DESCRIPTION OF DATA Logistics Support Analysis Records (LSAR)		3. SUBTITLE																
4. AUTHORITY (Data Item Number) ILS-012			5. CONTRACT REFERENCE SOW paragraphs 3.3.2.7, 3.5.3, 3.5.3.1, 3.5.3.2, 3.5.3.3 3.5.4, 3.6.2.1, 3.6.3, 3.6.3.2, 3.6.5.1 3.7.3.1 and 3.8.4		6. REQUIRING OFFICE PMO TCR Project																
7. INSPECTION DD	9. INPUT		10. FREQUENCY MNTHY	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 0/1 <table border="1"> <tr> <td rowspan="2">A. ADDRESS DAEPM (R&CS)</td> <td colspan="3">B. COPIES</td> </tr> <tr> <td>DRAFT</td> <td colspan="2">FINAL</td> </tr> <tr> <td></td> <td>REP</td> <td>REP</td> <td>REG</td> </tr> </table>					A. ADDRESS DAEPM (R&CS)	B. COPIES			DRAFT	FINAL			REP	REP	REG	
A. ADDRESS DAEPM (R&CS)			B. COPIES																		
	DRAFT	FINAL																			
	REP	REP	REG																		
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16																	
16. REMARKS 16.1 The Logistic Support Analysis Records (LSAR) must be provided electronically by a CD ROM or FTP download starting one (1) month after CDR. 16.2 The Logistics Support Analysis Records (LSAR) must record the LSA process. The LSAR must be designed to allow effective Logistics, Engineering and Maintenance planning.					<table border="1"> <tr> <td>PMO TCR Project</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>CA</td> <td>0</td> <td></td> <td>0</td> </tr> <tr> <td>OTHER</td> <td></td> <td></td> <td></td> </tr> </table>					PMO TCR Project	0	1	0	CA	0		0	OTHER			
PMO TCR Project	0	1	0																		
CA	0		0																		
OTHER																					
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD																	
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		0	1	0											



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT							
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257			
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR			
1. ITEM NUMBER C013		2. TITLE OR DESCRIPTION OF DATA System Software		3. SUBTITLE			
4. AUTHORITY (Data Item Number) <u>ILS-013</u>		5. CONTRACT REFERENCE SOW paragraph 3.8.4.1		6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT	10. FREQUENCY OTIME	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 0/4			
8. APP CODE A		11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES		
16. REMARKS 16.1 All software and software licenses required to operate and support the TCR system and sub-systems must be provided to DND in three copies at system acceptance as follows: one (1) per system (total 2 (3 if option for 3 rd TCR exercised)) and one (1) for LCMM (see block 14 & 15). 16.2 System software delivery due at Initial Operational Capability (IOC)/Handover.				DRAFT			
				FINAL			
				REP	REP	REG	
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE	15. TOTAL	0	1	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR					
1. ITEM NUMBER C014			2. TITLE OR DESCRIPTION OF DATA LSA Candidate Items List (CIL)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) ILS-014			5. CONTRACT REFERENCE SOW paragraphs 3.5.3.4, 3.6.2 and 3.6.3			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 Draft LSA Candidate Items List to be submitted one (1) month after Critical Design Review (CDR) meeting. 16.2 Final LSA Candidate Items List to be submitted one (1) month prior to 1 st TCR System FAT. 16.3 The selection of LSA tasks must be driven by the concepts of operations and maintenance and will include a matrix identifying items subjected to LSA and the LSA tasks to be performed.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER			18. ESTIMATED NUMBER OF PAGES			19. ESTIMATED PRICE		15. TOTAL		2 2 2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR			
1. ITEM NUMBER C015			2. TITLE OR DESCRIPTION OF DATA Reliability and Maintainability (R&M) Predictions Data			3. SUBTITLE			
4. AUTHORITY (Data Item Number) <u>ILS-015</u>			5. CONTRACT REFERENCE SOW paragraphs 3.6.1, 3.7.5.1 and 5.2.3			6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE AA			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES			
16. REMARKS 16.1 Draft R&M Predictions Data must be submitted one (1) month after Preliminary Design Review (PDR). 16.2 Final R&M Predictions Data must be submitted one (1) month after Critical Design Review. 16.3 Detailed R&M Predictions Data, indicating the quality of the data predicted, measured and actual must be provided. The measurement base for this parameter must be stated in the introduction to the report.					DRAFT		FINAL		
					REP		REP		
					REG		REG		
					1		1		
CA					1		1		
OTHER									
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR				
1. ITEM NUMBER C016			2. TITLE OR DESCRIPTION OF DATA Level of Repair Analysis (LORA) Report			3. SUBTITLE				
4. AUTHORITY (Data Item Number) <u>ILS-016</u>			5. CONTRACT REFERENCE SOW paragraphs 3.6.2, 3.6.2.1 and 3.6.2.2			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES				
16. REMARKS 16.1 The draft Level of Repair Analysis (LORA) must be submitted one (1) month after Preliminary Design Review (PDR). 16.2 The final Level of Repair Analysis (LORA) must be submitted one (1) month after Critical Design Review (CDR). 16.3 Level of Repair Analysis (LORA) provides economic justification for the decision to repair or discard a failed hardware item and for the maintenance level of repair. This report documents the results of the LORA .					DRAFT		FINAL			
					REP		REP			
					REG		REG			
					1		1			
PM TCR Project					1		1		1	
CA					1		1		1	
OTHER										
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2		



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR					
1. ITEM NUMBER C017			2. TITLE OR DESCRIPTION OF DATA Sparing Analysis Report			3. SUBTITLE					
4. AUTHORITY (Data Item Number) ILS-017			5. CONTRACT REFERENCE SOW paragraphs 3.6.3, 3.6.3.1, 3.6.3.2 and 3.6.3.3			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION See block 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION See block 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The Sparing Analysis Report must be submitted one (1) month prior to the Initial Provisioning Guidance Conference (IPGC). 16.2 A revised Sparing Analysis Report must be submitted two (2) months after the IPGC. 16.3 Sparing Analysis is performed to determine the optimum selection, quantity and distribution of spares. This report documents the results of Sparing Analysis.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2		2	
								2		2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR					
1. ITEM NUMBER C018			2. TITLE OR DESCRIPTION OF DATA Request for Nomenclature			3. SUBTITLE					
4. AUTHORITY (Data Item Number) ILS-018			5. CONTRACT REFERENCE SOW paragraphs 3.8.2, 3.9.7.3 and 3.12.2.1			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION See block 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION See block 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The Draft Request for Nomenclature must be submitted one (1) month prior to CDR. 16.2 The Final Request for Nomenclature must be submitted one (1) month after CDR. 16.3 Required to assign Joint Electronics Type Designation System (JTEDS) nomenclature for electronic equipment, test and training equipment.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL					
						2		2			
						2		2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR					
1. ITEM NUMBER C019			2. TITLE OR DESCRIPTION OF DATA Equipment Identification Plate Data			3. SUBTITLE					
4. AUTHORITY (Data Item Number) ILS-019			5. CONTRACT REFERENCE SOW paragraph 3.8.3			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION See block 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION See block 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The Equipment Identification Plate Data must be submitted two (2) months after Critical Design Review (CDR). 16.2 Obtain design approval prior to manufacturing Equipment Identification Plates. As per guidelines provided in D-02-002-001/SG-001.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL					
								2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT							
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257			
C. SOW IDENTIFIER SOW		D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR			
1. ITEM NUMBER C020		2. TITLE OR DESCRIPTION OF DATA Engineering Drawings and Associated Lists		3. SUBTITLE			
4. AUTHORITY (Data Item Number) <u>ILS-020</u>		5. CONTRACT REFERENCE SOW paragraphs 3.8.1, 3.9.7.2 and 5.8.4		6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT	10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A		11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES		
16. REMARKS 16.1 The draft Level 2 Engineering Drawing Package and Associated Lists must be submitted for DND review two (2) months after Critical Design Review (CDR). 16.2 Final Level 2 Engineering Drawing Package and Associated Lists must be submitted four (4) months after CDR. The Engineering Drawing Package and Associated Lists must be prepared in accordance with Appendix 17. 16.3 Engineering drawings and associated lists must be delivered in hard and soft copy.							
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE	15. TOTAL	2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT								
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR				
1. ITEM NUMBER C021		2. TITLE OR DESCRIPTION OF DATA Engineering Data List		3. SUBTITLE				
4. AUTHORITY (Data Item Number) ILS-021		5. CONTRACT REFERENCE SOW paragraphs 3.8.1.3, 3.8.1.4, 5.8.4, 5.8.5, 5.12.2.7 and 5.12.6.2		6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES		
16. REMARKS 16.1 The draft Engineering Data List must be submitted two (2) months after the Critical Design Review (CDR). 16.2 The final Engineering Data List must be submitted four (4) months after the Critical Design Review. 16.3 An index of all engineering data that comprise the Product Baseline, including drawings, specifications and software documentation. This data is needed by DND to acquire, operate, maintain and support the system throughout its life cycle. D-01-400-002/SF-000 provides guidance regarding content.					PMO TCR Project	DRAFT	FINAL	
					CA	REP	REP	REG
					OTHER			
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	2	2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR				
1. ITEM NUMBER C022			2. TITLE OR DESCRIPTION OF DATA Supplementary Provisioning Technical Documentation (SPTD)			3. SUBTITLE				
4. AUTHORITY (Data Item Number) ILS-022			5. CONTRACT REFERENCE SOW paragraphs, 3.7.3.2, 3.7.3.3, 3.7.4, 3.7.4.1, 3.7.5.1, 3.7.6.2 and 3.9.7.1			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES		
16. REMARKS 16.1 This CDRL to be cross-referenced with C005 (PPB) and subject to DSCO Approval. 16.2 Supplementary Provisioning Technical Documentation (SPTD) includes data to clearly define each item for cataloguing. The SPTD to be sequenced in the same order as the provisioning list that it supplements.					DRAFT		FINAL			
					REP		REP		REG	
					1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM					DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER			18. ESTIMATED NUMBER OF PAGES			19. ESTIMATED PRICE		15. TOTAL		
								2 2 2		



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR			
1. ITEM NUMBER C023			2. TITLE OR DESCRIPTION OF DATA Repair and Overhaul Plan (R&O)			3. SUBTITLE			
4. AUTHORITY (Data Item Number) <u>ILS-023</u>			5. CONTRACT REFERENCE SOW paragraphs 3.6.5 and 3.6.5.1			6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION 6 MACA		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION See block 16		A. ADDRESS DAEPM (R&CS)		B. COPIES	
16. REMARKS 16.1 Draft submission of the Repair & Overhaul (R&O) Plan is due two (2) months prior to Critical Design Review (CDR). 16.2 Final submission of the R&O Plan is due one (1) month after the first (1 st) System Factory Acceptance Test (FAT). PREPARED BY Mr. B. Stokes, TCR System PM DATE January 2016 APPROVED BY Maj M.J. Kallio, TCR System PD						DRAFT		FINAL	
						REP		REP	
						REG		REG	
						1		1	
CA						1		1	
OTHER									
17. CONTRACT FILE / DOCUMENT NUMBER			18. ESTIMATED NUMBER OF PAGES			19. ESTIMATED PRICE		15. TOTAL	
								2 2 2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR				
1. ITEM NUMBER C024			2. TITLE OR DESCRIPTION OF DATA Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Status/Shortage Report			3. SUBTITLE				
4. AUTHORITY (Data Item Number) ILS-024			5. CONTRACT REFERENCE SOW paragraph 4.2			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES				
16. REMARKS 16.1 The Contractor must submit a GSM Status/Shortage Report as required to report GSM receipts, shortages, and rejections. 16.2 The Contractor must submit a GFE Status/Shortage Report as required to report GFE receipts, shortages, and rejections.					DRAFT		FINAL			
					REP		REP		REG	
					1		1		1	
					1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM					DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR			
1. ITEM NUMBER C025			2. TITLE OR DESCRIPTION OF DATA Government Supplied Material (GSM) Government Furnished Equipment (GFE) and Government Furnished Information (GFI) Inventory List			3. SUBTITLE			
4. AUTHORITY (Data Item Number) ILS-025			5. CONTRACT REFERENCE SOW paragraph 1.4.3			6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES			
16. REMARKS 16.1 The Contractor must prepare a GSM Inventory List identifying material supplied by DND for use in the integration process. 16.2 The Contractor must prepare a GFE Inventory List identifying equipment supplied by DND for use in the integration process. 16.3 The Contractor must prepare a GFI Inventory List identifying information supplied by DND for the use in the integration process. 16.4 The GSM/GFE/GFI Inventory Lists are to be initiated and maintained upon receipt of GSM, GFE or GFI.					PMO TCR Project		1	1	1
					CA		1	1	1
					OTHER				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT							
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257			
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR			
1. ITEM NUMBER C026		2. TITLE OR DESCRIPTION OF DATA Special Packaging, Handling, Storage and Transportability (PHST) Consideration Items List		3. SUBTITLE			
4. AUTHORITY (Data Item Number) ILS-026		5. CONTRACT REFERENCE SOW paragraph 3.9.2		6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT	10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A		11. AS OF DATE SEE BLOCK 16	13. DATE OF SUBMISSION	A. ADDRESS DAEPM (R&CS)		B. COPIES	
16. REMARKS 16.1 The Special Packaging, Handling, Storage and Transportability (PHST) Consideration Items List is required four (4) months prior to the Physical Configuration/ Installation Audit (PCIA) of the first site.				DRAFT		FINAL	
				REP		REP	
				REG		REG	
				OTHER		OTHER	
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT							
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257			
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR			
1. ITEM NUMBER C027		2. TITLE OR DESCRIPTION OF DATA Packaging Data		3. SUBTITLE			
4. AUTHORITY (Data Item Number) ILS-027		5. CONTRACT REFERENCE SOW paragraphs 3.9.3 and 3.9.3.2		6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT	10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A		11. AS OF DATE SEE BLOCK 16	13. DATE OF SUBMISSION	A. ADDRESS DAEPM (R&CS)	B. COPIES		
16. REMARKS 16.1 The Packaging Data is required four (4) months prior to the Physical Configuration / Installation Audit (PCIA). 16.2 Packaging Data must be initiated to identify packaging requirements for items to be shipped to or stored at a DND facility. This data may be submitted/accessed in electronic media.				DRAFT		FINAL	
				REP		REP	
				REG		REG	
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT							
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257			
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR			
1. ITEM NUMBER C028		2. TITLE OR DESCRIPTION OF DATA Material Safety Data Sheet (MSDS)		3. SUBTITLE			
4. AUTHORITY (Data Item Number) ILS-028		5. CONTRACT REFERENCE SOW paragraphs 3.9.4 and 3.9.4.1		6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT	10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A		11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES		
16. REMARKS 16.1 Material Safety Data Sheets (MSDS) must be submitted one (1) month prior to the 1st System FATs. 16.2 Contractor to provide information and instructions on the chemical and physical characteristics of substances as detailed in the Hazardous Products Act, Controlled Products Regulations. 16.3 One hard copy must also be enclosed with all items within each shipment.							
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE	15. TOTAL	2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT							
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257			
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Integrated Logistics Support		E. CONTRACTOR			
1. ITEM NUMBER C029		2. TITLE OR DESCRIPTION OF DATA Calibration/Measurement Requirements Summary (CMRS)		3. SUBTITLE			
4. AUTHORITY (Data Item Number) ILS-029		5. CONTRACT REFERENCE SOW paragraph 3.10.2		6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT	10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A		11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES	
16. REMARKS 16.1 Calibration/Measurement Requirements Summary (CMRS) must be submitted two (2) months prior to Critical Design Review (CDR) meeting. 16.2 Provision of data required to set up the calibration program. This data may be submitted/accessed in electronic media. 16.3 Final submission of the Calibration/Measurement Requirements Summary (CMRS) is due two (2) months prior to the first (1 st) System Factory Acceptance Test (FAT).				DRAFT		FINAL	
				REP		REP REG	
				1		1 1	
				1		1 1	
PREPARED BY Mr. B. Stokes, TCR System PM				DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD	
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	2	2 2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR					
1. ITEM NUMBER C030			2. TITLE OR DESCRIPTION OF DATA Training Plan			3. SUBTITLE					
4. AUTHORITY (Data Item Number) <u>ILS-030</u>			5. CONTRACT REFERENCE SOW paragraph 3.11.1			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft Training Plan must be submitted six (6) months prior to the Training course. 16.2 The final Training Plan must be submitted three (3) months prior to the start of the Training course.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT													
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257								
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR							
1. ITEM NUMBER C031			2. TITLE OR DESCRIPTION OF DATA Training Material			3. SUBTITLE							
4. AUTHORITY (Data Item Number) <u>ILS-031</u>			5. CONTRACT REFERENCE SOW paragraph 3.11.7			6. REQUIRING OFFICE PMO TCR Project							
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 0/1							
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES					
16. REMARKS 16.1 The DRAFT submission of the Training Material is due four (4) months prior to the conduct of the training. 16.2 The FINAL copy will be delivered with the agreed changes two (2) months prior to the conduct of the training. 16.3 DND will provide its comments to the Contractor within forty-five (45) calendar days of receiving the Training Material.						DRAFT		FINAL					
						REP		REP		REG			
						1		1		1			
						1		1		1			
						OTHER		4		4		4	
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD								
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		6		6		6	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR					
1. ITEM NUMBER C032			2. TITLE OR DESCRIPTION OF DATA Interim Spares List (ISL)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) ILS-032			5. CONTRACT REFERENCE SOW paragraph 3.7.3.3			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/0					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.4 Draft Interim Spares List (ISL) must be submitted one (1) month after PDR. 16.5 Final delivery of the ISL must be submitted one (1) month after CDR and must be subject to DSCO approval. 16.6 This CDRL must be cross-referenced with the Supplementary Provisioning Technical Documentation (SPTD) CDRL C022.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL					
						2		2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR					
1. ITEM NUMBER C033			2. TITLE OR DESCRIPTION OF DATA Long Lead Time Items List (LLTIL)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) ILS-033			5. CONTRACT REFERENCE SOW paragraph 3.7.3.1			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/0					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.7 Draft Long Lead Time Items List (LLTIL) must be submitted one (1) month after PDR. 16.8 Final delivery of the LLTIL must be submitted one (1) month after to CDR and must be subject to DSCO approval. 16.9 This CDRL must be cross-referenced with the Supplementary Provisioning Technical Documentation (SPTD) CDRL C022.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT													
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257								
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Integrated Logistics Support			E. CONTRACTOR							
1. ITEM NUMBER C034			2. TITLE OR DESCRIPTION OF DATA Logistic Support Analysis Plan (LSAP)			3. SUBTITLE							
4. AUTHORITY (Data Item Number) <u>ILS-034</u>			5. CONTRACT REFERENCE SOW paragraph 3.5.2			6. REQUIRING OFFICE PMO TCR Project							
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1								
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES							
16. REMARKS 16.1 Draft Logistics Support Analysis Plan (LSAP) must be submitted one (1) month before the Preliminary Design Review (PDR). 16.2 Final LSAP is due one (1) month before the Critical Design Review (CDR).					DRAFT		FINAL						
					REP		REP		REG				
					1		1		1				
					OTHER				1				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD								
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2		2		3	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Test & Evaluation			E. CONTRACTOR					
1. ITEM NUMBER D001			2. TITLE OR DESCRIPTION OF DATA Integrated Master Test Plan (IMTP)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) TE-001			5. CONTRACT REFERENCE SOW paragraphs 6.1.1 and 6.4.2			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft submission of the Integrated Master Test Plan (IMTP) is due one (1) month prior to Preliminary Design Review (PDR) meeting. 16.2 The final submission must be delivered with the agreed changes three (3) months after the Preliminary Design Review (PDR) meeting.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Test & Evaluation			E. CONTRACTOR			
1. ITEM NUMBER D002			2. TITLE OR DESCRIPTION OF DATA Requirements Verification Matrix (RVM)			3. SUBTITLE			
4. AUTHORITY (Data Item Number) <u>TE-002</u>			5. CONTRACT REFERENCE SOW paragraphs 6.2, 6.2.1, 6.2.2 and 6.4.4			6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES			
16. REMARKS 16.1 The draft submission of the Requirements Verification Matrix (RVM) is due one (1) month prior to Critical Design Review (CDR) meeting. 16.2 The final copy must be delivered with the agreed changes two (2) months after the Critical Design Review (CDR) meeting.					PMO TCR Project		1	1	1
					CA		1	1	1
					OTHER				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD		LCol. R. Passant, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2
								2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Test & Evaluation			E. CONTRACTOR					
1. ITEM NUMBER D003			2. TITLE OR DESCRIPTION OF DATA Factory Acceptance Test Plan (FATP)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) TE-003			5. CONTRACT REFERENCE SOW paragraphs 6.4.3 and 6.4.8.1			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft submission of the Factory Acceptance Test Plan (FATP) is due four (4) months prior to the applicable Factory Acceptance Test (FAT). 16.2 The final copy will be delivered with the agreed changes two (2) months prior to the applicable FAT.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD		LCol. R. Passant, TCR System PD	
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2		2	
								2		2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Test & Evaluation			E. CONTRACTOR					
1. ITEM NUMBER D004			2. TITLE OR DESCRIPTION OF DATA Site Acceptance Test Plan (SATP)			3. SUBTITLE					
4. AUTHORITY (Data Item Number) TE-004			5. CONTRACT REFERENCE SOW paragraph 6.5.5			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft submission of the Site Acceptance Test Plan (SATP) is due four (4) months prior to the applicable Site Acceptance Test (FAT). 16.2 The final copy will be delivered with the agreed changes two (2) months prior to the applicable SAT.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT										
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257					
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Test & Evaluation			E. CONTRACTOR				
1. ITEM NUMBER D005			2. TITLE OR DESCRIPTION OF DATA Acceptance Test Procedures (ATPR)			3. SUBTITLE				
4. AUTHORITY (Data Item Number) <u>TE-005</u>			5. CONTRACT REFERENCE SOW paragraphs 6.3.3, 6.4.3, 6.5.5 and 6.5.14			6. REQUIRING OFFICE PMO TCR Project				
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES				
16. REMARKS 16.1 The draft submission of the Acceptance Test Procedures (ATPR) is due three (3) months prior to the applicable Acceptance Test (AT). 16.2 The final copy will be delivered with the agreed changes one (1) month prior to the applicable Acceptance Test.					REP		REP	REG		
					PMO TCR Project		1	1	1	
					CA		1	1	1	
					OTHER					
PREPARED BY Mr. B. Stokes, TCR System PM			DATE		APPROVED BY Maj M.J. Kallio TCR System PD					
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Test & Evaluation			E. CONTRACTOR			
1. ITEM NUMBER D006			2. TITLE OR DESCRIPTION OF DATA Acceptance Test Report (ATR)			3. SUBTITLE			
4. AUTHORITY (Data Item Number) TE-006			5. CONTRACT REFERENCE SOW paragraphs 6.4.8.2, 6.4.9, 6.4.12 and 6.5.15			6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES		
16. REMARKS 16.1 The Acceptance Test Report (ATR) is due one (1) month after completion of the applicable Acceptance Test (AT).					DRAFT		FINAL		
					REP		REP	REG	
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Site Design and Transition			E. CONTRACTOR					
1. ITEM NUMBER E001			2. TITLE OR DESCRIPTION OF DATA Site Preparation Report			3. SUBTITLE					
4. AUTHORITY (Data Item Number) TR-001			5. CONTRACT REFERENCE SOW paragraphs 5.12.2.4, 7.11.1 and 7.11.1.1			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1						
8. APP CODE			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)		B. COPIES				
16. REMARKS 16.1 The draft Site Preparation Report must be submitted one (1) month prior to the 1 st Site Design Reviews. 16.2 The final Site preparation Report must be submitted at the 2 nd Site Design Reviews.					DRAFT		FINAL				
					REP		REP		REG		
					1		1		1		
					CA		1		1		
					OTHER						
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2		2	
								2		2	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT							
A. System / ITEM TCR Modernization Project				B. CONTRACT / RFP NUMBER W8475-155257			
C. SOW IDENTIFIER SOW 00000743		D. DATA CATEGORY Site Design and Transition		E. CONTRACTOR			
1. ITEM NUMBER E002		2. TITLE OR DESCRIPTION OF DATA Installation Plan		3. SUBTITLE			
4. AUTHORITY (Data Item Number) TR-002		5. CONTRACT REFERENCE SOW paragraphs 5.12.2.7 and 5.13.4		6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT	10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A		11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES		
16. REMARKS 16.1 The draft Installation Plan is due one (1) month prior to the Site Design Reviews meeting. 16.2 The final Installation Plan must be delivered four (4) months prior to the delivery of the first system. 16.3 The Installation Plan must set forth the Contractor's plan for managing the installation of the system(s). The Plan must include the site physical requirements, delivery, installation, integration and initial checkout of the system(s). The Installation Plan will allow the Design Authority to ensure that the proposed installation will meet DND requirements.				DRAFT			
				FINAL			
				REP			
				REG			
				PMO TCR Project	1	1	1
				CA	1	1	1
				OTHER			
PREPARED BY Mr. B. Stokes, TCR System PM		DATE January 2016	APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER	18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE	15. TOTAL	2	2	2

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Site Design and Transition			E. CONTRACTOR			
1. ITEM NUMBER E003			2. TITLE OR DESCRIPTION OF DATA Transition Plan (TP)			3. SUBTITLE			
4. AUTHORITY (Data Item Number) TR-003			5. CONTRACT REFERENCE SOW paragraph 5.13.5			6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT		10. FREQUENCY R/ASR	12. DATE OF 1ST SUBMISSION SEE BLOCK 16	14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1				
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16	A. ADDRESS DAEPM (R&CS)	B. COPIES			
16. REMARKS 16.1 The draft Transition Plan must be submitted one (1) month prior to the Site Design Reviews Meeting. 16.2 The Transition Plan must be revised as required to incorporate approved changes to the system configuration as they occur. 16.3 The final Transition Plan must fully describe the Contractor's methodology to transition from the existing system to the new TCR System and must be delivered four (4) months prior to the delivery of the first system.					PMO TCR Project		1	1	1
					CA		1	1	1
					OTHER				
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	2	2	2



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Site Design and Transition			E. CONTRACTOR					
1. ITEM NUMBER E004			2. TITLE OR DESCRIPTION OF DATA Pre-Design Report			3. SUBTITLE					
4. AUTHORITY (Data Item Number) TR-004			5. CONTRACT REFERENCE SOW paragraph 2.7.1.1			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The draft Pre-Design Report must be submitted at the Initial Progress Review (IPR) Meeting. 16.2 The final Pre-Design Report must be submitted one (1) month after the initial Kick-Off Meeting. 16.3 The final Pre-Design Report must be revised as required to incorporate approved changes to the site design requirements as they occur.						DRAFT		FINAL			
						REP		REP		REG	
						1		1		1	
						1		1		1	
PREPARED BY Mr. B. Stokes, TCR System PM						DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD			
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2			

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT									
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257				
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Site Design and Transition			E. CONTRACTOR			
1. ITEM NUMBER E005			2. TITLE OR DESCRIPTION OF DATA Concept Design Report			3. SUBTITLE			
4. AUTHORITY (Data Item Number) TR-005			5. CONTRACT REFERENCE SOW paragraph 5.12.2.4			6. REQUIRING OFFICE PMO TCR Project			
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1			
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES	
16. REMARKS 16.1 The draft Concept Design and Report must be submitted one (1) month prior to the Preliminary Design Review (PDR) Meeting. 16.2 The final Concept Design Report must be delivered one (1) month after the Preliminary Design Review (PDR). 16.3 The Concept Design Report must be revised as required to incorporate approved changes to the site design configuration as they occur.						DRAFT		FINAL	
						REP		REP	
						REG		REG	
						1		1	
PMO TCR Project						1		1	
CA						1		1	
OTHER									
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD				
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		2 2 2	

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT														
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257									
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Site Design and Transition			E. CONTRACTOR								
1. ITEM NUMBER E006			2. TITLE OR DESCRIPTION OF DATA Design Development Report			3. SUBTITLE								
4. AUTHORITY (Data Item Number) TR-006			5. CONTRACT REFERENCE SOW paragraph 5.12.3.6			6. REQUIRING OFFICE PMO TCR Project								
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1								
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES						
16. REMARKS 16.1 The draft Design Development Report must be submitted two (2) month prior to the Critical Design Review (CDR) Meeting. 16.2 The Design Development Report must be revised as required to incorporate approved changes to the site design configuration as they occur. 16.3 The final Design Development Report must be delivered one (1) month prior the Critical Design Review (CDR).						DRAFT		FINAL						
						REP		REP						
						REG		REG						
						PMO TCR Project		9		9		9		
CA						1		1		1				
OTHER														
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD									
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES			19. ESTIMATED PRICE		15. TOTAL		10		10		10	



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT											
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257						
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Site Design and Transition			E. CONTRACTOR					
1. ITEM NUMBER E007			2. TITLE OR DESCRIPTION OF DATA Construction Document Report			3. SUBTITLE					
4. AUTHORITY (Data Item Number) TR-007			5. CONTRACT REFERENCE SOW paragraphs 5.12.4.4, 5.12.4.6 and 5.12.4.11			6. REQUIRING OFFICE PMO TCR Project					
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1					
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		A. ADDRESS DAEPM (R&CS)		B. COPIES			
16. REMARKS 16.1 The 66% Construction Document Report including indicative Class C construction estimate must be submitted one (1) month prior to the Critical Design Review (CDR). 16.2 The 99% Construction Document Report including substantive class B construction cost estimate must be submitted one (1) month prior to the 1st Site Design Review (Site DR) for each site. 16.3 The 100% Construction Document Report (including substantive class A (tender) construction cost estimate) must be submitted one (1) month prior to the 2 nd Site Design Review (Site DR) for each site. 16.4 The 100% complete construction documents stamped and signed by appropriate professional must be delivered one (1) month after the 2 nd Site Design Review (Site DR) for each site.						DRAFT		FINAL			
						REP		REP		REG	
						4		4		4	
						1		1		1	
OTHER											
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD						
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL		5 5 5			



National Defence
Défense Nationale

[Back to CDRL List](#)

CONTRACT DATA REQUIREMENTS LIST LISTE DES DONNÉES ESSENTIELLES DU CONTRAT																	
A. System / ITEM TCR Modernization Project					B. CONTRACT / RFP NUMBER W8475-155257												
C. SOW IDENTIFIER SOW 00000743			D. DATA CATEGORY Site Design and Transition			E. CONTRACTOR											
1. ITEM NUMBER E008			2. TITLE OR DESCRIPTION OF DATA Post Construction Phase Report			3. SUBTITLE											
4. AUTHORITY (Data Item Number) TR-008			5. CONTRACT REFERENCE SOW paragraphs			6. REQUIRING OFFICE PMO TCR Project											
7. INSPECTION DD	9. INPUT		10. FREQUENCY ONE/R	12. DATE OF 1ST SUBMISSION SEE BLOCK 16		14. DISTRIBUTION AND ADDRESSEES PMO TCR Project 1/1											
8. APP CODE A			11. AS OF DATE	13. DATE OF SUBMISSION SEE BLOCK 16		<table border="1"> <tr> <td colspan="2">A. ADDRESS</td> <td colspan="2">B. COPIES</td> </tr> <tr> <td>DAEPM (R&CS)</td> <td>DRAFT</td> <td colspan="2">FINAL</td> </tr> <tr> <td></td> <td>REP</td> <td>REP</td> <td>REG</td> </tr> </table>		A. ADDRESS		B. COPIES		DAEPM (R&CS)	DRAFT	FINAL			REP
A. ADDRESS		B. COPIES															
DAEPM (R&CS)	DRAFT	FINAL															
	REP	REP	REG														
16. REMARKS 16.1 The Post Construction Document Report must be submitted for each site 1 month after the end of the Site Construction Phase. 16.2 The Post Construction Report must be submitted in accordance with Section 18 of the "Design Service Requirements", Annex A, Appendix 25.					PMO TCR Project		1	1	1								
					CA		1	1	1								
					OTHER												
PREPARED BY Mr. B. Stokes, TCR System PM			DATE January 2016		APPROVED BY Maj M.J. Kallio, TCR System PD												
17. CONTRACT FILE / DOCUMENT NUMBER		18. ESTIMATED NUMBER OF PAGES		19. ESTIMATED PRICE		15. TOTAL	2	2	2								

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 02

DATA ITEM DESCRIPTION (DID)

FOR

TACTICAL CONTROL RADAR (TCR) MODERNIZATION PROJECT

APPENDIX 2 – Data Item Description (DID)

1. TITLE: The DID title identifies the data item. It is a meaningful short name for the data item that identifies its nature.

2. IDENTIFICATION NUMBER: An alphanumeric allocation is representing a functional area of responsibility.

PM-000	Project Management
SE-000	System Engineering
ILS-000	Integrated Logistics Support
TE-000	Test and Evaluation
TR-000	Transition and Site Design

3. DESCRIPTION/PURPOSE: The description/purpose entry presents a concise description (abstract) of the data content requirements and presents the purpose for which the data is required.

4. APPROVAL DATE: The originator's approval date.

5. OFFICE OF PRIMARY INTEREST: The office designation of the directorate or individual responsible for specifying the data requirement.

6. GIDEP APPLICABLE: The box will be marked by an X when copies of the data are required to be submitted by a government organization or the contractor to the Government/Industry Data Exchange Program (GIDEP).

7. APPLICATION/INTERRELATIONSHIP: A block, which contains information to assist in the proper selection and application of the data item.

8. ORIGINATOR: Title of author

9. APPLICABLE FORMS: Forms associated with the DID are identified in Block 9

10. PREPARATION INSTRUCTIONS: A block which contains the description of the information required in the DID. The following subparagraphs provide the generic format and content instructions for the preparation of all deliverables:

10.1. Applicable Documents. The documents cited in the individual DIDs are summarized in Appendix 4 to this Annex. The applicable issue of each document is the date listed in Appendix 4.

10.2. Data Item Formats and Delivery Mediums. Unless otherwise defined within this contract, the Contractor must submit the contract deliverables in paper and electronic formats. Best commercial practices are to be used for charts, tables, matrices, page numbering and document control numbering.

10.2.1. Paper Format. Deliverables in paper format must be provided in typewritten form on plain, 8 ½ by 11 inch or 8 ½ by 14 inch, bond paper. Note that the preceding size restriction does not apply to Engineering Drawings.

10.2.2. Electronic Format. Electronic documents must be delivered in a format fully compatible with the products listed in the following table.

TABLE 1 - FORMAT COMPATIBILITY FOR ELECTRONIC DOCUMENTS

Application Type	Product/Format
Word Processing	Microsoft Word 2000 for Windows
Spreadsheet	Microsoft Excel 2000 for Windows
Presentation	Microsoft PowerPoint 2000 for Windows
Database	Microsoft Access 2000 for Windows
Project Management/Schedules	Microsoft Project 2000 for Windows
Drawing	AutoCAD 2005 (Autodesk)
Photos	JPEG, TIFF

Electronic versions of documents must be delivered on CD-ROMs. CD-ROMs must be labeled with the following information, as a minimum:

- a. project name;
- b. contract Number;
- c. subject matter; and

d. date of delivery.

Alternatively, for working or draft documents, the contractor may deliver electronic data via e-mail (must comply with the Department of National Defence (DND) internet/firewall maximum file size limitation of 5 Mb).

10.3. Contents. The Data Item Descriptions must consist, as a minimum, of the following sections:

- a. Title Page;
- b. Table of Contents;
- c. Document Control Log;
- d. Revision Record;
- e. Purpose;
- f. Introduction;
- g. References;
- h. Specific Content (subject matter);
- i. Notes; and
- j. Appendices.

10.3.1. Title Page. The Title Page must contain the following information:

- a. data item title, as written in box 1 of DID;
- b. contract number;
- c. CDRL sequence number;
- d. prepared for: Canadian Department of National Defence, Tactical Control Radar (TCR) Modernization Project Management Office (PMO); and
- e. prepared By: Contractor's name and address.

10.3.2. Table of Contents. The Table of Contents should list the title and page number of each titled paragraph and subparagraph, figure, table and appendix.

10.3.3. Document Control Log. The Document Control Log should contain three columns: Revision, Date and reason for the change.

10.3.4. Revision Record. The Revision Record should contain a listing of pages and their revision status.

10.3.5. Purpose. This section must describe the purpose of the data item.

10.3.6. Introduction. This section must detail the Contractor's approach and general plan for this data item.

10.3.7. References. This section must list all applicable/referenced documents and is to include number designations, titles, dates and revisions.

10.3.8. Subject Matter. Plain text that addresses the material that is to be included in the document.

10.3.9. Notes. This section must contain any general information that aids in the understanding of the document (eg. background information, glossary). This section should include an alphabetical listing of all acronyms, abbreviations and their meanings as used in the plan. This listing must be included with the final plan.

10.3.10. Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (eg. charts, classified data). As applicable, each appendix must be referenced in the main body of the plan where the data would normally have been provided. Appendices may be bound as separate documents for ease of handling.

DATA ITEMS DESCRIPTIONS LIST (DID)

CDRL ITEM NUMBER	DID ID NUMBER	TITLE
A001	PM-001	Project Management Plan (PMP)
A002	PM-002	Agendas
A003	PM-003	Minutes
A004	PM-004	Progress Review Meeting (PRM) Package
A005	PM-005	Hot Line Reports/Discrepancy Reports
A006	PM-006	Initial Project Review (IPR) Meeting Presentation Package
A007	PM-007	Master Project Schedule (MPS)
B001	SE-001	Request for Waivers and Deviations
B002	SE-002	System Engineering Management Plan (SEMP)
B003	SE-003	System Design Document (SDD)
B004	SE-004	Product Specifications (PS)
B005	SE-005	Interface Control Document (ICD)
B006	SE-006	Electromagnetic Environment Effects (E3) Control Plan
B007	SE-007	System Security Management Plan

CDRL ITEM NUMBER	DID ID NUMBER	TITLE
B008	SE-008	Security Anomaly Report
B009	SE-009	Security Functional Specification
B010	SE-010	Security Architectural Design
B011	SE-011	Emanations Security (EMSEC) Control Plan
B012	SE-012	Security Detail Design

CDRL ITEM NUMBER	DID ID NUMBER	TITLE
B013	SE-013	TEMPEST Test Facility Certification Report
B014	SE-014	Equipment TEMPEST Qualification Test Report
B015	SE-015	Preliminary Design Review (PDR) Package
B016	SE-016	Critical Design Review (CDR) Package
B017	SE-017	Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Integration Plan
B018	SE-018	Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Integration Report
B019	SE-019	Engineering Change Proposal (ECP)
B020	SE-020	Specification Change Notice (SCN)
B021	SE-021	Site Data Package (SDP)
B022	SE-022	Electromagnetic Environmental Effects (E3) Test Plan (E3TP)
B023	SE-023	Electromagnetic Environmental Effects (E3) Test Report (E3TR)
B024	SE-024	Frequency Allocation and Emitter Data
C001	ILS-001	Integrated Logistics Support (ILS) Plan
C002	ILS-002	Maintenance Plan (MP)
C003	ILS-003	Sustainment Plan
C004	ILS-004	Software User Manuals (SUMs)
C005	ILS-005	Provisioning Parts Breakdown (PPB)
C006	ILS-006	Technical Publications Requirements List (TPRL)
C007	ILS-007	Acceptance of Commercial and Foreign Government Publications

C008	ILS-008	New System Operating Instruction Manual(s)
C009	ILS-009	New TCR System Technical Manuals
C010	ILS-010	Material Change Notice (MCN)
C011	ILS-011	Common Bulk Items List (CBIL)
C012	ILS-012	Logistic Support Analysis Record (LSAR)
C013	ILS-013	System Software
C014	ILS-014	LSA Candidate Items List (CIL)
C015	ILS-015	Reliability & Maintainability (R&M) Predictions Data
C016	ILS-016	Level of Repair Analysis Report (LORA)
C017	ILS-017	Sparing Analysis Report
C018	ILS-018	Request for Nomenclature
C019	ILS-019	Equipment Identification Plate Data
C020	ILS-020	Engineering Drawings and Associated Lists
C021	ILS-021	Engineering Data List
C022	ILS-022	Supplementary Provisioning Technical Documentation (SPTD)
C023	ILS-023	Repair and Overhaul (R&O) Plan
C024	ILS-024	Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Status/Shortage Report
C025	ILS-025	Government Supplied Material (GSM), Government Furnished Equipment (GFE) and Government Furnished Information (GFI) Inventory List
C026	ILS-026	Special Packaging, Handling, Storage and Transportability (PHST) Consideration Items List
C027	ILS-027	Packaging Data
C028	ILS-028	Material Safety Data Sheet (MSDS)
C029	ILS-029	Calibration/Measurement Requirements Summary (CMRS)
C030	ILS-030	Training Plan
C031	ILS-031	Training Material
C032	ILS-032	Interim Spares List (ISL)
C033	ILS-033	Long Lead Time Items List (LLTIL)
C034	ILS-034	Logistic Support Analysis Plan (LSAP)
D001	TE-001	Integrated Master Test Plan (IMTP)

D002	TE-002	Requirements Verification Matrix (RVM)
D003	TE-003	Factory Acceptance Test Plan (FATP)
D004	TE-004	Site Acceptance Test Plan (SATP)
D005	TE-005	Acceptance Test Procedures (ATPR)
D006	TE-006	Acceptance Test Report (ATR)
E001	TR-001	Site Preparation Report
E002	TR-002	Installation Plan
E003	TR-003	Transition Plan (TP)
E004	TR-004	Pre-Design Report
E005	TR-005	Concept Design Report
E006	TR-006	Design Development Report
E007	TR-007	Construction Document Report

		National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Project Management Plan (PMP)		PM-001	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Project Management Plan (PMP) details the project management practices and procedures that the Contractor will follow in order to meet the objectives of the project. It must detail the procedures for project planning, quality assurance, organizing, directing, monitoring, controlling, providing for the orderly resource management of and reporting on all Work with respect to the project. The PMP is used to provide the DND TA insight into Contractor's project management practices and procedures as they apply to the Contract. The PMP must include as Annexes various plans such as the CMP and QAP.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-A001 and SOW paragraphs 2.2, 2.6.1, 2.7.2.1, 2.8.1, 2.8.2, 2.9.1, 2.9.3, 5.11.3, 5.11.4 and 5.12.3.3 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
<p>10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. General. The Project Management Plan (PMP) must document in detail the contractor's procedures for planning, quality assurance, organizing, directing, monitoring, controlling, providing for the orderly resource, management and reporting of all Work with respect to the project.</p> <p>10.3. Specific Format Requirement. The PMP must be prepared in accordance with the format instructions provided at A-AD-D30-001/SJ-001 (DNDP 30), DND Administrative and Staff Procedures Manual Section 9 Figure 2-14 and as further described herein. The Contractor may use their own paragraph numbering format providing every separate portion is identified by a number or letter similar to the DND approach. The Plan sections must have the same name, number and sequence as given herein. The Configuration Management Plan (CMP) must be prepared in accordance with paragraph 5.2 of D-01-002-007/SG-001.</p>			

10.4. Specific Content Requirement. The PMP must be a narrative, supported by Diagrams and Charts as appropriate, including as a minimum:

- a. Introduction. Outlines the purpose of the Plan and provides a description of any background information used for the preparation of the Plan.
- b. Overview. Must provide overview of how the contractor will plan for, organize, direct, monitor, control and report on all work with respect to the project such that the schedule and technical goals are achieved.
- c. Approach. The Contractor's approach and procedures with respect to project management in general, showing how a systematic and synergistic management methodology will bring together the different program elements and plans into an integrated effort which will achieve the program goals. Details of how the Contractor will provide for a proactive approach to the above mentioned activities in such a way as to ensure that potential deviations in schedule and technical goals are noted, analyzed and solutions provided for prior to any significant impact to the aforementioned schedule and technical goals.
- d. Organization Breakdown Structure (OBS). This section must contain a Project Organization Chart.
- e. Organizational Interfaces. Must provide details of the interfaces that will be established between the Government, sub-Contractors and the contractor, which are necessary and pertinent to the accomplishment of project management tasks. Details of how these interfaces will provide for an effective and efficient communication flow.
- f. Work Breakdown Structure. Details how the Contractor will utilize the WBS to plan and manage the Work.
- g. Responsibility Assignment. Details how the Contractor will assign responsibility to plan and manage the Work.
- h. Project Management Support System. Details the project management support system(s) that will be employed to provide the management related CDRL items, including the person(s) responsible for each part or whole of the project management functions, their experience (resume) and Terms of Reference. This must include details on how the project management support system(s) will provide the information necessary for Managers to be informed of potential deviations from cost, schedule or technical goals prior to negative impact on the goals and provide the information required by the program management specific DIDs. A list of status reports generated from the system, which will be used to monitor and control activities must be provided, with statements as to the purpose, summary of content, generation responsibility, generation schedule, distribution, analyses to be performed, retention period and location.
- i. Work Authorization. Details how the Contractor will control work in terms of the actions required to authorize the initiation of Work, monitor and terminate or authorize the completion of Work initiated by PWGSC.
- j. Project Reviews. Details the Contractor's procedures for preparing and conducting project progress reviews. This must include details of progress review frequency, agendas, generation of action items, follow-up to progress review items and closure of progress review items for action.
- k. Security of Information. An overview of how the Contractor will provide for the security of project related information including access to documents / information / PMSS, safeguarding of stored information and preservation of confidentiality.
- l. Conflict Management. Details how the Contractor will manage conflict with the client.
- m. Conclusion. A conclusion section that summarizes the methodologies, practices and procedures that will be employed to provide for effective project management of all Work with respect to the project.

10.5. The following sub-plans must be included as Annexes to the Project Management Plan on an as required basis.

- a. The Resource Management Plan (RMP) must document the approach to be taken to manage personnel and facility resources vis-à-vis the requirements to support the Project goals. The RMP must include as a minimum:
 - (1) The skill sets and capabilities currently held within the organization which shows that the Contractor has the resources necessary to provide a core of management, technical and administrative competence;
 - (2) A personnel resource histogram based on the Contractor's schedule, which illustrates the total number of resources that will be deployed on the Program, versus those personnel resources currently available within the organization; a description of the approach that will be taken to acquire skill sets and/or capabilities required, but not currently held within the organization; and
 - (3) A description of the extent and type of staff skill acquisition that will be undertaken, indicating expected timelines for the actual implementation of each staff type and number acquisition.
- b. The Risk Management Plan must document in detail the Contractor's procedures for identifying risks affecting the technical, schedule or cost objectives of the Project, assessing the potential, impact of that risk, identifying and analyzing alternatives available and determining which alternative will eliminate or reduce the risk element(s). The Risk Management Plan must include the following as a minimum:
 - (1) Risk identification, assessment and evaluation process and procedures;
 - (2) Technical risks;
 - (3) Security risks;
 - (4) Schedule risks;
 - (5) Resource risks;
 - (6) Cost risks;
 - (7) Other risks;
 - (8) Risk reduction process and results;
 - (9) Plan and process for on-going risk assessment and risk element reduction or elimination; and
 - (10) Details of how identified risks have been factored into the cost/schedule/technical proposal.
- c. The Problem Reporting and Resolution Plan must document in detail the Contractor's methods, practices and procedures for identifying problem areas, reporting the problems and providing for the timely resolution of the problems before the Project's technical, schedule or cost goals are adversely impacted. The Problem Reporting and Resolution Plan must include as a minimum the following:
 - (1) Deviation and problem identification process;
 - (2) Problem categorization process;
 - (3) Problem analysis process;
 - (4) Decision and resolution process;
 - (5) Problem reporting; and
 - (6) Problem tracking, solution and follow-up.
- d. The Sub-Contract Management Plan (SMP) must describe the practices and procedures that will be followed in the management, review and reporting of all Sub-contractor efforts. The SMP must include as a minimum the following:
 - (1) A list of selected sub-contractors and associate contractors, with the responsibility area(s) of each sub-contractor/associate clearly indicated; and
 - (2) A description of the practices and procedures that will be followed to manage and review sub-contractor and associate contractor efforts to meet the requirements (especially project management requirements) detailed in the Statement of Work, including:

- (a) Lowdown (or "flow across") of terms and conditions to sub-contractors and associate contractors;
 - (b) Procedures for Work effort integration;
 - (c) Procedures for establishing interfaces with the sub-contractors and associate contractors; and
 - (d) Procedures for establishing sub-contractor and associate contractor progress and technical reviews and the content and timing of these reviews.
- e. The Contract Data Management Plan (CDMP) must detail the practices and procedures that will be followed in order to manage activities resulting in the delivery and final acceptance of all contract data deliverables as defined by the Statement of Work. In particular how the Contractor will ensure that CDRL items are delivered that meet schedule and quality requirements and that documents are received, accepted, reviewed, approved and archived in an effective and appropriate manner. The CDMP must include as a minimum the following:
- (1) The procedures and process for tasking deliverable document production, including responsibility assignment and the internal review and approval process;
 - (2) The procedures for document identification for delivery, including document delivery notice and internal distribution;
 - (3) The procedures for ensuring that required revisions to delivered documents are incorporated and that these revisions are duly noted and appropriate actions taken to revise programmatic elements that may be impacted by the document change(s);
 - (4) The procedures for document filing and retrieval; and
 - (5) The procedures for archival of documentation.
- f. The Configuration Management Plan (CMP) must provide DND with the Contractor configuration management policy and the methods that the Contractor intends to use to implement configuration control. The plan will document the processes to be used for identifying product items, controlling and implementing changes, and recording and reporting change implementation. The PMP must contain a Configuration Management Plan (CMP). The CMP may be prepared in Contractor format, but must address the contents of Part 5.1 of D-01-002-007/SG-001 – "DND Standard – Requirements for the Preparation of Configuration Management Plans". The CMP must define the configuration management policies and procedures used the Contractor during the acquisition phase and during the In-Service Support phase. The CMP must also discuss the control of technical and management interfaces, both between the Contractor and Canada and, when appropriate, the Contractor and sub-contractors involved in the project. In this section, the Contractor must also describe in detail its internal process for the management, control and approval of Engineering Change Proposals (ECPs) and Materiel Change Notices (MCNs). The CMP must be updated and maintained as part of the In-Service Support phase.
- (1) Format The Configuration Management Plan (CMP) must be prepared in accordance with paragraph 5.2 of D-01-002-007/SG-001.
 - (2) Content. The CMP must also include the following:
 - (a) Introduction;
 - (b) Organization;
 - (c) Configuration Management Procedures;
 - (d) Technical Reviews;
 - (e) Interface Management;
 - (f) CM Transition Plan; and
 - (g) Tools, Techniques and Methodologies.
 - (3) Paragraph 5.2.6.1.5 of D-01-0-2-007/SG-001 must refer to the Contractor's choice and definition of computer software entities rather than CSCs and CSUs.
 - (4) Section 7 is an additional section not contained in D-01-002-007/SG-001. This section must identify, state the purpose, and describe the use of the specific software tools, techniques, and methodologies to be employed to support configuration management. This must include the tools, techniques, and

- methodologies used to;
- (a) Identify software media and media documentation;
 - (b) Bring documentation and media under CM control and formally release it; and
 - (c) Document the status of changes made to CIs and associated documentation.
- (5) Configuration Control. This paragraph must describe the process by which problems and changes are submitted, reviewed and subsequently approved or disapproved. The process description must include the following:
- (d) Contractor's configuration control organisation, authorities and activities;
 - (e) procedures for preparation and processing of ECPs and submittal to the Contractor's configuration control board; and
 - (f) format, processing and submittal of requests for Deviation and Waiver in accordance with D-02-006-008/SG-001.
- (6) Configuration Status Accounting (CSA). This paragraph must describe the Contractor's method for performing configuration status accounting, and for reporting configuration status to Canada. The Contractor's CSA system must be established during the ASR/SSR acquisition phase, but must also be designed for continued use throughout the in-service support phase. The CSA system must perform the functions detailed in Section 5.1.6.3 of D-01-002-007/SG-001 - "DND Standard - Requirements for the Preparation of Configuration Management Plan.
- (7) Physical Configuration/Installation Audits. This paragraph must discuss the planned activities and processes with respect to measures that apply to CM, especially addressing the following:
- (a) verification and reconciliation of deliverable hardware/software to its approved documentation;
 - (b) process to ensure the proper incorporation of approved changes;
 - (c) reconciliation of the status of the hardware/software, descriptive documentation, and program materials with the approved baseline(s) and its approved changes; and
 - (d) description of how the Contractor plans to conduct/support the Physical Configuration/Installation Audit including a description of the audits.
- (8) Subcontractor/Vendor CM Control. The paragraph must describe the Contractor's planned methods and processes for monitoring and controlling subcontractor and vendor CM practices. The methods used to determine their capability and to monitor their ability to support the requirements of configuration management must be explained.
- g. Data Management. The Data Management (DM) must address all facets of the generation and preparation of contractual, management, financial, administrative, technical data and logistics. In the DM section of the plan, the Contractor must discuss its methods and procedures to address the following, as a minimum:
- (a) data duplication control;
 - (b) data quality control;
 - (c) acquisition, administration and verification of administration of subcontractor/vendor data;
 - (d) identification and handling of proprietary rights-in-data;
 - (e) maintenance and control of Contractor-developed information and the Government Furnished Ressources (GFRs);
 - (f) handling of sensitive information; and
 - (g) planning, scheduling and delivery of data to Canada.
 - (h) collecting, preparing, publishing and delivery of the data (i.e., management, administrative, technical, and financial data) as designated in Appendix 1, Contract Data Requirements List (CDRL) .
- h. Quality Assurance (QA). The PMP must include a section on QA to describe the Contractor's QA processes and organisation. This section must include as a minimum, a description of the Contractor's established QA procedures, how its QA procedures will be extended to the subcontractors/vendors, the amount of visibility that will be provided to Canada on QA matters, and how the Contractor's QA process will be adapted to requirements especially in the areas of qualification, testing and acceptance of system, sub-systems and Configuration Items (CIs).

- (a) Format. Contractor's format is acceptable.
- (b) Content. The Quality Assurance Reliability Program Reviews are to be prepared in accordance with MILSTD 785B task 103. All pertinent aspects of the reliability program must be discussed and documented at the following reviews, when applicable.
- i. Progress Review Meetings;
 - ii. Preliminary Design Review;
 - iii. Critical Design Review;
 - iv. Site Design Review; and
 - v. Test Readiness Review.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Agendas		PM-002
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
An agenda is promulgated for all TCR Project related Meetings, Reviews, Audits and provides an outline of items for discussion.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL-A002 and SOW paragraphs 2.6.2, 2.7.1, 2.7.2, 2.7.3, 3.3.2.2, 3.7.1, 3.7.5.1, 5.12.2.2, 5.12.3.2, 5.12.4.3, 5.12.6.3 and 6.3.4 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1. <u>Generic Format and Content.</u> The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. <u>Specific Content.</u> The content of each agenda must be prepared in Contractor format and contain, as a minimum, the following:</p> <ul style="list-style-type: none"> a. Purpose of the meeting, including meeting aim; b. Time, date, location and expected duration of review, meeting or conference; c. A list of Contractor and Subcontractor attendees; d. A list of Canada's attendees; e. The name and phone number of meeting coordinator; f. The following agenda items: <ul style="list-style-type: none"> (1) Item 1 - Review of the minutes and all open action items of the previous meeting; and (2) Item 2 - review of progress by the Contractor or sub-contractor, if applicable. This item would include a brief description of progress on actions or problems, if any, identified at the last review. 		

- f. An itemized list of Contractor's and Subcontractor's originated items to be addressed including for each item:
- (1) The name, position and telephone number of the Contractor's or Subcontractor's representative responsible for sponsoring the item;
 - (2) The objectives to be achieved;
 - (3) A brief background of the subject;
 - (4) A list of the relevant documents, if applicable;
 - (5) where applicable, expected impact on the project in terms of cost, schedule and Canada's activities.

10.3. The following information must be submitted for each meeting, review, audit and conference, if applicable:


- a. Facilities to be provided for accommodating participating Government of Canada personnel such as office space, and intra-facility transportation; and
- b. Other pertinent information (such as visit clearances, security arrangements or any other relevant information that would assist Government of Canada personnel).

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Minutes		PM-003
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
The purpose of Meeting Minutes is to document Contractor / PMO TCR Project decisions and agreements reached during various meetings, formal reviews, inspections or audits. The Meeting Minutes must be a summary / reference document only and must not convey executive authority to enact decisions made at the meeting. DND will have the final approval authority for all agendas and minutes of meetings and reviews.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL-A003 and SOW paragraphs 2.6.2, 2.6.3, 2.7.1, 2.7.2, 2.7.3, 3.3.2.2, 3.7.1, 3.7.5.1, 5.12.2.2, 5.12.3.2, 5.12.3.5, 5.12.4.3, 5.12.6.3 and 6.3.4 refer. This DID contains the format and content preparation instructions for the data generated under the work tasks described in the TCR SOW.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. Specific Content. Minutes of each meeting must be prepared in Contractor format and must include, as a minimum, the following:</p> <ul style="list-style-type: none"> a. Title, date and type of meeting; b. Place of meeting; c. The purpose and objective of the meetings; d. Identification of system/equipment, training courses, contract number, etc as applicable; e. List of attendees (and chair person) by name, title, organization, activity represented, phone numbers, e-mail addresses, as appropriate; and f. A summary of the discussions, decisions, agreements reached and directions of the meeting; g. Space for signatures of the designated representatives of the Contractor and PMO TCR Project. 		

10.3. Action item sheets. Each action item must be implemented. Format of the action item sheets must be the responsibility the meeting chairperson. Action items that are not closed (not complete or requiring more time for completion) from previous meetings must NOT be deleted from the action items list. The item action list must reflect ALL open (not complete) action items. The Contractor must also maintain a database of ALL open and closed action items. The format for this database of action items is to be mutually agreed upon by the Contractor and DND PM, but must contain as a minimum the following: Description, date opened, organization and person(s) responsible, action taken and date closed.


10.4. Note. The following note must be added to all meeting minutes:

- a. The following minutes reflect the topics discussed during the meeting referred to above and will be used by the parties for guidance, direction or information as appropriate. These minutes are not to be construed as changing the scope of work or the obligations of the parties under contract or as authorizing a change to the contract. Changes can only be introduced into the contract with the approval of PWGSC CA.

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Progress Review Meeting (PRM) Presentation Package		PM-004	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The PRM Presentation Package must provide details of the Contractor's presentation and material presented at a given progress review meeting.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-A004 and SOW paragraphs 2.5.1, 2.7.2, 2.7.2.2, 2.7.3, 3.3.2.2, 3.3.2.6, 5.12.2.1, 5.12.3.1 and 5.12.3.5 refer. This DID must be used also for the Final Project Review (FPR) presentation package.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
<p>10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. Specific Content. The PRM Presentation Package must be prepared and delivered in Contractor format. An electronic copy of the presentation and presentation material must be delivered in MS PowerPoint 2000.</p> <p>10.2.1. The Contractor must use Earned Value analysis techniques to report on project performance as part of the PRM.</p> <p>10.2.2. The Progress Report must include the following information (as a minimum):</p> <ul style="list-style-type: none"> a. an executive summary which covers significant elements of the report; 			

- b. the Master Project Schedule with progress up to the last day of the reporting period, including the critical path and details of long-lead items;
- c. progress towards milestones and critical path analysis;
- d. narrative detailing progress against milestones, expected date of completion of near milestones, problem areas and work-around plans where required;
- e. risk assessment and risk mitigation strategy, including identification/update of medium and high risk items;
- f. progress on issues (PM, SE, ILS, T&E, etc.) from previous project reviews;
- g. update of progress for major subcontracts;

- h. production status against each major deliverable, the time phase of significant stages of production and the time phase of testing, verification, demonstration and acceptance activities requiring Canada's participation or surveillance;
- i. status report on Data Deliverable Items (DIDs) as called up in the Contract Data Requirements List (CDRL);
- j. status of Engineering Change Proposals (ECPs), Deviation and Waiver requests where applicable;
- k. project financial status review and update where applicable;
- l. cost and schedule issues;
- m. review of completed items, open action items, current action items and forecasted items;
- n. action items outstanding by Canada;
- o. planned activities for next reporting period;
- p. scheduled tasks, their status and manpower assignment to these tasks;
- q. 180 day outlook;
- r. other areas of concern, interest or importance such as; and
- s. arrangements for the next meeting.

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Hot Line Reports / Discrepancy Reports		PM-005	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
Hotline report must provide early warning of issues, new risk or problem, which will affect project schedule or objectives and which may have serious impact on the progress of the Contract.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-A005 and SOW paragraphs 2.5.2 and 3.3.2.5 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10., except where stated otherwise below.

10.2. The Hot Line Report may be in Contractor's format.

10.2.1. General. The Hot Line Report must be provided immediately, no later than two (2) working days upon the occurrence of any of the following circumstances or situations:

- a. identification of a significant technical (including Integrated Logistics Support) or quality problem;
- b. anticipation of a significant schedule slippage;
- c. accidents involving the equipment to be delivered or Government Furnished Resources (GFRs); and
- d. incidents that could have jeopardized the health of Canada's personnel or could have caused loss or damage to Canada's assets.

10.3. Specific Content. The Contractor must prepare the Hot Line Report in Contractor format. The Hot Line Report must contain the following (as a minimum):

- a. the report number (serialized Hot Line Report number starting at 1);
- b. occurrence details of the issue (date, time, etc.);
- c. identification and a brief description of the problem or risk being reported;
- d. impact on the project and items in question;
- e. project cost and schedule impact;
- f. proposed corrective action being taken to rectify the incident;
- g. risk assessment and mitigation plan. (The final Risk Mitigation worksheet be submitted no later than 2 working days after the Hot Line Report and must follow the format/process identified in DID PM001).
- h. any additional significant information.

10.4. Records of preceding discussions. Hot Line Reports must reference any preceding telephone call(s)/discussion(s) regarding the problem/risk with Canada.

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

ATTACHMENT 1

TO

DID PM 005 – Hot Line Reports / Discrepancy Reports

EXAMPLE OF A RISK MITIGATION WORKSHEET

DRAFT

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

Risk Mitigation Worksheet

Risk ID#: _____

Risk Title: _____ Team Leader: _____ Date: _____

Risk:

Include a short description of the risk. Contractor should indicate in risk analysis box whether the risk is considered technical, schedule or cost risk and use the probability and consequence scale to determine if the risk is Low (green blocks), Medium (yellow blocks) or High (red blocks). On the probability scale, a rating of one indicates a low probability of occurrence and a rating of five indicates a very high probability of occurrence. On the consequence scale, a rating of one indicates a low impact on the project while a rating of five indicates a potential very serious consequence to the project.

Cause:

Include a brief description of the ROOT cause of this risk.

Impact:

Describe briefly how this situation could impact the project.

Risk Analysis:


☐ Technical

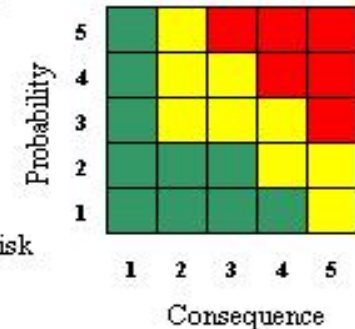
☐ Schedule

☐ Cost

 Low risk


 Medium risk

 High risk



Risk Mitigation Plan

Action/Event	Completion Date		Success Criteria	Projected Risk Level	Comments
	Scheduled	Actual			
1. Describe the action or event required in order to mitigate or manage the above risk.			Indicate how you will assess if your mitigation plan is a success. Criteria shall be verifiable.	Expected risk level after mitigation	Include comments as required.
2. List as many as required.					

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Initial Project Review (IPR) Meeting Package		PM-006	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The IPR Meeting Package must provide details of the Contractor's presentation and material presented at a given project review meeting.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-A006 and SOW paragraphs 2.7.1 and 2.7.1.2 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.

10.2. The IPR Meeting Package must be prepared and delivered in Contractor format. An electronic copy of the presentation material must be delivered in MS PowerPoint 2000.

10.3. Specific Content. Presentation material for each meeting/review/audit may be prepared in Contractor format and must include, as a minimum, the following:

- a. the title and type of meeting;
- b. the location, date, and estimated duration;
- c. the objective(s) of the meeting;
- d. a listing of each major topics or subtopics to be discussed during the meeting and time scheduled for each topic;
- e. a detailed description of meeting topics and subtopics; and
- f. other pertinent information to the meeting/review objective.

10.3.1. Project Review Meeting. The Initial Project Review (IPR) Meeting must cover all applicable topics as detailed in DID PM-004.

10.3.2. System Requirements Review. The IPR must also include a System Requirements Review (SRR) (guidance is available in Appendix A, MIL-STD-1521B). The detailed review of the TCR System requirements must also cover as follows:

- a. electrical design;
- b. mechanical design;
- c. civil design (foundation, grading, etc);
- d. environmental controls and thermal design;
- e. electromagnetic compatibility;
- f. power consumption and generation, lightning protection, bonding and grounding design;
- g. internal/external interfaces characteristics;
- h. electrical and mechanical interface compatibility;
- i. system safety and security engineering;
- j. human factors design;
- k. packaging and handling;
- l. standardization and interchangeability (equipment, parts, interfaces, etc.)
- m. support equipment requirements;
- n. reliability, Maintainability and Availability;
- o. natural environment;
- p. equipment layout (RTOC, garrison, deployment); and
 - (1) any other significant items, such as:
 - (2) life cycle costs analysis;
 - (3) detail information on all firmware/software to be provided with the system;
 - (4) software operation and support manuals;
 - (5) technical manuals;
 - (6) corrosion prevention/control considerations;
 - (7) quality assurance program (ex: findings and status);
 - (8) mass properties (volume, size, etc);
 - (9) maintenance and maintenance data;
 - (10) certifications, approvals, licenses, etc;
 - (11) design analysis, mock-ups, trade-offs; and

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

(12) preliminary list of materials, parts and processes.

q. any other other pertinent information to the design review objective.

10.3.3. Design Services Requirements. The IPR must also include a detailed review of Annex A, Appendix 25 – Design Service Requirement(Infrastructure) , Attachment B to Annex A, Appendix 25 – Statement of Operational Requirements (Infrastructure) and Attachment E to Appendix 25 –DND Documentation and Submission Standards.

	National Defence Défense Nationale	Back to the DID List
--	--	--------------------------------------

DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES

1. TITLE – TITRE	2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Master Project Schedule (MPS)	PM-007

3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET

The Master Project Schedule is to show all project activities from Contract signing through to final acceptance and hand over. The Master Schedule is updated regularly to provide the DND TA or a designated representative with visibility of Project accomplishment to date at a summary level which is indicative of overall Project performance and which provides more detail than the Executive Summary Schedule. The Master Schedule is an overview of the entire Project scope and its status at given points in time.

4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	

7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE

CDRL-A007 and SOW paragraphs 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.3.5, 2.3.6, 2.4.2, 2.4.3, 2.7.1, 2.7.2.1 and 3.3.2 refer.

8. ORIGINATOR - AUTEUR	9. APPLICABLE FORMS - FORMULES PERTINENTES
PM	

10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES

10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.

10.2. General. The Master Schedule must depict the entire scope of the project, including milestones, major events and major deliverables. For each task to be performed, the Contractor must provide a clear and concise definition of the task and by whom it is to be performed. The charts must be based on a planned sequence of events with the time estimates for all events precisely calculated. The Contractor must update the Schedule on a monthly basis and provide soft copies to DND TA and PWGSC CA at PRMs or whenever the Master Project Schedule has been changed.


10.3. Specific Format Requirements. The Master Schedule must be presented in Bar (Gantt) chart format. It must

clearly indicate actual progress against a baseline. The Contractor may utilize symbology of choice. A legend depicting the meaning of all symbols must be included on all schedules submitted. Upon approval, the symbols must not be revised unless agreed by the DND TA or a designated representative. The format of the PMS must be in MS Project for use on DND systems.

10.4. Specific Content Requirements. The Master Schedule must depict all project Work including milestones, major events and major deliverables of the project. The schedule must have the following features:

- a. The Contractor must baseline the schedule upon approval and henceforth clearly indicate actual progress against the baseline. The baseline must not be revised without the written consent of the DND TA or a designated representative;
- b. The Master Schedule must clearly show a "Time Now" line, which illustrates the point in time at which the schedule status pertains;
- c. The schedule must include all progress review meetings, design review meetings, Contractor demonstrations, in-plant tests, on-site tests and inspections, deliverable preparation time frames, installation activities and acceptance and hand over meetings;
- d. The requirements for delivery or preparation of Government Furnished Material, including equipment and facilities, must be clearly indicated by the Contractor; and
- e. The Master Schedule must clearly show the document title, date produced and version number as applicable.

10.5. Soft Copy. A copy of the Master Project Schedule database must be provided to the DND TA and PWGSC CA at PRMs, upon request and whenever the PMS is updated/changed.

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Request for Waivers and Deviations		SE-001	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
<p>Deviations must be used to obtain a specific written authorization to depart from a particular performance or design requirement specified in the Contract.</p>			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
<p>CDRL-B001 and SOW paragraphs 2.9.2 and 2.9.3 refer. MILSTD 973 Configuration Management, Sections 5.4.3 and 5.4.4.</p>			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM System Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
<p>10.1. Generic Format and Content. The format and content instructions as detailed in Data Item Descriptions (DIDs) – General Information, paragraph 10 does not apply to this deliverable.</p> <p>10.2. Guidance. Guidance for the preparation of this deliverable is available in MIL-STD-973, Configuration Management, section 5.4.3 and 5.4.4. The Contractor must utilize DND Form 675 “Request for Waiver or Deviation”, available upon request from the DND PM.</p>			

		National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
System Engineering Management Plan (SEMP)		SE-002	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The purpose of the SEMP is to describe the Contractor's plan for the conduct and management of the fully integrated engineering effort necessary to satisfy the general requirements of the project schedule and Statement of Work.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
7.1 This DID contains the format and content preparation instructions for the SEMP. 7.2 This document is to be submitted on electronic media (only CD, DVD or E-mail) in a format, which is compatible with the latest Microsoft Office Suite (Word) running under Windows. 7.3 The SEMP must not conflict with other management plans. 7.4 CDRL-B002 and SOW paragraphs 5.2, 5.2.1, 5.3.3 and 5.12.6.4 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM System Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.			
10.2 Guidance. Guidance for the preparation of this deliverable is available in the following documents: <ul style="list-style-type: none"> a. Institute of Electrical and Electronic Engineers (IEEE) standards IEEE STD 1220-2005 : Application and Management of the Systems Engineering Process. b. Electrical Industries Alliance (EIA) standards EIA-632 : Processes for Engineering a System; and c. Electrical Industries Alliance (EIA) standards EIA 731-1 Systems Engineering Capability Model (SECM). 			
10.3 Specific Content and format instructions. Production of this document using automated techniques is encouraged. Best commercial practices are to be used for charts, tables, matrices, page numbering and document control numbering. Specific content and format instructions for this document are specified below. The SEMP must consist of the following (as a minimum):			

- a. Title page;
- b. Table of contents;
- c. Document Control Log;
- d. Revision Record;
- e. Purpose;
- f. References;
- g. Guidance;
- h. Specific Content;
- i. System Engineering;
- j. Technical Project Planning and Control;
- k. Engineering Project Integration;
- l. Assignment of Responsibility and Authority;
- m. Design Reviews;
- n. Plan for other Technical Program Tasks;
- o. Technical Engineering Management Tools;
- p. Engineering Specialty Integration;
- q. System Engineering Program; and
- r. Appendices.

10.4 Specific Sub-sections. The SEMP must contain sufficient detail to establish the Contractor's processes. This plan must be divided into three parts:

- a. System Engineering;
- b. Technical Project Planning and Control; and
- c. Engineering Specialty Integration.

10.4.1 System Engineering. This part of the SEMP must describe Contractor's system engineering processes, as it will be applied to the definition of system design and test requirements during the contractual effort. It must explain how the process fulfils the general requirements of this contract. A narrative must be included, supplemented by graphical presentations, if applicable, describing the Contractor's processes and procedures for the following elements of the system engineering process:


- a. baselines;
- b. requirements traceability;
- c. trade studies methodology;
- d. design optimisation/effectiveness analysis;
- e. technical interface compatibility;
- f. system integration and verification; and
- g. other System Engineering Tasks.

This section and succeeding ones, must describe the Contractor's plans and procedures for all system engineering tasks to be performed by the Contractor. When these are covered by other data item descriptions identified by the Contract Data Requirements List (CDRL), use cross-reference rather than duplicate. However, the relationship of the proposed task with other elements of the system engineering process must be denoted.

10.4.2 Technical Project Planning and Control. This part of the SEMP must describe the Contractor's process for the planning and control of his engineering efforts for the design, development, test, production, verification and evaluation functions and the application of this effort to the particular contractual requirements.

10.4.2.1 Engineering Project Integration. This section must describe the Contractor's technical project planning and control functions for assuring the conduct of a totally integrated engineering effort.

- 10.4.2.2 Assignment of Responsibility and Authority.** This section must identify the organisation(s) and key personnel and provide clear definition of their responsibilities. Existing procedures establishing the authority, lines of communication and specific functions of these and other organisations associated with engineering policies and their implementation must be referenced and/or attached.
- 10.4.2.3 Design Reviews.** This section must set forth the Contractor's proposed schedule and content for all design reviews/audits required as part of the Statement of Work.
- 10.4.2.4 Plan for Other Technical Program Tasks.** This and succeeding sections of this part of the SEMP must describe the Contractor's plans and procedures for other technical project planning and control tasks.
- 10.4.2.5 Technical Engineering Management Tools.** This section must describe/identify specific tools, methods and procedures to be utilized. Examples must be provided to illustrate the use of such methods. The Contractor must describe how he intends to assure consistency between various modelling efforts and models themselves.
- 10.4.3 Engineering Specialty Integration.** Engineering specialty programs must be included in accordance with applicable standards and contractual requirements. This section of the SEMP must describe in detail the methods by which the Contractor will integrate these efforts. This section must also include a summary of each specialty program and cross-reference the individual plans covering such specialty programs. In those cases where the CDRL does not require individual specialty program plans, such plans may be included in this section as SEMP sub-plans. Such specialty programs include as a minimum: Human Factor Engineering, RMA, Safety engineering, Security engineering and testing.
- 10.4.3.1 System Engineering Program.** The SEMP must outline the Contractor's plans for addressing all systems engineering issues in concert with the project. Canada- unique Support Equipment as well as all project interrelationships and differences must be described.
- 10.4.4 Appendices.** Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts, graphical data). As applicable, each appendix must be referenced in the main body of the document where the data would normally have been provided. Appendices may be bound as separate documents for ease in handling.

		National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
System Design Document (SDD)		SE-003	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
<p>The purpose of the SDD is to describe the design of the system/sub-systems and their operational/support environment. The SDD contains the highest-level design information for the system and sub-systems. The SDD describes the allocation of system requirements to sub-systems and Configuration Items (CIs).</p> <p>The SDD describes the characteristics of each hardware/software CI.</p>			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
<p>This DID relates to the following:</p> <ul style="list-style-type: none"> a. CDRL-B003, System Design Document (SDD); b. CDRL-B004, Product Specifications (PS); c. CDRL-B005, Interface Control Document (ICD); d. CDRL-D002, Requirements Verification Matrix (RVM); and e. SOW paragraphs 5.4.2, 5.5, 5.5.1 and 5.7.1 refer. 			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM System Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

- 10.1 Generic Format and Content.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2** The System Design Document (SDD) may be in Contractor format but must follow generally accepted specification practices. The package may be a single document or a compilation of documents provided that the data accurately reflects the final delivered configuration of the complete TCR system.
- 10.3 Specific Content.** Specific content instructions for this document are specified below.
- 10.3.1 System Architecture and Design.** This section must identify and describe the entire structure of the system. The sub-systems/CIs must be identified and their purpose described. The relationships among the different sub-systems and among the CIs within each sub-system must be described. This section must also identify and state the purpose of each external interface and major internal interfaces of the system. Internal interfaces should only be described generally as the details must be located in the Interface Control Document (ICD). A system architecture diagram must be used to illustrate the top-level architecture of system. Design constraints must be clearly identified.
- 10.3.2 Internal Interfaces.** This section must describe the Internal Interfaces:
- CI-to-CI.** This subsection must identify and generally describe, the interface(s) between each CI within individual sub-systems, as applicable. Information such as signals and data transmitted between the CIs, the CI transmitting the signal/data and the CI receiving the signal/data must be included.
 - Sub-system-to-Sub-system.** This subsection must identify and generally describe, the interface(s) between each sub-system, as applicable. Information such as signals and data transmitted between the sub-systems, the sub-system transmitting the signal/data and the sub-system receiving the signal/data must be included.
- 10.3.3 System Capacity/Capability.** This section must identify and describe at the high level all sub-system and CI capabilities/characteristics affecting or ensuring the operational efficiency in the Product Specification (DI-ENG-004). These must include but not be limited to:
- performance;
 - integrity;
 - Reliability, Maintainability, Availability (RMA);
 - modularity;
 - expandability;
 - flexibility;
 - safety;
 - supportability;
 - security; and
 - power consumption.
- 10.3.4 Support Environment.** This section must describe the support environment for the operational system/sub-systems/CIs during its life cycle.
- 10.3.5 Support Concept.** This section must describe the support concept. The following information must be

included as a minimum:

- a. use of multipurpose or automated test equipment;
- b. repair versus replacement criteria;
- c. DND and Contractor levels of maintenance;
- d. maintenance and repair cycles;
- e. PMO and Contractor support;
- f. accessibility;
- g. maintainability; and
- h. other.

10.3.6 Support Facilities. This section must describe the system support facilities and equipment to be used during the system life cycle as applicable. A quantitative description of new or modified facilities and equipment must be provided in sufficient detail to permit planning for construction or procurement as required.

10.3.7 Requirements Traceability. This section must provide traceability of the requirements allocated to the sub-systems and CIs back to the requirements of the SOW (functional baseline). The requirements traceability matrix must be created using a commercially available software product that is mutually agreed upon by the DND TA or a designated representative and the Contractor.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Product Specifications (PS)		SE-004
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
3.1 The purpose of PS is to describe the configuration items (hardware and software) to be delivered under the terms of the Contract.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
This DID relates to the following: <ul style="list-style-type: none">a. CDRL-B003, System Design Document (SDD);b. CDRL-B004, Product Specifications (PS);c. CDRL-B005, Interface Control Document (ICD); andd. SOW paragraphs 5.4.2, 5.6, 5.6.1 and 5.12.3.4 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM System Engineer		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.		
10.2. Specific Format Instructions.		
10.2.1. Best commercial practices are to be used for charts, table matrices, page numbering and document control numbering. Specific content and format instructions for this document are specified below. The PS must consist of the following (as a minimum): <ul style="list-style-type: none">a. Title Page;b. Table of Contents;c. Document Control Number;d. Revision Record;		

- e. Purpose;
- f. References;
- g. Introduction;
- h. Applicable Documents;
- i. Equipment Definitions;
- j. Physical Characteristics;
- k. Installation Information;
- l. Environmental Conditions;
- m. Internal and External Interfaces;
- n. Reliability and Maintainability Information;
- o. Software;
- p. Production Drawings and Standards of Manufacture;
- q. Product Design Standards and Safety;
- r. Quality Assurance Provisions;
- s. Special Tests and Examination;
- t. Packaging Information;
- u. Notes; and
- v. Appendices.

10.2.2. Specific Contents Requirements. The PS must contain as a minimum the following information, as applicable to the Configuration Item (CI) being described:

- a. Introduction. An overview of the purpose and content of the specification must be provided;
- b. Applicable Documents. This section must contain a list of documents referenced in the specification. It must include titles, dates, numbers and revisions;
- c. Equipment Definition. A description of the CI must be provided to identify:
 - (1) the major components of the item;
 - (2) the manufacturer of each major component; and
 - (3) any components to be specially manufactured non Commercial-Off-The-Shelf (COTS).
- d. Physical Characteristics. The following information must be provided for each CI. Drawings and/or digital pictures may be used:
 - (1) physical configuration: size, weight, shelter floor loading and power requirements as applicable;
 - (2) exterior surface: material, colour and finish;
 - (3) name plate and other distinctive markings (such as a manufacturer's logo), the location of the plate and information contained on the plate;
- e. Technical Specification Data: the following information must be provided as applicable:
 - (1) technical features;
 - (2) performance data and characteristics;
 - (3) options and standard features available which enhance performance and expandability, e.g. spare card slots, etc;
 - (4) options included in the current configuration as delivered;
 - (5) human interface; and
 - (6) source control drawing for components (where applicable).
- f. Installation information. A summary of relevant installation information must be provided:

- (1) power and cooling specifications/requirements;
- (2) provisions for mounting the equipment (e.g. example floor, rack or table top mounting, etc); and
- (3) significant limitations in setting up equipment (e.g., limits on cable length between monitor and computer).

g. Environmental Conditions. The following information must be provided:

- (1) operating conditions; and
- (2) storage conditions.

h. Internal and External Communication Interfaces. The following information must be provided where applicable:

- (1) standard(s) and protocols;
- (2) communication products, data rates;
- (3) types of connectors; and
- (4) other pertinent data.

i. Reliability and Maintainability Information. The following information must be provided:

- (1) mean time between failure data for each major component/CI;
- (2) built-in test and/or internal diagnostics capability; and
- (3) other applicable information.

j. Software (where applicable). The following information must be provided:

- (1) Operating System (OS) options;
- (2) OS to be supplied; and
- (3) languages supported.

k. Production Drawings and Standards of Manufacture. The following information must be provided:

- (1) top-level assembly drawing(s), parts list, etc; and
- (2) drawing, manufacturing and workmanship standards.

l. Product Design Standards and Safety. The following information must be provided:

- (1) electromagnetic compatibility (emissions and immunity);
- (2) acoustic noise (test standard, etc);
- (3) ergonomics (standards of design), controls and their location; and
- (4) safety features (identify whether product meets safety standards, e.g., Canadian Standard Association (CSA) or Underwriters Laboratory (UL) approved).

m. Quality Assurance Provisions. Describe any unique quality assurance provisions required to be specified to assure the product meets the contractual requirements;

n. Special Tests and Examination. Describe any unique tests that the manufacturer has introduced to meet requirements laid down by the Contractor. Detailed test procedures are not required;

o. Packaging Information. The following information must be provided:

- (1) packaging;
- (2) labelling including contents (i.e., manuals, cables, parts list, etc);
- (3) handling weight and volume, restrictions related to shipping, storage and/or stacking; and
- (4) other delivery/transportation requirements (e.g. reuse of shipping).

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

10.2.3. Notes. “Notes” must be the last section in the main body of the document and must contain any general information that aids in the understanding of the document (e.g. background information and glossary). “Notes” must also include an alphabetical listing of all acronyms, abbreviations and meanings as used in this document.

10.2.4. Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g. charts and graphical data). As applicable, each appendix must be referenced in the main body of the document where the data would normally have been provided. Appendices may be bound as separate documents for ease of handling.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Interface Control Document		SE-005
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
<p>The ICD is used to:</p> <ul style="list-style-type: none">a. Define the interface requirements between two systems/organizations and to provide a common data reference;b. Control the interfaces (internal and external) between two systems and to provide a common data reference; andc. Specify application service element (i.e., application protocol) by detailing both a service definition and a protocol specification for the output status port. <p>The ICD must include descriptions of the applicable functions and requirements in sufficient detail to present a clear understanding of what is to be accomplished. They must prescribe the best available interface (internal and external) design that can be evolved from analysis of the requirements of the interfacing entities and any constraints or limitations imposed by the external organisation or state-of-the-art considerations.</p>		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
<p>This DID relates to the following:</p> <ul style="list-style-type: none">a. CDRL-B003, System Design Document (SDD);b. CDRL-B004, Product Specifications (PS);c. CDRL-B005, Interface Control Document (ICD); andd. SOW paragraphs 5.4.2, 5.7.1, 5.7.2, 5.12.2.4, 7.2.4.16.3, 7.4.5 and 7.5.1.1.5 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM System Engineer		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated		

otherwise below.

10.2 Specific Content. The Interface Control Document (ICD) must detail the Interface Requirements, Interface Control and Protocol Designs as outlined herein.

10.2.1 Interface Requirements.

10.2.1.1 Definitions. Definitions of the systems involved and the system functions supported by or involved with the interface must be provided. Instances of the interface and any variations in configuration must be included.

10.2.1.2 Data Flows. The interrelationships of the functions related to the interface must be defined. The data flows between the systems for each function must be defined in terms of constituent data elements, conditions under which a data flow is initiated and relationships/dependencies between data flows. Data flow diagrams and/or time sequence diagrams must be used for ease of understanding.

- a. Performance and Security. Performance requirements either specifically defined for the interface or derived from the system requirements must be defined in terms of response time, throughput, availability and allowable error rates. Security requirements in terms of threats to be countered must be defined. Transition requirements related to the replacement of an existing interface must be stated. Changes in interface implementation resulting from any implementation phasing of either system must also be addressed.
- b. Interface Management. The interface management requirements in terms of fault management (e.g. error detection, reporting and recovery), configuration management and performance management must be defined.
- c. Constraints. A definition of the technical requirements of the interface must be provided in terms of technical constraints only, to ensure compatibility to an existing implementation or limit choices to a set of supported standards. Examples include constraints related to the encoding of data, communication media, protocol standards and type of telecommunication facilities, type of connectors, security mechanisms and physical size.
- d. Qualification. The qualification requirements for the specified interface must be defined. This paragraph may reference a requirement cross-reference matrix such as the Requirement Verification Matrix (RVM).

10.2.2 Interface Control.

- a. Overview using Block Diagrams. The ICD must describe the interface through an overview of the major functions to be supported by the interface and with block diagrams depicting the interrelationships between the applications/systems and equipment being interfaced.
- b. Relationships and Tolerances. The ICD must indicate in quantitative terms with tolerances, the mechanical and functional relationship of the interfacing configuration items to the level of detail necessary to permit detail design.
- c. Functional Interfaces. Functional interfaces must be specified through input/output requirements at the

interface. These functional interfaces must describe in greater detail the functional relationships that are specified as requirements in the corresponding Interface Requirement Section of this DID. This document must incorporate either directly or by reference, interface drawing and/or engineering documentation necessary to specify the mechanical and functional interfaces of the interfacing Configuration Items (CIs) and sub-systems as applicable.

- d. Interface Control Drawings. Where interface requirements lend themselves to drawing presentation, they must be presented as Interface Control Drawings. The Interface Control Drawings must be compatible with the applicable CI's specifications, which specify the performance and design requirements peculiar to the interface design, development, test and qualification. The ICD must record the detail design agreements of equipment including the required allocated performance. The defined interfaces must include but not be limited to the following areas: functional, performance, physical, electrical, electronics, environmental control, displays control and system control.
- e. Data Interfaces. For interfaces involving the exchange of data (i.e., messages), the ICD must include message descriptions, a definition of addressing and naming conventions, data elements definitions, a definition of interface and message priority and a description of the technical details of the protocol(s) operating over the interface including services provided, functions provided, elements of procedure, protocol data unit descriptions and state transition information. Where more than one protocol is used to satisfy the requirements of the interface, the interrelationship and dependencies must be defined. Where the protocols to be used are layered, the mapping of the services/protocol data units of the upper layer protocol(s) to those of the lower layer protocol(s) must also be defined. Aspects of security (e.g. auditing), interface management (e.g. fault reporting) and quality of service (e.g. response time and availability objectives) not involving protocol functions must also be defined. The conditions under which data flow is initiated over the interface must be described as well as the interrelationship of flows operating over the interface. To promote readability and ease of understanding, the Contractor must maximize the use of standard syntax notation and/or tables for the definition of messages and data elements and the use of data flow and/or time sequence diagrams for depicting data exchanges and interrelationships. Additionally, state transition diagrams and/or tables must be used to support the description of the functioning of the protocol.
- f. Functional Profiles. As an alternative to a complete redefinition of protocol utilised over the interface, functional profile(s) can be used which reference the appropriate protocol design documents, service definitions and protocol specifications and detail the subset/features of the referenced protocols implemented. Functional profiles applicable to more than one interface can be referenced in an ICD but must be included in each ICD to make these standalone documents.

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Electromagnetic Environment Effects (E3) Control Plan		SE-006	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
<p>The E3Control Plan describes overall integration and implementation of E3 interface and performance requirements into system hardware and software to achieve a cost-effective system. The E3 Control Plan provides the means for the government to evaluate E3 compliance with requirements throughout the life cycle of the system.</p> <p>The E3 Control Plan will document the analyses, studies and testing to establish E3 controls and features to be implemented in the design of the system. Design techniques used to protect equipment against E3 effects must be verifiable, maintainable and effective over the rated lifecycle of the system. Design margins must be established based on system criticality, hardware tolerances and uncertainties involved in verification of system-level design requirements.</p>			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
<p>The E3 Control Plan will tell each engineer, manager, department head and sub-contractor about the work effort, emphasis and design guides that will be used to meet the system level E3 requirements.</p> <p>Related CDRLs are:</p> <ul style="list-style-type: none"> a. CDRL-B006 E3 Control Plan; b. CDRL-B022 E3 Test Plan; c. CDRL-B023 E3 Test Report; d. Appendix 16 – Instructions for Completing DND 552s Application for Frequency Supportability; e. CDRL-B024 Frequency Allocation and Emitter Data; f. CDRL-B011 EMSEC Control Plan; and g. SOW paragraph 5.9.1 			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM System Engineer			

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES

10.1 Generic Content and Format. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.

10.2 Guidance. Guidance for the preparation of this deliverable is available in MIL-STD-464C.

10.3 Specific Content. The E3 Control Plan must describe the application of the E3 requirements and translation of these requirements into the system software and hardware to achieve a cost-effective system. The E3 Control Plan provides the means for the government to evaluate E3 compliance with requirements throughout the life cycle of the system. The E3 Control Plan will document the analyses, studies and testing to establish E3 controls and features to be implemented in the design of the system. Design techniques used to protect equipment against E3 effects must be verifiable, maintainable and effective over the rated lifecycle of the system. Design margins must be established based on system criticality, hardware tolerances and uncertainties involved in verification of system-level design requirements.

10.3.1 References. The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices and revisions must be as specified in the contract.

10.3.2 Management. The E3 Control Plan must cover the specific organisational responsibilities, lines of authority and control and the implementation planning, including milestones and schedules. In addition, the detailed E3 requirements to be imposed on sub-contractors and a definition of responsibility must be indicated:

- for Contractor equipment;
- for commercial off the shelf items;
- for Government Furnished Resources (GFRs); and
- sub-contractor items.

10.3.3 Summary information. The E3 Control Plan must summarize the following (as a minimum):

- Introduction, background
- System description;
- Statement of the electromagnetic environments for the system and their impact on the item being developed; and
- Statement of any assumptions used in developing the design.
- Body. Synopsis of each of the E3 Control Plans for each of the E3 Technical areas contained in section 10.3.5 below.

10.3.4 Detailed information. The E3 Control Plan must provide specific technical descriptions for each of the following E3 technical areas in section 10.3.5 below. For each E3 requirement, the E3 Control Plan must include detailed information (as a minimum) on:

- Specific environmental requirement points: how the general environments in MIL-STD-464C are interpreted and tailored to the specific system operational scenarios;
- Specific application of margins for that requirement;
- Flow down methodology of the environment to sub-systems, including specific tailoring of MIL-STD-461 requirements;
- The E3 control philosophy (i.e. design, filtering, shielding, bonding, grounding, separation etc.) for system (i.e. TCR system, sub-system (i.e. radar system, communications shelter, etc.) and equipment (COTs equipment, MIL-STD-461 equipment etc.). Based on prediction or analysis techniques to meet the E3 equipments, the E3 Control Plan must describe the:
- Mechanical design. The control plan must show, as a result of the Contractor's design effort, the following as applicable:
- the material and construction to be used to provide the inherent attenuation of electromagnetic emissions and susceptibilities while still meeting the E3 requirements;
- type of construction, such as compartmentalising, filter mounting and isolation of other parts, type and characteristics of filtering used on feed thrus, ventilation ports, access hatches, windows, meter faces and control shafts and type of attenuation characteristics of Radio Frequency (RF) gaskets (if applicable) used on all internal and external mating surfaces;
- shielding and design practices employed for determining shielding effectiveness;

- (1) separation of sub-systems, equipment and cabling
 - (2) Electrical/electronic wiring design. The control plan must show, as a result of the Contractor's design effort, the following as applicable:
 - (3) the electrical/electronic wiring design, including shielding, filtering, cable separation and routing to minimise emission and susceptibilities;
 - (4) grounding; and
 - (5) Equipment or sub-systems must have interconnecting cabling diagrams prepared and referenced within the plan.
- i. Risk assessment and risk mitigation measures based on E3 studies and analysis etc.;
 - j. The test plan that will be used to verify that the E3 requirement will be met, such as analysis, bench tests, component-piece part tests, sub-system tests, full system tests and inspections; and,
 - k. The test report that shows that the E3 requirement was met.


10.3.5 E3 Technical Areas.

- a. Margins.
- b. Intra-system Electromagnetic Compatibility (EMC) - The system must be electromagnetically compatible within itself such that system operational performance requirements are met.
- c. External Radiofrequency (RF) Electromagnetic Environment (EME) - The system must be electromagnetically compatible with its defined external RF EME such that its system operational performance requirements are met.
- d. Lightning - The system must meet its operational performance requirements for both direct and indirect effects of lightning.
- e. Sub-systems and equipment Electromagnetic Interference (EMI) - Individual sub-systems and equipment (including where applicable: non-developmental items and commercial items) must meet interference control requirements (such as the conducted emissions, radiated emissions, conducted susceptibility and radiated susceptibility requirements of MIL-STD-461) so that the overall system complies with all applicable E3 requirements.
- f. Electrostatic charge control - The system must safely control and dissipate the build-up of electrostatic charges caused by precipitation static (p-static) effects, fluid flow, air flow, exhaust gas flow, personnel charging, charging of launch vehicles (including pre-launch conditions) and space vehicles (post deployment) and other charge generating mechanisms to avoid fuel ignition, inadvertent detonation or dudding of ordnance hazards, to protect personnel from shock hazards and to prevent performance degradation or damage to electronics.
- g. Electrostatic Discharge - All electrical and electronic devices that do not interface or control ordnance items must not be damaged by electrostatic discharges during normal installation, handling and operation. The ESD environment is defined as an 8 kV (contact discharge) or 15 kV (air discharge) electrostatic discharge. Discharging from a 150 picofarad capacitor through a 330 ohm resistor with a circuit inductance not to exceed 5 microhenry to the electrical/electronic sub-system (such as connector shell (not pin), case and handling points) in accordance with IEC 61000-4-2:2008.
- h. Electromagnetic radiation hazards (EMRADHAZ). The system design must protect personnel, fuels and ordnance from hazardous effects of electromagnetic radiation.

- i. Hazards of electromagnetic radiation to personnel (HERP) - The system must comply in accordance with Health Canada Safety Code 6 2015 and C-55-040-002/TS-002 for the protection of personnel against the effect of electromagnetic radiation.
- j. Hazards of electromagnetic radiation to fuel (HERF) - Fuels must not be inadvertently ignited by radiated EMEs.
- k. Hazards of electromagnetic radiation to ordnance (HERO) - Electrically initiated devices (EIDs) in ordnance must not be inadvertently actuated during or experience degraded performance characteristics after exposure to the EME levels generated by the TCR system, both direct RF induced actuation of the EID and inadvertent activation of an electrically powered firing circuit in accordance with C-09-153-001/TS-000.
- l. Life cycle, E3 hardness - The system operational performance and E3 requirements of this standard must be met throughout the rated life cycle of the system and must include, but not be limited to, the following: maintenance, repair, surveillance and corrosion control. Compliance must be verified by test, analysis, inspections or a combination thereof. Maintainability, accessibility and testability and the ability to detect degradations must be demonstrated.
- m. Electrical bonding - The system electrical bonding must provide electrical continuity across external mechanical interfaces on electrical and electronic equipment, both within the equipment and between the equipment and other system elements, for control of E3 such that the system operational performance requirements are met. The following direct current (DC) bonding levels must apply throughout the life of the system:
 - (1) 10 milliohms or less from the equipment enclosure (including antennas) to system structure, including the cumulative effect of all faying surface interfaces;
 - (2) 15 milliohms or less from cable shields to the equipment enclosure, including the cumulative effect of all connector and accessory interfaces; and
 - (3) 2.5 milliohms or less across individual faying interfaces within the equipment, such as between subassemblies or sections.
- n. External grounds - The system and associated sub-systems must provide external grounding provisions to control electrical current flow and static charging for protection of personnel from shock, prevention of inadvertent ignition of ordnance, fuel and flammable vapors and protection of hardware from damage.
- o. Bonding – Bonding of all electrically conductive items subject to electrical fault currents must be provided to control shock hazard voltages and allow proper operation of circuit protection devices.
- p. EMSEC - National security information must not be compromised by emanations from classified information processing equipment. EMSEC portion of the E3CP must be prepared in accordance with DID SE-011.
- q. System radiated emissions - The system must control radiated fields necessary to operate with the other co-located systems and to limit threat capability to detect and track the system commensurate with its operational requirements.
- r. Inter-system EMC - Unintentional radiated emissions from the system must not exceed -90 dBm (using a 10 kHz resolution bandwidth) when measured from the communication antennas of the installed radios in

their appropriate locations.

- s. Antenna placement compatibility – The antenna footprint for a physically confined space as currently existing at the radar site and for minimal deployment space must be optimized such that the antenna placement does not degrade its performance. The antenna footprint must incorporate the antennas listed in Section 4 of the SOW.
- t. EM spectrum supportability - Spectrum-dependent systems must comply with the Department of National Defence (DND)/Industry Canada (IC) and international spectrum regulations for the use of the electromagnetic spectrum.

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
System Security Management Plan		SE-007	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The System Security Management Plan must specify the security measures and activities required to assure the security of the TCR system and the system's compliance with the stated requirements of project's statement of work.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-B007 and SOW paragraph 5.11.1 refer. This DID addresses system security and security products.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM Security Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

10.1 Generic Content and Format. The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.


10.2 General. For the purposes of the TCR Modernization Project, security and privacy is defined as the totality of safeguards used to provide the level of protection defined in the TCR System Specification. This includes all measures designed to prevent deliberate or inadvertent unauthorised disclosure, acquisition, manipulation, modification or loss of information as well as measures designed to deny unauthorised use. It also includes technological safeguards and managerial procedures that are applied to computer hardware, programs, data and facilities to assure availability, integrity and confidentiality.

10.3 Specific Format. The Contractor must submit this document in a format acceptable to the DND PM, using MILSTD 499A as a guide. This document must contain, as a minimum, the following sections:

- a. Scope. This section must describe the purpose and scope of the document. If applicable, the portions of the system to which the document applies must be identified and a brief overview of the portion of the system must be provided. The paragraph must also describe the relationship, if any, of this document to others.
- b. Related Documents. The purpose of this section is to provide the references or bibliography for this document. The section must cite document by short or common title (if any), full title, version or release designator (if appropriate), date, publisher or source document number or other unique identifier.
- c. Applicable Documents. This paragraph must begin as follows: "The following documents are referenced herein and are directly applicable to this document."
- d. Information Documents. This paragraph must begin as follows: "The following documents, although not directly applicable, amplify or clarify the information presented in this volume and are not contractually binding."
- e. Security Activities. This section must describe the specific activities to be performed relative to security. This must include activities required to meet the mandatory security requirements in the TCR System Specification. The justification for each activity must be specified as well as the dependencies and constraints associated with each activity.
- f. Security Methods and Techniques. This section must describe the methods and techniques to be used for all security activities. This must include activities required to meet the mandatory or optional security requirements in the TCR System Specification. Justification for selection of the described methods and techniques must be provided as well as a description of the contractor's level of familiarity and previous experience with the methods and techniques. Dependencies and constraints related to the use of the selected methods and techniques must be clearly defined.
- g. Security Products. This section must describe the products of the security activities including their structure, format and purpose.
- h. Support Environment Requirements. This section must describe the requirements for the security support environment. Specific items described may include automated tools, duplicate testing items and personnel.
- i. Activity Management and Quality Assurance Procedures. This section must describe the procedures that

will be followed to ensure the quality of security products and to manage the planning and execution of security activities.

- (1) Approach and Procedures. Within this paragraph of the plan, the contractor must describe in summary form, the contractor's overall management approach and procedures, as they will apply to the security development program of the system.
- (2) Work Authorization. This paragraph must describe the work authorization process in terms of the actions required to initiate, control and terminate work initiated by the contracting agency. The paragraph must include a description of the procedures establishing the authority, lines of communication and specific functions within the security development program of the system.
- (3) Reporting, Monitoring and Revision. This paragraph must describe the format and content of all reports, which will be used as part of the security development program for the system.
- (4) Contractors. This paragraph must describe how contractors will fit into the security development program for the system.
- (5) Reviews. This paragraph must describe the Contractor's plans and methods for internal reviews as part of the security development program for the system.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Security Anomaly Report		SE-008
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
This report details all security deficiencies which have been identified in the TCR system, both corrected and uncorrected. This document may contain classified material when produced.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
<p>7.1 CDRL-B008 and SOW paragraph 5.11.2 refer.</p> <p>7.2 Applicability Level. The applicability level for this DID is system.</p> <p>7.3 Test reports associated with Security Functional Specification (DID SE-009) testing are source documents for identification of security anomalies and are required for creation of this DID.</p>		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM Security Engineer		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2 General.** This DID is a detailed log of all of the failed security tests and security flaws found in the system during its design, development and testing. It serves to provide a single source for system maintainers and certification and accreditation authorities to look for the security history and current security state of the system.
- 10.3 Classification.** This DID must be classified **SECRET CANADIAN EYES ONLY** and safeguarded accordingly.
- 10.4 Specific Format.** The Contractor must submit this document in a format acceptable to the DND PM, using MILSTD 499A as a guide. This document must contain, as a minimum, the following sections:
- a. Scope. This section must describe the purpose and scope of the document. If applicable, the portions of the system to which the document applies must be identified and a brief overview of the portion of the system must be provided. This paragraph must also describe the relationship of this document to other documents and the people involved in the work.
 - b. Related Documents. The purpose of this section is to provide the references or bibliography for this document. The section must cite documents by short or common title (if any), full title, version or release designator (if appropriate), date, publisher or source document number or other unique identifier.
 - c. Applicable Documents. This paragraph must begin as follows: "The following documents are referenced herein and are directly applicable to this document."
 - d. Information Documents. This paragraph must begin as follows: "The following documents, although not directly applicable, amplify or clarify the information presented in this volume and are not contractually binding."
 - e. New Anomalies. This section will detail all new security anomalies which were uncovered in the system. since the last revision of the Security Anomaly Report was submitted. For each security anomaly, the following historical information must be provided:
 - (1) Identification of the anomaly;
 - (2) Type of anomaly: functional test failure, potential flaw, successful penetration test, other;
 - (3) Date of discovery of the anomaly;
 - (4) User and organization responsible for discovery of the anomaly;
 - (5) Methods used or activities leading to the discovery of the anomaly;
 - (6) Potential impact of the anomaly based upon exploitability and the value of anything which could be compromised through exploiting anomaly; and
 - (7) Corrective action taken to correct the system's security behaviour; and results of retesting or other analysis of the system to ensure that the anomaly has been removed.
 - f. New Anomalies Identified in the Previous Revision. This section will detail the historical anomaly information for each anomaly which was new to the previous submission & revision of the Security Anomaly Report.
 - g. Unresolved Security Anomalies. This section will detail the historical anomaly information for each anomaly for which a corrective action and retesting has not been completed.

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.


Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

- h. Resolved Security Anomalies. This section will detail in chronological order from most too least recent, every security anomaly uncovered in the system for which a corrective resolution has been reached. The log must include the same historical anomaly information.

		National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Security Functional Specification		SE-009	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
Specification for the security policy and security services implemented in the TCR system.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
7.1 CDRL-B009 and SOW paragraph 5.11.3 refer. 7.2 Applicability Level. The applicability level for this DID is system. 7.3 The TCR Statement of Work (SOW) and Concept of Operations (ConOps) are required for the creation of this DID.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM Security Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2 General.** The Security Functional Specification is a functional level description of the system. It describes what security services and the system security policy, which the system provides with little or no design information on how these services are implemented.
- 10.3 Specific Format.** The Contractor must submit this document in a format acceptable to the DND PM, using MILSTD 499A as a guide. This document must contain, as a minimum, the following sections:
- a. Scope. This section must describe the purpose and scope of the document. If applicable, the portions of the system to which the document applies must be identified and a brief overview of the portion of the system must be provided. This paragraph must also describe the relationship of this document to other documents and the people involved in the work.
 - b. Related Documents. The purpose of this section is to provide the references or bibliography for this document. The section must cite documents by short or common title (if any), full title, version or release designator (if appropriate), date, publisher or source document number or other unique identifier.
 - (1) Applicable Documents. This paragraph must begin as follows: "The following documents are referenced herein and are directly applicable to this document."
 - (2) Information Documents. This paragraph must begin as follows: "The following documents, although not directly applicable, amplify or clarify the information presented in this volume and are not contractually binding."
 - c. Trace to the System Specification. The trace of the TCR Security Policy to the security requirements specified in the system specification provides the link between the identified security requirements for the system and the security behaviour of the system.
 - (1) Trace from System Specification. The trace from the system specification will, for each security requirement of the system specification, identify the security services, which enforce or support the enforcement of the requirement.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Security Architectural Design		SE-010
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
This document specifies the high level architectural design for the security of the system.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
<p>7.1 CDRL-B010 and SOW paragraphs 5.11.4 and 5.11.5.1 refer.</p> <p>7.2 Applicability Level. The applicability level for this DID is system.</p> <p>7.3 The Security Functional Specification (SE-009) is required for the creation of this DID.</p>		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM Security Engineer		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1 <u>Generic Content and Format.</u> The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2 <u>General.</u> The Security Architecture is a high level or top-level design specification that refines the Security Functional Specification into major components of the product design.</p> <p>10.3 <u>Specific Format.</u> The Contractor must submit this document in a format acceptable to the DND PM, using MILSTD 499A as a guide. This document must contain, as a minimum, the following sections:</p> <p>a. Scope. This section must describe the purpose and scope of the document. If applicable, the portions of the system to which the document applies must be identified and a brief overview of the portion of the system must be provided. This paragraph must also describe the relationship of this document to other documents and the people involved in the work.</p>		

- b. Related Documents. The purpose of this section is to provide the references or bibliography for this document. The section must cite documents by short or common title (if any), full title, version or release designator (if appropriate), date, publisher or source document number or other unique identifier.
 - (1) Applicable Documents. This paragraph must begin as follows: "The following documents are referenced herein and are directly applicable to this document."
 - (2) Information Documents. This paragraph must begin as follows: "The following documents, although not directly applicable, amplify or clarify the information presented in this volume and are not contractually binding."
- c. External System Interface. This paragraph must describe all of the external interfaces provided by the system to the level of system calls, ports and parameters.
- d. System Components. The system components section of the document will list all of the major components of the system and for each component provide the following information:
 - (1) Component name;
 - (2) Component purpose and function in the system; and
 - (3) Security services performed in whole or in part by the component; and high-level description of all of the interfaces to the component.
- e. System Dependencies. This section of the document will describe any security dependencies of the system. The purpose is to provide sufficient information to allow an understanding of the relationship between the system and its dependencies. For each component not part of the system or other system, upon which the system is dependent for its correct security operation, the following information will be provided:
 - (1) Identification of the dependency such as by system or component name;
 - (2) Security services performed in whole or in part by the dependency;
 - (3) Rationale for the use of the dependency in lieu of system implementation of the security service;
 - (4) High-level description of the interface to the dependency, including those used and unused by the system; and identification of those interfaces to the dependency, which are used by the system.
- f. Component Relationships. The component relationships section of the document will detail how the components of the system interrelated with each other, the system interface and the system dependencies.
- g. Trace to the Security Functional Specification. The trace to the Security Functional Specification is used to demonstrate that the high level design of the system is consistent with the security behaviour already described for the system.
 - (1) Completeness. The completeness section must show, using plain language or other techniques that all of the security services identified in the Security Functional Specification are being implemented and where in the system they are being implemented.
 - (2) Accuracy. The accuracy section must show, using plain language or other techniques, that no security relevant behaviour is introduced to any component or dependency in the Security Architectural Design, which was not described in the Security Functional Specification.

Contract No. - N° de Contrat
W8485-155257


Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257


CCC No. /N° CCC - FMS No. /N° VME

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Emanations Security (EMSEC) Control Plan		SE-011
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
<p>The EMSEC Control Plan is a document, which will place into effect the methods, which the Contractor will use to meet the EMSEC requirements of this Contract. Its purpose is to prevent practices that could lead to serious EMSEC problems at a time when the equipment is combined with other devices to form a complete system. The EMSEC Control Plan will tell each engineer, manager, department head and sub-contractor about the work effort, emphasis and design guides that will be used to meet the EMSEC requirements for discrete pieces of equipment and installation.</p>		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
<p>7.1 CDRL-B011 and SOW paragraph 5.10.2 refer.</p> <p>7.2 The EMSEC Control Plan (CDRL-B011) must be prepared in accordance with the requirements in CID/09/15A and INFOSEC 601.</p>		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM Security Engineer – CTP II		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2 Reference Documents.** The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices and revisions must be as specified in the contract.
- 10.2.1** The following references apply:
- CID/09/15A – TEMPEST Guidelines for Equipment/System Design; and
 - INFOSEC 601 – Technical COMSEC Instructions for the Installation of Information Technology Systems.
- 10.3 Specific Content.** The EMSEC Control Plan must, as a minimum, contain the following items:
- 10.3.1 Relationship to the TCR Modernization Project TEMPEST Program.** The relationship between this plan and the TCR system and sub-system EMSEC Control plans must be included.
- 10.3.2 Management Control.** This section will detail specific organisational responsibilities, line of authority and control that the Contractor will implement to ensure TEMPEST is addressed at all levels for the duration of the contract. This will include the Contractor's plans and associated milestones. Resumes of the responsible TEMPEST design engineering personnel must be included.
- 10.3.3 Spectrum Control.** This section of the Control Plan must describe how all intentional signals from equipment and its installation will be limited in bandwidth and amplitude and must include the purpose and location of signal lines external to the equipment and its installation, signal amplitudes, the spectral content of signals, design and proposed constraints on external signals.
- 10.3.4 Mechanical Design.** The mechanical section of the Control Plan will detail the construction methods and selection of materials that the Contractor will use to provide attenuation of compromising emanations produced by electronic processing equipment in order to meet the TEMPEST requirements.
- 10.2.4.1 Information as to the type and thickness of metal to be used, mechanical construction techniques, RED and BLACK compartmentalisation, mounting techniques of filters and optical isolators.
- 10.2.4.2 The Control Plan will detail the consideration given to RED and BLACK equipment interfaces, connectors, junction boxes and patch panels. Ventilation, access and viewing apertures and grounding concepts will also be addressed in the Control Plan.
- 10.3.5 Electrical and Electronic Wiring Design.** This section of the Control Plan must describe the suppression techniques used to eliminate undesired signal emanations generated by cabling used within the individual piece of equipment and its installation. Items to be included in this section of the Control Plan must include, but are not limited to, the grounding methods to be used, determination of line types (i.e. RED and BLACK), types of cables used, physical separation of RED and BLACK signal lines and RED and BLACK power distribution.
- 10.3.6 Electrical/Electronic Circuit Design.** Details concerning the methods used to suppress TEMPEST emanations from electronic equipment must be included in this section. It must include information pertaining to:

- circuits;
- a. Logic type, signal amplitudes and rise/fall transitions times will be explained for all circuits in the equipment which are capable of generating undesired signal data emanations;
 - b. All RED and Black input and output signal amplitudes, rise/fall times and wave shaping/isolation methods to be used in the equipment;
 - c. Shielding and compartmentalization techniques to be employed in the equipment design;
 - d. Power supply design showing how RED/BLACK isolation will be achieved;
 - e. Techniques used to reduce TEMPEST emanations from printed circuit boards;
 - f. Analysis of both analogue and digital signals with respect to spectral bandwidth reduction and impedance matching;
 - g. Placement and grouping of components and descriptions and characteristics of filters and isolation
 - h. Input/Output clocking details along with a list of which power supply is associated with each clock. If RED circuits are also driven with these power supplies, a list of these RED circuits must also be included;
 - j. Transmitter characteristics including RP output bandwidth, type(s) of modulation, modulation index (indices), signalling rate(s), RP frequency bands(s), RF carrier power(s), sideband power(s) and frequency hopping rates; and
 - k. Possible circuits susceptible to RED signal coupling.


10.3.7 R&D Testing. A section must be included in the plan to describe the testing methods used to verify the effectiveness of the TEMPEST control measures proposed for each piece of equipment and its installation.

		National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Security Detail Design		SE-012	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
This document describes the detailed security design of the TCR System. This document may contain classified material when produced.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
7.1 CDRL-B012 and SOW paragraph 5.11.5.3 refer.			
7.2 This DID applies to all levels of the system.			
7.3 The Security Functional Specification (CDRL-B009) and the Security Architectural Design (CDRL-B010) are required for the creation of this DID.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM Security Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2 General.** The Security Design is a low level or detailed specification that refines the architectural design into its smallest design components. The detailed design is intended to provide sufficient detail to allow implementation to begin.
- 10.3 Specific Format.** The Contractor must submit this document in a format acceptable to the DND PM, using MILSTD 499A as a guide. This document must contain, as a minimum, the following sections:
- 10.3.1 Scope.** This section must describe the purpose and scope of the document. If applicable, the portions of the system to which the document applies must be identified and a brief overview of the portion of the system must be provided. This paragraph must also describe the relationship of this document to other documents and the people involved in the work.
- 10.3.2 Related Documents.** The purpose of this section is to provide the references or bibliography for this document. The section must cite documents by short or common title (if any), full title, version or release designator (if appropriate), date, publisher or source document number or other unique identifier.
- a. Applicable Documents. This paragraph must begin as follows: "The following documents are referenced herein and are directly applicable to this document."
- b. Information Documents. This paragraph must begin as follows: "The following documents, although not directly applicable, amplify or clarify the information presented in this volume and are not contractually binding."
- 10.3.3 Components Excluded from the Security Detailed Design.** This section lists the components of the system which have already had their designs analysed as part of a third party security evaluation or endorsement.
- a. Evaluation and Endorsement Certificates. For each of the components excluded from the detailed design, a copy of the certificate of evaluation or endorsement from an approved source must be included as an attachment to the DID.
- 10.3.4 System Component Detailed Designs.** For each component of the system, a security detailed design will be provided which describes the following aspects of the component:
- a. How the component is constructed, including algorithms and internal interfaces; and
- b. A detailed description of all interfaces of the component.
- 10.3.5 System Dependency Detailed Designs.** For each dependency of the system identified in the Security Architectural Design, a detailed security design will be provided which describes the following aspects of the dependency:
- a. A detailed description of all interfaces of the dependency including those used and unused by the system; and
- b. A detailed description of the failure modes of the dependency including impacts on the system and interfaces.

10.3.6 Trace to the Security Architectural Design. The trace to the Security Architectural Design is used to demonstrate that the detailed design of the system is consistent with the high level design already described for the system.

- a. Completeness. The completeness section must show, using plain language or other techniques, that all of the system components and system dependencies described in the Security Architectural Design are detailed in the Security Detailed Design.
- b. Accuracy. The accuracy section must show that no security relevant behaviour is introduced to any component or dependency in the Security Detailed Design, which was not listed in the Security Architectural Design.

		National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
TEMPEST Test Facility Certification Report		SE-013	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
To provide data to determine if the Contractor's TEMPEST test facility is qualified for use in the required TEMPEST testing.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
7.1 CDRL-B013. SOW paragraph 5.10.3.3.1 refers. 7.2 This report is not required for facilities holding a current TEMPEST facility certification, however, a letter containing copies of the certification as issued by CSE, the US NSA or the UK GCHQ is required.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM Security Engineer – CTP II			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2 Reference Documents.** The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices and revisions must be as specified in the contract.
- 10.3 Specific Content.** The TEMPEST Test Facility Certification Report must be prepared in accordance with CID/09/15A.

		National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Equipment TEMPEST Qualification Test Report		SE-014	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
<p>To document the TEMPEST characteristics of the equipment, installation or system under test (SUT) and to specifically document the TEMPEST deficiencies, their causes and remedial modifications (engineering sketches and/or descriptions) required to eliminate the deficiencies. To provide a complete record which will be available for future program applications.</p> <p>To document the TEMPEST characteristics of the First Article.</p>			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		N/A
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
<p>7.1 CDRL-B014 and SOW paragraphs 5.10.3.3.2 and 5.10.3.3 refer.</p> <p>7.2 This DID applies to all levels of the system.</p>			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM Security Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.


Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2 Reference Documents.** The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices and revisions must be as specified in the contract.
- 10.3 Specific Content.** The TEMPEST Qualification Article Test Report must be prepared in accordance with CID/09/15. A TEMPEST Test Setup Ambient Certification Report must be included as part of this document.

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Preliminary Design Review (PDR) Package		SE-015	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Preliminary Design Review Package is required by DND to permit adequate preparation for the Preliminary Design Review meeting.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-B015 and SOW paragraphs 5.12.1.3, 5.12.2.1, 7.10.1.3, 7.7.2.2, 7.10.2.3 and 7.12.2 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM System Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2** Presentation material for the PDR may be prepared in Contractor format.
- 10.3 Specific Content.** The Contractor must present a detailed preliminary design review of the system, site design and installation as detailed in MILSTD 1521B Appendix D. The DND TA or a designated representative must approve the Contractor's list of applicable elements for PDR from MIL-STD-1521B Appendix D.
- 10.3.1** The Contractor must present the Concept Design for:
- a. the infrastructure construction/modifications for the Tactical Control Radar at Primrose Lake, Alberta and Lac Castor, Quebec;
 - b. the infrastructure construction/modifications for the installation and operations of the TCR related equipment at the RTOCs at 3 Wing Bagotville and 4 Wing Cold Lake; and
 - c. the infrastructure construction/modifications for the installation and operations of the TCR related equipment at 22 Wing North Bay C&C Centre.
- 10.3.2** The Concept Design Presentation must be based on the Concept Design Report in accordance with Section 4 of the DND Documentation and Submission Standards, Attachment E of Appendix 25, Design Service Requirement (Infrastructure).
- 10.3.3** The Contractor must present preliminary Site Preparation, Installation and Transition Planning.
- 10.3.4** The Contractor must present a detailed review of all other subject elements as detailed in this SOW and Appendix 25, Design Service Requirement (Infrastructure) as directed by the DND TA or a designated representative.


	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Critical Design Review (CDR) Package		SE-016	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Critical Design Review Package is required by DND to permit adequate preparation for the Critical Design Review meeting.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-B016 and SOW paragraphs 5.11.5.2, 5.12.1.3, 5.12.3, 7.10.1.3 and 7.11.3 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM System Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
<p>10.1 <u>Generic Content and Format.</u> The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2 The Contractor must provide a CDR package in Contractor format.</p> <p>10.3 <u>Specific Content.</u> The Contractor must present a detailed critical design review of the system, site design and installation as detailed in MILSTD 1521B Appendix E. The DND TA or a designated representative must approve the Contractor's list of applicable elements for CDR from MIL-STD-1521B. Appendix E.</p> <p>10.3.1 The Contractor must present the Design Development for:</p> <ul style="list-style-type: none"> a. the infrastructure construction/modifications for the installation and operations of Tactical Control Radar system, sub-systems and equipment at Primrose Lake, Alberta and Lac Castor, Quebec; 			

- b. the infrastructure construction/modifications for the installation and operations of the TCR related equipment at the RTOCs at 3 Wing Bagotville and 4 Wing Cold Lake; and
- c. the infrastructure construction/modifications for the installation and operations of the TCR related equipment at 22 Wing North Bay C&C Centre.


10.3.2 The Design Development Presentation must be based on the Design Development Report in accordance with Section 5 of the DND Documentation and Submission Standards, Attachment E of the SOW for Design Services.

10.3.3 The Contractor must present updated Site Preparation, Installation and Transition Planning.

10.3.4 The Contractor must present a detailed review of any other subject elements detailed in this SOW and the Design Services document (Appendix 25) as directed by the DND TA or a designated representative.

		National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Integration Plan		SE-017	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The GSM and GFE Integration Plan must outline how the Contractor will integrate GSM and GFE with the Contractor Supplied Material (CSM).			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-B017 and SOW paragraph 5.13.1 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2** The GSM and GFE Integration Plan must be prepared in Contractor format and must include a detailed integration plan outlining the integration of GSM and GFE with CSM.
- 10.3** The GSM and GFE Integration Plan must form the basis for the completion of the GSM and GFE Integration Reports as specified in DID SE-018.

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Integration Reports		SE-018	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The GSM and GFE Integration Report must outline how the Contractor will integrate GSM and GFE with Contractor Supplied Material (CSM).			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-B018 and SOW paragraph 5.13.1.1 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.


Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257


File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2** The GSM and GFE Integration Report must be prepared in Contractor format and must include an outline of how the Contractor will integrate GSM and GFE with CSM.
- 10.3** The GSM and GFE Integration Report must be based on the GSM and GFE Integration Plan DID SE-017.

		National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Engineering Change Proposal (ECP)		SE-019	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
<p>The purpose of the Engineering Change Proposal (ECP) is to prepare, process and incorporate Engineering Changes to the applicable project baselines, i.e. functional, allocated or product. The ECP is to include both the engineering change and the documentation by which the change is described and suggested. An ECP describes changes to configuration items and associated configuration documentation affected by the proposed engineering change. All ECP (CDRL-B019) must be approved by both DND TA and PWGSC CA.</p>			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
<p>This DID relates to the following:</p> <ul style="list-style-type: none"> a. SE-020, Specification Change Notice (SCN); and b. SOW paragraphs 2.9.3, 3.7.7, 5.10.5.6, 5.11.3, 5.11.4 and 5.12.3.3 refer. 			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM System Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

- 10.1 Generic Fromat and Content.** The format and content instructions as detailed in Data Item Descriptions (DIDs) – General Information, paragraph 10 does not apply to this deliverable.
- 10.2 Guidance.** Guidance for the preparation of this deliverable is available in MIL-STD-973, Configuration Management, section 5.4.2 and 5.4.8.
- 10.3 Specific Format and Content.** The ECP data package must include a Specification Change Notice (SCN) for each Contractor prepared specification affected by the change. When the affected documentation by the proposed change is not of the Contractor's responsibility, a Notice Of Revision (NOR) must be included in the ECP data package.
- 10.4** The DND TA or a designated representative will provide the Engineering Change Proposal (ECP) form to the Contractor. The Contractor must complete and submit the applicable form for any ECPs.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Specification Change Notice (SCN)		SE-020
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
<p>The Specification Change Notice (SCN) is used to transmit and record changes to specification(s). The SCN identifies a proposed change to a contractually applicable specification and, after approval, provides a record of the change and the associated Engineering Change Proposal (ECP, SE-019).</p>		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
<p>This DID relates to the following:</p> <ul style="list-style-type: none"> a. SE-019, Engineering Change Proposal (ECP); b. CDRL-B020 Specification Change Notice (SCN); and c. SOW paragraphs 2.9.3 and 5.12.3.3 refer. 		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM System Engineer		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		

10.1 Generic Format and Content. The format and content instructions as detailed in Data Item Descriptions (DIDs) – General Information, paragraph 10 does not apply to this deliverable.

10.2 Guidance. Guidance for the preparation of this deliverable is available in MIL-STD-973, Section 5.4.6.

10.3 Specific Format and Content. The DND TA or a designated representative will provide the Specification Change Notice (SCN) form to the Contractor. The Contractor must complete and submit the applicable form for any SCNs. SCNs must be approved by both DND TA and PWGSC CA.

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Site Data Package (SDP)		SE-021	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The SDP identifies the requirements for the installation of the equipment/system. It must detail all of the work (civil, electrical, etc) that must be accomplished by Canada to support the installation and include all supporting documentation (plans, drawings, specifications, etc).			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
This DID relates to the following: <ul style="list-style-type: none"> a. CDRL-B021, Site Data Package; b. CDRL-E001, Site Preparation Report; c. CDRL-E002, Installation Plan; and d. SOW paragraphs 5.4.2, 5.8, 5.8.1, 5.8.2, 5.8.3, 5.8.4, 5.8.5, 5.12.4.5, 5.12.4.7 and 5.12.6.2 refer. 			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM System Engineer			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

- 10.1 Generic Format and Content.** The generic format and content instructions for this deliverable must be in accordance with Data Items Descriptions – General Information, paragraph 10, except where stated otherwise below.
- 10.2 Specific Guidance.** Drawings requested as part of this deliverable must be provided as detailed in Data Item Description DI-ILS-020 Engineering Drawings and Associated Lists.
- 10.3 Specific Content.** The Package must contain sufficient engineering data to allow equipment installation to be integrated into the design of each facility. The list presented below must not be considered exhaustive:
- 10.3.1 Identification of the Equipment.**
- 10.3.2 Purpose of the Equipment.**
- 10.3.3 Site and Vicinity Layout Plan.** Layout plan identifying the system's general location, staging areas and location of equipment shelter, antenna tower, cabling, APU and access roads.
- 10.3.4 Site Construction Phasing Plan.** Layout plan detailing the sequencing of work and general work areas.
- 10.3.5 Plot Design.** Layout plan of shelter area defining locations and orientation of equipment shelter, power transformer, antenna tower, all buried/ground cable routings and surface finish around shelter.
- 10.3.6 Foundation Design.** Layout and construction drawings of the antenna tower, shelter and cable entry points.
- 10.3.7 Equipment Mounting Details.**
- a. mounting plate drawing including hole location and sizes;
 - b. fastener types and sizes;
 - c. welding requirements;
 - d. installation steps;
 - e. special installation tools; and
 - f. interface mounting and mating information.
- 10.3.8 Grounding/Bonding and Protection Design.** Drawings and plans defining the grounding/bonding, lightning protection, signal reference sub-system design, equipment and installation.
- 10.3.9 Utility Plans, Drawings and Specifications.**
- a. lighting;
 - b. pressurized air supply (pressure, moisture content, flow, volume, temperature);
 - c. alternating current supply (voltage, frequency, phase, volt amperes, power factor, connection configuration, steady-state voltage, transient voltage limitation and response, voltage modulation, harmonic content, wattage, waveform, frequency regulation and limits, transient and frequency modulation); and
 - d. direct current supply (voltage, voltage limits, amperage, ripple).
- 10.3.10 Equipment Heat Dissipation.**

10.3.11 Environmental Controls (temperature, humidity, dust).

10.3.12 Control Communication Cable Design. Plans, drawings, cross connections and pin-outs and specifications defining requirements for control/communication cables with the type of termination required.

10.3.13 Excavation, Grading and Drainage Design. Plans, drawings and specifications defining the requirements for new or modifications to existing excavations, grading and drainage.

10.3.14 Obstructions Resolution Plan and Design. Plans, drawings and specifications defining the modifications to or removal of any obstructions to maximize the system signal-in-space and minimize unwanted reflections, if applicable. This section must also include a panoramic photographic record of the radar from mean antenna height and a theodolite horizon profile from mean antenna height or electrical centre.

10.3.15 General Equipment Specifications. Physical specifications such as height, length, width and weight of major system's components and manufacturer's specific configuration.

10.3.16 Space Demands.

- a. equipment Maintainer;
- b. items under test/maintenance;
- c. equipment maintenance access (beside, above, behind);
- d. storage for ancillary items and publications;
- e. safety envelope required during operation; and
- f. additional items awaiting testing or maintenance.

10.3.17 Safety Provisions.

- a. sound attenuation;
- b. exhaust ventilation; and
- c. fire detection and suppression.

10.3.18 Site Preparation Verification Checklist. A formal verification checklist summarizing the expected status of all of the preparation activities identified in the SDP by the contractor as work to be completed by Canada prior to the installation of the equipment.

10.3.19 Other Plans, Drawings and Specifications. Plans, drawings and specifications as necessary to complement the SDP, to minimize disruptions to the preparatory work.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Electromagnetic Environmental Effects (E3) Test Plan (E3TP)		SE-022
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
The E3 Test Plan describes the methods of test, analysis and inspection used by the contractor to verify compliance with the electromagnetic environmental effects (E3) interface and performance requirements of a system. The E3TP provides the means for the government to understand and duplicate verification methods used by the contractor to verify E3 requirements.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
<p>CDRL-B022 and SOW paragraph 5.9. 2 refer.</p> <p>The E3TP will tell each engineer, manager, department head and sub-contractor about the work effort, emphasis and test plans that will be used to test that the system level E3 requirements are met.</p> <p>Related CDRLs are:</p> <ul style="list-style-type: none"> a. CDRL-B006, Electromagnetic Environmental Effects (E3) Control Plan; b. CDRL-B023, Electromagnetic Environmental Effects (E3) Test Report (E3TR); c. Appendix 16, Instructions for Completing DND 552s Application for Frequency Supportability; d. CDRL-B024, Frequency Allocation and Emitter Data; and e. CDRL-B011, EMSEC Control Plan. 		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM System Engineer		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1 <u>Generic Content and Format.</u> The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2 <u>Guidance.</u> Guidance for the preparation of this deliverable is available in MIL-STD-464C.</p>		

10.3 Specific Content. The E3TP describes the methods of test, analysis and inspection used by the contractor to verify compliance with the electromagnetic environmental effects (E3) interface and performance requirements of a system. The E3TP provides the means for the government to understand and duplicate verification methods used by the contractor to verify E3 requirements.

The E3TP must describe the overall verification methods being used and must provide detailed verification procedures (test, analysis and inspection, as applicable) for each E3 requirement specified in the contract for the system being developed.

10.3.1 References. The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices and revisions must be as specified in the contract.

10.3.2 Summary Information. The E3TP must summarize the following (as a minimum):

- a. Introduction, background
- b. System description, including any pertinent information regarding verification issues;
- c. Statement of any assumptions and limitations associated with verification; and
- d. General objectives.
- e. Scope. General description of overall verification matrix being used to demonstrate compliance with requirements, including the relative role of analyses, tests and inspections.
- f. Methods of verification. Abstracts of the procedures used for verifying each E3 requirement listed in section 10.3.4 below.
- g. Engineering factors. Any important engineering factors affecting the verification procedures, such as facilities, resources, safety, reports and security.

10.3.3 Detailed Information. The E3TP must provide detailed technical information covering the overall verification methodology (audit trail of various analyses, tests and inspections and their interrelationships) used to verify compliance for each of the interface requirement areas listed below that are included in contractually imposed requirements. The E3TP must include detailed procedures (analyses, tests and inspections, as applicable) for each area, including the types of information listed in the section 10.3.4 below that are included in contractually imposed requirements. For each E3 requirement, the E3TP must include detailed information (as a minimum) on:

- a. Scope:
 - (1) Objective of verification for the particular area; and
 - (2) References.
- b. Verification Article.
 - (1) Identification of the physical configuration, such as structural features, mechanical and electrical equipment installed and software status;
 - (2) Description of system functions (or sub-system/equipment functions) that are required or available; and
 - (3) Description of provisioned equipment (items that are part of the resultant system operation but are not necessarily developed under the contract), such as weapons, pods and payloads that are required.
- c. Elements of Verification.
 - (1) Models, techniques and tools used for analysis and predictions and their specific application to this system;
 - (2) Step-by-step procedures;
 - (3) Determination of applicable margins and the methods to be used for demonstration;
 - (4) Selection of critical circuits, functions and sub-systems;
 - (5) Pass or fail criteria and methods of quantifying and evaluating degradation;

- (6) Description of test articles, test facilities, test equipment (including instrumentation on and off the system), support equipment and calibration techniques; and
- (7) Method of simulating operational performance when actual operation is impractical.

10.3.4E3 Technical Areas.

- a. Margins;
- b. Intra-system Electromagnetic Compatibility (EMC) - The system must be electromagnetically compatible within itself such that system operational performance requirements are met.
- c. External Radiofrequency (RF) Electromagnetic Environment (EME) - The system must be electromagnetically compatible with its defined external RF EME such that its system operational performance requirements are met
- d. Lightning - The system must meet its operational performance requirements for both direct and indirect effects of lightning.
- e. Sub-systems and equipment Electromagnetic Interference (EMI) - Individual sub-systems and equipment (including where applicable: non-developmental items and commercial items) must meet interference control requirements (such as the conducted emissions, radiated emissions, conducted susceptibility and radiated susceptibility requirements of MIL-STD-461) so that the overall system complies with all applicable E3 requirements.
- f. Electrostatic charge control - The system must safely control and dissipate the build-up of electrostatic charges caused by precipitation static (p-static) effects, fluid flow, air flow, exhaust gas flow, personnel charging, charging of launch vehicles (including pre-launch conditions) and space vehicles (post deployment) and other charge generating mechanisms to avoid fuel ignition, inadvertent detonation or dudding of ordnance hazards, to protect personnel from shock hazards and to prevent performance degradation or damage to electronics.
- g. Electrostatic Discharge - All electrical and electronic devices that do not interface or control ordnance items must not be damaged by electrostatic discharges during normal installation, handling and operation. The ESD environment is defined as an 8 kV (contact discharge) or 15 kV (air discharge) electrostatic discharge. Discharging from a 150 picofarad capacitor through a 330 ohm resistor with a circuit inductance not to exceed 5 microhenry to the electrical/electronic sub-system (such as connector shell (not pin), case and handling points) IAW IEC 61000-4-2:2008.
- h. Electromagnetic radiation hazards (EMRADHAZ). The system design must protect personnel, fuels and ordnance from hazardous effects of electromagnetic radiation
- i. Hazards of electromagnetic radiation to personnel (HERP) - The system must comply IAW Health Canada Safety Code 6 2015 and C-55-040-002/TS-002 for the protection of personnel against the effect of electromagnetic radiation.
- j. Hazards of electromagnetic radiation to fuel (HERF) - Fuels must not be inadvertently ignited by radiated EMEs.
- k. Hazards of electromagnetic radiation to ordnance (HERO) - Electrically initiated devices (EIDs) in ordnance must not be inadvertently actuated during or experience degraded performance characteristics after exposure to the EME levels generated by the TCR system, both direct RF induced actuation of the EID and inadvertent activation of an electrically powered firing circuit. IAW C-09-153-001/TS-000.
- l. Life Cycle, E3 hardness - The system operational performance and E3 requirements of this standard must be met throughout the rated life cycle of the system and must include, but not be limited to, the following: maintenance, repair, surveillance and corrosion control. Compliance must be verified by test, analysis, inspections or a combination thereof. Maintainability, accessibility and testability and the ability to detect degradations must be demonstrated.
- m. Electrical bonding - The system electrical bonding must provide electrical continuity across external mechanical interfaces on electrical and electronic equipment, both within the equipment and between the equipment and other system elements, for control of E3 such that the system operational performance

requirements are met. The following direct current (DC) bonding levels must apply throughout the life of the system:

- (i) 10 milliohms or less from the equipment enclosure (including antennas) to system structure, including the cumulative effect of all faying surface interfaces.
 - (ii) 15 milliohms or less from cable shields to the equipment enclosure, including the cumulative effect of all connector and accessory interfaces
 - (iii) 2.5 milliohms or less across individual faying interfaces within the equipment, such as between subassemblies or sections.
- n. External grounds - The system and associated sub-systems must provide external grounding provisions to control electrical current flow and static charging for protection of personnel from shock, prevention of inadvertent ignition of ordnance, fuel and flammable vapors and protection of hardware from damage.
 - o. Bonding of all electrically conductive items subject to electrical fault currents must be provided to control shock hazard voltages and allow proper operation of circuit protection devices.
 - p. EMSEC - National security information must not be compromised by emanations from classified information processing equipment. EMSEC portion of the E3CP must be prepared in accordance with DID SE-011.
 - q. System radiated emissions - The system must control radiated fields necessary to operate with the other co-located systems and to limit threat capability to detect and track the system commensurate with its operational requirements.
 - r. Emission control (EMCON) - When tactical EMCON conditions are imposed, surface ships, submarines and airborne systems electromagnetic radiated emissions must not exceed -110 dBm/m² (5.8 dBμV/m) at one nautical mile or -105 dBm/m² (10.8 dBμV/m) at one kilometer in any direction from the system over the frequency range of 500 kHz to 40 GHz, when using the resolution bandwidths listed in MIL-STD-464C TABLE 11.
 - s. Inter-system EMC - Inter-system EMC - Unintentional radiated emissions from the system must not exceed -90 dBm (using a 10 kHz resolution bandwidth) when measured from the communication antennas of the installed radios in their appropriate locations.
 - t. Antenna placement Compatibility - The antenna footprint for a physically confined space as currently existing at the radar site and for minimal deployment space must be optimized such that the antenna placement does not degrade its performance. The antenna footprint must incorporate the antenna listed in Section 4 of the SOW
 - u. EM spectrum supportability - Spectrum-dependent systems must comply with the DND/IC and international spectrum regulations for the use of the electromagnetic spectrum.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Electromagnetic Environmental Effects (E3) Test Report (E3TR)		SE-023
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
<p>The E3TR describes the tests, analyses and inspections used by the contractor and documents the results verifying compliance with the E3 interface and performance requirements of a system. The E3TR provides the means for the government to evaluate E3 verification results.</p>		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
<p>SOW paragraph 5.9. 3 refers.</p> <p>The E3TR will tell each engineer, manager, department head and sub-contractor about the work effort, emphasis and reports that will be generated to document that the system level E3 requirements were met.</p> <p>Related CDRLs are:</p> <ul style="list-style-type: none"> a. CDRL-B023, Electromagnetic Environmental Effects (E3) Test Report (E3TR); b. CDRL-B006, Electromagnetic Environmental Effects (E3) Control Plan (CP); c. CDRL-B022, Electromagnetic Environmental Effects (E3) Test Plan (E3TP); d. Appendix 16, Instructions for Completing DND 552s Application for Frequency Supportability; e. CDRL-B024, Frequency Allocation and Emitter Data; and f. CDRL-B011, EMSEC Control Plan. 		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM System Engineer		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2 Guidance.** Guidance for the preparation of this deliverable is available in MIL-STD-464C.
- 10.3 Content.** The E3TR must describe the overall verification results (test, analysis and inspection, as applicable) for each E3 requirement specified in the TCR Statement of Work (Annex A) for the system being developed.
- 10.3.1 References.** The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices and revisions must be as specified in the contract.
- 10.3.2 Summary Information.** The E3TP must summarize the following (as a minimum):
- a. Introduction, Background.
 - b. System description, including any pertinent information regarding verification issues;
 - (i) Statement of any assumptions and limitations associated with verification; and
 - (ii) General Objectives
 - c. Body. A general description of the results must be provided for the verification of each E3 interface and performance requirement area listed in section 10.3.4 below
 - d. Synopsis of verification procedure and reference to detailed procedures.
 - e. Successes and failures.
 - f. Impacts of failures on operational performance.
 - g. Recommendations to resolve failures.
 - h. Lessons learned.
- 10.3.3 Detailed Information.** The The E3TR must provide detailed technical information covering the results of the analyses, tests and inspections used to verify compliance with each of the interface requirement areas listed below that are included in contractually imposed requirements. The E3TR must include the types of information described in subsequent subsections below for each of the following areas listed in the section 10.3.4 below that are included in contractually imposed requirements. For each E3 requirement, the E3TR must include detailed information (as a minimum) on:
- a. Scope.
 - (1) Objective of verification for the particular area; and
 - (2) References including source of the detailed verification procedures.
 - b. Verification Article.
 - (1) Identification of the physical configuration, such as structural features, mechanical and electrical equipment installed and software status;
 - (2) Description of system functions (or sub-system/equipment functions) that were exercised; and
 - (3) Description of provisioned equipment (items that are part of the resultant system operation but are not necessarily developed under the contract), such as weapons, pods and payloads that were used.
 - c. Results.
 - (1) When verification was conducted.
 - (2) Where verification was conducted.
 - (3) Who conducted the verification.
 - (4) Documentation of setup, including the verification article, facility, test equipment and calibration.
 - (5) Verification observations, such as plots, measurements, photos, drawings, logs, checklists, data sheets, ratings and comments.

- (6) Demonstration of margins.
- (7) Description of any deviations from the verification procedures.
- (8) Status and disposition of verification article.

d. Conclusions.

- (1) Status of compliance with requirements (pass or fail).
- (2) Impact of the results on system operational performance.

e. Recommendations.


- (1) Any required corrective actions, modifications or changes to operational procedures, manual or processes.
- (2) Any additional verification actions, investigations, resolutions or studies.

10.3.4 **E3 Technical Areas.**

- a. Margins.
- b. Intra-system Electromagnetic Compatibility (EMC) - The system must be electromagnetically compatible within itself such that system operational performance requirements are met.
- c. External Radiofrequency (RF) Electromagnetic Environment (EME) - The system must be electromagnetically compatible with its defined external RF EME such that its system operational performance requirements are met.
- d. Lightning - The system must meet its operational performance requirements for both direct and indirect effects of lightning.
- e. Sub-systems and equipment Electromagnetic Interference (EMI) - Individual sub-systems and equipment (including where applicable: non-developmental items and commercial items) must meet interference control requirements (such as the conducted emissions, radiated emissions, conducted susceptibility and radiated susceptibility requirements of MIL-STD-461) so that the overall system complies with all applicable E3 requirements.
- f. Electrostatic charge control - The system must safely control and dissipate the build-up of electrostatic charges caused by precipitation static (p-static) effects, fluid flow, air flow, exhaust gas flow, personnel charging, charging of launch vehicles (including pre-launch conditions) and space vehicles (post deployment) and other charge generating mechanisms to avoid fuel ignition, inadvertent detonation or dudding of ordnance hazards, to protect personnel from shock hazards and to prevent performance degradation or damage to electronics.
- g. Electrostatic Discharge - All electrical and electronic devices that do not interface or control ordnance items must not be damaged by electrostatic discharges during normal installation, handling and operation. The ESD environment is defined as an 8 kV (contact discharge) or 15 kV (air discharge) electrostatic discharge. Discharging from a 150 picofarad capacitor through a 330 ohm resistor with a circuit inductance not to exceed 5 microhenry to the electrical/electronic sub-system (such as connector shell (not pin), case and handling points) IAW IEC 61000-4-2:2008.
- h. Electromagnetic radiation hazards (EMRADHAZ). The system design must protect personnel, fuels and ordnance from hazardous effects of electromagnetic radiation.
 - (1) Hazards of electromagnetic radiation to personnel (HERP) - The system must comply IAW Health Canada Safety Code 6 2015 and C-55-040-002/TS-002 for the protection of personnel against the effect of electromagnetic radiation.
 - (2) Hazards of electromagnetic radiation to fuel (HERF) - Fuels must not be inadvertently ignited by radiated EMEs.
 - (3) Hazards of electromagnetic radiation to ordnance (HERO) - Electrically initiated devices (EIDs) in ordnance must not be inadvertently actuated during or experience degraded performance characteristics after exposure to the EME levels generated by the TCR system, both direct RF induced actuation of the EID and inadvertent activation of an electrically powered firing circuit. IAW C-09-153-001/TS-000.
- i. Life cycle, E3 hardness - The system operational performance and E3 requirements of this standard must

be met throughout the rated life cycle of the system and must include, but not be limited to, the following: maintenance, repair, surveillance and corrosion control. Compliance must be verified by test, analysis, inspections or a combination thereof. Maintainability, accessibility and testability and the ability to detect degradations must be demonstrated.

- j. Electrical bonding - The system electrical bonding must provide electrical continuity across external mechanical interfaces on electrical and electronic equipment, both within the equipment and between the equipment and other system elements, for control of E3 such that the system operational performance requirements are met. The following direct current (DC) bonding levels must apply throughout the life of the system:
 - (1) 10 milliohms or less from the equipment enclosure (including antennas) to system structure, including the cumulative effect of all faying surface interfaces.
 - (2) 15 milliohms or less from cable shields to the equipment enclosure, including the cumulative effect of all connector and accessory interfaces.
 - (3) 2.5 milliohms or less across individual faying interfaces within the equipment, such as between subassemblies or sections.
- k. External grounds - The system and associated sub-systems must provide external grounding provisions to control electrical current flow and static charging for protection of personnel from shock, prevention of inadvertent ignition of ordnance, fuel and flammable vapors and protection of hardware from damage.
- l. Bonding of all electrically conductive items subject to electrical fault currents must be provided to control shock hazard voltages and allow proper operation of circuit protection devices.
- m. EMSEC - National security information must not be compromised by emanations from classified information processing equipment. EMSEC portion of the E3CP must be prepared in accordance with DID SE-011.
- n. System radiated emissions - The system must control radiated fields necessary to operate with the other co-located systems and to limit threat capability to detect and track the system commensurate with its operational requirements.
- o. Inter-system EMC - Inter-system EMC - Unintentional radiated emissions from the system must not exceed -90 dBm (using a 10 kHz resolution bandwidth) when measured from the communication antennas of the installed radios in their appropriate locations.
- p. Antenna placement compatibility - The antenna footprint for a physically confined space as currently existing at the radar site and for minimal deployment space must be optimized such that the antenna placement does not degrade its performance. The antenna footprint must incorporate the antennas listed in Section 4 of the SOW.
- q. EM spectrum supportability - Spectrum-dependent systems must comply with the DND/IC and international spectrum regulations for the use of the electromagnetic spectrum.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Frequency Allocation and Emitter Data		SE-024
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
This document specifies a detailed list of E3 technical data on emitter/receiver equipment and platform characteristics that must be provided by the Contractor to satisfy various procurement requirements. Not all the requirements specified herein may apply to a given procurement project. QETE can assist any DND Procuring Authority with tailoring the requirements for technical information specified in this document.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL-B024 and SOW paragraphs 5.14.1.3 and 5.14.1.5 refer. The E3CP will tell each engineer, manager, department head and sub-contractor about the work effort, emphasis and design guides that will be used to meet the system level E3 requirements. Related CDRLs are: <ul style="list-style-type: none"> a. CDRL-B006, Electromagnetic Environmental Effects (E3) Control Plan (CP); b. CDRL-B022, Electromagnetic Environmental Effects (E3) Test Plan (E3TP); c. CDRL-B023, Electromagnetic Environmental Effects (E3) Test Report (E3TR); d. Appendix 16, Spectrum Management (DND 552); and e. CDRL-B011, EMSEC Control Plan. 		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM System Engineer		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		

- 10.1 Generic Content and Format.** The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.
- 10.2 Guidance.** Guidance for the preparation of this deliverable is available in QETE Technical Note, Electromagnetic Emitter, Receiver and Platform Data Specification Requirements, Rev 8.2, 25 May 2015.
- 10.3 General Requirements.** Emitter and/or platform data may consist of individual parameters, tables, graphs, drawings and/or descriptions as specified in the following sections. If an emitter has more than one configuration or mode of operation, then data must be provided for each configuration or mode of operation. Drawings and tables in an electronic format compatible with certain software packages maybe required as indicated.
- 10.4 Emitter Data Requirements.** The required emitter characteristics are identified as data items listed in Table 1 to Table 6. Contractors must provide data as applicable for each numbered data item.
- 10.4.1 Emitter Identification.** All names, model numbers and any other reference information used to identify the emitter system must be listed. Any alternate or obsolete names, model numbers, etc. must be included, as per Table 1.

Table 1

Data Item	Name	Comments	Units
1.	Type	Type of emitter (e.g. Navigational Radar, SATCOM, VHF/UHF, etc.)	n/a
2.	Manufacturer		n/a
3.	Model Number	Include version number if applicable	n/a
4.	Military Type Designation		n/a
5.	Other Identification	Includes all alternate and obsolete names, model numbers and other reference information	n/a

- 10.4.2 Operating Specifications.** The Contractor must specify the operating specifications for all possible system configurations. If the system operates with more than one main beam, provide data for each beam, as per Table 2.

Table 2

Data Item	Name	Comments	Units
1.	Frequency or Frequency Range	If a range of discrete frequencies is used, provide a complete list. If Doppler or swept-FM is used, provide a list of all frequency ranges	Hz
2.	Bandwidth	-3 dB bandwidth of the emitter	Hz
3.	Tx Gain Rx Gain	Transmitter Antenna Gain Receiver Antenna Gain	dBi
4.	Sidelobe Level	Maximum sidelobe levels, as referenced to the maximum gain value	dB
5.	Polarization	Common polarizations are Horizontal, Vertical or Circular. Circular polarization is defined as right-handed or left-handed as seen from the source	n/a
6.	Beamwidth	Azimuth Beamwidth and Elevation Beamwidth for each beam. Indicate if antenna is omni-directional.	deg.
7.	Boresight	Boresight angle for each beam	deg.
8.	Antenna Dimensions	Dimensions of radiating component of antenna (excludes pedestal, mount and radome or cover)	m

10.4.3 Power and Loss Specifications. The Contractor must provide a complete set of data which specifies the transmitted power output (PTO) of the system over the operating frequency range and all possible configurations. Data must consist of tabulated values and/or graphs which specify the transmitted power output over the emitter's operating frequency range and all configurations. The Contractor must provide loss data for the system, including VSWR or return loss. Loss values identified for each major system component, such as feedlines, must be included as per Table 3.

Table 3

Data Item	Parameter Name	Comments	Units
1.	Peak Transmitter Output Power	Peak Transmitter Output Power data for the emitter	W
2.	Average Transmitter Output Power	Average Transmitter Output Power data for the emitter. For rotating antennas, the average must <u>not</u> include a rotation factor.	W
3.	Peak ERP or EIRP	Peak Effective Radiated Power (ERP) or Peak Effective Isotropic Radiated Power (EIRP) data for the emitter. Clearly identify.	W
4.	Average ERP or EIRP	Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP) averaged over the duty cycle	W

5.	System Losses	Loss data, including VSWR or return loss, for each major system component.	W
----	---------------	--	---

10.4.4 Power and Loss Specifications. The Contractor must provide the signal characteristics listed in Table 4.

Table 4

Data Item	Parameter Name	Comments	Units
1.	Pulse Width	Duration of a pulse.	s
2.	Pulse Repetition Time (PRT) OR Pulse Repetition Frequency (PRF)	Time interval between successive pulses. Equal to 1/PRF. Frequency of Pulses. Equal to 1/PRT.	s Hz
3.	Modulation	CW, AM, FM, Pulse, etc.	

10.4.5 Phased Array Antenna Specifications. If the emitter employs a phased-array (also known as an electronically-steered) antenna, the Contractor must provide the specifications as listed in Table 5.

Table 5

Data Item	Name	Comments	Units
1.	Number of Radiating Elements	Total number of radiating elements (e.g. patch antennas, slotted waveguides, etc.) comprising the phased-array antenna	n/a
2.	Radiating Element Dimensions	Drawings with dimensions shown for each unique radiating element, that gives the element size and shape	m
3.	Radiating Element Spacing And Arrangement	Description and/or drawings of the spacing and arrangement of radiating elements comprising the antenna	Hz
4.	Amplitude of Source Current Distribution	Amplitudes of the current applied to each radiating element	A
5.	Phase of Source Current Distribution	Phase of the current applied to each radiating element	deg.

10.4.6 2D Aperture Antenna Characteristics. If the emitter is comprised of an aperture antenna such as a radar, SATOM, microwave dish or other reflector, the Contractor must provide relevant data as specified in Table 6. Data for the Aperture Illumination Amplitude and Phase may be measured or calculated.

Table 6

Data Item	Name	Comments	Units
1.	Aperture Illumination Amplitude	Amplitude distribution of the electric field across the antenna aperture	V/m
2.	Aperture Illumination Phase	Phase distribution of the electric field across the antenna aperture	deg.

10.4.7 General Requirements. As listed in Table 7, the Contractor must provide complete electronic 3D CAD models of the Platform, including all receiving antennas, transmitting antennas and other electromagnetic emitters. The Platform model must contain all main external structural components, but does not need to contain internal structure. Antenna models must contain the main components such as radiating elements, couplings, shielding, antenna base, supports and grounding points. For reflector antennas, the antenna model must contain all feedhorns and reflector dishes.

10.4.7.1 The 3D CAD models of the Platform and its antennas must include all of the models used in CEM studies.

10.4.7.2 All 3D CAD models must be to scale, with units indicated and in electronic format. The material composition of all main components must be indicated, either as a property of the component in the 3D CAD data file or in a separate table.

10.4.7.3 The 3D CAD models of the complete Platform must be contained in either:

- A set of 3D geometry files of the main Platform components in *.cfx data file format, compatible with
- A set of associated mesh data files in *.fek data file format derived from the 3D geometry models compatible with the FEKO software package; or
- A set of 3D geometry files of the main Platform components in *.x_b (binary Parasolid XT) data file format; and
- A set of associated mesh data files, in *.stl (Standard Tessellation Language or Stereolithography) data file format, derived from the 3D geometry models.

Table 7

Data Item	Name	Comments
1.	Antenna Drawings	3D CAD drawings of antenna and all components in electronic format
2.	Platform Drawings	3D CAD drawings of platform in electronic format, if requested by DND

10.4.8 Measured Magnetic and Electric Near-Field Components. Electric and magnetic near-field components are to be measured in a volume around the emitter, at a sufficient number of positions to fully characterise the near field. For each measurement, three components are to be recorded for of each of the electric field E, magnetic field H and position r and provided as a data set in Cartesian, spherical polar or cylindrical coordinates.

10.4.8.1 In Cartesian coordinates, the near-field data must consist of a set of values for (Ex, Ey, Ez) and (Hx, Hy, Hz) at position (x, y, z);

10.4.8.2 In spherical coordinates, the near-field data must consist of a set of values for (Er, E θ , E ϕ) and (Hr, H θ , H ϕ) at position (r, θ , ϕ); or

10.4.8.3 In cylindrical coordinates, the near-field data must consist of a set of values for (Er, E ϕ Ez) and (Hr, H ϕ Hz) at position (r, ϕ , z).

Table 8

Data Item	Name	Comments
1	Near-Field Data	A set of values for the components of E , H and r , in Cartesian, spherical polar or cylindrical coordinates

10.4.9 Measured Magnetic and Electric Far-Field Components. Far-field free space patterns (antenna radiation patterns), consisting of plots of complete elevation and azimuth gain measurements in dBi, are to be provided, as listed in Table 9. Normally, one gain plot in elevation that covers $\pm 90^\circ$ from the horizontal (providing 180° coverage) and one gain plot in azimuth that provides 360° of coverage are required. For more complicated far-field patterns, measurements that provide additional angular coverage may be requested. Far-field antenna radiation patterns may be calculated from near-field scan data using accepted techniques.

Table 9

Data Item	Name	Comments
1.	Far-Field Radiation Patterns	Plots of elevation and azimuth far-field gain in dBi

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Integrated Logistics Support (ILS) Plan		ILS-001
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
<p>The Integrated Logistics Support (ILS) Plan must (as a minimum):</p> <ul style="list-style-type: none"> a. describe the Contractor's ILS Program – its purpose, organization, work plan, schedule and reporting and control methods; b. define interrelationships with other key plans; c. describe the Logistics Support Analysis Process; and d. present a plan for the acquisition of each element of logistics support. 		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
<p>7.1 SOW paragraphs 3.3.1, 3.3.2.3, 3.5.2, 3.5.3, 3.5.4.1 and 3.5.4.2 refer specifically. All of section 3 of the SOW pertains.</p> <p>7.2 The Integrated Logistics Support (ILS) Plan must be consistent with the Contractor's Project Management Plan.</p> <p>7.3 The DID contains the format, content and preparation instructions for the data product generated by the specific and discrete task requirements as delineated in the contract.</p> <p>7.4 CDRL C001 refers.</p>		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below:</p> <p>10.2 Guidance. Guidance for the preparation of this deliverable is available in A-LM-505-001/AG-001 (Guidance Manual, Integrated Logistics Support), Chap 2, paragraph 19.</p> <p>10.3 Specific Format and Content. The deliverable must be developed and maintained as outlined herein.</p> <p>10.3.1 Introduction. The Integrated Logistics Support (ILS) Plan must be broken down into the following</p>		

sections:

- a. Purpose, Scope and Applications;
- b. Applicable References;
- c. Policies and Objectives;
- d. Updating Process; and
- e. Definitions and Acronyms.

10.3.2 Management and Organization. This section must also describe the Contractor's ILS organization, sub-contractor's ILS organization management procedures and reporting/tracking system. The Contractor's ILS manager and logistic element managers must be identified by name in an ILS Organization chart. A resume of duties for the ILS manager and each of the logistic element managers must be provided. This information must also be provided:

- a. Detail responsibility of each ILS element managers including line of authority and functional interface;
- b. Identification of sub-contractors, including their functional interface; and
- c. Description of the method of sub-contractor interface, management.

10.3.3 Management of the Integrated Logistics Support Program. Comprises an overview of the management methodology for the program.

10.3.4 Integrated Logistics Support Program Organization. The Integrated Logistics Support Organization Chart must include the names of the Integrated Logistics Support Manager, subordinate managers and other key personnel. The Integrated Logistics Support Manager would be responsible for implementation of the Contractor's Integrated Logistics Support program and be Canada's point of contact for Integrated Logistics Support matters.

10.3.5 Sub-Contractors and Vendor Interface. Comprises a list of the major sub-contractors involved in the Integrated Logistics Support program and a description of the scope of Integrated Logistics Support work assigned to each, the method of controlling the accomplishment of this work, and the organizational interfaces established with each sub-contractor. Includes a general description of the method of specifying Integrated Logistics Support requirements in vendor purchase orders and controlling the accomplishment of specific work and deliverables.

10.4 Management Procedures.

- a. Progress reporting should be included during Progress Review Meetings (PRMs);
- b. Integrated Logistics Support Hot Line Reports address urgent matters that must be brought to the attention of Canada and would be normally transmitted by e-mail. Integrated Logistics Support Hot Line reporting must be combined with overall project issue reporting and include an issues tracking system that can be used to monitor issues, assign responsibility, direct action and track status;
- c. Integrated Logistics Support Supportability Impact Statements must be completed as part of the company form used to authorize engineering changes. See Engineering Change Proposal, SE-019; and
- d. Logistics Change Records should be used internally by the Contractor as a 'record of action taken' to ensure that key personnel are aware of the impact of engineering changes on the Integrated Logistics Support.

10.5 Integrated Logistics Support Planning and Control. This section must also provide schedules for the

ILS program including all ILS elements and major milestones as follows:

- a. A time-phased workflow diagram supported by a narrative explanation that describes the activities associated with the ILS program; and
- b. An integrated schedule of the overall ILS program with key project milestones. This schedule must also demonstrate its consistency with schedules contained in the Project Management Plan and System Engineering Plan.

10.5.1 Contractor Work Breakdown Structure (CWBS). The CWBS must depict a top-down breakout of the Integrated Logistics Support Program activities. The CWBS must be in sufficient detail for effective planning and control, and must be integrated with the overall Project CWBS. The Integrated Logistics Support CWBS may be presented at a summary level within the ILSP.

10.5.2 Integrated Logistics Support Program Schedule. The schedule must indicate Integrated Logistics Support Program tasks, planned duration of the tasks, and inter-dependencies among Integrated Logistics Support tasks with other aspects of the project. Major Integrated Logistics Support milestones must also be displayed and Canada advised of the failure or potential failure to achieve one. The schedule must be integrated with the overall Master Project Schedule, PM-007. Integrated Logistics Support Program Schedule data must either be available to Canada in electronic format or Canada must have shared electronic access.

10.5.3 Integrated Logistics Support Participation in PRMs. Periodic reviews of the Integrated Logistics Support Program should be, where practical, conducted as part of PRMs. Integrated Logistics Support Program review topics should include Hot Line Reports, Integrated Logistics Support Program Schedule status, Logistics Engineering (if applicable), Maintenance Planning, Acquisition of Logistics Support and Contractor Life Cycle Product Support. Logistics Support Analysis (LSA) review topics should include Obtaining and Validating Source Data, Logistics Support Analysis Record (LSAR) issues, Completed Maintenance Plans and Contractor Recommendations.

10.6 Interrelationships. This section must describe the following relationships between the various ILS elements, Between the ILS and the Engineering program, between the ILS program and other project programs.

10.6.1 With Project Management. Comprises the process/procedures, which would ensure that project staff is kept aware of Integrated Logistics Support Program issues/concerns. See Project Management Plan, PM-001.

10.6.2 With Systems Engineering Management. Comprises the process/procedures, which would ensure that engineering staff is kept aware of Integrated Logistics Support Program issues/concerns. See Systems Engineering Management Plan, SE-002, and Engineering Change Proposal, SE-019.

10.6.3 With Configuration Management. Comprises the process/procedures, which would ensure that Configuration Management staff is kept aware of Integrated Logistics Support Program issues/concerns.

10.7 Logistics Support Analysis (LSA).

10.7.1 Supportability Objectives. Comprises the objectives of the LSA Program, and explains how the Contractor will ensure that only essential LSA data elements would be included within the program (consistent with the 2nd Level maintenance philosophy). Further guidance is available within MIL-STD-1388-1A "Logistic Support Analysis", Task 102.

10.7.2 LSA Candidates, LSA Tasks and Procedures. Selects the LSA Candidates and recommends the LSA tasks that the Contractor believes are required, and the methodology for managing and implementing the tasks. The electronic data transfer/access procedures must be described.

10.7.3 Government Furnished Information. LSA associated data required by the Contractor but not included within the requirements list must be requested by the Contractor.

10.7.4 Logistics Support Analysis Record (LSAR). Data transfer/access will enable Canada to view completed work and work in progress. The LSA data storage comprises standard data definitions and formats compatible with GEIA-STD-0007 Requirements for a Logistic Support Analysis Record". Further guidance is available within A-LM-505-001/AG-001, Chap 5, paragraphs 23 – 40. A process is required for vetting data when electronically importing it into the Contractor's LSAR to ensure that these data are free of logically detectable errors. A method is required to indicate the maturity of the LSAR data made available to Canada (by access or transfer) such as indicating its status as working data, Contractor validated data or customer approved data. Delivery of (or access to) LSAR Contract Data Requirements List (CDRL) must be provided in electronic form. Application and tailoring guidance for the LSAR is available within GEIA-STD-0007. Should the Contractor conduct further LSA analysis (level of repair analysis, sparing analysis, life cycle costing), the LSAR analysis computer tools and analytical models must be identified.

10.7.5 Logistics Control Number (LCN) Structure. The LCN is the primary means of identifying items within the LSAR. This description comprises the hierarchical LCN structure used by the Contractor, which may reflect either a functional or physical breakdown structure (also known as an Equipment Breakdown Structure). The preferred equipment breakdown structure is the top down breakdown, where the top level (or system level) is broken down into a number of second level assemblies/components, which are further broken down into third level assemblies/components, etc.

10.7.6 Logistics Configuration Baseline (LCB). The hierarchical LCN structure, accessible via a database, is known as the Logistics Configuration Baseline (LCB). The LCB will provide a view of the hierarchy of systems, assemblies, components and piece parts that comprise the prime system. This LCB description comprises the LCB identification process; including the LCNs, the LSAR mandatory data, Equipment Breakdown Structure and Maintenance Selection Items (MSI). Consistent with the 2nd Level Maintenance Philosophy, certain MSIs must be declared to be LSA candidates on which LSA tasks would be performed.

10.7.7 Logistics Acquisition. This section defines the overall approach (content, format, delivery, etc) for the provision of the following logistics items:

- a. Engineering Data;
- b. Supply Support;

- c. Packaging, Handling, Storage and Transportation (PHST);
- d. Support Equipment;
- e. Technical Publications;
- f. Personnel and Training;
- g. Computer Resources Support;
- h. Facilities;
- i. Contractor Services and Support; and
- j. Repair & Overhaul.

10.7.8 Product Support. This section discusses the Contractors ability to provide the following items as well as the overall approach:

- a. Engineering Support Services;
- b. Change and Revision Services;
- c. Software Support Services;
- d. Contractor Maintenance; and
- e. In-Service LSA.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Maintenance Plan		ILS-002
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
To explain how the system will be supported on a 2nd level basis		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C002 and SOW paragraphs 3.6.4 and 3.10 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.		
10.2 Guidance. Guidance for the preparation of this deliverable is available in: <ul style="list-style-type: none">a. A-LM-505-001/AG-001 (Guidance Manual, Integrated Logistics Support), Chap 7, para 23; andb. A-PD-055-002/PP-002 (MOC 226/MOS-ID 00109).		
10.3 Specific Format and Content. The deliverable must be developed and maintained as outlined herein.		
10.3.1 The Maintenance Plan must include (as a minimum): <ul style="list-style-type: none">a. Maintenance Plan Number (DED 209);		

- b. Maintenance Plan Date; and
- c. Maintenance Plan data are typically entered into the 'B', 'C', 'E', and 'H' Tables of the Logistics Support Analysis Record (LSAR) in accordance with GEIA-STD-0007. Appendix E of this ref provides DED descriptions. When an LSAR is used to prepare the Maintenance Plan, its Report Generator can be programmed to export or print the required data.

10.3.2 This report must include the following information (as a minimum):

10.3.2.1 **Equipment Identification.** Identify the system/equipment for which the maintenance plan is applicable.

- a. Logistics Control Number (LCN) (DED 199);
- b. Used-On Code (DED 501);
- c. Item Name (DED 182);
- d. Version or Model Number;
- e. Military Type No. (AN/);
- f. Reference (Manufacturer's Part) No. (DED 337); and
- g. NSCM/CAGE Code (DED 046).

10.3.2.2 **Maintenance Rationale.**

- a. SMR Code (DED 389); and
- b. Maintenance Plan Rationale (DED 210).

10.3.2.3 **Description.**

- a. Line Drawing or Photograph; and
- b. Brief narrative description of the system/equipment.

10.3.2.4 **Reliability and Maintainability Characteristics.**

Provide for each Maintenance Significant Item:

- a. Maintenance Replacement Rate (DED 211);
- b. MTTR (DED 236); and
- c. Repair Cycle Time (DED 350).

10.3.2.5 **Maintenance Tasks.**

List the maintenance tasks performed by DND, grouped by level of maintenance (first, second, third, fourth) and by category – preventive and corrective. Present the data in the following format:

LCN/ALN (DED 019/199)	TASK IDENTIFICATION (DED 431)	TASK FREQUENCY (DED 430)	MEAN ELAPSED TIME (DED 225)	RESOURCE REQUIREMENTS (DED 412)

10.3.2.6 **Logistic Resource Requirements.**

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

For each required resource (e.g. digital voltmeter, torque wrench, etc.), indicate its usage by completing the following table.

RESOURCE REQUIREMENTS (DED 412)	RECOMMENDED QUANTITY (DED 328)	REQUIRED FOR LCN/ALN (DED 199/019)	ITEM NAME (DED 182)	MAINTENANCE LEVEL (DED 427c)

10.3.2.7 Personnel Requirements.

Summarize the personnel requirements by completing the following summary for each military occupation:

MOC (DED 185)	EQUIPMENT (DED 182)	MAINTENANCE LEVEL (DED 427c)	MANHOURS PER YEAR

10.3.2.8 Fielded Systems. The Maintenance Plan must identify whether maintenance results from fielded systems have been applied to the maintenance plan rationale and tasks including:

- How the time in-service is measured;
- How the outage is detected and recorded; and
- How routine maintenance activities are excluded.

10.3.2.9 Software Maintenance Methodology. The Maintenance Plan must address the following:

- How software change requests are managed;
- Typical response times for s/w changes to be implemented;
- How software changes are installed; and
- Associated costs (CFTO changes, etc.)

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Sustainment Plan		ILS-003	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Contractor must provide a long-term twenty (20) year Sustainment Plan for the installed system, including recommended technology insertion and mid-life upgrades. This Sustainment Plan must cover the period that commences upon DND's acceptance of the second TCR system, exclusive of the warranty period.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL C003 and SOW paragraph 3.6.6 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 <u>Generic Format and Content.</u> The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.			
10.2 The Sustainment Plan may be in Contractor's format.			
10.3 The Sustainment Plan must address, as a minimum, the following: a. technology insertion strategy to take advantage of advances in technology;			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- b. manufacturing obsolescence;
- c. aging system components and premature failures; and
- d. general system upgrades to enhance system capabilities.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Défense Nationale	Defence	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Software User Manuals (SUM)		ILS-004	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Software User Manuals (SUM) describes how to install and use computer software provided as part of the system.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-C004 and SOW paragraph 3.8.4.2 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

- 10.1 Generic Format and Content.** The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.
- 10.2 Specific Content.** The Contractor must prepare and deliver the Software User Manuals in Contractor format but as a minimum should include the items described below.
- a. Software summary. This section must be divided into the following paragraphs:
 - (1) Software Application. This paragraph must provide a brief description of the intended uses of the software. Capabilities, operating improvements and the benefits expected from its use must be described;
 - (2) Software Inventory. This must identify all software files, including databases and data files, which must be installed for the software to operate. The identification must include security and privacy considerations for each file and identification of the software necessary to continue or resume operation in case of an emergency; and
 - (3) Software Environment. This paragraph must identify the hardware, software, procedures and other resources needed for a user to install and run the software. Included, as applicable, must be identification of:
 - (i) Necessary computer equipment, including amount of volatile and non-volatile memory required, peripheral equipment such as printers and other input/output devices;
 - (ii) Necessary communications/networking equipment;
 - (iii) Other software that must be present, such as operating systems, databases, data files, utilities and other supporting systems; and
 - (iv) Facilities, equipment or resources that must be available.
 - b. Assistance and problem reporting. This paragraph must identify points of contact and procedures to be followed to obtain assistance and report problems encountered in using the software.
 - c. Access to the software. This section must contain step-by-step procedures oriented to the first time/occasional user. Enough detail must be presented so that the user can reliably access the software before learning the details of its functional capabilities. Safety precautions, marked by WARNING or CAUTION, must be included where applicable.
 - d. First-time user of the software. This paragraph must be divided into the following subparagraphs:
 - (1) Equipment familiarization. This paragraph must describe the following as appropriate:
 - (i) Procedures for turning on power and making adjustments;
 - (ii) Dimensions and capabilities of the visual display screen;
 - (iii) Appearance of the cursor, how to identify an active cursor if more than one cursor can appear, how to position a cursor and how to use a cursor;
 - (iv) Keyboard layout and role of different types of keys and pointing devices; and
 - (v) Procedures for turning power off if special sequencing of operations is needed.

- (2) Access control. This paragraph must present an overview of the access and security features of the software that are visible to the user. The following items must be included, as applicable:
- (i) How and from whom to obtain a password;
 - (ii) How to add, delete or change passwords under user control; and
 - (iii) Security and privacy considerations pertaining to the storage and marking of output reports and other media that the user will generate.
- e. Installation and set-up. This paragraph must describe any procedures that the user must perform to be identified or authorized to access or install software on the equipment, to perform the installation, to configure the software, to delete or overwrite former files or data and to enter parameters for software operation.
- f. Initiating a session. This paragraph must provide step-by-step procedures for beginning work, including any options available. A checklist for problem determination must be included in case difficulties are encountered.
- g. Software organization and overview of operation. This paragraph must provide a brief description of the organization and operation of the software from the user's point of view. The description must include, as applicable:
- (1) Logical components of the software, from the user's point of view and an overview of the purpose/operation of each component;
 - (2) Performance characteristics that can be expected by the user, such as:
 - (i) Types, volumes, rate of inputs accepted;
 - (ii) Types, volume, accuracy, rate of outputs that the software can produce;
 - (iii) Typical response time and factors that affect it;
 - (iv) Typical processing time and factors that affect it;
 - (v) Limitations, such as number of events that can be tracked;
 - (vi) Error rate that can be expected; and
 - (vii) Reliability that can be expected.
- (c) Relationship of the functions performed by the software with interfacing systems, organizations or positions; and
- (d) Supervisory controls that can be implemented (such as passwords) to manage the software.
- h. Security and privacy. This paragraph must contain an overview of the security and privacy considerations associated with the software. A warning must be included regarding making unauthorized copies of software or documents, if applicable.
- i. Assistance and problem reporting. This paragraph must identify points of contact and procedures to be followed to obtain assistance and report problems encountered in using the software.
- j. Data backup. This paragraph must describe procedures for creating and retaining backup data that can be used to replace primary copies of data in event of errors, defects, malfunctions or accidents.
- k. Recovery from errors, malfunctions and emergencies. This paragraph must present detailed procedures for

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

restart or recovery from errors or malfunctions occurring during processing and for ensuring continuity of operations in the event of emergencies.

- l. Messages. This paragraph must list or refer to an appendix that lists, all error messages, diagnostic messages and information messages that can occur while accomplishing any of the user's functions. The meaning of each message and the action that should be taken after each such message must be identified and described.
- m. Quick-reference guide. If appropriate to the software, this paragraph must provide or reference a quick-reference card or page for using the software. This quick-reference guide must summarize, as applicable, frequently used function keys, control sequences, formats, commands or other aspects of software use.
- n. Notes. This section must contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section must include an alphabetical listing of all acronyms, abbreviations and their meanings as used in this document and a list of terms and definitions needed to understand this document.
- o. Appendixes. Appendixes may be used to provide information published separately for convenience in document maintenance (e.g., charts, classified data). As applicable, each appendix must be referenced in the main body of the document where the data would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes must be lettered alphabetically (A, B, etc.).


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Provisioning Parts Breakdown (PPB)		ILS-005
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
To provide the data needed by DND to identify, catalogue, calculate and procure the range and depth of spares needed by each line of maintenance provisioned by DND (and as installation and checkout spares) IAW D-01-100-214/SF-000.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL-C005 and SOW paragraphs 3.7.2, 3.7.3, 3.7.5 and 3.9.7.3 refer. D-01-100-214/SF-000 Preparation of Provisioning Documentation.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.		
10.2 Guidance. Guidance for the overall preparation of this deliverable is available in D-01-100-214/SF-000 (Specification for Preparation of Provisioning Documentation for Canadian Forces Equipment).		
10.3 The Recommended Buy Quantity must be sufficient to maintain the equipment for a period of twenty-four (24) months, exclusive of warranty.		
10.4 Specific Format and Content. The deliverable must be developed and maintained as outlined herein.		
10.4.1 The deliverable must be completed in accordance with D-01-100-214/SF-000, paragraph 3.9.		
10.4.2 The information requested herein captures most details required for cataloguing the items into the Canadian Forces Supply System (CFSS).		
10.4.3 If the NATO Stock Number of an item is not known, the Supplementary Provisioning Technical Documentation (SPTD) must be provided for the item submitted in the PPB in accordance with D-01-100-214/SF-000.		
10.4.4 For each item, the Provisioning Documentation must be prepared in accordance with D-01-100-214/SF-000 Preparation of Provisioning Documentation and must include the following data elements:		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

DATA FIELDS REQUIRED	PPB
Item Number (unique sequence number for each list)	M
Indenture Code (DED 162)	M
Item Name (DED 182)	M
Reference (manufacturer's part) No. (DED 337)	M
NSCM/CAGE Code (DED 046)	M
OEM's Part Number (DED 337)	R
NATO Stock Number (DED 253)	R
Quantity Per Assembly (DED 316)	M
Standard Unit Price	M
Unit Of Issue (UOI) (DED 488)	M
Unit of Measure (DED 491)	NR
Reparability Indicator (REP)	R
Government Supplied Material (GSM)	R
Procurement Lead Time (PLT)	M
Reference Designation (DED 335)	R
Shelf Life	R
Usage Rate	R
Recommended Buy Quantity (DED 328)	M
SMR Code (DED 389)	R
Logistics Control Number (LCN) (DED 199)	R
Demilitarization Code (DMC)	R
M =Mandatory R =Required if known O = Optional NR = Not Required	

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Technical Publications Requirements List (TPRL)		ILS-006
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
To provide the data needed to identify, procure and manage technical publications.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C006 and SOW paragraph 3.12.1 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -


10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.

10.2 Specific Content. The TPRL must identify required publications in two categories:

- a. Existing Publications (that can be used as is or modified); and
- b. New Publications (that must be developed).

10.2.1 The TPRL must contain the following information (as a minimum) for each Technical Publication:

- a. Technical Manual Title;
- b. Technical Manual Number (DED 440);
- c. Technical Manual Change Number (DED 436);
- d. NSCM/CAGE Code (DED 046);
- e. Line(s) of Maintenance Applicable;
- f. Status (use as is, modify, develop);
- g. Current Language (English, bilingual, other) (for existing Technical Publications);
- h. Media (hard copy, microfiche, electronic) (for existing publications);
- i. Owner of Proprietary Right/Copyright;
- j. Procurement Lead Time;
- k. Technical Manual Development Cost;
- l. Translation Cost; and
- m. Price Per Book (excluding development cost and translation cost).

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Acceptance of Commercial and Foreign Government Publications		ILS-007	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Technical Orders (TO) document the theory of operation and maintenance procedures required to operate and support the TCR system. The TOs must also include transportation, setup and takedown instructions. This Data Item Description (DID) defines the requirement for the content and acceptance criteria of existing publications from commercial or foreign government sources, in whole or in part, as DND publications and supplemental data if the initial data is incomplete but otherwise acceptable.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

7.1 CDRL C007, SOW paragraph 3.12.2.2 and Appendix 21 refer.

7.2 The Contractor and DND must verify and evaluate all documentation in accordance with specification C-01-100-100/AG-005, Acceptance of Commercial and Foreign Government Publications as Adopted Publications and C-01-100-100/AG-006, Writing, Format and Production of Technical Publications, for all publications purposely written for the DND system.

7.3 Where it is determined that existing publications are acceptable but require supplementary data, the Contractor must make good any shortcomings of the existing manuals in the respective sub-system manual(s).

8. ORIGINATOR - AUTEUR

PM

9. APPLICABLE FORMS - FORMULES PERTINENTES

10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES

10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.

10.2 Approval of COTS Manuals. All Existing Commercial and Foreign Government Publications must be accepted based on the conformance requirements of DND Specification C-01-100-100/AG-005, Acceptance of Commercial and Foreign Government Publications as Adopted Publications.

10.3 Advance Delivery of COTS Manuals. The Contractor may find it convenient to process and deliver the existing manuals and other documentation early. The TA must be contacted to arrange details.

10.4 Interim Publications. Interim publications must not be accepted.

10.5 Translation of Existing Publications. The Contractor must provide all publications in bilingual (English/French) format.

10.6 Publications Requiring Modifications. All Technical Orders/Publications identified in the Technical Publications Requirement List (refer to CDRL C006), as requiring format and/or content revision, modification and red-lining must be made in accordance with C-01-100-100/AG-006 Writing, format and Production of Technical Publications.

10.7 Technical Orders cover all aspects of operation, maintenance and overhaul of equipment and systems used in the Canadian Forces and explain techniques, provide definite procedures and give specific information about job operation.

10.8 Operational and technical publications must be prepared, printed and delivered (in hard and soft copy) in accordance with C-01-100-100/AG-006 Writing, Format and Production of Technical Publications.

Contract No. - N° de Contrat

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client

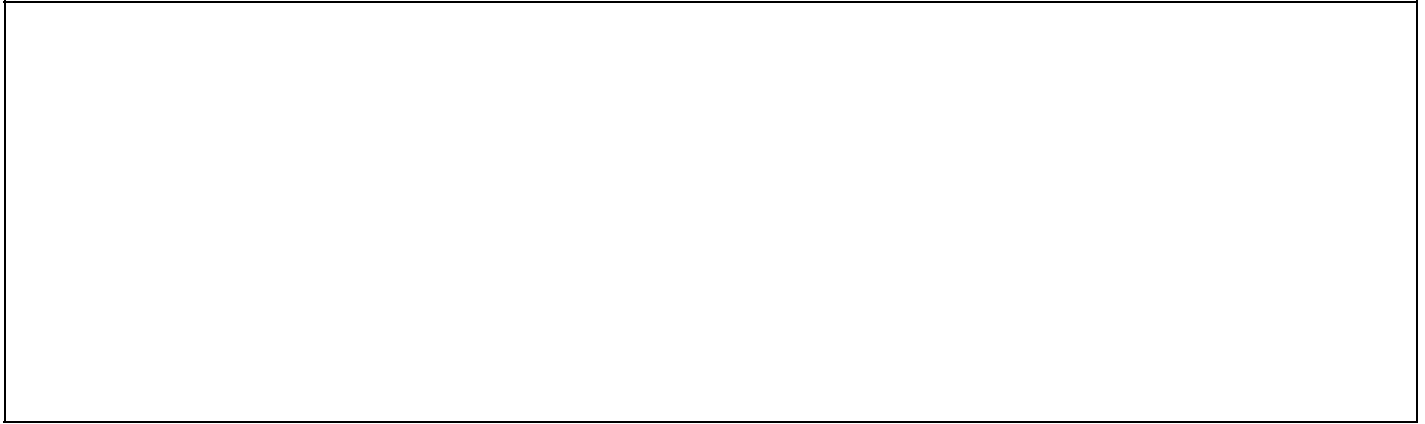
FMS No. /N° VME

W8485-155257

File No. - N° du dossier

164BQW8485-155257

CCC No. /N° CCC -




Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
New System Operating Instruction Manual(s)		ILS-008	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
This Data Item Description (DID) defines the content for any newly developed Operating Instructions Manual(s) that is being produced for this contract. The TCR Operating Instructions Manual(s) must provide(s) information and detailed procedures for initiating, operating, monitoring and shutting down specific TCR equipment and for identifying/isolating a malfunctioning component in the sub-system.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
7.1 CDRL-C008 and SOW paragraphs 3.10.1 and 3.12.3 refer. 7.2 This DID applies to newly developed TCR system Operating Instructions Manuals. 7.3 All new publications must be written in accordance with: a. C01-100-100/AG-006 Specification for Writing, Format and Production of Technical Publications; b. D-01-100-203/SF-000 Specification for Preparation of Operating Instructions must be used as a guide but must not limit the inclusion of additional information the Contractor deems necessary; and c. D-01-400-002/SF-000 Specification Drawings, Engineering and Associated Lists.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 <u>Generic Format and Content.</u> The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.			
10.2 <u>Specific Content.</u> The new System Operating Instructions Manual(s) must include as a minimum the following parts: a. General Description; b. Description of Controls and Instruments;			

- c. Preparation for Use (including detailed System Set-up Procedures);
- d. Operation under Normal Conditions;
- e. Operating under Unusual Conditions;
- f. Emergency Operation;
- g. Operation of Ancillary Equipment; and
- h. Deployed Operations.

10.2.1 The Operating Instructions Manual may include/incorporate existing COTS information/documentation reformatted in accordance with C01-100-100/AG-006. The manual(s) must not make reference to external COTS manuals unless they have been officially assigned a NDID number.

10.3 Specific Content and Format Instructions. IAW C01-100-100/AG-006 Specification for Writing, Format and Production of Technical Publications. Production of this manual using automated techniques is encouraged.

10.3.1 New System Operating Instructions Manual(s) must be bilingual (English and French) side-by-side format in accordance with C01-100-100/AG-006.

10.4 Specific Media. The New System Operating Instructions Manual(s) must be submitted on CDROM. CDROM disks must be labelled as follows:

- a. The project name and contract number;
- b. The title(s) [Manual name and NDID]; and
- c. The date of delivery.

10.5 Safety Requirements (Part 3). This part must include detailed grounding and testing requirements, including lightning protection for the TCR system.

10.6 System Operating Instructions. Refer to D-01-100-203/SF-000 Specification for Preparation of Operating Instructions. This part must include, as a minimum, the following information:

10.7 Deployed Operations.

- a. Preparation for Deployment. This section must describe the step-by-step procedure to prepare the TCR system for deployment, including any special precautions or instructions for movement;
- b. Site Selection Criteria. This section must provide guidance in selecting an optimal site and site layout for the TCR system when deployed;
- c. System Assembly. This section must contain detailed instructions for reassembly and testing of the TCR system in a deployed environment;
- d. The turn-on/turn-off and operating procedures must be in accordance with parts 4, 5 and 6 of D-01-100-203/SF-000; and
- e. Site Adaptation and Variable Sub-system Parameters. This section must describe procedures to

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

enter/modify site-specific data and variable sub-system parameters.

10.8 Other Procedures. This section must contain any additional procedures required for TCR system set up and operation.

10.9 Equipment Safety Decals. Equipment safety decals, in English and French, warn personnel of dangers from high voltage, poisonous chemicals, heavy lift weights, radiation, charged capacitors, electrostatic discharge and other dangers to personnel and equipment and must be applied to the equipment in the appropriate locations. The drawings of the decals must appear in the applicable operating manuals with the relevant safety information.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
New TCR System Technical Manuals		ILS-009	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
<p>3.1 This Data Item Description (DID) applies to newly developed TCR System Technical Manuals only.</p> <p>3.2 The Maintenance Manuals must cover hardware, firmware and software programming support for all of the TCR system and sub-systems. These manuals must be consistent with a minimum of Level Two maintenance support. The Contractor must rectify any shortcomings of the Vendor delivered manuals.</p> <p>3.3 Technical Manuals are required for each major sub-system.</p>			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
<p>CDRL-C009 and SOW paragraphs 3.10.1 and 3.12.3 refer.</p> <p>C-01-100-100/AG-006 Writing, Format And Production Of Technical Publications</p> <p>D-01-100-201/SF-000 Preparation of Installation Instructions</p> <p>D-01-100-204/SF-000 Preparation of Preventive Maintenance Instructions</p> <p>D-01-100-205/SF-000 Preparation of Corrective Maintenance Instructions</p> <p>D-01-100-207/SF-000 Preparation of Parts Identification Lists</p>			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
<p>10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2 Specific Content. The technical manuals must include, but not be limited to, description, maintenance and troubleshooting instructions, illustrated parts breakdowns, preventive maintenance instructions, schematic diagrams, storage/handling procedures and safety precautions. The technical manuals may include/incorporate existing COTS documentation. However, the manuals must not reference COTS manuals unless they have been adopted as an official CFTO. The technical manuals must be capable of being used as “stand alone” documents without any obligatory reference to other publications. If the Contractor wishes to reference complete documents for DND's benefit, the Contractor must ask for DND TA</p>			

approval in accordance with CDRL B001.

10.2.1 A detailed stand alone TCR System Setup, Testing and Teardown Manual must be provided.

10.2.2 Document Structure. This manual(s) must be developed in accordance with C-01-100-100/AG-006 Writing, Format And Production Of Technical Publications and include, as a minimum, the following:

- a. Maintenance Manual Overview;
- b. Referenced Documents List;
- c. Sub-system Overview;
- d. Sub-system/assembly list;
- e. General Description;
- f. Theory of Operation;
- g. Sub-system/assembly detailed specification;
- h. Installation Instructions;
- i. Safety Precautions;
- j. Preventive Maintenance Instructions;
- k. Performance Monitoring Checks;
- l. Preventive Maintenance Instructions;
- m. Mechanical Maintenance Instructions;
- n. Supplementary Data;
- o. Corrective Maintenance Instructions;
- p. Illustrated Parts Lists;
- q. Equipment Safety Decals;
- r. Sub-system/CI Preparation for Transport;
- s. Field Quick Reference Guide (QRG);
- t. Software/Firmware;
- u. Notes; and
- v. Back Matter.

10.2.3 Requirement to Translate. The Contractor must translate Technical Manuals. DND will require the right to translate manuals during the life of the TCR system.

10.2.4 Media. New Technical Manuals must be submitted in CDROM. CDROM disks must be labelled as follows:

- a. The project name and contract number;
- b. The title(s) [Manual name and NDID if available]; and
- c. The date of delivery.

10.3 Technical Manual Overview. Technical Manual Overviews must define the purpose and content of each manual.

10.3.1 Referenced Documents List. The Referenced Documents List must include the document numbers and titles of all documents referenced in the particular manual. The source for all documents not available through normal Government stocking activities must be indicated.

- 10.4 System Overview.** System Overviews must include the TCR system/sub-system theory of operation to facilitate the maintenance. Details of the TCR system/sub-system must appear in the main manual. Making reference to Original Equipment Manufacturer (OEM) documentation is prohibited unless approved the DND TA or it has been officially adopted as a CFTO.
- 10.4.1 General Description.** General Descriptions must describe the purpose and limitations of the parts of the TCR system and how each accomplishes its function and any other general information deemed essential to the understanding of its purpose. The following basic details must include, as a minimum:
- a. The weight and dimensions of each unit, with and without shipping container;
 - b. Photographs or outline drawings of the part and its components with the name of each component given. Component part numbers must be given only when the nomenclature is insufficient for identification;
 - c. A description of the major parts of the sub-system and of their respective associate equipment;
 - d. A list of condensed factual data in tabular form showing the system/sub-system characteristics (of electronic sub-system and parts.) This data must include, if applicable, as a minimum:
 - (1) Frequency ranges, to include number of preset frequencies and frequency stability;
 - (2) Output characteristics (type of emission, power, pulse width);
 - (3) Tuning band ranges, to include sensitivity and selectivity;
 - (4) Input voltages, to include the frequency and power required for starting, normal operation and standby operation;
 - (5) Type and method of modulation;
 - e. Any other information as applicable to the specified sub-systems as necessary to complement the text and to ensure better understanding by the reader; and
 - f. A brief description of the external features and controls of each major system/sub-system supplemented with photographs showing and identifying the controls.
- 10.4.2 Theory of Operation.** Each Theory of Operation must explain in detail the theory of operation of the complete equipment and its component parts. The theory of operation narrative must be supported by the illustrations, schematics, photographs, block diagrams, flow and wiring diagrams, necessary to compliment the text and to ensure better understanding by the reader.
- 10.4.3 System/Sub-system Details Specification.** The System/Sub-system Details Specification must contain a detailed reference list of technical orders, specifications and standards applicable to the TCR system and sub-systems.
- 10.5 Installation Instructions.** Installation Instructions for the TCR systems/sub-systems must be prepared in accordance with D-01-100-201/SF-000 Preparation of Installation Instructions.
- 10.6 Preventive Maintenance Instructions.** The Contractor must prepare Preventive Maintenance Instructions for the TCR systems/sub-systems in accordance with D-01-100-204/SF-000 Preparation of Preventive Maintenance Instructions. These instructions must contain all the necessary information to perform monitoring checks, uncover malfunctions, perform in-service inspections, adjustments and the routine lubrication and cleaning of mechanical components.
- 10.7 Performance Monitoring Checks.** Performance Monitoring Checks must detail the step-by-step instructions for each major unit, assembly or cabinet, necessary to carry out checks to determine that the sub-system assemblies are operating within the specified parameters. The frequency of the checks may be schedule hourly, daily, weekly or on a shift basis. Checks must be detailed so that as many of the operations as possible may be performed without interrupting normal performance of the sub-system. Performance

Monitoring Checks must be arranged as follows:

- (1) General Information. This section must outline the average time required to complete the work involved, the purpose of the checks and information of a general nature;
- (2) Test Equipment Required. This section must list all test equipment or BIT features required in the procedures including calibration checks prior to use;
- (3) Material Required. This section must list all material such as special tools, cables, cleaners, lubricants, etc. The specification for the cleaners and lubricants must be given; and
- (4) Procedures. This section must detail the work to be accomplished in step-by-step form.

10.7.1 Mechanical Maintenance Instructions. These Instructions must detail relevant mechanical checks for example, antenna reflector contour checks, levelling procedures, bearing wear, coupling re-alignment and gear train checks.

10.7.2 Supplementary Data. Supplementary Data section(s) must include information not conveniently placed elsewhere. For example, details of replacement procedures must be included for equipment and/or parts, which may fail during preventive maintenance.

10.8 Corrective Maintenance Instructions. The Contractor must prepare Corrective Maintenance Instructions for the TCR system/sub-systems in accordance with D-01-100-205/SF-000 Preparation of Corrective Maintenance Instructions.

10.9 Illustrated Parts Lists. Illustrated Parts Lists must be prepared in accordance with D-01-100-207/SF-000, Preparation of Parts Identification Lists. Illustrated Parts Lists must include, but not be limited to, the information required to positively identify all of the parts in the sub-system, which may require maintenance or replacement action.

10.10 Equipment Safety Decals. Equipment safety decals warn the maintainers of dangers from high voltage, poisonous chemicals, heavy lift weights, radiation, charged capacitors, electrostatic discharge and other dangers to personnel and equipment and must be applied to the equipment in the appropriate locations. Equipment safety decals must be prepared in accordance with CDRL C020.

10.11 Sub-system/Assembly Preparation for Transport. The Sub-system/Assembly Preparation for Transport must include directions to prepare the sub-system/assembly for transport. The following information is required as a minimum:

- a. Vehicle preparation (internal and external)(if applicable);
- b. Shelter preparation (internal and external)(if applicable);
- c. Other container preparation (internal and external);
- d. How the sub-system/Assembly/Part must be fastened to prevent load shifting;
- e. Any special precautions to be taken while the sub-system/ assembly/part is in transit; and
- f. Other handling and safety issues.

10.12 Field Quick Reference Guide (QRG). Pocket-sized field set-up/ tear-down QRGs should be provided in a water-resistant media. The QRGs should give pertinent instructions at a glance. QRGs must be in best commercial format.

10.13 Software/Firmware. These instructions must include all information required for field maintenance of the

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

software or firmware.

10.14 Notes. Notes must contain any general information that aids in understanding the document (e.g., background information)

10.15 Back Matter. Back matter must be prepared in accordance with C-01-100-100/AG-006. Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts, graphical data).

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Material Change Notices		ILS-010	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Contractor submits MCNs to inform Canada of each change to previously submitted provisioning data or to provide a warning of impending component obsolescence. MCNs are used by Canada to update the automated supply system (Equipment Item File) and to correct Illustrated Parts Lists (and any other parts references) in Maintenance Manuals. A MCN is required, for example, following approval of an engineering change, a revision to the predicted usage rate and a change in the source of supply. D-01-100-215/SF-000 refers.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL C010, SOW paragraphs 3.4.1.2, 3.7.6, 3.7.6.1, 3.7.6.2, 3.7.6.3 and 3.7.7 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.			
10.2 Guidance. Guidance for the preparation of this deliverable is available in D-01-100-215/SF-000 (Specification for Preparation of Materiel Change Notices (MCN) for Canadian Forces Equipment).			
10.3 Specific Format and Content. The deliverable must be developed and maintained in accordance with D-01-100-215/SF-000, paragraph 3.10, which includes the following:			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10.3.1 The MCN must include the following information (as a minimum):

MANAGEMENT DATA

Contractor
Equipment Name
Contract Number
MCN Sequence Number
Submitted By
Approved/Rejected (Canada use only)

ACTION REQUIRED (Check one only)

- ☐ Delete existing item without replacement
☐ Add new item
☐ Replace existing item with new item
☐ Amend existing item

Change Authority

DATA FIELD CHANGED

EXISTING DATA

NEW DATA

- Item Number (unique sequence no.)	_____	_____
- Indenture Code (DED 162)	_____	_____
- Item Name (DED 182)	_____	_____
- Reference (Manufacturer's Part) No. (DED 337)	_____	_____
- NSCM/CAGE Code (DED 046)	_____	_____
- OEM's Part Number (if assigned) (DED 337)	_____	_____
- NATO Stock Number (if assigned) (DED 253)	_____	_____
- Quantity Per Assembly (DED 316)	_____	_____
- Standard Unit Price	_____	_____
- Unit of Issue (UOI) (DED 488)	_____	_____
- Unit of Measure (DED 491)	_____	_____
- Reparability Indicator (REP)	_____	_____
- Government Supplied Material (GSM)	_____	_____
- Procurement Lead Time (PLT)	_____	_____
- Reference Designation (DED 335)	_____	_____
- SMR Code (DED 389)	_____	_____
- Shelf Life	_____	_____
- Usage Rate	_____	_____
- Recommended Buy Quantity (DED 328)	_____	_____
- Logistics Control Number (LCN) (DED 199)	_____	_____
- Used-On Code (DED 501)	_____	_____

CHANGE NARRATIVE

Remarks

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Common Bulk Item List (CBIL)		ILS-011	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
<p>The Contractor must supply a list of all common bulk items required to support the TCR system in an operational role. The CBIL includes screws, nuts, bolts, washers and other fasteners, seals, gaskets, cotter pins and other common items used during maintenance. These are usually procured in economic quantities and issued by the full package or box.</p> <p>The associated provisioning documentation comprises the data needed by Canada to identify, catalogue, calculate and procure the range of repairable and consumable spares needed by each line of maintenance provisioned by Canada.</p>			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL item C011 and SOW paragraph 3.7.3.2 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.

10.2 Guidance. Guidance for the overall preparation of this deliverable is available in D-01-100-214/SF-000 (Specification for Preparation of Provisioning Documentation for Canadian Forces Equipment).

10.3 Specific Format and Content. The deliverable must be developed and maintained as outlined herein.

10.3.1 The deliverable must be completed in accordance with D-01-100-214/SF-000, paragraph 3.9.

10.3.2 The information requested herein captures most details required for cataloguing the items into the Canadian Forces Supply System (CFSS).

10.3.3 If the NATO Stock Number is not known, the Supplementary Provisioning Technical Documentation (SPTD) must be provided for the item submitted in the CBIL in accordance with D-01-100-214/SF-000.

10.3.4 For each item considered for provisioning, Common Bulk Item List (CBIL) must be selected as follows.

DATA FIELDS REQUIRED	CBIL
Item Number (unique sequence number for each list)	M
Item Name (DED 182)	M
Reference (manufacturer's part) No. (DED 337)	M
NSCM/CAGE Code (DED 046)	M
OEM's Part Number (DED 337)	R
NATO Stock Number (DED 253)	R
Standard Unit Price	M
Unit Of Issue (UOI) (DED 488)	M
Procurement Lead Time (PLT)	M
Shelf Life	M
Recommended Buy Quantity (DED 328)	M

M =Mandatory R =Required if known


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Logistic Support Analysis Records (LSAR)		ILS-012	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Logistics Support Analysis Records (LSAR) must record the LSA process. The LSAR must be designed to allow effective Logistics Engineering and Maintenance planning.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
7.1 CDRL C012 LSAR and SOW paragraphs 3.3.2.7, 3.5.3, 3.5.3.1, 3.5.3.2, 3.5.3.3, 3.5.4, 3.6.2.1, 3.6.3, 3.6.3.2, 3.6.5.1, 3.7.3.1 and 3.8.4 refer. 7.2 The DID contains the format, content and preparation instructions for the data product resulting from the work tasks described in MILSTD 1388-1A and GEIA-STD_0007. 7.3 The DID is used in conjunction with DID ILS-034 (Logistic Support Analysis Plan) and ILS-002 (Maintenance Plan).			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- 10.1 Generic Format and Content.** The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.
- 10.2** The LSAR may be kept in any reasonable, traceable format. The Contractor must be responsible for the upkeep of the LSAR data.
- 10.3** The applicable issue of the documents cited herein, including their approval dates must be as specified in the contract.
- 10.4 Format and Content.** The LSAR must be prepared in accordance with the provisions of GEIA-STD-0007 for those tasks identified in MIL STD 1388-1A.
- 10.5** The LSAR must be created using a SLIC-2B LSA automated platform.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
System Software		ILS-013	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
To provide the documentation needed for software maintenance and support.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL C013 and SOW paragraph 3.8.4.1 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257


CCC No. /N° CCC -

10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.

10.2 Specific Content. The software documentation provided to facilitate maintenance and support must include (as a minimum):

a. Software family tree for each computer program identifying each Computer Software Configuration Item (CSCI) by:

- (1) CSCI Number;
- (2) LSA Control Number (DED 199);
- (3) CSCI Name (DED 182);
- (4) Functional description of each CSCI; and
- (5) List of computer programs.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
LSA Candidate Items List		ILS-014
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
To provide a matrix identifying items to be subjected to LSA and the tasks to be performed.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C014 and SOW paragraphs 3.5.3.4, 3.6.2 and 3.6.3 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES

10.1 Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.

10.2 Guidance. Guidance for the preparation of this deliverable is available in:

- a. GEIA-STD-0007 (Requirements for a Logistic Support Analysis Record); and
- b. MIL-PRF-49506 (Performance Specification Logistics Management Information).

10.3 Specific Format and Content. The deliverable must be developed and maintained as outlined herein.

10.3.1 Selection of LSA candidates is driven by the concept of operations and support and is dependent upon decision factors pertaining to the nature of each item, its function, importance, design maturity (existing, modified, new), cost and failure rate. The Essentiality Code (Data Element Definition (DED) 100) is an important factor in the decision because it indicates the effect on the mission and on safety of failure of the item. Also, candidate selection is dependent upon the cost/benefit of the reported LSA data or work associated with the LSA task. Note the definitions for the data elements can be found in GEIA-STD-0007.

The LSA Candidate Items List must comprise a matrix as follows:

CANDIDATE ITEM			LSA TASK				
LCN/ALC (DED 199/019)	LCN NOMENCLATURE (DED 201)	ESSENTIALITY CODE (DED 100)					
-----	-----	-	X		X	X	
-----	-----	-					X

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Reliability and Maintainability (R&M) Predictions Data		ILS-015	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
To provide baseline reliability and maintainability data. These data may be submitted/accessed in electronic media.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL C015 and SOW paragraphs 3.6.1, 3.7.5.1 and 5.2.3 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.			
10.2. Guidance. Guidance for the preparation of this deliverable is available in:			
a. MIL-STD-785B (Reliability);			
b. MIL-HDBK-217F (Reliability);			
c. MIL-STD-470B (Maintainability);			
d. MIL-HDBK-470A, Volumes 1 and 2 (Maintainability); and			
e. MIL-HDBK-472 (Maintainability) (a related spec is MIL-PRF-49506).			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10.3. Specific Format and Content. The deliverable must be developed and maintained as outlined herein.

10.3.1. R&M predictions data are typically entered into the 'B' Table of the LSAR in accordance with GEIA-STD-0007(Requirements for a Logistic Support Analysis Record). .

10.3.2. The report must provide the following minimum reliability and maintainability prediction data.

- a. Inherent Availability (DED 164);
- b. Failure Rate (DED 140);
- c. Means of Detection (DED 237);
- d. Built-In-Test Detectability Level Percentage (DED 032);
- e. Fault Isolation (with respect to Ambiguity Groups (DED 143);
- f. Maximum Time to Repair (DED 222);
- g. Percentile (Maximum time to repair achieved) (DED 286);
- h. Mean Time To Repair (DED 236);
- i. Mean Time Between Failures (DED 229)²;
- j. Mean Time Between Maintenance Actions (DED 230)²;
- k. MTBM Induced (DED 231);
- l. MTBM No Defect (DED 233);
- m. Mean Time Between Preventive Maintenance (DED 234);
- n. Measurement Base (DED 238)².
(1) Mean Time Between Removals (DED 235); and
(2) Wear Out Life (DED 505).
- o. Achieved Availability (DED 001); and
- p. Reliability/Maintainability Indicator Code (DED 347).

Notes:

- a. A measurement base (operating hours, kilometres, etc) must be identified for DEDs 229, 230 and 238;
- b. The report must indicate the quality of the data – predicted, measured, actual; and
- c. The level of detail for R&M parameter values are normally required at the system level, and at lower levels of indenture down to the lowest repairable item. There is not normally a need Canada to have R&M data for items below the level at which maintenance will be performed (2nd Level).

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Level of Repair Analysis (LORA) Report		ILS-016
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
Level of Repair Analysis (LORA) provides economic justification for the decision to repair or discard a failed hardware item and for the maintenance level of repair. This report documents the results of Economic LORA analyses.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C016 and SOW paragraph 3.6.2 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.		
10.2. Specific Content. This Report must include (as a minimum): <ul style="list-style-type: none">a. Introduction:<ul style="list-style-type: none">(1) Purpose;(2) Applicable References; and(3) Definitions and Acronyms.		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- b. Method and Rationale:
 - (1) Description of LORA Model; and
 - (2) LORA Procedure.
- c. LORA Results:
 - (1) Maintenance Scenario Data;
 - (2) For each item;
 - (a) Item Input Data;
 - (b) Results of LORA Computations; and
 - (c) Results of Sensitivity Analysis.
- d. Conclusions and Recommendations:
 - (1) For each item;
 - (2) Assessment of Results; and
 - (3) Recommended SMR Code (DED 389).

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Sparing Analysis Report		ILS-017
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
Sparing Analysis is performed to determine the optimum selection, quantity and distribution of spares. This report documents the results of Sparing Analysis.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C017 and SOW paragraphs 3.6.3, 3.6.3.1, 3.6.3.2 and 3.6.3.3 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.		
10.2. Specific Content. This Report must include (as a minimum): <ul style="list-style-type: none">a. Introduction:<ul style="list-style-type: none">(1) Purpose;(2) Applicable References; and(3) Definitions and Acronyms.		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- b. Method and Rationale:
 - (1) Description of Sparing Analysis Model; and
 - (2) Sparing Analysis Procedure.
 - (a) For Repairables; and
 - (b) For Consumables.
- c. Sparing Analysis Results:
 - (1) Maintenance Scenario Data;
 - (2) For Repairables in each Line Replaceable Unit;
 - (a) Item Input Data; and
 - (b) Results of Sparing Analysis.
 - (3) For Consumables:
 - (a) Input Data; and
 - (b) Results of Calculations.
- d. Conclusions and Recommendations:
 - (1) For each Line Replaceable Unit
 - (a) Recommended buy of Repairables; and
 - (b) Recommended buy of Consumables.

Note: Rather than submitting the extensive data identified in this chapter, the Contractor may provide DND with access to these data.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Request for Nomenclature		ILS-018	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
To request Joint Electronics Type Designation System (JETDS) nomenclature for electronic equipment, test and training equipment.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL C018 and SOW paragraphs 3.8.2, 3.9.7.3 and 3.12.2.1 refer. D-01-000-200/SF-001 provides guidance.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.			
10.2. Guidance. Guidance for the preparation of this deliverable is available in D-01-000-200/SF-001 (JETDS Assignment and Procedures).			
10.3. Specific Format and Content. The deliverable must be developed and maintained as outlined herein.			
10.3.1. Items requiring nomenclature designations are identified within D-01-000-200/SF-001, paragraphs 3.2 and 3.3.			
10.3.2. Canada will provide Request for Nomenclature Form, DND 2091, to the Contractor. The Contractor must submit the form as detailed within D-01-000-200/SF-001, Part 3, paragraph 3.10.			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10.3.3. The following information must be included for all items requiring nomenclature designations in accordance with D-01-000-200/SF-001, paragraph 3.5.

10.3.4. The request for nomenclature must include the following information:

- a. Block 1: Originator and Address;
- b. Block 2: Through or via (Prime Contractor);
- c. Block 3: Submitted to (DND office);
- d. Block 4: Date of Request;
- e. Block 5: Request Sequence Number (assigned by DND);
- f. Block 6: Source Request Number (optional);
- g. Block 7: Security Class of Equipment;
- h. Block 8: Federal Supply Class;
- i. Block 9: Stock Number (when available) (DED 253);
- j. Block 10: Action Requested;
____ Revision ____ Cancellation ____ Assignment
- k. Block 11: For Revision, Note Change in;
 - (1) ____ Item Name;
 - (2) ____ Type Designation;
 - (3) ____ Security Class of Tech Data;
 - (4) ____ Technical Data; and
 - (5) ____ Security Class of Equipment.
- l. Block 12: Type of Nomenclature Requested;
 - (1) ____ Experimental or Developmental; and
 - (2) ____ Pre-production or Production.
- m. Block 13: Recommended Nomenclature (DED 182);
- n. Block 14: Technical Data Details;
 - (1) Federal Cataloguing Name (DED 201);
 - (2) Technical Characteristics;
 - (3) Special Features;
 - (4) Operating Power Requirements;
 - (5) Overall Dimensions and Weight;
 - (6) Mounting Data;
 - (7) Design Activity Data (if applicable);
 - (8) Manufacturer's Data (if applicable); and
 - (9) Type of Installation (if applicable).
- o. Block 15: Functional Description of Equipment;
- p. Block 16: Contract or Order Number;
- q. Block 17: Government Drawing Number (if applicable) (DED 089);
- r. Block 18: Government Specification Number;
- s. Block 19: Date Action Taken (for use by Control Point only);
____ Assign ____ Cancel ____ Revise
- t. Block 20: Project Group;
- u. Block 21: Equipment of which this item is a part; and
- v. Block 22: Equipment with which this item is used.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Equipment Identification Plate Data		ILS-019
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
To obtain DND TA design approval prior to manufacturing Equipment Identification Plates.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C019 and SOW paragraph 3.8.3 refer. D-02-002-001/SG-001 provides guidance.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.		
10.2. The Equipment Identification Plate Data must be prepared in accordance with Canadian Forces specification D-02-002-001/SG-001.		
10.3. Those items, which require identification markings or nameplates, are to be identified in accordance with A-A-50271.		

Contract No. - N° de Contrat

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client

FMS No. /N° VME

W8485-155257

File No. - N° du dossier

164BQW8485-155257

CCC No. /N° CCC -


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Engineering Drawings and Associated Lists		ILS-020
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
<p>3.1 To define the Product Baseline for in-service configuration management and to provide a source of information to support maintenance and engineering analysis activities. C-01-000-100/AG-004 refers.</p> <p>a. Fitted Equipment List Reference; and</p> <p>b. Minimum Equipment List Reference.</p> <p>3.2 Engineering Drawing Package and Associated List must define engineering design approaches. They are used to support design analyses, the development of prototype hardware and life-cycle support.</p>		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C020, SOW paragraphs 3.8.1, 3.9.7.2 and 5.8.4 and Appendix 17 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. Specific Content and Format. The Engineering Drawings and Associated Lists must be supplied in the form of a Technical Data Package (TDP) prepared in accordance with the CF Specifications D-01-400-001/SG-000 and D-01-400-002/SF-000. Appendix 17 outlines the production and delivery criteria for engineering drawings.</p> <p>10.2.1. Submissions must be accompanied by Engineering Data Lists to identify and index the entire contents of the TDP.</p> <p>10.2.2. For new drawings, drawing numbers must be selected from Drawing Number Allotments provided by DND.</p> <p>10.2.3. The data must be submitted in the media (and quantities) stipulated in the Statement of Work.</p> <p>10.2.4. For new drawings, drawing forms used must be:</p> <p><u>Drawing Size</u> <u>NATO Stock Number</u></p>		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

AO	7530-21-896-0808
A1	7530-21-896-0807
A2	7530-21-896-0806
A3	7530-21-896-0956
B1	7530-21-896-0957
A4 (Data List)	7530-21-896-0805
A4 (Cover Sheet)	7530-21-896-0954

10.2.5. Parts Lists must be prepared integral to the engineering assembly drawing.

10.2.6. Control Drawings must be prepared for Commercial Off The Shelf items.

10.2.7. Drawings must contain the Contractor's name and CAGE code.

If metric system requirements are applicable, then the drawings must comply with the Canadian Metric Guide CAN3-Z234.1-76 or the American DoD STD-1476 Metric System, Application in New Design.

10.2.8. Use DND standard nomenclature for equipment items in all drawings, specifications, lists and supporting documentation.

10.2.9. The Engineering Drawings and Associated Lists must be prepared and delivered in accordance with Appendix 17.

10.2.10. Level 2 Engineering Drawings, Associated Lists and Reference Documents must be provided in accordance with Appendix 17 of the SOW, as well as the following requirements and in the final form specified below. In the event that the Contractor already has drawings equivalent to Level 2, the Contractor may submit them to the DND TA for approval. DND reserves the right to accept or reject COTS drawings. If the DND TA rejects the Contractor's drawings, then the Contractor must change the drawings as required to ensure compliance with the specification and standard described below.

10.2.11. Governing Specification.

a. NEW DRAWINGS:

- (1) D-01-400-002/SF-000, Drawings, Engineering and Associated List (Canada); and
- (2) DoD-D-1000B, Drawings, Engineering and Associated List (USA).

b. EXISTING DRAWINGS:

- (1) Existing drawings/associated list must be accepted if they meet the requirements of D-01-400-002/SF-000 and DoD-D-1000B.

10.2.12. Governing Standard.

- a. D-01-400-001/SG-000, Engineering Drawing Practices.

10.2.13. Applicable Documents.

- a. CAN/CSA-Z234.1-89, Canadian Metric Practices Guide; and
- b. D-LM-008-022/SG-000, Standard for Packaging of Documentation.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10.2.14. Drawing Level.

- a. Level 1 – Design Concept;
- b. Level 2 – Prototype / Limited Production; and
- c. Level 3 – Production and installation.

10.2.15. Reference Documents.

Reference documents called up on the engineering drawings (excepting those, which are government, society and readily available industrial specifications or standards) must be included as part of the engineering drawings and associated documents.

10.2.16. Contractor Drawings.

Existing Contractor drawings must be acceptable provided they meet the requirements of paragraph 3.2 of D-01-400-002/SF-000. In the event that Contractor drawings do not meet the specified requirements the Contractor must rework the drawings to ensure that the requirements are met.

10.2.17. Parts Lists.

Parts lists can be integral or separate from the drawings.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Engineering Data List		ILS-021
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
To provide an index of all engineering data that comprise the Product Baseline, including drawings, specifications and software documentation. These data are needed by DND to acquire, operate, maintain and support the system throughout its life cycle.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C021 and SOW paragraphs 3.8.1.3, 3.8.1.4, 5.8.4, 5.8.5, 5.12.2.7 and 5.12.6.2 refer. D-01-400-001/SF-000 provides guidance regarding content.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.		
10.2. Guidance. Guidance for the preparation of this deliverable is available within the following: <ul style="list-style-type: none">a. D-01-400-002/SF-000 (Drawings, Engineering and Associated Lists);b. D-LM-008-022/SG-000 (Standard for Packaging of Documentation);c. ASME Y14.100 (Engineering Drawing Practices);d. ASME Y14.24 (Types and Applications of Engineering Drawings);		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- e. ASME Y14.34 (Associated Lists);
- f. ISO 9660 (Information Technology - Volume and File Structure of CDROM for Information Interchange);
- g. CSA Z234.1 (Canadian Metric Practices Guide); and
- h. TIFF (Adobe Systems Incorporated).

10.3. Specific Format and Content. Engineering Drawings, Associated Lists and Reference Documents must be provided in accordance with the following requirements and in the final form specified herein. All drawings must be in english and french languages.

10.3.1. Director Supply Chain Operations (DSCO) 5-3-2 Technical Data Action Notice (TDAN) Number. The following number has been assigned to control the acquisition of all Engineering Drawings and Associated Lists produced under this contract.

10.3.2. New Drawings. Engineering Drawings and Associated Lists must meet the design disclosure and legibility requirements of the specified level in accordance with D-01-400-002/SF-000.

10.3.2.1. Drawing Level. The detail level of drawings must be Level 2 Prototype/Limited Production.

10.3.3. Drawing Practices. Drawing practices must be in accordance with ASME Y14.100.

10.3.4. Data Lists. Data Lists complete with Cover Sheets are required and must be prepared in accordance with ASME Y14.34M and supplied as part of the Engineering Drawings. Data Lists must be prepared at the item level of assembly (and/or end item) declared for future production by Canada. Cover sheets must be prepared as sheet one (1) of the Data List. Cover Sheets must include the Contract Number and a note, which details the Intellectual Property Rights that apply to the data identified on the Data List (see para 10.3.9).

10.3.5. Reference Documents. Reference documents called up on the Engineering Drawings (excepting those, which are government, society and readily available industrial specifications or standards) must be included as part of the Engineering Drawings and Associated Lists.

10.3.6. Contractor Drawings. Existing Contractor Drawings being provided as part of the Engineering Drawing Package must be in accordance with paragraph 3.2 of D 01-400-002/SF 000. In the event that Contractor Drawings do not meet the specified requirements, the drawings must be reworked to ensure the requirements are met.

10.3.7. TDAN. A TDAN must be prepared listing all Drawings and Associated Lists delivered as a result of the contract. A sample TDAN can be provided by Canada upon request.

10.3.7.1. Drawing System. The mono-detail drawing system, as defined in D-01-400-001/SG-000, must be used.

10.3.7.2. Drawing Types. The types of drawings must satisfy the sophistication of the specified drawing level. Drawing types selected must be in accordance with ASME Y14.24. Type selection must be subject to the approval of Canada.

10.3.7.3. Parts Lists. Parts lists must be prepared integral with the drawings. On multi-sheet drawings, the parts list must be placed on sheet one (1).

10.3.7.4. Control Drawings. Control Drawings as defined in ASME Y14.24 must be prepared for commercial items approved for use in the design, which are not defined by Canada or nationally recognized industrial specifications and standards.

10.3.7.5. Family-Tree Drawing(s). A Family-Tree Drawing(s) must be prepared depicting the complete configuration

of the Engineering Drawing Package, and it must be subject to the approval of Canada.

10.3.7.6. Units of Measure. Canada will determine the units of measure (metric or Imperial). Metric drawings must be in accordance with CSA Z234.1.

10.3.8. Integration. New and existing drawings must be integrated to form a complete Engineering Drawing Package.

10.3.9. Data Rights. Canada must have rights in data as detailed in the Terms and Conditions of the contract.

10.3.9.1. Data Rights Legend. All Foreground & Background Engineering Drawings & Associated Lists delivered under this contract must be marked with a complete notation as detailed at "Intellectual Property Rights" and/or "Data Rights" clause(s) of the contract.

10.3.10. Quality Assurance Provisions. Quality of the Engineering Drawings and Associated Lists delivered on this contract is the responsibility of the Contractor and subject to the quality requirements of the contract.

10.3.10.1. Acceptance. Acceptance of the Engineering Drawings, Associated Lists, Reference Documents and Electronic Data Deliverables for technical content and format requirements will be the responsibility of Canada.

10.3.10.1.1. Interim Deliverables for Acceptance Purposes. Two (2) complete, full-size, print copy sets of the Level 2 Engineering Drawings, Associated Lists and Reference Data must be delivered to Canada in hard copy form for acceptance purposes (reduced size" print copies may be acceptable provided that they are legible). If the package cannot be accepted, for reasons of either technical content or format, it may be necessary to resubmit the print copy sets.

10.3.11. Final Deliverables. Upon acceptance, the Level 2 Engineering Drawings, Associated Lists and Reference Data must be delivered to Canada in hard and soft copy form as outlined herein:

10.3.11.1. Hard Copy Deliverables. Two (2) sets of hard copy deliverables must be provided to Canada.

10.3.11.2. Soft Copy Deliverables. Soft copy deliverables to Canada must include the Engineering Drawings, Associated Lists, Reference Data and the associated Metadata in electronic form.

10.3.11.2.1. Engineering Drawings. Engineering Drawings must be delivered as Raster files as detailed herein. Multi-sheet drawings must be delivered one sheet per file.

10.3.11.2.2. Associated Lists. Associated Lists must be delivered as Raster files as detailed herein. Multi-sheet lists must be delivered one sheet per file.

10.3.11.2.3. Reference Documents. Reference Documents must be delivered as Raster files as detailed herein or in a format deemed acceptable by Canada.

10.3.11.2.4. TDAN. The TDAN must be delivered as Raster files as detailed in herein. Multi-sheet TDANs must be delivered one sheet per file. Alternate file formats may be acceptable provided they have been approved in writing by Canada. NOTE: One (1) hard copy of the TDAN complete with Contractor's signatures must be provided with the final deliverables.

10.3.11.2.5. Metadata (Capture of Related Information). Metadata (the data that describes data objects) must be provided for all Engineering Drawings, Associated Lists and Reference Data deliverables. Metadata records must contain the information in the order shown in Table 1. Metadata must be delivered as a Microsoft Access data base table as shown at Figure 1.

10.3.11.2.5.1. Database Table. Each delivered image must have a corresponding database record. All records must be entered into a single Microsoft Access 2000 database table. Fields without corresponding information must remain

blank. The Microsoft Access database file must be named "metadata.mdb".

10.3.11.2.6. File Formats for Raster Data. Raster data must be Tagged Image File Format in accordance with Adobe Systems Inc. specification "TIFF Revision 6", compressed to CCITT Group 4. Files must be UNTILED and be wholly raster (hybrid files must not be delivered).

10.3.11.2.6.1. Pel Density. Raster image pixel element (Pel) density must be a minimum of 200 dpi.

10.3.11.2.6.2. Position of Pels. Position of Pels must be as follows:

- a. Portrait Data: line progression 270 degrees, Pel path 0 degrees; and
- b. Landscape Data: line progression 270 degrees, Pel path 0 degrees.

10.3.11.2.6.3. Image Sizes. Image sizes as outlined in Table 2 are provided as a guide and sizes may vary slightly, but no more than plus or minus one inch (25 mm) in either width or length.

10.3.11.2.6.4. Cropping. Images must be cropped such that the engineering drawing is free from extraneous information. For example, drawing formats having an inside and an outside border must be cropped closely to the outside of the outside border. Drawing formats having only one border, where zone or quadrant identification is outside of that border must be cropped such that the zone information is retained.

10.3.11.2.6.5. Skew Correction. In general, skew correction is not required. If the Contractor deems it necessary, correction must be done to 0 degrees and 90 degrees.

10.3.11.2.6.6. Despeckling. If any despeckling is required, the data integrity must not be compromised by this operation.

10.3.11.2.6.7. Image Foreground /Background. Images must be black on white background.

10.3.11.2.6.8. File Names/Batch Number Allocation. File names and a batch number must be requested in writing from Canada (defined within Table 1). Quantity of file names required must be specified at the time of the request.

10.3.11.2.7. Media of Delivery. The media form for final delivery of electronic data must be CD-ROM, written in accordance with ISO 9660. Note that file compression software must not be used. Each CD-ROM and its case must be labelled or marked in a method of the Contractor's choosing. Each label or marking must display the Batch Number, Contract/Task number, TDAN number and the date the CD-ROM was created.

10.3.12. Packaging/Marking/Loss/Damage. Reproducible and non-reproducible data must be preserved packaged and marked in accordance with D-LM-008-022/SG 000. Exterior shipping containers must be marked with the contract and TDAN number and in the event of loss or damage while in shipment; the responsibility for replacement must be that of the primary Contractor and must be at the primary Contractor's expense.

10.3.13. The Engineering Data List must be in the form of a table that includes for each data item:

- a. A sequence number;
- b. Drawing Number (DED 089);
- c. The current revision or amendment list number (may be included in Drawing Number);
- d. Drawing title;
- e. Drawing classification (use, level, proprietary status) (DED 088);
- f. The language(s) (E/F) of the data item and whether the data item requires translation (Y/N); and
- g. When the data item will be available.

10.3.14. The Engineering Data List must be presented in a logic sequence so as to facilitate its use. For example,

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

drawings should be sequenced to reflect the equipment's Family Tree Structure. The top drawing in each data package should present the Family Tree Structure, listing each document number and title. Drawing sets should be complete for a Line Replaceable Unit.

10.3.15. The Engineering Data List should be submitted in electronic media. D-01-400-001/SG-000 provides guidance.

TABLE 1 - INDEX FIELDS

Order	Field Name	Max Field Length	Field Definition / Description	Example Entry
1	FILENAME (all one word)	12 (8.3)	Name of electronic file - unique filename for uploading in database. File names will be issued by Canada. Alpha characters must be uppercase.	AZ000235.TIF
2	BATCH No (all one word)	8	Batch number - used for uploading files in database. Batch number will be assigned with filenames. Alpha characters must be uppercase.	AZ001
3	DOCUMENT No (all one word)	25	This field must contain the document number.	9775458
4	REVISION	3	Letter or number indicating the revision level. If there is no rev, indicate with dash ("-")	B
5	SHEET No (all one word)	3	Sheet number x of y. Enter the value of x.	1
6	No Of SHEETS (all one word)	3	Sheet number x of y. Enter the value of y.	1
7	FRAME No (all one word)	3	Frame number x of y. Enter the value of x. (This field is applicable only when capturing data from aperture cards.) When field is not applicable, leave blank.	
8	No Of FRAMES	3	Frame number x of y. Enter the value of y. (This field is applicable only when capturing data from aperture cards.) When field is not applicable,	

Contract No. - N° de Contrat
 Buyer ID - Id de l'acheteur
 W8485-155257
 164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
 FMS No. /N° VME
 W8485-155257

File No. - N° du dossier
 164BQW8485-155257

CCC No. /N° CCC -

	(all one word)		leave blank.	
9	NSCM	5	This field must contain the NATO Supply Code for Manufacturers (NSCM) of the Owner of the data. (Also known as FSCM, CAGE or NCAGE code.)	36376
10	SIZE	2	This field contains the document size.-For imperial sizes use A, B, C, D, E, F, G, H, J, K and LE (for legal)-For metric sizes use A4, A3, A2, A1, A0 and B1.	A2
11	ADDITIONALIDENTIFIER (all one word)	10	This open field must be used when two (2) or more documents have the same document number but are different documents .e.g. Document 12345; Document 12345 DCR 001, then "DCR 001" would be entered in this field. When field is not applicable, leave blank.	DCR 001
12	DATARIGHTS (all one word)	1	The data rights as specified in the contract. "L" for "LIMITED" or "U" for "UNLIMITED"	U
13	DOCUMENT TITLE (all one word)	240	Title of document. (i.e. Drawing title)	BRACKET ASSY
14	TDAN No (all one word)	12	This field must be used to enter the TDAN number assigned for the project.	054271035
15	ERN	8	This field must be used for the Equipment Registration Number. Information must be provided if required, otherwise the field may be left blank.	
16	EAC	8	This field must be used for the Equipment Application Code. Information must be provided if required, otherwise the field may be left blank.	
17	EQUIPMENT	75	Name of the Equipment. Information must be provided if required, otherwise the field may be left blank.	

TABLE 2 - DRAWING SIZES

Contract No. - N° de Contrat

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No. /N° CCC -

FMS No. /N° VME

164BQW8485-155257

W8485-155257

METRIC DRAWING SIZES

Drawing Size	W x L (max) (mm)	Pels Per Line	Number of Lines
A4	210 X 297	1656	2344
A3	297 X 420	2344	3312
A2	420 X 594	3312	4680
A1	594 X 841	4680	6624
A0	841 X 1189	6624	9368
B1	707 X 1000	5567	7875

NORTH AMERICAN / IMPERIAL DRAWING SIZES

Drawing Size	W x L (max) (inches)	Pels Per Line	Number of Lines
A	8.5 x 11	1704	2200
B	11 x 17	2200	3400
C	17 x 22	3400	4400
D	22 x 34	4400	6800
E	34 x 44	6800	8800
F	28 x 40	5600	8000
G	11 x 90	2200	18000
H	28 x 143	5600	28600

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

J	34 x 176	6800	35200
K	40 x 143	8000	28600
Legal	8.5 x 14	1704	2800

FIGURE 1 - Sample Metadata Records

Sample record entries (Metadata) in database table (shown on two lines to suit page width):

FILENAME	BATCHNO	DOCUMENTNO	REVISION	SHEETNO	NOOFSHEETS	FRAMENO	NOOFFRAMES
AZ000235.TIF	AZ001	9775458	B	1	1	1	1
AZ000236.TIF	AZ001	9775457	-	1	1		

NSCM	SIZE	ADDITIONALIDENTIFIER	DATARIGHTS	DOCUMENTTITLE	TDANNO	ERN	EAC	EQUIPMENT
36376	A2	DCR 001	U	BRACKET ASSY	054271035			
36376	A1		U	BRACKET	054271035			

Contract No. - N° de Contrat

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client

FMS No. /N° VME

W8485-155257

File No. - N° du dossier

164BQW8485-155257

CCC No. /N° CCC -


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Supplementary Provisioning Technical Documentation (SPTD)		ILS-022
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET The SPTD supplements the Provisioning Documentation to uniquely identify, for cataloguing purposes, each item in each provisioning list that has not already been assigned a NATO Stock Number.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE CDRL C022 and SOW paragraphs 3.7.3.2, 3.7.3.3, 3.7.4, 3.7.4.1, 3.7.5.1, 3.7.6.2 and 3.9.7.1 refer.		
8. ORIGINATOR - AUTEUR PM		9. APPLICABLE FORMS - FORMULES PERTINENTES
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. Guidance. Guidance for the preparation of this deliverable is available in D-01-100-214/SF-000 (Specification for Preparation of Provisioning Documentation for Canadian Forces Equipment).</p> <p>10.3. The SPTD must include sufficient data to clearly define each item for cataloguing. The SPTD must include identification of any limitations on the use or publication of any data provided.</p> <p>10.4. Specific Format and Content. The deliverable must be sequenced in the same order as the provisioning lists that it supplements.</p> <p>10.4.1. The SPTD must include:</p> <ul style="list-style-type: none">a. Item Name (DED 201);b. Reference (Manufacturer's Part) No. (DED 337); andc. CAGE Code (DED 046).		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10.4.2. The SPTD must include, as applicable:

- a. Configuration – drawing of item; assembly, wiring or schematic drawing; illustrated parts list;
- b. Technical specification, including relevant standards;
- c. Physical characteristics, such as dimensions, tolerances, materials, mandatory processes, surface finish, protective coating;
- d. Electrical characteristics;
- e. Performance data, including the environmental and operating conditions under which the item must perform;
- f. Mounting requirements;
- g. Special features which contribute to the uniqueness of the item; and
- h. Commercial catalogue data.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Repair and Overhaul (R&O) Plan		ILS-023
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
To provide R&O planning information for each item requiring R&O, as soon as this information is known.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C023 and SOW paragraphs 3.6.5 and 3.6.5.1 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.		
10.2. Specific Content. This Report must provide the following data on each item requiring Repair and Overhaul: <ul style="list-style-type: none">a. Item Number (unique sequence number for each list);b. Item Name (DED 182);c. Reference (Manufacturer's Part) Number (DED 337);d. NSCM/CAGE Code (DED 046);e. NATO Stock Number (if available) (DED 253);f. Wear out Life (DED 505); and		

Contract No. - N° de Contrat

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No. /N° CCC -

FMS No. /N° VME

W8485-155257

164BQW8485-155257

g. Designated Rework Point (DED 081).

10.2.1. For each item requiring Repair and Overhaul, provide a Technical Data List identifying the technical data needed by the Repair and Overhaul facility. These data may include, for example, overhaul task descriptions, repair schemes, test procedures and instructions on modifications to be incorporated.

10.2.2. Where a repair and overhaul capability must be established, the estimated cost of doing so.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Government Supplied Material (GSM) and Government Furnished Equipment (GFE) Status/Shortage Report		ILS-024	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Contractor must report GSM and GFE receipts, shortages and rejections.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL C024 and SOW paragraph 4.2 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.			
10.2. Specific Content. This document must include the following data:			
a. <u>Introduction</u> (1) Contractor; (2) Contact person; (3) Telephone number; and (4) Contract for which the GSM and GFE is required.			
b. <u>GSM and GFE Status/Shortages</u> Indicate for each item of GSM and GFE:			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ


Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- (1) Item Number (same as on GSM and GFE Delivery Schedules);
- (2) Item Name (DED 182);
- (3) NSCM/CAGE Code (DED 046);
- (4) NATO Stock Number (DED 253);
- (5) Reference (Manufacturer's Part) Number (DED 337);
- (6) GSM and GFE Total Quantity Required;
- (7) Gross Number Received;
- (8) Serviceable Stock On Hand;
- (9) Number Short;
- (10) Number Rejected; and
- (11) Number of Rejects Repaired.

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Government Supplied Material (GSM), Government Furnished Equipment (GFE) and Government Furnished Information (GFI) Inventory Lists		ILS-025
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
The Contractor must identify equipment supplied by the DND for use in the integration process.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C025 and SOW paragraph 1.4.3 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.

10.2. Specific Format and Content. At the beginning of the document indicate its source: Contractor, contact person and telephone number and identify the contract for which the GSM and GFE is provided.

10.2.1. Prepare the List in four parts, as applicable:

- a. Part 1 - Equipment;
- b. Part 2 - Special Production Tooling;
- c. Part 3 - Special Test Equipment; and
- d. Part 4 - Computer Software.

10.2.2. All GFE must be included.

10.2.3. Include for each item:

- a. Item Name;
- b. Serial Number;
- c. Related production process or part; and
- d. The cost of the item.

10.2.4. Sum the cost of items for each Part of the List.

10.2.5. GFE will be provided under a Loan Agreement which ensures the proper care of DND property, prevents the inadvertent sale of DND assets by the Contractor and controls the re-allocation of such assets to other companies, for example for life cycle product support.

10.2.6. The Articles of Agreement should have a clause to require that:

- a. Clear title is vested in DND;
- b. Each item is clearly identified as Canadian Government Property;
- c. Accurate records are maintained;
- d. These assets are properly cared for while in the Contractor's custody; and
- b. The items are returned to DND upon completion of the contract.

10.2.7. From the date the first GSM or GFE is requested, the Contractor must prepare and submit monthly GSM and GFE Inventory Lists in accordance with CDRL item C025.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Special Packaging, Handling, Storage and Transportability (PHST) Consideration Items List		ILS-026
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
To identify all items requiring special considerations when being handled, stored or transported.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C026 and SOW paragraph 3.9.2 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.		
10.2. Specific Format and Content. Include the following data in the Special PHST Consideration Items List: <ul style="list-style-type: none">a. Item Number (unique sequence number for each list);b. Item Name (DED 182);c. Reference (Manufacturer's Part) Number (DED 337);d. NSCM/CAGE Code (DED 046);e. NATO Stock Number (if available) (DED 253);f. Description of Special Consideration; andg. Applicable Standard (for protection, handling) (if appropriate).		
10.2.1. Special PHST consideration items include items: <ul style="list-style-type: none">a. Subject to damage from electrostatic discharge;b. Subject to damage from shock (of more than 25G instantaneous);c. Subject to degradation from magnetic or electromagnetic radiation;d. Subject to degradation from freezing;e. Subject to degradation from humidity;		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- f. Subject to degradation from heat;
- g. Subject to degradation from ultra-violet light;
- h. That are dangerous goods;
- i. That are hazardous material;
- j. That must be kept in a special orientation;
- k. That require special external blocking or bracing;
- l. That must have an internal blocking/locking device engaged;
- m. That emit electromagnetic radiation that could degrade nearby susceptible items;
- n. That require continuous power application;
- o. That can be without power application only for a short period of time;
- p. That should not have protective packaging removed except in a clean room environment;
- q. That can only be removed from a special storage environment for a short period of time;
- r. That are classified and must have an escort; and
- s. That requires a special container.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Packaging Data		ILS-027
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
To identify packaging requirements for items to be shipped to or stored at a DND facility (such as spare parts, bulk items, special tools, support equipment, test equipment and training equipment). These data may be submitted/accessed in electronic media.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C027 and SOW paragraphs 3.9.3 and 3.9.3.2 refer. D-LM-008-011/SF-001 provides guidance.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.		
10.2. Guidance. Guidance for the preparation of this deliverable is available within the following: <ul style="list-style-type: none">a. D-LM-008-011/SF-001 (Preparation and Use of Packaging Requirements Codes);b. D-LM-008-001/SF-001 (Methods of Packaging);c. MIL-STD-961E (DoD Standard Practice - Defence Specification); andd. A-GG-040-004/AG-001 (Hazardous Materials Safety and Management Manual)		
10.3. Specific Format and Content. The deliverable must be developed and maintained as outlined herein.		
10.3.1. Provide the following data: <ul style="list-style-type: none">a. Item Identification (1) Item Name (DED 182);		

Contract No. - N° de Contrat

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No. /N° CCC -

FMS No. /N° VME

W8485-155257

164BQW8485-155257

(2) Reference (Manufacturer's Part) Number (DED 337);

(3) NSCM/CAGE code (DED 046); and

(4) NATO Stock Number (if assigned) (DED 253).

b. Packaging Data

(1) Unit Pack Size (length, width, depth) (inches) (DED 496);

(2) Unit Pack Weight (pounds) (DED 497);

(3) Packing Code (A, B, C) (DED 283);

(4) Hazardous Code (Regulated/Non-regulated) (DED 154); and

(5) Special packaging instruction (for items on Special PHST Consideration Items List) (DED 396).

(6) Material Content Code (DED 395);

(7) Unit Pack Cube (DED 493);

(8) Degree of Protection Code (DED 074); and

(9) Quantity Per Unit Pack (DED 321).

Notes:

1. To reduce the need for redundant data, similar items may be grouped with the same packaging data applying to the group.
2. The Canadian Forces Supply System requires size in meters and weight in kilograms.
3. To use the special packaging instruction number, the Contractor will need to prepare an enumerated list of instructions, consistent as possible with MILSTD 2073-1 and -2.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Material Safety Data Sheet (MSDS)		ILS-028
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
<p>To provide information and instructions on the chemical and physical characteristics of a substance, its hazards and risks, the safe handling requirements, and actions to be taken in the event of a fire, spill, overexposure or other risk.</p> <p>Dangerous/hazardous material is defined as any substance which is capable of posing a risk to health, safety, property or the environment when stored, handled or transported, and is so classified in regulations governing transportation.</p> <p>An MSDS is an information paper containing data relative to a specific product.</p>		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
CDRL C028 and SOW paragraphs 3.9.4 and 3.9.4.1 refer.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. Guidance. Guidance for the preparation of this deliverable is available in:</p> <ul style="list-style-type: none">a. Hazardous Products Act including the Controlled Products Regulations and the Ingredients Disclosure List;b. Hazardous Materials Information Review Act including the Hazardous Materials Information Review Regulations;c. (Canadian) Transportation of Dangerous Goods Act;d. (Canadian) Transportation of Dangerous Goods Regulations; ande. A-GG-040-004/AG-001 (General Safety Program - Hazardous Materials Safety And Management Manual). <p>10.3. Specific Format and Content. The deliverable must be developed and maintained as outlined herein.</p>		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10.3.1. Hazardous materials include (but are not limited to) dangerous goods identified in the (Canadian) Transportation of Dangerous Goods Act. Although there is no specified MSDS format established by law in Canada, the MSDS must contain information under the following nine headings as detailed within Schedule I of the Controlled Products Regulations, Section 12

10.3.2. A Material Safety Data Sheet (MSDS) is an information paper containing data relative to a specific product. The types of information shown are detailed in the Hazardous Products Act, Controlled Products Regulations. The MSDS must be bilingual English/French. There is no specific format established by law in Canada, however the MSDS must contain information under the following 9 headings:

- a. Hazardous Ingredients:
 - (1) Chemical Abstract Service Registry Number;
 - (2) Ingredient name; and
 - (3) Ingredient percentage.
- b. Preparation Information:
 - (1) Name and phone number of person, group or party responsible for producing MSDS; and
 - (2) Date of MSDS preparation.
- c. Product Information:
 - (1) Manufacturer's name, address and emergency phone number;
 - (2) Supplier identifier, address and emergency phone number (if not the same as the manufacturer);
 - (3) Product identifier; and
 - (4) Product use data.
- d. Physical Data:
 - (1) Physical state (gas, liquid, solid);
 - (2) Appearance and odour;
 - (3) Specific gravity, vapour density;
 - (4) Evaporation rate;
 - (5) Boiling point;
 - (6) Freezing point;
 - (7) pH; and
 - (8) Coefficient of water/oil distribution.
- e. Fire or Explosion Hazard:
 - (1) Conditions of flammability;
 - (2) Means of Extinction;
 - (3) Flash point and method of determination;
 - (4) Upper and lower explosion limits;
 - (5) Auto ignition temperature;
 - (6) Hazardous combustion products; and
 - (7) Explosion data: Sensitivity to static discharge and mechanical impact.
- f. Reactivity Data:
 - (1) Conditions under which the product is chemically unstable;
 - (2) Name of substance or class of substance of which the product is incompatible;

Contract No. - N° de Contrat

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No. /N° CCC -

FMS No. /N° VME

164BQW8485-155257

W8485-155257

- (3) Conditions of reactivity; and
- (4) Hazardous decomposition products.

g. Toxicological Properties:

- (1) Route of entry: Skin contact, skin absorption, eye contact, inhalation and ingestion;
- (2) Effects of acute and chronic exposure to product;
- (3) Exposure limits (Threshold Limit Values);
- (4) Irritancy and sensitization of product;
- (5) Carcinogenicity, Teratogenicity and Mutagenicity of product;
- (6) Reproductive toxicity; and
- (7) Name of toxicologically synergistic products.

h. Preventative Measures:

- (1) Personal protective equipment to be used;
- (2) Specific engineering controls to be used;
- (3) Procedures to be followed in case of leak or spill;
- (4) Waste disposal;
- (5) Handling procedures and equipment;
- (6) Storage requirements; and
- (7) Transportation information.

i. First Aid Measures:

- (1) Specific first aid measures.

Contract No. - N° de Contrat
 Buyer ID - Id de l'acheteur
 W8485-155257
 164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
 FMS No. /N° VME
 W8485-155257

File No. - N° du dossier
 164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Calibration/Measurement Requirement Summary		ILS-029	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
To provide the data needed to set up the calibration program. These data may be submitted/accessed in electronic media.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENTES
January 2016	TCR Modernization Project Management Office		Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL C029 and SOW paragraph 3.10.2 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
<p>10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. Guidance. Guidance for the preparation of this deliverable is available in:</p> <ul style="list-style-type: none"> a. GEIA-STD-0007(Requirements for a Logistic Support Analysis Record); and b. ISO 17025. <p>10.3. Specific Format and Content. The deliverable must be developed and maintained as outlined herein.</p> <p>10.3.1. CMRS data are typically entered into the 'E' Tables of the Logistics Support Analysis Record (LSAR) in accordance with GEIA-STD-0007.</p> <p>10.3.2. Each Calibration/Measurement Requirement Summary must include:</p> <ul style="list-style-type: none"> a. <u>Identification of CMRS.</u> 			

Contract No. - N° de Contrat

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No. /N° CCC -

FMS No. /N° VME

164BQW8485-155257

W8485-155257

(1) CMRS Number; and

(2) CMRS Date.

b. Identification of Support Equipment Item Requiring Calibration.

(1) SE Item Name (DED 182);

(2) SE Reference (Manufacturer's Part) Number (DED 337);

(3) NSCM/CAGE Code (DED 046);

(4) NSN (if available) (DED 253);

(5) Item Date of Manufacture; and

(6) Item Equipment Life Expectancy (ELE).

c. Calibration Requirement.

(1) Calibration Interval (DED 037);

(2) Calibration Standard (DED 041);

(3) Calibration Procedure (DED 039); and

(4) Calibration Required (DED 040).

Note:

a. Required calibration standard items used to calibrate support equipment are listed for procurement in the Consolidated Support Equipment Provisioning List; and

b. If Calibration Procedures (DED 039) are proprietary, Canada must have the authority to use the procedures within Department of National Defence managed calibration centres.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Training Plan		ILS-030	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Contractor must provide a comprehensive Training Plan for the development and presentation of Operator and Technician training.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL C030 and SOW paragraph 3.11.1 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.			
10.2. Guidance. Guidance for the preparation of this deliverable is available in:			
a. A-P9-050-000/PT-001, (Canadian Forces Manual of Individual Training and Education, Volume 1, Canadian Forces Individual Training and Education System — Introduction/Description);			
b. A-P9-050-000/PT-003 (Manual of Individual Training and Education, Volume 3, Analysis of Instructional Requirements);			
c. A-P9-050-000/PT-004 (Manual of Individual Training and Education, Volume 4, Design of Instructional Programs);			
d. A-LM-505-001/AG-001 (Guidance Manual, Integrated Logistics Support), Chapter 7, paragraphs 41 – 44, and Chapter 12, paragraphs 25 – 26; and			

e. A-PD-055-002/PP-002 (MOC 226/MOS-ID 00109).

10.3. Specific Format and Content. The deliverable must be developed and maintained as outlined herein.

10.3.1. Training content must be consistent with the role of TCR technicians who must be trained to a 2nd Level knowledge and skill basis; including as a minimum:

- a. TCR and associated systems' concepts, theory of operation and characteristics;
- b. Block Diagram System layout;
- c. Operator adjustments, controls and displays;
- d. Installation and operation of Operating System and software;
- e. Preventative and Corrective Maintenance Procedures (including alignments);
- f. Analyze system parameters to determine whether TCR system is ready for operational usage; and
- g. Chassis/module interconnect wiring layout and troubleshooting.

10.3.2. Training content for the Advanced Technical Training must be consistent with the role of TCR techs to support the operational units and provide technical expertise on the radar system; including as a minimum:

- a. Radar optimization and site adaptation - optimization of radar parameters to achieve maximum aircraft detection while minimizing clutter and false alarms;
- b. Specialized Maintenance - specialized or low occurrence maintenance and alignments routines, including the replacement of a rotary joint and main antenna bearing, and use of specialized tools and test equipment;
- c. Remote Monitoring and Support - use of the Centralized Maintenance Workstation and analysis of the data to support the operational sites; and
- d. Fault Isolation - advanced use and interpretation of the Built-In Test (BIT), diagnostics and other equipment parameters to assist in fault isolation.

10.3.3. Where practical, existing training materials should be used as is or with only minor modifications. Training should encourage maximum use of training aids, simulations, BITE and computer based maintenance. The Training Plan may be in Contractor format.

10.3.4. The Contractor Training Plan must include:

- a. Training Purpose.
 - (1) Military Occupation;
 - (2) System/Equipment; and
 - (3) Initial Cadre Level 1/Level 2 and Advanced Technical Training.
- b. Proposed Training. For each proposal course:
 - (1) Course Title;
 - (2) Duration;
 - (3) Location(s);

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- (4) Language (English);
- (5) Recommended Min/Max Students per Course;
- (6) Prerequisite Training; and
- (7) Training Method.

c. Training Design and Development.

- (1) Organization and Resources;
- (2) Preparation of Training Standards and Plans; and
- (3) Preparation of Lesson Specifications and Training Material.

d. Proposed Schedule.

- (1) Design and Development Schedule; and
- (2) Proposal Presentation Schedule (if required).

10.3.5. The Training Plan must include the following modules:

- a. Course Outline;
- b. Type of Instruction (e.g. classroom, on-the-job training, computer based training);
- c. Lesson Plans;
- d. Training/Learning Objectives;
- e. Student Training Documentation;
- f. Training Aids;
- g. Evaluation Method (e.g. practical/written exam); and
- h. References.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Training Material		ILS-031	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
Upon completion of all Operator and Technician training, the Contractor must provide DND with final copies of all training material.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL C031 and SOW paragraph 3.11.7 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.			
10.2. Guidance. Guidance for the preparation of this deliverable is available in:			
a. A-P9-050-000/PT-001, (Canadian Forces Manual of Individual Training and Education, Volume 1, Canadian Forces Individual Training and Education System — Introduction/Description);			
b. A-P9-050-000/PT-003 (Manual of Individual Training and Education, Volume 3, Analysis of Instructional Requirements);			
c. A-P9-050-000/PT-004 (Manual of Individual Training and Education, Volume 4, Design of Instructional Programs);			
d. A-LM-505-001/AG-001 (Guidance Manual, Integrated Logistics Support), Chapter 7, paragraphs 41 – 44, and Chapter 12, paragraphs 25 – 26; and			

Contract No. - N° de Contrat

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No. /N° CCC -

FMS No. /N° VME

164BQW8485-155257

W8485-155257

e. A-PD-055-002/PP-002 (MOC 226/MOS-ID 00109).

10.3. Specific Format and Content. The deliverable must be developed and maintained as outlined herein Training material may be in Contractor format.

10.3.1. The training lesson plans and student material for the Technical Training must be consistent with the approved Technical Training Plan ILS-030; including as a minimum::

- a. Training standard;
- b. Lesson specifications and plans;
- c. Instructors notes; and
- d. Training material for each student (equipment block diagram, schematic, system wiring diagram and handouts).

10.3.2. Where practical, existing training materials should be used as is or with only minor modifications. Training should encourage maximum use of training aids, simulations, BITE and computer based maintenance.

10.3.3. Upon completion of Operator and Technician training, the Contractor must provide DND with final copies of all training material. This training material will be used by DND for developing DND in-house training.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE - TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Interim Spares List (ISL)		ILS-032
3. DESCRIPTION / PURPOSE - DESCRIPTION / OBJET		
<p>The ISL comprises peculiar repairable components, assemblies or subassemblies required as initial spares in support of newly fielded end items. Shortly after contract award, these spares should be agreed upon and procurement action initiated to ensure spares are received on time. The remaining spares lists (Depot, LLTIL, etc.) would be negotiated throughout the contract period.</p> <p>The associated provisioning documentation comprises the data needed by Canada to identify, catalogue, calculate and procure the range of repairable and consumable spares needed by each line of maintenance provisioned by Canada.</p>		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP - APPLICATION / INTERDÉPENDANCE		
CDRL-C032 and SOW paragraph 3.7.3.3 refer. D-01-100-214/SF-000 Preparation of Provisioning Documentation.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS - INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. Guidance. Guidance for the overall preparation of this deliverable is available in D-01-100-214/SF-000 (Specification for Preparation of Provisioning Documentation for Canadian Forces Equipment).</p> <p>10.3. Specific Format and Content. The deliverable must be developed and maintained as outlined herein.</p> <p>10.3.1. The deliverable must be completed in accordance with D-01-100-214/SF-000, paragraph 3.9.</p> <p>10.3.2. The information requested herein captures most details required for cataloguing the items into the Canadian Forces Supply System (CFSS).</p> <p>10.3.3. If the NATO Stock Number of an item is not known, Supplementary Provisioning Technical Documentation (SPTD) must be provided in accordance with D-01-100-214/SF-000.</p> <p>10.3.4. The Recommended Buy Quantity must be sufficient to maintain the equipment for a period of twenty-four (24) months, exclusive of warranty.</p> <p>For each item, the Provisioning Documentation must be prepared in accordance with D-01-100-214/SF-000 Preparation of Provisioning Documentation and must include the following data elements:</p>		

Contract No. - N° de Contrat

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No. /N° CCC -

FMS No. /N° VME

164BQW8485-155257

W8485-155257

DATA FIELDS REQUIRED	ISL
Item Number (unique sequence no. for each list)	M
Indenture Code (Data Element Definition (DED) 162)	O
Item Name (DED 182)	M
Reference (Manufacturer's) Part Number (DED 337)	M
NSCM/CAGE Code (DED 046)	M
OEM's Part Number (DED 337)	R
NATO Stock Number (DED 253)	R
Quantity per Assembly (DED 316)	M
Standard Unit Price	M
Unit of Issue (UOI) (DED 488)	M
Repairability Indicator (REP)	R
Government Supplied Material (GSM)	R
Procurement Lead Time (PLT)	M
Reference Designation (DED 335)	R
Shelf Life	R
Usage Rate	R
Recommended Buy Quantity (DED 328)	M
SMR Code (DED 389)	R
Demilitarization Code (DMC)	M
Logistics Control Number (LCN) (DED 199)	R
Used on Code (DED 501)	R
Unit of Measure (DED 491)	NR

M =Mandatory R =Required if known O = Optional NR = Not Required


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE - TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Long Lead Time Items List (LLTIL)		ILS-033
3. DESCRIPTION / PURPOSE - DESCRIPTION / OBJET		
<p>The LLTIL is a list of spares and support equipment which, because of complexity of design, complicated manufacturing processes or limited production, may violate procurement times so that delivery of spares would be later than the introduction of the end item. It must also include items for which a cost benefit can be realized for procurement concurrent with the manufacture of those same items for inclusion in the end item being procured.</p> <p>The associated provisioning documentation comprises the data needed by Canada to identify, catalogue, calculate and procure the range of repairable and consumable spares needed by each line of maintenance provisioned by Canada. The LLTIL provide the data needed by DND to identify, catalogue, calculate and procure the range and depth of spares needed by each line of maintenance provisioned by DND (and as installation and checkout spares) IAW D-01-100-214/SF-000.</p>		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	
7. APPLICATION / INTERRELATIONSHIP - APPLICATION / INTERDÉPENDANCE		
CDRL-C033 and SOW paragraph 3.7.3.1 refer. D-01-100-214/SF-000 Preparation of Provisioning Documentation.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS - INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
<p>10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below.</p> <p>10.2. Guidance. Guidance for the overall preparation of this deliverable is available in D-01-100-214/SF-000 (Specification for Preparation of Provisioning Documentation for Canadian Forces Equipment).</p> <p>10.3. Specific Format and Content. The deliverable must be developed and maintained as outlined herein.</p> <p>10.3.1. The deliverable must be completed in accordance with D-01-100-214/SF-000, paragraph 3.9.</p> <p>10.3.1.1. The information requested herein captures most details required for cataloguing the items into the Canadian Forces Supply System (CFSS).</p> <p>10.3.2. If the NATO Stock Number of an item is not known, Supplementary Provisioning Technical Documentation (SPTD) must be provided in accordance with D-01-100-214/SF-000.</p> <p>10.3.3. The Recommended Buy Quantity must be sufficient to maintain the equipment for a period of twenty-four (24)</p>		

Contract No. - N° de Contrat
 Buyer ID - Id de l'acheteur
 W8485-155257
 164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
 FMS No. /N° VME
 W8485-155257

File No. - N° du dossier
 164BQW8485-155257

CCC No. /N° CCC -

months, exclusive of warranty.

10.3.4. For each item the Provisioning Documentation must be prepared in accordance with D-01-100-214/SF-000 Preparation of Provisioning Documentation and must include the following data elements:

DATA FIELDS REQUIRED	LLTIL
Item Number (unique sequence no. for each list)	M
Indenture Code (Data Element Definition (DED) 162)	O
Item Name (DED 182)	M
Reference (Manufacturer's) Part Number (DED 337)	M
NSCM/CAGE Code (DED 046)	M
OEM's Part Number (DED 337)	R
NATO Stock Number (DED 253)	R
Quantity per Assembly (DED 316)	M
Standard Unit Price	M
Unit of Issue (UOI) (DED 488)	M
Repairability Indicator (REP)	R
Government Supplied Material (GSM)	R
Procurement Lead Time (PLT)	M
Reference Designation (DED 335)	R
Shelf Life	R
Usage Rate	R
Recommended Buy Quantity (DED 328)	M
SMR Code (DED 389)	R
Demilitarization Code (DMC)	M
Logistics Control Number (LCN) (DED 199)	R
Used on Code (DED 501)	R
Unit of Measure (DED 491)	NR

M =Mandatory R =Required if known O = Optional NR = Not Required


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale	Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES		
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION
Logistic Support Analysis Plan (LSAP)		ILS-034
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET		
LSA explains the Contractor's approach to LSA management, procedures, processes and schedules. LSA must identify and integrate all LSA tasks and outline the approach toward accomplishing analysis tasks. LSA is used as the principle reference for the management and control of LSA tasks.		
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE		
7.1 CDRL C034 and SOW paragraph 3.5.2 refer. 7.2 The DID contains the format, content and preparation instructions for the data product resulting from the work tasks described in MILSTD 1388-1A.		
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES
PM		
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES		
10.1. Generic Format and Content. The generic format and content instructions for this deliverable must be in accordance with Data Item Description (DID) - General Information, paragraph 10, except where stated otherwise below. 10.2. The applicable issue of the documents cited herein, including their approval dates must be as specified in the contract. 10.3. Format. LSA must be prepared in accordance with MILSTD 1388-1A. 10.4. Content. LSA must describe how the LSA program will be conducted to meet the ILS requirements. The following sections must be included (as a minimum): a. <u>Section I – Introduction</u> A description of the management structure and authorities applicable to LSA must be discussed. This includes the interrelationship between line, service, staff and policy organizations. Specific references to the relationship between LSA staff, the Logistics Engineering staff and the Systems Engineering staff must be		

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

included (as a minimum);

b. Section II – LSA Process

The Contractor must document how the LSA program will be conducted to meet the system and logistic requirements of the program. Included will be an explanation of which processes will be used from the Effective Date of Contract until delivery of the LSAR. The following sub-sections must be included (as a minimum) in LSA:

- (1) An explanation for the LSACN system and methodology for number assignment and how this will be integrated with the LSACN used for the program;
- (2) The identification of each LSA task that will be accomplished, how each will be performed and when each will be performed to support the ILS program. Included in this sub-section will be a description of how each LSA task and the resulting data will interface with other ILS elements in the accomplishment of the ILS requirements, specifically in the delivery of spare and repair parts, technical manuals, training, support equipment identification and training aids identification; and
- (3) The procedures, methods and controls for identifying and evaluating the status and control of each task and how this information will be presented at each LSA Review Meeting and PRM.

c. Section IV – Miscellaneous

LSA must also include:

- (1) LSA Reviews. The format and agenda topics to be included for each LSA Review. Each LSA Review must include, as a minimum, the status of LSA development, outstanding action for the Contractor and the DND PM, a review of the schedule, anticipated problem areas and new business. To assist in a consistent presentation of the status of LSA development, the Contractor must propose a format that the Contractor must use at each LSA Review to identify the anticipated total number of LSA maintenance narratives associated with each Candidate Item List, the percentage narratives completed and the percentage in progress; and
- (2) LSAR Validation. The validation plan for the LSA must include the activities to be undertaken by the Contractor in meeting the requirements of LSA Sub-Task. Validation activities to be undertaken as part of the supportability process must include Validation Reviews and the validation activities planned to be undertaken at the system level. DND will attend the LSA validation activities.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Integrated Master Test Plan (IMTP)		TE-001	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Contractor must provide an Integrated Master Test Plan (IMTP) The IMTP must provide an overall outline and philosophy of the entire spectrum for the test and evaluation effort.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL D001 and SOW paragraphs 6.1.1 and 6.4.2 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 <u>Generic Format and Content.</u> The Training The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions (DIDs) – General Information, paragraph 10, except where stated otherwise below.			
10.2 <u>Specific Content and Format.</u> The IMTP must describe the test philosophy and contain the plans, procedures and schedules necessary to define and control the total Test and Evaluation (T&E) program. Although additional subordinate plans may be used as necessary to amplify the details associated with particular functions, test locations or test phases, this plan must present the details necessary to define each segment of the program. Generally this plan should identify each element of the system, the requirements against the element, the means/facilities to be used to demonstrate or verify the performance or completion and the success criteria and review actions required to complete the Test and Evaluation of the element. The reader should, from this single plan, be able to understand all the T&E actions associated with the project, from design to deployment and how they are related in time, content and responsibility and if a family of plans is to be used, where additional information on any particular facet can be found. The content of the IMTP should be consistent with the content of the test sub-program described in the SOW. The following subjects as a minimum must be addressed:			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- a. **Classes of Tests to be covered.**
 - (1) integration tests (hardware and software);
 - (2) system, sub-system and Configuration Item (CI) level tests;
 - (3) interface tests (internal and external);
 - (4) communications tests;
 - (5) performance tests;
 - (6) integrity and reliability tests;
 - (7) environmental tests;
 - (8) formal acceptance tests (factory and site);
 - (9) regression tests;
 - (10) retests; and
 - (11) any other test requirements and activities relevant to the project.
- b. **Schedules/Flow Diagrams/Milestones.** The plan must contain flow diagrams, schedules and milestones to describe the overall test program and to highlight more specific details of key test segments.
- c. **Support Requirements.** The plan must identify and describe all significant technical and logistical supports required to implement all project test tasks. The requirements must be expressed in sufficient detail to permit a determination of whether Canada has the capability to support the test or needs to take action to acquire a capability. Instrumentation, logistics, facilities, personnel, test and support aircraft and data processing must be addressed for each test phase.
- d. **Documentation.** The plan must identify the documentation to be used on the test program. All test plans and reports must be identified, indexed and Canada's responsibilities for evaluation and approval indicated.
- e. **Deficiency Reports.** The plan must describe in details the process by which the deficiencies identified during any of the test phases will be addressed, documented, reported and closed. The plan must also describe in detail, the Canada's involvement in this process. Plan may be in Contractor format.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Requirements Verification Matrix (RVM)		TE-002	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The RVM must depict how the Contractor will verify and demonstrate compliance with the requirements of the Contract.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office	Government Industry Data Exchange Program	
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
This DID relates to the following: <ul style="list-style-type: none">a. CDRL D002, Requirements Verification Matrix (RVM);b. CDRL D003, Factory Acceptance Test Plan (FATP);c. CDRL D004, Site Acceptance Test Plan (SATP);d. CDRL D005, Acceptance Test Procedures (ATPR);e. CDRL D006, Acceptance Test Report (ATR); andf. SOW paragraphs 6.2, 6.2.1, 6.2.2 and 6.4.4 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 Generic Format and Content. The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.			
10.2 Specific Content and Format. The RVM must address all SOW requirements to be tested. The RVM must be organised in a table format. The following information must be included for each requirement to be tested:			

Contract No. - N° de Contrat

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No. /N° CCC -

FMS No. /N° VME

164BQW8485-155257

W8485-155257

- a. unique requirement object identifier;
- b. actual text of the requirement from technical requirements,
- c. test scenario, test case or group of tests applicable to the specific requirement;
- d. test unique identifier;
- e. test type or class;
- f. level/stage of the test (i.e. Factory Acceptance Test (FAT) or Site Acceptance Test (SAT);
- g. qualification method (i.e. analysis, demonstration or inspection);
- h. first Article Test only (yes/no);
- i. overview of the test itself;
- j. sub-tests as applicable;
- k. details of the pass/fail criteria;

Continued

DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES

Requirements Verification Matrix (RVM) – TE-002

- l. test status; and
- m. remark (any additional information not mentioned above and judged relevant to the requirement tests activity). may be in Contractor format.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Factory Acceptance Test Plan (FATP)		TE-003	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
3.1 The FATP is used to document the tests that will be performed on the TCR systems and sub-systems at the factory to demonstrate that the test item meets all specifications of the SOW. This DID is applicable to all systems and equipment requiring Factory Acceptance Testing.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
7.5 This DID contains the format and content preparation instructions for the FATP. 7.6 This document is to be submitted on electronic media (only CD, DVD or E-mail) in a format, which is compatible with the latest Microsoft Office Suite (Word) running under Windows 2000. 7.7 The FATP must not conflict with other Test Plans, Procedures or Reports. 7.8 CDRL D003, D004 and SOW paragraphs 6.4.3 and 6.8.4.1 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 Generic Format and Content. The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.			
10.2 Specific Content and Format Instructions. Production of this document using automated techniques is encouraged. Best commercial practices are to be used for charts, tables, matrices, page numbering, document control numbering. Specific content and format instructions for this document are specified below. The FATP must consist of the following (as a minimum): <ul style="list-style-type: none">a. Title page;b. Table of contents;c. Document Control Log;d. Revision Record			

- e. Purpose;
- f. References;
- g. Factory Acceptance Test Plan;
- h. Test Environment;
- i. Formal Test Identification;
- j. Factory Acceptance Test Schedule;
- k. Existing test data;
- l. First Article Tests;
- m. FAT vs SAT;
- n. Notes; and
- o. Appendices.

10.2.1 Title Page. The Title Page must contain the following information:

- a. FATP for the TCR Modernization Project (DAEPM/R&CS);
- b. Contract No.;
- c. CDRL Sequence No.;
- d. Prepared for: National Defence, Project Management Office for Directorate Aerospace Engineering and Project Management / Radar and Communications Systems Project (DAEPM/R&CS); and
- e. Prepared by: Contractor's name and address.

10.2.2 Table of Contents. The Table of Contents must list the title and page number of each titled paragraph and subparagraph, figure, table and appendix.

10.2.3 Document Control Log. The Document Control Log must contain three columns: Revision, Date and Reason for Change.

10.2.4 Revision Record. The Revision Record must contain a listing of pages and their revision status.

10.2.5 Purpose. The purpose of the FATP must be described.

10.2.6 References. All references used in the FATP must be listed.

10.2.7 Factory Acceptance Test Plan. The FATP must document the necessary test data required to demonstrate the degree to which the test item meets all performance specifications of the SOW.

10.2.8 Test Environment. This subparagraph must be divided into the following subparagraphs:

- a. Hardware/Software Under Test must identify the hardware/software under test; and
- b. Testware must be a description of the hardware/software used in support of the verification of the hardware/software identified in the previous subparagraph.

10.2.9 Formal Test Identification. Formal Test Identification must be divided into the following subparagraphs to identify each formal test and to describe the formal test requirements to which this plan applies.

- a. **Project-Unique Identifier.** Project-Unique Identifier must identify a formal test phase by name and project-unique identifier and must be divided into the following subparagraphs to describe the total scope of testing for the Factory Acceptance Test;
- b. **General Test Requirements.** General Test Requirements must describe pre-test requirements that apply to all of the formal tests or to a group of formal tests;

- c. **Test Definitions.** Test Definitions must identify and describe each formal test to be conducted during the Factory Acceptance Test;
- d. **Test Name.** The Test Name must identify a formal test by name. This subparagraph must provide the information specified below for the test (some or all of this information may be provided graphically):
- (1) Test objective;
 - (2) Any special requirements (e.g., 48 hours of continuous facility time, simulation, live interface feed or simulated data);
 - (3) Test type or class;
 - (4) Test scenario(s) or test cases(s);
 - (5) Qualification method (i.e., analysis, demonstration or inspection);
 - (6) Cross reference to the system specifications requirement(s) addressed by this test;
 - (7) Cross reference to the interface requirements in the Interface Document addressed by this test;
 - (8) Type of data to be recorded for test purposes;
 - (9) Assumptions and constraints; and
 - (10) Planned method to incorporate GSM in the tests.

10.2.10 Factory Acceptance Test Schedule. The Factory Acceptance Test Schedule must contain or reference the test schedule for conducting the tests.

10.2.11 Existing Test data. Existing Test data must describe the nature of existing test data, if any, that the Contractor plans to submit to DND TA for approval, in order to demonstrate compliance to specific requirements or groups of requirements.

10.2.12 First Article Tests. First Article Tests must address the requirements for the equipment or parts, which the Contractor plans to submit to First Article Equipment tests. The details of the rationale for each individual selection must be provided.

10.2.13 FAT vs. SAT. FAT vs. SAT must identify the requirements that cannot be tested at the Factory. The details of the rationale for such a selection must be provided.

10.2.14 Notes. "Notes" must be the last section in the document and must contain any general information that aids in understanding this document (e.g., background information and glossary). This section must include an alphabetical listing of all acronyms, abbreviations and their meanings as used in this document.

10.2.15 Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts, graphical data). As applicable, each appendix must be referenced in the main body of the document where the data would normally have been provided. Appendices may be bound as separate documents for ease in handling.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Site Acceptance Test Plan (SATP)		TE-004	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
3.1 Site Acceptance Test Plans are required to document the tests of systems, sub-systems, equipment and parts to provide results for determination of system acceptance. This DID is applicable to all systems, sub-systems, equipment and parts requiring tests.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)		6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
7.1 This DID contains the format and content preparation instructions for the data generated under the work tasks described in the TCR Modernization SOW. 7.2 This document is to be submitted on electronic media (only CD, DVD or E-mail) in a format, which is compatible with the latest Microsoft Office Suite (Word) running under Windows 2000. 7.3 The SATP must not conflict with other Test Plans, Procedures or Reports. 7.4 CDRL D004 and SOW paragraph 6.5.5 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 Generic Format and Content. The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.			
10.2 Specific Content and Format Instructions. Production of this document using automated techniques is encouraged. Best commercial practices are to be used for charts, tables, matrices, page numbering, document control numbering. Specific content and format instructions for this document are specified below. Site Acceptance Test Plan (SATP) must consist of the following (as a minimum): <ul style="list-style-type: none">a. Title page;b. Table of contents;c. Document Control Log;			

- d. Revision Record;
- e. Purpose;
- f. References;
- g. Site Acceptance Test Plan;
- h. Test Environment;
- i. Formal Test Identification;
- j. Site Acceptance Test Schedule;
- k. Existing Test Data;
- l. Notes; and
- m. Appendices.

Continued

DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES

Site Acceptance Test Plan (SATP) – TE-004

10.2.1 Title Page. The Title Page must contain the following information:

- a. Site Acceptance Test Plan (SATP) for the TCR Modernization Project;
- b. Contract No.;
- c. CDRL Sequence No.;
- d. Prepared for: National Defence, Project Management Office for Directorate Aerospace Equipment Program Management / Radar and Communications Systems (DAEPM/R&CS); and
- e. Prepared by: Contractor's name and address.

10.2.2 Table of Contents. The Table of Contents must list the title and page number of each titled paragraph and subparagraph, figure, table and appendix.

10.2.3 Document Control Log. The Document Control Log must contain three columns: Revision, Date and Reason for Change.

10.2.4 Revision Record. The Revision Record must contain a listing of pages and their revision status.

10.2.5 Purpose. This section must describe the purpose and scope of the SAT.

10.2.6 References. This section must include a list of all references required to conduct the SAT.

10.2.7 Site Acceptance Test Plan. The Site Acceptance Test Plan must document the test data and procedures required to demonstrate that the item under test meets all performance specifications stated in the SOW.

10.2.8 Test Environment. This subparagraph must be divided as follows:

- a. Hardware/Software Under Test. Hardware/Software Under Test must identify the hardware/software under test; and
- b. Test ware. Test ware must provide a description of the hardware/software used in support of the verification of the software identified in the previous subparagraph. The specific environment in which the tests will be performed must also be described.

10.2.9 Formal Test Identification. This subparagraph must be divided as follows in order to identify each formal test as well as the formal test requirements to which the plan applies.

- a. Project-Unique Identifier. The Project-Unique Identifier must identify a formal test phase by name and project-unique identifier;
- b. General Test Requirements. General Test Requirements must describe pre-test requirements that apply to all of the formal tests or to a group of formal tests;
- c. Test Definitions. Test Definitions must identify and describe each formal test to be conducted during the Site Acceptance Test; and
- d. Test Name. The Test Name must identify a formal test by name and provide, as a minimum, the information specified below (some or all of this information may be provided graphically):
 - (1) Test objective;
 - (2) Any special requirements (e.g., 48 hours of continuous facility time, real-time);
 - (3) Test type or class to include Test Flights when required;
 - (4) Test scenario(s) or test cases(s);
 - (5) Qualification method (i.e., analysis, demonstration or inspection);
 - (6) Cross reference to the system specifications requirements addressed by this test;
 - (7) Cross reference to the interface requirements in the Interface Document addressed by this test;
 - (8) Type of data to be recorded;
 - (9) Assumptions and constraints; and
 - (10) Planned method of incorporating GSM in the tests.

10.2.10 Site Acceptance Test Schedule. The Site Acceptance Test Schedule must contain or reference the test schedule for conducting the tests.

10.2.11 Existing Test Data. The Existing Test data must describe the nature any existing test data, if any, that the Contractor plans to submit to DND TA for approval in order to demonstrate compliance to specific requirements or groups of requirements.

10.2.12 Notes. "Notes" must be the last section in the document and must contain any general information that aids in understanding this document (e.g., background information and glossary). This section must include an alphabetical listing of all acronyms, abbreviations and their meanings as used in this document.

10.2.13 Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts, graphical data). As applicable, each appendix must be referenced in the main body of the document where the data would normally have been provided. Appendices may be bound as separate documents for ease in handling.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Acceptance Test Procedures (ATPR)		TE-005	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Test Procedures must include a description of the overall test plan, test objectives, test requirements, resource requirements and test procedures for accomplishing the respective test.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL D005 and SOW paragraphs 6.3.3, 6.4.3, 6.5.5 and 6.5.14 refer. This DID contains the format and content preparation instructions for the Tests, Plans and Procedures.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

10.1 Generic Format and Content. The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.

10.2 Specific Content and Format. The Test Procedures must be prepared in Contractor format and contain the following (as a minimum):

- a. The purpose of the Test, the Test relationship to the overall project and the Test objectives;
- b. Test schedule;
- c. A description of the Test site, including a listing of all resources required;
- d. A description of Test instrumentation required;
- e. Test procedures, including test conditions and step-by-step procedures to obtain the data necessary to determine conformance with the requirement; and
- f. Data sheets/cards must be included for recording data of each test. Provisions for recording the date of the test, signature of tester and signature of DND POC witness (if required) must be included.

10.2.1 These test procedures are to include FAT and SAT.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Acceptance Test Reports (ATR)		TE-006	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
Test Reports are the vehicle by which the results of a test are documented. Test Reports must be used to describe and evaluate discrepancies between the intended system functionality and the actual capability demonstrated. Test Reports must be submitted for FAT, SAT and TEMPEST System Tests.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL D006 and SOW paragraphs 6.4.9, 6.4.8.2, 6.4.12 and 6.5.15 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

10.1 Generic Format and Content. The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.

10.2 Specific Content and Format. The Test Report must be prepared in Contractor format and must include the following content:

- a. The purpose of the test, the test relationship to the overall project and the test objectives;
- b. Deviations from the Test Plan and Procedures;
- c. Test results based upon the data collected during the test. For each step of a test procedure where a discrepancy occurred, the step of the discrepancy and its impact on the validity of preceding or subsequent steps must be noted;
- d. Test evaluation including overall analysis of the functional performance. For each discrepancy identified, a statement must be provided indicating impact on performance and evaluation of the discrepancy; and
- e. Record of the test data sheets as an Annex to the report.

10.2.1 Test Discrepancies. All discrepancies noted during acceptance tests must be recorded on a test discrepancy form in a mutually agreeable format at the time the test procedures are reviewed and finalized. Discrepancies can be written by any test personnel (includes authorized representative of the Contractor and the Contract Authority). Each discrepancy must be recorded in sufficient detail to permit the appropriate corrective action/disposition and recheck to be accomplished by experienced personnel. Disposition of each test discrepancy form must be certified by DND and Contractor signatures in the appropriate test discrepancy form blocks.

10.2.2 Test Discrepancies Summary. All test discrepancies noted during the conduct of the in-plant and on-site acceptance tests must be recorded on a Test Discrepancies Summary Form. The Contractor must propose a format for the Test Discrepancies Summary Form (TDSF). The TDSF must include:

- a. Test discrepancy identification number;
- b. Concise description of test discrepancy;
- c. Status (open, closed, etc.); and
- d. Conditions at the time of the test discrepancy.

10.2.3 The software used by the Contractor to track/search/sort test discrepancies must be made available to DND and compatible with DND office software (for example, Excel/Access). MS Access is the preferred format.

10.2.4 Appendices. Appendices must be used wherever appropriate for pertinent data required to perform the acceptance tests.

10.2.5 TEMPEST. The TEMPEST System Test Report must be prepared in accordance with CID/09/15A and follow the numbering and references in the TEMPEST System Test Plan.

10.2.6 Information contained in the TEMPEST Qualification and First Article Test Plans or the TEMPEST System Test Plan need not be repeated if appropriately referenced.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Site Preparation Report		TR-001	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Contractor must determine the extent of design modifications required to integrate the TCR system to the existing infrastructure.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL-E001 and SOW paragraphs 5.12.2.4, 7.11.1 and 7.11.1.1 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- 10.1 Generic Format and Content.** The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.
- 10.2** .The Site Preparation Report must be in Contractor format. The Contractor must include all modification requirements to the existing infrastructure to integrate the TCR system.
- 10.3 Specific Content.** The Report must include, but not be limited to, the following requirements:
- a. equipment lay outs;
 - b. installation details;
 - c. HVAC;
 - d. power and grounding;
 - e. cable lay outs;
 - f. electrical and mechanical systems modifications;
 - g. modifications (redline) to existing drawings reflecting the required changes;
 - h. roads and grounds; and
 - i. minor structural modifications.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Installation Plan		TR-002	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Installation Plan must set forth the Contractor's plan for managing the installation of the system(s). The plan must include the site physical requirements, delivery, installation, integration and initial checkout of the system(s). The Installation Plan will allow the Design Authority to ensure that the proposed installation will meet DND requirements.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
7.1 CDRL-E002 and SOW paragraphs 5.12.2.7 and 5.13.4 refer. 7.2 This Data Item Description (DID) contains the format, content and preparation instructions for the data product generated by the specific and discrete task requirements as delineated in the contract.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

- 10.1 Generic Format and Content.** The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.
- 10.2 Format.** Contractor format is acceptable.
- 10.3 Specific Content.** The Installation Plan must specify the measures and activities to be undertaken to effect and assure a successful system installation. The installation plan must include a general facilities requirements specification, which details the equipment physical layout, floor space/loading, power and environmental requirements, cabling and connector details, installation procedures and grounding requirements. The Installation Plan must, as a minimum, contain the following information:
- 10.3.1 Scope.** This section must describe the purpose and scope of the document.
- 10.3.2 Related Documents.** This section must provide the references and related documents.
- 10.3.3 Installation Approach.** This section must describe the Contractor's overall approach to the installation. A description of the Contractor's level of familiarity and previous experience with the approach must be provided. Dependencies, identified risks and constraints related to the installation approach must be clearly defined.
- 10.3.4 Installation Activities.** This section must define the main activities and phases of the installation and describe in detail the work efforts, impacts, dependencies and constraints associated with each.
- 10.3.5 Definition of Phases.** This section must define and describe each phase of the installation including, as a minimum, the following:
- a. the overall time-frame associated with the phase;
 - b. the relative timing of the phase in relation to the overall installation schedule;
 - c. the impact of the phase on DND operations and procedures;
 - d. DND personnel involvement required by the phase; and
 - e. the dependencies, criticalities and constraints associated with the phase.
- 10.3.6 Detailed Activity List.** This section must describe the activities associated with each phase of the installation. As a minimum, the following must be described for each phase:
- a. preparation and planning activities;
 - b. sequencing of activities and identification of dependencies, risks and constraints associated with each activity; and assignment of responsibility for completion of each activity.
- 10.3.7 Assurance Activities.** This section must describe the testing, verification and review activities to assure the successful completion of each phase of the installation. As a minimum, the following must be described:
- a. assurance testing including the purpose of the test, component(s) to be tested, pass/fail criteria, recovery procedures from a failed test and the impact of test failure on the success of the activity/phase;
 - b. testing procedures including methods, tools, responsibilities and problem identification and resolution procedures;
 - c. contingency plans for each phase of the installation to ensure that, upon failure of a scheduled installation activity installation can proceed;
 - d. sign-off criteria; and
 - e. problem identification and resolution procedures following sign-off.

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

- 10.3.8** Activity Management. This section must describe the procedures that will be followed to manage the planning and execution of the installation activities. As a minimum, this section must include a Work Breakdown Structure (WBS), resource estimation and allocation to the WBS and interfaces with associated Contractors. The content and preparation instructions for a Phase Completion Report must be described. The Phase Completion Report must address any recommended changes required to other system plans.
- 10.3.9** Miscellaneous. This section must include any additional information that the contractor would like to add to enhance the document and that is not addressed elsewhere in the DID.
- 10.3.10** Attachments. The attachments contain material that is too bulky or detailed to be placed in the main body text. Refer to each attachment in main body of the text where the information applies.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Transition Plan (TP)		TR-003	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
<p>The purpose of the Transition Plan is to describe the Contractor's methodology to transition from the existing system to the new TCR system. The TP must identify all legacy equipment not required to support the new system as well as the description of work efforts, hardware and software requirements for accomplishing each phase of the transition.</p> <p>The TP must provide a detailed description of the Contractor's strategies and methodologies for implementing and deploying the new TCR system in discrete steps for each phase of the transition.</p>			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL E003 and SOW paragraph 5.13.5 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			

10.1 Generic Format and Content. The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.

10.2 Specific Content and format instructions. Best commercial practices are to be used for charts, table matrices and page numbering, document control numbering. Specific content and format instructions for this document are specified below. The Transition Plan (TP) must consist of the following (as a minimum):

- a. Title Page;
- b. Table of Contents;
- c. Document Control Number;
- d. Revision Record;
- e. Purpose;
- f. References;
- g. Introduction/Transition Planning;
- h. Concept of Operations;
- i. Transition equipment requirements;
- j. Transition equipment requirements - alternatives;
- k. Notes; and
- l. Appendices.

10.2.1 Title Page. The Title Page must contain the following information:

- a. Transition Plan for the TCR Modernization Project;
- b. Contract number;
- c. CDRL Sequence No.;
- d. Prepared for; National Defence, Project Management Office for the TCR Modernization Project; and
- e. Prepared by: Contractor's name and address.

10.2.2 Table of Contents. The Table of Contents must list the title and page number of each titled paragraph and sub-paragraph, figures, tables and appendices as required.

10.2.3 Document Control Log. The Document Control Log must contain as a minimum three (3) columns: Revision, Date and Reason for Change.

10.2.4 Revision Record. The Revision Record must contain a listing of pages and their revision status.

10.2.5 Purpose. The Purpose of the TP must be described.

10.2.6 References. All References used in the TP must be listed.

10.2.7 Transition Planning. The TP must contain, as a minimum, the following information:

- a. A description of the plan and methodology to accomplish each phase of the transition;
- b. Identification of hardware and software capabilities required to install, integrate and test the TCR System in the existing facilities; and
- c. Plans and procedures for the test and verification of each transition phase.

10.2.8 Concept of Operation (Transition phase). The Concept of Operation must define the transition scenarios proposed for transitioning from the existing systems to the new TCR system. Each scenario must identify the

following (as a minimum):

- a. Co-ordination required before, during and after the switchover;
- b. Sequential events (script/checklist);
- c. Organizational responsibilities for each event;
- d. Operational risk and mitigation procedures;
- e. Impact on the unit's operations/procedures; and
- f. Impact on maintenance activities and procedures.

10.2.9 Transition Requirements. The Transition Requirements must identify the requirements to be satisfied by the temporary transition equipment (hardware, software and communications) necessary during the period of parallel operations. In the event that significant construction engineering work is required at the existing Radar Heads, the Contractor must provide a temporary environmental structure to house the CSM radar antenna. The siting of this structure and any supporting equipment must be approved by the DND TA or a designated representative. The Transition Requirements must address the following (as a minimum):

- a. General requirements;
- b. Functional requirements of the following:
 - (1) Interfaces;
 - (2) Switching; and
 - (3) Support and Test Equipment.
- c. Physical requirements/constraints of:
 - (1) Floor space;
 - (2) Power;
 - (3) Cabling;
 - (4) Heating and cooling;
 - (5) EMI/EMC; and
 - (6) Grounding.
- d. Logistic support.

10.2.10 Notes. "Notes" must be the last section in the main body of the document and must contain any general information that aids in the understanding of the document (e.g. background information and glossary). "Notes" must also include an alphabetical listing of all acronyms, abbreviations and meanings as used in this document.

10.2.11 Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g. charts and graphical data). As applicable, each appendix must be referenced in the main body of the document where the data would normally have been provided. Appendices may be bound as separate documents for ease of handling.


Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence Défense Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO NTIFICATION	
Pre-Design Report		TR-004	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Pre-Design Report is intended to be the formal project work plan and must include a comprehensive review, analysis and summary of the project requirements documenting the Contractor's understanding of all of the available documentation and information about the project.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL E004 and SOW paragraph 2.7.1.1 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 Generic Format and Content. The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.			
10.2 Specific Format and Content. Pre-Design Report must be submitted with indicative, Class D construction cost estimate as indicated in Section 3 of the DND Documentation and Submission Standards, Attachment E of the Design Service Requirement (Appendix 25).			

Contract No. - N° de Contrat

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client

FMS No. /N° VME

W8485-155257

File No. - N° du dossier

164BQW8485-155257

CCC No. /N° CCC -

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence se Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Concept Design Report		TR-005	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Concept Design Report must develop and analyze a minimum of three (3) substantially different multi-disciplinary, integrated options for the accommodation of the project functional and technical requirements of the Design Services document (Appendix 25). The Concept Design Report will develop multidisciplinary options for only the selected architectural option by Canada.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL E005 and SOW paragraph 5.12.2.4 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 Generic Format and Content. The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.			
10.2 Specific Format and Content. The Concept Design Report must be submitted with updated indicative, class D construction cost estimate as indicated in Section 4 of the DND Documentation and Submission Standards, Attachment E of the Design Service Requirement (Appendix 25).			

Contract No. - N° de Contrat

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client

FMS No. /N° VME

W8485-155257

File No. - N° du dossier

164BQW8485-155257

CCC No. /N° CCC -

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence se Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Design Development Report		TR-006	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The Design Development must demonstrate the final resolution of all major components and the selection of all building systems with respect to type, size and other material characteristics. Note: All design decisions with respect to system and material selections, layouts, GreenGlobe rating must be completed by the end of this stage.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL E006 and SOW paragraph 5.12.3.6 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 <u>Generic Format and Content.</u> The Training Plan The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.			
10.2 <u>Specific Format and Content.</u> The Design Development Report must be submitted with an Indicative, Class D construction cost estimate as indicated section 5 of the DND Documentation and Submission Standards, Attachment E of the Design Service Requirement (Appendix 25).			

Contract No. - N° de Contrat

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client

FMS No. /N° VME

W8485-155257

File No. - N° du dossier

164BQW8485-155257

CCC No. /N° CCC -

Contract No. - N° de Contrat
Buyer ID - Id de l'acheteur
W8485-155257
164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client
FMS No. /N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC -

	National Defence se Nationale		Back to the DID List
DATA ITEM DESCRIPTION - DESCRIPTION DE DONNÉES			
1. TITLE – TITRE		2. IDENTIFICATION NUMBER - NUMÉRO D'IDENTIFICATION	
Construction Document Report		TR-007	
3. DESCRIPTION / PURPOSE – DESCRIPTION / OBJET			
The construction document translates the design development documents into construction drawings and specifications to guide and direct the contractor and sub-contractors in carrying out their work on the project. It involves preparing drawings and specifications setting forth in detail the requirements for the construction and final cost estimate for each tender package for the project.			
4. APPROVAL DATE DATE D'APPROBATION	5. OFFICE OF PRIMARY INTEREST (OPI) BUREAU DE PREMIERE RESPONSABILITÉ (BPR)	6. GIDEP APPLICABLE D'ÉCHANGE DE DONNÉES PERTINENT	
January 2016	TCR Modernization Project Management Office		
7. APPLICATION / INTERRELATIONSHIP – APPLICATION / INTERDÉPENDANCE			
CDRL E007 and SOW paragraphs 5.12.4.4, 5.12.4.6 and 5.12.4.11 refer.			
8. ORIGINATOR - AUTEUR		9. APPLICABLE FORMS - FORMULES PERTINENTES	
PM			
10. PREPARATION INSTRUCTIONS – INSTRUCTIONS SUR LA PRÉSENTATION DES DONNÉES			
10.1 <u>Generic Format and Content.</u> The generic format and content instructions for this deliverable must be in accordance with Data Item Descriptions – General Information, paragraph 10, except where stated otherwise below.			
10.2 <u>Specific Format and Content.</u> The Construction Document Report must be in accordance with Section 6 of the DND Documentation and Submission Standards, Attachment E of the Design Service Requirement (Appendix 25), the Contractor must submit: <ul style="list-style-type: none">a. 66% complete construction documents with indicative Class C construction estimate at CDR;b. Completed Construction Document Report, 99% complete construction documents and substantive class B construction cost estimate at Site DR;c. Updated Construction Document Report, 100% complete construction documents and substantive class A (tender) construction cost estimate after Site DR; andd. 100% complete construction documents stamped and signed, by appropriate professional and issued for Tender and Construction.			

Contract No. - N° de Contrat

Buyer ID - Id de l'acheteur

W8485-155257

164BQ

Amd. No. - N° de la modif.

Client Ref. No. - N° de réf. du client

FMS No. /N° VME

W8485-155257

File No. - N° du dossier

164BQW8485-155257

CCC No. /N° CCC -

--

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 03
PUBLICATIONS LIST
FOR
TACTICAL CONTROL RADAR (TCR)
MODERNIZATION PROJECT

APPENDIX 3 – Publications List

3.0 All of the documents listed in this Appendix are applicable. If a document is listed but not attached to this appendix, it is the contractor's responsibility to obtain a copy of the document.

3.1 General Documentation.

- a. CAN/CSA-Z 234.1, Canadian Metric Practice;
- b. Canadian Electrical Code;
- c. Canadian Labour Code; and
- d. ISO 6346 Freight Containers - Coding, Identification and Markings.

3.2 General Safety.

- a. SPE-1000, model code for the field evaluation (special inspection) of electrical equipment.

3.3 Radioactive Materials.

- a. Nuclear Safety and Control Act (NSCA);
- b. Nuclear Substances and Radiations Device Regulations (NSRDR);
- c. Packaging and Transport of Nuclear Substances Regulations ;
- d. Transportation of Dangerous Goods Regulations;
- e. Nuclear Safety Orders and Devices (NSOD);
- f. Nuclear Safety Instructions (NSI); and
- g. In the event that there are secondary X-Rays generated by the device, the Contractor shall conform to the *Radiation Emitting Device Act (RED Act)*.

3.4 Radio frequency (RF) Radiation Safety.

- a. DAOD 3026-0 Radio Frequency Safety;
- b. DAOD 3026-1 Radio Frequency Safety Programme;
- c. C-55-040-001/TS-001, Safety Precaution and Incident Prevention Instructions - Radio Frequency Safety Program;

- d. C-55-040-001/TS-002, Radio Frequency Safety Standards and Requirements; and
- e. Health Canada Safety Code 6 (HC SC6).

3.5 Environment: The following documents (latest version) shall be obtained by the Contractor:

- a. Canadian Environmental Protection Act (CEPA);
- b. Canadian Transportation of Dangerous Goods Act;
- c. Canadian Environmental Assessment Act (CEAA);
- d. Species at Risk Act (SARA);
- e. Federal Halocarbon Regulations (FHR); and
- f. Fisheries Act.

3.3 ISO Quality Assurance.

- a. ISO 10005 Quality Management Guidelines; and
- b. ISO 9001 Quality management Guidelines for Quality Plans.

3.4 Configuration Management.

- a. D-01-002-007/SG-001, Requirements for the Preparation of Configuration Management Plans;
- b. DND 675 Request for Deviation;

3.5 Integrated Logistics Support (ILS) - Preparation of Publications and Drawings. The following documents are used for the preparation of publications and drawings and will be provided by DND to the Contractor:

- a. C-01-000-100/AG-004 Production and Acquisition Of Engineering Data;
- b. C-01-100-100/AG-005, Acceptance of Commercial and Foreign Government Publications as Adopted Publications;
- c. C-01-100-100/AG-006, Writing, Format and Production of Technical Publications;
- d. D-LM-008-011/SF-001 Preparation and Use of Packaging Requirements Codes;
- e. D-LM-008-002/SF-001, Specification for Marking for Storage and Shipment;
- f. D-LM-008-022/SG-000, The Standard for Packaging of Documentation;

- g. D-01-000-200/SF-001 Specification - Military Nomenclature Assignment and Procedures;
- h. D-01-100-201/SF-000, Preparation of Installation Instructions;
- i. D-01-100-203/SF-000, Preparation of Operating Instructions;
- j. D-01-100-204/SF-000, Preparation of Preventive Maintenance Instructions;
- k. D-01-100-205/SF-000, Preparation of Corrective Maintenance Instructions;
- l. D-01-100-207/SF-000, Preparation of Parts Identification List;
- m. D-01-100-214/SF-000, Specification for Preparation of Provisioning Documentation for CF Equipment;
- n. D-01-100-215/SF-000, Specification for Preparation of Material Change Notice;
- o. D-01-400-001/SG-000, Engineering Drawings Practices;
- p. D-01-400-002/SF-000, Drawings, Engineering and Associated Lists; and
- q. D-02-002-001/SG-001 CF Standard - Identification Marking of Canadian Military Property.

3.5.1 The following document is also required and is the Contractor's responsibility to acquire:

- a. DoD-D-1000B, Drawings, Engineering and Associated List (USA).

3.6 System Engineering.

- a. Institute of Electrical and Electronic Engineers (IEEE) Standards IEEE STD 1220-2005; Application and Management of the System Engineering Process;
- b. Electrical Industries Alliance (EIA) standards EIA-632; Processes for Engineering a System; and
- c. Electrical Industries Alliance (EIA) standards EIA-731-1 Systems Engineering Capability Model (SECM).

3.7 Electromagnetic Environment Effect (E3) Management.

3.7.1 The following documents are listed for information only for Electromagnetic Effect Management and will be provided by DND to the Contractor:

- a. A-GG-040-001/AG-001, DND General Safety Program (Volume 1), Policy and Program; and
- b. NDHQ Instruction DCDS 3/83, Electromagnetic Pulse Protection (EMPP) for CF Equipment Systems and Installation Activity;
- c. MILSTD 461, Requirement for Control of EMI Characteristics of Sub-Systems and Equipment;
- d. MILSTD 464C,

- e. CFTO C-09-153-009/TS-000
- f. QETE Technical Note, Electromagnetic Emitter, Receiver and Platform Data Specification Requirements, Rev 8.2a, 25 May 2015.

3.7.2 The following document is required and is the Contractor's responsibility to acquire:

- a. US DID DI-EMCS-81541B;
- b. US DID DI-EMCS-81542B;
- c. IEC 61000 4-2 (2008); and
- d. NATO AECTP 500, ed. 4, January 2011.

3.8 Emanation Security (EMSEC) Engineering.

- a. INFOSEC 601, Technical COMSEC Instructions for the installation of IT Systems;
- b. CID/09/14 Tactical HIJACK/NONSTOP Test Requirements and Procedures or CNSS Advisory Memorandum TEMPEST 01-02; and
- c. CID/09/15A Compromising Emanations Laboratory Test Requirements, Electromagnetics.

3.9 Security Management and Planning.

- a. DND/CAF IT Security Control catalogue.

3.10 Design Reviews and Audits.

- a. MILSTD-1521B, Design Reviews and Audits.

3.11 Frequency Spectrum Management.

- a. DAOD 6003-0 Radio Frequency Spectrum Management;
- b. US DI-MISC-81174, Frequency Allocation and Emitter Data

3.12 Operational Test and Evaluation.

- a. Operational & Test Evaluation Requirements; and
- b. BGA-164 Flight Inspection Manual.

3.13 Canadian Advanced Synthetic Environment (CASE).

- a. IEEE 1516.2 – 2000 Object Model Template;

- b. Real-Time Platform Reference Federation Object Model (FRPR FOM()) 2.0D17; and
- c. GRIM-RPR, Guidance, Rationale and Interoperability Manual for Real-Time Platform reference Federation Object Model, Version 2.0D17v3.

3.14 CF-18 Advanced Distributed Combat Training System (ADCTS).

- a. CF-18 ADCTS High Level Architecture (HLA) Federation Object Model;
- b. CF-18 ADCTS Federation Agreements Document (FAD).

3.15 Primary and Secondary Surveillance Radar.

- a. AIMS 03-1000A, Technical Standard for the ATCBRS/IFF Mark XIIA Electronic Identification System and Military Implementation of Mode S (AIMS 03-1000 covers requirements for new or modified systems striving to implement Mode 5);
- b. AIMS 04-900; Interface Control Standard for the Mode 4/5 Cryptographic Computer;
- c. ICAO Annex 10; and
- a. STANAG 4193, Technical Characteristics of IFF Mk XA and MkXII Interrogators and Transponders;

3.16 Tactical Data Link.

- a. STANAG 5501, Digital Data Link – Link 1 (Point to Point);
- b. STANAG 6011, Tactical Data Link (TDL) Link-11/11B Message Standard;
- c. STANAG 6016; Tactical Data Link (TDL) Link 16 Message Standard;
- d. MILSTD 6020, Data Forwarding Between Tactical Data Link;
- e. MILSTD 3011, Interoperability Standard for the Joint Range Extension Application Protocol (JREAP); and
- f. STANAG 5616, Standards for Data Forwarding Between Tactical Data Systems Employing Link 11/11B, Link 16 and Link 22.

3.17 Displays.

- a. MILSTD 2525B, Common Warfighting Symbolology.

3.18 Shelter Interface Cabling.

- a. TBITS Cabling Standards <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=15746>.

3.19 Equipment References. The following document refers to equipment and will be provided by DND to the Contractor:

- a. L-53-666-000/LC-001, Checklist for the AN/TSC-510 Transportable Satcom System.
- b. Pallet Loading System (PLS)

3.20 MILSTDs. The following MILSTDs are referenced in the SOW and are the Contractor's responsibility to acquire:

- a. MILSTD 461E, Requirement for Control of EMI Characteristics of Sub-systems and Equipment. The applicable DoD DIDs discussed in MILSTD 461E are as follows:
 - (1) Electromagnetic Interference Control Procedures (EMICP) DI-EMCS-80199A;
 - (2) Electromagnetic Interference Test Report (EMITR) DI-EMCS-80200A;
 - (3) Electromagnetic Interference Test Procedures (EMITP) DI-EMCS-80201A;
 - (4) Electromagnetic Effects Verification Procedures (EMEVP) DI-EMCS-81295; and
 - (5) Electromagnetic Compatibility Program Procedures DI-EMCS-81528.
- b. MILSTD 499, Security Management;
- c. MILSTD 785, Quality Assurance;
- d. MILSTD 973 Configuration Management, Sections 5.4.3 and 5.4.4 and Appendix E;
- e. MILSTD 1388-1A and 1388-2B, Requirements for Logistics Support Analysis Record Superseded by MIL HDBK 502 to be used as a Reference Only;
- f. MILSTD 1472, Human Engineering;
- g. MILSTD 2073-1 and -2, Special Packaging;

3.21 Design Service Requirement

3.21.1 General Standards

- a. National Building Code of Canada (NBCC), errata, revisions and supplements;
- b. Applicable codes, standards, specifications and guidelines referenced in the NBC;
- c. Provincial building codes when applicable, latest edition, errata, revisions and supplements. (TA to confirm if provincial codes are applicable);

- d. National Master Specification (NMS), latest edition;
- e. International Organization for Standardization (ISO) Standard 9001 - Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation and Servicing, latest edition; and
- f. National Energy Code of Canada for buildings (NECB);
- g. Canadian Standard Association (CSA)
 - i. CAN/CSA-Z317.1 Special requirements for plumbing installations in health care facilities;
 - ii. CAN/CSA-Z317.2 - Special requirements for heating, ventilation, and air-conditioning (HVAC) systems in health care facilities; and
 - iii. CSA-B651, Accessible Design for the Built Environment.
- h. Fire Prevention
 - i. NFCC, National Fire Code of Canada, latest edition, and all standards referenced therein;
 - ii. NFPA, National Fire Protection Association Codes Note: There are approximately 300 codes put out by the NFPA. They have been updated at various times, e.g. NFPA 1 - 2015; NFPA 8506- 1998;
 - iii. CAN/ULC S524 – Standard for Installation of Fire Alarm Systems;
 - iv. CAN/ULC S536 - Standard for the Inspection and Testing of Fire Alarm Systems;
 - v. CAN/ULC S537 – Standard for Verification of Fire Alarm Systems;
 - vi. ASTM E605 : Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members;
 - vii. ASTM E736 : Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members;
 - viii. ASTM E2174: Standard Practice for On-site Inspection of Installed Firestops;
 - ix. ASTM E2393: Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers;
 - x. CSA S16, Limit States Design of Steel Structures;
 - xi. CSA A23.1/A23.2 - Concrete materials and methods of concrete construction/Test methods and standard practices for concrete;
 - xii. CSA A23.3, Design of concrete structures;
 - xiii. CAN/CSA S832, Seismic Risk Reduction of Operational and Functional Components (OFCs) of Buildings;

xiv. CSA O86, Engineering Design in Wood; and

xv. CSA S304.1, Design of Masonry Structures.

i. Mechanical

i. ACGIH Industrial Ventilation: A Manual of Recommended Practice, 28th Edition;

ii. C448 SERIES - Design and installation of earth energy systems;

iii. National Plumbing Code of Canada; and

iv. B149.1 Natural gas and propane installation code.

j. Electrical

i. IESNA – Illumination Engineering Society of North America, Lighting Handbook;

ii. CSA C22.1, Canadian Electrical Code, Part 1; and

iii. CSA Z462 Workplace Electrical Safety.

k. Environmental

i. Guidelines for Canadian Drinking Water Quality (GCDWQ); Summary Tables;

ii. Wastewater Systems Effluent Regulations, (SOR/2012-139); and

iii. Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197).

l. Commissioning

i. CSA Z320 Building Commissioning.

m. Communications

i. TIA-EIA 568 Commercial Building Communication Standards (English Only);

ii. TIA-EIA 569 Commercial Building Standards for telecommunications pathways and spaces (English Only);

iii. TIA-606 Administration Standard for Telecommunications Infrastructure; and

iv. TIA-607 Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises (English Only);

3.21.2 DND references.

a. Guidelines, Manuals and Handbooks.

- i. SOR/2012-139, Wastewater Systems Effluent Regulations(Web link only – Not in Library (CD));
- b. Barrier Free Access
 - i. C-98-007-000/AF-Z01 Universal Design and Barrier-Free Access Guidelines and Standards for DND/CF Facilities;
- c. Communications (SSC)
 - i. Shared Services Canada, Communications Requirements, Section 27;
 - ii. Shared Services Canada, Design Requirements, Section 00210, Room Data Sheets, Telecommunication Room (TR);
 - iii. Shared Services Canada, Design Requirements, Section 00210, Room Data Sheets, Main Telecom Room (MTR);
 - iv. Shared Services Canada, Structure Wiring System, SSC/NSP/WAN/TCNM Section 27 - Drawings: Buss Bar, Ground Lug, Conduit Layout, Conduit to Rack Pole, Ladder Cable Tray, Ventilated Cable Tray and Corcan Fibre Outlet;
 - v. CAT 6 Networks Design & Installation Tips; and
 - vi. Infrastructures in DND Buildings.
- d. Fire
 - i. FMD 4000, Electro-magnetic door locks, Canadian Forces Fire Marshal;
 - ii. FMD 4003, Fire Protection and Life Safety Engineering Design, Canadian Forces Fire Marshal;
 - iii. FMD 4005, Partial Occupancy, Canadian Forces Fire Marshal;
 - iv. FMD 4009, Fire Protection for Trailers and Tension Fabric Buildings, Canadian Forces Fire Marshal;
 - v. FMD 4010, Security and safe egress from restricted access areas, Canadian Forces Fire Marshal; and
 - vi. FMD 4011, Fire Protection for Information Technology Facilities and Equipment, Canadian Forces Fire Marshal.
- e. Electrical
 - i. National Defence Lighting and Lighting Control Guidelines.
- f. Mechanical
 - i. C-98-015-001/DD-006 Ventilation of Indoor Firing Ranges.
- g. Forms and Templates

- i. 7.51CT01, ISO 9001, DCPEP Quality Template, Application;
- ii. 7.30DF02, ISO 9001, DCPEP Quality Form, New Furniture List;
- iii. 7.30 DF03, ISO 9001, DCPEP Quality Form, Existing Equipment List;
- iv. 7.30 DF04, ISO 9001, DCPEP Quality Form, New Equipment List. (In English Only);
- v. 7.30 DF06, ISO 9001, DCPEP Quality Form, SOCR Room Data Sheet;
- vi. 7.51CT11, ISO 9001, DCPEP Quality Template, Operations and Maintenance Manual;
- vii. 7.51CT12, ISO 9001, DCPEP Quality Template, Occupant Manual; and
- viii. National Building Code of Canada Data Matrix Parts 3 or 9.

h. Civil / Site

- i. C-98-001-003/MS-003, Siting;
- ii. C-98-002-003/MF-003, Description and Maintenance of Fences;
- iii. Site Development Design Criteria;
- iv. RAMM Chapter 4, Section 5, Sanitary Sewer System Design Standard;
- v. RAMM Chapter 4, Section 5, Water System Design Standards;
- vi. RAMM Chapter 4, Section 5, Storm System Design Standards;
- vii. RAMM Chapter 4, Section 6, Roadway Design Standards; and
- viii. For other Civil Engineering related References (DWAN Link Only – Not in Library (CD)).

i. CAD / BIM

- i. DND CAD/BIM Standard Version 2.3.

j. Commissioning

Note: the commissioning Documents are living documents. Please contact Andrew Bradley, DCAE 3-4, for any questions/documents concerning commissioning. See also reference 1.14.2 – CSA Z320 Building Commissioning.)

- i. DND Commissioning Plan;
- ii. DND Commissioning Manual Note; and
- iii. DND Commissioning Specification.

k. Shielding Enclosures

- i. D-98-013-004/DD-001 National Defence, RF/EMI Shielded Enclosure Demountable Type Preparation of Drawings and Specifications; and
- ii. D-98-013-004/DD-002 National Defence, RF/EMI Shielded Enclosure Welded Type (MIG or GMAW) Preparation of Drawings and Specifications.

3.22 In-Service Support. The following document is referenced in the SOW and is provided by DND to the Contractor.

DRAFT

APPENDIX 04

ACRONYMS AND ABBREVIATIONS

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 4 – Acronyms and Abbreviations

1 Cdn Air Div/CANR HQ	1 Canadian Air Division/Canadian NORAD Region
AC Op	Aerospace Control Operator
ACO	Aerospace Control Orders
ACAS	Automatic Crash Avoidance System
ADCTS	Advanced Distributed Combat Training Systems
ADM(Mat)	Assistant Deputy Minister (Material)
ADSI	Air Defence Systems Integrator
AEC	Aerospace Control
AF	Air Force
AFCCIS	Air Force Command & Control Information System
A/G/A or AGA	Air Ground Air
AHJ	Authority Having Jurisdiction
AIMS	ATCBRS IFF Mark XII System
AKA (aka)	Also Known As
AMDS	Advanced Mission Distributed Simulation
ANR	Active Noise Reduction
AOR	Areas of Responsibility
AP	Anomalous Propagation
APU	Auxiliary Power Unit
ASTERIX	All-Purpose Structured Eurocontrol Radar Information Exchange
ASTi	Army Secure Tactical Initiative
ATCRBS	Air Traffic Control Radar Beacon System
ATIS	Aerospace Telecommunications and Information Systems
ATO	Aerospace Traffic Orders
ATPR	Acceptance Test Procedure
ATR	Acceptance Test Report
BCE	Base Construction Engineering
BDS	Binary Data Store
BFA	Barrier Free Access
BIT	Built In Test
BITE	Built In Test Equipment

BOD	Beneficial Occupancy Date
BY\$	Budget Year Dollars
C2	Command and Control
CA	Contract Authority
CAD	Computer Aided Design
CAD	Computer Assisted Drawing
CADS	Canadian Air Defence Sector
CaGBC	Canadian Green Bldg Council
CALS	Continuous Acquisition and Life Cycle
CASE	Canadian Advanced Synthetic Environment
CBIL	Common Bulk Items List
CBT	Computer Based Training
C&C	Control and Command or Command and Control?
CCB	Communications Consolidation Building
CCN	Contemplated Change Notice
CD	Compact Disk
CD2	Common Digitizer
CDR	Critical Design Review
CDRL	Contract Data Requirement List
CE	Construction Engineering
CEAA	Canadian Environment Assessment Act
CEPA	Canadian Environment Protection Act
CETO	Construction Engineering Technical Orders
CF	Canadian Forces
CFAR	Constant False Alarm Rate
CFC	Commissioning Flight Check
CFFM	Canadian Forces Fire Marshal
CFTO	Canadian Forces Technical Orders
CFWC	Canadian Forces Warfare Centre
CHI	Computer Human Interfacing
CHU	Cargo Handling Unit
CI	Configuration Item
CID	Canadian Interdepartmental Document
CIL	Candidate Item List

CITP	Canadian Industrial TEMPEST Program
CLAWR	Cold Lake Air Weapons Range
CLC	Canada Labour Code
CM	Configuration Management
CMP	Configuration Management Plan
CMRS	Calibration/Measurement Requirement Summary
CNSC	Canadian Nuclear Safety Commission
CNSS	Center for National Security Studies
CO	Change Order
CO	Commanding Officer
CODAN	Carrier Operated Device, Anti-Noise
COMSEC	Communications Security
CONOPS	Concept of Operations
COTS	Commercial Off the Shelf
CPU	Central Processing Unit
CSA	Canadian Standards Association
CSA	Configuration Status Accounting
CSCI	Computer Software Configuration Item
CSE	Communication Security Establishment
CSM	Contractor Supplied Material
CSN	Canadian Switched Network
CTP	Certified TEMPEST Professional
D&S	Drawings and Specifications
DAEPM	Director Aerospace Equipment Program Management
dB	Decibel
DB	Design-Build
DBB	Design-Bid-Build
DCC	Defense Construction Canada
DCC CO	Defence Construction Canada Contract Coordinator
DCPD	Directorate of Construction Project Delivery
DGNS	Director of General Nuclear Safety
DHW	Domestic Hot Water
DID	Data Item Description
DMSO	Defense Modeling Simulation Office (U.S. DoD)

DND	Department of National Defence
DoD	Department of Defense (US)
DQA	Directorate of Quality Assurance
DQP	Design Quality Plan
DR	Design Review
DSCO	Director Supply Chain and Operations
DTD	Document Type Definitions
DVD	Digital Video Disk
DWAN	Defence Wide Area Network
E3	Electromagnetic Environment Effects
EA	Environmental Assessment
EBS	Equipment Breakdown Structure
ECCM	Electronic Counter Counter Measures
ECM	Electronic Counter Measures
ECP	Engineering Change Proposal
EGIE	Existing Government Infrastructure and Equipment
EIA	Environmental Impact Assessment
EIA	Electrical Industry Standards
ELM	Extended Length Message
E&M	Ear and Mouth
EMC	Electromagnetic Compatibility
EMCS	Energy Management Control System
EME	Electromagnetic Environment
EMI	Electromagnetic Interference
EMSEC	Emissions Security
EOI	Expression of Interest
EPA	Effective Project Approval
ER	Escadron de Radar (Translation of Radar Squadron)
ESD	Electrostatic Discharge
ESM	Electronic Support Measures
FAD	Federation Agreement Document
FAR	False Alarm Rate
FAT	Factory Acceptance Test
FATP	Factory Acceptance Test Plan

FCA	Functional Configuration Audit
FEDEP	Federation Execution and Development Process
FHR	Federal Halocarbon Regulations
FI	Fault Isolation
FOC	Full Operational Capability
FOSI	Format Output Specification Insurance
FPR	Final Project Review
FQR	Formal Qualification Review
FRUIT	Friendly Replies Unsynchronized In Time
FSP	Functional Space Program
G/A/G or GAG	Ground/Air/Ground
GCA	Government Contracting Authority
GCHQ	British Government's Communication Headquarters
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GFR	Government Furnished Resources
GICB	Ground Initiated Comm-B (Mode-S Transponder Systems)
GNC	Global Navigation Chart
GPS	Global Positioning System
GQA	Government Quality Assurance
GRIM-RPR	Guidance, Rationale and Interoperability Manual for the Real-Time Platform Reference Federation Object Model
GSM	Government Supplied Material
GTC	Gain Time Control
GUI	Graphical User Interface
HERF	Hazards of Electromagnetic Radiation to Fuel
HERO	Hazards of Electromagnetic Radiation to Ordnance
HERP	Hazards of Electromagnetic Radiation to Personnel
HF	High Frequency
HFE	Human Factors Engineering
HLA	High Level Architecture
HST	Harmonized Sales Tax
HVAC	Heating, Ventilation and Air Conditioning
IAW	In Accordance With

ICAO	International Civil Aviation Authority
ICD	Interface Control Document
ICS	Integrated Communications System
ID	Identification
IEEE	Institute for Electrical and Electronics Engineers
IETM	Interactive Electronic Technical Manual
IFF	Identification of Friend or Foe (transponder)
ILS	Integrated Logistic Support
ILSP	Integrated Logistic Support Plan
IMTP	Integrated Master Test Plan
INFOSEC	Information Security
IOR	Immediate Operational Requirement
IPC	Initial Provisioning Conference
IPGC	Initial Provisioning Guidance Conference
IPR	Initial Project Review
ISL	Interim Spare List
ISO	International Standardization Organization
IT	Information Technology
ITP	Industrial TEMPEST Program
ITS	Industrial TEMPEST Scheme
JETDS	Joint Electronics Type Designation System
JFCOM	Joint Forces Command's (JFCOM)
JMPS	Joint Mission Planning Suite
JNC	Jet Navigation Chart
JREAP	Joint Range Extension Application Protocol
Lat	Latitude
LCB	Logistics Control Baseline
LCC	Life Cycle Cost
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
LHCN	Long Haul Communications Network
LCMM	Life Cycle Material Manager
LLTIL	Long Lead Time Items List
Long	Longitude

LORA	Level Of Repair Analysis
LRU	Line Replaceable Unit
LSA	Logistic Support Analysis
LSACN	Logistic Support Analysis Control Number
LSAP	Logistics Support Analysis Plan
LSAR	Logistic Support Analysis Records
M&S	Modeling and Simulation
MACA	Month After Contract Award
MCN	Material Change Notice
MDF	Main Distribution Frame
MFI	Monitoring and Fault Indication
MILSTD	Military Standard
MMR	Minimum Military Requirement
MND	Minister of National Defence
MOC	Military Occupation Code
MOTS	Military Off The Shelf
MP	Maintenance Plan
MPR	Monthly Progress Report
MPS	Master Project Schedule
MRADP	Master Realty Asset Development Plan
MRP	Mobile Repair Party
MSDS	Material Safety Data Sheet
MSI	Maintenance Significant Items
MSL	Mean Sea Level
MSSR	Monopulse Secondary Surveillance Radar
MTBCF	Mean Time Between Critical Failure
MTI	Moving Target Indicator
MTTR	Mean Time to Repair
MUX	Multiplexer
NAD	North American Datum
NATO	North Atlantic Treaty Organization
NBC	Nuclear Biological Chemical
NDHQ	National Defence Head Quarters
NDI	Non Developmental Items

NDQAR	National Defence Quality Assurance Representative
NFPA	National Fire Protection Association
NFTC	NATO Flying Training in Canada
NIMA	National Imagery and Mapping Agency
NMS	National Master Specification
NLT	No Later Than
NM or nm	Nautical Mile
NORAD	North American Aerospace Defence Command
NRC	National Research Council
NRTL	Nationally Recognized Testing Laboratory
NSA	National Security Agency
NSCA	Nuclear Safety and Control Act
NSN	NATO Stock Number
NSRDR	Nuclear Substances and Radiations Device Regulations
NTP	Network Time Protocol
O&M	Operation and Maintenance
OASES	Ocean, Atmospheric and Space Environment Service
OEM	Original Equipment Manufacturer
OGD	Other Government Departments
OJT	On-Job-Training
ONC	Operational Navigation Chart
Ops	Operations
OT&E	Operational Testing and Evaluation
PA	Procurement Authority
PABX	Private Automated Branch Exchange
Para (s)	Paragraph(s)
PARROT	Position Adjustable Range Reference Orientation Transponder
PAS	Publication Authorship Service
PC	Personal Computer
PCIA	Physical Configuration and Installation Audit
PD	Provisioning Documentation
PD (Pd)	Probability of Detection
PDF	Portable Document Format
PDR	Preliminary Design Review

PF _a	Probability of False Alarm
PLER TSPI	Primrose Lake Evaluation Range – Time Space Position Information
PHST	Package Handling Storage and Transportability
PLER	Primrose Lake Evaluation Range
PLS	Pallet Loading System
PM	Project Manager
PME	Primary Mission Equipment
PMP	Project Management Plan
P/N	Part Number
PO	Project Officer
POA	Provisional Operational Airworthiness
PPA	Preliminary Project Approval
PPB	Provisioning Parts Breakdown
PPLI	Precise Position Location Identification
PRF	Pulse Repetition Frequency
PRM	Progress Review Meeting
PSR	Primary Surveillance Radar
PSTN	Public Switched Telephone Network
PTT	Push To Talk
PVR	Personal Video Recorder
QA	Quality Assurance
QAP	Quality Assurance Program
QDF	Quick Distribution Form
QETE	Quality Engineering Test Establishment
QP	Quality Plan
QS	Quantity Surveyor
Qty	Quantity
R&CS	Radar and Communications Systems
R&O	Repair and Overhaul
RA	Requisition Authority
RAM	Random Access Memory
RADHAZ	Radiation Hazard
RCAF	Royal Canadian Air Force
RCS	Radar Cross Section

Rdns	Readiness
RDP	Radar Data Processor
Rdr	Radar
RED	Radiation Emitting Device
RF	Radio Frequency
RFAP	Request for Abbreviated Proposal
RFSP	Radio Frequency Safety Program
RH	Relative Humidity
RMA	Reliability, Maintainability, and Availability
RMS	Root Mean Square
ROM	Read Only Memory
RPM	Revolutions Per Minute
RPR FOM	Real-Time Platform Reference Federation Object Model
RTI	Run Time Infrastructure
RTOC	Remote Training Operations Centre
RTQC	Real-Time Quality Control
RU	Rack Unit
RVM	Requirement Verification Matrix
SAA	Security Assessment and Authorization
SARA	Species At Risk Act
SAT	Site Acceptance Test
SATP	Site Acceptance Test Plan
Satcom	Satellite Communications
SCD	Statement of Capability Deficiency
SCN	Specification Change Notice
SCV	Subclutter Visibility
SDP	Site Data Package
SDS	Sustainable Design Strategy
SE	System Engineering
SEDRIS	Source for Environmental Data Representation and Interchange
SEMP	System Engineering Management Plan
SGML	Standard Generalized Mark-up Language
SIF	Selective Identification Feature
SLS	Side Lobe Suppression

SMR	Source Maintenance and Recoverability
SOCR	Statement of Construction Requirements
SOM	Simulation Object Model
SOR	Statement of Operational Requirements
SOR(I)	Statement of Operational Requirements (Infrastructure)
SOW	Statement Of Work
SPI	Special Position Indicator
SPST	Single Pole Single Throw
SPTD	Supplementary Provisioning Technical Documentation
Sqn	Squadron
SSB	Single-sideband
SSR	Secondary Surveillance Radar
STANAG	Standardization Agreement (NATO)
STC	Sensitivity Time Control
SUM	Software User Manual
TA	Technical Authority
TAC	Technical Accuracy Check
TBITS	Treasury Board Information and Technology Standards
TCI	Technical COMSEC Inspection
TCR	Tactical Control Radar
TD	Tabular Display
TDAN	Technical Data Action Notice
TDL	Tactical Data Link
TDL C ²	Tactical Data Link Command and Control
T&E	Test and Evaluation
TEMPEST	Transient Electromagnetic Pulse Emanations Standard
TFC	Tactical Fighter Controllers
TIM	Technical Interchange Meetings
TO	Technical Order
TOD	Time-of-Day
TP	Transition Plan
TPC	Tactical Pilotage Charts
TPRL	Technical Publications Requirements List
TRA	Threat – Risk Assessment

TRACS	Terminal Radar and Communication System
TRR	Test Readiness Review
TSPI	Time Space Position and Information
TÜV	Technischer Überwachungsverein (German Safety and Standards)
UD	Universal Design
UHF	Ultra High Frequency
UL	Underwriters Laboratories
USB	Universal Serial Bus
USMTF	US Message Text Format
UPS	Uninterruptible Power Supply
UTC	Universal Time Coordinated
VHF	Very High Frequency
VTC	Virtual Technologies Corporation
WASO	Weapons Assistant Sensor Operator
WBS	Work Breakdown Structure
WD	Working Days
WGS	World Geodetic System
WOD	Word of Day
XML	Extensible Markup Language

APPENDIX 05

DESCRIPTION OF BUILDINGS AND VEHICLES

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Table of Contents

APPENDIX 5.....	3
Bagotville.....	3
Lac Castor (12ER)	3
12ER Building at Lac Castor	4
12ER Building (rear) at Lac Castor	5
12ER Domes and Antennas at Lac Castor.....	6
12ER Scissor Lift.....	7
12ER Opening for Scissor Lift	8
12ER radar shelter with HVAC tubes.	9
12ER 5-ton trucks	14
Specifications on the HESV Pallet Loading System (PLS).....	15
42 Rdr Sqdn -TPS-70 radar building at PLER.....	10
Skyguard building.....	10
Consolidated Communications Building (CCB)	12
42 Radar location on the PLER hill top (location only).	13

APPENDIX 5

Description of TCR Buildings and Vehicles

Bagotville

Lac Castor (12ER)



12ER Building at Lac Castor



12ER Building (rear) at Lac Castor



12ER Domes and Antennas at Lac Castor



Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

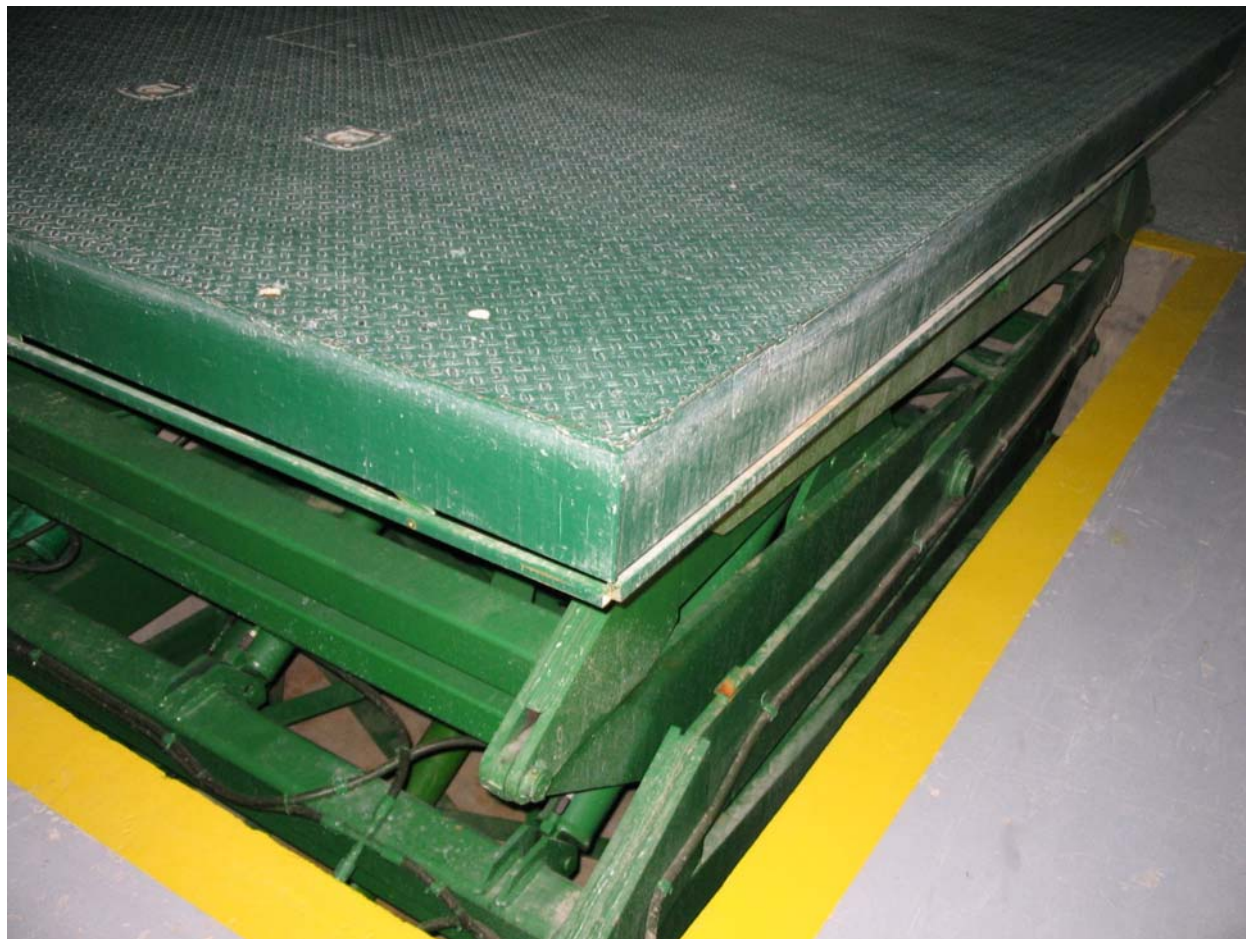
Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

12ER Scissor Lift



12ER Opening for Scissor Lift



12ER radar shelter with HVAC tubes.



Cold Lake

42 Rdr Sqdn -TPS-70 radar building at PLER.



Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

Skyguard building

Building Long ddd:mm:ss.sss
B391 -110:02:29.899
222.97 SQ. METRES

Lat dd:mm:ss.sss
54:44:44.677



The center portion of this building has two floors with office space.

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

Consolidated Communications Building (CCB)

Building Long ddd:mm:ss.sss Lat dd:mm:ss.sss
B379 -110:02:45.299 54:44:50.273
269.7 SQ. METRES



Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

42 Radar location on the PLER hill top (location only).

Building
B376

Long ddd:mm:ss.sss
-110:03:11.497

Lat dd:mm:ss.sss
54:45:02.792

Bldg 376 BPrin 77334 Rame 407



Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

12ER 5-ton trucks



Specifications on the HESV Pallet Loading System (PLS)



National Défense
Defence nationale

C-32-B49-000/MA-000

DATA SUMMARY

**TRUCK, PALLET LOADING SYSTEM, DED, SINGLE WHEELS, MILITARIZED,
6X6, HESV, MODEL 4866S, 15 TONNE CAPACITY**

(BILINGUAL)

FICHE TECHNIQUE

**CAMION, PALLETISEUR, DED, 15 TONNES, MILITARISÉ
À SIX ROUES MOTRICES, VLSG, MODÈLE 4866S**

(BILINGUE)

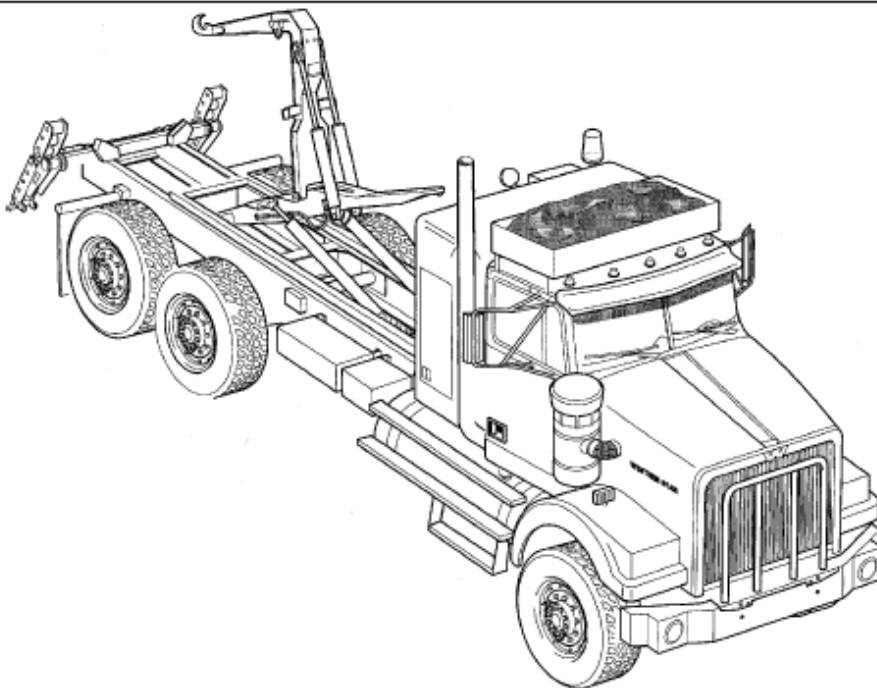
Issued on Authority of the Chief of the Defence Staff
Publiée avec l'autorisation du Chef d'état-major de la Défense

Contact Officer: DSVPM 4
Officier responsable: DAPVS 4

OPI: DSVPM 4
BPR: DAPVS 4

© 1997 DND/MDN Canada

1997-07-31



General View of Equipment
Aperçu de l'équipement

INTRODUCTION

1. This Data Summary provides technical information on the Heavy Engineer Support Vehicle (HESV) Pallet Loading System, and its major components.

PURPOSE

2. The purpose of the HESV PLS vehicle is to transport ISO containers, dump modules, military stores on flat racks, and medium floating bridge bays. This vehicle is equipped with hydraulic couplers to operate the dumping mechanism on the dump module. The use of the vehicle with medium floating bridge bays requires the removal of the (ISO container) rear roller bed (refer to the HESV Operator's Manual).

DESCRIPTION

3. The vehicle is a 6X6 truck with a 6,300 mm wheelbase (front-to-centre between axles) in the 15 tonne payload range and is provided with a leaf spring front and rear air ride suspension.

IDENTIFICATION

4. Manufacturer Western Star Trucks Inc.
Manufacturer's Designation Cornerstone
Model 4866S
Series HESV
Manufacturer's Reference Number (MRN) 38429
Year of Manufacture 1997
Contract Demand (CD) Number W8476-5-MY01/01-1A
Stock Class 2320
NATO Stock Number (NSN) 2320-21-901-5936
Equipment Category Code (ECC) 147106
Quantity Purchased 30
Equipment Registration Number (ERN) 32-B49-000

TECHNICAL SPECIFICATIONS

PERFORMANCE FACTOR AT GROSS WEIGHT	WITHOUT TOWED LOAD	WITH TOWED LOAD
Cruising Range	700 km	500 km
Maximum Speed	108 km/h	108 km/h
Maximum Grade		
– traveling uphill	60%	40%
– traveling side slope	30%	30%
Fuel Consumption (highway)	60.0 L/100 km	84.0 L/100 km
Fording Depth	800 mm	750 mm
Angle of Approach	35°	35°
Angle of Departure	28°	28°
Turning Radius	13 400 mm	13 400 mm

WEIGHTS AND DIMENSIONS

Military Load Classification (MLC)

- PLS	37
- PLS with Trailer	45

Curb Weight

- PLS	14,520 kg
- PLS with dump module	18,240 kg
- PLS with flat rack	16,570 kg
- front axle (PLS) GAWR	7,000 kg
- rear tandem axles (PLS) GAWR	7,490 kg
- payload capacity	15,000 kg
- towed-load capacity	18,160 kg

Overall Dimensions (see Figure 1)

- length	10,666 mm
- width (maximum)	2,691 mm
- height (no load)	3,340 mm
- shipping volume	91.4 m ³
- height with dump module	3,655 mm
- shipping volume with dump module	100 m ³
- height with ISO container (2.44 m)	4,048 mm
- shipping volume with ISO container	111 m ³

Other Measurements (see Figure 1)

- wheelbase	6,300 mm
- intermediate to rear axle	1,397 mm
- rear axle to end of frame	1,333 mm
Rear Roller Deck to Ground	1,600 mm
Pintle Height to Ground	762 mm
Cab Height to Ground	3,296

Ground Clearances

- under Transfer Case	510 mm
- under axles	280 mm
- under frame	959 mm

Tire Track

- front	2,591 mm
- rear	2,591 mm

ENGINE SYSTEM

Manufacturer	Caterpillar
Model	C12
Type	Diesel in-line vertical
Compression Ratio	16:1
Idle Speed	700 rpm
Governed No-Load Speed	2,100 rpm
Number of Cylinders	6
Firing Order	1-5-3-6-2-4
Bore	130 mm
Stroke	150 mm
Piston Displacement	12 L
Power	
- brake horsepower @ 1,800 rpm	410 hp
- gross @1,700 rpm	309.6 kW (SAE)
Torque	
- maximum net @1,300 rpm	1,967 N•m

Valve Clearance
- Cold — intake 0.38 mm
 — exhaust 0.64 mm

Oil Pressure
- maximum 275 to 414 kPa
- minimum (with engine idling at operating temperature) 68 kPa

Coolant Temperature
- normal (thermostat opening temperature) 80° C

Turbocharger
- make Caterpillar
- model GT42

Engine Weight Complete w/Accessories 940 kg

TRANSMISSION/TORQUE CONVERTER SYSTEM

Transmission
- make Allison World Transmission
- model HD4560P
- type automatic w/torque converter
- gear range 5 speed plus reverse
- weight c/w torque converter 405 kg

Torque Converter
- model Allison TC-541
- type hydraulic

POWER TRAIN SYSTEM

Transfer Case
- make Fabco
- model TC-270 with lubrication pump
- type pneumatic-shifted 2 speed
- ratio - high 1:1
 - low 2.23:1
- weight - dry 318 kg

Power Take-Off
- make Muncie
- model CS20A1006H3KX

Differentials
- make Rockwell
- ratio 6.14:1

Front Axle
- make Rockwell
- type RF-21-160 front drive steer axle
- weight (complete assembly) 895 kg
- capacity 9,534 kg

Intermediate Axle
- make Rockwell
- type MP-29-160 single reduction
- weight (complete assembly) 585 kg
- capacity 13,166 kg

Rear Axle
- make Rockwell
- type MR-29-160 single reduction
- weight (complete assembly) 585 kg
- capacity 13,166 kg

WHEELS AND TIRES

Wheels
- rim size 20 x 10.00 disc
Tires
- make Michelin
- type XZL
- size 395/85R20
Tire Pressures (Highway and Cross-Country)
- front 691 kPa
- rear 792 kPa
Tire Pressures (Mud, Sand and Snow – Maximum Speed 20km/h)
- front 310 kPa
- rear 380 kPa

BRAKE SYSTEM

Compressor
- make Bendix Westinghouse
- model BW 750
- displacement @ 1,250 rpm 16.5 CFM
- maximum air pressure 827 kPa
Air Dryer
- make Bendix Westinghouse
- model AD-9 heated
Service Brakes
- front brake Rockwell 16.5 x 6
- rear brake make, size Rockwell 16.5 x 7
- type internal expanding shoe
- applied compressed air
Park Brake
- type spring energy
- applied park brake valve
Trailer Brake
- type internal expanding shoe
- applied compressed air
Engine Brake 3-position, Jacobs Brake
Anti-Lock Brake System (ABS)
- make Wabco
- model 454M 4 channel

SUSPENSION SYSTEM

Front
- type leaf springs
- number of leaves 7
size (width x length) 90 x 1,955 mm
Rear Suspension
- type Neway AD-246 air ride
- capacity 20,884 kg
Shock Absorbers Front
- make Gabriel
- type double action hydraulic
Shock Absorbers Rear
- make Neway
- type double action hydraulic

STEERING SYSTEM

Steering Boxes

- make TRW
- models TAS-65 main/RCS65 slave
- type recirculating ball
- normal hydraulic pressure 150 bar

Power Steering Pump

- make Vickers
- model V20F
- type Vane
- capacity at 1 000 rpm 36 L/min
- working pressure at 1 000 rpm 12,057 kPa

Wheel Alignment

- toe-in -1.5 to 0 mm
- camber angle 0.30°

COOLING/HEATING SYSTEM

Fuel-Fired Coolant Heater

- make Webasto
- model DBW 2010
- output (40 000 Btu) 11.6 kW/h
- fuel consumption 1.5 L/h

Thermostat

- type 80° C in-line
- number used 1

Drain Cocks

- number used (radiator) 1

ELECTRICAL SYSTEM

Electrical System Voltage 24 V

Batteries

- type Delco Maintenance Free
- number used (series/parallel) 4
- voltage (each) 12 V
- capacity (each) 625 CCA
- ground terminal negative

Alternator

- make Prestolite
- model 8LHA3090U
- output 110 amperes

Starting Motor

- make Delco Remy
- model 42MT400
- voltage 24 V

FUEL SYSTEM

Fuel Pump

- make Caterpillar

Fuel injector

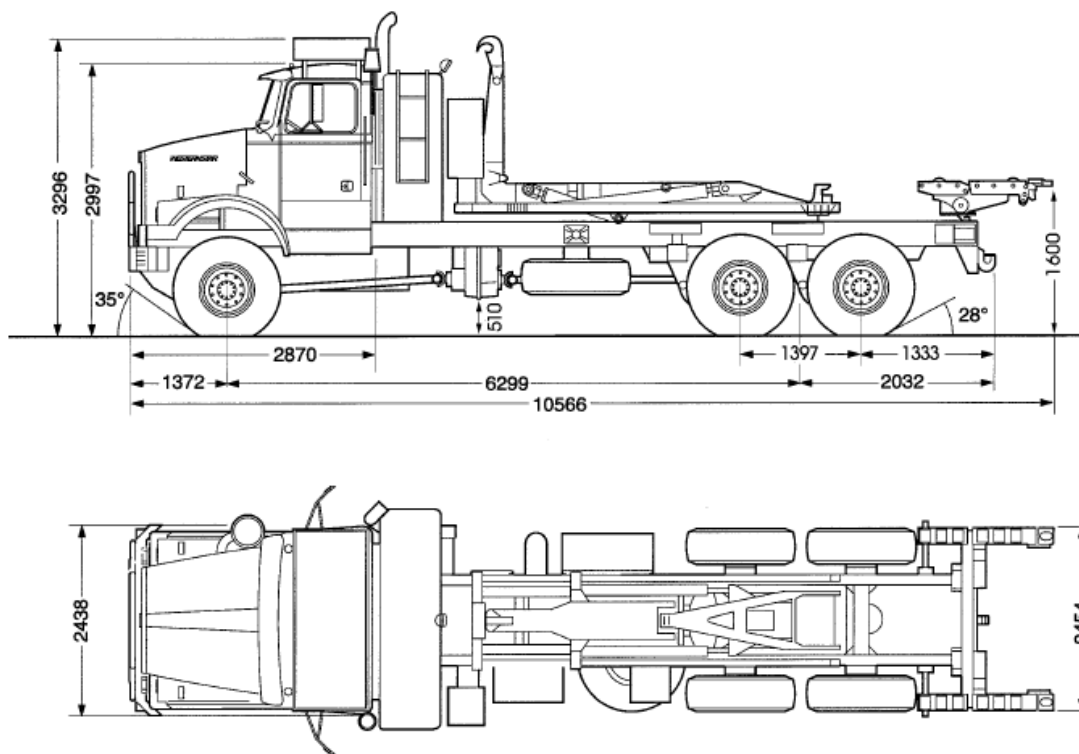
- make Caterpillar
- type electronic unit

DUMP MODULE SYSTEM

- make	DEL
- Capacity	6.88 m ³
- Operation	hydraulic
- Maximum Dumping Angle	50°
- Hydraulic Cylinder	DEL G6 Series 169

CAPACITIES (APPROX.)

Engine with Filter	34.0 L
Transmission/Torque Converter Assembly	45.0 L
Transfer Case	10.5 L
Differentials	
- front	16.0 L
- intermediate	18.0 L
- rear	16.0 L
Windshield Washer Fluid Reservoir	4.0 L
Power Steering Reservoir	4.0 L
Fuel Tank	450.0 L
Main Hydraulic Reservoir	110.0 L



NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. TURNING RADIUS IS 13,400 mm (13.4 m).

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 06

CLUTTER MODELS AND PROCESSING

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

1.1 Clutter Models/Definitions

The clutter models specified herein are to be used for analysis and simulation of the radar environment, which is a collaboration of Seek Igloo and North Warning environments. It is the basis for performance calculations in response to the specified system performance characteristics in PSR Detection Performance. Amplitude and spectral characteristics of clutter are modeled in four major categories: ground, sea, rain, and bird. Models are applicable to both L-band (1.3 GHz nominal frequency) and S-band (3.0 GHz nominal frequency), except where otherwise indicated.

Ground Clutter

Tundra (Seek Igloo)

The amplitude of terrain echoes is characterized by the scattering coefficient σ_0 , which is the ratio of the radar cross section (RCS) of a clutter patch to its illuminated area:

$$\sigma_0 = \text{RCS}/A \quad (1)$$

The illuminated area is given by:

$$A = R \theta_B c \tau / 2 \quad (2)$$

where R is the radar range to the clutter patch, θ_B is the 3 dB two-way azimuthal beam width of the radar, c is the speed of light, and τ is the radar pulse length.

Three modeled amplitude distribution functions (regions) for terrain clutter are provided in Figure 0-1.

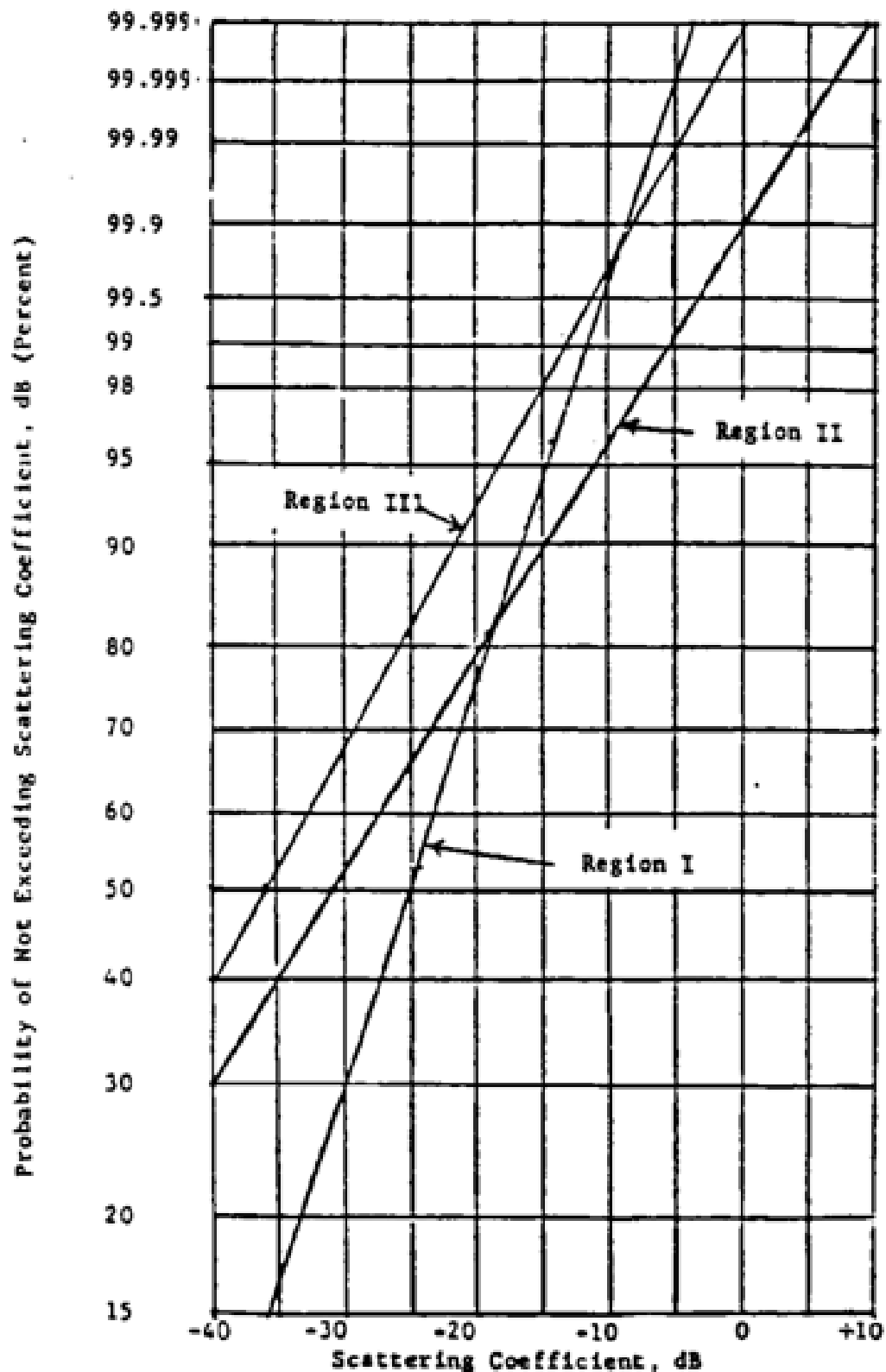


Figure 0-1 Amplitude Distribution Function, Terrain Clutter Weibull* Fit

The amplitude distribution is given by:

$$P(\sigma_c^0 \leq \sigma^0) = 1 - \exp[\ln 2 (\sigma^0 / \sigma_m^0)^b] \quad (3)$$

Equation (3) gives the cumulative probability that the scattering coefficient of the clutter does not exceed the value σ^0 . The value of the parameters, σ_m^0 and b for mountain clutter are:

$$\text{Region I (Swamp): } \sigma_m^0 = 3.249 \times 10^{-3} \text{ (-24.88 dB/m}^2\text{)} ; b = 0.6094$$

For the purposes of this specification, the mountain clutter should be analyzed at the mean amplitude.

The clutter should be considered to be heterogeneously distributed spatially, as can be expected at the actual sites. That is, areas of intense clutter often occur near shadowed or low clutter areas. Terrain clutter must be characterized by its echo spectrum as well as its amplitude. The modeled double-sided power spectral densities of terrain clutter echoes are:

$$\text{Valleys/Muskeg: } P(v) = 0.46 \delta(v) + \frac{0.682}{\left(1 + \left(\frac{|v|}{0.0345}\right)\right)^{3.5}} \quad (4)$$

where v is expressed in meters/second and $\delta(v)$ is the unit impulse (delta function). In equation (4), the first term is an idealized representation of the dc component of clutter. (In a real radar system this impulse will be modified by transmitter and receiver instabilities.)

Equation (4) is normalized to contain unity total power.

1.1.1.1 Severe Hills, Mountain, and Ice Packs (North Warning)

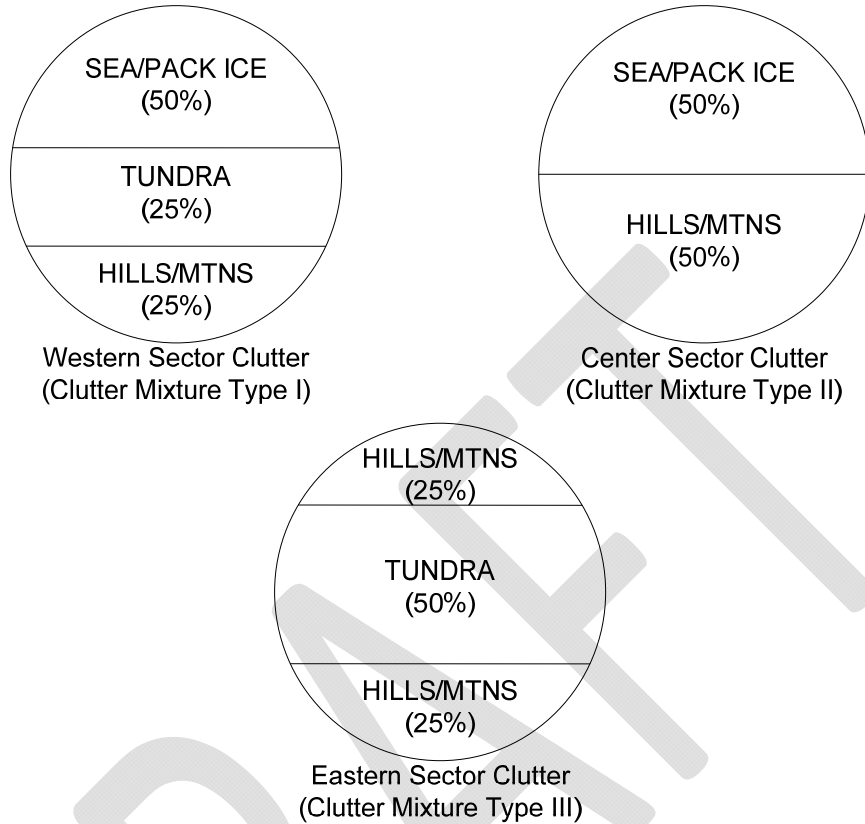


Figure 1.1.1.1-1 Clutter Mixtures

Backscatter will be considered to consist of two scattering phenomena, namely discrete clutter and distributed clutter. Discrete clutter is an abrupt discontinuity in the distributed clutter plus noise level arising from spatially isolated dominant scatterers. Hills, mountains and sea/pack ice have discretely while tundra and weather clutter do not. The discrete clutter is characterized by its radar cross section (RCS) which is defined as 4π times the ratio of the power per unit solid angle scattered in the direction of the radar (P_s) to the power per unit area in a plane wave incident on the scatterers (P_i) from the direction of the radar:

$$RCS = 4\pi \frac{P_s}{P_i}$$

Table 0-1 gives the quantity and RCS of discrete scatterers that are uniformly distributed over 360 degrees within a 100 NM radius of the radar. The number of discrete scatterers varies in direct proportion to the percentage of a particular kind of clutter that is within the radar field of view to that defined over 360 degrees and 100 NM. For example, the number of icebergs within 100 NM from the clutter mixture in Figure 5.2.1.2-1 (Type I) and (Type II) is half the value given in Table 0-1.

Distributed surface clutter arises from a continuum of small but not necessarily equal size surface scatterers and is characterized by the backscatter coefficient which is defined as the RCS of the scatterers divided by the area of a radar resolution element:

$$\sigma_o = \frac{RCS}{A}$$

The radar resolution element is given by:

$$A = R\theta_B = \frac{cr}{2}$$

where R is the radar range to the scatter, θ_B is the two-way 3 dB azimuthal beam width of the radar, c is the speed of light and r is the radar pulse length.

The spatial distribution of distributed clutter is described by the Weibull Probability Density Function:

$$P\left(\frac{\sigma}{\sigma_m}\right) = \left[b \cdot \ln(2) \cdot \sigma^{b-1} / \sigma_m^b\right] \cdot \left[\exp - \ln(2) \left(\frac{\sigma}{\sigma_m}\right)^b\right]$$

where σ_m is the median value and b is the shape parameter. Values for σ_m and b are given in Table 1.1.1-1 below.

Table 0-1 Distribution of Discretes

RCS	Hills/Mountains	Icebergs*
60 dBm ²	1	5
50 dBm ²	2	20
40 dBm ²	7	100
30 dBm ²	10	150
20 dBm ²	10	175
10 dBm ²	10	---
0 dBm ²	10	---
*Velocity is ± 0.6 Knots		

Table 0-2 Clutter Backscatter Characteristics

	Median Backscatter Coefficient		Shape Parameter
	σ_m		b
	S Band	L Band	
Severe Hills/Mountains (P ₃)	-36 dB	-36 dB	1/3.2
Pack Ice			
Depression Angle			
10 degrees	-27 dB	-27 dB	1/1.6
1 degree	-37 dB	-37 dB	1/2.6
low grazing	-55 dB	-55 dB	1/3.6

Regions of hills and mountains are also considered to have a substantial amount of terrain that is shadowed by higher terrain and, therefore, does not produce clutter. Terrain which is within 100 NM of the radar will be modeled as 315 uniformly distributed irregularly shaped patches as follows:

- 240 areas of 20 square nautical miles
- 63 areas of 75 square nautical miles
- 15 areas of 300 square nautical miles

For a region of severe hills/mountains will have the severe characteristic (P_3) given in Table 0-2 . As with the distribution of discretely, the number of patches will be proportionally increased or decreased depending upon the mixture of clutter types within the radar field of view.

Icebergs and the discrete targets in a hill/mountain region will be considered to be non-fluctuating. The temporal fluctuation of the distributed clutter will be considered to be Rayleigh about a time-varying mean defined by the spatial distribution.

Power density spectra of independent resolution cells within distributed clutter are described below. The power spectral density function for terrain clutter is given by:

$$P(v) = 0.964\delta(v) + \frac{0.705}{(1 + v / 0.023)^4}$$

where v = velocity in meters/seconds

$\delta(v)$ = delta function

The spectral density of pack ice will be considered to be Gaussian. Pack ice will be considered to have a mean velocity of 0.3 m/sec plus 0.02 times the wind speed and a 3 dB spectral width of 0.5 m/sec.

Sea Clutter (North Warning)

Sea clutter is considered to have a Rayleigh amplitude distribution with a mean scattering coefficient as given in Table 0-1 for sea state 5, considered to be an applicable "worst case" condition.

The power density spectrum of sea clutter is considered to have a Gaussian spread about its mean frequency value with a 3 dB width of 2.5 m/sec (representing approximately sea state 5, or a wind slightly in excess of 20 knots). This mean frequency may have any value corresponding to a doppler velocity between -2.5 m/sec and +2.5 m/sec.

Table 0-1 Sea Scattering Coefficients

Depression Angle of Radar Beam and Frequency Band	Scattering Coefficient, Horizontal Polarization	Scattering Coefficient, Vertical Polarization
0.1°, L-Band	-65 dB	-60 dB
1°, L-Band	-50 dB	-43 dB
3°, L-Band	-46 dB	-38 dB
0.1°, S-Band	-53 dB	-50 dB
1°, S-Band	-42 dB	-38 dB
3°, S-Band	-37 dB	-35 dB

Rain Clutter

Rain (Seek Igloo)

The distributed precipitation clutter environment is due to a constant rainfall of 2 mm/hour originating at 20,000-foot altitude and filling the entire surveillance area of the radar. In the presence of precipitation, there will be signal attenuation and clutter having the following modeled characteristics competing with target returns.

The maximum two-way path attenuation due to rain under distributed rain precipitation conditions is 0.0025 dB/nmi at S-Band and negligible at L-Band. The value thus calculated will be added to the atmospheric absorption loss as given in NRL Report 6930 to obtain the total modeled loss for any propagation path.

Distributed rain clutter has a cross section per unit volume of $6.17 \times 10^{-11} \text{ m}^{-1}$ at L-Band and $1.73 \times 10^{-9} \text{ m}^{-1}$ at S-Band.

Clutter competing with radar target returns will be computed by multiplication of an appropriate beam volume which intersects the clutter by the clutter cross section per unit volume.

The doppler spectrum of backscattered precipitation clutter which fills the beam in elevation has a Gaussian spread about its mean value with

$$\sigma_v = 2.355 * (1.0 + 1.411 * R^2 * \phi^2)^{1/2}$$

where σ_v is the 3 dB width expressed in meters/seconds, R is the range to the clutter in kilometers, and ϕ is the one-way elevation half-power beamwidth in radians. The mean may assume any radial velocity value between -25 m/sec and +25 m/sec.

Where precipitation clutter does not fill the beam, its spectral width may be calculated analytically by combining the effects of a 1 m/sec random fluctuation due to atmospheric turbulence and a random fluctuation attributable to a wind shear gradient of 4.0 m/sec per kilometer of altitude.

The energy backscattered by precipitation clutter when the incident energy is circularly polarized will possess components both of the same sense as the incident energy and of the opposite sense. The ratio of the opposite sense component to the same sense component is taken to be 15 dB for rain.

Rain (North Warning)

This region is specified to have cellular and uniform rainfall precipitation structures as given in Table 0-1. The volumetric reflectivity (m^2/m^3) is:

$$\eta = 6.12 \times 10^{-14} \left(\frac{r^{1.6}}{\lambda^4} \right)$$

where r = rainfall rate, mm/hour

λ = wavelength, meters

Table 0-1 Weather Characteristics

	Greenland
Uniform Rainfall Rate (mm/hour)	2
Bright Band Rainfall Rate (mm/hour)	10
Cellular Rainfall Rate (mm/hour)	10
Number of Cells within 100 NM radius	120
Diameter of Cells at half rainfall rate (NM)	4.0

The attenuation factor (dB/NM):

$$k = 0.02 \left[\frac{3.2}{\lambda \text{ (cm)}} \right]^{2.8r}$$

There exists a bright band of uniform rain at the maximum altitude of up to 15,000 feet (ex: Greenland). The width of the band is 500 feet and the rate is given in Table 0-1. The edge fall-off rate for cellular precipitation is 7.14 mm/hour/NM.

The energy backscattered by precipitation clutter when the incident energy is circularly polarized will possess components both of the same sense as the incident energy and of the opposite sense. The ratio of the opposite sense component to the same sense component is taken to be 15 dB for rain. The spectral density of weather clutter will be Gaussian with the standard deviations given below:

$$\sigma_v = 1.12 (1 + 7.68 R^2 \phi^2)^{1/2}$$

where R = range, NM

Φ = vertical beamwidth in radians

Bird Clutter

Bird clutter consists of two types: discrete and distributed. Discrete bird clutter consists of migrating flocks having the characteristics given in Table 0-1. Distributed bird clutter (whose characteristics are given in Table 0-2) is due to individual birds acting independently in search of food.

Table 0-1 Migratory Bird Clutter Model

Migration Period	- May - June and August - September
Number of Flocks	- 350 uniformly distributed within 70 NM radius from radar site
Composition of Flock	- 85% Eider 15% Lesser Snow Geese
Flock Radar Cross Section	- See Figure 5.2.4-1; assume slow fluctuation rate with cross section constant from pulse to pulse within beamwidth, independent scan to scan
Flock Shape and Dimensions	- Eider - Long Wavy Line; Length 50 Ft. to 3000 Ft. Lesser Snow Geese - U Shape and oblique line; Length 200 Ft. to 3000 Ft.
Speed Distribution	- Approximately Gaussian in calm air with a mean of 45 knots and a standard deviation of 7 knots. This speed distribution will be modified by the wind speed model given in 60.2.
Height Distribution	- Eider - 50% less than 80 Ft. 99% less than 140 Ft. Lesser Snow Geese 50% less than 3,000 Ft. 99% less than 6,000 Ft.

Table 0-2 Distributed Bird Clutter Model

Period	- June through August
Area	- Uniformly distributed over tundra and 10 miles offshore
Bird Density	- 10 birds/(NM) ²

Speed Distribution	-	Approximately Rayleigh in calm air with a mean of 20 knots and a standard deviation of 10 knots. This speed distribution will be modified by the Wind Speed Model given in 60.2. Birds have a random velocity orientation relative to the radar.
Height Distribution	-	Uniformly distributed less than 500 Ft.
Individual Bird Cross Section	2.	- 0.04 M ² (UHF)
	3.	0.02 M ² (L Band)
		0.006 M ² (S Band)

Discrete bird clutter does not fluctuate from pulse to pulse but has Rayleigh fluctuation from scan to scan.

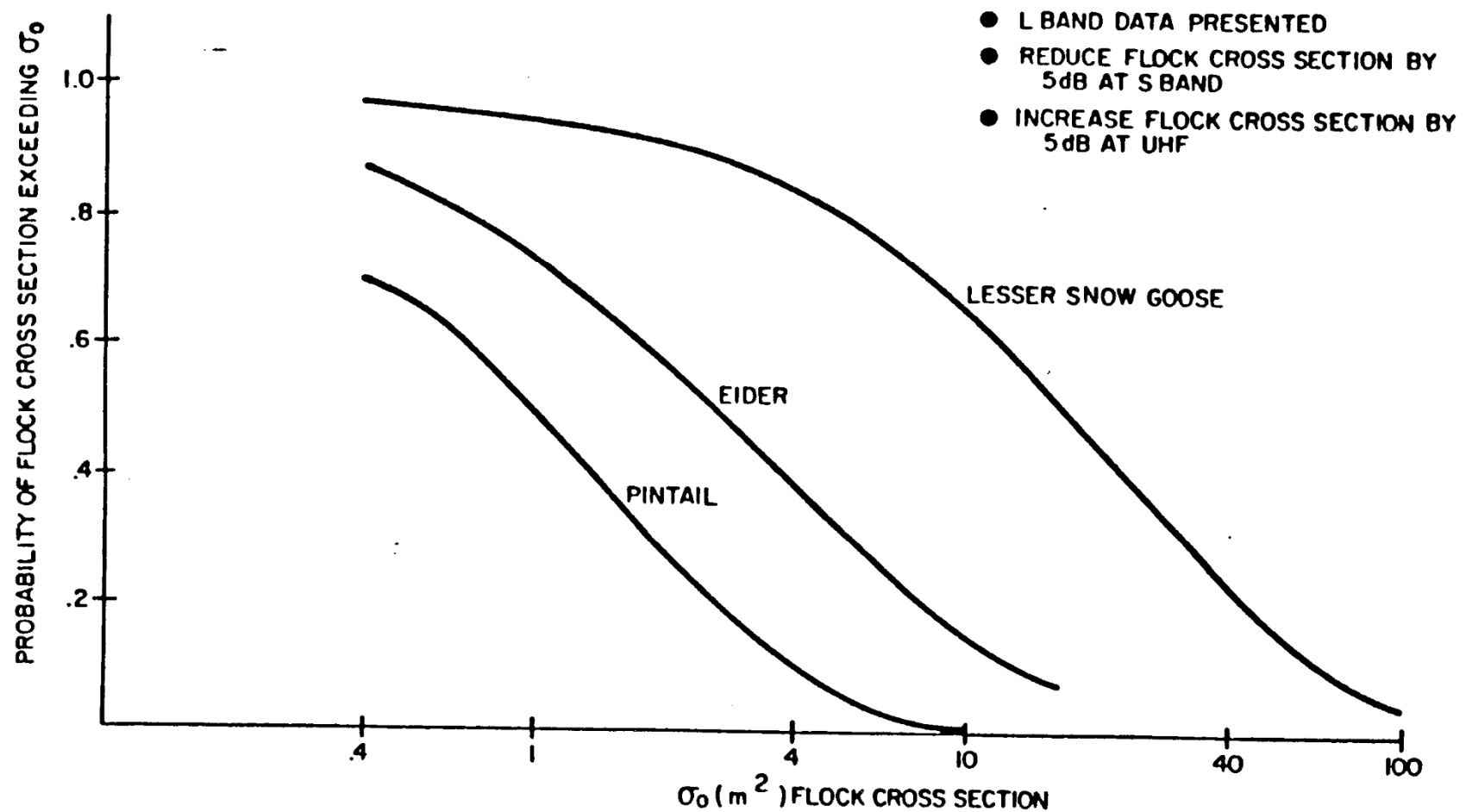


Figure 0-1 Probability Distribution of Flock Mean Radar Cross Section

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 07

GOVERNMENT SUPPLIED MATERIAL (GSM)

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 7 – Government Supplied Material

This Appendix is intentionally left blank.

DRAFT

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 08

GOVERNMENT FURNISHED EQUIPMENT (GFE)

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 8 – Government Furnished Equipment

8.0 Government Furnished Equipment (GFE). The following equipment will be GFE.

- 8.1 Air Force Command and Control Information System (AFCCIS). DND will use one (1) TEMPEST Level 1 AFCCIS laptop per TCR System.
- 8.2 KIV-78 Mode 4/5 Crypto units.
- 8.3 Link 16 Equipment. DND will provide (2) MIDS LVT (11) terminal (including mounting tray) as link system equipment.
- 8.4 Link 11 Equipment. The two (2) fielded Link 11 systems are complete with transit cases and are operated from the Shelter. The Link 11 equipment includes HF radios, UHF Multichannel radios, Crypto equipment and Air Defence System Integrators (ADSI) version 15.
- 8.5 Satcom Ground Station (AN/TSC-510). An AN/TSC-510 Transportable Satcom Systems (NSN 5895-20-000-3848) will be supplied as GFE.
- 8.6 Solacom Voice Switch Equipment.
- 8.7 Radio Equipment. There will be nine Harris VHF/UHF (PRC-117 based) radios provided as GFE for each of the TCR systems.
 - 8.7.1 Two (2) C7999 Remote Control heads (AN/GRC171 UHF A/G/A Transceivers) will be provided for 42 Rdr RTOC.
- 8.8 Mode 5 Crypto. Two (2) Mode 5 Crypto units will be provided for the TCR systems as GFE.

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 09

GOVERNMENT FURNISHED INFORMATION (GFI)

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 9 - Government Furnished Information (GFI)

The Contractor can obtain a bilingual format Material Safety Data Sheet (MSDS) from DND.

GFI	CFTO/Publication	Availability/Status
Link 11 Equipment		ITAR controlled.
Data Terminal Set (DTS), AN/USQ-125(V), MX-512PV, 5895-01-443-9686	C-59-803-ZA0/MS-001	Document is controlled.
Antennas		
D2211 TACO Antenna		Available
Satellite System (AN/TSC-510)	C-53-588-000/MF-002	Available (with updated Satcom Drawings)
Miscellaneous		
Antenna Radome	C-59-826-000-MS-001	Available
Related Projects		
Project C.000451 - Primrose Lake Evaluation Range Time Space Position and Information (TSPI) System Project	Various	Available

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 10

GOVERNMENT FURNISHED RESOURCES (GFR)

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 10 – Government Furnished Resources (GFR)

- 10.1 DND will supply target aircraft for SAT (including OT&E testing).
- 10.2 DND will supply aircraft and loadmasters for load trials.
- 10.3 DND will supply vehicles, trailers and driver operators for load trials as follows:
- a. Trucks – Qty three (3) per site for a total of six (6). NSN: 2320-21-920-4693, Heavy Equipment Specialized Vehicle (HESV), Truck, Palletized Loading, 15 tonne, 6X6, Model No. 4866S, HESV, Military Design, Western Star;
 - b. Trailer – Qty one (1) per site for a total of two (2). NSN: 2330-21-893-4392, Trailer, Cargo, Wheeled, 1.5 tonnes, Fixed Bed, Nonadjustable Platform Loading Height, Model No. M104CDN3, Manac;
 - c. Trailer – Qty one (1) per site for a total of two (2). NSN: 4930-01-228-6538, Trailer Tank Fuel Dispensing Diesel, Trailer Mounted, Model No. 645A600, Westinghouse;
 - d. Trailer – Qty one (1) per site for a total of two (2). NSN: 6115-01-229-4522, Trailer Flat Bed 3 tonne, TDM AXL HYD Brakes, Model No. 645A601, Westinghouse; and
 - e. Trailers – Qty three (3) per site for a total of six (6). NSN: 2330-21-901-5949, Trailer Palletized Loading Full 15 tonne, Model No. 20WT102, BWS.
- 10.4 DND will supply on-site personnel support to provide limited assistance during installation of the TCR system.
- 10.5 DND will supply the signal 'path' from the Remote Training Operations Centre (RTOC) demarcation point to the Radar Head demarcation point.
- 10.6 DND will supply the Comlog Voice Recorder (CVDS DL2410).
- 10.7 DND will supply the 42 Rdr low-level communication system (LLCS) remote control equipment.

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 11
VISIO DRAWINGS
FOR
TACTICAL CONTROL RADAR (TCR)
MODERNIZATION PROJECT

APPENDIX 11 – Visio Drawings

Figure No.	Drawing Title
1	TCR ADSI to LINK Equipment Block Diagram
2	Existing 42 Radar Sqn Comms Path
3	Existing 12 ER Comms Path
4	TCR Satellite Comms Block Diagram
5	42 Radar Sqn Overall Terminal Signal Path
6	42 Radar Sqn PLER T6 Quick Distribution Frame (QDF) Layout
7	42 Radar Sqn T2 RTOC Layout
8	42 Radar Sqn T5 radar Head Bix Layout
9	12 ER Overall Terminal Signal Path
10	12 ER T1 RTOC Layout
11	12 ER Lac Castor T2 and T6 Layout
Figure No.	Drawing Title
12	12 ER Lac Castor T3 Quick Distribution Frame (QDF) Layout
13	12 ER Lac Castor UHF/VHF Antenna Layout
14	TSPI Wiring 42 Radar Sqn
15	Link 11 HF Interconnect
16	Cold Lake TCR Command and Control
17	Bagotville TCR Command and Control

APPENDIX 12

12ER CROSS-CONNECT SHEETS

INTERFACE CONTROL DOCUMENT (ICD)

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 12 – 12 ER Cross-Connect Sheets

Figure No.	Sheet Title	Status
1	Cross Connects Sheets T1-1 for 12 ER Bagotville	Available
2	Cross Connects Sheets T1-4 for 12 ER Bagotville	Available
3	Cross Connects Sheets T1-5 for 12 ER Bagotville	Available
4	Cross Connects Sheets T1-6 for 12 ER Bagotville	Available
5	Cross Connects Sheets T1-7 for 12 ER Bagotville RTOC	Available
6	Cross Connects Sheets T1-8 for 12 ER Bagotville RTOC	Available
7	Cross Connects Sheets T1-9 for 12 ER Bagotville RTOC	Available
8	Cross Connects Sheets T2 for Bagotville Lac Castor	Available
9	Cross Connects Sheets T3 QDF for 12 ER Lac Castor	Available
10	Cross Connects Sheets T6 for 12 ER Lac Castor	Available
11	Cross Connects Sheets TR1 for 12 ER Lac Castor	Available
12	Cross Connects Sheets TR2 for 12 ER Lac Castor	Available
13	Cross Connects Sheets TR3 for 12 ER Lac Castor	Available
14	Cross Connects Sheets TR4 for 12 ER Lac Castor	Available
15	Cross Connects Sheets TR5 for 12 ER Lac Castor	Available
16	Cross Connects Sheets TR6 for 12 ER Lac Castor	Available
17	Cross Connects Sheets T1 for 12 ER Satcom Shelter	Available
18	Cross Connects Sheets RCS Rack for 12 ER TCR Satcom Shelter	Available
19	Cross Connects Sheets for 3 Wing Bagotville Tower	Available

APPENDIX 13

42 RADAR SQN CROSS-CONNECT SHEETS

INTERFACE CONTROL DOCUMENT (ICD)

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 13 – 42 Radar Sqn Cross-Connect Sheets

Figure No.	Sheet Title	Status
1	Cross Connects Sheets T2-1 for 42 Rdr Sqn RTOC	Available
2	Cross Connects Sheets T2-2 for 42 Rdr Sqn RTOC	Available
3	Cross Connects Sheets T2-3 for 42 Rdr Sqn RTOC	Available
4	Cross Connects Sheets T2-4 for 42 Rdr Sqn RTOC	Available
5	Cross Connects Sheets T2-5 6 7 for 42 Rdr Sqn RTOC	Available
6	Cross Connects Sheets T5 for 42 Rdr Sqn	Available
7	Cross Connects Sheets T6 QDF for 42 Rdr Sqn	Available
8	Cross Connects Sheets T1 for 42 Radar Sqn TCR Satcom	Available
9	Cross Connects Sheets RCS Rack for 42 Radar Sqn TCR Satcom Shelter	Available

APPENDIX 14

12 ER TEST EQUIPMENT LIST

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 14 – 12 ER Test Equipment List

ITEM NAME	NSN	PART NUMBER	QTY HELD
Analyzer, Spectrum	6625-01-081-4156	HP8901A	1
Analyzer, Spectrum	6625-01-096-1726	3586C	2
Analyzer, Spectrum	6625-01-527-2906	MS2721A	1
Anemometer	6660-21-559-7117	1438	1
Attenuator, Fixed	5985-00-811-2441	AS6	2
Attenuator, Variable	5985-01-006-8373	8495B OPTION 001	1
Bridge, Capacitance – Inductance – Resistance	6625-01-069-6679	1657-9700 and 1650-9702	2
Counter, Electronic, Digital Readout	6625-01-071-9122	5342A-001-002- 011	2
Coupler, Directional	5985-00-490-2834	779D and SC- 400934-2	1
Coupler, Directional	5985-00-837-8664	776D/11512A	1
Coupler, Directional	5985-01-016-8863	778D and SC- 400934-1	1
Generator, Signal	6625-01-045-2183	8640B-003 and SG5489	1
Generator, Signal	6625-01-344-7926	6100/2-8	2
Generator, Signal	6625-21-897-9467	2018A, 52018- 404A and 52018- 900F	1
Generator, Sweep	6625-01-079-0003	2001-SP443 AND RS50	1

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

ITEM NAME	NSN	PART NUMBER	QTY HELD
Generator, Sweep	6625-01-259-0618	2002B	1
Generator, Pulse	6625-01-376-9293	HP8110A	1
Generator, Function, Electronic Test	6625-01-420-9726	HP33120A and 188223-001	1
Indicator, Distortion	6625-00-871-8012	HP334A AND 334A	1
Indicator, Dial	5210-21-109-6454	22C, 645A and 599-7740	1
Meter, Modulation	6625-01-033-5835	52304-900S AND TF2304	1
Multimeter	6625-01-113-4262	TS5502 and 8020AC90	2
Multimeter	6625-01-372-3905	HP34401A and 3478A-325	1
Multimeter	6625-01-131-8586	FLUKE 87	1
Multimeter	6625-21-805-7868	635HV	1
Multimeter	6625-21-901-0512	403B, 570B and 8020A	4
Multimeter	6625-21-902-2564	3104 and 3128	1
Oscilloscope	6625-01-178-9491	2445A and TEK2445A	1

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

ITEM NAME	NSN	PART NUMBER	QTY HELD
Oscilloscope	6625-01-187-7847	2235-01 and AN/USM-488	3
Oscilloscope	6625-17-108-2894	PM3382A/003	2
Power Supply	6130-00-224-2058	LPD421AFM and LPD421FM	1
Power Supply	6130-01-164-6579	6024A and 6024A-120	1
Synthesizer, Electrical Frequency	6625-01-089-6304	HP3335A	1
Test Set, Radio Frequency Power	6625-00-649-5070	43	2
Test Set, Insulation Breakdown	6625-00-858-5231	9T11Y8454	2
Test Set, Transmission Line	6625-01-169-3608	4935A-001	3
Test Set, Radio	6625-99-330-1428	2955B Option S 001, 006	2
Tester, Earth Resistance	6625-99-535-4464	DET 3/2	1
Theodolite, Surveying T16ED	6675-21-878-1297	356102 and C66-111-000LC001	1
Voltmeter	6625-00-995-7716	HP400E	1
Voltmeter	6625-01-030-1318	3015A-92	1
Voltmeter	6625-01-262-3532	92EA	1
Wattmeter	6625-00-937-6156	1840A and 1840-9701	1

APPENDIX 15

42 RADAR SQN TEST EQUIPMENT LIST

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 15 – 42 Radar Sqn Test Equipment List

ITEM NAME	NSN	PART NUMBER	QTY HELD
Analyzer, Spectrum	6625-01-527-2906	MS2721A	1
Anemometer	6660-21-559-7117	1438	1
Bolometer, Radio Frequency	6625-01-015-4412	8482A	1
Bridge, Capacitance – Inductance – Resistance	6625-01-069-6679	1657-9700 and 1650-9702	2
Converter, Signal Data	6625-01-111-1052	5356A	1
Counter, Electronic, Digital Readout	6625-00-531-4752	5345A	2
Counter, Electronic, Digital Readout	6625-01-071-9122	5342A-001-002-011	1
Counter, Electronic, Digital Readout	6625-01-385-4918	HP5347A	1
Coupler, Directional	5985-00-837-8664	776D/11512A	1
Coupler, Directional	5985-01-030-1242	11691D	1
Detector, Halogen LE	6625-01-092-6798	TIF5500	1
Detector, Radio Frequency	6625-01-035-0626	CAQI420A	2
Detector, Radio Frequency	6625-01-118-5887	HP423B OPT002	1
Detector, Radio Frequency	6625-01-166-9370	84811A	1
Dummy Load, Electrical	5985-009946797	8201 and 4487-13	1
Generator, Pulse	6625-01-103-9550	214B Option 99	1
Generator, Signal	6625-01-344-7926	6100/2-8	1
Kit Logic	6625-01-0725-084	5023A	2
Lead, Test	6625-01-070-2312	34300A and 34111A	1
Mount, Thermistor	6625-01-067-0413	HP8478B	1
Multimeter	6625-01-219-8283	8840A-05-09	1
Multimeter	6625-21-805-7868	635HV	1
Multimeter	6625-21-902-2564	3104 and 3128	1
Multimeter	6625-21-901-0512	403B, 570B and 8020A	5
Multimeter 89-4	6625-21-AAC-0415	L6625013408156	1
Ohmmeter	6625-01-394-4939	2426-03 and 242607-600	1

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

ITEM NAME	NSN	PART NUMBER	QTY HELD
Oscilloscope	6625-01-187-7847	2235-01 and AN/AUM-488	3
Oscilloscope	6625-17-108-2894	PM3382A/003	1
Plug-In Unit, Electrical	6625-00-130-0014	5257A	1
Power Sensor	6625-01-014-6695	8481H	2
Probe-Lead Assembly, Test	6625-01-040-4423	P6015A plus numerous others	1
Test Set, Electronic Systems	6625-01-165-7801	102594	2
Test Set, Electronic Systems	6625-01-385-5284	545	1
Test Set, Electronic Systems	6625-21-896-0496	3110-3210	2
Test Set, Insulation Breakdown	6625-00-891-9257	422	1
Test Set, Interrogator	6625-21-876-9539	102597 and TS5106UPX	1
Test Set, Radio	6625-99-330-1428	2955B Option S001, 006	2
Test Set, Radio Frequency Power	6625-00-649-5070	43	2
Test Set, Transmission Line	6625-01-169-3608	4935A-001	1
Thermistor, Mount	6625-00-495-3447	HP478A and TM400	1
Transmission Impair	6625-01-342-7972	HP4947A	4
Wattmeter	6625-00-436-4883	432A and ME441U	1
Wavemeter	6625-00-966-6728	536A and 1050461	1

APPENDIX 16

INSTRUCTIONS FOR COMPLETING

DND FORM 552 – APPLICATION FOR FREQUENCY

SUPPORTABILITY

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Table of Contents

1. INSTRUCTIONS FOR COMPLETING DND FORM 552	3
1.1. Classification.....	3
1.2. Part 1: Equipment Usage.....	3
1.3. Part 2: Transmitter Equipment Characteristics.....	4
1.4. Part 3: Receiver Equipment Characteristics.....	7
1.5. Part 4: Antenna Equipment Characteristics.....	9
Transmitter Equipment Characteristics - Caractéristiques du matériel émetteur	13
Receiver Equipment Characteristics – Caractéristiques du matériel récepteur	14
Antenna Equipment Characteristics – Caractéristiques du matériel d’antenne	15

1. INSTRUCTIONS FOR COMPLETING DND FORM 552

1.1. Classification.

1.1.1. Enter classification and downgrading stamp. Indicate by check mark whether for Experimental Research or Exploratory Development, Advanced or Engineering Development, or Operational Utilization. The classification of the title should be appropriately indicated (e.g. (U), (C) or (S)). Classified information contained in the completed form should be indicated:

- (a) As a general statement in a Remarks block, such as, "The purpose, functions, operational use, frequency band, emission bandwidths, and power are classified X;"
- (b) By an enumeration of the applicable paragraphs and subparagraphs with their classifications; or
- (c) The classification may be marked alongside each entry on the form.

1.2. Part 1: Equipment Usage.

1.2.1. Part 1, Block 1: Equipment Nomenclature and Model Number. Provide nomenclature and equipment type (e.g. AN/FPS-16 Instrumentation Radar).

1.2.2. Part 1, Block 2: Status of Supportability Request. The supportability request will be for one of these purposes:

- (a) Experimental research or exploratory development:
 - i. To test the feasibility of new techniques or concepts of natural phenomena and environment, and efforts towards solution of problems in the physical, behavioural and social sciences that have no direct military application; and
- (b) To test the feasibility of adapting conventional techniques to new purposes prior to projection into development planning. Includes all effort directed toward solution of specific military problems, short of major development projects.
 - i. Advanced or engineering development:
 - 1. To develop equipment which has moved into the development of hardware for experimental or operational test;
 - 2. To modify existing operational equipment for improved performance;
 - 3. To develop programs being engineered for service use, but have not yet been approved for production and service deployment; and
 - 4. To continue development of equipment/systems that have been approved for production and service use.
- (c) To operate and test equipment which has passed the development phase and is planned for operational use for:
 - i. Tactical and training purposes; or
 - ii. Non tactical purposes, such as for test range instrumentation.

1.2.3. Part 1, Block 3: Function and Purpose. Describe as specifically as possible the function and purpose to be performed. For example: guided missile control radar; troposcatter communications equipment; provides acquisition and tracking information; short range communications; telemetering for quality control.

1.2.4. Part 1, Block 4: Method of Operation. Describe the method of operation. For example: radar activates beacon transponder in missile with coded pulses; beacon provides missile track; radar also transmits coded pulse command signals to missile beacon receiver for guidance.

1.2.5. Part 1, Block 5: Extent of Use. Describe operational extent of usage. For example: continuous or intermittent; expected duty cycle during mission; expected number of hours of operation per day or other appropriate time period. Indicate any conditions governing intermittent use. If appropriate, describe mission phase during which system operates.

1.2.6. Part 1, Block 6: Operational Environment. Give brief description of ultimate operational environment. For example: amphibious landing operations; defence of strategic target area; sea areas; field army. Provide any additional environmental factors pertinent to a meaningful assessment of electromagnetic compatibility, such as specific vehicle/platform types, expected mobility or other factors affecting the environment variability.

1.2.7. Part 1, Block 7: Geographical Area of Experimental Research or Developmental Evaluation. State the geographical area used for the experimental research or development.

1.2.8. Part 1, Block 8: Geographical Area of Operational Use. State the geographical area for potential use. Provide latitude and longitude of centre of operational area and radius of operation in kilometres.

1.2.9. Part 1, Block 9: Number of Equipment in Initial Phase. List number of equipment planned for experimental or developmental phase.

1.2.10. Part 1, Block 10: Quantity of Equipment Planned for Operational Use. List number of equipment planned for operational use.

1.2.11. Part 1, Block 11: Quantity of Equipment Operating Simultaneously in the Same Electromagnetic Environment. Indicate maximum number of these systems that will be operating simultaneously in the same environment. For example: 3 missiles will be flown simultaneously in an operating area.

1.2.12. Part 1, Block 12: Target Date for the Start and end of Experimental or Developmental Evaluation. Indicate the dates on which it is expected that the experimental or developmental phase will start and finish.

1.2.13. Part 1, Block 13: Target Date for Operational Use. Indicate target date for operational use.

1.2.14. Part 1, Block 14: Previous DND 552 Application Number. For DIMTPS 5 use only.

1.3. Part 2: Transmitter Equipment Characteristics.

1.3.1. Part 2, Block 1: Nomenclature, Manufacturer's Model No. Enter the Government assigned alphanumeric equipment designation. If not available, enter the manufacturer's model number (e.g. MIT 502), and indicate Manufacturer's Name (Part 2 block 2 below). If this too is not available, enter a short descriptive title (e.g. ATS-6 Telemetry Transmitter).

1.3.2. Part 2, Block 2: Manufacturer's Name. Enter the manufacturer's name, if available. If a manufacturer's model number is listed in Nomenclature (Part 2 block 1 above), this block must be completed.

1.3.3. Part 2, Block 3: Transmitter Installation. List specific types of vehicles, ships, planes or buildings, etc., where the transmitters will be installed.

1.3.4. Part 2, Block 4: Transmitter Type. Enter the generic name of the transmitter (e.g. Frequency Scan, Scan While Track Radar, Monopulse Tracker, AM or PM Communications). In addition, for radar enter the radar type (e.g. Non-FM Pulse, FM Pulse, Frequency Hopping, CW or FM-CW).

1.3.5. Part 2, Block 5: Tuning Range. Enter the frequency range through which the transmitter is capable of being tuned (e.g. 225 - 400 MHz). For equipment designed to operate only at a single frequency, enter that frequency. Include units (e.g. kHz, MHz or GHz).

1.3.6. Part 2, Block 6: Method of Tuning. Enter the method of tuning (e.g. crystal, synthesizer or cavity). If the equipment is not readily tuneable in the field, indicate in Remarks (Part 2 block 24 below) the complexity of tuning. Include complexity factors such as skill levels involved, major assemblies involved, time required, and location (factory or depot) where equipment is to be tuned.

1.3.7. Part 2, Block 7: RF Channelling Capability. Describe the RF channelling capability:

- (a) For uniformly spaced channels, enter the centre frequency of the first channel and channel spacing (e.g. first channel 406 MHz, 100 kHz increments);
- (b) For continuous tuning, enter the lowest frequency and the word "continuous"; and
- (c) For others, such as single-sideband (SSB) or cases where channel selection is under software control, enter a detailed description in Remarks (Part 2 block 24 below, e.g. degraded channels, internal hardwiring limitations or lockout capability for frequency hopping systems).

1.3.8. Part 2, Block 8: Emission Designators. Enter the emission designators, including the necessary bandwidth, for each designator, in accordance with Appendix D2 to this publication (e.g. 16K0F3E). For systems with a frequency hopping mode as well as a non-hopping mode, enter the emission designators for each mode. Identify each mode as hopping or non-hopping.

1.3.9. Part 2, Block 9: Frequency Tolerance. Enter the frequency tolerance (i.e. the maximum departure of a transmitter from its assigned frequency after normal warm-up time). Indicate the units in parts per million (ppm) for all emission types except single sideband, which shall be indicated in Hertz (Hz).

1.3.10. Part 2, Block 10: Filter Employed. Check the appropriate box.

1.3.11. Part 2, Block 11: Spread Spectrum. Check the appropriate box. If "Yes," see instructions for Modulation (Part 2 block 14 below).

1.3.12. Part 2, Block 12: Emission Bandwidth. Enter the emission bandwidths for which the transmitter is designed at the -3, -20 and -60 dB levels and the occupied bandwidth. For pulse radar transmitters the bandwidth at -40 dB shall also be entered. The emission bandwidth is defined as the bandwidth appearing at the antenna terminals and includes any significant attenuation contributed by filtering in the output circuit or transmission lines. Values of emission bandwidth specified should be indicated as calculated or measured, by checking the appropriate box. If calculated, the methods used shall be in accordance with Industry Canada Telecommunication Regulation Circular 43 (TRC 43), which is available on the internet. Indicate units used (e.g. Hz, kHz or MHz). Note that the occupied bandwidth (block 12e) is defined as the width of the frequency bandwidth such that, below its lower and above its upper limits, the mean power radiated is each equal to 0.5% of the total mean power radiated.

1.3.13. Part 2, Block 13: Maximum Bit Rate. Enter the maximum information bit rate for digital equipment, in bits per second (bps). If spread spectrum is used, enter the bit rate after encoding.

1.3.14. Part 2, Block 14: Modulation Techniques and Coding. Describe in detail the modulation and coding techniques employed. For complex modulation schemes, such as direct sequence spread spectrum, frequency hopping or frequency agile, provide information relating to the hop rate, processing gain, clock rate, pre-defined hop sets and frequencies, minimum required number of frequencies per hop set, notching capability, etc. If too lengthy, use Remarks (Part 2 block 24 below).

1.3.15. Part 2, Block 15: Maximum Modulation Frequency. Enter the maximum modulation or baseband frequency for a frequency- or phase-modulated transmitter. This is assumed to be the frequency at the -3 dB point on the high frequency side of the modulator response curve. Indicate the units (e.g. Hz, kHz or MHz).

1.3.16. Part 2, Block 16: Pre-Emphasis. For frequency or phase modulated transmitters, check the appropriate box to indicate whether pre-emphasis is available.

1.3.17. Part 2, Block 17: Deviation Ratio. For frequency or phase modulated transmitters, enter the deviation ratio, computed as follows:

$$\text{Deviation Ratio} = \frac{\text{Maximum Frequency Deviation}}{\text{Maximum Modulation Frequency}}$$

1.3.18. Part 2, Block 18: Pulse Characteristics. For pulse modulated transmitters:

- (a) Enter the pulse repetition rate, in pulses per second (pps);
- (b) Enter the pulse width at the half voltage levels, in microseconds (μsec);
- (c) Enter the pulse rise time, in microseconds (μsec). This is the time required for the leading edge of the voltage pulse to rise from 10% to 90% of its peak amplitude;
- (d) Enter the pulse fall time, in microseconds (μsec). This is the time required for the trailing edge of the voltage pulse to fall from 90% to 10% of its peak amplitude; and
- (e) Enter the maximum pulse compression ratio, if applicable.

1.3.18.1. For coded pulse waveforms see instructions for Modulation (Part 2 block 14 above).

1.3.19. Part 2, Block 19: Power. Enter the mean power delivered to the antenna terminals for all AM and FM emissions, or the peak envelope power (PEP) for all other classes of emissions. If there are any unique situations, such as interrupted CW, provide details in Remarks (Part 2 block 24 below). Indicate the units (e.g. W or kW).

1.3.20. Part 2, Block 20: Output Device. Enter a description of the device used in the transmitter output stage (e.g. ceramic diode, reflex klystron, transistor or TWT).

1.3.21. Part 2, Block 21: Harmonic Level. Enter the harmonic level of the second and third harmonics, in dB, relative to the fundamental. Enter in "other" (block 21c) the relative level, in dB, of the highest power harmonic above the third.

1.3.22. Part 2, Block 22: Spurious Level. Enter the maximum value of spurious emission, in dB, relative to the fundamental, which occurs outside the -60 dB point on the transmitter fundamental emission spectrum (Part 2

block 12 above) and does not occur on a harmonic of the fundamental frequency. Indicate, in kHz or MHz, the location of the spurious from the fundamental frequency.

1.3.23. Part 2, Block 23: Industry Canada Type Approval No. Enter the Industry Canada type approval number, if applicable.

1.3.24. Part 2, Block 24: Equipment Frequency Plan. Self-explanatory. Use additional pages if necessary.

1.4. Part 3: Receiver Equipment Characteristics.

1.4.1. Part 3, Block 1: Nomenclature, Manufacturer's Model No. Enter the Government assigned alphanumeric equipment designation. If not available, enter the manufacturer's model number (e.g. MIT 502) and complete Manufacturer's Name (Part 3, block 2 below). If this too is not available, enter a short descriptive title (e.g. GPS Receiver). A separate receiver submission is required for each receiver in a complex system (e.g. radar ECCM receivers).

1.4.2. Part 3, Block 2: Manufacturer's Name. Enter the manufacturer's name, if available. If a manufacturer's model number is listed in Nomenclature (Part 3 block 1 above), this block must be completed.

1.4.3. Part 3, Block 3: Receiver Installation. List specific types of vehicles, ships, planes or buildings, etc. where the receivers will be installed.

1.4.4. Part 3, Block 4: Receiver Type. Enter the generic class (e.g. Dual Conversion Superheterodyne or Homodyne).

1.4.5. Part 3, Block 5: Tuning Range. Enter the frequency range through which the receiver is capable of being tuned (e.g. 225 - 400 MHz). For equipment designed to operate only at a single frequency, enter that frequency. Include units (e.g. kHz, MHz or GHz).

1.4.6. Part 3, Block 6: Method of Tuning. Enter the method of tuning (e.g. crystal, synthesizer or cavity). If the equipment is not readily tuneable in the field, indicate in Remarks (Part 3 block 21 below), the complexity of tuning. Include complexity factors such as skill levels involved, major assemblies involved, time required, and location (factory or depot) where equipment is to be tuned.

1.4.7. Part 3, Block 7: RF Channelling Capability. Describe the RF channelling capability:

- (a) For uniformly spaced channels, enter the center frequency of the first channel and the channel spacing (e.g. first channel 406 MHz, 100 kHz increments);
- (b) For continuous tuning, enter the lowest frequency and the word "continuous"; and
- (c) For others, including cases where channel selection is under software control, enter a detailed description in Remarks (Part 3 block 21 below).

1.4.8. Part 3, Block 8: Emission Designators. Enter the emission designators, including the necessary bandwidth, for each designator, in accordance with Appendix D2 to this publication (e.g. 16K0F3E). For systems with a frequency hopping mode as well as a non-hopping mode, enter the emission designators for each mode. Identify each mode as hopping or non-hopping.

1.4.9. Part 3, Block 9: Frequency Tolerance. Enter the frequency tolerance (i.e., the maximum departure of a receiver from its assigned frequency after normal warm-up). Indicate the magnitude, in parts per million (ppm), for all emission types except single sideband, which shall be indicated in Hertz (Hz).

1.4.10. Part 3, Block 10 IF Selectivity. Enter the bandwidth for each IF stage at the -3, -20 and -60 dB levels. Indicate units (e.g. kHz or MHz).

1.4.11. Part 3, Block 11. RF Selectivity. Enter the bandwidth at the -3, -20 and -60 dB levels. The RF bandwidth includes any significant attenuation contributed by filtering in the input circuit or transmission line. Values of RF bandwidth specified should be indicated as calculated or measured by checking the appropriate box. Indicate units (e.g. kHz or MHz). Enter the pre-selection type (e.g. tuneable cavity).

1.4.12. Part 3, Block 12: IF Frequency. Enter the tuned frequency of the first, second and third IF stages. Indicate units (e.g. kHz or MHz).

1.4.13. Part 3, Block 13: DIMTPS 5 Use Only. Intentionally left blank to match the US form.

1.4.14. Part 3, Block 14: DIMTPS 5 Use Only. Intentionally left blank to match the US form.

1.4.15. Part 3, Block 15: Oscillator Tuned. Check the appropriate box to indicate the location of the first, second and third oscillator frequencies with respect to the associated mixer input signal.

1.4.16. Part 3, Block 16: Maximum Bit Rate. Where applicable, enter the maximum bit rate (bps) that can be used. If spread spectrum is used, enter the bit rate after decoding. Describe any error detecting/correcting codes under Remarks (Part 3 block 21 below).

1.4.17. Part 3, Block 17: Sensitivity. Complete as follows:

- (a) Enter the sensitivity, in dBm;
- (b) Specify criteria used (e.g. 12 dB SINAD, where SINAD is (Signal + Noise + Distortion)/(Noise + Distortion));
- (c) If the receiver is used with terrestrial systems, enter the receiver noise figure in dB; and
- (d) If the receiver is used with space or satellite earth stations, enter the receiver noise figure in Kelvin.

1.4.18. Part 3, Block 18: De-Emphasis. For frequency or phase-modulated receivers, indicate whether de-emphasis is available.

1.4.19. Part 3, Block 19: Image Rejection. Enter the image rejection, in dB. Image rejection is the ratio of the image frequency signal level required to produce a specified output to the desired signal level required to produce the same output.

1.4.20. Part 3, Block 20: Spurious Rejection. Enter the spurious rejection, in dB. Enter the single level of spurious rejection that the receiver meets or exceeds at all frequencies outside the -60 dB IF bandwidth. Spurious rejection is the ratio of a particular out-of-band frequency signal level required to produce a specified output, to the desired signal level required to produce the same output.

1.4.21. Part 3, Block 21: Remarks. Self-explanatory. Use additional pages if necessary.

1.4.22. Part 3, Block 22: Industry Canada Type Approval No. Enter the Industry Canada type approval number, if applicable.

1.5. Part 4: Antenna Equipment Characteristics.

1.5.1. Part 4, Block 1: Antenna Type. Check the appropriate box to indicate the type of antenna. For multi antenna systems use a separate Part 4 form for each antenna.

1.5.2. Part 4, Block 2: Nomenclature, Manufacturer's Model No. Enter the Government assigned alphanumeric equipment designation. If not available, enter the manufacturer's model number (e.g. DS6558) and indicate Manufacturer's Name (Part 4 block 3 below). If this too is not available, enter a short descriptive title (e.g. ATS-6 Telemetry Antenna).

1.5.3. Part 4, Block 3: Manufacturer's Name. Enter the manufacturer's name, if available. If a manufacturer's model number is given in Nomenclature (Part 4 block 2 above), this block must be completed.

1.5.4. Part 4, Block 4: Frequency Range. Enter the range of frequencies for which the antenna is designed. Indicate units (e.g. kHz or MHz).

1.5.5. Part 4, Block 5: Type. Enter the generic name or describe the general technical features (e.g. Horizontal, Log Periodic, and Cassegrain with Polarization Twisting, Whip, Phased Array or Conformal Array). To the extent possible, use the standard antenna configuration given in Appendix D1, Table D1-1.

1.5.6. Part 4, Block 6: Polarization. Enter the polarization. If circular, indicate whether it is left or right handed.

1.5.7. Part 4, Block 7: Scan Characteristics. Complete as follows:

(a) If the antenna scans, enter the type of scanning (e.g. vertical, horizontal, vertical and horizontal);

(b) Vertical Scan:

- i. Enter the maximum elevation angle, in degrees (positive or negative, referenced to the horizontal), that the antenna can scan;
- ii. Enter the minimum elevation angle, in degrees (positive or negative, referenced to the horizontal), that the antenna can scan; and
- iii. Enter the vertical scanning rate, in scans per minute.

(c) Horizontal Scan:

- i. Enter the angular scanning range, in degrees, of the horizontal sector scanned; and
- ii. Enter the horizontal scan rate, in scans per minute.

(d) Indicate if antenna is capable of being sector blanked. If yes, enter details in Remarks (Part 4 block 10b below).

1.5.8. Part 4, Block 8: Gain. If frequency is between 27.5 MHz and 890 MHz indicate gain of radiator relative to half wave dipole (dB). If frequency is below 27.5 MHz or above 890 MHz indicate gain of radiator relative to an isotropic radiator (dBi).

(a) Enter the maximum gain, in dB; and

(b) Enter the nominal gain of the first major side lobe, in dB, and the angular displacement from the main beam, in degrees.

1.5.9. Part 4, Block 9: Beamwidth. Enter the 3 dB beamwidth, in degrees.

1.5.10. Part 4, Block 10: Remarks. Describe any unusual characteristics of the antenna, particularly as they relate to the assessment of electromagnetic compatibility and to amplify or clarify any of the information provided above. Use additional pages if necessary. In addition, enter the following information, if applicable:

- (a) The front-back ratio, in dB, for directional antennas used in radio relay circuits;
- (b) For phased array antennas enter:
 - i. Mode of operation, single or multiple beam;
 - ii. Single beam parameters; and
 - iii. Multiple beam parameters:
 - 1. Polarization of each beam;
 - 2. Gain of each beam;
 - 3. Beam width of each beam; and
 - 4. Scan characteristics of each beam (Part 4 block 7 above).

Application for Spectrum Supportability Demande d'octroi de Fréquences		Date	Page
To: À:		From (Office making request): De (Bureau qui présente la demande):	
1. Equipment nomenclature and/or model number Désignation du matériel et numéro de modèle			
2. Status of supportability request (check one) Centre de demande d'octroi (cochez une seule case)			
<input type="checkbox"/> Experimental research or exploratory development Recherche expérimentale ou développement préliminaire			
<input type="checkbox"/> Advanced or engineering development Développement avancé ou ingénierie			
<input type="checkbox"/> Operational Utilisation opérationnelle			
1. Equipment Usage – Utilisation du matériel			
3. Functional and purpose Fonction et but			
4. Method of operation Mode de fonctionnement			
5. Extent of use Étendue de l'utilisation			
6. Operational environment Milieu d'utilisation			
7. Geographical area of experimental research, or developmental evaluation Région géographique de la recherche expérimentale ou de l'évaluation du développement			
8. Geographical area of operational use Région géographique de l'utilisation opérationnelle			
9. Number of equipments in initial phase Nombre d'appareils pendant la phase initiale			
10. Number of equipments planned for operational use Nombre d'appareils prévu pour l'utilisation opérationnelle			
11. Number of these equipments operating simultaneously in the same electromagnetic environment Nombre d'appareils fonctionnant simultanément dans le même milieu électromagnétique			
12. Target date for the start and end of experimental or developmental evaluation Date prévue pour le commencement et la fin de l'évaluation expérimentale ou de l'évaluation ou développement			
13. Target date for operational use Date prévue d'utilisation opérationnelle			

**14. Compliance with requirements of the DND/CF Radio Frequency Safety Program (RFSP)
Conformité aux exigences du MDN/FC Programme de sécurité des radiofréquences (PSRF)**

In accordance with DAOD 3026-1 (Radio Frequency Safety Program) LCMMs, Procurement Officers and Project Managers are responsible for ensuring all radiofrequency (RF) devices under their control have been evaluated to establish the extent and type of RF hazards that may be associated with the devices.

Conformément au DOAD 3026-1 (Programme de sécurité des radiofréquences) les GCVM, les agents d'approvisionnement et les gestionnaires de projet sont chargés de veiller à ce que tous les dispositifs radiofréquences (RF) relevant d'eux aient fait l'objet d'une évaluation visant à déterminer l'étendue et la nature des risques pouvant être liés aux rayonnements RF produits par les dispositifs.

☐ I confirm that a formal request to the RFSP TA at QETE has been made in accordance with DAOD 3026-0, DAOD 3026-1 and CFTO C-55-040-001/TS-001 to conduct an RF safety assessment for the relevant HERP, HERF and HERO requirements under QETE project no _____.

☐ Je confirme qu'une demande formelle a été faite à l'autorité technique (AT) du Programme de sécurité des radiofréquences du CETQ conformément aux DOAD 3026-0, DOAD 3026-1 et ITFC C-55-040-001/TS-001, pour exécuter l'évaluation de la sécurité des radiofréquences, conformément aux exigences qui relèvent des besoins en HERP, HERF et HERO, sous le numéro de projet du CETQ _____.

Name/Nom: _____

Signature: _____ Date: _____

DND 552 (2-2012)

Transmitter Equipment Characteristics - Caractéristiques du matériel émetteur	
1. Nomenclature, Manufacturer's Model No.: Désignation, n° de modèle du fabricant:	2. Manufacturer's Name: Nom du fabricant:
3. Transmitter Installation: Installation émettrice:	4. Transmitter Type: Type d'émetteur:
5. Tuning Range: Gamme d'accord:	6. Method of Tuning: Méthode d'accord:
7. RF Channelling Capability: Répartition des voles RF:	8. Emission Designator(s): Identificateur(s) d'émission:
9. Frequency Tolerance: Tolérance de fréquence:	
10. Filter Employed Filtre utilisé: Yes <input type="checkbox"/> No <input type="checkbox"/> Oui Non	12. Emission Bandwidth Largeur de bande de l'émission: <input type="checkbox"/> Calculated <input type="checkbox"/> Measured Calculée Mesurée
11. Spread Spectrum: Spectre étalé: Yes <input type="checkbox"/> No <input type="checkbox"/> Oui Non	(a) -3 dB _____ (b) -20 dB _____ (c) -40 dB _____ (d) -60 dB _____ (e) OCCBW _____ Largeur de bande occupée
13. Maximum Bit Rate: Débit binaire maximal:	15. Maximum Modulation Frequency: Fréquence de modulation et de codage:
14. Modulation Techniques and Coding: Techniques de modulation et de codage:	
16. Pre-emphasis: Préaccentuation: Yes <input type="checkbox"/> No <input type="checkbox"/> Oui Non	17. Deviation Ratio: Rapport de déviation:
18. Pulse Characteristics: Caractéristiques des impulsions: (a) Rate - Fréq. de récurrence _____ (b) Width - Durée _____ (c) Rise Time - Temps de montée _____ (d) Fall Time - Temps de descente _____ (e) Comp Ratio - Rapport de comp. _____ Largeur de bande occupée	19. Power - Puissance: (a) Mean - Moyenne _____ (b) PEP - En crête _____
21. Harmonic Level: Niveau des harmoniques: (a) 2nd - 2° _____ (b) 3rd - 3° _____ (c) Other - Autres _____	20. Output Device: Dispositif de sortie:
	22. Spurious Level: Niveau du rayonnement non essentiel:
	23. Industry Canada Type Approval No.: N° d'homologation de l'industrie Canada:
24. Equipment Frequency Plan: Plan de fréquences de l'équipement :	

Receiver Equipment Characteristics – Caractéristiques du matériel récepteur				
1. Nomenclature, Manufacturer's Model No.: Désignation, n° de modèle du fabricant:			2. Manufacturer's Name: Nom du fabricant:	
3. Receiver Installation: Installation réceptrice:			4. Receiver Type: Type de récepteur:	
5. Tuning Range: Gamme d'accord:			6. Method of Tuning: Méthode d'accord:	
7. RF Channelling Capability: Répartition des voles RF:			8. Emission Designator(s): Identificateur(s) d'émission:	
9. Frequency Tolerance: Tolérance de fréquence:				
10. IF Selectivity: Sélectivité FI: (a) -3 dB _____ (b) -20 dB _____ (c) -60 dB _____			12. RF Selectivity: Sélectivité RF: Calculated <input type="checkbox"/> Measured <input type="checkbox"/> Calculée _____ Mesurée _____ (a) -3 dB _____ (b) -20 dB _____ (c) -40 dB _____	
12. IF Frequency: Fréquence intermédiaire: (a) 1st – 1 ^{ère} _____ (b) 2nd – 2 ^e _____ (c) 3rd – 3 ^e _____			13. DFSM use only: Réservé au GSFM:	
14. DFSM use only: Réservé au GSFM:			15. Oscillator Tuned: Oscillateur accordé: (a) Above Tuned Frequency Au-dessus de la fréq. d'accord (b) Below Tuned Frequency Au-dessous de la fréq. d'accord (c) Either Above or Below the Frequency Ou au-dessus ou au-dessous de la fréq.	
15. Oscillator Tuned: Oscillateur accordé: (a) Above Tuned Frequency Au-dessus de la fréq. d'accord (b) Below Tuned Frequency Au-dessous de la fréq. d'accord (c) Either Above or Below the Frequency Ou au-dessus ou au-dessous de la fréq.			16. Maximum Bit Rate: Débit binaire maximal:	
18. De-emphasis: Désaccentuation:			17. Sensitivity: Sensibilité: (a) Sensitivity – Sensibilité _____ dBm (b) Criteria – Critère _____ (c) Noise Fig – Facteur de bruit _____ dB (d) Noise Temp – Temp. de bruit _____ Kelvin	
19. Image Rejection: Rejet de fréquence image:			20. Spurious Rejection: Rejet des fréquences parasites:	
21. Remarks: Remarques:				

22. Industry Canada Type Approval No.:
N° d'homologation de l'industrie Canada:

Antenna Equipment Characteristics – Caractéristiques du matériel d'antenne		
1. Transmitting Émission <input type="checkbox"/>	Receiving Réception <input type="checkbox"/>	Transmitting and Receiving Émission et réception <input type="checkbox"/>
2. Nomenclature, Manufacturer's Model No.: Désignation, n° de modèle du fabricant:		3. Manufacturer's Name: Nom du fabricant:
4. Frequency Range: Gamme de fréquences:		5. Type:
6. Polarization – Polarisation:		7. Scan Characteristics: Caractéristiques de balayage: (a) Type _____ (b) Vertical Scan: Balayage vertical: _____ (1) Max Elev Angle de site max. _____ (2) Min Elev Angle de site min. _____ (3) Scan Rate Vitesse de balayage _____ (c) Horizontal Scan: Balayage horizontal: _____ (1) Sector Scanned Secteur balayé _____ (2) Scan Rate Vitesse de balayage _____ (d) Sector Blanking Yes No Effacement de secteur Oui Non <input type="checkbox"/>
8. Gain: (a) Main Beam Faisceau principal _____ (b) 1st Major Side Lobe 1 ^{er} lobe latéral important _____		
9. Beamwidth : Largeur du faisceau: (a) Horizontal _____ (b) Vertical _____		

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

10. Remarks:
Remarques:

Originator: Rédacteur:	Position:	Telephone Number: Numéro de téléphone:	Date:
---------------------------	-----------	---	-------

APPENDIX 17

COMMERCIAL ENGINEERING DRAWINGS

AND

ASSOCIATED LISTS

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Table of Contents

1. General.....	4
1.1. Technical Data Action Notice (TDAN) Number.....	4
1.2. Applicable Documents.....	4
1.3. New and Existing Drawings	4
1.4. Drawing Level.....	4
2. DATA LISTS.....	4
3. REFERENCE DOCUMENTS.....	5
4. TECHNICAL DATA ACTION NOTICE (TDAN)	5
5. DRAWING SYSTEM.....	5
6. DRAWING TYPES.....	5
7. PARTS LISTS.....	5
8. CONTROL DRAWINGS	5
9. FAMILY-TREE DRAWING(S)	5
10. UNITS OF MEASURE	5
11. LANGUAGE	5
12. INTEGRATION	6
13. DATA RIGHTS	6
14. DATA RIGHTS LEGEND	6
15. QUALITY ASSURANCE PROVISIONS.....	6
15.1. Acceptance.....	6
15.2. Level 1 - Design Concept.....	6
15.3. Level 2 - Prototype / Limited Production	6
15.4. Level 3 - Production	6
16. FINAL DELIVERABLES	6
16.1. Soft Copy Deliverables.....	7
16.2. Engineering Drawings	7
16.3. Associated Lists	7
16.4. Reference Documents.....	7
17. TDAN	7
17.1. Metadata (Capture of Related Information):	7
17.2. Database Table	7

18.	FILE FORMATS FOR RASTER DATA.....	7
18.1.	Pel Density	7
18.2.	Image Sizes.....	7
18.3.	Image Foreground /Background	7
18.4.	File Names/Batch Number Allocation	8
18.5.	Media of Delivery.....	8
19.	PACKAGING/MARKING/LOSS/DAMAGE	8
20.	MAIL OR COURIER DELIVERY	8
21.	INQUIRIES OR VISITS	8
	<u>TABLE 1: INDEX FIELDS.....</u>	<u>9</u>
	<u>TABLE 2: DRAWING SIZES.....</u>	<u>11</u>
	Sample record entries (Metadata) in database table:	12
	<u>FIGURE 1 Sample Metadata Records.....</u>	<u>12</u>

1. General

Engineering Drawings, Associated Lists and Reference Documents shall be provided in accordance with the following requirements and in the final form specified below.

1.1. Technical Data Action Notice (TDAN) Number

A TDAN number will be assigned to each Tasking to control the acquisition of all Engineering Drawings and Associated Lists produced under this contract. TDAN numbers will be assigned upon request to DSCO 4-6 individually as required.

1.2. Applicable Documents

D-01-400-002/SF-000 dated 1983-11-30, Drawings, Engineering and Associated Lists

D-LM-008-022/SG-000, Standard for Packaging of Documentation

ASME Y14.100, Engineering Drawing Practices

ASME Y14.24, Types and Applications of Engineering Drawings

ASME Y14.34M, Associated Lists

ISO 9660, Information Processing - Volume and File Structure of CDROM for Information Interchange

Z234.1-00, Canadian Metric Practices Guide

TIFF Revision 6, Adobe Systems Incorporated, dated June 3, 1992

1.3. New and Existing Drawings

When required, the Contractor shall prepare and deliver Engineering Drawings and Associated Lists which meet the design disclosure and legibility requirements of the specified level as defined by the Canadian Forces Engineering Drawings and Associated Lists specification D-01-400-002/SF-000.

Existing Contractor Drawings being provided as part of the Engineering Drawing Package shall meet the requirements of paragraph 3.2 of D-01-400-002/SF-000. In the event that Contractor Drawings do not meet the specified requirements the Contractor shall rework the drawings to ensure that the requirements are met.

1.4. Drawing Level

Level 1 Design Concept

Level 2 Limited Production / Prototype

Level 3 Production

Drawing Practices

Drawing practices shall be in accordance with ASME Y14.100.

2. DATA LISTS

Data Lists complete with Cover Sheets are required and shall be prepared in accordance with ASME Y14.34M and supplied as part of the Engineering Drawings. Data Lists shall be prepared at the item level of assembly (and/or end item) declared for future production by the Technical Authority. Cover sheets shall be prepared as

sheet one (1) of the Data List. Cover Sheets shall include the Contract Number and a note which details the Intellectual Property Rights that apply to the data identified on the Data List (see para 7).

3. REFERENCE DOCUMENTS

Reference documents called up on the Engineering Drawings (excepting those, which are government, society and readily available industrial specifications or standards) shall be included as part of the Engineering Drawings and Associated Lists.

4. TECHNICAL DATA ACTION NOTICE (TDAN)

A TDAN shall be prepared listing all Drawings and Associated Lists delivered as a result of the contract. A sample TDAN can be provided upon request.

5. DRAWING SYSTEM

The mono-detail drawing system shall be used.

6. DRAWING TYPES

The contractor shall provide the necessary types of drawings that will satisfy the sophistication of the specified drawing level. Drawing types selected shall be in accordance with ASME Y14.24. Type selection shall be subject to the approval of both the DND Technical Authority and DSCO 4-6.

7. PARTS LISTS

For new parts lists shall be prepared integral with the drawings. On multi-sheet drawings, the parts list shall be placed on sheet one (1). For existing parts lists, separate parts lists are acceptable.

8. CONTROL DRAWINGS

Control Drawings as defined in ASME Y14.24 shall be prepared for commercial items approved for use in the design, which are not defined by Government or nationally recognized industrial specifications and standards.

9. FAMILY-TREE DRAWING(S)

When required, the contractor shall prepare a Family-Tree Drawing(s) of the complete configuration of the Engineering Drawing Package and it shall be subject to the approval of both the DND Technical Authority and DSCO 4-6.

10. UNITS OF MEASURE

The DND Technical Authority will determine the units of measure (metric or Imperial). Metric drawings shall comply with Z234.1-00 Canadian Metric Practices Guide.

11. LANGUAGE

Existing drawings of Level 1, 2 and 3 shall be unilingual English unless otherwise specified.

New drawings of Level 1 & 2 shall be unilingual English unless otherwise specified.

New drawings of Level 3 shall be Bilingual English and French.

12. INTEGRATION

The prime Contractor shall be fully responsible for the integration of the new and existing drawings to form a complete Engineering Drawing Package.

13. DATA RIGHTS

The Government of Canada shall have rights in data as detailed in the Terms and Conditions of the contract.

14. DATA RIGHTS LEGEND

The Contractor shall mark all Foreground & Background Engineering Drawings & Associated Lists delivered under this contract with a complete notation as detailed at "Intellectual Property Rights" and/or "Data Rights" clause(s) of the contract.

15. QUALITY ASSURANCE PROVISIONS

Quality of the Engineering Drawings and Associated Lists delivered on this contract is the responsibility of the contractor and subject to the quality requirements of the contract.

15.1. Acceptance

Acceptance of the Engineering Drawings, Associated Lists and Reference Documents for technical content requirements will be the responsibility of the DND Technical Authority. Acceptance of the Engineering Drawings, Associated Lists, Reference Documents and Electronic Data Deliverables for format requirements will be DSCO 4-6.

Interim Deliverables for Acceptance Purposes

One soft copy of the Engineering Drawings, Associated Lists and Reference Data shall be delivered in hard copy form for acceptance purposes. If the package cannot be accepted, for reasons of either technical content or format, it may be necessary to resubmit the soft copy.

15.2. Level 1 - Design Concept

The Level 1 Engineering Drawings, Associated Lists and Reference Documents shall be forwarded to the Technical Authority upon completion.

15.3. Level 2 - Prototype / Limited Production

Following acceptance of the Level 1 Engineering Drawings, Associated Lists and Reference Documents, the Level 2 Engineering Drawings, Associated Lists and Reference Documents shall be forwarded to the Technical Authority.

15.4. Level 3 - Production

Following acceptance of the Level 2 Engineering Drawings, Associated Lists and Reference Documents, the Level 3 Engineering Drawings, Associated Lists and Reference Documents shall be forwarded to DSCO 4-6.

16. FINAL DELIVERABLES

Upon acceptance, the Level 3 Engineering Drawings, Associated Lists and Reference Data shall be delivered in soft copy form as outlined herein.

16.1. Soft Copy Deliverables

Soft copy deliverables shall include the Engineering Drawings, Associated Lists, Reference Data and the associated Metadata in electronic form.

16.2. Engineering Drawings

Engineering Drawings shall be delivered as Raster files as detailed herein. Multi-sheet drawings shall be delivered one sheet per file.

16.3. Associated Lists

Associated Lists shall be delivered as a PDF file or in a format deemed acceptable by DSCO 4-6.

16.4. Reference Documents

Reference Documents shall be delivered as a PDF file or in a format deemed acceptable by DSCO 4-6.

17. TDAN

The TDAN shall be delivered in the native MSWord file and a PDF file. Alternate file formats may be acceptable provided they have been discussed and approved in writing by DSCO 4-6. NOTE: One (1) hard copy of the TDAN complete with contractor's signatures shall be provided with the final deliverables.

17.1. Metadata (Capture of Related Information):

Metadata (the data that describes data objects) shall be provided for all Engineering Drawings, Associated Lists and Reference Data deliverables. Metadata records shall contain the information in the order shown in Table 1. Metadata shall be delivered as a Microsoft Access 2010 database shown at Figure 1.

17.2. Database Table

Each delivered image shall have a corresponding database record. All records shall be entered into a single Microsoft Access 2010 database table. Fields without corresponding information shall remain blank. The Microsoft Access 2010 database file shall be named with the "batch#.mdb".

18. FILE FORMATS FOR RASTER DATA

Raster data shall be Tagged Image File (TIF) or PDF format. Files shall be wholly raster (hybrid files shall not be delivered).

18.1. Pel Density

Raster image pixel element (Pel) density shall be 200 dpi.

18.2. Image Sizes

Image sizes as outlined in Table 3 are provided as a guide and sizes may vary slightly, but no more than plus or minus one inch (25 mm) in either width or length.

18.3. Image Foreground /Background

Images shall be black on white background.

18.4. File Names/Batch Number Allocation

File names shall be made up from the document number by adding a prefix(LZ for LAND, AZ for AIR and MZ for MARITIME) Batch numbers shall be assigned as a block and shall be requested in writing to DSCO 4-6. (See Fig. 1)

18.5. Media of Delivery

The media form for final delivery of electronic data shall be CD or DVD. Each CD or DVD and its case shall be labeled or marked in a method of the contractor's choosing. Each label or marking shall display the TDAN number, the Contract/Task number and the date of creation.

19. PACKAGING/MARKING/LOSS/DAMAGE

Reproducible and non-reproducible data shall be preserved, packaged, and marked in accordance with CF Standard D-LM-008-022/SG-000. Exterior shipping containers shall be marked with the contract and TDAN number and in the event of loss or damage while in shipment, the responsibility for replacement shall be that of the primary Contractor and shall be at the primary Contractor's expense.

20. MAIL OR COURIER DELIVERY

Deliverables shall be forwarded to:

Department of National Defence
National Defence Headquarters
MGen George R. Pearkes Building
Ottawa ON K1A 0K2

Attention: DSCO 4-6, NPB

21. INQUIRIES OR VISITS

DSCO 4-6 may be contacted at (819) 939-9058
Fax (819) 994-9561.

The address is:
Department of National Defence
National Printing Bureau Building
45 Boul. Sacré Coeur
Gatineau QC J8X 1C6

Attention: DSCO 4-6

TABLE 1: INDEX FIELDS

Order	Field Name	Max Field Length	Field Definition / Description	Example Entry
1	FILENAME (all one word)	12 (8.3)	Name of electronic file - unique filename for uploading in database. File names will be issued by DSCO 4-3-3. Alpha characters shall be uppercase.	AZ000235.TIF
2	BATCHNO (all one word)	8	Batch number - used for uploading files in database. Batch number will be assigned with filenames. Alpha characters shall be uppercase.	AZ001
3	DOCUMENTNO (all one word)	25	This field shall contain the document number.	9775458
4	REVISION	3	Letter or number indicating the revision level. If there is no rev, indicate with dash ("-")	B
5	SHEETNO (all one word)	3	Sheet number x of y. Enter the value of x.	1
6	NOOFSHEETS (all one word)	3	Sheet number x of y. Enter the value of y.	1
7	FRAMENO (all one word)	3	Frame number x of y. Enter the value of x. (This field is applicable only when capturing data from aperture cards.) When field is not applicable, leave blank.	
8	NOOFFRAMES (all one word)	3	Frame number x of y. Enter the value of y. (This field is applicable only when capturing data from aperture cards.) When field is not applicable, leave blank.	
9	NSCM	5	This field shall contain the NATO Supply Code for Manufacturers (NSCM) of the Owner of the data. (Also known as FSCM, CAGE or NCAGE code.)	36376
10	SIZE	2	This field contains the document size. -For imperial sizes use A, B, C, D, E, F, G, H, J, K and LE (for legal) -For metric sizes use A4, A3, A2, A1, A0 and B1.	A2
11	ADDITIONALIDENTIFIER (all one word)	10	This open field shall be used when two (2) or more documents have the same document number but are different documents. e.g. Document 12345, Document 12345 DCR 001, then "DCR 001" would be entered in this field. When field is not applicable, leave blank.	DCR 001
12	DATARIGHTS (all one word)	1	The data rights as specified in the contract. "L" for "LIMITED" or "U" for "UNLIMITED"	U
13	DOCUMENTTITLE (all one word)	240	Title of document. (i.e. Drawing title)	BRACKET ASSY

Order	Field Name	Max Field Length	Field Definition / Description	Example Entry
14	TDANNO (all one word)	12	This field shall be used to enter the TDAN number assigned for the project.	1142710XX
15	ERN	12	This field shall be used for the Equipment Registration Number. Information shall be provided if required, otherwise the field shall be left blank.	
16	EAC	8	This field shall be used for the Equipment Application Code. Information shall be provided if required, otherwise the field shall be left blank.	
17	EQUIPMENT	75	Name of the Equipment. Information shall be provided if required, otherwise the field shall be left blank.	
18	CTAT	1	If the data is "Not Controlled", DM Code "A" shall be entered. If the data is "Controlled Goods", DM Code "D" shall be entered.	A or D
19	PROJECTNAME	30	This field shall be used for "Controlled Goods" data and will be filled in by DSCO 4-6. This field shall be left blank.	

TABLE 2: DRAWING SIZES

METRIC DRAWING SIZES			
Drawing Size	W x L (max) (mm)	Pels Per Line	Number of Lines
A4	210 X 297	1656	2344
A3	297 X 420	2344	3312
A2	420 X 594	3312	4680
A1	594 X 841	4680	6624
A0	841 X 1189	6624	9368
B1	707 X 1000	5567	7875
NORTH AMERICAN / IMPERIAL DRAWING SIZES			
Drawing Size	W x L (max) (inches)	Pels Per Line	Number of Lines
A	8.5 x 11	1704	2200
B	11 x 17	2200	3400
C	17 x 22	3400	4400
D	22 x 34	4400	6800
E	34 x 44	6800	8800
F	28 x 40	5600	8000
G	11 x 90	2200	18000
H	28 x 143	5600	28600
J	34 x 176	6800	35200
K	40 x 143	8000	28600
Legal	8.5 x 14	1704	2800

Sample record entries (Metadata) in database table:

(The following table is shown on three lines to suit page width.)

FILENAME	BATCHNO	DOCUMENTNO	REVISION	SHEETNO	NOOFSHEETS	FRAMENO	NOOFFRAMES
AZ000235.TIF	AZ001	9775458	B	1	1	1	1
AZ000236.TIF	AZ001	9775457	-	1	1		

NSCM	SIZE	ADDITIONALIDENTIFIER	DATARIGHTS	DOCUMENTTITLE	TDANNO	ERN	EAC	EQUIPMENT
36376	A2	DCR 001	U	BRACKET ASSY	1142710XX			
36376	A1		L	BRACKET	1142710XX			

CTAT	PROJECTNAME
A	
D	

FIGURE 1 Sample Metadata Records

APPENDIX 18

ACTIVITIES AND DELIVERABLES

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Month After Contract Award	Activities	Contract Deliverable
		IPR & TIM Agenda (A002)
0.5 MACA		Draft IPR Presentation Package (A006)
1 MACA	Initial Project Review (IPR)	Draft Project Management Plan (A001)
	Technical Interchange Meeting (TIM)	Draft IPR & TIM Meeting Minutes (A003)
	Pre-Design Presentation	Final IPR Presentation Package (A006)
		Draft Master Project Schedule (A007)
		Draft GSM and GFE Integration Plan (B017)
		Draft ILS Plan (C001)
		Draft Pre-Design Report (E004)
2 MACA		PRM #1 & IPGC Agenda (A002)
		Final IPR & TIM Meeting Minutes (A003)
		Draft Site Surveys (12 ER and 42 Rdr) Meeting Minutes (A003)
		Draft PRM #1 Presentation Package (A004)
		Draft IPGC Presentation Package (A004)
		Draft System Engineering Management Plan (B002)
		Final Pre-Design Report (E004)
	Progress Review Meeting (PRM) #1	Final Project Management Plan (A001)
	Initial Provisioning Guidance Conference (IPGC)	PDR Agenda (A002)

Month After Contract Award	Activities	Contract Deliverable
3 MACA	SOCR Visits (12 ER and 42 Rdr Sqn)	Draft PRM & IPGC #1 Meeting Minutes (A003)
	SOCR Presentation/Meetings	Final Site Surveys Meeting Minutes (A003)
		Final PRM #1 Presentation Package (A004)
		Final IPGC Presentation Package (A004)
		Draft System Design Document (B003)
		Draft Interface Control Document (B005)
		Draft Electromagnetic Environment Effects (E3) Control Plan (B006)
		Draft System Security Management Plan (B007)
		Draft Security Functional Specification (B009)
		Draft EMSEC Control Plan (B011)
		Draft PDR Presentation Package (B015)
		Draft Frequency Allocation and Emitter Data (B024)
		Draft Maintenance Plan (C002)
		Draft Parts Provisioning Breakdown (PPB) (C005)
		Draft Supplementary Provisioning Technical Documentation (SPTD) (C022)
		Draft Logistic Support Analysis Plan (LSAP) (C034)
		Draft Integrated Master Test Plan (IMTP) (D001)
		Draft Concept Design Report (E005)
4 MACA	Preliminary Design Review (PDR)	Final PRM #1 Meeting Minutes (A003)
	Concept Development Meeting	Draft PDR Meeting Minutes (A003)
		Final Master Project Schedule (A007)
		Final System Engineering Management Plan (B002)
		Final PDR Presentation Package (B015)

Month After Contract Award	Activities	Contract Deliverable
		Final GSM and GFE Integration Plan (B017)
5 MACA	Concept Presentation	PRM #2 Agenda (A002)
		Final PDR Meeting Minutes (A003)
		Draft PRM #2 Presentation Package (A004)
		Final Security Functional Specifications (B009)
		Draft Security Architectural Design (B010)
		Draft GSM and GFE Integration Report (B018)
		Final ILS Plan (C001)
		Draft Technical Publications Requirements List (TPRL) (C006)
		Draft R&M Predictions Data (C015)
		Draft Level of Repair Analysis Report (LORA) (C016)
		Draft Interim Spares List (ISL) (C032)
		Draft Long Lead Times Items List (C033)
		Final Concept Design Report (E005)
6 MACA	Progress Review Meeting (PRM) #2	Draft PRM #2 Meeting Minutes (A003)
	Design Development Presentation	Final PRM #2 Presentation Package (A004)
		Final Electromagnetic Environment Effects (E3) Control Plan (B006)
		Final System Security Management Plan (B007)
		Final EMSEC Control Plan (B011)
		Final Maintenance Plan (C002)
		Draft Repair & Overhaul (R&O) Plan (C023)

Month After Contract Award	Activities	Contract Deliverable
		Draft Calibration/Measurements Requirements Summary (CRMS) (C029)
		Draft Integrated Master Test Plan (IMTP) (D001)
		Draft Design Development Report (E006)
7 MACA		Draft CDR Agenda (A002)
		Final PRM #2 Meeting Minutes (A003)
		Final System Design Document (B003)
		Draft Product Specifications (B004)
		Final Interface Control Document (B005)
		Final Security Architectural Design (B010)
		Draft Security Detail Design (B012)
		Draft CDR Presentation Package (B016)
		Final Frequency Allocation and Emitter Data (B024)
		Final Provisioning Parts Breakdown (C005)
		Draft Acceptance of Commercial and Foreign Government Publications (C007)
		Draft New TCR System Operating Instruction Manual(s) (C008)
		Draft New TCR System Technical Manual(s) (C009)
		Draft Common Bulk Items List (CBIL) (C011)
		Draft Sparing Analysis Report (C017)
		Draft Request for Nomenclature (C018)
		Final Supplementary Provisioning Technical Documentation (SPTD) (C022)
		Final Logistic Support Analysis Plan (LSAP) (C034)
		Draft Requirements Verification Matrix (RVM) (D002)

Month After Contract Award	Activities	Contract Deliverable
		Final Design Development Report (E006)
8 MACA	Critical Design Review (CDR)	PRM #3 Agenda (A002)
	Initial Provisioning Conference (IPC)	Draft CDR Meeting Minutes (A003)
		Draft PRM #3 Presentation Package (A004)
		Final CDR Presentation Package (B016)
		Draft Radar Subsystems #1 Factory Acceptance Test Plan (D003)
9 MACA	Progress Review Meeting (PRM) #3	Site Design Reviews Agendas (A002)
		Draft PRM #3 Meeting Minutes (A003)
		Final Critical Design Review Minutes (A003)
		Final PRM #3 Presentation Package (A004)
		Final GSM and GFE Integration Report (B018)
		Logistics Support Analysis Records (LSAR) (C012)
		Draft LSA Candidate Items List (C014)
		Final R&M Predictions Data (C015)
		Final Level of Repair Analysis (LORA) (C016)
		Final Request for Nomenclature (C018)
		Final Interim Spares List (ISL) (C032)
		Final Long Lead Time Items List (C033)
		Draft Radar Subsystem #1 Factory Acceptance Test Procedure (D005)
		1 st Site Design Reviews Agendas (A002)
10 MACA		Final PRM #3 Meeting Minutes (A003)

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

Month After Contract Award	Activities	Contract Deliverable
		Draft 1st Site Design Reviews Presentation Package (A004)
		Final Product Specifications (B004)
		Final Security Detail Design (B012)
		Draft Site Data Package (B021)
		Final Technical Publications Requirements List (TPRL) (C006)
		Logistics Support Analysis Reports (LSAR) (C012)
		Final Sparing Analysis Report (C017)
		Equipment Identification Plate Data (C019)
		Draft Engineering Drawings and Associated Lists (C020)
		Engineering Data Lists (C021)
		Final Requirements Verification Matrix (RVM) (D002)
		Final Radar Subsystems Factory Acceptance Test Plan (D003)
		Draft Subsystem #2 Factory Acceptance Test Plan (D003)
		Draft Site Preparation Report (E001)
		Draft Installation Plan (E002)
		Draft Transition Plan (E003)
		Draft (66%) Construction Document Report (w/ substantive class B construction cost estimate) (E007)
11 MACA	12 ER and 42 Rdr Sqn 1 st Site Design Reviews	PRM #4 Agenda (A002)
		Radar Subsystem #1 FAT Agenda (A002)
		Draft 1st Site Design Reviews Minutes (A003)
		Draft PRM #4 Presentation Package (A004)
		Draft Radar Subsystem #1 FAT Presentation Package

Month After Contract Award	Activities	Contract Deliverable
		(A004)
		Final 1st Site Design Reviews Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
		Final Radar Subsystems Factory Acceptance Test Procedures (D005)
		Draft Subsystems #2 Factory Acceptance Test Procedures (D005)
12 MACA	Progress Review Meeting (PRM) #4	2 nd Site Design Reviews Agendas (A002)
	Radar Subsystem #1 FATs	Draft PRM #4 Meeting Minutes (A003)
		Draft Radar Subsystem #1 FAT Meeting Minutes (A003)
		Final PRM #4 Presentation Package (A004)
		Final Radar Subsystem #1 FAT Presentation Package (A004)
		Draft 2 nd Site Design Reviews Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
		Final Subsystem #2 Factory Acceptance Test Plan (D003)
		Draft Subsystem #3 Factory Acceptance Test Plan (D003)
		Final (99%) Construction Document Report (w/ Substantive Class A (Tender) Construction Cost Estimate) (E007)
13 MACA	12 ER and 42 Rdr Sqn 2nd Site Design Reviews	Subsystem # 2 FATs Agenda (A002)
	2 nd Construction Document Presentation	Final PRM #4 Meeting Minutes (A003)
		Draft 2 nd Site Design Reviews Meeting Minutes (A003)

Month After Contract Award	Activities	Contract Deliverable
		Draft Subsystem #2 FATs Presentation Package (A004)
		Draft 2 nd Site Design Reviews Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
		Final Subsystems #2 Factory Acceptance Test Procedures (D005)
		Draft Subsystems #3 Factory Acceptance Test Procedures (D005)
		Radar Subsystems #1 Factory Acceptance Test Report (ATR) (D006)
		Final (100%) Construction Document Report (w/ Substantive Class A (Tender) Construction Cost Estimate) (E007)
14 MACA	Subsystem #2 FATs	PRM #5 Agenda (A002)
		Draft Subsystem #2 FATs Meeting Minutes (A003)
		Final Subsystem #2 FATs Presentation Package (A004)
		Draft PRM #5 Presentation Package (A004)
		Final 2 nd Site Design Reviews Presentation Package (A004)
		Final Site Data Package (B021)
		Logistics Support Analysis Reports (LSAR) (C012)
		Final Engineering Drawings and Associated Lists (C020)
		Final Subsystem #3 Factory Acceptance Test Plan (D003)
		Draft Subsystem #4 Factory Acceptance Test Plan (D003)
		Final Construction Document Report (w/ Substantive Class A (Tender) Construction Cost Estimate) (E007) stamped and signed
15 MACA	Progress Review Meeting (PRM) #5	Subsystem #3 FAT Agenda (A002)

Month After Contract Award	Activities	Contract Deliverable
		Final Subsystem #2 Meeting Minutes (A003)
		Draft PRM #5 Meeting Minutes (A003)
		Final PRM #5 Presentation Package (A004)
		Draft Subsystem #2 Presentation Package (A004)
		Final Subsystem #2 FAT Procedures (B005)
		Draft Subsystem #3 FAT Procedures (B005)
		Logistics Support Analysis Reports (LSAR) (C012)
		Draft Training Plan (TP) (C030)
		Final Subsystems #3 Factory Acceptance Test Procedures (D005)
		Draft Subsystems #4 Factory Acceptance Test Procedures (D005)
		Subsystems #2 Factory Acceptance Test report (ATR) (D006)
16 MACA	Subsystem # 3 FATs	Draft Subsystem #3 FAT Meeting Minutes (A002)
		Final PRM #5 Meeting Minutes (A003)
		Final Subsystem #3 FAT Presentation Package (A004)
		Draft Electromagnetic Environmental Effects (E3) Test Plan (B022)
		Logistics Support Analysis Reports (LSAR) (C012)
		Draft System Factory Acceptance Test Plan (D003)
		Final Subsystem #4 Factory Acceptance Test Plan (D003)
17 MACA		PRM #6 Agenda (A002)
		Subsystem #4 FAT Agenda (A002)
		Draft PRM #6 Presentation Package (A004)

Month After Contract Award	Activities	Contract Deliverable
		Draft Subsystem #4 FAT Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
		Draft Training Material (C031)
		Final Subsystems #4 Factory Acceptance Test Procedures (D005)
		Draft Systems Factory Acceptance Test Procedures (D005)
		Subsystems #3 Factory Acceptance Test Report (ATR) (D006)
18 MACA	Progress Review Meeting (PRM) #6	Draft PRM #6 Meeting Minutes (A003)
	Subsystem #4 FATs	Draft Subsystem #4 FAT Meeting Minutes (A003)
		Final PRM #6 Presentation Package (A004)
		Final Subsystem #4 FAT Presentation Package (A004)
		Final Electromagnetic Environmental Effects (E3) Test Plan (B022)
		Draft (English Only) Software Users Manuals (C004)
		Logistics Support Analysis Reports (LSAR) (C012)
		Calibration/Measurements Requirements List (CRMS) (C029)
		Final Training Plan (TP) (C030)
		Final System Factory Acceptance Test Plan (D003)
		Final Site Preparation Report (E001)
		Final Installation Plan (E002)
		Final Transition Plan (E003)
		Final PRM #6 Meeting Minutes (A004)
		Final Subsystem #4 FAT Meeting Minutes (A004)

Month After Contract Award	Activities	Contract Deliverable
19 MACA		Final Common Bulk Items List (CBIL) (C011)
		Logistics Support Analysis Reports (LSAR) (C012)
		Final LSA Candidate Items List (C014)
		Special PHST Consideration Items List (C026)
		Packaging Data (C027)
		Material Safety Data Sheets (MSDS) (C028)
		Final Training Material (C031)
		Final Systems Factory Acceptance Test Procedures (D005)
		Subsystems #4 Factory Acceptance Test Report (ATR) (D006)
20 MACA	TCR System #1 FAT	PRM #7 Agenda (A002)
	Start of bi-weekly construction coordination meetings	Draft TCR System #1 FAT Meeting Minutes (A003)
		Draft PRM #7 Presentation Package (A004)
		Final TCR System #1 FAT Presentation Package (A004)
		Final (English Only) Software Users Manuals (C004)
		Logistics Support Analysis Reports (LSAR) (C012)
		Draft Site Acceptance Test Plan (SATP) (D004)
21 MACA	Progress Review Meeting (PRM) #7	Draft PRM #7 Meeting Minutes (A003)
	TCR System 42Rdr Sqn Ops Training	Final PRM #7 Presentation Package (A004)
		Draft Electromagnetic Environmental Effects (E3) Test Report (B023)
		Logistics Support Analysis Reports (LSAR) (C012)
		Final Repair & Overhaul (R&O) Plan (C023)

Month After Contract Award	Activities	Contract Deliverable
		Draft Site Acceptance Test Procedures (D005)
		TCR System #1 Factory Acceptance Test Report (ATR) (D006)
22 MACA	TCR System 42 Rdr Sqn Maint. Training	Draft TCR System #1 PCIA Agenda
	Post Construction Phase Meeting	Final PRM #7 Meeting Minutes (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
		Final Site Acceptance Test Plan (SATP) (D004)
		Post Construction Phase Report (E008)
23 MACA	TCR System #1 Physical Configuration and Installation Audit (PCIA)	PRM #8 Agenda (A002)
		TCR System #1 SAT Agenda (A002)
		Draft TCR System #1 PCIA Meeting Minutes (A003)
		Draft PRM #8 Presentation Package (A004)
		Final TCR System #1 PCIA Presentation Package (A004)
		Final Electromagnetic Environmental Effects (E3) Test Report (B023)
		Final Acceptance of Commercial and Foreign Government Publications (C007)
		Final New System Operating Instruction Manual(s) (C008)
		Final New TCR System Technical Manual(s) (C009)
		Logistics Support Analysis Reports (LSAR) (C012)
		System Software (C013)
		Final Site Acceptance Test Procedures (D005)

Month After Contract Award	Activities	Contract Deliverable
24 MACA	Progress Review Meeting (PRM) #8	TCR System #2 FAT Agenda (A002)
	TCR System #1 SAT (incl. OT&E)	Draft PRM #8 Meeting Minutes (A003)
		Draft TCR System #1 SAT Meeting Minutes (A003)
		Final PRM #8 Presentation Package (A004)
		Final TCR System #1 SAT Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
25 MACA	TCR System #2 FAT	Final PRM #8 Meeting Minutes (A003)
		Final TCR System #1 SAT Meeting Minutes (A003)
		Draft TCR System #2 FAT Meeting Minutes (A003)
		Final TCR System #2 FAT Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
		TCR System #1 Site Acceptance Test Report (D006)
26 MACA	TCR System 12 ER Ops. Training	PRM #9 Agenda (A002)
		Draft PRM #9 Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
		TCR System #2 Factory Acceptance Test Report (ATR) (D006)
27 MACA	Progress Review Meeting (PRM) #9	TCR System #2 PCIA Agenda (A002)
	TCR System 12 ER Maint. Training	Draft PRM #9 Meeting Minutes (A003)
		Final PRM #9 Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)

Month After Contract Award	Activities	Contract Deliverable
28 MACA	TCR System #2 PCIA	Draft TCR System #2 PCIA Meeting Minutes (A003)
		Final PRM #9 Meeting Minutes (A003)
		Logistics Support Analysis Reports (LSAR) (C012)
		System Software (C013)
29 MACA		PRM #10 Agenda (A002)
		Draft PRM #10 Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
		Final (French) Software User Manuals (C004)
30 MACA	Progress Review Meeting (PRM) #10	Draft PRM #10 Meeting Minutes (A003)
	TCR System #2 SAT (incl. OT&E)	Draft TCR System #2 SAT Meeting Minutes (A003)
		Final PRM #10 Presentation Package (A004)
		Final TCR System #2 SAT Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
31 MACA		Final PRM #10 Meeting Minutes (A003)
		Final TCR System #2 SAT Meeting Minutes (A003)
		Logistics Support Analysis Reports (LSAR) (C012)
		System Software (C013)
		TCR System #2 Site Acceptance Test Report (ATR) (D006)
32 MACA		PRM # 11 Agenda (A002)
		Draft PRM #11 Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

Month After Contract Award	Activities	Contract Deliverable
33 MACA	Progress Review Meeting (PRM) #11	Draft PRM #11 Meeting Minutes (A003)
		Final PRM #11 Presentation Package (A004)
		Draft Sustainment Plan (C003)
		Logistics Support Analysis Reports (LSAR) (C012)
34 MACA		Final PRM #11 Meeting Minutes (A003)
		Logistics Support Analysis Reports (LSAR) (C012)
35 MACA		FPR Agenda (A002)
		Draft FPR Presentation Package (A004)
		Logistics Support Analysis Reports (LSAR) (C012)
36 MACA	Final Progress Review (FPR)	Draft FPR #12 Meeting Minutes (A003)
		Final FRP #12 Presentation Package (A004)
		Final Sustainment Plan (C003)
		Logistics Support Analysis Reports (LSAR) (C012)

APPENDIX 19
OPTIONAL THIRD SYSTEM
FOR
TACTICAL CONTROL RADAR (TCR)
MODERNIZATION PROJECT

Table of Contents

1. APPENDIX 19 - Optional Third TCR System	3
1.1. The Optional Third TCR System.	3
1.2. General Information - Ancillary Equipment.	3

DRAFT

1. APPENDIX 19 - Optional Third TCR System

1.1. The Optional Third TCR System.

1.1.1. The optional third system shall meet the same technical requirements of interchangeability and form-fit-function as detailed in the SOW for the other two (2) TCR systems. (All three (3) TCR systems shall be the same version number). The quantities of Government Supplied Material (GSM) provided for the third system will differ from what was provided for the first two (2) systems. The optional third system shall be delivered, installed, integrated and tested in the Radar Head building at Cold Lake, but the optional third system does not include an RTOC or Radar Head configuration. The Contractor shall procure the North Bay equipment necessary to integrate the Satcom system for the third system. This equipment will be installed by DND.

1.2. General Information - Ancillary Equipment.

1.2.1. 3600 MainStreet Mux. The Alcatel 3600 MainStreet family of multiplexer equipment shall be used for the optional third system.

1.2.2. SATCOM Crypto. The following Crypto equipment will be provided as GSM for the third satellite system:

- a) Crypto, Qty 2 KIV-7M;
- b) Crypto Power Supply, Qty 2;
- c) Encryption Bypass Switch; and
- d) Encryption Shelf.

1.2.3. UHF/VHF Radios. These radios will be GSM. The radios are Harris AN/PRC117 based. There will be nine (9) of these radios for installation in the third system. Four radios will include a 40-Watt amplifier shelf:

- a) UHF Guard;
- b) VHF Guard;
- c) AICC; and
- d) One (1) Operator selectable.

1.2.4. HF Radios. The HF radios will be GSM. The HF radios are Rockwell-Collins RT-2200 based. There will be two (2) of these radios for installation in the third system. Each radio will include a 1kW linear power amplifier shelf.

1.2.5. Satcom. The AN/TSC-510 ground station will be provided as GSM for the third TCR system. The Contractor shall provide all other ancillary equipment required to replicate the existing Satcom functionality for the third TCR system.

1.2.6. Link 16 Equipment. DND will provide (1) one MIDS LVT(11) terminal (including mounting tray) as link system equipment for the third TCR Radar.

1.2.7. Link 11 Equipment The fielded Link 11 systems are complete with transit cases and are operated from the Shelter. The Link 11 equipment includes HF radios, UHF Multichannel radios, Crypto equipment and Air Defence System Integrators (ADSI) version 15.

1.2.8. Audio Sharing. The Audio Sharing capability shall be Contractor supplied. Para 7.5.5.1 of the SOW describes the functional requirements. In the event that the Contractor's design calls for a dedicated Audio Sharing Unit, it shall be comprised of the following Audior Communications products:

- a) Three (3) each Card Cage, P/N 75755500;
- b) Twenty-five (25) each Control Cards, P/N 75755500-SA;
- c) Four (4) each Power Supplies, 75755552;
- d) Three (3) each Fuse Panels, P/N 75755551; and
- e) Two (2) each Extender Card, P/N 75755556.

1.2.9. Antennas. The Contractor shall provide the following antennas for the third TCR system:

- a) Nine (9) each UHF/VHF Antennas; D2211 TACO;
- b) Two (2) Sloping V Antennas (with N type connectors); 5985-21-895-5483;
- c) Three (3) UHF Satcom Antennas; any combination may be used of 5985-01-485-4672, (Trivec Avant part number AV-2040-02 or Harris Corporation part number RF-3080-AT001) or the preferred High Gain UHF Satcom Antenna, Harris Corporation part number 12006-9000-01;
- d) Two Global Positioning System (GPS) antennas; and
- e) Two (2) UHF/VHF General Purpose use antennas; D2211 TACO.

1.2.10. Signaling Unit. The single-channel radios, currently in service with the TCR, utilize a Carrier Operated Device, Anti Noise (CODAN) unit. The CODAN unit provides a signal that acknowledges a transmit or receive signal in North Bay. This signal uses a single lead on the 4 Wire E&M ('M' lead at TCR and 'E' lead at North Bay) card on the TCR Satcom model 3600 Multiplexer. The AN/PRC-117 radios, installed as part of the TCR project, are transceivers. The Contractor shall provide a signaling unit for each radio that interfaces this signaling unit with North Bay via the Satcom 3600 Multiplexer to provide the transmit and receive acknowledge indication.

1.2.11. System Synchronization. The TCR system shall be synchronized to Universal Time Coordinated (UTC) via GPS. One (1) complete GPS synchronized master clock (Stratum level 2 at a minimum) complete with distribution system is required and shall be installed by the Contractor.

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 20

INSTALLATION STANDARDS

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 20 – Installation Standards

The following table lists some installation standards for telecommunications equipment. Any other standards shall be approved by the DND Technical Authority prior to implementation.

STANDARD	DESCRIPTION
ANSI/TIA/EIA-568-B.1-2001	Commercial Building Telecommunications Cabling Standard - Part 1 General Requirement
ANSI/TIA/EIA-568-B.1-1-2001	Commercial Building Telecommunications Cabling Standard –Part 1 Addendum 1 – Minimum 4 Pair UTP and 4 Pair ScTP Cable Bend Radius
ANSI/TIA/EIA-568-B.2-2001	Commercial Building Telecommunications Cabling Standard –Part 2 – Balanced Twisted Pair Cabling Components
ANSI/TIA/EIA-568-B.2-1-2002	Commercial Building Telecommunications Cabling Standard –Part 2 – Addendum 1 – Transmission Performance for 4 Pair 100 ohm Category 6 Cable.
ANSI/TIA/EIA-568-B.3-2000	Optical Fiber Cabling Components Standard
ANSI/TIA/EIA-568-B.3-1-2002	Optical Fiber Cabling Components Standard – Addendum 1 – Additional Transmission Performance Specifications for 50/125um Optical Fiber Cables
ANSI/TIA/EIA-569B	Commercial Building Standard for Telecommunications Pathways and Spaces
ANSI/TIA/EIA-606-A-2002	Administration Standard for Commercial Telecommunications Infrastructure
ANSI-J-STD-607-A-2002	Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
DFS 1004 Hard Copy Only available	General Specification for Installation of Electronic Equipment by Contract
IPC/WHMA –A –620	Requirements and Acceptance for Cable and Wire Harness Requirements
CEI/IEC 60154-1	International Standard for Flanges for Waveguides
C22.2 No. 0.12-M1985	Wiring Space and Wire Bending Space in Enclosures for Equipment Rated 750V or less
TBITS 6.9	Profile for the Telecommunications Wiring System in Government Owned and Leased Buildings – Technical Specifications

APPENDIX 21

PUBLICATION AUTHORSHIP SERVICE (PAS)

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Table of Contents

PUBLICATION AUTHORSHIP SERVICE (PAS)	3
1. INTRODUCTION	3
1.1. Contractor Responsibility	3
1.2. Authorship Service	3
1.3. Technical Publications Management Plan	3
1.4. (SGML) CALS Compliant Source Data	4
1.5. Work Review Process	5
2. LANGUAGE OF PUBLICATIONS	6
2.1. Bilingual Publications	6
2.2. Source Documents	6
2.3. Publication Format	6
2.4. Validation	7
2.5. Inspection and Audits	8
2.6. Certificates	8
2.7. Quality Assurance	8
2.8. Government Review Period	9
2.9. Quantity	9
2.10. Official Languages	9
2.11. Translation Accuracy Check (TAC)	9
2.12. Warranty Procedures	10
2.13. Printing and Delivery	10
2.14. Soft Copy Publications	10
2.15. Advance Shipping Notice	11
2.16. Storage and Shipping of Reproducible Copy, Artwork and Related Material	11
2.17. Methods of Packaging	12
2.18. Definitions	12
ATTACHMENT A	13
ATTACHMENT B	14

PUBLICATION AUTHORSHIP SERVICE (PAS)

1. INTRODUCTION

This Appendix defines the requirements of the Department of National Defence (DND) for the production and translation of technical publications in support of the TCR Modernization Project.

1.1. Contractor Responsibility

The Contractor is responsible for providing Publication Authorship Services for the Technical Publications identified in the Technical Publications Requirements List (TPRL) in Para 3.12.1 of the SOW. This list may be altered as required by DND as a contract amendment through the Contracting Authority (CA).

1.2. Authorship Service

In this document, the Authorship Service is the process of planning, organising and coordinating: the writing, validating, translating, performing of Technical Accuracy Checks (TAC) and publishing of selected publications. Also, as part of the Authorship Service, the Contractor must ensure that the publications reflect the current, approved configuration of the equipment.

DND has no single preference for the descriptive mark-up or file format of documents.

1.3. Technical Publications Management Plan

The plan to manage the production and translation of technical publications must be integrated into the ILS Management Plan. The plan must address the following:

- (a) Organization. To include an organization chart indicating the relationship and structure of the personnel resources;
- (b) Production Schedule;
- (c) Quality Assurance (QA) and Quality Control (QC) procedures; and
- (d) If DND Continuous Acquisition and Life-cycle Support (CALS) Standard Generalized Mark-up Language (SGML) version 2.1 is selected the (SGML) Source Data Validation Plan must be as described in Article 4.0 of the Standard.

1.3.1 Standard Generalized Mark-up Language (SGML) Source Data Validation Plan. The plan must be submitted as part of the Technical Publications Management Plan and must describe the following:

- (a) The testing and demonstration procedures that will be used to verify that all Source Data deliverables are fully conformant with the applicable standards and implementation guidelines. The (SGML) Source Data Validation Plan must identify the test application that will be used to demonstrate standards conformance;

(b) Where the implementation guideline for the DND CALS Document Type Definitions (DTD) version 2.1 require that the Contractor select from specified options the Contractor must document the selections made for each Technical Publication. Furthermore, the Assembly DTD must be used for all publications unless the justification is provided as part of the plan and subsequently approved by the PM; and

(c) The format of the (SGML) Source Data Validation Plan must be in Contractor's format.

1.3.2 Each SGML Project must be labeled with the following:

- (a) The project name;
- (b) The TA designation (A40C);
- (c) The contract number;
- (d) The Title(s) (Source Data Validation Plan); and
- (e) Delivery date.

1.4. (SGML) CALS Compliant Source Data

1.4.1. The Contractor must validate all technical publications in accordance with the (SGML) Source Data Validation Plan. All technical publications must be conformant with "ISO 8879 SGML", the "DND CALS DTD v2.1", and the associated plans (including the (SGML) Source Data Validation Plan).

1.4.2. Illustrations must be prepared and delivered as two-dimensional vector graphics to the greatest extent possible with the remainder being prepared and delivered as raster images. All illustrations must conform to the applicable standards and must support the planned publishing process for both printed and online delivery.

1.4.3. Graphics information items submitted as raster images must be in accordance with "MIL-PRF-28002B" for black and white images, and "ISO 10918 Joint Photographic Experts Group (JPEG)" for grey scale, continuous tone or colour images. The images must be validated in accordance with the (SGML) Source Data Validation Plan.

1.4.4. Graphic information submitted as two-dimensional vector graphics must be in accordance with "ISO 8632:1992 Computer Graphic Metafiles (CGM)" and "MIL-PRF-28003A, Amendment 1, 14 August 1992". The two-dimensional vector graphics must be validated according to the (SGML) Source Data Validation Plan.

1.4.5. Multimedia Information, if required, must be submitted as video or audio data and must be in accordance with "ISO DIS 11172 Motion Picture Experts Group (MPEG 1 and 2)". The video or audio data must be validated in accordance with the (SGML) Source Data Validation Plan.

1.5. Work Review Process

1.5.1. Publication Review Meetings must be held at the discretion of all parties concerned, as and when required to facilitate the Publication Authorship process. Meetings must be held at mutually agreed locations; however, the Contractor's facilities must be considered as the prime location. Representatives at the meeting may include DND (the TAs, the Quality Assurance Representative (QAR), DSCO 5-3 Publications Officer, the RA), the CA, and the Contractor.

1.5.2. Meetings must be held in conjunction with PRMs when required:

- (a) Discuss present and future workloads;
- (b) Establish priorities for work to be done;
- (c) Advise regarding translation requirements;
- (d) Review the quality of released work;
- (e) Review status of work in progress as well as planned work;
- (f) Advise changes in publication formats and media;
- (g) Review the funds committed and spent; and
- (h) Demonstrate the compliance of the source data in accordance with the (SGML) Source Data Validation Plan and the established publications production environment.

1.5.3. The Contractor must be responsible for the co-ordination of the Publications Review Meetings between themselves, the DND representatives, and the CA.

1.5.4. The Contractor must develop an agenda with collaboration from all parties concerned. The proposed agenda must be submitted 15 working days before the review meeting in accordance with CDRL A003.

1.5.5. The Contractor must prepare and submit minutes within 15 working days for DND concurrence. The minutes of the meetings will provide a record of discussions. Once approved by DND and the Contractor the minutes must be used for technical direction in accordance with CDRL A004.

1.5.6. The Contractor must distribute the approved minutes to all the participants.

1.5.7. The meeting must be co-chaired by the Contractor and the PM.

1.5.8. The proposed agenda will include a listing of all publications to be reviewed to include the following information:

- (a) Publication National Defence Index of Documentation (NDID) number;

- (b) Publication title;
- (c) Activities performed since the last review meeting; and
- (d) Translation status/progress.

1.5.9. Any decision made during these meetings that has an effect on the scope or cost of the publication, must not be implemented before being officially approved in writing by the CA nor before the contract is modified.

2. LANGUAGE OF PUBLICATIONS

2.1. Bilingual Publications

The Contractor must provide, and clearly label all technical publications required for description, operation, installation, maintenance and repair of the deliverable end items.

2.1.1. The Contractor must specify lead times required for delivery for each of the following:

- (a) Newly Written Manuals. All publications produced in both English and French, in one of the following formats, side-by-side, tumbled, separate issues, separate joined, facing pages, or over and under. The selected format must be in full conformance with the current issue of C-01-100-100/AG-006;
- (b) Existing Manuals. All publications provided as existing commercial or foreign government off-the-shelf manuals in both English and French, in one of the formats mentioned in Option 1, meeting the requirements of the current issue of C-01-100-100/AG-005, provided that where existing commercial publications are not available, Option 1 must apply;
- (c) Alternate Format. All publications provided in any cost-effective format in both English and French, provided they meet the requirements of the current issue of C-01-100-100/AG-005. This option requires the written approval of the TA prior to awarding of contract; and
- (d) Right to Translate and Reproduce.

2.1.2. All publications provided as existing unilingual commercial formatted publication must comply with the requirements of the current issue of C-01-100-100/AG-005.

2.2. Source Documents

DND source documents must be routed to the Contractor through the TA using form DND 570 - Contract Publication Change Transmittal Form. Contractor to request source documents from the PM.

2.3. Publication Format

2.3.1. The Contractor must prepare textual material, artwork, all reproducible and replicated/printed copy to the quality standards and format specified by DND in Attachment C.

2.3.2. The Contractor must bring forward for resolution at the Publications Review Meeting any requirements for format change.

2.3.3. Deviations from the specifications are permitted provided they can be shown to improve usability of the publication or the efficiency of the publishing process. Requests for deviations require written approval of the Director of Supply Chain Operations, DSCO 5-3 Publications Officer prior to implementation. Any deviations that will increase cost must be addressed through formal contract amendment process prior to proceeding.

2.3.4. Draft changes/revisions prepared by DND must be incorporated without change, other than editorial, unless specifically authorized in writing by the PM.

2.4. Validation

2.4.1. The Contractor must ensure that Validation is carried out in all cases where a change or a revision to a publication originates as a result of an installation change, equipment modification, change in maintenance procedures or otherwise as stipulated by the TA in writing prior to the commencement of work. This requirement will be accomplished by the Contractor upon completion of a manuscript copy.

2.4.2. Contractor validation of operating and maintenance procedures including checkout, calibration, alignment, scheduled removal and replacement instructions, and associated checklists must be satisfied by one of the following methods:

- (a) Testing by observation;
- (b) Testing by simulation;
- (c) Testing by actual performance; and/or
- (d) Desktop review of manuscripts against source material for technical accuracy.

2.4.3. Validation must ensure the technical accuracy, adequacy, as well as SGML validation of the new or changed data applicable to the changed or revised publication.

2.4.4. The Contractor must validate disassembly, cleaning, inspection, testing, repair, replacement, reassembly, troubleshooting, preventive maintenance checks and services, and similar maintenance procedures. All other data such as schematic diagrams, wiring data, and parts catalogues must be checked against source data to assure the accuracy of such information.

2.4.5. The Contractor is not responsible for the adequacy and accuracy of DND furnished information provided for inclusion in the manuscript. However, the Contractor must promptly notify the TA of any inaccurate or inadequate data, or of any data, that is inconsistent with the content of the affected publication.

2.4.6. Validation normally will be carried out at the Contractor's facility, but may be conducted at an operational site when requested by the Contractor, and approved by the PM.

2.5. Inspection and Audits

2.5.1. The Contractor must arrange with the TA for the inspection of the manuscript, including preliminary artwork, specifying by NDID number, the file size/page count if electronic, and/or the number of pages if hardcopy.

2.5.2. Audit may be carried out on processes and production of publications at any time. The Contractor must make available to the TA or his representative, specified publications for audit.

2.6. Certificates

2.6.1. The Contractor must prepare Certificates of (refer to C-01-100-100/AG-006):

- (a) Validation (DND 590) for submission to the PM;
- (b) Translation Accuracy Check (TAC);
- (c) Reproducible Copy (DND 642) and;
- (d) Compliance (DND 591).

2.6.2. The Contractor's Quality Assurance Department must document all records of Certification by the Contractor for Validation, TAC, Reproducible Copy, Printed Copy, and Electronic Media.

2.6.3. The Certificate of Validation must be raised and signed by the Contractor's Quality Assurance representative to certify that the publication, which has been prepared under contract, was tested for technical accuracy and adequacy including the validation of the source data in accordance with the DND CALS DTD 2.1, if applicable.

2.6.4. The Contractor must submit the original Certificate of Validation (DND590) for each manuscript to the TA for approval. On completion of the "DND Instructions to Contractor" block by the PM, the Contractor must proceed as directed.

2.6.5. The Certificates will list all items covered in that work package.

2.6.6. The TA will list any observations against each item submitted for Validation, on observation sheets.

2.6.7. Any errors or omissions of critical safety nature found by either the Contractor or the TA must be actioned immediately by the Contractor upon written confirmation by the TA as part of the current publication action.

2.6.8. All deliverables must be accompanied by a duly completed Certificate of Compliance.

2.7. Quality Assurance

All Contractor procedures and practices must be subject to Government Quality Assurance (GQA) and must be in accordance with contract requirements.

2.8. Government Review Period

The Contractor must provide to the CA, a production and delivery schedule for the publications which constitute deliverable end items that will ensure availability of the publications concurrently with the delivery of the goods to which the publications relate. The Contractor's schedule must account for the time required by DND to conduct reviews and provide acknowledgement or comments.

2.9. Quantity

2.9.1. Prior to replicating/printing, the Contractor must contact the Requisition Authority (RA), by message or letter, requesting the printed quantity required. The Contractor must replicate/print the quantity specified by the RA.

2.9.2. The message or letter sent by the Contractor must specify the contract number, the contract serial number, the contract item number (if applicable), and the NDID number.

2.10. Official Languages

2.10.1. The TA must establish the official language requirements following the guidelines of A-LM-505-010/JS-001:

Official Languages Requirements for Technical Documentation. All changes to bilingual publications must be translated and issued simultaneously.

2.10.2. The language quality of the translation must be consistent with and equivalent to the source text and must be suited to the typical user/technician's ability in the language (Refer to C-01-100-100/AG-006).

2.10.3. The Contractor must make use of all glossaries, lexicons and other sources of terminology. Should the Contractor not find a required technical term in the DND glossaries or lexicons, then the TERMIUM – "The Government of Canada Linguistic Data Bank" must be used as the primary reference and the "Ernst Comprehensive Dictionary of Engineering and Technology" must be used as the secondary reference. A listing of these is provided in Attachment C. Beyond that, the Contractor must provide the necessary terminology to proceed with the work, and make such terminology available to DND via the PM.

2.10.4. Under normal situations, the translation activity must only begin after DND approval of technical content. However, where artwork is involved, layout planning will commence at the initial artwork stage to prevent duplication of effort later in the production process.

2.11. Translation Accuracy Check (TAC)

2.11.1. The Contractor must subject all translated material to the TAC process prior to the production of reproducible copy.

2.11.2. TAC must be carried out at the Contractor's facility unless otherwise specified.

2.11.3. The Contractor must be responsible for TAC when signing the Certificate of TAC, certifying the accuracy of the translated text.

2.12. Warranty Procedures

2.12.1. The terms and conditions of warranty are as defined in DSS 9601 forming a part of the contract. The Department of National Defence exercises the warranty by a process called Verification.

2.12.2. Verification by the Canadian Forces consists of actual performance of selected operating and maintenance procedures, including checkout, calibration, alignment, scheduled removal, replacement instructions and associated check lists, to ensure that all content is correct, feasible and suitable to the specific requirements and ultimate environment.

2.12.3. This verification will also review any approved procedural changes, modifications or product improvement changes to the equipment which were originated or developed by the Contractor or which were provided by DND. The above is in accordance with C-01-100-100/AG-006. Any warranty provisions must be corrected within three months after receipt of written notice from the PM.

2.13. Printing and Delivery

Printing and delivery must be in accordance with C-01-100-100/AG-006. DND publications with the NDID prefixes "A", "B", "C", "D", "L" and "R", on which there is to be a recorded distribution must be delivered to:

DSCO 4
Publication Depot
2140 Thurston Dr.
Ottawa, Ont.
K1A-0K7

2.14. Soft Copy Publications

For each publication produced or amended the Contractor must provide the following soft copies:

- (a) Master Document Files: The Master Document Files are the electronic master of the completed publication. Master document files must be delivered in their native file format (e.g. Word Perfect, MS Word, Ventura, Framemaker, etc.). All blank pages, figures, illustrations and foldouts must be imbedded within the file(s). These files are considered the "Master Document" files for present and future revision, changes and/or re-use. The Master Document files may be broken down into a number of folders and sub-files in order to ensure the file sizes can be managed on the normal office word processor. Files should be broken at logical page locations to ensure future ease of use. This would normally occur at the end of a part/chapter or section;
- (b) Master Image Files: All illustrations (Figures) must be delivered as separate individual Tagged Image File Format (TIFF) images in accordance with Adobe Systems Inc.

specification "TIFF Revision 6", compressed to CCITT Group 4. Files must be UNTILED and be wholly raster (hybrid files must not be delivered);

- (c) **Master Read Only Files:** Using the completed Master Document file(s), the Contractor must generate and provide a Portable Document Format (PDF) file that must contain the complete publication (with changes incorporated as applicable). This file(s) is considered the "Master Read Only" file for printing/reproduction/ viewing purposes. All pages contained in the PDF file must be oriented such that they do not require rotation when viewing. This file must contain "thumbnails" of each of the pages. The Master Read Only File is not a replacement for the Master Document files or the Master Image files. The Contractor must ensure that a quality check is done on the Read Only (PDF) file to verify that the content reflects the same content/formatting as the Master Document file and the Reproducible copy. The requirements for hyperlinks within the Read Only File must be specified on the individual task or tasks. In the case of changes, a second PDF file that contains only the changed sheets is also required, and
- (d) **Read Only Copies:** Read only copies of individual publications or sets of publications may be required on CD-ROM. Read only copies must be duplicated using the Master Read Only files. Copy quantities, label requirements and requirements for CD indexes and hyperlinks within the CD-ROM must be specified on the individual task or tasks.

2.14.1. Media of Delivery: The Contractor must provide the electronic files on CD-ROM written in accordance with ISO 9660. Files must not be compressed or zipped other than as specified herein. The diskettes or CD-ROM must be clearly labelled with the NDID number, publication title, corresponding file number(s) and type, contract number and task or requisition number.

2.14.2. Where applicable, the Contractor must deliver electronic files/hard copy technical publications simultaneously.

2.15. Advance Shipping Notice

The Contractor must advise the Consignee and the Requisition Authority (RA), regarding the quantity and estimated delivery date of each publication and the identifying number (example: C-12-140-AA0/MF-000 - EDD 31 July 1997). Contract number, contract serial number, and contract item numbers are to be stated on this notice.

2.16. Storage and Shipping of Reproducible Copy, Artwork and Related Material

2.16.1. All material that is the property of DND, including any items supplied by the Department, must be held and properly stored in accordance with C-01-100-100/AG-006.

2.16.2. Upon completion of the Contract, or as requested by the PM, and after confirmation in writing by the PM, all components must be returned to DND, as directed by the PM.

2.16.3. The components must be suitably packaged and protected in accordance with D-LM-008-022/SG-000 by the Contractor so as to ensure their safe transit without physical damage. Reproducible copy and master copy must each be separately packaged and clearly marked as such together with contract number, contract serial number, and contract item number (if applicable).

2.16.4. The Contractor must protect electronic media during shipping, from damage due to environmental conditions including field force discharge, by using protective packaging in accordance with D-LM-008-001/SF-001,

2.17. Methods of Packaging

The Contractor must clearly mark on all electronic media, and on all packaging, the internal content/structure of the electronic media, in accordance with D-LM-008-002/SF-001, Specification for Marking for Storage and Shipment.

2.18. Definitions.

2.18.1. Definitions in A-AD-100-100/AG-000 must apply. It is emphasised that in context of PAS:

- (a) Draft Copy. The draft copy is the "working copy" used in the preparation of the manuscript. The draft may be reviewed by DND during in process reviews, however must not constitute the validation or approval copy.
- (b) Manuscript Copy. The manuscript copy is the copy which has undergone technical editing prior to validation. The validated manuscript when presented for DND approval must be in a form ready for Technical Review.
- (c) Master Copy. The master copy of a publication is a copy which is certified to contain all published changes and revisions. This copy must be in electronic form, or in an alternative form if such a form is proved to better serve publication management.
- (d) Working Copy. The working copy of a publication is a published copy of a DND publication or supplement marked up by the Contractor in conjunction with the OPI for future change action. This copy must contain all approved changes and revisions current as of any point in time, be they published and/or unpublished. Unpublished changes/revisions must be replaced by the published version when such becomes available. The working copy must be in electronic form with comments and annotations embedded reflecting all records and change/revision activity.

ATTACHMENT A

LIST OF PUBLICATIONS.

DOCUMENT EFFECTIVITY. The effective issue of the listed publications required by the Contractor must be the issue, plus amendments, in effect as of the date of the contract.

NOTE. This list may include commercial or foreign military manuals if they have been adopted for use by DND (i.e., given an NDID number). Prior to any conversion action of commercial manuals into a CFTO, copyright/translation/proprietary releases must have been obtained from the source by the PM.

ITEM/	NDID	TITLE	CONTACT OFFICER/
001			

ATTACHMENT B

PUBLICATION CHANGE RECOMMENDATION

Publication Title:				Publication Number or Code		
Basic Date	Change Nu/date	Part	Chapter	Section	Page	Paragraph
Step:	Figure and Index Nu. or Drawing Nu.					
Originator Name		Designation		Phone		Date
Observation:						
Recommended Change:						
Action Taken: (ORIGINATOR: DO NOT WRITE BELOW THIS LINE)						
NDHQ Comments: (For file, pending receipt of draft change)						

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 22

CONTRACTOR SPECIALIZED

TEST AND SUPPORT EQUIPMENT

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

APPENDIX 22 – Contractor Specialized Test and Support Equipment

The Contractor shall list all Contractor Specialized Test and Support Equipment.

The Contractor shall provide technical manuals and operating instructions for all Contractor Specialized Test and Support Equipment identified.

DRAFT

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 23

12 ER INFRASTRUCTURE DRAWINGS

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 23 – 12 ER Infrastructure Drawings

Existing 12 ER infrastructure drawings are available on CD and will be provided as GFI by the DND TA upon request.

DRAFT

APPENDIX 24

42 RADAR SQUADRON INFRASTRUCTURE DRAWINGS

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 24 – Infrastructure Drawings for 42 Rdr

Existing 42 Rdr infrastructure drawings are available on CD and will be provided as GFI by the DND TA upon request.

DRAFT

Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 25

DESIGN SERVICE REQUIREMENTS

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

1. PROJECT DEFINITION	4
1.1. Introduction.....	4
1.2. Infrastructure Project Description	4
1.3. Background	5
1.4. Constraints and Challenges	5
1.5. Language Requirements	5
1.6. Duplication of Deliverables and Services.....	5
2. SUMMARY OF DESIGN SERVICES	6
2.1. Required Expertise	6
2.2. Provided Services	6
3. SCHEDULE	7
3.1. Project Milestones	7
4. PROJECT QUALITY AND SUCCESS	7
4.1. Quality Assurance and Acceptance	7
4.2. Success Factors	8
5. PROJECT ADMINISTRATION	8
5.1. Project Team	8
5.2. Contractor's Roles and Responsibilities.....	8
6. DOCUMENTATION STANDARDS	9
6.1. DND Documentation:	9
7. REPORTING REQUIREMENTS	9
7.1. Meetings	9
8. REFERENCES	10
8.1. List of References	10
9. COMMISSIONING	10
9.1. Commissioning Authority	10
9.2. Commissioning Plan.....	10
9.3. Contractor Services.....	10
10. PROJECT DESIGN REQUIREMENTS	11
10.1. Sustainable Design Strategy (SDS)	11
10.2. Universal Design (UD).....	12
10.3. Force Protection and Security.....	12
10.4. Furniture and Equipment.....	12
11. TASKS AND DELIVERABLES	12
11.1. Pre Design: Analysis of Requirements.....	12
11.2. Tasks	12
11.3. Meetings.....	12
11.4. Deliverable(s)	13
12. CONCEPT DESIGN	13
12.1. Objective	13
12.2. Tasks	13
12.3. Meetings.....	13
12.4. Deliverables.....	13
13. DESIGN DEVELOPMENT	14
13.1. Objectives.....	14
13.2. Tasks	14
13.3. Deliverables.....	14
13.4. Meetings.....	14
14. CONSTRUCTION DOCUMENTS	14
14.1. Objectives.....	14
14.2. Tasks	14
14.3. Deliverables.....	14

14.4. Meetings.....	15
15. TENDER PHASE SERVICES	15
15.1. Objectives.....	15
15.2. Tasks.....	15
15.3. Deliverables.....	15
15.4. Meetings.....	15
16. CONSTRUCTION PHASE SERVICES	15
16.1. Objectives.....	15
16.2. Tasks.....	16
16.3. Deliverables.....	17
16.4. Meetings.....	17
17. POST CONSTRUCTION PHASE SERVICES	17
17.1. Objectives.....	17
17.2. Tasks.....	17
17.3. Deliverables.....	18
17.4. Meetings.....	18
18. SUMMARY OF SUBMISSIONS AND MEETINGS	18
18.1. Summary of Submissions	18
Table 18-1: Summary of Submissions	18
18.2. Summary of Meetings and Briefings	19
Table 18-2: Summary of Meetings / Briefings	19

1. PROJECT DEFINITION

1.1. Introduction

1.1.1. This Design Service Requirements Appendix describes the services and deliverables required from the Contractor to undertake the design of the required infrastructure to support the TCR Modernization Project. These requirements include:

- (a) the definition, pre-design and design phases;
- (b) the production of construction drawings and specifications;
- (c) the provision of services during the tender phase;
- (d) the provision of services during the construction phase; and
- (e) the provision of services during the post construction phase.

1.1.2. The objective of this document is to provide proponents with sufficient information to assess the scope of work, services and deliverables required, so that they are able to formulate the technical and cost elements of their proposals, in response to the Request for Proposal (RFP).

1.1.3. Many of the infrastructure requirements for this project have been identified and are indicated in the Statement of Operational Requirements (Infrastructure) (SOR(I)), included as Attachment B. .

1.1.4. Acronyms used in this document and related attachments are detailed in Appendix 4 of Annex A.

1.2. Infrastructure Project Description

1.2.1. This project must provide the infrastructure required to house, operate, maintain and deploy the proposed TCR system. The Radar Head facilities, including the towers, will be primarily Group F Division 3 occupancy.

1.2.2. The TCR will be deployed as needed. This project must provide the equipment necessary to off-load the TCR from the transport vehicle, manoeuvre the TCR within the building, raise the antenna into the radome where it will be secured, operated and maintained by Canada, and then to on-load the TCR system to the transport vehicle(s).

1.2.3. An access to the radome via a staircase must be provided for technicians. A separate lift must be provided to move equipment and tools between the ground level and the radome floor.

1.2.4. The final configuration of the radar facility must satisfy the requirements of the SOR(I) and the SOW for the TCR Modernization Project.

1.2.5. The radar facility, including the space under the radome, must be provided with heating and air-conditioning systems sufficient to maintain comfort levels identified in the SOR(I).

1.2.6. A new fire protection system must be provided (refer to the SOR(I)).

1.2.7. Identify all equipment that is not reusable (such as the scissor lift, electrical equipment etc.) and that must be disconnected and removed.

1.2.8. Space for manoeuvring the vehicles identified in Appendix 5 at the radar site must be provided. The TCR will be loaded and unloaded from the transport vehicle outside the radar building. The site must be modified as needed to provide the manoeuvring space required.

1.2.9. Security measures must be provided, as required by DND Security Policies and Directives (see SOR(I)).

1.3. Background

1.3.1. The existing buildings and building systems, where indicated in the SOR(I) are serviceable. However, the new TCR may be larger, heavier and may require a larger radome than the existing. These differences may require significant modifications to the radar building as indicated in SOR(I).

1.3.2. The existing heating system serving the radar area and the radome may not be able to maintain working temperature and humidity as specified in the SOR(I).

1.3.3. The buildings do not have a fire protection system. A new fire protection system is required. The fire alarm system must be replaced with a new addressable type that is compatible with the existing Wing system.

1.3.4. The new fire protection and detection systems must extend to the entire building.

1.4. Constraints and Challenges

1.4.1. The sites and buildings are only accessible between 06:00 - 18:00, five (5) days/week, Monday to Friday, excluding statutory holidays.

1.4.2. The supply and installation of a step-down transformer (if needed) and disconnection / removal of a frequency converter (if necessary) to provide electric power connection to the TCR System.

1.4.3. The operation of the TCR system without the use of any equipment intended for deployed operations, such as an auxiliary power unit (generator), when at the Squadron building.

1.5. Language Requirements

1.5.1. 4 Wing, Cold Lake – English. This Wing operates in the English language, therefore all deliverables and communications must be in the English language.

1.5.2. 3 Wing, Bagotville – French. This Wing operates in the French language, therefore all deliverables and communications must be in the French language.

1.5.3. The Contractor must provide personnel that have the necessary language skills for each site.

1.6. Duplication of Deliverables and Services

1.6.1. Unless approved by Canada, all services, deliverables, meetings must be provided separately for each project site.

1.6.2. The Contractor may suggest combining certain services, deliverables, and/or meetings if it is practical to do so and Canada will make the final determination.

2. SUMMARY OF DESIGN SERVICES

2.1. Required Expertise

2.1.1. Canada intends to retain a Contractor with a multi-disciplinary team, for the provision of all the services required for this design project.

2.1.2. As Contractor, the selected design firm will provide a full consulting team including expertise in:

- (a) Architecture;
- (b) Civil Engineering;
- (c) Structural Engineering;
- (d) Building Envelope;
- (e) Mechanical Engineering;
- (f) Electrical Engineering;
- (g) GreenGlobe®;
- (h) Sustainable Design;
- (i) Fire Codes;
- (j) Building Codes;
- (k) Cost estimation;
- (l) Quality Control; and
- (m) Lighting.

2.1.3. The Contractor must also provide the expertise required to support the project during the tender and construction phases as defined in section 2.2.

2.1.4. Canada will tender, award and manage the construction contract using the drawings and specifications produced by the Contractor.

2.2. Provided Services

2.2.1. The Contractor must include the provision of the services specified in this document including:

- (a) Pre-Design: Analysis of Project Requirements;
- (b) Concept Design;
- (c) Design Development;
- (d) Construction Documents;

- (e) Tender Phase services;
- (f) Construction Phase Services, and
- (g) Post Construction Phase Services.

2.2.2. The following are included in the Contractor's work:

- (a) Hazardous materials survey;
- (b) Topographical survey;
- (c) Supplemental Geotechnical investigations; and
- (d) Specification and selection of new shelving, storage units and furniture.

2.2.3. The following are excluded from the Contractor's work:

- (a) Environmental Assessments and Monitoring;
- (b) Threat-Risk Assessment;
- (c) IT designs of active equipment such as switches/routers/servers and software; and
- (d) Construction.

2.2.4. No subsequent phase must commence prior to acceptance of the previous phase by Canada.

3. SCHEDULE

3.1. Project Milestones

3.1.1. The Design Services Requirements document includes milestones, which are incorporated into the TCR Project Milestone Description and Achievement Criteria attached as Annex B to the Contract for the TCR Modernization Project.

4. PROJECT QUALITY AND SUCCESS

4.1. Quality Assurance and Acceptance

4.1.1. The acceptable level of quality in the design is a professional judgment on the part of Canada. Their judgement will take into account the demands of the program, the stated design philosophy, the site context, value for money and professional opinions. Unless otherwise stated all guidelines provided in the Canada Documentation and Submission Standards (Attachment E), Canada Technical Requirements (Attachment F) and reference documents (Appendix 3 to Annex A) must be adhered to.

4.1.2. The Contractor must obtain Canada's acceptance prior to proceeding with the next project phase. Regardless of the reviews performed by Canada, the Contractor must ensure accuracy, coordination, completion and technical. If progressive design development or time / cost / risk updates or technical investigation reveals errors and omissions, the Contractor must re-design the work and re-submit within the terms and conditions of the contract and the work of this phase must be accepted by Canada before proceeding to the next phase.

4.2. Success Factors

- 4.2.1. Ensuring the facility's design meets the Squadron's operational requirements, as indicated in the SOR(I) within the established budget and schedule objectives from Section 3.
- 4.2.2. Achieving compliance with relevant federal, provincial, municipal codes, standards and regulations.
- 4.2.3. Providing a sound, simple and practical design solution to the requirements of this document that reflects the minimum military requirement.
- 4.2.4. Developing cost and operationally efficient low maintenance facilities that meet all stated Canada standards and requirements, and ensures durability and ease of maintenance of materials, equipment and systems.
- 4.2.5. Selecting alternative solutions, materials and systems on the basis of practicality and minimum Life Cycle Costs (LCC). Design solutions must reflect the principles and best practices inherent in green procurement. Materials must be of good quality and durability.
- 4.2.6. Creating a suitable balance between functional and sustainable development requirements.
- 4.2.7. Providing a functional, responsive, efficient barrier-free and universally accessible spaces, as indicated in the Universal Design/Barrier Free Access Compliance / Minor Variance Form for Lac Castor (Attachment H).
- 4.2.8. Integrating environmental considerations into all aspects of the decision-making process. Optimized energy efficiency, minimizing resource consumption and potential pollution effects while enhancing indoor environmental quality. As per the sustainable design strategy, achieve the maximum possible compliance with 3 GreenGlobe®.
- 4.2.9. If a new building is required, the building design must provide a nominal 40 year anticipated useful life with mechanical and electrical recap at 20 years.

5. PROJECT ADMINISTRATION

5.1. Project Team

5.1.1. Canada Roles and Responsibilities

5.1.1.1. Canada is the technical authority and as such will provide technical direction to the Contractor.

5.1.1.2. Canada will provide the Contractor with access to any available pertinent Canada information, such as drawings, reports, notes and correspondence, which may aid in the Contractor's work. The accuracy of these documents is not guaranteed by Canada and is to be verified by the Contractor who must inform Canada of discrepancies or erroneous information. Such documents must be returned to Canada upon written request by the Contracting Authority.

5.1.2. Canada will inspect and accept the Contractor's work to ensure that governmental and departmental policy, and the overall objectives and requirements, have been met.

5.2. Contractor's Roles and Responsibilities

5.2.1. The Contractor must notify Canada immediately if it becomes apparent that there will be a delay in the completion of any phase of the work.

5.2.2. The Contractor must execute all work identified in this document as being the Contractor's responsibility. Canada's inspection and acceptance of the Contractor's work does not relieve the Contractor of responsibility for the completeness and accuracy of the work.

5.2.3. The Contractor is responsible to ensure the design complies with all applicable Acts, regulations, codes, standards, Canadian regulations and standards, and municipal by-laws.

5.2.4. The Contractor must engage qualified architects, engineers and specialists, for the development and completion of all phases of this project that are registered or certified by the jurisdiction in the province or territory where the work is to be performed. The Contractor must manage and coordinate the work and activities of their Design Team.

5.2.5. The Contractor must obtain and verify all site information. The Contractor must obtain additional local information as required to carry out a comprehensive design based on the actual site conditions.

5.2.6. The Contractor must select appropriate materials and equipment, and integrating these into coherent systems that provide best value for the money, from a Life Cycle Cost (LCC) perspective and Value-for-Money perspective. The Contractor is responsible for implementing Life Cycle and Value Analysis measures.

5.2.7. The Contractor must manage the Quality Assurance / Quality Control (QA/QC) during the design phase.

5.2.8. The Contractor must establish and implement an adequate QA/QC management plan.

6. DOCUMENTATION STANDARDS

6.1. DND Documentation:

6.1.1. Submission Standards and Technical Requirements are included in Appendix 25, attachments E and F.

7. REPORTING REQUIREMENTS

7.1. Meetings

7.1.1. Meetings must be held in accordance with Appendix 18 "Activities and Deliverables". Meetings requiring site access must be held at the appropriate radar site; Primrose Lake, AB or Lac Castor, QC. Canada will be responsible for providing an appropriate venue and coordinating the dates of the meetings in consultation with the Contractor and all other stakeholders.

7.1.2. Meetings that do not require site access will be held at the appropriate Wing, Cold Lake AB or Bagotville, QC. Canada will be responsible for providing an appropriate venue when the meeting(s) are held at the Wings. Canada will coordinate the dates of the meetings in consultation with the Designer and all other stakeholders.

7.1.3. All meetings required during the construction phase will be held at the respective construction site; Primrose Lake or Lac Castor.

8. REFERENCES

8.1. List of References

8.1.1. A list of both General and DND References are identified in Appendix 3 of Annex A and will be provided electronically to the Contractor.

9. COMMISSIONING

9.1. Commissioning Authority

9.1.1. For this project, Canada will provide the services of the Commissioning Authority, who is responsible to prepare the commissioning plan, form a commissioning team, prepare a commissioning plan and oversee, organize, control and witness all commissioning activities during the development, design, implementation, and post construction stages of the project. The specifications for the construction & post construction commissioning must be provided by the Commissioning Authority and included in the construction documents by the Contractor.

9.1.2. The minimum commissioning (Cx) prerequisite includes; verifying and ensuring that building elements and systems are designed, installed, tested and calibrated to operate as intended. The Commissioning Authority must report all findings directly to Canada.

9.2. Commissioning Plan

9.2.1. The Commissioning Authority will plan, coordinate, and carry out the Commissioning process in accordance with the commissioning plan. The Commissioning Authority will also ensure that systems perform in accordance with the requirements, co-ordinate the Contractor's involvement, assemble the commissioning team at the first commissioning meeting and chair commissioning meetings.

9.2.2. The Commissioning Plan will be based upon the standard format Commissioning Plan and sample commissioning worksheets. Information required for the Commissioning Plan will be coordinated with that used in the preparation of the O&M Manual to avoid unnecessary duplication in the preparation of drawings.

9.2.3. For each system requiring commissioning, the Commissioning Plan will make provision for the descriptions of the testing required to demonstrate that the system satisfies the intent of the design. This plan will be included with the Construction and Bidding Documents when tendering occurs.

9.3. Contractor Services

9.3.1. The Contractor must sign-off the work to confirm that the completed work conforms to the design. To do this adequately the Contractor must conduct static testing system start up and dynamic testing.

9.3.2. The Contractor must witness commissioning of all systems. Control, scheduling and coordination of the actual commissioning process will be carried out by Commissioning Authority and the Contractor. The Contractor must notify the Commissioning Authority and Canada of all planned commissioning. First notice will be based on an overall commissioning schedule prepared by the Contractor and approved by Canada.

9.3.3. The Contractor must also be available during the construction phase to support Canada by answering questions regarding the Contractor's detailed commissioning procedures for all equipment.

9.3.4. Throughout the commissioning process, the Contractor's representatives on-site must work closely with the Commissioning Authority, and Canada to implement Commissioning activities and create useful, well integrated drawings, reports and manuals, in compliance with this document and the construction documents.

9.3.5. The Contractor must attend a series of four commissioning meetings that will also require the attendance of the Commissioning Authority and Canada. At a minimum, Mechanical and Electrical Contractors representatives must be present at these meetings.

10. PROJECT DESIGN REQUIREMENTS

10.1. Sustainable Design Strategy (SDS)

10.1.1. The intent is to deliver a facility that meets the achievable targets to three GreenGlobes®. To achieve this, the Contractor must adopt a fully integrated design approach whereby the commissioning agent and energy engineer work with the Contractor through all phases of the design.

10.1.2. The Contractor must ensure that a qualified professional is on the team who must act as a facilitator during the design between all of the various design disciplines. This facilitator must:

- (a) Outline the integrated design process for the design team;
- (b) Assist the design team in the development of SDS targets to meet Canada's requirements;
- (c) Assist in the development and identification of appropriate green building initiatives to meet the established goals;
- (d) Monitor the design process and review the design as required at various stages to meet the established SDS objectives;
- (e) Participate in design review meetings; and
- (f) Prepare a report and background information required to confirm that the building meets the SDS objectives.

10.1.3. Regardless of the SDS approach, the benchmarks identified in this paragraph must be met. Baselines for all reductions mentioned below are to be set by the Contractor:

- (a) Reduce the design energy consumption:
- (b) Identify, by options analysis, the most energy efficient system that meets the performance requirements of the radar facility;
- (c) Greenhouse gas emissions reduction of 20% kilo tonne CO2 equiv. relative to existing;
- (d) Indoor environmental quality (thermal, air, lighting);
- (e) Site Conservation (Protection and preservation of valued natural site features);
- (f) Environmentally friendly maintenance procedures and products; and
- (g) Construction waste management 80% diversion from landfill.

10.2. Universal Design (UD)

10.2.1. Existing areas of the radar buildings that will NOT be modified are excluded from compliance with the Universal Design concepts. Modified or new areas or spaces must comply with the Universal Design concepts.

10.2.2. The Contractor must design the facility in accordance with Universal Design concepts incorporating DND Barrier Free Access (BFA) requirements as per CAN-CSA B651-04 as well as the supplemental DND/UD Requirements Universal Design and Barrier Free Access Guidelines and Standards for DND/CF Facilities, First Edition, 1 January 2006. Universal Design/BFA must be applied to all portions of the building as indicated in the "UD/BFA Compliance / Minor Variance Form" (Appendix H).

10.3. Force Protection and Security

10.3.1. Canada will establish a review and approval process and manage the force protection and security requirements at the facility.

10.3.2. The radar building is in a controlled access facility and the existing provisions for this building must be maintained and observed.

10.3.3. DND policies and directives relating to Security must be addressed during the Design and Implementation phases while meeting building codes, policies, technical requirements. If new, modified, or proposed policies impact the work, the Contractor must provide options and recommendations.

10.4. Furniture and Equipment

10.4.1. The Contractor must, with the advice and guidance of Canada, itemize existing furniture and equipment that must be retained by the users and include these items in all applicable drawings and specifications. The move and installation of such items is to be included in the scope of the construction phase.

10.4.2. For all additional new furniture, shelving and storage units required to support the users in the new facility, the Contractor must include these items in all applicable drawings and specifications.

11. TASKS AND DELIVERABLES

11.1. Pre Design: Analysis of Requirements

11.1.1. Objective

11.1.2. The Pre-Design Report is intended to be the formal work plan and must include a comprehensive review, analysis, and summary of the requirements documenting the Contractor's understanding of all of the available documentation and information about the project.

11.2. Tasks

11.2.1. The Contractor must provide Canada with the comprehensive infrastructure requirements for the TCR for operation in the radar building.

11.2.2. Work may commence immediately after the Kick-off meeting.

11.3. Meetings

11.3.1. One presentation meeting for the review and discussion of the Pre-Design Report.

11.4. Deliverable(s)

11.4.1. The Contractor must deliver the Pre-Design Report as indicated in section 3 of the DND Documentation and Submission Standards, Attachment E.

11.4.2. The Contractor must provide an indicative, Class D construction cost estimate.

11.4.3. The Pre-Design Report must be submitted in accordance with CDRL E004 and accepted but must not delay subsequent project tasks and deliverables. In the case where Canada finds the Pre-Design Report is not acceptable, the Contractor will be notified to stop work on the subsequent tasks until the Pre-Design Report is accepted by Canada and authorization to continue has been granted.

12. CONCEPT DESIGN

12.1. Objective

12.1.1. The objective of the Concept Design is to develop and analyze a minimum of three (3) substantially different multi-disciplinary, integrated options for the accommodation of the project functional and technical requirements.

12.1.2. The analysis of these options and the recommendation must be based on Attachment L, Option Analysis.

12.1.3. In order to streamline this deliverable, the Contractor may submit between one and three architectural options and develop multidisciplinary options for the selected architectural option.

12.1.4. If only one architectural option is to be further developed the recommended option must be accepted by Canada.

12.2. Tasks

12.2.1. Work must commence immediately after the Pre-Design report is submitted.

12.3. Meetings

12.3.1. The Contractor must conduct two (2) separate one (1) day presentations/meetings with the full stakeholder group, as determined by Canada. These meetings must include visual presentations of the concept design options and a roundtable discussion of the options.

12.3.2. At the first meeting, the Contractor must lead a workshop-style discussion with the Users and Stakeholders to receive input, suggestions and direction based upon the proposed concept options. Canada will provide direction to the Contractor regarding the preferred option and any changes required to the concept.

12.3.3. At the second meeting, the Contractor must lead a presentation of the complete Concept Design.

12.4. Deliverables

12.4.1. The Concept Design Report must be submitted in accordance with CDRL E005 and as indicated in section 4 of the DND Documentation and Submission Standards, Attachment E.

12.4.2. The Concept Design Report must update the indicative, class D construction cost estimate.

13. DESIGN DEVELOPMENT

13.1. Objectives

13.1.1. The Design Development must demonstrate the final resolution of all major components and the selection of all building systems with respect to type, size and other material characteristics. All design decisions with respect to system and material selections, layouts, GreenGlobe® rating must be completed by the end of this stage.

13.2. Tasks

13.2.1. Work must commence immediately after the Concept Design Report is accepted by Canada.

13.3. Deliverables

13.3.1. The Design Development Report must be submitted in accordance with CDRL E006 and as indicated section 5 of the DND Documentation and Submission Standards, Attachment E.

13.3.2. The Design Development Report must include updated indicative, Class D construction cost estimates.

13.4. Meetings

13.4.1. Ad-Hock meetings may be called as required by Canada or the Contractor.

13.4.2. The Contractor must attend one presentation meeting for Design Development Report.

14. CONSTRUCTION DOCUMENTS

14.1. Objectives

14.1.1. The intent of the construction document stage is to translate the design development documents into construction drawings and specifications to guide and direct the Contractor and sub-contractors in carrying out their work on the project. It involves preparing drawings and specifications setting forth in detail the requirements for the construction and final cost estimate for each tender package for the project.

14.1.2. Interim submission must satisfy the reviewer that the systems agreed to in the design development are implemented.

14.1.3. Final submission (100%) must incorporate all revisions required in the previous submission, and must provide Canada with complete construction documents to be used in the subsequent tender call.

14.2. Tasks

14.2.1. The Contractor must incorporate as required, all comments from Canada's reviews into subsequent submissions.

14.2.2. Work must commence immediately after the Design Development Report is accepted by Canada.

14.3. Deliverables

14.3.1. The Contractor must submit 66% complete construction documents with indicative Class C construction estimate as per CDRL E007 prior to the 1st Site Design Review.

14.3.2. The Contractor must submit updated Construction Document Report, 99% complete construction documents and substantive class B construction cost estimate as per CDRL E007 prior to the 2nd Site Design Reviews.

14.3.3. The Contractor must submit the updated Construction Document Report, 100% complete construction documents and substantive class A (tender) construction cost estimate as per CDRL E007 after the 2nd Site Design Reviews.

14.3.4. Once the final submission of the updated Construction Document Report and substantive class A (tender) construction cost estimates have been approved by Canada, the Contractor must submit 100% complete construction documents stamped and signed, by appropriate professional and issued for tender and subsequent construction after the 2nd Site Design Reviews as per CDRL E007.

14.4. Meetings

14.4.1. The Contractor must attend two Site Design Reviews at each site for the review, discussion and acceptance of the Construction Document Report and associated construction cost estimate.

14.4.2. Ad-Hoc meetings may be called as required by Canada or the Contractor.

15. TENDER PHASE SERVICES

15.1. Objectives

15.1.1. To ensure that the intent and details of the tender construction documents is clear to bidding contractors.

15.2. Tasks

15.2.1. The Contractor must analyze any inquiries relating to the construction documents and provide an appropriate written response to elaborate, clarify or correct the intent of the Construction Documents as requested by the Contracting Authority.

15.2.2. The Contractor must analyze proposed products to determine conformance to the construction documents in the form of an Addendum to the tender construction documents.

15.3. Deliverables

15.3.1. Addenda, as required during the Tender phase.

15.4. Meetings

15.4.1. Ad-Hoc meetings may be called as required by Canada or the Contractor.

16. CONSTRUCTION PHASE SERVICES

16.1. Objectives

16.1.1. During the construction phase, Canada is responsible for the management of the construction contract. The purpose of this phase is to ensure the project has been completed in compliance with the Contract Documents and warranty, seasonal, commissioning and training issues have been addressed. During the construction phase, the Bidder that is awarded the construction contract will be identified as `the Builder`.

16.1.2. The Contractor must provide general review services to ensure the Builder`s compliance with the requirements and conditions as described in the construction documentation, as well as adherence to the design intent.

16.2. Tasks

16.2.1. The Contractor may be required to provide answers to Canada for requests for information (RFI) and on the interpretation of the contract documents.

16.2.2. In cooperation with the Builder, the Contractor may be required to perform regular walk-through inspections throughout the construction phase of the project, as required, to determine if the work is being performed in conformity with the plans and specifications. The intervals must be appropriate to the complexity and schedule of the construction. The Contractor may be required to perform additional visits to address unforeseen site conditions, significant quality and deficiency issues with fees negotiated with Canada.

16.2.3. The Contractor may be required to attend the bi-weekly, regularly scheduled construction meetings during the construction period.

16.2.4. The Contractor may be required to produce a written report on progress, results of inspections, deficiencies, remedial actions required and time lines to implement any remedial action. One copy of the Inspection Report must be submitted to Canada for distribution.

16.2.5. The Contractor must promptly answer questions with respect to design intent of the construction documents and issue written direction to Canada for distribution. This must include supplementary clarification, design details and direction with the site instruction, as necessary, for distribution by Canada.

16.2.6. The Contractor must review and recommend for approval, the shop drawing list for the project and review all shop drawings, samples, product data and project mock ups.

16.2.7. The Contractor must review "As Built" drawings during each site visit, the O&M manuals and record documents.

16.2.8. The Contractor must review and make recommendations as to the Builder`s requests of use of alternative product(s) and the impact on project cost and project quality. Canada will advise what systems cannot have alternative products or performance characteristics.

16.2.9. The Contractor must prepare and supply to Canada, revised sealed drawings and specifications for revisions and changes that are the result of errors or omissions on the Contractor`s part. Cost estimates for these works must also be provided. Canada will issue these documents as Contemplated Change Notices (CCN) to the construction documents.

16.2.10. The Contractor must prepare and supply revised sealed drawings, specifications and cost estimates for design changes caused by site conditions not foreseeable and design changes requested by Canada. Canada will issue the Change Orders (CO).

16.2.11. The Contractor may be required to provide opinion on whether the Change Order in question was intended to be covered by the contingency allowance or is an extra to the contract.

16.2.12. The Contractor must provide a letter stating that the project is substantially completed i.e. the project work appears to be in general accordance with the requirements and intent of the design documents based on a rationale sampling on site as part of general review during construction.

16.2.13. The Contractor may be required to provide a letter upon project completion. This must cover the construction phase work and must confirm all deficiencies have been addressed to the satisfaction of the Contractor.

16.2.14. The Contractor must prepare record drawings based on the contractor's As-Built red line drawings.

16.3. Deliverables

16.3.1. The Contractor may be required to provide any of the following deliverables as requested by Canada:

- (a) Inspection reports
- (b) CCNs required for revisions and changes that are the result of errors or omissions on the Contractor's part
- (c) Cost estimates required for revisions and changes estimates
- (d) Replies to RFIs
- (e) Reviewed shop drawings
- (f) Compliance letters
- (g) Record drawings.

16.4. Meetings

16.4.1. The Contractor may be required to attend bi-weekly construction meetings at the construction site.

17. POST CONSTRUCTION PHASE SERVICES

17.1. Objectives

17.1.1. The purpose of this phase is to ensure the work has been completed in compliance with the Contract Documents and warranty, seasonal, commissioning and training issues have been addressed.

17.2. Tasks

17.2.1. The Contractor may be required to update As-Built Drawings to reflect changes after seasonal commissioning and warranty work has been completed;

17.2.2. The Contractor must complete post occupancy evaluation

17.2.3. The Contractor must review the seasonal commissioning and site work and any required adjustments;

17.2.4. Submit final quantities and/or versions of spare parts, training materials, hardware and software;

17.2.5. The Contractor must review all Warranty Certificates for the facility components, equipment and systems, complete with a log of such warranties, including in-service and warranty expiry dates;

17.2.6. The Contractor must review and recommend the Final Operation and Maintenance Manuals for the entire facility and associated equipment; and

17.2.7. The Contractor must attend warranty inspections up to the end of the warranty period.

17.3. Deliverables

17.3.1. The Contractor must provide at minimum:

- (a) the Final Post Construction Phase Report, including;
- (b) the Seasonal Commissioning Report;
- (c) the Post Occupancy Evaluation Report;
- (d) Record of corrections of items on the Warranty Deficiency List;
- (e) Log of final warranty certificates for all components and systems including in service and warranty expiry dates for each component;
- (f) Final As-Built Drawings;
- (g) Updates to the O&M Manual and Occupant Manuals reflecting all changes; and
- (h) Updates to other sections of the Construction Report as required. Where no updates are required the sections must be listed and N/A must be indicated.

17.4. Meetings

17.4.1. The Contractor may call or attend ad-Hoc meetings as required by Canada or the Contractor.

18. SUMMARY OF SUBMISSIONS AND MEETINGS

18.1. Summary of Submissions

18.1.1. The Design Services Requirements associated with deliverables and meetings are incorporated into the TCR Project Milestone Description and Achievement Criteria attached as Annex C to the Contract for the TCR Modernization Project.

Table 18-1: Summary of Submissions

Ref.	DESCRIPTION	FREQ	ELECT. COPY	HARD COPIES	PURPOSE
PRE-DESIGN					
12.4.1	Pre-Design Report	ONE/R	Pdf	2	Review / Acceptance

Ref.	DESCRIPTION	FREQ	ELECT. COPY	HARD COPIES	PURPOSE
CONCEPT DESIGN					
13.4.1	Concept design report	ONE/R	pdf Power-Point	2	Review / Discuss / Decision
DESIGN DEVELOPMENT					
14.3.1	Design development report	ONE/R	pdf MS Word AutoCAD/BIM	10	Review / Discuss / Decision
CONSTRUCTION DOCUMENTS					
15.3.1, 15.3.2, 15.3.3, and 15.3.4	Construction document report,	R/ASR (66%, 99%, 100%)	pdf MS Word AutoCAD/ BIM	Drwgs: 5 full sized and 5 half sized. Reports: 3	Review / Discuss/ Acceptance
Tender phase services					
16.3.1	Addenda	ASREQ	pdf AutoCAD/ BIM	1	Acceptance
CONSTRUCTION PHASE SERVICES					
17.3.1	Inspection reports, CCN, cost estimates, RFI replies, shop drawing reviews, Compliance letters, record drawings	ASREQ	pdf AutoCAD/ BIM	1	Acceptance
POST CONSTRUCTION PHASE					
18.3.1	Post Construction Phase Report	ONE/R	Pdf	2	Acceptance/ Record

18.1.2. Although the frequency may be listed as once, Canada reserves the right to request a rewrite of any deliverable.

18.2. Summary of Meetings and Briefings

Table 18-2: Summary of Meetings / Briefings

Ref.	DESCRIPTION	REMARKS
PRE-DESIGN PHASE		
12.3.1	Pre Design Presentation	One 1-day session
STATEMENT OF CONSTRUCTION REQUIREMENTS PHASE		
12.2.2	SOCR Visit	One half day visit to the site
12.3.2	SOCR Presentation/Meeting	One half to full day session on site if required including a presentation from the Design-Builder
CONCEPT STUDIES PHASE		
13.3.1	Concept Development Meeting	One 1-day working session

Ref.	DESCRIPTION	REMARKS
13.3.2	Concept presentation	One 1-day presentation session
DESIGN DEVELOPMENT PHASE		
14.4.1	Ad-Hoc meetings	As required
14.4.2	Design Development presentation	One 1-day presentation session
CONSTRUCTION DOCUMENT DEVELOPMENT PHASE		
15.4.1	1 st Site Design Review Presentation	One 1-day presentation session per site
15.4.1	2 nd Site Design Review Presentation	One 1-day presentation session per site
TENDER PHASE		
16.4.1	Ad-Hoc meetings	As required
CONSTRUCTION PHASE SERVICES		
17.4.1	Construction coordination meetings	Bi-weekly meetings at the construction site.
POST CONSTRUCTION PHASE		
18.4.1	Ad-Hoc meetings	As required.

APPENDIX 25, ATTACHMENT B

STATEMENT OF OPERATIONAL REQUIREMENT

(INFRASTRUCTURE)

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Table of Contents

1. INTRODUCTION	3
1.1. Objective	3
1.2. SOR (I) Description	3
1.3. Aim	3
1.4. Location	3
1.5. Existing and Future Facilities	4
1.6. Assumptions	5
1.7. Related Designs	5
2. CONCEPT OF OPERATIONS	5
3. DESIGN AND CONCEPT GUIDANCE	6
3.1. Design Guidelines	6
3.2. Specific Requirements	6
Table 3-1: Vehicles	6
3.3. Access/Siting	8
3.4. Environmental Sustainability	8
3.5. Health and Safety	8
3.6. Accessibility (Barrier Free Access)	8
3.7. Force Protection	8
3.8. Seismic Protection	8
3.9. Universal Design	8
3.10. Structural	8
3.11. Architectural	8
3.12. Technical Requirements	10
3.14. Lifts and Stairs	11
4. LIFE CYCLE CONSIDERATIONS	12
4.1. Life Expectancy	12
ARTICLE I – Drawings of Existing Infrastructure and New Infrastructure Requirements	12

1. INTRODUCTION

1.1. Objective

1.1.1. This Statement of Operational Requirements (Infrastructure) (SOR (I)) identifies the infrastructure requirements needed to house, operate and maintain the new deployable Tactical Control Radar (TCR) to be provided. One of the new TCR systems will be located at Primrose Lake, Alberta and will be operated and maintained by 42 Radar Squadron located at 4 Wing Cold Lake. The second TCR system will be located at Lac Castor, Quebec and will be operated and maintained by 12 Radar Squadron located at 3 Wing Bagotville.

1.1.2. Some modifications to the existing TCR infrastructure will be required; the extent of the modifications will be determined by the specific TCR system provided. The infrastructure must facilitate operations and deployment of the new TCR System, the building will require the necessary space and equipment to: load and off-load the TCR System from transport vehicles; manoeuvre and place the TCR System within the facility; and, move the TCR System in and out of the facility. Specifically, the TCR antenna module will be lifted into a second level radome where it will be secured, operated & maintained. Access to the radome is to be provided for the personnel via stairs. A separate lift is required for maintenance and repair of the equipment operated in the radome (to move equipment and tools from the ground level to the second level radome) will also be provided.

1.1.3. The final layout of the radar facility will satisfy all requirements outlined within this SOR (I).

1.2. SOR (I) Description

1.2.1. The Statement of Operational Requirement (Infrastructure) (SOR (I)) is the primary document used to quantify a need for construction or other options to satisfy space requirements. The SOR(I) communicates the characteristics of the operational requirement and contains the critical performance criteria necessary for evaluating options and assisting in the post-project completion evaluation of system performance.

1.2.2. The SOR (I) forms the base document upon which the specifications for the infrastructure will be drawn from and must ultimately conform to. The SOR(I) describes the infrastructure capability and capacity requirement and defines the minimum military requirements that options are measured against.

1.3. Aim

1.3.1. This SOR (I) is narrow in focus and only aims to outline the minimum military infrastructure requirements to house, operate, maintain and deploy the new TCR systems at the existing Squadron TCR locations.

1.4. Location

1.4.1. One system will be housed approximately 50km north of the main site of 4 Wing Cold Lake at the Primrose Lake Evaluation Range (PLER) in Primrose Lake, Alberta. PLER is 4 Wing's primary test range. The second system will be housed approximately 65 km northwest of the main site of 3 Wing Bagotville within the Zone d'Exploitation Contrôlée Martin-Valin (ZEC Martin-Valin) in Lac Castor, Quebec.

1.4.2. The Primrose Lake TCR system will be operated and maintained by 42 Radar Squadron and the Lac Castor TCR system operated and maintained by 12 Radar Squadron.

1.4.3. The Radar Squadron's key operational functions are as follows:

- (a) Provide temporary replacement for damaged or unserviceable North Warning System (NWS) radars, Canadian Coastal Radars (CCR), or North Atlantic Treaty Organization (NATO) radars;

- (b) Provide primary radar coverage and control capability in areas of national interest;
- (c) Support deployed flying operations;
- (d) Support aircrew basic, upgrade, and flight proficiency training;
- (e) Provide aerospace control/surveillance support to air/land/naval forces in support of joint and/or combined operations and exercises;
- (f) Support of Aerospace Controllers basic, upgrade, and proficiency training; and
- (g) Provide primary and secondary data, data link, and Air-Ground-Air (A/G/A) radio communications to the Remote Training and Operations Centres (RTOCs).
- (h) The Radar Squadron conducts these key operational functions by using a Tactical Control Radar which performs the following key tasks:
 - (i) Provide primary and secondary radar data to the Canadian Air Defence System (CADS);
 - (j) Provide primary and secondary radar coverage of designated Canadian urban airspace;
 - (k) Provide primary and secondary radar coverage of designated airspace anywhere in the world;
 - (l) Provide ground based control of designated airborne assets;
 - (m) Provide Very High Frequency (VHF), Ultra High Frequency (UHF); High Frequency (HF), and Ground-Air-Ground (G/A/G) communications with designated airborne assets;
 - (n) Provide radar and radio services to Main Operating Base (MOB) fighter aircraft for daily training, upgrade, and proficiency purposes; and
 - (o) Participate in tactical data link networks with land, sea, and airborne platforms in a joint or coalition environment.

1.5. Existing and Future Facilities

1.5.1. Current Situation

1.5.1.1. The existing TCR facilities, are considered one story building with a total floor area of approximately 400m². The Facility is a reinforced concrete and steel structure with light concrete block walls.

1.5.1.2. Although considered one story buildings, the facilities consist of two distinct levels being: the ground level by which the building is accessed and where TCR system components may be operated, maintained and deployed; and the second level which houses the existing TCR antenna module under the radome (refer to Drawings A101-1 and A101-2 in Article I).

1.5.1.3. The Facility is essentially split into two functional components:

- (a) Support Area. The Support Area consists mainly of office, classroom and storage space, in addition to a kitchen and washroom. The storage space houses the emergency generator, Uninterrupted Power Supply (UPS), and spare radar inventory. Building utilities such as heat, electrical, telecommunications, a 60 to 400 Hz Solid State Converter, and the domestic water tank are also located within the Support Area.

- (b) Radar Area. The Radar Area is similar to light industrial facilities and includes space for the storage of two deployable shelters (Satellite Communications (SATCOM) and Radar). A third deployable shelter is required during deployment operations and is currently stored outside of current facility. The Radar Area is capped by a radome structure which houses the deployable radar antenna. The SATCOM and Radar shelters are located on the ground level of the facility while the radar antenna is located on the second level. A lift is used to raise the radar antenna from the ground level to the second level with access for personnel from the ground to second level via a ladder. A mechanical equipment room which houses cooling equipment for the Radar Shelter is located next to the main area. Cooling is required to maintain proper operating conditions for the Radar Shelter due to the heat generated by the radar equipment.

1.5.2. Deficiencies

- 1.5.2.1. The infrastructure design requirements for the new TCR System must be identified by the Contractor.

1.6. Assumptions

- 1.6.1. The existing electrical site services capacities are adequate to accommodate all new Radar Area and TCR System requirements.

- 1.6.2. The existing domestic water supply arrangement (storage tank) is adequate to accommodate all new Radar Area and TCR System requirements.

- 1.6.3. The existing fuel supply arrangements (storage tanks) for heating the building and also running the 250kW Auxiliary Power Unit (APU) are adequate.

1.7. Related Designs

- 1.7.1. The TCR infrastructure design for Lac Castor, QC and Primrose Lake, AB must be delivered in parallel and as independent sets of deliverables. Although both TCR infrastructure designs are similar in nature, they must be delivered independently of one another.

2. CONCEPT OF OPERATIONS

- 2.1. This concept of operations focuses solely on the requirements for the new infrastructure needed to house, operate, maintain and deploy the new TCR system.

- 2.2. Three operational configurations exist for the new infrastructure. These operational configurations are as follows:

- a) Deployed. In this configuration, the TCR System is being prepared for, undergoing and/or being returned from deployment. In order to deploy, the Radar Squadron is responsible for:
 - i. Providing the transportation for all components required to operate in the field;
 - ii. Disconnecting the components from building services and loading them onto transportation vehicles, and vice versa;
 - iii. Disconnecting and lowering the Radar antenna and loading it onto a transportation vehicle for deployment; and vice versa; and
 - iv. Once the equipment is deployed, the Radar Area is essentially vacant.
- b) Unmanned. In this configuration, the Radar Area is vacant of personnel and:

- i. The TCR System will be in place: with the TCR antenna on the second level positioned within the radome;
 - ii. The TCR system are connected to building power and data cables which will be permanently installed; and
 - iii. The TCR system may or may not be operational.
- c) Manned. In this configuration, personnel are present and may be conducting maintenance on the TCR Radar and its associated equipment, or undergoing training on the TCR System.
- i. The TCR System will be in place: with the TCR antenna on the second level positioned within the radome;
 - ii. The TCR system are connected to power and data cables which will be permanently installed;
 - iii. The TCR system may or may not be operational;
 - iv. The arraignment of the TCR system components must be ready for operations and allow all required service and circulation space.; and
 - v. On occasion, TCR antenna may be temporarily lowered to the ground level for non-operational purposes such as maintenance.

3. DESIGN AND CONCEPT GUIDANCE

3.1. Design Guidelines

3.1.1. The Contractor must ensure that all designs comply with established and approved current versions of national building code 2015, the national fire code, and all referenced standards including all amendments.

3.1.2. The Contractor, through consultation with Canada, must confer with the Wings, Military Police (MP) and the Base Fire Chief in all matters concerning security and fire regulations.

3.1.3. The Contractor must carry out due diligence and research to ensure that all pertinent and applicable general references to codes, standards and other authorities having jurisdiction, as well as best industry standards are applied to the project.

3.1.4. Where necessary the design scope must include the modifications that may be required outside the radar buildings, such as access roads and security enclosures.

3.2. Specific Requirements

3.2.1. Vehicles

3.2.1.1. The following outlines the specific requirements for the transportation vehicles associated with the deployment of the TCR System:

Table 3-1: Vehicles

Transport Vehicle Requirements

Gross Vehicle Weight (GVW)	30,000 kg
Width of Truck	2.8 m
Height of Truck (loaded)	4.3 m
Turning Radius	10.5 m
Maximum Grade (travelling uphill)	60%
Maximum Grade (travelling side slope)	30%

3.2.2. Radar and Radome

3.2.2.1. The radome must be compatible with the TCR and provide adequate space as required by the TCR supplier.

3.2.3. Functional Requirements

3.2.3.1. Some of the infrastructure considerations required to house, operate, maintain and deploy the TCR system are as follows:

3.2.3.2. The TCR system will be deployed as needed. The design must detail the equipment required to:

- (a) Maneuver the TCR system within the Area with lifting-rolling equipment attached;
- (b) Raise the TCR antenna into the radome where it will be secured, operated and maintained; and
- (c) Return the TCR Radar to the transport vehicle.

3.2.3.3. If manoeuvring equipment is required and increases the overall weight and size of the Radar system when it is affixed to its exterior, the specifications of this maneuvering system must be included as part of the infrastructure project design. The requirements of this system must be incorporated into the functional requirements including the possible storage of the system (detachable legs and wheels).

3.2.3.4. To support the deployment capability, proper door widths, clear ceiling heights, working and circulation space is to be provided within the facility.

3.2.3.5. Designated floor space is to be provided for any equipment or modules that will be stored on the ground floor of the Radar Area.

3.2.3.6. The Equipment must be situated in a manner to allow for the appropriate turning radius, estimated to be 1.5m, of antenna wires leading to exterior fixed antennas.

3.2.3.7. In the Manned Configuration (Section 2.1.2.4), provide sufficient space to allow the operation, maintenance/repair and circulation space. Provide utility power sources as needed for operational purposes. The Contractor must confer with Canada to finalize this requirement.

3.2.3.8. A separate lift system is required to enable movement of equipment and tools for maintenance purposes between the ground level and the second level. The lift system should be capable of carrying a 500kg load with a maximum size of 2000mm high x 1500mm wide x 1500mm deep.

3.2.3.9. To facilitate the exterior loading and unloading of the equipment from a transport vehicle, a reinforced concrete area in front of the applicable access door(s) is required. This reinforced concrete area should be large enough to accommodate the placement of a shelter (2.5m x 6.1m) and appropriate access and circulation space.

3.3. Access/Siting

3.3.1. The minimum standoff distances for parking, roadways and access to the Radar Area must be considered. As access to the facility is required via transport vehicles, appropriate access roads with adequate grading and turning radiuses must be provided as per Section 3.2.

3.3.2. The width and turning radiuses of access roads must take into consideration the requirement to operate large snow removal vehicles.

3.4. Environmental Sustainability

3.4.1. "Green Building" principles must be applied i.e. Green Globe Standard Level 3.

3.4.2. The location of access roads, parking, vehicle barriers, and perimeter lighting must be integrated into the design along with sustainable site considerations.

3.4.3. The infrastructure must optimize energy use, protect and conserve water, use environmentally preferable products and enhance indoor environmental quality.

3.5. Health and Safety

3.5.1. The facility design must reflect due-diligence to the safety and health of the occupants.

3.6. Accessibility (Barrier Free Access)

3.6.1. The facility is classified as a Group F, Division 3 occupancy. As per the DND CETO C-98-007-000/AF-Z01, the Radar Area must be fully compliant in all areas where DND and CF members generally have access and where employees are not required, by their job descriptions, to be able-bodied. For further clarification, refer to the "UD/BFA Compliance / Minor Variance Form" (Article III).

3.7. Force Protection

3.7.1. Force protection requirements will be provided by 4 Wing Cold Lake and 3 Wing Bagotville MPs who must be consulted regarding force protection measures that need to be incorporated into the overall design effort.

3.8. Seismic Protection

3.8.1. The seismic protection requirements of any modifications to the existing infrastructure must meet the "Normal Importance Category Building" as outlined within the 2015 National Building Code of Canada (NBC).

3.9. Universal Design

3.9.1. The design team must provide a universal design that satisfies the requirements indicated in the "UD/BFA Compliance / Minor Variance Form" (refer to Article III).

3.10. Structural

3.10.1. The building must be designed in accordance with the NBC.

3.10.2. The maximum deflections of the radome floor must be less than that required by the TCR equipment,

3.11. Architectural

3.11.1. Materials

3.11.1.1. The Contractor is encouraged to specify materials and systems that simplify and reduce maintenance requirements; require less water, energy, and toxic chemicals and cleaners to maintain; and are cost-effective and reduce lifecycle costs.

3.11.1.2. Appropriate materials must be used within the Radar Area and Radome so as not to interfere with radar operations.

3.11.2. Floors

3.11.2.1. Floors must be consistent with the type of work being done in the space and/or area. Finishes should be chosen to be robust and durable and of good quality for hard service and long life.

3.11.2.2. Floor loading must take into consideration requirements as outlined in Section 3.2.

3.11.2.3. A floor drain, for water, is required on both levels.

3.11.2.4. All other general area floor loading requirements must be in accordance with the NBC and good design practices.

3.11.2.5. As per Section 3.3.1.8, a reinforced concrete area is required in front of applicable exterior vehicle access doorways. This area is estimated to be approximately 5m x 10m subject to the final design and operations of the TCR deployment.

3.11.3. Clear Height Requirement

3.11.3.1. Clear height must consider all ceiling mounted mechanical and electrical systems and services. Minimum height provisions should follow all National and Provincial standards and guidelines that may apply.

3.11.3.2. The minimum clear height in the facility must accommodate the maneuvering loading and unloading of the TCR System including the shelters (Ops, Equip., Satcom) and TCR Radar in conjunction with Section 3.2.

3.11.3.3. The minimum floor to clear ceiling height must be determined and provided by the Contractor. The clear ceiling height is based upon the proposed methodology for maneuvering the equipment into the operating locations.

3.11.4. Lighting

3.11.4.1. Sufficient lighting in all work areas must be provided in accordance with NBC and Canada Labour Code requirements. All emergency lighting should be designed to allow for connection to the existing back-up power supply.

3.11.5. Finishes

3.11.5.1. Floor, walls, ceiling, and paint finishes must be consistent with the type of work being done in the space and/or area. Finishes must be chosen to be robust and durable and of good quality for hard service and long life.

3.11.6. Circulation Space

3.11.6.1. Sufficient space must be provided within the facility to efficiently and safely house, operate, maintain and deploy the TCR System including any other components.

3.11.7. Access Doors

3.11.7.1. Installation of all access doors must be in accordance with the NBC.

3.11.7.2. The number of doors in the facility must be adequate to satisfy requirements for the movement of personnel, materiel, equipment, and deployment of the TCR System.

3.11.7.3. Vehicle access doors for entering and leaving the Radar Area must be located such as to direct the flow of traffic in a unidirectional fashion, if practical (e.g. drive-through capability). Vehicle access doors must provide sufficient and safe clearance for a transport vehicle in accordance with the requirements outlined in Section 3.2. The exterior vehicle access doors must be insulated metal overhead type doors, motorized with push-button operators located adjacent to each, and with back-up manual chain operators. Steel bollards must be installed at each point, before the door, on each side.

3.11.7.4. Double leaf access doors must be installed wherever personnel using handcarts and/or wheeled trolleys may need to pass to access internal/external spaces.

3.11.7.5. Mechanical, electrical, and other service rooms must have double leaf doors installed in any exterior wall to facilitate the installation and removal of equipment. If the space does not have an external wall, then double leaf doors must be installed on an interior wall accessing a corridor.

3.11.7.6. All non-man doors must be motorized.

3.12. Technical Requirements

3.12.1. Heating, Ventilation and Air Conditioning (HVAC)

3.12.1.1. HVAC configurations must be provided as required for the following:

- (a) Asset Integrity. Minimum heat/cooling is a requirement to maintain long term asset integrity and must be provided for at all times. The absence of heat/cooling permits the ingress of moisture which has adverse effects on many building components and overall building conditions.
- (b) Content Preservation. Exclusive of personnel comfort and asset integrity, building contents may also dictate the requirement for heat/cooling within a structure. In these instances, the requirement for heat/cooling needs to be determined based on the proposed long term use of the building and the contents being stored.
- (c) Personnel Comfort. The provision of heating/cooling is a key element of a proper, healthy, and comfortable work environment. Federal government employee workspace conditions are regulated by Canada Labor Code.
- (d) The governing HVAC configuration must be based on the operational configurations of deployed, unmanned, and manned as outlined in Section 2.1.2.
- (e) The TCR system may create an inordinate amount of heat when operational. Provision must be made to provide adequate cooling during the operation of the TCR within the infrastructure.

3.13. Roof Safety

3.13.1. Adequate safety provisions, such as permanent railings or tie-off cable/rail, must be provided around the roof line of the Radar Area of the TCR Facility.

3.14. Lifts and Stairs

3.14.1. Radar Lift

3.14.1.1. A lift mechanism is required to hoist the TCR antenna from the ground level to the second level (into the radome) and return it to the ground level when required.

3.14.1.2. The lift mechanism will typically be in the retracted position and must be flush with the ground floor. Consideration must be given to possible weight loads placed on the retracted lift mechanism in excess of its loading capacity, such as a transport vehicle.

3.14.1.3. Adequate safety provisions, such as railings, must be provided for all openings on the ground level and second level (radome). Safety provisions that obstruct movement of equipment or personnel (e.g. railings) must be removable when not required. In addition, adequate safety equipment must be provided to ensure personnel safety during lift operation.

3.14.1.4. The lift opening between the ground level and second level (radome) must be provided with an adequate retractable/moveable closure.

3.14.2. Equipment Lift

3.14.2.1. A lift mechanism is required to hoist tools and parts from the ground level to the second level (into the radome) and return it to the ground level when required.

3.14.2.2. The lift mechanism will typically be in the retracted position and must be flush with the ground floor. Consideration must be given to possible weight loads placed on the retracted lift mechanism in excess of its loading capacity, such as a transport vehicle as per Section 3.2.

3.14.2.3. Adequate safety provisions, such as railings, must be provided for all openings on the ground level and second level (radome). In addition, adequate safety equipment must be provided to ensure personnel safety during lift operation. Safety provisions that obstruct movement of personnel or equipment must be removable when not required.

3.14.2.4. The lift opening between the ground level and second level (radome) is to be secured with an adequate retractable/moveable weight-bearing closure. This closure should be flush with the floor to minimize floor elevation changes.

3.14.3. Stairs

3.14.3.1. A stairway compliant with the NBC must be provided within the Radar Area from the ground level up to the second level. No ladders must be permitted.

3.14.4. Communications and Data Outlets

3.14.4.1. One telephone and one data outlet for Defence Wide Area Network (DWAN) connection is required in the radome area, and two telephone and two DWAN outlets are required in the Radar Area. The final location is to be determined in consultation with Canada.

3.14.5. Building Monitoring System

3.14.5.1. The Contractor; through consultation with Canada, must confer with the Wing Telecommunications and Information Services Officer in all matters concerning the Building Monitoring System.

3.14.6. Electrical

3.14.6.1. Provision should be made for holes (square or round) in the slab to allow for pass-through of electrical and other wiring between the ground level and second level. The final location of these must be in consultation with Canada.

3.14.6.2. The design must provide for the electrical requirements for the TCR system.

3.14.6.3. Emergency power requirements on site are currently serviced by an existing Auxiliary Power Unit (APU) and also an Uninterrupted Power Supply (UPS). The design must provide for the upgrade of the emergency power system as required

3.14.7. Fire Detection & Protection

3.14.7.1. Fire detection and extinguishing systems must be provided to meet the NBC and the Canadian Forces Fire Marmust (CFFM) codes and regulations.

3.14.7.2. The existing facility has no fire sprinkler system or other suppression system currently installed. The Canadian Forces Fire Marshal's Office (CFFM's Office) has mandated that a fire suppression system be installed.

3.14.7.3. The new fire protection system must be a sprinkler system or a high pressure water mist/fog type system or other acceptable technology.

3.14.7.4. Adequate water supply/storage & pumps must be provided.

3.14.7.5. The existing fire alarm system is reaching the end of its life cycle. Provide a new fire alarm system.

3.14.7.6. The Contractor, through consultation with Canada, must confer with the CFFM in all matters concerning fire detection and protection.

3.14.8. Lightning Protection

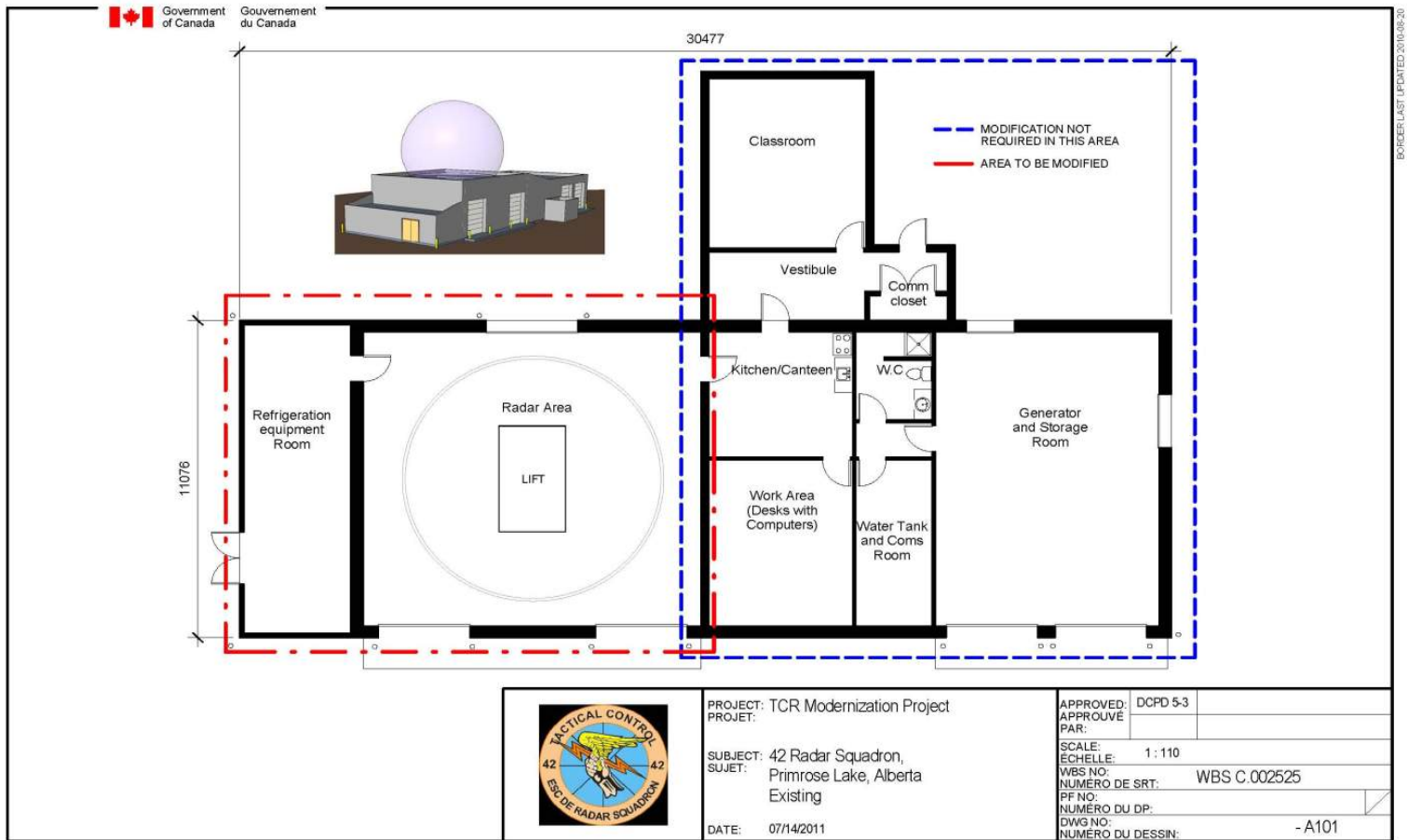
3.14.8.1. Lightning protection is required in this building. The lightning protection system must conform to the requirements of the appropriate provincial legislation or, in the absence of such legislation, to CAN/CSA-B72-M, "Installation Code for Lightning Protection Systems."

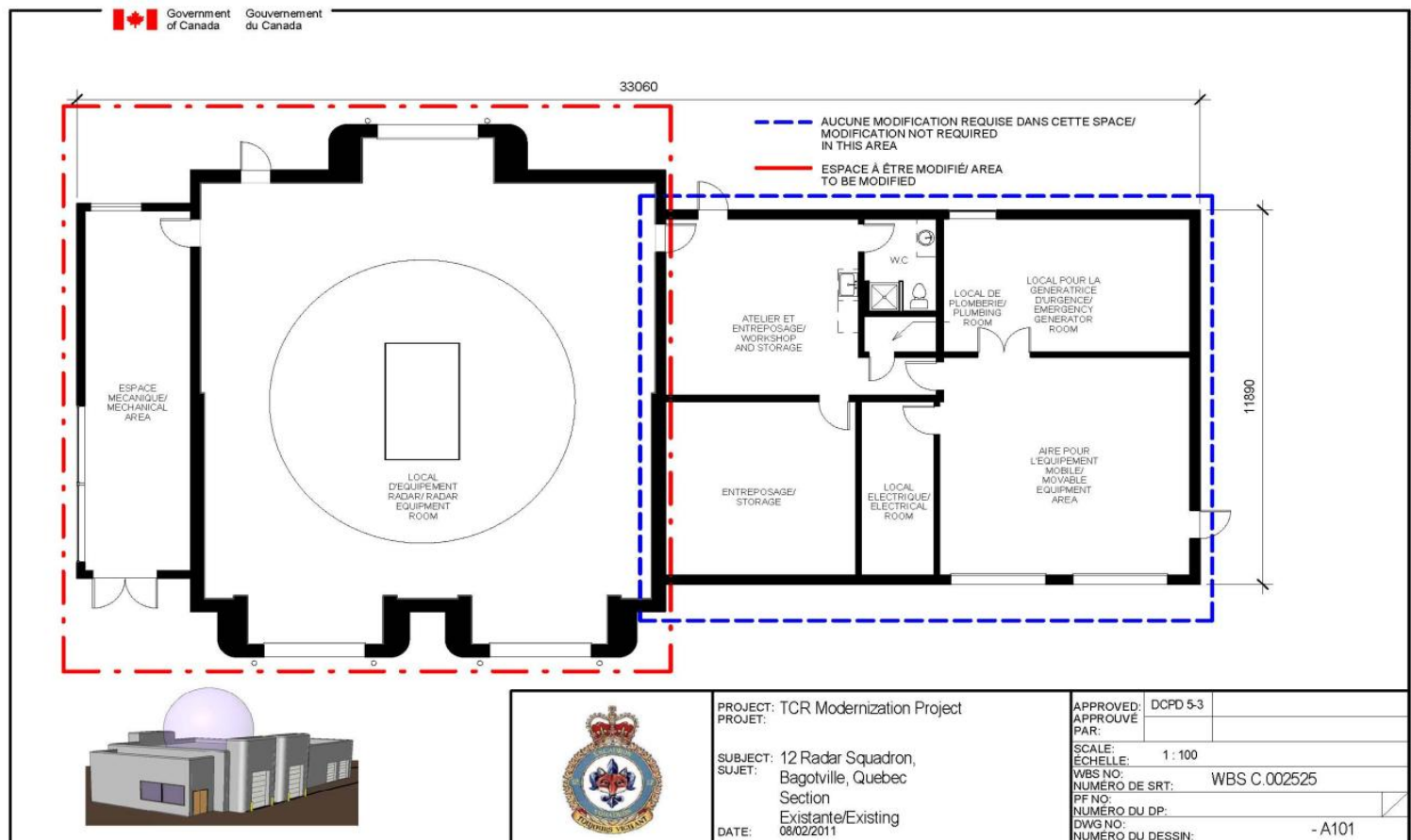
4. LIFE CYCLE CONSIDERATIONS

4.1. Life Expectancy

4.1.1. The facility is to provide a nominal 40 year anticipated useful life with mechanical and electrical recapitalization at 20 years.

ARTICLE I – Drawings of Existing Infrastructure and New Infrastructure Requirements





Contract No. - N° de Contrat
W8485-155257

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur
164BQ

Client Ref. No. - N° de réf. du client
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No. /N° VME

APPENDIX 25, ATTACHMENT E

CANADA DOCUMENTATION AND SUBMISSION STANDARDS

FOR

APPENDIX 25

DESIGN SERVICES

DND Documentation and Submission Standards

Normes de documentation et
de soumission du MDN

Amendments

Record of Amendments and Corrigenda

This publication is effective as of November 1, 2012 and supersedes all previous DND/CAF publications.

Distribution is limited to DND/CF employees or their agents engaged in the design of facilities for the use of DND or the CAF.

Modifications

Registre des modifications et rectificatifs

Cette publication entre en vigueur le 1er novembre 2012 et remplace toutes les publications antérieures des FC et du MDN concernant les Normes de documentation et de soumission.

Elle est destinée exclusivement aux employés et agents des FC et du MDN appelés à développer les plans des installations destinées aux FC/au MDN.

AMENDMENTS MODIFICATIONS			
	Date Date	Amendment Modification	Page (s) Page
0			
1	April 2015		
2	October 2015		
3			
4			
5			
6			
7			

CORRIGENDA RECTIFICATIFS			
	Date Date	Amendment Modification	Page (s) Page
0			
1			
2			
3			
4			
5			
6			
7			

DND Documentation and Submission Standards

Architectural and Engineering Services

Acknowledgements

The publication of these Documentation and Submission Standards is the result of a partnership between the Director General Infrastructure and Environment Engineering Services and Director General Fire and Nuclear Safety Teams: Director Construction Project Delivery, Canadian Forces Fire Marshal, and Director Architecture and Engineering Services.

Graphics by: Murray Gallant

Translation by: Public Works and Government Services Canada Translation Bureau

Statement of Limitation

The material in this document is current to the best of our knowledge, compiled from sources believed to be reliable, accurate, and representative of the subjects covered. The contents of this document take into account the specific legal, policy and operational framework in which DND and the CAF operate; it cannot be assumed that all acceptable workplace, health and safety measures are contained in this document, or that other additional measures may not be required in exceptional circumstances or in a different context.

DND notes that this document is to be used for the purpose of design and construction of facilities for DND and the CAF only.

Copyright

The *DND Documentation and Submission Standards* are the intellectual property of the Department of National Defence. Only pre-authorized use is permissible and no one has the right to sell, rent, lease, or make profit from the standard.

Normes de documentation et de soumission du MDN

Services d'architecture et de génie

Remerciements

La publication des présentes Normes de documentation et de soumission a été rendue possible grâce à un partenariat entre les équipes du Directeur Général - Services d'Ingénierie (Infrastructure et Environnement): Directeur Général - Protection Incendie et Sûreté Nucléaire, Directeur - Réalisation des Projets de Construction, , Directeur – Service des Incendies des Forces Canadiennes, et Directeur – Services intégrés (Architecture et génie).

Représentation graphique par : Murray Gallant

Traduit par : Travaux publics et Services gouvernementaux Canada Bureau de la traduction

Avertissement

Le contenu du présent document est à jour au meilleur de nos connaissances; il est le résultat d'une compilation de sources réputées fiables et précises et représentative des sujets couverts. Le contenu de ce document tient compte du cadre juridique, politique et opérationnel spécifique qui régit les activités du MDN et des FC : il ne faut pas présumer que toutes les mesures acceptables en matière de santé et sécurité sur les lieux de travail sont mentionnées dans ce document, ou que toute autre mesure supplémentaire est à exclure dans des circonstances particulières ou exceptionnelles ou dans un contexte différent.

Le MDN rappelle que ce document ne doit servir qu'aux fins de la conception et de la construction d'installations destinées aux FC et au MDN.

Droits d'auteur

Les Normes de documentation et de soumission du MDN relèvent de la propriété intellectuelle du ministère de la Défense nationale. Seule l'utilisation préautorisée est admise et personne n'a le droit de procéder à la vente ou à la location de cette norme ou d'en tirer profit.

Table of Contents

1	Introduction.....	6
2	Documents	10
3	Pre-Design:	
	Analysis of Project Requirements	18
4	Concept Design	24
5	Design Development	34
6	Construction Documents.....	48
1		

List of Appendices

Appendix A: Design Narratives and Calculations

Appendix B: Sample Page

Appendix C: Project Execution Plan

Appendix D: File Requirements

Appendix E: Civil Checklist for Specifications and Drawings

Appendix F: Structural Checklist for Calculations, Specifications and Drawings

Appendix G: Architectural Checklist for Specifications and Drawings

Appendix H: Mechanical Checklist for Calculations, Specifications and Drawings

Appendix I: Electrical Checklist for Calculations, Specifications and Drawings

Appendix J: Series 900 Interior Fit-up Checklist

Appendix K: Waste Management

Appendix L: Sustainability

Appendix M: Costing

Appendix N: Schedule Analysis

Appendix O: Risk Analysis

Table des matières

	Introduction.....	6
2	Documents	10
3	Rapport de préconception :	
	Analyse des exigences du projet.....	18
4	Étude conceptuelle (conception).....	24
5	Élaboration de la conception	34
6	Documents de construction	48

Liste des appendices

Annexe A : Descriptions de la conception et calculs

Annexe B : Exemple

Annexe C : Plan de mise en œuvre du projet

Annexe D : Exigences relatives aux fichiers

Annexe E : Aide-mémoire génie civil pour les devis et plans

Annexe F : Aide-mémoire structure pour les calculs, devis et plans

Annexe G : Aide-mémoire architecture pour les calculs, devis et plans

Annexe H : Aide-mémoire mécanique pour les calculs, devis et plans

Annexe I : Aide-mémoire électricité pour les calculs, devis et plans

Annexe J : Aide-mémoire aménagement intérieur, série 900

Annexe K : Gestion des déchets

Annexe L : Durabilité

Annexe M : Établissement des coûts

Annexe N : Analyse du calendrier

Annexe O : Analyse des risques

Introduction

I.1	Defence Project Management System.....	6
I.2	Terminology.....	7
I.3	Application (General Requirements).....	8
I.1		

	Defence Project Management System.....	6
I.2	Terminology.....	7
I.3	Application (General Requirements).....	8

Introduction

Defence Project Management System

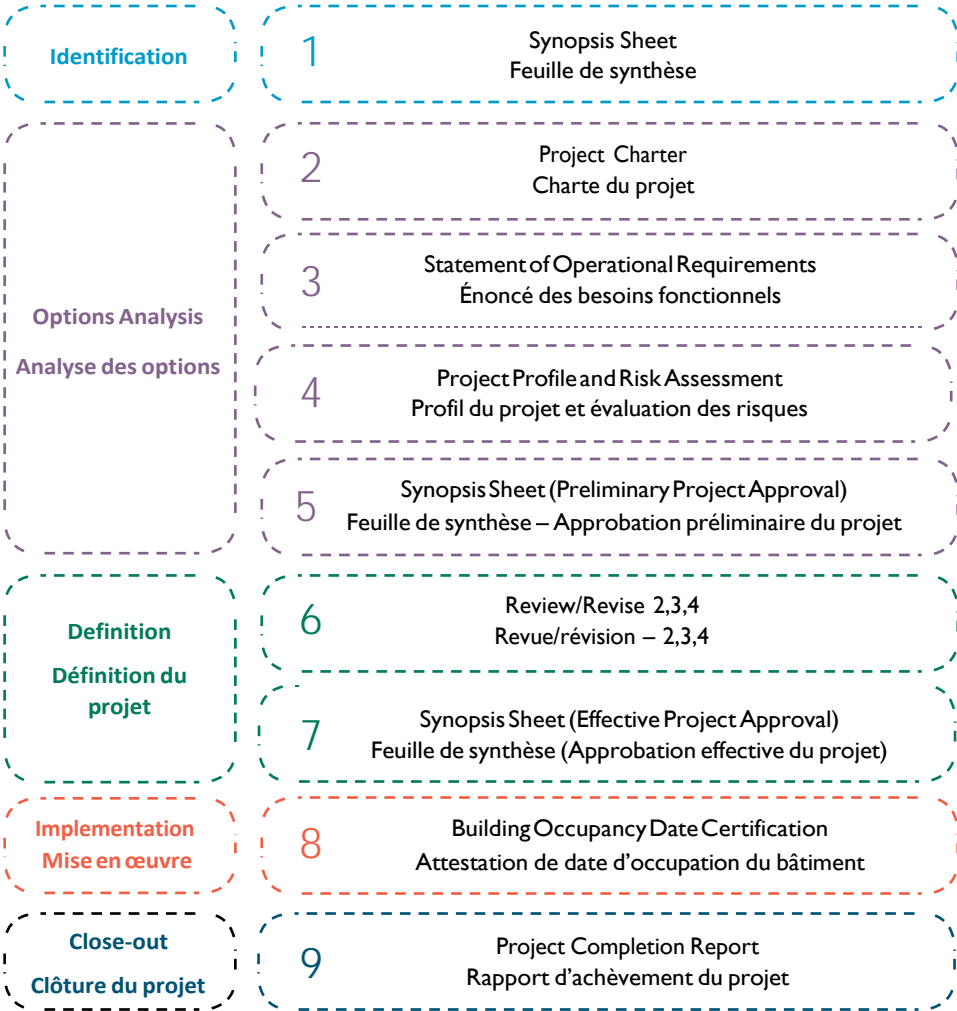
DND uses a five-stage Defence Project Management System applicable to all infrastructure projects as outlined in the diagram below. Consultants are sometimes involved in the pre-definition stages assisting DND in providing feasibility studies, analysis, and determining the scope of work for a particular infrastructure project; however, Consultants are primarily involved in the project definition stage of the infrastructure project.

Introduction

Système de gestion des projets de la Défense

Le MDN utilise un système de gestion des projets de la Défense en cinq (5) étapes, applicable à tous les projets d'infrastructure; le schéma ci-dessous illustre ce système. Les experts-conseils participent parfois aux deux premières étapes (avant la définition) : ils aident le MDN à produire les études de faisabilité et les analyses et à déterminer l'étendue des travaux pour un projet d'infrastructure particulier. Toutefois, les experts-conseils participent principalement à l'étape de définition du projet d'infrastructure.

figure 1-1 Project Management Phases
Étapes de la gestion du projet



This document concerns definition and implementation phases, which are divided into the following project stages:

- Design (analysis of project requirements)
- Concept Design
- Design Development
- Construction Documents
- Tender Call, Bid Evaluation and Construction Contract Award

This document contains the minimum standards for deliverables submitted by each professional discipline, which will be evaluated for completeness and authorization to proceed to the next stage.

The required deliverables are described in the Statement of Work.

Architectural deliverables shall meet the minimum industry standards outlined in the *Canadian Handbook of Practice for Architects* (latest edition) distributed by the Royal Architectural Institute of Canada.

Engineering deliverables shall meet the minimum industry standards outlined in the *Engineering Services Management Guide and Glossary* (latest edition) distributed by the Association of Consulting Engineering Companies Canada and the Association of Consulting Engineers of Québec.

Standards contained in this document shall take precedence should there be a conflict with an industry standard.

1.2 Terminology

This standard uses the following terminology to distinguish requirements from guidelines:

- **Shall:** Expresses a requirement or order (i.e., a provision that the Consultant is obliged to satisfy in order to comply with the standard)
- **Should:** Expresses a recommendation (i.e., that which is advised but not required)
- **Can:** Expresses possibility or capability (i.e., the option is practicable)
- **May:** Expresses an option or that which is permissible (e.g., Consultants may deliver projects in CAD or BIM)

Ce document a pour objet la définition et les étapes de mise en œuvre d'un projet, qui se divisent comme suit.

- Conception (analyse des exigences du projet)
- Études conceptuelles
- Élaboration de la conception
- Production des documents de construction
- Appel d'offres, évaluation des soumissions et adjudication du contrat de construction

Ce document énonce les normes minimales qui servent à évaluer le produit livré par chacune des disciplines professionnelles participant au projet pour déterminer s'il est complet et si l'on peut entamer l'étape suivante.

Les livrables requis sont décrits dans l'énoncé des travaux.

Les livrables architecturaux doivent satisfaire aux normes minimales de l'industrie, définies dans le *Manuel canadien de pratique de l'architecture* (édition en vigueur) publié par l'Institut royal d'architecture du Canada.

Les livrables d'ingénierie doivent satisfaire aux normes minimales de l'industrie, définies dans le *Guide et lexique de gestion de services d'ingénierie* (édition en vigueur) publié par l'Association des ingénieurs-conseils du Canada et l'Association des ingénieurs-conseils du Québec.

En cas de prescriptions conflictuelles avec une norme de l'industrie, les normes définies dans ce document prévalent.

1.2 Terminologie

Les présentes normes utilisent la terminologie suivante pour distinguer les exigences des lignes directrices:

- **Doit** (shall en anglais) : Exprime une exigence ou un ordre (c.-à-d. une disposition que l'Expert-conseil est tenu de respecter pour se conformer aux normes)
- **Devrait** (should en anglais) : exprime une recommandation (c.-à-d. un conseil, mais non une exigence)
- **Peut** (can en anglais) : exprime une possibilité ou une capacité (c.-à-d. que l'option est possible)
- **Pourrait** (may en anglais) : exprime une option ou un élément permis (p. ex., les experts-conseils peuvent remettre le projet en CAO ou en BIM)

1.3 Application (General Requirements)

These *Documentation and Submission Standards* have been developed to ensure a rational, well-documented design process and to facilitate reviews by DND staff as the design develops.

It is the policy of the Department of National Defence that all architectural and engineering submissions for infrastructure projects, including base/wing command level in addition to major capital, comply with the provisions of the DND Documentation and Submission Standards.

These are the minimum general requirements for each project.

Where no submission standard is indicated for a particular deliverable or phase, the Consultant shall use either the industry standard format or their own integrated format for the deliverable.

1.3 Application (exigences générales)

Ces *Normes de documentation et de soumission* ont été élaborées afin d'assurer un processus de conception bien documenté et rationnel, et pour faciliter les examens par le personnel du MDN au fur et à mesure que la conception progresse.

Les politiques du ministère de la Défense nationale exigent que toutes les soumissions d'architecture et d'ingénierie pour des projets d'infrastructure, y compris au niveau du commandement de la base / escadre, en plus des projets majeurs, soient conformes aux dispositions des Normes de documentation et de soumission du MDN.

Ces exigences sont le minimum requis pour tout projet

Dans le cas où aucune norme de présentation n'est décrite pour un livrable ou une phase spécifique des travaux, l'Expert-conseil doit reprendre le format de présentation des normes de l'industrie, ou encore utiliser son propre format intégré de présentation de livrable.

Documents

2.1	General.....	10
2.2	Electronic Submissions.....	10
2.3	Hard Copies.....	11
2.4	Format: Reports and Specifications.....	11
2.5	Reports.....	12
2.6	Drawings.....	13
2.7	Specifications.....	14
2.8	Presentation Models.....	15
2.9	Photographs.....	15

	Généralités.....	10
2.2	Documents à soumettre en format électronique.....	10
2.3	Copies papier.....	11
2.4	Format : Rapports et devis.....	11
2.5	Rapports.....	12
2.6	Plans.....	13
2.7	Devis.....	14
2.8	Maquettes de présentation.....	15
2.9	Photographies.....	15

2 Documents

2.1 General

Submissions shall be fully integrated and multi-disciplinary; trade-specific submissions will not be acceptable.

Each sheet of the final construction drawings as well as the final specification Consultant's identification sheet shall bear the seal and signature of the responsible design professional as required and described in various provincial jurisdictions.

Documents shall be marked according to the project security designation: **"UNCLASSIFIED"**, **"CONFIDENTIAL"**, **"SECRET"**, or **"TOP SECRET"** on each page of specifications, reports, calculations, etc. (both electronic and paper formats).

No "Copyright" markings other than the Title to Intellectual Property Arising Under Crown Procurement Contracts are permitted on documents as per DND drawing template.

Submissions shall be in electronic and hard copy format.

For a brief overview of definitions and requirements, see *Appendix A: Design Narratives and Calculations*.

2.2 Electronic Submissions

- Submissions shall be delivered in native (dwg, rvt, doc, xls, etc.) and PDF format as a minimum (PDF/A for 8.5x11 documents, and PDF/E for 11x17 documents, as specified in ISO 32000-1).
- Files shall be unlocked and unprotected.
- Files shall be organized into folders, i.e., drawings, specifications, reports, design narratives and calculations, photographs, models, etc.
- Each drawing, specification section, report, etc., shall be saved as a separate .pdf file.
- PDF files submitted for publication on the Government Electronic Tendering System will be sorted alphanumerically.

2 Documents

2.1 Généralités

La documentation soumise doit être entièrement intégrée et multidisciplinaire; la documentation propre à un corps de métier n'est pas acceptable.

Chacune des pages des plans de construction, de même que la page d'identification du devis définitif de l'expert conseil, doit porter le sceau et la signature du professionnel responsable de la conception, comme exigé et expliqué par les diverses administrations provinciales.

Les documents doivent porter la mention appropriée à leur désignation de sécurité, soit « **NON CLASSIFIÉ** », « **CONFIDENTIEL** », « **SECRET** » ou « **TRÈS SECRET** » sur chaque page des devis, rapports, calculs, etc. (aussi bien en format électronique que sur la copie papier).

Aucune mention de « droit d'auteur » autre que le titre de propriété intellectuelle découlant des marchés d'acquisition de l'État ne peut être apposée sur les documents, conformément au modèle de plans du MDN.

Les documents à soumettre doivent être en format électronique et en copies papier.

Pour un aperçu des définitions et exigences, voir l'*Annexe A : Descriptions de la conception et calculs*.

2.2 Documents à soumettre en format électronique

- Les documents à soumettre doivent être livrés au moins dans les formats d'origine (dwg, rvt, doc, xls, etc.) et en format PDF (PDF/A pour les documents de 8,5 po x 11 po, et PDF/E pour les documents de 11 po x 17 po, comme précisé dans la norme ISO 32000-1).
- Les fichiers doivent être déverrouillés et non protégés.
- Les fichiers doivent être regroupés en dossiers distincts, p. ex. plans, devis, rapports, descriptions techniques et calculs, photographies, maquettes, etc.
- Chaque plan, section de devis, rapport, etc. doit être sauvegardé dans un fichier PDF distinct.
- Les fichiers PDF soumis pour publication sur le service électronique d'appels d'offres du gouvernement seront classés en ordre alphabétique.

2.3 Hard Copies

- Hard copies shall be direct reproductions of the original electronic files.
- Drawing submissions shall be staple bound with card reinforcement at binding edge. Drawings shall be separately bound in volumes not exceeding fifty (50) sheets according to discipline.
- Hard copy drawings shall be reverse-rolled and wrapped in paper.
- Drawings shall remain legible when reduced to half size.
- Specification and report submissions shall be staple, coil, or cerlox bound with card covers (front and back). Specifications and reports with a thickness greater than 40mm shall be bound in a two or more volume format according to discipline or division.
- Tender Specifications and one (1) copy of final submissions of all reports shall be hard bound.
- Paper shall be good quality to withstand frequent use and not discolour.
- Paper shall be white or of a colour that gives good contrast with the text and drawings, so that it is easy to read and reproduce.

2.4 Format: Reports and Specifications

- Pages shall consistently use portrait format, font type and size, margins, headers and footers across all sections. Landscape format shall be used for fold-out pages.
- Pages shall be numbered consecutively.
- The type size of the main body text shall be 11-point Arial, with smaller sizes permitted for footnotes, tables, etc. (minimum 8 points). Type larger than 12 points is not recommended for the main text.
- Submissions shall be recto verso double-sided with mirrored margins.
- New sections shall start on recto pages. Blank verso pages shall be numbered and include the following note: "This page is intentionally left blank."

2.3 Copies papier

- Les copies papier doivent être des reproductions directes des fichiers électroniques originaux.
- Les soumissions de plans doivent être reliées à l'aide d'agrafes, et renforcées de carton rigide du côté de la reliure. Les plans doivent être reliés séparément en volumes d'au plus 50 feuilles par secteur d'activité.
- Les plans sur support papier doivent être roulés renversés et emballés dans du papier.
- Les plans doivent demeurer lisibles lorsqu'ils sont réduits de moitié.
- Les soumissions de devis doivent être reliées à l'aide d'agrafes, de spirales ou de cerlox, sous couvertures avant et arrière en carton robuste. Les devis et les rapports dont l'épaisseur est supérieure à 40 mm doivent être divisés en deux volumes ou plus, par discipline ou division.
- Le devis d'appel d'offres et un (1) exemplaire de tous les rapports définitifs doivent être sous reliure rigide.
- Le papier doit être de bonne qualité et permettre aux plans de résister à la décoloration et à une utilisation fréquente.
- Le papier doit être blanc ou d'une couleur offrant un bon contraste avec le texte et les plans, afin qu'il soit facile de lire et de reproduire ces derniers.

2.4 Format : Rapports et devis

- Toutes les pages doivent être imprimées en format portrait, en caractères de même style et taille avec marges, en-têtes et bas de page de même format pour toutes les sections. Les encarts intégrés doivent être en format paysage.
- Les pages doivent être numérotées consécutivement.
- La police, dans le corps principal du texte, doit être en Arial de 11 points, les tailles réduites étant autorisées pour les notes de bas de page, tableaux, etc. (au minimum 8 points). Une police excédant 12 points n'est pas recommandée pour le corps du texte.
- Les documents à soumettre doivent être recto verso avec marges symétriques.
- Les nouvelles sections doivent commencer sur des pages recto. Les pages verso vierges doivent porter la mention « Page laissée vide intentionnellement » et être numérotées.

table | tableau 2-1: Minimum margins / Marges minimales

(mm)	Top Haut	Bottom Bas	Inside Guache	Outside Droite
Recto	19	19	30	12
Verso	19	19	12	30

Headers

Each page shall include the project title, project location, project number, section title, section number, page and date.

Refer to *Appendix B: Sample Page*.

Footers

Each page shall include the level of security designation and page number in sequence.

Refer to *Appendix B: Sample Page*.

Cover Page

The cover page shall include document title, submission phase, date, project name, address, project number, Government of Canada logo, security designation, DCC contract number.

Author's/Consultant's Identification

Identification shall include all joint venture partners, sub-consultants, specialists, etc. contributing to the report.

2.5 Reports

Reports shall be submitted in binders with tabs for each of the design phases in accordance with the Statement of Work.

Note: The content submitted for each design phase is not to be deleted, but built upon and updated for every following design phase, as a means to document and record the design process.

Organization:

- Cover Page
- Consultant's Identification
- Table of Contents
- Executive Summary
- Administrative
- Statement of Construction Requirements (SOCR)
- Project Execution Plan
- Cost Control Plan
- Project Schedule Analysis
- Risk Analysis

En-têtes

Chaque page doit indiquer le titre du projet, l'emplacement du projet, le numéro du projet, le titre de la section, le numéro de la section, la page et la date.

Reportez-vous à l'*Annexe B : Exemple*.

Bas de page

Chaque page doit indiquer la classification de sécurité et le numéro de page séquentiel.

Reportez-vous à l'*Annexe B : Exemple*.

Page couverture

La page couverture doit indiquer le titre du document, l'étape de la soumission, la date, le nom du projet, l'adresse, le numéro du projet, le logo du gouvernement du Canada, la désignation de sécurité, et le numéro de contrat de CDC.

Identification de l'expert-conseil/auteur

L'identification doit viser tous les partenaires de coentreprise, les sous experts conseils, les spécialistes, etc. qui participent à la rédaction du rapport.

2.5 Rapports

Les rapports doivent être remis dans des cahiers comportant des onglets pour chaque étape de la conception, conformément à l'Énoncé des travaux.

Remarque : Le contenu présenté pour chacune des étapes de la conception ne doit pas être supprimé, mais il doit servir de contenu de base et être mis à jour pour chaque étape subséquente de la conception dans le but de documenter et de consigner le processus de conception.

Organisation :

- Page couverture
- Identification de l'expert-conseil
- Table des matières
- Sommaire
- Analyse administrative
- Énoncé des besoins en construction (EBC)
- Plan de mise en œuvre du projet
- Plan de contrôle des coûts
- Analyse de l'échéancier du projet
- Analyse des risques

- Appendices
- Endnotes / reference list / bibliography
- Glossary

For detailed content, refer to **Chapters 3–6**

2.6 Drawings

- All CAD drawings shall conform to the *DND CAD/BIM Standard*, latest edition. All AutoCAD drawings shall be self-checked for *DND CAD Standard* compliance prior to submission.
- Organization shall be as per *DND CAD/BIM Standard*.
- Drawings shall be consistent throughout the document set, and shall conform to the sheet sizes outlined in the *DND CAD/BIM Standard*, latest edition.
- Electronic documents authored using a software application shall be delivered under the following conditions:
 - Each drawing sheet/file named in accordance with the *DND CAD/BIM Standard*
 - Drawing sheets organized in discipline folders as per *DND CAD/BIM Standard*
- All drawings shall be fully coordinated and cross-referenced between all disciplines

CAD Drawing Output

Drawings shall be submitted in .dwg format, their original format, and a PDF/E iteration.

External CAD reference files shall be bound into host drawings using the insert option. Attached image files shall be embedded into the drawing. Reference files shall be submitted in the same folder as the host drawings.

BIM Drawing Output

Drawings generated from the building information model(s) shall be submitted in PDF format for interim submissions.

Drawings generated from the building information model(s) shall be submitted in both PDF and .dwg format for the final submission.

- Annexes
- Notes finales/liste de références/bibliographie
- Glossaire

Pour plus de détails sur le contenu, reportez-vous aux **chapitres 3 à 6**.

2.6 Plans

- Tous les plans doivent être conformes à la version en vigueur de la *Norme de CAO/BIM du MDN*. Tous les plans en format AutoCAD doivent être vérifiés pour s'assurer qu'ils respectent la norme du MDN avant leur présentation.
- L'organisation des plans doit être conforme à la *Norme de CAO/BIM du MDN*.
- Les dimensions des plans doivent être conformes dans tout le jeu et être conformes aux dimensions prescrites par la *Norme de CAO/BIM du MDN* en vigueur.
- Les documents électroniques créés au moyen d'un logiciel doivent être livrés en vertu des conditions suivantes :
 - Chaque feuille de plan et chaque fichier doivent être nommés conformément à la *Norme de CAO/BIM du MDN*.
 - Les feuilles de plans doivent être organisées en dossiers par discipline, conformément à la *Norme de CAO/BIM du MDN*.
- Tous les plans doivent être coordonnés avec renvois entre toutes les disciplines.

Plans CAO

Les plans doivent être présentés en format DWG, original et PDF/E.

Les fichiers de référence CAO externes doivent être intégrés dans les plans hôtes au moyen de l'option d'insertion. Tous les fichiers d'image en pièces jointes doivent être intégrés dans le plan. Les fichiers de référence doivent être présentés dans le même dossier que les plans hôtes.

Plans BIM

Les plans produits à partir des modèles d'information du bâtiment (BIM) doivent être présentés en format PDF pour les soumissions provisoires.

Les plans produits à partir des BIM doivent être présentés en formats PDF et DWG pour les soumissions définitives.

Building Information Models

BIM model methodology and organization shall be executed in accordance with the DND CAD/BIM Standard and the approved Project Execution Plan (PxP). See *Appendix C: Project Execution Plan*.

All Building Information Models (BIMs) used for design, coordination, analysis and/or drawing output shall be fully coordinated and submitted in the agreed formats and Level of Development (LOD) stated in Project Execution Plan and approved by DND Technical Authority.

All drawings generated from BIMs shall be submitted in conformance to the *DND CAD/BIM Standard* and *DND Documentation and Submission Standards* Section 2.6.

All reports such as clash/interference check reports shall be submitted as agreed and approved of in the Project Execution Plan.

For application file format/version requirements, refer to *Appendix D: File Requirements*.

2.7 Specifications

The latest edition of the National Master Specification (NMS) sections and section formatting shall be used.¹

MasterFormat: List of section titles and numbers that the Construction Specifications Canada (CSC) and Construction Specifications Institute (CSI) of the United States jointly produce shall be used (latest edition) for DND specification sections, where not included in the NMS.

Narrow scope sections describing single units of work shall be used for complex work.

Broad scope sections may be used for less complex work.

¹ The National Master Specification is a bilingual system of master construction specification sections, which cover a wide range of construction and/or renovation projects.

Modèles d'information du bâtiment

La méthodologie et l'organisation des modèles d'information du bâtiment (BIM) doivent être conformes à la Norme de CAO/BIM du MDN et au plan de mise en œuvre du projet approuvé. Voir l'*Annexe C : Plan de mise en œuvre du projet*.

Tous les modèles BIM utilisés pour la conception, la coordination, l'analyse et(ou) le format de sortie des plans doivent être coordonnés et soumis dans les formats convenus et conformément au degré d'élaboration indiqué dans le plan de mise en œuvre du projet et approuvé par le responsable technique du MDN.

Tous les plans produits à partir de BIM doivent être présentés conformément aux exigences de la *Norme de CAO/BIM du MDN* et de la section 2.6 des Normes de documentation et de soumission du MDN.

Tous les rapports, notamment les rapports sur la détection des conflits, doivent être présentés comme convenu et approuvés dans le plan de mise en œuvre du projet.

Pour connaître les exigences relatives au format ou à la version des fichiers de la demande, reportez-vous à l'*Annexe D : Exigences relatives aux fichiers*.

2.7 Devis

Il faut utiliser la plus récente version du Devis directeur national (DDN) pour les sections et leur formatage.¹

Répertoire normatif (MasterFormat) : liste des titres et des numéros de section que le Construction Specifications Institute (CSI) des États Unis et Devis de construction Canada (DCC) produisent en collaboration, et dont la plus récente version doit être utilisée pour les sections des devis du MDN, lorsqu'elles ne sont pas incluses dans le DDN.

Les sections dont la portée est réduite et qui décrivent des ouvrages individuels doivent être utilisées pour les travaux complexes.

Les sections dont la portée est vaste peuvent convenir aux travaux moins complexes.

¹ Le Devis directeur national (DDN) est un système bilingue de sections de Devis de construction, qui porte sur un large éventail de travaux de construction et(ou) de rénovation.

Organization

- Cover Sheet
- Consultant's Identification
- List of Drawings
- Table of Contents
- Divisions 00 through 48

For detailed content, refer to checklists (*Appendices E to J*)

2.8 Presentation Models

- Both electronic and traditional built formats are acceptable.
- Model size shall be appropriate to express intentions at the prescribed design stage.
- Electronic format models shall be illustrated graphically appropriate for high resolution.
- Digital models shall include three-dimensional massing, computer animation walk-through conforming to minimum 640x480 projector size (.mp4, .mpeg, or .avi format) in appropriate detail for the submission stage.
- Traditional built models shall be constructed of durable materials (wood or plastic).

2.9 Photographs

Digital photographs shall be high resolution [i.e., a minimum of 600 dpi at 102mm x 152mm (~2MB) in electronic format]. At a minimum, 102mm x 152mm prints of each digital photo shall be included in reports or mounted in archival quality 216mm x 279mm photo storage pages.

Organisation

- Page couverture
- Identification de l'expert conseil
- Liste des plans
- Table des matières
- Divisions 00 à 48

Pour plus de détails sur le contenu, reportez-vous aux aide-mémoire (*Annexes E à J*)

2.8 Maquettes de présentation

- Les maquettes conçues électroniquement ou de manière traditionnelle sont acceptables.
- La taille des maquettes doit être suffisante pour exprimer les objectifs d'une étape de conception donnée.
- Les maquettes électroniques doivent être illustrées graphiquement pour la haute résolution.
- Les maquettes numériques doivent permettre une visite animée à l'ordinateur et en trois (3) dimensions, compatible avec un projecteur d'au moins 640 x 480 (format MP4, MPEG ou AVI) et comportant suffisamment de détails pour l'étape de soumission.
- Les maquettes conçues traditionnellement doivent être durables (bois ou plastique).

2.9 Photographies

Les photographies numériques doivent avoir une haute résolution [c. à d. au moins 600 ppp de 102 mm x 152 mm (~2 Mo) en format électronique]. Des épreuves d'au moins 102 mm x 152 mm de chaque photo numérique doivent être jointes aux rapports ou montées en pages de rangement de 216 mm x 279 mm de qualité archive.

Pre-Design: Analysis of Project Requirements

3.1	General.....	18
3.2	Submissions.....	18
3.3	Outline for Pre-Design Report.....	18
3.3.1	Executive Summary.....	18
3.3.2	Administrative.....	18
3.3.3	Statement of Construction Requirements (SOCR).....	19
3.3.4	Project Execution Plan.....	22
3.3.5	Cost Control Plan.....	22
3.3.6	Project Schedule Analysis.....	22
3.3.7	Risk Analysis.....	22
3.1		

	Généralités.....	18
3.2	Documents à soumettre.....	18
3.3	Aperçu du rapport de préconception.....	18
3.3.1	Sommaire.....	18
3.3.2	Administratif.....	18
3.3.3	Énoncé des besoins en construction (EBC).....	19
3.3.4	Plan de mise en œuvre du projet.....	22
3.3.5	Plan de contrôle des coûts.....	22
3.3.6	Analyse de l'échéancier du projet.....	22
3.3.7	Analyse des risques.....	22

3

Préconception (analyse des exigences du projet)

3 Pre-Design: Analysis of Project Requirements

3.1 General

The Pre-Design Report is intended to be the formal project work plan and shall include a comprehensive review, analysis, and summary of the project requirements documenting the consultant's understanding of all of the available documentation and information about the project.

3.2 Submissions

Binding, electronic format, paper format, organization shall conform to **Chapter 2**.

3.3 Outline for Pre-Design Report

The Pre-Design Report shall contain the following sections:

3.3.1 Executive Summary

The Executive Summary shall contain a précis of the key regulatory, programmatic, project design and cost, schedule and risk analysis. The Pre-Design report shall contain a preliminary understanding of the project budget, milestone delivery dates and the various risks associated with delivery of the project.

3.3.2 Administrative

This section shall contain the following items:

- A copy of the Authorization to Proceed with the Pre-design stage of the project
- Minutes of the Project Start-up Meeting/Administrative Briefing
- Summaries of Key Decisions and Recommendations from partnering sessions, workshops, etc.
- Inventory of all material (reports, drawings, investigations, etc.) received from DND and confirmation from the DND Project Manager that the material is current and complete
- Security Control Measures
- Communications Strategy
- Quality Plan complete with checklist of quality checks throughout the design process

3 Rapport de préconception : Analyse des exigences du projet

3.1 Généralités

Le rapport de préconception doit comprendre un examen, une analyse et un résumé complets des exigences du projet et faire état de la compréhension, par l'expert conseil, de tous les documents et renseignements disponibles à propos du projet; ce rapport est destiné à constituer le plan officiel des travaux dans le cadre du projet.

3.2 Documents à soumettre

La reliure, les formats électroniques et imprimés, ainsi que l'organisation des documents, doivent être conformes aux exigences énoncées au **chapitre 2**.

3.3 Aperçu du rapport de préconception

Le rapport de préconception doit comprendre les sections qui suivent :

3.3.1 Sommaire

Le sommaire doit comprendre un précis des principales réglementations, des programmes, de la conception du projet et des coûts, du calendrier et de l'analyse des risques. Le rapport de préconception doit refléter une compréhension préliminaire du budget, des dates de livraison échelonnées et des divers risques associés à la réalisation du projet.

3.3.2 Administratif

Cette section doit comprendre les éléments suivants :

- Une copie de l'autorisation de passer à l'étape de la préconception du projet.
- Des comptes rendus de la réunion sur le démarrage initial du projet et de la séance d'information administrative.
- Des résumés des décisions clés et des recommandations énoncées durant les réunions de partenariat, les ateliers, etc.
- L'inventaire de tout le matériel (rapports, plans, enquêtes, etc.) reçu du MDN, de même qu'une confirmation de la part du gestionnaire de projet du MDN comme quoi le matériel est à jour et complet.
- Les mesures de contrôle de sécurité.
- La stratégie de communication.
- Le plan de qualité, qui comprend une liste des vérifications de la qualité à effectuer au cours du processus de conception.

3.3.3 Statement of Construction Requirements (SOCR)

The section shall contain a summary of the Consultant's understanding and confirmation of the Statement of Operational Requirements (SOR) and Concept of Operations.

3.3.3.1 Functional Program Analysis

- Basic area calculations
- Program net areas by function (room/space data sheets, including HVAC, electrical, lighting, data, telecommunications requirements)
- Gross floor area/Gross-up factor
- Special provisions
- Spatial/functional relationship: horizontal and vertical; basic analysis of building height (possible number of storeys); clear height requirements; special provisions

3.3.3.2 Project Design

1) Regulatory Analysis

Code Analysis

- Building classification
- Occupancy group(s)
- Firefighter access
- Occupancy load calculations
- Barrier-free/Universal design requirements
- Fire resistance requirements
- Construction type
- General egress requirements
- Climatic data
- Structural requirements:
 - Live load requirements
 - Seismic data
 - Importance category (normal, high or post-disaster)
- List of all codes and standards being used for fire and life safety systems

Fire and Life Safety Analysis

- Précis of meetings with authorities having jurisdiction [Canadian Forces Fire Marshal (CFFM), Base/Wing Fire Chief]
- Identify any perceived challenges with fire protection/life safety design

3.3.3 Énoncé des besoins en construction (EBC)

Cette section doit comprendre un résumé de la compréhension par l'expert conseil et la confirmation de l'énoncé des besoins opérationnels et du concept d'exploitation.

3.3.3.1 Analyse fonctionnelle du programme

- Calcul de l'emplacement de base.
- Superficies nettes programmées par fonction (fiches techniques sur les salles/l'espace, y compris les exigences relatives au CVCA, à l'électricité, à l'éclairage, aux données et aux télécommunications).
- Superficie brute/facteur de majoration.
- Dispositions spéciales.
- Relation spatiale/fonctionnelle : horizontale et verticale; analyse de base de la hauteur des bâtiments (nombre possible d'étages); exigences relatives à la hauteur libre; dispositions spéciales.

3.3.3.2 Conception du projet

1) Analyse de la réglementation

Analyse des codes

- Classification des bâtiments
- Groupes d'occupation
- Accès au service des incendies
- Calculs de nombre d'occupants
- Exigences relatives aux principes de la conception universelle/de l'accessibilité des bâtiments
- Exigences relatives à la résistance au feu
- Type de construction
- Exigences générales d'évacuation
- Données climatiques
- Exigences structurales :
 - Exigences relatives aux surcharges
 - Données parasismiques
 - Catégorie d'importance (normale, élevée ou protection civile)
- Liste de toutes les normes et de tous les codes utilisés pour les systèmes de sécurité incendie et de sécurité des personnes

Analyse de la sécurité-incendie et de la sécurité des personnes

- Précis des réunions avec les autorités compétentes [directeur – Service des incendies (Forces canadiennes) (DSIFC), chef du Service d'incendie de la base/l'escadre]
- Indication de tout problème perçu dans la conception des systèmes de sécurité incendie et de sécurité des personnes

Zoning Analysis

- Zoning classification
- Setback requirements
- Building height restrictions
- Allowable density
- Parking requirements
- Rights-of-way
- Airfields zoning
- Range/explosive safety templates
- Ammunition storage

2) Site/Services Strategy

- Location of existing nearby site services (utilities)
- Site and building access
- Delivery services
- Waste management services (see *Appendix K: Waste Management*)
- Telecommunications

Confirmed DND Requirements

- Specific Base/Wing architectural and engineering standards

Municipal Infrastructure

- Subsurface and above-grade services
- Preliminary calculation of utility demands and loads
- Calculation of available system capacities: Provide design criteria for the design of site utilities, including water, sanitary, and stormwater (quantity and quality)
 - Based on available Base/Wing information (i.e., existing system building loads/demands)
- Adequacy of existing conditions: Provide a preliminary assessment on adequacy of existing Base utilities to accommodate demands/loads based on available information
 - Storm water drainage, fire suppression, domestic water, sanitary sewer, power, telecommunications, steam and gas

Site Analysis

- Landscape features
- Earthwork
 - Topographical features: Narrative on overall topography, associated constraints and challenges as well as related geotechnical issues
- Subsurface, geotechnical analysis of soils

Analyse du zonage

- Classification du zonage
- Exigences relatives aux marges de recul
- Restrictions relatives à la hauteur du bâtiment
- Densité admissible
- Besoins en stationnement
- Emprises
- Zonage des aérodromes
- Modèles de sécurité du tir et des explosifs
- Entreposage des munitions

2) Stratégie de services à l'emplacement

- Localisation des services existants à proximité (services publics)
- Accès à l'emplacement et au bâtiment
- Services de livraison
- Services de gestion des déchets (voir l'*Annexe K : Gestion des déchets*)
- Télécommunications

Exigences confirmées du MDN

- Normes architecturales et techniques propres à la base/l'escadre.

Infrastructures municipales

- Services souterrains et surélevés
- Calcul préliminaire des demandes de services publics et des charges
- Calcul de la capacité des systèmes disponibles : fournir les critères conceptuels pour la conception des services publics du site, ce qui comprend l'eau potable, les égouts sanitaires et les eaux pluviales (quantité et qualité)
 - Fondé sur les renseignements sur la base/l'escadre fournis (c. à d. la puissance et la charge du bâtiment existant)
- Vérification des conditions existantes : fournir une évaluation préliminaire du caractère adéquat des services publics existants de la base pour satisfaire à la demande/charge en se fondant sur les renseignements disponibles.
 - Drainage des eaux pluviales, lutte contre les incendies, eau potable, égouts sanitaires, alimentation électrique, télécommunications, alimentation en vapeur et en gaz

Analyse de l'emplacement

- Éléments paysagés
- Terrassement
 - Caractéristiques topographiques : description de la topographie générale, des contraintes et des problèmes s'y rapportant, ainsi que les questions géotechniques
- Analyses souterraines et géotechniques des sols

- Climatic influences
 - Wind directions, sun angles, seasonal weather patterns
- Environmental features
 - Including sustainable design opportunities, security requirements/ influences
- Existing buildings structures
- Site circulation: Provide design criteria, including vehicle types, circulation requirements, and number of parking spaces with justification
 - Vehicular access
 - Parking spaces (military and civilian)
- Pedestrian access
- Site photographs
- Storm water management requirements and approach
 - Based on DND standards, and local jurisdictional requirements
 - Existing Base storm water management plans and risk assessments are to be reviewed and discussed with Base personnel
- Environmental Assessment Report
 - Including (if applicable) historical/archaeological features, previous uses, mitigation measures

3) Building Systems Analysis

- Structural
- Architectural
- Mechanical
- Electrical
- Communications

4) Security Analysis

- Force protection analysis
 - Civil
 - Structural
- Security systems analysis
 - EMSEC zoning analysis

5) Sustainable design analysis

- See *Appendix L: Sustainability*
- Shall conform to the National Energy Code for Buildings (NECB) latest edition or approved equivalent
- Identification of approach to sustainable site design and design criteria
- Green Building Directive: Preliminary LEED / GreenGlobe targeted points

- Influences du climat
 - Direction des vents, angle des rayons du soleil, modèles météorologiques saisonniers
- Caractéristiques environnementales
 - Y compris les possibilités de conception durable, et les exigences et influences liées à la sécurité
- Structures ou bâtiments existants
- Circulation sur le site : fournir les critères de conception, notamment les types de véhicules, les exigences relatives à la circulation, et le nombre de places de stationnement avec justification
 - Accès pour les véhicules
 - Places de stationnement (pour militaires et civils)
- Accès pour les piétons
- Photographies de l'emplacement
- Approche et exigences en matière de gestion des eaux pluviales
 - Fondées sur les normes du MDN et les exigences des autorités locales
 - Les plans existants de gestion des eaux pluviales de la base et les évaluations des risques doivent faire l'objet d'un examen et de discussions avec le personnel de la base
- Rapport d'évaluation environnementale
 - Y compris, s'il y a lieu, les caractéristiques historiques/archéologiques, les utilisations antérieures et les mesures d'atténuation

3) Analyse des systèmes du bâtiment

- Structures
- Architecture
- Mécanique
- Électricité
- Communications

4) Analyse de la sécurité

- Analyse de la protection de la force
 - Civil
 - Structure
- Analyse des systèmes de sécurité
 - Analyse du zonage EMSEC

5) Analyse de la conception durable

- Voir l'*Annexe L : Durabilité*
- Doit être conforme au Code national de l'énergie pour les bâtiments (CNEB) en vigueur ou son équivalent approuvé
- Définition de l'approche à l'égard des critères de conception et de la conception durable de l'emplacement
- Directive sur l'écologisation des bâtiments : points ciblés LEED/Green Globes préliminaires

- Enclosure and systems options
- Civil
- Structural
- Architectural
- Mechanical
- Electrical

6) Heritage Preservation Analysis

Shall conform to DND, Federal Heritage Buildings Review Office (FHBRO), and Historic Places: Standards and Norms

7) Project Delivery Strategy

- Swing space requirements
- Phasing requirements

3.3.4 Project Execution Plan

See *Appendix C: Project Execution Plan*

3.3.5 Cost Control Plan

- See *Appendix M: Costing*
 - Budget analysis including confirmation of the feasibility of achieving the construction cost limit
 - Estimate

3.3.6 Project Schedule Analysis

- Schedule Control Plan (see *Appendix N: Schedule Analysis*)

3.3.7 Risk Analysis

- Risk Management Plan (see *Appendix O: Risk Analysis*)

- Options de bâtis et de systèmes
- Génie civil
- Structure
- Architecture
- Mécanique
- Électricité

6) Analyse de la conservation du patrimoine

Doit être conforme aux exigences du MDN, du Bureau d'examen des édifices fédéraux du patrimoine (BEEFP) et des normes et lignes directrices concernant les lieux historiques

7) Stratégie d'exécution du projet

- Exigences relatives aux locaux transitoires
- Exigences relatives aux phases

3.3.4 Plan de mise en œuvre du projet

Voir l'*Annexe C : Plan de mise en œuvre du projet*

3.3.5 Plan de contrôle des coûts

- Voir l'*Annexe M : Établissement des coûts*
 - Analyse du budget, y compris la confirmation de la faisabilité concernant le respect de la limite des coûts de construction
 - Estimation des coûts

3.3.6 Analyse de l'échéancier du projet

- Plan de contrôle de l'échéancier (voir l'*Annexe N : Analyse du calendrier*)

3.3.7 Analyse des risques

- Plan de gestion des risques (voir l'*Annexe O : Analyse des risques*)

Concept Design

4.1	General	24
4.2	Submissions	24
4.3	Outline for Concept Design Report	24
4.3.1	Executive Summary	24
4.3.2	Administrative	24
4.3.3	Statement of Construction Requirements (SOCR)	25
4.3.4	Project Execution Plan	32
4.3.5	Cost Control Plan	32
4.3.6	Project Schedule Analysis	32
4.3.7	Risk Analysis	32

	Généralités	24
4.2	Documents à soumettre	24
4.3	Aperçu du rapport de l'étude conceptuelle	24
4.3.1	Sommaire	24
4.3.2	Administratif	24
4.3.3	Énoncé des besoins de construction (EBC)	25
4.3.4	Plan de mise en œuvre du projet	32
4.3.5	Plan de contrôle des coûts	32
4.3.6	Analyse de l'échéancier du projet	32
4.3.7	Analyse des risques	32

4

Étude conceptuelle (conception)

4 Concept Design

4.1 General

Concept Design documents shall be submitted, as outlined in the Consultant Statement of Work, at the Concept Design stage.

It is DND policy to review and analyze a minimum of three (3) substantially different multi-disciplinary, integrated options for the accommodation of the project functional and technical requirements.

4.2 Submissions

Concept Design documents shall be submitted in report and drawing format. Binding, electronic format, paper format, organization shall conform to Chapter 2.

4.3 Outline for Concept Design Report

The Concept Design report shall contain the following sections:

4.3.1 Executive Summary

The Executive Summary shall contain a précis of the key regulatory, programmatic, project design and cost, schedule and risk analysis, along with a clear recommendation of the preferred integrated design option.

4.3.2 Administrative

This section shall contain the following items, updated from the Pre-Design report:

- A copy of the authorization to proceed with the Concept Design stage of the project
- Minutes of the Project Start-up Meeting/Administrative Briefing
- Summaries of Key Decisions and Recommendations from partnering sessions, workshops, design charrettes, etc.
- Inventory of all material (reports, drawings, investigations, etc.) received from DND and confirmation from the DND Project Manager that the material is current and complete
- Security Control Measures
- Communications Strategy
- Quality Plan complete with checklist of quality checks throughout the design process

4 Étude conceptuelle (conception)

4.1 Généralités

Les documents de l'étude conceptuelle doivent être présentés de la façon indiquée dans l'Énoncé des travaux de l'expert conseil à l'étape de l'étude conceptuelle.

Le MDN a pour politique d'étudier et d'analyser au moins trois (3) options multidisciplinaires intégrées différentes pour répondre aux exigences fonctionnelles et techniques du projet.

4.2 Documents à soumettre

Les documents de l'étude conceptuelle doivent être présentés selon les formats de rapport et de plans. La reliure, les formats électroniques et imprimés, ainsi que l'organisation des documents, doivent être conformes aux exigences énoncées au chapitre 2.

4.3 Aperçu du rapport de l'étude conceptuelle

Le rapport de l'étude conceptuelle doit contenir les sections suivantes :

4.3.1 Sommaire

Le sommaire doit contenir un précis des principales réglementations, des programmes, de la conception et des coûts du projet, du calendrier et de l'analyse des risques, ainsi qu'une recommandation claire de la meilleure option conceptuelle intégrée.

4.3.2 Administratif

Cette section doit comprendre les éléments suivants, mis à jour sur la base du rapport de préconception :

- Une copie de l'autorisation de procéder à l'étude conceptuelle du projet
- Les procès-verbaux de la réunion sur le démarrage initial et de la séance d'information administrative
- Des résumés des décisions et des recommandations énoncées durant les réunions de partenariat, les ateliers, les charrettes de conception, etc.
- L'inventaire de tout le matériel (rapports, plans, enquêtes, etc.) reçu du MDN, de même qu'une confirmation de la part du gestionnaire de projet du MDN comme quoi le matériel est à jour et complet
- Les mesures de contrôle de la sécurité
- La stratégie de communication
- Le plan de la qualité, qui comprend une liste des vérifications de la qualité à effectuer au cours du processus de conception

4.3.3 Statement of Construction Requirements (SOCR)

This section shall contain a summary of the Consultant's understanding of how each option meets the Statement of Operational Requirements (SOR) and Concept of Operations. It shall contain the following items, updated from the Pre-Design report:

4.3.3.1 Functional Program Analysis

- Finalized Statement of Construction Requirements clearly describing the changes/updates, along with acknowledgment letter signed by the integrated team principals
- Basic area calculations
- Program net areas by function (room/space data sheets, including HVAC, electrical, lighting, data, telecommunications requirements)
- Gross floor area/Gross-up factor
- Special provisions
- Spatial/functional relationship: horizontal and vertical; basic analysis of building height (possible number of storeys); clear height requirements; special provisions

4.3.3.2 Project Design

1) Regulatory Analysis

Code Analysis

- Complete National Building Code of Canada (NBCC) – Data Matrix
- Project description
- Building classification
- Occupancy group(s)
- Building area (m²) / Gross area (m²)
- Number of storeys above grade/below grade
- Number of streets/firefighter access
- Sprinkler system proposed
- Standpipe required
- Fire alarm required
- Adequate water service/supply
- High building
- Construction restrictions
- Mezzanine(s) area (m²)
- Occupant load calculations based on m²/person or design of building
- Barrier-free/Universal design requirements
- Hazardous substances
- Required fire resistance rating (FRR)

4.3.3 Énoncé des besoins de construction (EBC)

Cette section doit comprendre un résumé de la compréhension, par l'expert conseil, de la façon dont chaque option respecte l'Énoncé des besoins opérationnels (EBO) et le concept d'exploitation. Il doit comprendre les éléments suivants, mis à jour sur la base du rapport de préconception :

4.3.3.1 Analyse fonctionnelle du programme

- Version définitive de l'Énoncé des besoins en construction qui décrit clairement les changements/mises à jour, accompagnée d'une lettre d'attestation signée par les responsables de l'équipe intégrée
- Calcul de la superficie de base
- Superficies nettes programmées par fonction (fiches techniques sur les salles/l'espace, y compris les exigences relatives au CVCA, à l'électricité, à l'éclairage, aux données et aux télécommunications)
- Superficie brute/facteur de majoration
- Dispositions spéciales
- Relation spatiale/fonctionnelle : horizontale et verticale; analyse de base de la hauteur des bâtiments (nombre possible d'étages); exigences relatives à la hauteur libre; dispositions spéciales

4.3.3.2 Conception du projet

1) Analyse de la réglementation

Analyse des codes

- Code national du bâtiment (CNB) – matrice de données
- Description du projet
- Classification du bâtiment
- Classification de l'usage
- Aire de bâtiment (m²)/aire brute (m²)
- Nombre d'étages au-dessus/en dessous du niveau moyen du sol.
- Nombre de rues/voies d'accès pour le service des incendies
- Système de gicleurs proposé
- Canalisations d'incendie requises
- Système d'alarme-incendie requis
- Alimentation en eau/alimentation adéquate
- Bâtiment de grande hauteur
- Restrictions relatives à la construction
- Superficie de la ou des mezzanines (m²)
- Densité d'occupation selon le nombre de m²/personnes ou la conception du bâtiment
- Exigences relatives aux principes de conception universelle/sans obstacles.
- Matières dangereuses
- Degré de résistance au feu (DRF) requis

Normes de documentation et de soumission du MDN

- Spatial separation (construction of exterior walls)
- Plumbing fixture requirements
- General egress requirements
- Climatic data
- Structural requirements:
 - Live load requirements
 - Seismic data
 - Importance category (normal, high or post disaster)
- List of all codes and standards being used for fire and life safety systems
- Ventilation requirements

Fire and Life Safety Analysis

- Précis of meetings with authorities having jurisdiction [Canadian Forces Fire Marshal (CFFM), Base Fire Chief]
- Fire safety design narrative (may be separate or integrated into architectural, mechanical, electrical) for each (minimum three options required) potential active or passive fire safety systems and egress systems
 - Description of the proposed active and passive fire safety systems and egress systems, identification of special requirements (i.e., high-rise, atrium, interconnected floor spaces, grand stairways, etc.), and description of how the proposed design solutions will address the requirements of the identified codes and standards.

Zoning Analysis

- Zoning classification
- Setback requirements
- Building height restrictions
- Allowable density
- Parking requirements (military and civilian)
- Servicing requirements
- Rights-of-way
- Airfields zoning
- Range/explosive safety templates
- Ammunition storage

2) Site/Services Design (Civil)

- Location of existing nearby site services (utilities)
- Site and building access
- Delivery services
- Waste management services (see *Appendix K: Waste Management*)
- Telecommunications

- Séparation spatiale (construction des murs extérieurs)
- Exigences relatives aux accessoires de plomberie
- Exigences générales relatives aux issues de secours
- Données climatiques
- Exigences structurales
 - Exigences relatives aux surcharges
 - Données parasismiques
 - Catégorie d'importance (normale, élevée ou protection civile)
- Liste de toutes les normes et de tous les codes utilisés pour les systèmes de sécurité incendie et de sécurité des personnes
- Exigences relatives à la ventilation

Analyse de la sécurité-incendie et de la sécurité des personnes

- Précis des réunions avec les autorités compétentes (directeur – Service des incendies (Forces canadiennes) (DSIFC), chef du Service d'incendie de la base).
- Description de la conception de la sécurité-incendie (peut être séparée ou intégrée à l'architecture, la mécanique ou l'électricité) pour chaque système de sécurité incendie actif ou passif potentiel et système d'issues de secours (minimum de trois options requises).
 - Description des systèmes de sécurité-incendie actifs et passifs et systèmes d'issues de secours proposés, détermination des exigences particulières (p. ex. pour les grands bâtiments, l'atrium, les aires communicantes des étages, les escaliers principaux, etc.), et description de la façon dont les solutions conceptuelles proposées satisfont aux exigences des normes et codes indiqués.

Analyse du zonage

- Classification du zonage
- Exigences relatives aux marges de recul
- Restrictions quant à la hauteur du bâtiment
- Densité admissible
- Besoins en stationnement (militaires et civils)
- Exigences relatives aux services
- Emprises
- Zonage des aéroports
- Modèles de sécurité de tirs et d'explosifs
- Entreposage des munitions

2) Conception des services à l'emplacement (Civil)

- Localisation des services existants à proximité (services publics)
- Accès à l'emplacement et au bâtiment
- Services de livraison
- Services de gestion des déchets (voir l'*Annexe K : Gestion des déchets*)
- Télécommunications

Confirmed DND Requirements

- Specific Base/Wing architectural and engineering standards

Municipal Infrastructure

- Subsurface and above grade services
- Preliminary calculation of utility demands and loads
- Calculation of available system capacities
 - Based on available Base / Wing information (i.e., existing system building loads/demands)
- Adequacy of existing conditions
 - Storm water drainage, fire suppression, domestic water, sanitary sewer, power, telecommunications, steam and gas

Site Analysis

Narratives and calculations shall include:

- Landscape features
- Earthwork
 - Topographical features
 - Existing natural topographical features and proposed changes, drainage patterns
 - Subsurface, geotechnical analysis of soils
- Climatic influences
 - Existing climatic conditions, wind rose, sun and shadow study for winter and summer solstices and two equinoxes, and proposed design considerations
- Environmental features
 - Existing environmental conditions including any erosion conditions with remediation, wetlands and locations of flood plains, pollution with remediation, hazardous wastes with remediation
- Existing buildings / structures
 - Existing and proposed built environment and physical conditions including relationships with surrounding buildings (style, massing and scale), design consideration relating to views including building heights, noise and visual considerations
- Site circulation: Provide a narrative that describes the preliminary site circulation design; number of site entrances; pedestrian circulation; number of stalls (military/ civilian); number of bicycle parking racks; design of service areas, including a description of number and sizes of trucks that can be accommodated; and propose scheme for waste removal and fire department access routes

Exigences confirmées du MDN

- Normes architecturales et techniques propres à la base/l'escadre

Infrastructures municipales

- Services souterrains et surélevés
- Calcul préliminaire des demandes et des charges de services publics
- Calcul de la capacité des systèmes disponibles
 - Fondé sur les renseignements sur la base/l'escadre fournis (c. à d. la puissance et la charge du bâtiment existant)
- Vérification des conditions existantes
 - Drainage des eaux pluviales, lutte contre les incendies, eau potable, égouts sanitaires, alimentation électrique, télécommunications, alimentation en vapeur et en gaz

Analyse de l'emplacement

La description et les calculs doivent comprendre les éléments suivants

- Éléments paysagers
- Terrassement
 - Caractéristiques topographiques
 - Caractéristiques topographiques naturelles existantes et modifications proposées, modèles de drainage
 - Analyses souterraines et géotechniques des sols
- Influences du climat
 - Conditions météorologiques existantes, étude de la rose des vents, de l'ensoleillement et de la couverture nuageuse pour les solstices d'hiver et d'été et pour les deux équinoxes, ainsi que les considérations relatives à la conception
- Caractéristiques environnementales
 - Conditions environnementales existantes, y compris l'érosion et les mesures correctives, l'emplacement des sols humides et des périmètres d'inondation, la pollution et les mesures correctives, les déchets dangereux et les mesures correctives
- Structures/bâtiments existants
 - Les conditions matérielles et les environnements bâtis existants et proposés, y compris la relation avec les bâtiments environnants (style, masse et échelle); les considérations de conception relatives au panorama, comme la hauteur des bâtiments et les considérations relatives au bruit et à la vue
- Circulation sur le site : Donner une description de la conception préliminaire pour la circulation sur le site; le nombre d'entrées y donnant accès; la circulation piétonnière; le nombre de places de stationnement (pour militaires/civils); le nombre de supports à vélo; la logique de la conception des zones de service, y compris la description du nombre et de la grosseur

- Vehicular access
 - Existing and proposed vehicular circulation on the site with respect to surrounding circulation patterns (traffic patterns, public transportation, service roads, pedestrian, bicycle, parking and access, etc.)
- Parking spaces (military and civilian)
- Pedestrian access
- Zoning impacts
 - Design considerations relating to local zoning restrictions (refer to 4.3.3.2.1 Zoning Analysis)
- Site photographs
 - Contiguous areas
 - Elevations of existing buildings and/or landscape (as applicable) surrounding the site
- Storm water management requirements and approach
 - Sustainable requirements/approach (see 4.3.3.2.9)
- Environmental Assessment Report

Site/Civil Drawings

See *Appendix E: Civil Checklist for Specifications and Drawings*

3) Building Design (Structural)

- Proposed structural systems analysis (minimum of three)
 - Functional advantages of each option
 - Design loads for all load cases
 - Structural implications resulting from geotechnical report
 - Special requirements (i.e., High-rise, ammunition, existing structures nearby)
 - Certifying statement for seismic design review on proposed building, seismic assessment results and options
- Analysis shall include factors that may have a bearing on the final selection, such as availability of material, local skilled labour in the erection systems and other concerns

4) Building Design (Architectural)

- Design narrative of options (minimum of three)
 - Design philosophy/intent
 - Organizational concept
 - Expansion potential
 - Description of the preferred option

des camions qu'on peut garer; le schéma proposé pour l'enlèvement des déchets et les voies d'accès pour le service des incendies

- Accès des véhicules
 - Circulation existante et proposée des véhicules sur le site en ce qui a trait aux modes de circulation environnants existants (modes de circulation, transport en commun, chemins de desserte, circulation des piétons et des cyclistes, stationnement et accès, etc.)
- Places de stationnement (pour militaires et civils)
- Accès pour les piétons
- Répercussions du zonage
 - Considérations relatives à la conception en fonction des restrictions locales de zonage (se reporter au point 4.3.3.2.1 Analyse du zonage)
- Photographies de l'emplacement
 - Aires contiguës
 - Niveaux des bâtiments actuels et(ou) de l'aménagement paysager (s'il y a lieu) près de l'emplacement
- Approche et exigences en matière de gestion des eaux pluviales
 - Approche/exigences en matière de durabilité (voir le point 4.3.3.2.9)
- Rapport d'évaluation environnementale

Plans de génie civil/de l'emplacement

- Voir l'*Annexe E : Aide-mémoire génie civil pour les devis et plans*

3) Conception du bâtiment (structure)

- Analyse des systèmes structuraux proposés (minimum de trois)
 - Avantages fonctionnels de chaque option
 - Charges de calcul pour tous les cas de chargement
 - Incidences sur la structure découlant du rapport géotechnique
 - Exigences particulières (p. ex. grands bâtiments, munitions, structures existantes à proximité)
 - Énoncé attestant que la conception du bâtiment a été étudiée pour résister aux séismes, options et résultats de l'évaluation parasismique
- L'analyse doit tenir compte des facteurs pouvant avoir une incidence sur la sélection définitive, p. ex. la disponibilité des matériaux et de la main d'œuvre compétente dans les systèmes de montage et les autres motifs de préoccupation

4) Conception du bâtiment (architecture)

- Description des options conceptuelles (minimum de trois)
 - Philosophie/doctrine de la conception
 - Conception organisationnelle
 - Potentiel d'agrandissement
 - Description de l'option privilégiée

- Building floor efficiency
- Fire safety design (refer also to other disciplines)

- Vertical transportation design
 - Elevators, escalators and stairs
- Operations and Maintenance Goals
- Special construction/demolition
- Including hazardous materials abatement

5) Building Design (Mechanical)

- Proposed HVAC, plumbing, and baseline systems (minimum of three)
 - Preliminary design brief on basis of the design, design criteria and assumptions
 - U factors, shading coefficient, lighting, equipment, people, etc.
 - Description of systems
 - Qualitative comparison of general features
 - Configuration and functional advantages/disadvantages of each system
 - Integration of components with HVAC, such as windows, lighting and building orientation
 - Description of preferred option
- Fire protection concept
- Sequence of operation (normal and emergency modes) and relationship to other systems
- Special construction/demolition

6) Building Design (Electrical)

- Proposed electrical systems and baseline systems (minimum of three)
 - Preliminary design brief on basis of design, design loads and assumptions
 - Lighting, equipment, people, etc.
 - Description of systems and feasibility
 - Qualitative comparison of general features
 - Configuration and functional advantages and disadvantages of each system
 - Description of preferred option
- Fire alarm and life safety concept
- Sequence of operation (normal and emergency modes) and relationship to other systems
- Special construction/demolition

- Efficience des étages du bâtiment
- Conception du système de sécurité-incendie (reportez vous également aux autres disciplines)
- Conception des transports verticaux
 - Ascenseurs, escaliers mécaniques et escaliers
- Objectifs relatifs à l'exploitation et à l'entretien
- Travaux de construction et de démolition spéciaux
- Y compris l'élimination des matières dangereuses

5) Conception du bâtiment (mécanique)

- Systèmes de CVCA, de plomberie proposés et de référence (minimum de trois)
 - Résumé de conception préliminaire décrivant le fondement de la conception, les critères et les hypothèses de conception
 - Facteurs de conductivité (U), coefficient d'ombrage, éclairage, matériel, personnel, etc.
 - Description des systèmes
 - Comparaison qualitative des caractéristiques générales
 - Configuration et avantages/inconvénients fonctionnels de chaque système
 - Intégration des composants au système de CVCA, p. ex. les fenêtres, l'éclairage et l'orientation du bâtiment
 - Description de l'option privilégiée
- Schéma des systèmes de protection-incendie
- Séquence de fonctionnement (modes normal et d'urgence) et relations avec d'autres systèmes
- Travaux de construction/démolition particuliers

6) Conception du bâtiment (électricité)

- Systèmes électriques proposés et de référence (minimum de trois)
 - Résumé de la conception préliminaire décrivant le fondement de la conception, les charges de calcul et les hypothèses
 - Éclairage, matériel, personnel, etc.
 - Description des systèmes et faisabilité
 - Comparaison qualitative des caractéristiques générales
 - Configuration et avantages/inconvénients fonctionnels de chaque système
 - Description de l'option privilégiée
- Conception des systèmes d'alarme-incendie et de sécurité des personnes
- Séquence de fonctionnement (modes normal et urgence) et relations avec d'autres systèmes
- Travaux de construction/démolition particuliers

7) Building Design (Communications)

- Proposed telecommunications
- Information technology / connectivity systems

8) Building Design (Security)

- Force protection
- Proposed security system

9) Sustainable Design Considerations

- See *Appendix L: Sustainability*
- Green Building Directive: Preliminary LEED/GreenGlobe analysis
- Civil
 - Orientation
 - Storm water management approach
- Structural
- Architecture
- Mechanical
 - Provide an energy simulation for each of the three options presented
- Passive heating/cooling strategies
- Natural daylight
- Water management and conservation
- Individual user controls and workstations
- Preliminary energy budget
- Electrical
 - Passive heating/cooling impact on energy requirements
- Natural daylight
- Water management and conservation
- Individual user controls and workstations
- Preliminary energy budget

10) Heritage Preservation Strategy

- Civil — Archaeological
- Structural
- Architectural

11) Building Drawings

Refer to the following:

Appendix E: Civil Checklist for Specifications and Drawings

Appendix F: Structural Checklist for Calculations, Specifications and Drawings

7) Conception du bâtiment (communications)

- Systèmes de télécommunications proposés
- Systèmes de connectivité/technologie de l'information

8) Conception du bâtiment (sécurité)

- Protection de la force
- Système de sécurité proposé

9) Considérations relatives à la conception durable

- Voir l'*Annexe L : Durabilité*
- Directive sur l'écologisation des bâtiments : Analyse LEED/Green Globes préliminaire
- Génie civil
 - Orientation
 - Approche à l'égard de la gestion des eaux pluviales
- Structure
- Architecture
- Mécanique
 - Fournir une simulation de la consommation d'énergie pour chacune des trois options présentées
 - Stratégies de refroidissement et chauffage passifs
 - Lumière naturelle
 - Conservation et gestion des eaux
 - Régulation d'ambiance individuelle dans les postes de travail
 - Budget énergétique préliminaire
- Électricité
 - Incidence du refroidissement et du chauffage passifs sur la consommation d'énergie
 - Lumière naturelle
 - Conservation et gestion des eaux
 - Régulation d'ambiance individuelle dans les postes de travail
 - Budget énergétique préliminaire

10) Stratégie relative à la protection du patrimoine

- Génie civil – Archéologie
- Structure
- Architecture

11) Plans du bâtiment

Veillez vous reporter aux annexes suivantes :

Annexe E : Aide-mémoire génie civil pour les devis et plans

Annexe F : Aide-mémoire structure pour les calculs, les devis et plans

Appendix J: Series 900 Interior Fit-Up Checklist (for interior fit-up projects with structural work)

12) Integrated Renderings and Drawings

Integrated massing drawings (orthographic or perspective renderings) or massing models

- Overall massing
- Orientation
- Indication of solid and voids, that is, punched windows versus curtain wall versus ribbon windows, etc.
- Principle entrances
- Service and parking entrances
- Service penthouses
- Fenestration strategy
- Exterior materials selection

Integrated architectural, structural, mechanical and electrical plans

- Principle entrances
- Lobbies
- Elevators
- Egress stairs
- Work areas
- Special purpose spaces and service spaces responding to program analysis and design options
- Equipment spaces (HVAC, electrical, fire pumps, generators, etc.), sizes, weight and clearance requirements
- Special purpose equipment
- Lighting

Integrated building elevations and vertical sections/Integrated rendered building elevations of major façades

- Relationship of building to site
- Proposed ground elevations
- Floor to floor heights and other critical dimensions responding to Regulatory Analysis
- Fenestration
- Exterior materials
- Louvers and rendered vertical building sections
- Adequate space for structural, mechanical, electrical, telecommunications and passive and active fire safety systems

Annexe J : Aide-mémoire aménagement intérieur, série 900 (pour les projets d'aménagement intérieur nécessitant des travaux de structure)

12) Dessins et rendus intégrés

Dessins de masse intégrés (rendus orthographiques ou en perspective) et(ou) maquettes de masse

- Masse générale
- Orientation
- Indication des solides et des vides, notamment les fenêtres individuelles par rapport à des murs rideaux ou des fenêtres en bandes, etc.
- Entrées principales
- Entrées de service et de stationnement
- Locaux techniques hors toit
- Stratégie relative à la fenestration
- Sélection des matériaux pour l'extérieur

Plans intégrés d'architecture, de structure, de mécanique et d'électricité

- Entrées principales
- Halls d'entrée
- Ascenseurs
- Escaliers de secours
- Aires de travail
- Locaux à vocation particulière et de service, conformément à l'analyse du programme et aux options de conception
- Locaux où se trouvent le matériel (CVCA, électricité, pompes à incendie, groupes électrogènes, etc.), exigences relatives aux dimensions, au poids et à l'espacement
- Matériel à vocation particulière
- Éclairage

Élévations et coupes verticales intégrées du bâtiment/élévations intégrées des principaux éléments de la façade du bâtiment

- Relation du bâtiment par rapport à l'emplacement.
- Niveaux projetés du terrain.
- Hauteur entre les étages et autres dimensions essentielles, conformément à l'Analyse de la réglementation.
- Fenestration.
- Matériaux extérieurs.
- Louvres et coupes rendues verticales du bâtiment.
- Locaux appropriés pour les systèmes structuraux, mécaniques, électriques, de télécommunications et de sécurité-incendie actifs et passifs.

13) Building Model (Traditional and/or Digital)

- Integrated overall massing
 - Orientation
 - Relationship of building to site
 - Principle entrances
 - Service and parking entrances
 - Indication of solid and voids
 - Service penthouses

14) Project Delivery Strategy

- Swing space requirements
- Phasing requirements

4.3.4 Project Execution Plan

- See *Appendix C: Project Execution Plan*

4.3.5 Cost Control Plan

- See *Appendix M: Costing*
 - Updated Estimate
 - Life-cycle Cost Analysis
 - Provide for each option a structural comparative life-cycle cost analysis based on the design of a typical cross-section of one- column-bay width of the building. Include a comparison of lateral load resisting elements and non-structural building systems that have a bearing on the overall cost of the system.
- Mechanical comparative life-cycle cost analysis for equipment selections including heat recovery / storage and zoning control options
- Electrical comparative life-cycle cost analysis for equipment selections including lighting, associated controls, telecommunications and zoning control options
- Value Engineering Study [optional] (see *Appendix M: Costing*)

4.3.6 Project Schedule Analysis

- Schedule control plan: see *Appendix N: Schedule Analysis*

4.3.7 Risk Analysis

- Risk management plan: see *Appendix O: Risk Analysis*
 - Preliminary list of proposed long-lead, pre-purchase and sole source items

13) Maquette de construction (traditionnelle et (ou) numérique)

- Masse générale intégrée
 - Orientation
 - Relation du bâtiment par rapport à l'emplacement
 - Entrées principales
 - Entrées de service et de stationnement
 - Indication des solides et des vides
 - Locaux techniques hors toit

14) Stratégie relative à l'exécution du projet

- Exigences relatives aux locaux transitoires
- Exigences relatives aux phases

4.3.4 Plan de mise en œuvre du projet

- Voir l'*Annexe C : Plan de mise en œuvre du projet*

4.3.5 Plan de contrôle des coûts

- Voir l'*Annexe M : Établissement des coûts*
 - Estimation des coûts à jour
 - Analyse du coût du cycle de vie
 - Fournir pour chaque option une analyse structurale comparative des coûts du cycle de vie fondée sur la conception d'une coupe transversale type d'une largeur colonne-baie du bâtiment comportant une comparaison des éléments de résistance aux charges latérales, et des systèmes non structuraux du bâtiment ayant une incidence sur le coût global de l'ensemble.
- Analyse mécanique comparative des coûts du cycle de vie pour le matériel choisi, y compris les options relatives à la récupération et au stockage de la chaleur, à la régulation et au zonage
- Analyse électrique comparative des coûts du cycle de vie pour le matériel choisi, y compris les options relatives à l'éclairage, à la régulation connexe, aux télécommunications et au zonage
- Étude analytique de la valeur [facultative] (voir l'*Annexe M : Établissement des coûts*)

4.3.6 Analyse de l'échéancier du projet

- Plan de contrôle de l'échéancier : Voir l'*Annexe N : Analyse du calendrier*

4.3.7 Analyse des risques

- Plan de gestion des risques : Voir l'*Annexe O : Analyse des risques*
 - Liste préliminaire des articles à long délai de livraison, à achat préalable ou à fournisseur exclusif proposés

Design Development

5.1	General.....	34
5.2	Submissions.....	34
5.3	Outline for Design Development Report.....	34
5.3.1	Executive Summary.....	35
5.3.2	Administrative.....	35
5.3.3	Statement of Construction Requirements (SOCR).....	35
5.3.4	Project Execution Plan.....	46
5.3.5	Cost Control Plan.....	46
5.3.6	Project Schedule Analysis.....	46
5.3.7	Risk Analysis.....	46
5.1		

	Généralités.....	34
5.2	Documents à soumettre.....	34
5.3	Aperçu du rapport d'élaboration de la conception.....	34
5.3.1	Sommaire.....	35
5.3.2	Administratif.....	35
5.3.3	Énoncé des besoins en construction (EBC).....	35
5.3.4	Plan de mise en œuvre du projet.....	46
5.3.5	Plan de contrôle des coûts.....	46
5.3.6	Analyse de l'échéancier du projet.....	46
5.3.7	Analyse des risques.....	46

5

Élaboration de la conception

5 Design Development

5.1 General

Design Development documents shall be submitted as outlined in the Consultant Statement of Work at the Design Development stage.

Design Development documents shall demonstrate the final resolution of all major components and the selection of all building systems with respect to type, size and other material characteristics. Note: All design decisions with respect to system and material selections, layouts, LEED / GreenGlobe rating shall be completed by the end of this stage.

Design development documents shall be coordinated between disciplines ensuring a well-integrated design including architecture, structural, mechanical, fire safety, electrical, etc. with respect to all critical building components including building envelope (walls, windows, and roofs), interior construction (flooring, ceilings and partitions), service and equipment spaces (structural, mechanical, electrical, fire safety, security, telecommunications), vertical transportation systems (elevators, escalators and stairs), etc.

Design Development documents shall contain a combination of drawings, narratives, calculations, comprehensive outline specifications (including photographs, models and detailed technical specifications for specialty components), updated cost estimate (substantive), schedule and risk analysis.

5.2 Submissions

Design Development documents shall be submitted in report and drawing format. Binding, electronic format, paper format, organization shall conform to **Chapter 2**.

5.3 Outline for Design Development Report

The Design Development report shall contain the following sections:

5 Élaboration de la conception

5.1 Généralités

Les documents d'élaboration de la conception doivent être présentés conformément à l'Énoncé des travaux de l'expert conseil à l'étape de l'élaboration de la conception.

Les documents d'élaboration de la conception doivent démontrer la résolution définitive de tous les principaux composants, de même que la sélection de tous les systèmes du bâtiment en ce qui a trait au type, aux dimensions et aux autres caractéristiques importantes. Remarque : Toutes les décisions de conception concernant la sélection des systèmes et des matériaux, des aménagements et des cotes LEED/Green Globes doivent avoir été prises avant la fin de cette étape.

Les documents d'élaboration de la conception doivent être coordonnés entre les secteurs d'activité afin d'assurer l'intégration parfaite de la conception portant sur l'architecture, la structure, la mécanique, la sécurité incendie, l'électricité, etc. en ce qui a trait à tous les composants essentiels du bâtiment, p. ex. l'enveloppe (murs, fenêtres et toitures), la construction intérieure (revêtement de sol, plafonds et cloisons), les locaux techniques où se trouve le matériel (structures, mécanique, électricité, sécurité incendie, sécurité, télécommunications) et les voies de transport vertical (ascenseurs, escaliers mécaniques et escaliers).

Les documents d'élaboration de la conception doivent comprendre un ensemble de plans, de textes et de calculs, un devis sommaire complet (y compris des figures de catalogue, des photographies, des maquettes et des devis techniques spécifiques pour les composants spéciaux), une version à jour de l'estimation des coûts (fondée), un calendrier et une analyse des risques.

5.2 Documents à soumettre

Les documents d'élaboration de la conception doivent être présentés selon les formats de rapport et de plans. La reliure, les formats électroniques et imprimés, ainsi que l'organisation des documents, doivent être conformes aux exigences énoncées dans le **chapitre 2**.

5.3 Aperçu du rapport d'élaboration de la conception

Le rapport d'élaboration de la conception doit comprendre les sections suivantes :

5.3.1 Executive Summary

Shall contain a précis of the key regulatory, programmatic, project design and cost, schedule and risk analysis; and, clear recommendations for key component selections.

5.3.2 Administrative

This section shall contain the following items, updated from the Concept Design Report:

- A copy of the authorization to proceed with the design development stage of the project
- Acknowledgement/description of changes from previous stage (letter signed from the principal)

5.3.3 Statement of Construction Requirements (SOCR)

This section shall contain the following components, updated from Concept Design.

5.3.3.1 Functional Program Analysis

- Basic area calculations
- Program net areas by function (room/space data sheets, including HVAC, electrical, lighting, data, telecommunications requirements)
- Gross floor area/Gross-up factor
- Special provisions
- Spatial/functional relationship: horizontal and vertical; basic analysis of building height (possible number of storeys); clear height requirements; special provisions

5.3.3.2 Project Design

1) Regulatory Requirements

Code Statement

- Complete National Building Code of Canada Data Matrix
- How the final design solution meets all aspects set out in the National Building Code of Canada (NBCC) data matrix sheet, and the requirements set out in the *Canadian Forces Fire Marshal Directive FMD 4003*.
- **Note:** Where provincial codes are used NBCC references shall be indicated primarily and provincial codes secondarily

5.3.1 Sommaire

Cette section doit comprendre un précis des principales réglementations, des programmes, de la conception et des coûts du projet, du calendrier et de l'analyse des risques, ainsi que des recommandations claires relatives à la sélection des composants principaux.

5.3.2 Administratif

Cette section doit comprendre les éléments suivants, mis à jour sur la base du rapport d'élaboration de la conception :

- Une copie de l'autorisation de passer à l'étape de l'élaboration de la conception du projet
- Une attestation/description des changements apportés depuis l'étape précédente (lettre signée par le responsable)

5.3.3 Énoncé des besoins en construction (EBC)

Cette section doit comprendre les éléments suivants, mis à jour sur la base de l'élaboration de la conception.

5.3.3.1 Analyse fonctionnelle du programme

- Calcul de l'emplacement de base
- Superficies nettes programmées par fonction (fiches techniques sur les salles/l'espace, y compris les exigences relatives au CVCA, à l'électricité, à l'éclairage, aux données et aux télécommunications)
- Superficie brute/facteur de majoration
- Dispositions spéciales
- Relation spatiale/fonctionnelle : horizontale et verticale; analyse de base de la hauteur des bâtiments (nombre possible d'étages); exigences relatives à la hauteur libre, dispositions spéciales

5.3.3.2 Conception du projet

1) Exigences relatives à la réglementation

Énoncé des codes

- Matrice de données du Code national du bâtiment.
- Énoncé indiquant comment la conception finale respecte tous les aspects définis dans la matrice de données du CNB, ainsi que les exigences définies dans la *Ligne directrice du directeur FMD 4003 – Service des incendies* (Forces canadiennes).
- **Remarque :** Dans les cas où les codes provinciaux sont utilisés, les références au CNB doivent être indiquées en premier lieu et celles des codes provinciaux en second lieu

Fire and Life Safety Analysis

- Précis of meetings with authorities having jurisdiction (Canadian Forces Fire Marshal, Base Fire Chief)

Zoning Analysis

- Zoning classification
- Setback requirements
- Building height restrictions
- Allowable density
- Parking requirements
- Servicing requirements
- Rights-of-way
- Airfields zoning
- Range/explosive safety templates, etc.

DND Standards Compliance/Variance Statement

Summary of impacts on design decisions with respect to barrier-free design, heritage, etc. that relate to the project.

2) Site/Services Design: Civil**Design Calculations**

Design calculations shall include summary of design criteria and calculated demands and loads for various services including:

- Site storm drainage combined with building storm drainage and sanitary sewer
- Storm water detention / retention management
- Water supply
- Parking
- Dewatering
 - When required, assess and implement recommendations of geotechnical report for excavations on adjacent structures and improvements. Provide a description of acceptable means of excavation.
- Site related LEED / GreenGlobes components

Site Utilities Distribution

Narrative describing the following:

- Fire suppression water supplies
- Fire hydrants
- Fire department access routes

Analyse de la sécurité-incendie et de la sécurité des personnes

- Précis des réunions avec les autorités compétentes (directeur – Service des incendies (Forces canadiennes), chef du Service d’incendie de la base)

Analyse du zonage

- Classification du zonage
- Exigences relatives aux marges de recul
- Restrictions quant à la hauteur du bâtiment
- Densité admissible
- Besoins en stationnement
- Services requis
- Emprises
- Zonage des aérodromes
- Modèles de sécurité du tir et des explosifs, etc.

Énoncé de conformité et de non-conformité aux normes du MDN

Sommaire des incidences sur les décisions de conception prises dans le cadre du projet relativement à la conception sans obstacles, au patrimoine, etc.

2) Conception des services à l’emplacement: Génie Civil**Calculs de conception**

Les calculs de conception doivent tenir compte du sommaire des critères de conception et des demandes et charges calculées pour divers services, y compris :

- Le drainage des eaux pluviales du site et des toitures, et les égouts sanitaires
- La rétention/gestion de la rétention des eaux pluviales
- L’alimentation en eau potable
- Le stationnement
- L’assèchement
 - Au besoin, évaluer et mettre en œuvre des recommandations du rapport géotechnique pour les excavations effectuées à proximité de structures et d’améliorations adjacentes. Fournir une description des moyens d’excavation acceptables.
- Composants LEED/Green Globes relatifs à l’emplacement.

Répartition des services publics de l’emplacement

Description décrivant les éléments suivants :

- Approvisionnement en eau pour la lutte contre les incendies
- Bornes d’incendie
- Voies d’accès du service des incendies

Site Grading & Drainage Design

Narrative describing changes to existing topography and features

Site Circulation

Narrative describing design approach for the following:

- Site circulation design and number of site entrances
- Pedestrian circulation
- Number of parking stalls (military, civilian)
- Number of bicycle parking racks
- Design of service area(s) including description of number and sizes of trucks that can be accommodated
- Proposed scheme for waste removal

Landscape Design

Narrative describing design approach for the following:

- Constraints and opportunities (including existing features to be preserved)
- Local context
- Amount of hard spaces (courtyards etc.), open spaces and other special features or amenities (fountains, ponds, sculptures, etc.)
- Barrier-free design and safety considerations
 - Selection criteria for quality and quantity of site furnishings
 - Lighting design (functional and aesthetic)
 - Selection of plant materials
 - Proposed landscape maintenance plan and water conservation plan and brief operating description of irrigation system (if applicable)

Drawings [Series 100]

Refer to *Appendix E: Civil Checklist for Specifications and Drawings*

Site Photographs

- Contiguous areas
- Elevations of existing buildings and/or landscape (as applicable) surrounding the site.

Nivellement et drainage du terrain

Description des changements apportés à la topographie et aux caractéristiques

Circulation sur le site

Description de l'approche à l'égard de la conception pour les éléments suivants :

- Conception de la circulation sur le site et nombre d'entrées y donnant accès
- Circulation piétonnière
- Nombre de places de stationnement (pour militaires et civils)
- Nombre de supports à vélo
- Logique de la conception des zones de service, y compris la description du nombre et de la grosseur des camions qu'on peut garer
- Schéma proposé pour l'enlèvement des déchets

Aménagement paysager

Description de l'approche à l'égard de la conception pour les éléments suivants :

- Contraintes et possibilités (y compris les caractéristiques existantes à préserver)
- Contexte local
- Nombre d'espaces fixes (p. ex. cours), d'espaces ouverts et autres caractéristiques ou accessoires spéciaux (fontaines, étangs, sculptures, etc.)
- Conception sans obstacles et considérations relatives à la sécurité
 - Critères de sélection pour la qualité et la quantité des accessoires choisis à l'emplacement
 - Conception de l'éclairage (fonctionnel et esthétique)
 - Sélection des végétaux
 - Plan d'entretien de l'aménagement paysager proposé et plan de conservation de l'eau, et brève description du fonctionnement du système d'irrigation (s'il y a lieu)

Plans [série 100]

Reportez-vous à l'*Annexe E : Aide-mémoire génie civil pour les devis et plans*

Photos de l'emplacement

- Aires contiguës
- Niveaux des bâtiments actuels et(ou) de l'aménagement paysager (s'il y a lieu) près de l'emplacement

3) Building Design: Structural

Design Calculations

- Computer-generated results shall include a program user's manual, a model of the input data and all pertinent program material to understand the output, including a narrative of the input and results
- Refer to *Appendix F: Structural Checklist for Calculations, Specifications and Drawings*

Recommended Structural System

Narrative describing integrated description of the including choice of framing system, lateral load resisting elements and foundation design, including fire resistance rating as required

Verification of Adequacy of all Loads

Narrative describing assumed dead and live loads

Size and Depth of Structural Members

Narrative describing consideration of maximum depths of members and critical sizes of members coordinated with other disciplines

Size and Location of Openings

Narrative describing size and location of openings through the structure for work by other disciplines

Special Equipment

Narrative describing the provision of special equipment such as roof top mechanical units, window washing, fall arrest systems, etc.

Drawings [Series 200]

Refer to *Appendix F: Structural Checklist for Calculations, Specifications and Drawings*

4) Building Design: Architectural

Design Calculations

- Required acoustical ratings and separations
- Dew point location in exterior building envelope for design purpose
- Building/floor area and usable space calculations
- Occupant load
- Spatial separation and exposure protection

3) Conception du bâtiment : structure

Calculs de conception

- Les résultats générés par ordinateur doivent comprendre le guide d'utilisation du programme, un modèle de l'entrée des données et tous les documents se rapportant au programme pour comprendre les résultats, ainsi que la description des données et des résultats
- Reportez-vous à l'*Annexe F : Aide-mémoire structure pour les calculs, les devis et plans*

Système structural recommandé

Description intégrée indiquant le choix du système de charpente, les éléments de résistance aux charges latérales et la conception des fondations, de même que le degré de résistance au feu, au besoin

Vérification de l'adéquation de toutes les charges

Description de toutes les surcharges et charges permanentes

Dimensions et profondeur des éléments de charpente

Description de la profondeur maximale des éléments de charpente et de leurs dimensions critiques coordonnées avec les autres disciplines

Dimensions et emplacement des ouvertures

Description des dimensions et de l'emplacement des ouvertures pratiquées dans la structure pour permettre aux autres disciplines d'exécuter leurs travaux

Équipements particuliers

Description de la fourniture d'équipements particuliers, p. ex. les appareils mécaniques sur les toits, le matériel de lavage des fenêtres, les dispositifs antichute, etc.

Plans [série 200]

Reportez-vous à l'*Annexe F : Aide-mémoire structure pour les calculs, les devis et plans*

4) Conception du bâtiment : architecture

Calculs de conception

- Classes d'insonorisation et cloisons nécessaires
- Emplacement du point de rosée dans l'enveloppe extérieure du bâtiment pour les besoins de la conception
- Superficie théorique et superficie utilisable du bâtiment et des étages
- Densité d'occupation
- Séparation spatiale et protection contre la propagation du feu

- Fire compartments, floor, wall and roof ratings
- Exit width
- Plumbing fixture count

Design Narrative

Narrative describing the following:

- Design philosophy/intent
- Organizational design
- Expansion potential
- Building circulation and layout of major spaces
- Interior design strategy (i.e., materials, textures, finishes and colour selections)
- Building egress including occupant load, exit capacities, travel distance and exit discharge

Building Floor Efficiency

Operations and Maintenance Goals

Narrative describing how unique and tall architectural spaces such as gymnasiums, drill halls, hangars, etc., will be cleaned and maintained; proposed window washing equipment strategy; prevention of bird nesting strategy; how major mechanical and electrical equipment can be serviced and/or replaced in future years

Vertical Transportation Design

Narrative describing elevators, escalators and stairs

Fire and Life Safety

Narrative describing the following:

- Fire resistance rating of building structural elements
- Compliance with life safety and building security requirements
- Interior finish requirements as they pertain to the life safety requirements

Drawings [Series 300]

Refer to *Appendix G: Architectural Checklist for Specifications and Drawings*

- Cote des compartiments à l'épreuve du feu, des planchers, des murs et de la toiture
- Largeur des sorties
- Nombre d'accessoires de plomberie

Description de la conception

La description doit porter sur les éléments suivants :

- Doctrine et philosophie de la conception
- Conception organisationnelle
- Potentiel d'agrandissement
- Circulation dans le bâtiment et aménagement des principaux locaux.
- Stratégie de conception intérieure (p. ex. sélection des matériaux, des textures, des finis et des couleurs)
- Issues de secours du bâtiment, y compris la densité d'occupation, la capacité des issues de secours, la distance à parcourir et le dégagement des issues de secours

Efficacité des étages du bâtiment

Objectifs d'exploitation et d'entretien

Description des méthodes de nettoyage et d'entretien des espaces architecturaux uniques et élevés, comme les gymnases, les manèges militaires ou les hangars; la stratégie proposée pour le matériel de lavage des fenêtres; la stratégie visant à éviter que les oiseaux construisent des nids; la façon dont les principaux composants mécaniques et électriques seront entretenus et(ou) remplacés dans les années à venir.

Conception du transport vertical

Description des ascenseurs, des escaliers mécaniques et des escaliers.

Sécurité-incendie et sécurité des personnes

Description des éléments suivants :

- Degré de résistance au feu des éléments structuraux du bâtiment.
- Conformité aux exigences relatives à la sécurité des personnes et à la sécurité du bâtiment.
- Revêtement intérieur en ce qui a trait aux exigences se rapportant à la sécurité des personnes

Plans [série 300]

Reportez-vous à l'*Annexe G : Aide-mémoire architecture pour les calculs, les devis et plans*

Building Model (Traditional and/or Digital)

Integrated overall massing shall include the following:

- Orientation
- Relationship of building to site
- Principle entrances
- Service and parking entrances
- Doors and windows
- Indication of solid and voids (i.e., final fenestration design including punched windows, curtain wall, ribbon windows, louvers, exterior materials selection, service penthouses, etc.)

Sample Boards and Materials Selection

- Final selection of wall, ceiling and floor finishes, materials, colours and textures for principal entrances and lobbies, main work areas, special purpose areas, washrooms, and service facilities (i.e., kitchenettes or staff lunchrooms)
- Preliminary selection of furniture and screen finishes, materials, colours and textures for main work areas, meeting and conference rooms and special purpose spaces
- Clear labels indicating location, purpose, critical technical data (i.e., acoustic rating, durability, etc.)

5) Building Design: Mechanical**Design Calculations**

Refer to *Appendix H: Mechanical Checklist for Calculations, Specifications, and Drawings*

Recommended HVAC System

Narrative describing the following:

- Type and size of air conditioning and heating systems
- Approximate size and capacity of mechanical equipment
- How the system will function in different modes [e.g., heating, cooling, shoulder seasons, features such as noise control, vibration dampers and special controls and visual impact of mechanical equipment (roof)]
- Recommended HVAC systems for special purpose spaces including automated data processing rooms, auditoria, conference rooms, kitchens and other special spaces identified in the functional program

Maquette de construction (traditionnelle et/ou numérique)

Les masses générales intégrées doivent tenir compte des éléments suivants :

- Orientation
- Relation du bâtiment par rapport à l'emplacement
- Entrées principales
- Entrées de service et de stationnement
- Portes et fenêtres
- Indication des solides et des vides (p. ex. conception de la fenestration définitive, y compris les fenêtres individuelles, les murs-rideaux, les fenêtres en bandes, les louveres, la sélection des accessoires extérieurs, les locaux techniques hors toit, etc.)

Panneaux d'échantillons et sélection des matériaux

- Sélection définitive des revêtements de mur, de plafond et de sol, des matériaux, des couleurs et des textures pour les entrées principales et les halls d'entrée, les principales aires de travail, les locaux à vocation particulière, les salles de toilette et les installations de service, (notamment les cuisinettes ou salles à manger du personnel)
- Sélection préliminaire du mobilier et des revêtements des écrans, des matériaux, des couleurs et des textures pour les principales aires de travail, les salles de conférence et de réunion, et les locaux à vocation particulière
- Étiquettes indiquant clairement l'emplacement, l'objet, les données techniques essentielles (p. ex. la cote acoustique ou la durabilité)

5) Conception du bâtiment : mécanique**Calculs de conception**

Reportez-vous à l'*Annexe H : Aide-mémoire mécanique pour les calculs, les devis et dessins*.

Système de CVCA recommandé

Description des éléments suivants :

- Type et dimensions des systèmes de climatisation et de chauffage.
- Capacité et dimensions approximatives du matériel mécanique.
- Façon dont le système fonctionnera dans les différents modes (p. ex. chauffage, climatisation, saisons intermédiaires), caractéristiques comme la lutte contre le bruit, l'amortissement des vibrations, et régulation spéciale et impact visuel du matériel mécanique (sur la toiture).
- Systèmes de CVCA recommandés pour les locaux à vocation particulière, y compris les salles de traitement automatisé des données, les auditoriums, les salles de conférence, les cuisines et autres locaux à vocation particulière indiqués dans le programme fonctionnel

Energy Analysis

Narrative describing the energy analysis of the mechanical system selection for the final building layout

Recommended Plumbing System

Narrative describing development of the proposed plumbing system including lists of typical fixtures, required chases and clearances, evaluation of alternate sources for preheating of domestic water, and approvals for service connections

Fire Protection Concept

Narrative describing concept of fire protection systems including main components

- Area hazard rating
- Type of system
- Water coverage
- Sprinkler head temperature rating
- Special fire safety
- Integration with building automation system
- Smoke control systems

Final equipment/System Layouts for Mechanical Room(s)/Space(s)**Sequence of Operations****Drawings [Series 400]**

Refer to *Appendix H: Mechanical Checklist for Calculations, Specifications, and Drawings*

6) Building Design: Electrical

- Précis of meetings with base/wing staff verifying compatibility of proposed primary distribution equipment with existing systems
- Evaluation of building and designation of Hazardous Location classifications as per the Canadian Electrical Code

Design Calculations

Narrative describing the development and justification for the selected scheme

Refer to *Appendix I: Electrical Checklist for Calculations, Specifications and Drawings*

Analyse énergétique

Description de l'analyse énergétique du système mécanique choisi en fonction de l'aménagement final du bâtiment

Système de plomberie proposé

Description de l'élaboration du système de plomberie proposé, y compris les listes d'accessoires types, les chasses et dégagements nécessaires, l'évaluation des différentes sources pour le préchauffage de l'eau domestique, et les approbations pour les raccordements de services

Schéma des systèmes de protection-incendie

Description du schéma des systèmes de protection-incendie, y compris les principaux composants :

- Catégorie de risque des zones
- Type de système
- Aire d'arrosage
- Catégorie de température des têtes de gicleurs
- Systèmes spéciaux de sécurité-incendie
- Intégration avec les systèmes d'immotique de sécurité du bâtiment
- Systèmes de contrôle de la fumée

Disposition définitive du matériel/des systèmes des locaux/espaces de mécanique)**Séquence de fonctionnement****Plans [série 400]**

Reportez-vous à l'*Annexe H : Aide-mémoire mécanique pour les calculs, les devis et plans*

6) Conception du bâtiment : électricité

- Précis des réunions avec le personnel de la base/l'escadre pour vérifier la compatibilité du matériel de distribution primaire proposé avec les systèmes existants
- Évaluation du bâtiment et désignation des classifications d'endroit dangereux, conformément au Code canadien de l'électricité

Calculs de conception

Description de l'élaboration et de la justification du schéma sélectionné

Reportez-vous à l'*Annexe I : Aide-mémoire électricité pour les calculs, les devis et plans*

Validation of Power Provisions

- Power capacity and reliability requirements
- Emergency power and UPS systems

Interior/Exterior Lighting Systems

Narrative describing the proposed typical interior and exterior lighting systems, including

- Typical fixture type
- Layout and controls
- Description of proposed lighting for special purpose spaces (e.g., lobbies, auditoria, dining rooms, conference rooms, atriums, etc.)
- Integration with building automation system and security systems including methods for energy conservation

Demand Limit Control Analysis

Narrative describing the engineering analysis for demand limit controls

Signal Systems

Narrative describing each proposed signal system

Fire Alarm Systems

Narrative describing fire alarm systems including

- Integration with security systems
- Smoke control systems

Telecommunications

Narrative describing proposed telecommunications infrastructure, including systems proposed for infrastructure and cabling to accommodate the Telecommunications systems, in compliance with EIA/TIA Building Telecommunications Wiring Standards.

Drawings [Series 500]

Refer to *Appendix I: Electrical Checklist for Calculations, Specifications, and Drawings*

7) Building Design: Communications

Refer to *Appendix I: Electrical Checklist for Calculations, Specifications, and Drawings*

Validation des dispositions relatives à l'alimentation

- Exigences relatives à la puissance maximale et à la fiabilité
- Alimentation de secours et systèmes d'alimentation sans coupure (ASC)

Systèmes d'éclairage intérieurs et extérieurs

Description des systèmes d'éclairage intérieurs et extérieurs types proposés, y compris :

- Type d'accessoires
- Aménagement et régulation
- Description de l'éclairage proposé pour les locaux à vocation particulière (p. ex. halls d'entrée, auditoriums, salles à manger, salles de conférence, atriums, etc.)
- Intégration des systèmes d'immotique et de sécurité, y compris les modes de conservation de l'énergie

Analyse de la régulation dans le but de limiter la demande

Description de l'analyse technique de la régulation dans le but de limiter la demande

Systèmes de signalisation

Description de chaque système de signalisation proposé

Systèmes d'alarme-incendie

Description des systèmes d'alarme-incendie, y compris :

- Intégration aux systèmes de sécurité
- Systèmes de contrôle de la fumée

Télécommunications

Description de l'infrastructure proposée pour les télécommunications, y compris les systèmes proposés pour l'infrastructure et le câblage des systèmes de télécommunications, conformément aux Building Telecommunications Wiring Standards de l'EIA/TIA.

Plans [série 500]

Reportez-vous à l'*Annexe I : Aide-mémoire électricité pour les calculs, les devis et plans*

7) Conception du bâtiment : communications

Reportez-vous à l'*Annexe I : Aide-mémoire électricité pour les calculs, les devis et plans*

8) Building Design: Security

Refer to *Appendix I: Electrical Checklist for Calculations, Specifications, and Drawings*

- Force Protection
- Security Systems

9) Building Design: Interior Fit-Up

Note: Interior Fit-Up as described herein is used solely to describe interior works from a multi-disciplinary approach; however, if any of the following conditions apply, the above sections (describing the submission requirements for individual disciplines) shall be used:

- A change in major occupancy
- A change in Importance Factor
- An upgrade to meet the current National Building Code of Canada
- Building hardening for force protection requirements and exposure to ammunition/explosives facilities
- Any exterior works

Design Calculations

- Required acoustical ratings and separations Building/floor area and usable space calculations
- Occupant load
- Fire compartments, floor and wall ratings

Interior Design Narrative

Narrative describing design philosophy/intent, organizational design, expansion potential, building circulation and layout of major spaces, interior design strategy (i.e. materials, textures, finishes and colour selections)

Building Floor Efficiency

Operations and Maintenance Goals

Narrative describing how unique and tall architectural spaces such as gymnasiums, drill halls, hangars, etc. will be cleaned, have their light fixtures maintained, interior and exterior glass surfaces cleaned and typical maintenance performance

8) Conception du bâtiment : sécurité

Reportez-vous à l'*Annexe I : Aide-mémoire électricité pour les calculs, les devis et plans*

- Protection de la force
- Système de sécurité

9) Conception du bâtiment : aménagement intérieur

Remarque : L'aménagement intérieur décrit aux présentes a uniquement pour but de décrire les travaux intérieurs d'un point de vue multidisciplinaire; toutefois, si l'une des conditions suivantes s'applique, il faudra employer les sections ci-dessus (décrivant les exigences relatives aux documents à soumettre pour chacun des secteurs d'activité) :

- Une modification de l'usage principal
- Une modification du coefficient de risque
- Une amélioration pour satisfaire aux exigences actuelles du Code national du bâtiment
- Un renforcement du bâtiment pour satisfaire aux exigences relatives à la protection de la force et à l'exposition aux munitions/explosifs.
- Tous les travaux extérieurs

Calculs de conception

- Classes d'insonorisation et cloisons nécessaires. Superficie théorique et superficie utilisable du bâtiment et des étages
- Densité d'occupation
- Cote des compartiment à l'épreuve du feu, des planchers, des murs et de la toiture

Description de la conception intérieure

Description de la philosophie et de la doctrine de la conception, de la conception organisationnelle, du potentiel d'agrandissement, de la circulation dans le bâtiment et de l'aménagement des locaux principaux, ainsi que de la stratégie de conception intérieure (p. ex. sélection des matériaux, des textures et des couleurs)

Efficacité des étages du bâtiment

Objectifs relatifs à l'exploitation et à l'entretien

Description de la façon dont les espaces architecturaux uniques et élevés, comme les gymnases, les manèges militaires ou les hangars, seront nettoyés et entretenus, la façon dont leurs luminaires seront entretenus, dont les surfaces de verre extérieures et intérieures seront nettoyées, et dont l'entretien type sera effectué

Drawings [Series 900]

Refer to *Appendix J: Series 900 Interior Fit-up Checklist*

10) Integrated Renderings

Integrated rendered massing drawings (orthographic or perspective renderings) and/or massing models shall include the final integrated relationship of open offices, closed offices, conference/meeting rooms, kitchens/coffee areas, and service areas to principle entrances, service entrances, doors and windows, and indication of solid and voids.

Integrated rendered floor plans shall include final integrated relationship of open offices, closed offices, conference/meeting rooms, kitchens/coffee areas, and service areas to principle entrances, service entrances, doors and windows, and indication of furniture, fittings, and equipment.

Integrated rendered architectural, structural, mechanical and electrical reflected ceiling plans shall include final lighting, fire alarm and suppression systems, telecommunications drops, and HVAC layout for principal entrances and lobbies, main work areas, special purpose areas, washrooms and service facilities (i.e., kitchenettes or staff lunchrooms), clearly indicating variances in ceiling heights, materials, and access points.

Integrated rendered interior elevations for principal entrances and lobbies shall include main work areas, special purpose areas, washrooms and service facilities (i.e., kitchenettes or staff lunchrooms).

Integrated rendered vertical longitudinal and transverse building sections shall include relationship of floor-to-floor heights, adequate space for structural, mechanical, electrical, telecommunications and fire safety systems and other critical dimensions responding to Regulatory.

Integrated overall interior shall include orientation, relationship of open offices, closed offices, conference/meeting rooms, kitchens/coffee areas, and service areas to principle entrances, service entrances, doors and windows, and indication of solid and voids.

Plans [série 900]

Reportez-vous à l'*Annexe J : Aide-mémoire aménagement intérieur, série 900*

10) Rendus intégrés

Les dessins de masse intégrés (rendus orthographiques ou en perspective) et(ou) les maquettes de masse, indiquant les solides et les vides, doivent préciser la relation intégrée définitive qu'ont les bureaux ouverts et fermés, les salles de conférence/réunion, les cuisines/coins café et les aires de service avec les entrées principales et de service, les portes et les fenêtres.

Les plans d'étage intégrés doivent indiquer la relation intégrée définitive qu'ont les bureaux ouverts ou fermés, les salles de conférence/réunion, les cuisines/coins café et les aires de service avec les entrées principales et de service, les portes et les fenêtres, ainsi que les meubles, les raccords et le matériel.

Les plans intégrés d'architecture, de structure, de mécanique et d'électricité des plafonds réfléchis doivent indiquer l'éclairage définitif, les systèmes d'alarme-incendie et de lutte contre les incendies, les points de raccordement des télécommunications, et l'aménagement CVCA pour les entrées principales et les halls d'entrée, les principales aires de travail, les locaux à vocation particulière, les salles de toilette et les installations de service (p. ex. les cuisinettes ou les salles à manger du personnel), en indiquant clairement les variations entre les hauteurs des plafonds, les matériaux et les points d'accès.

Les élévations intérieures intégrées pour les entrées principales et les halls d'entrée doivent comprendre les principales aires de travail, les locaux à vocation particulière, les salles de toilette et les installations de service, (p. ex. les cuisinettes ou les salles à manger du personnel).

Les coupes de bâtiment verticales, longitudinales et transversales doivent indiquer la relation des hauteurs d'étage, l'espace suffisant pour les systèmes architecturaux, mécaniques, électriques, de télécommunications et de protection incendie, et les autres dimensions à respecter.

L'intérieur intégré hors tout doit indiquer l'orientation, les solides et les vides, ainsi que la relation intégrée définitive qu'ont les bureaux ouverts et fermés, les salles de conférence/réunion, les cuisines/coins café et les aires de service avec les entrées principales et de service, les portes et les fenêtres.

11) Sample Boards and Materials Selection

- Final selection of wall, ceiling and floor finishes, materials, colours and textures for principal entrances and lobbies, main work areas, special purpose areas, washrooms, and service facilities (i.e., kitchenettes or staff lunchrooms)
- Preliminary selection of furniture and screen finishes, materials, colours and textures for main work areas, meeting and conference rooms and special purpose spaces
- Clear labels indicating location, purpose, critical technical data (i.e., acoustic rating, durability, etc.)

12) Sustainable Design Considerations

Civil

Sustainable design strategy with respect to storm water management, hard and soft materials and plant selections

Structural

Architecture

Sustainable design strategy with respect to orientation, passive heating and cooling, natural daylight, energy conservation, water management and conservation, recycled materials, LEED or Green Globes report

Mechanical

Provide an updated energy simulation for the selected option.

Sustainable design strategy with respect to energy conservation requirements, evaluation of the most cost-effective primary energy source, storm water management, water conservation, use of grey-water recycling, waterless urinals, low-flow fixtures, etc.

Electrical

Sustainable design strategy with respect to energy conservation, daylighting, controls, etc.

11) Panneaux d'échantillons et sélection des matériaux

- Sélection définitive des revêtements de mur, de plafond et de sol, des matériaux, des couleurs et textures pour les entrées principales et les halls d'entrée, les principales aires de travail, les locaux à vocation particulière, les salles de toilette, et les installations de service (p. ex. les cuisinettes ou salles à manger du personnel)
- Sélection préliminaire du mobilier et des revêtements des écrans, des matériaux, des couleurs et des textures pour les principales aires de travail, les salles de conférence et de réunion et les locaux à vocation particulière
- Étiquettes indiquant clairement l'emplacement, l'objet et les données techniques essentielles (p. ex. la cote acoustique, la durabilité, etc.)

12) Considérations relatives à la conception durable

Génie civil

Stratégie de conception durable concernant la gestion des eaux pluviales, les matériaux rigides et souples, et le choix des végétaux

Structure

Architecture

Stratégie de conception durable concernant l'orientation, la climatisation et le chauffage passifs, l'éclairage naturel, la conservation de l'énergie, la gestion et la conservation de l'eau, le recyclage des matériaux et les rapports LEED ou Green Globes

Mécanique

Simulation de la consommation énergétique de l'option choisie.

Stratégie de conception durable indiquant les exigences relatives à la conservation de l'énergie, l'évaluation de la source d'énergie la plus économique, la gestion des eaux pluviales, la conservation de l'eau, l'utilisation des eaux grises recyclées, les urinoirs sans eau, les accessoires à faible débit d'eau, etc.

Électricité

Stratégie de conception durable indiquant la conservation de l'énergie, l'éclairage naturel, la régulation, etc.

13) Heritage Preservation Strategy**Civil – Archaeological****Structural****Architectural**

Protection, preservation, conservation, restoration, adaptive reuse

14) Project Delivery Strategy

- Swing Space Requirements
- Phasing Requirements

5.3.4 Project Execution Plan

- See *Appendix C: Project Execution Plan*

5.3.5 Cost Control Plan

- See *Appendix M: Costing*
 - Verification
 - Estimate (optional)
 - Updated life-cycle cost analysis for all systems (architectural, structural, mechanical, electrical, etc.) including value-engineering items that were incorporated
 - Finalized Value Engineering (VE) Analysis

5.3.6 Project Schedule Analysis

- See *Appendix N: Schedule Analysis*

5.3.7 Risk Analysis

- Risk Management Plan
 - See *Appendix O: Risk Analysis*
 - Updated risk management plan and the various risks associated with the final design and the mitigation strategies
 - Updated integrated list of long-lead, pre-purchase and sole source items
- Mitigation Strategies
- List of Long-Lead/Pre-Purchase/Sole Source items
- Estimate, Schedule and Risk Section, Design Development Report

13) Stratégie relative à la conservation du patrimoine**Civil – Archéologie****Structure****Architecture**

Protection, préservation, conservation, restauration, réutilisation adaptative

14) Stratégie d'exécution du projet

- Exigences relatives aux locaux transitoires
- Exigences relatives aux phases

5.3.4 Plan de mise en œuvre du projet

- Voir l'*Annexe C : Plan de mise en œuvre du projet*

5.3.5 Plan de contrôle des coûts

- Voir l'*Annexe M : Établissement des coûts*
 - Vérification
 - Estimation des coûts (facultative)
 - Analyse du coût du cycle de vie pour tous les systèmes (architecture, structures, mécanique, électricité, etc.), y compris les éléments de l'étude analytique de la valeur qui ont été intégrés
 - Étude analytique définitive de la valeur

5.3.6 Analyse de l'échéancier du projet

- Voir l'*Annexe N : Analyse du calendrier*

5.3.7 Analyse des risques

- Plan de gestion des risques
 - Voir l'*Annexe O : Analyse des risques*
 - Plan de gestion des risques à jour et les divers risques associés à la conception définitive et aux stratégies d'atténuation
 - Liste intégrée à jour des articles à long délai de livraison, à achat préalable ou à fournisseur exclusif
- Stratégies d'atténuation
- Listes des articles à long délai de livraison, à achat préalable ou à fournisseur exclusif
- Section sur l'estimation, échéancier et analyse des risques, Rapport d'élaboration de la conception

Construction Documents

6.1	General.....	48
6.2	Submissions.....	48
6.3	Outline for Construction Document Report.....	48
6.3.1	Executive Summary.....	48
6.3.2	Administrative.....	48
6.3.3	Statement of Construction Requirements (SOCR).....	49
6.3.4	Project Execution Plan.....	52
6.3.5	Cost Control Plan.....	52
6.3.6	Project Schedule Analysis.....	52
6.3.7	Risk Analysis.....	52
6.1		

	Généralités.....	48
6.2	Documents à soumettre.....	48
6.3	Aperçu du rapport sur les documents de construction.....	48
6.3.1	Sommaire.....	48
6.3.2	Administratif.....	48
6.3.3	Énoncé des besoins en construction (EBC).....	49
6.3.4	Plan de mise en œuvre du projet.....	52
6.3.5	Plan de contrôle des coûts.....	52
6.3.6	Analyse de l'échéancier du projet.....	52
6.3.7	Analyse des risques.....	52

6

Documents de construction

6 Construction Documents

6.1 General

The intent of the construction document stage is to translate the design development documents into construction drawings and specifications to guide and direct the contractor and sub-contractors in carrying out their work on the project. It involves preparing drawings and specifications setting forth in detail the requirements for the construction and final cost estimate for each tender package for the project.

Interim submission shall satisfy the reviewer that the systems agreed to in the design development are implemented.

Final submission (100%) incorporates all revisions required in the interim submission, and shall provide DND with complete construction documents for tender call.

6.2 Submissions

Construction document submissions shall be submitted primarily in drawing and specification format; final narratives and calculations shall be submitted in report format. Binding, electronic format, paper format, organization shall conform to **Chapter 2**.

6.3 Outline for Construction Document Report

The Construction Document report shall contain the following sections:

6.3.1 Executive Summary

Shall contain a précis of the key regulatory, programmatic project design and cost, schedule and risk analysis, and outstanding issues, as well as clear recommendations for mitigation of those issues.

6.3.2 Administrative

This section shall contain the following items:

- A copy of the authorization to proceed with the construction documents stage of the project
- Acknowledgement/description of changes from previous stage (letter signed from the principal)
- Meeting minutes

6 Documents de construction

6.1 Généralités

Cette étape vise à convertir les documents d'élaboration de la conception en plans et devis de construction afin de guider et d'orienter l'entrepreneur et les sous-traitants dans la réalisation du projet. Elle vise aussi à préparer des plans et devis qui indiquent en détail les exigences à respecter lors de l'exécution des travaux et du calcul de l'estimation du coût final pour chaque dossier d'appel d'offres du projet.

La soumission provisoire doit démontrer, à la satisfaction de l'examineur, que les systèmes dont il a été convenu lors de la conception sont mis en œuvre.

La soumission définitive (étape d'achèvement à 100 %) incorpore toutes les révisions devant être apportées aux documents de construction soumis à l'étape précédente, et doit fournir au MDN les documents définitifs en vue de l'appel d'offres.

6.2 Documents à soumettre

Les documents de construction soumis doivent être présentés principalement sous forme de plans et devis, et les documents présentant les descriptions et les calculs sous forme de rapport. La reliure, les formats électroniques et imprimés, ainsi que l'organisation des documents, doivent être conformes aux exigences énoncées au **chapitre 2**.

6.3 Aperçu du rapport sur les documents de construction

Le rapport sur les documents de construction doit comprendre les sections suivantes :

6.3.1 Sommaire

Il doit comprendre un précis des principaux programmes, réglementations, conceptions et coûts du projet, l'échéancier et l'analyse des risques, les points en litige et des recommandations claires relativement à l'atténuation de ces litiges.

6.3.2 Administratif

Cette section doit comprendre les éléments suivants :

- Une copie de l'autorisation de procéder à la présentation des documents de construction du projet
- Une attestation/description des changements apportés depuis l'étape précédente (lettre signée par le responsable)
- Les procès-verbaux des réunions

- Summaries of key decisions and recommendations from meetings, workshops, etc.
- Updated quality plan

6.3.3 Statement of Construction Requirements (SOCR)

Shall contain an updated Statement of Construction Requirements, including program status and reconciliation report containing verification of the design development compliance with the accepted requirements, clearly explaining deviations.

6.3.3.1 Project Design

1) Regulatory Requirements

Code Statement

Final National Building Code of Canada – Data Matrix to be shown on Regulatory Drawing 300 only, and shall not be bound into the specifications.

Fire and Life Safety Analysis

Précis of meetings with authorities having jurisdiction (Canadian Forces Fire Marshal, Base Fire Chief)

Final Zoning

To be shown graphically and/or tabular on the Site Plan (drawing 101)

DND Standards Compliance/Variance Statement

Including summary of impacts on design decisions with respect to barrier-free design, force protection/security, heritage, etc. that relate to the project

2) General: All Disciplines (Typical for all drawings and specifications)

- Title block: utilizing the “Title Block Master” obtained from the *DND CAD/BIM Standard*:
 - Consultant seal and signature
 - Updated history column (e.g., “issued for interim review”)
 - Security markings (refer to 2.1)
- The structural system complete with structural grids and dimensions
- Dimensions, legends, notes, scale and north arrow
- References to elevations, building, wall sections, and details
- Indication of future expansion

- Les sommaires des décisions clés et des recommandations énoncées durant les réunions de partenariats, les ateliers, etc.
- Un plan de la qualité à jour

6.3.3 Énoncé des besoins en construction (EBC)

Cette section doit comprendre un énoncé des besoins en construction mis à jour, y compris un rapport sur la situation et le contrôle de concordance du programme, notamment la vérification de la conformité de l'élaboration de la conception avec les exigences acceptées, indiquant et expliquant clairement toute dérogation.

6.3.3.1 Conception du projet

1) Exigences relatives à la réglementation

Énoncé des codes

Matrice finale de données du Code national du bâtiment indiquée sur le plan réglementaire - plan 300 seulement, non intégrée au devis.

Analyse de la sécurité-incendie et de la sécurité des personnes

Précis des réunions avec les autorités compétentes (directeur – Service des incendies (Forces canadiennes), chef du Service d'incendie de la base)

Zonage final

Présenté sous forme graphique et/ou de tableaux dans le plan de l'emplacement (plan 101)

Énoncé de conformité et de non-conformité aux normes du MDN

Sommaire des incidences sur les décisions de conception prises dans le cadre du projet relativement à l'aménagement facile d'accès, au patrimoine, etc. en lien avec le projet

2) Généralités : Toutes les disciplines (Typique pour tous les plans et devis)

- Cartouche : modèle provenant de la *Norme de CAO/BIM du MDN* et qui contient :
 - le sceau et la signature de l'expert-conseil
 - la colonne d'historique à jour (p. ex. « documents émis pour examen provisoire »)
 - la cote de sécurité (reportez-vous au point 2.1)
- Système structural, avec les trames et les dimensions de la structure
- Dimensions, légendes, notes, échelle, flèche d'orientation dirigée vers le nord
- Renvois (élévations, bâtiment, coupes de mur, détails)
- Indication des possibilités d'agrandissement

- Cover Sheet: utilizing the “Cover Sheet Master” obtained from the *DND CAD/BIM Standard*
- Schedules shall be graphical and/or tabular in drawing format
- Division 00 issued by Government Contracting Agency

3) Construction Documents (Demolition)

Demolition requirements are generic across all architectural and engineering disciplines. Demolition drawings shall be included in their discipline-specific drawing sets.

Refer to *Appendices E to J* for specific requirements.

Note: Elements to be demolished shall be graphically distinct from elements to remain or be protected/refurbished, etc.

Plans, Sections and Elevations

- The outlines of the exterior walls and interior partitions in relation to work to remain and demolition work complete with graphical representation of materials, cross-reference to partition types and dimensions
- The location of doors and windows, and other openings to be demolished, retained and/or reused complete with cross-reference to door, window and hardware schedules
- The location of fixtures and equipment for washrooms, kitchens, conference rooms, equipment/mechanical/electrical/telecommunications rooms to be demolished, retained and/or reused complete with cross-reference to equipment schedules, notes and dimensions
- Clearly indicated designated substances, hazardous materials, etc.
- Clearly indicated heritage material to be demolished, removed, and/or refurbished

Reflected Ceiling Plans

- Graphical representation of ceiling fixtures to be demolished, retained and/or reused complete with cross-reference to lighting, security, sprinkler, HVAC, fire alarm, etc.
- Clearly indicated bulkheads to be demolished, retained and/or reused complete with graphical representation of construction and materials, notes, elevations (geodetic) and dimensions
- Clearly indicated concealed ceiling systems to be demolished, retained and/or reused cable trays, retractable screens, structural support for ceiling mounted equipment, etc.

- Page couverture : modèle provenant de la *Norme de CAO/BIM du MDN*
- Les tableaux peuvent se présenter sous forme graphique et(ou) de grilles dans le format de plans
- Division 00 émise par une agence contractuelle gouvernementale

3) Documents de construction (démolition)

Les exigences relatives à la démolition sont génériques pour toutes les disciplines d'architecture et de génie. Les plans de démolition doivent faire partie des jeux de plans par discipline.

Reportez-vous aux *Annexes E à J* pour connaître les exigences particulières.

Remarque : La représentation graphique des éléments à démolir doit être différente de ceux à conserver, à protéger, à remettre en état, etc.

Plans, coupes et élévations

- Illustration des murs extérieurs et des cloisons intérieures par rapport aux éléments à conserver ou à enlever, avec représentation graphique des matériaux, références aux types et dimensions des cloisons
- Emplacement des portes, des fenêtres et des ouvertures à démolir, à conserver ou à réutiliser, et références aux tableaux des portes, des fenêtres et de la quincaillerie
- Emplacement des raccords et d'équipement des salles de toilette, des cuisines, des salles de conférence, d'équipements et d'installations mécaniques, électriques ou de télécommunications à enlever, à conserver ou à réutiliser, et références aux tableaux, notes et dimensions
- Indication claire des substances désignées, des matières dangereuses, etc.
- Indication claire des matériaux à valeur patrimoniale à démolir, à conserver et(ou) à remettre en état

Plans de plafond réfléchi

- Représentation graphique des appareils de plafond à enlever, à conserver et(ou) à réutiliser et renvois aux systèmes d'éclairage, de sécurité, de gicleurs, de CVCA et d'alarme-incendie.
- Indication claire des cloisons à démolir, à conserver et(ou) à réutiliser, accompagnée d'une représentation graphique de la construction et des matériaux, des niveaux (géodésiques) et des dimensions
- Indication claire des systèmes de plafond dissimulés à enlever, à conserver et(ou) à réutiliser, des chemins de câbles, des écrans amovibles, des structures de support d'équipement de plafond, etc.

Roof Plans

- The location of fixtures and equipment to be demolished, retained and/or reused for mechanical, electrical, window washing, maintenance, etc. complete with cross-reference to equipment schedules, notes and dimensions
- Clearly indicated remediation and protection of roof penetrations for equipment, skylights, hatches, etc.

Exterior/Interior Elevations

- The location of doors and windows, and other openings to be demolished, retained and/or reused complete with cross-reference to door, window and hardware schedules;
- Graphical representation of demolition materials and materials to remain/be reused.

Schedules

- Clearly indicated material, size, fire/thermal/acoustic/security resistance rating, colour, texture, pattern, etc.

4) Construction Documents : Site/Civil [Series 100]

See *Appendix E: Civil Checklist for Specifications and Drawings*

5) Construction Documents: Structural [Series 200]

See *Appendix F: Structural Checklist for Calculations, Specifications and Drawings*

6) Construction Documents: Architecture [Series 300]

See *Appendix G: Architectural Checklist for Specifications and Drawings*

7) Construction Documents: Mechanical [Series 400]

See *Appendix H: Mechanical Checklist for Calculations, Specifications and Drawings*

8) Construction Documents: Electrical [Series 500]

See *Appendix I: Electrical Checklist for Calculations, Specifications and Drawings*

9) Construction Documents: Communications [Series 700]

See *Appendix I: Electrical Checklist for Calculations, Specifications and Drawings*

10) Construction Documents: Security [Series 800]

See *Appendix I: Electrical Checklist for Calculations, Specifications and Drawings*

Plans de toit

- Emplacement des appareils et du matériel à enlever, à conserver et(ou) à réutiliser pour l'entretien mécanique ou électrique, le lavage des fenêtres, etc., et références aux tableaux, notes et dimensions
- Indication claire concernant la remise en état et la protection des ouvertures du toit, p. ex. équipement, puits de lumière, trappes, etc.

Élévations extérieures et intérieures

- Emplacement des portes, des fenêtres et des ouvertures à démolir, à conserver et(ou) à réutiliser, avec références aux tableaux des portes, des fenêtres et de la quincaillerie.
- Représentation graphique des matériaux à enlever, à conserver/à réutiliser.

Tableaux

- Indication claire des matériaux, de la taille, de la résistance thermique, acoustique, au feu et de sécurité, de la couleur, de la texture et des motifs, etc.

4) Documents de construction : emplacement/génie civil [série 100]

Voir l'*Annexe E : Aide-mémoire génie civil pour les devis et plans*

5) Documents de construction : structure [série 200]

Voir l'*Annexe F : Aide-mémoire structure pour les calculs, les devis et plans*

6) Documents de construction : architecture [série 300]

Voir l'*Annexe G : Aide-mémoire architecture pour les calculs, les devis et plans*

7) Documents de construction : mécanique [série 400]

Voir l'*Annexe H : Aide-mémoire mécanique pour les calculs, les devis et plans*

8) Documents de construction : électricité [série 500]

Voir l'*Annexe I : Aide-mémoire électricité pour les calculs, les devis et plans*

9) Documents de construction : Communications [série 700]

Voir l'*Annexe I : Aide-mémoire électricité pour les calculs, les devis et plans*

10) Documents de construction : sécurité [série 800]

Voir l'*Annexe I : Aide-mémoire électricité pour les calculs, les devis et plans*

11) Construction Documents: Interior Fit-up [Series 900]

This series is multi-disciplinary and is to be used solely for interior works; however, should any of the following conditions apply, Series 100 to 800 drawings shall be used:

- A change in major occupancy
- A change in Importance Factor
- An upgrade to meet the current National Building Code of Canada
- Building hardening for force protection requirements and exposure to ammunition/explosives facilities
- Any exterior works
- See *Appendix J: Series 900 Interior Fit-up Checklist*

12) Sample Boards and Materials Selection

- Final selection of wall, ceiling and floor finishes, materials, colours and textures for principal entrances and lobbies, main work areas, special purpose areas, washrooms, and service facilities (i.e., kitchenettes or staff lunchrooms)
- Preliminary selection of furniture and screen finishes, materials, colours and textures for main work areas, meeting and conference rooms and special purpose spaces
- Clear labels indicating location, purpose, critical technical data (i.e., acoustic rating, durability, etc.)

6.3.4 Project Execution Plan

See *Appendix C: Project Execution Plan*

6.3.5 Cost Control Plan

- See *Appendix M: Costing*
- Cost estimate including verification that the project can be constructed within budget
- Updated life-cycle cost analysis for all systems (architectural, structural, mechanical, electrical, etc.) including value-engineering items that were incorporated

6.3.6 Project Schedule Analysis

See *Appendix N: Schedule Analysis*

6.3.7 Risk Analysis

- See *Appendix O: Risk Analysis*
- Updated risk management plan and the various risks associated with the final design and the mitigation strategies, and finalized integrated list of long-lead, pre-purchase and sole source items

11) Documents de construction : aménagement intérieur [série 900]

Il s'agit d'une série multidisciplinaire qui doit être utilisée uniquement pour les travaux à l'intérieur; toutefois, si l'une des conditions suivantes s'applique, il faut utiliser les plans des séries 100 à 800 :

- Une modification de l'usage principal
- Une modification du coefficient de risque
- Une amélioration pour satisfaire aux exigences actuelles du Code national du bâtiment
- Un renforcement du bâtiment pour satisfaire aux exigences relatives à la protection de la force et à l'exposition aux munitions/explosifs
- Tous les travaux extérieurs
- Voir l'*Annexe J : Aide-mémoire aménagement intérieur, série 900*

12) Panneaux d'échantillons et sélection des matériaux

- Sélection définitive des revêtements de mur, de plafond et de sol, des matériaux, des couleurs et textures pour les entrées principales et les halls d'entrée, les principales aires de travail, les locaux à vocation particulière, les salles de toilette, et les installations de service (p. ex. les cuisinettes ou salles à manger du personnel)
- Sélection préliminaire du mobilier et des revêtements des écrans, des matériaux, des couleurs et des textures pour les principales aires de travail, les salles de conférence et de réunion et les locaux à vocation particulière
- Étiquettes indiquant clairement l'emplacement, l'objet et les données techniques essentielles (p. ex. la cote acoustique, la durabilité, etc.)

6.3.4 Plan de mise en œuvre du projet

Voir l'*Annexe C : Plan de mise en œuvre du projet*

6.3.5 Plan de contrôle des coûts

- Voir l'*Annexe M : Établissement des coûts*
- Estimation des coûts comprenant une vérification permettant de s'assurer que le projet peut être réalisé en respectant le budget
- Analyse du coût du cycle de vie à jour pour tous les systèmes (architecture, structures, mécanique, électricité, etc.), y compris les éléments de l'étude analytique de la valeur qui ont été intégrés

6.3.6 Analyse de l'échéancier du projet

Voir l'*Annexe N : Analyse du calendrier*

6.3.7 Analyse des risques

- Voir l'*Annexe O : Analyse des risques*
- Plan de gestion des risques à jour et les divers risques associés à la conception définitive et aux stratégies d'atténuation, et liste intégrée à jour des articles à long délai de livraison, à achat préalable ou à fournisseur exclusif



Appendix A: Design Narratives and Calculations

Content	Design narratives and calculations may be based on previous submissions; shall be cumulative; shall represent the current state of design (at the prescribed submission stages); and shall be revised to reflect the final design.
Narratives	Explain the design intent and document decisions made during the design process, and are an important part of the permanent record of the building design
Drawings and	Record what systems, materials, and components the design contains while narratives record why they were chosen
Calculations	Manual and/or computer based to support technical analysis; and shall include a summary sheet, input, assumptions, references to applicable codes, standards, textbooks, and conclusions.
Engineering and/or architectural sketches	Shall serve as an aid to understanding the narrative and calculations
Narratives and calculations	<p>Refer to drawing number where the results have been used (e.g., number and sizes of rebars used in reinforced concrete members)</p> <p>Provide a check of building performance criteria described in the Statement of Construction Requirements (SOCR)</p>

Annexe A : Descriptions et calculs de conception

Contenu	Les descriptions de la conception et les calculs peuvent se fonder sur les présentations antérieures; ils doivent être cumulatifs et représenter la situation actuelle de la conception (aux étapes de présentation prévues); ils doivent être révisés pour se conformer à la conception fi
Les descriptions	Expliquent l'objectif de la conception et décrivent les décisions adoptées pendant le processus de conception; elles constituent une part importante des relevés permanents de la conception des bâtiments
Les plans et les devis	Constituent des relevés du contenu des systèmes, des matériaux et des composants; les descriptions font état des raisons pour lesquelles elles ont été choisies.
Les calculs	Doivent être effectués manuellement et/ou à l'ordinateur pour étayer l'analyse technique; ils doivent comprendre une fiche sommaire, l'ensemble des hypothèses, les références aux codes, normes et documents applicables, et une liste des conclusions.
Les croquis d'ingénierie civil et/ou	Doivent aider à comprendre la description et les calculs
Les descriptions et les calculs	<p>Doivent renvoyer au numéro de plan dans les cas où les résultats des calculs ont été utilisés (P. ex. : nombre et dimensions des barres d'armature utilisées dans les éléments de charpente en béton armé)</p> <p>Doivent permettre de vérifier les critères d'exécution des bâtiments conformément aux modalités notées dans l'énoncé des besoins en construction (EBC).</p>

Appendix B: Sample Page

SAMPLE

Annexe B : Exemple

EXEMPLE



Appendix D: File Requirements

Drawing and BIM Digital File Requirements	<p>All drawing and model formats, software versions and deliverables at every submission shall be listed in the Project Execution Plan (PxP) and approved by DND Technical Authority prior to commencing.</p> <p>For CAD submissions, the consultants shall submit drawings in both:</p> <ul style="list-style-type: none">• PDF format with all layers exported and retained• DWG format in accordance with the <i>DND CAD/BIM Standard</i> <p>For BIM model generated deliverables, starting with the Design Development submission, 2D drawings generated from the model(s) shall be in PDF with fully bookmarked pages. For the 100% construction documents submission, drawings shall be submitted as both PDF and AutoCAD DWG.</p> <p>Fully coordinated BIM models shall be submitted in the following formats:</p> <ul style="list-style-type: none">• Native files (version as agreed in PxP)• IFC• Navisworks NWD and clash detection report (version as agreed in PxP)
Non-electronic document requirements	<p>Non-electronic documentation (i.e., sketches, conceptual drawings, renderings, photographs) submitted as deliverables shall be the original documents, and shall become the property of DND; second generation hard copies will not fulfill this requirement. Non-electronic documentation submitted shall be scanned to an electronic version and included on the media as follows:</p> <ul style="list-style-type: none">• Monochrome: TIFF Group 4 @ 300 dpi resolution (minimum)• Colour or Grayscale: JPEG @ 300 dpi resolution (minimum) with maximum 10% compression
Document index	<p>Submissions shall include a Document Index provided in a comma separated (.csv) spreadsheet format. The index shall include information regarding all documents in the submission as follows:</p> <ul style="list-style-type: none">• Document number/filename• Date• Document description• File format (.dwg, .rvt, .pdf, .xls, .jpg.)• Software application version
Digital media transfer requirements	<p>Media used to transfer data to DND shall meet the following requirements:</p> <ul style="list-style-type: none">• Media is burned to “write once” (ROM), and can be either CD-ROM or DVD+R, or a mixture of both*• CD-ROMs used for electronic file submissions comply with ISO 9660:1988 standard†• DVD+Rs used for electronic file submissions are 4.7 GB, single-sided, single-layer and comply with ISO/IEC 17344:2006 standards• Media is “closed” upon completion of burning• Media is usable in such a way that files may be accessed and copied from it• Media is free of known computer viruses
Media labelling	<p>When labelling any media, the following information shall be included:</p> <ul style="list-style-type: none">• Submission description• Project name• Project number• Job number• Consultant name• Date• Short description of contents
Data transmittal	<p>A data transmittal sheet shall accompany all submissions. This transmittal shall include the following:</p> <ul style="list-style-type: none">• Information required in media labelling• Total number of CD-ROM/DVD disks delivered• Total number of hard copy packages submitted• Printed copy of the document index

* See National Institute of Standards and Technology (NIST) / Library of Congress definition <<http://www.itl.nist.gov/iad/894.05/loc/definitions.html>>.

† To insure compatibility, ISO/IEC DIS 9660:1988 (E), 6.8.2.1 imposes a limit of eight levels to the depth of the directory structure. It also imposes a limit on the length of the path to each file. The length of the path is the sum of the lengths of all relevant directories, the length of the File Identifier (filename with extension), and the number of relevant directories. The length of the path cannot exceed 255. The sum of the lengths of the File Name and the File Name Extension cannot exceed 30.

Annexe D : Exigences relatives aux fichiers

Exigences relatives aux fichiers numériques de plans et BIM	<p>Tous les formats de maquettes et de plans, les versions des logiciels et les produits à livrer doivent être indiqués dans le Plan d'exécution du projet et approuvés par le l'autorité technique du MDN avant le début des travaux.</p> <p>Dans le cas de la soumission de plans CAO, les experts-conseils doivent présenter les plans dans les deux formats suivants :</p> <ul style="list-style-type: none"> • format PDF avec toutes les couches exportées et conservées; • format DWG, en conformité avec la Norme de CAO/BIM du MDN. <p>Dans le cas des produits à livrer créés à l'aide du modèle BIM, à compter de la présentation des documents de la phase d'élaboration de la conception, les plans en 2D produits à l'aide du ou des modèles doivent être en format PDF avec pages marquées d'un signet. Pour tous les documents de construction, les plans doivent être en formats PDF et AutoCAD DWG.</p> <p>Des modèles BIM coordonnés doivent être présentés dans les formats suivants :</p> <ul style="list-style-type: none"> • fichiers d'origine (version convenue dans le Plan d'exécution du projet); • IFC; • Navisworks NWD et rapport sur la détection des conflits (version convenue dans le Plan d'exécution du projet).
Exigences relatives aux documents non électroniques	<p>Les documents non électroniques (esquisses, dessins conceptuels, rendus, photographies) présentés comme des produits livrables sont des documents originaux qui deviennent la propriété du MDN; les copies papier de deuxième (2^e) génération ne satisfont pas à cette exigence. Les documents non électroniques présentés doivent être numérisés et inclus sur le média comme suit :</p> <ul style="list-style-type: none"> • Monochrome – Fichier TIFF groupe 4 ayant une résolution minimale de 300 ppp • Couleurs ou teintes de gris – Fichier JPEG ayant une résolution minimale d'au moins 300 ppp et une compression d'au plus 10 %
Index des documents	<p>Les présentations doivent inclure un index fourni dans une feuille de calcul en format CSV. L'index doit porter sur tous les documents de la présentation et comprendre les renseignements suivants :</p> <ul style="list-style-type: none"> • Numéro/nom de fichier des documents • Date • Description des documents • Format des fichiers (DWG, DGN, DOC, XLS, JPG, etc.) • Version du logiciel
Exigences de transfert par support électronique	<p>Le support utilisé pour transférer les données au MDN doit respecter les exigences suivantes :</p> <ul style="list-style-type: none"> • Le support est gravé d'une manière non réinscriptible (ROM). Il peut s'agir d'un CD-ROM, d'un DVD+R ou d'une combinaison de ces supports.* • Les CD-ROM utilisés pour présenter des fichiers électroniques sont conformes à la norme ISO 9660:1988.† • Les DVD+R utilisés dans le cadre de la présentation de fichiers électroniques sont des disques à simple face et simple couche ayant une capacité de 4,7 Go conformes à la norme ISO/IEC 17344:2006 • Le support est finalisé à la fin du processus de gravure • Le support est utilisable de telle manière qu'on pourrait accéder aux fichiers et les copier • Le support est exempt de virus
Étiquetage du support	<p>Lorsqu'on étiquette un support, on doit inclure l'information suivante :</p> <ul style="list-style-type: none"> • Description de la soumission • Nom du projet • Numéro du projet • Numéro de dossier • Nom de l'Expert-conseil • Date • Courte description du contenu
Transmission de données	<p>Une fiche de transmission de données doit accompagner toutes les soumissions. La fiche doit comprendre les renseignements suivants :</p> <ul style="list-style-type: none"> • Les éléments d'information nécessaire à l'étiquetage du support • Le nombre total de CD-ROM et de DVD présentés • Le nombre total de dossiers papier présentés • Une (1) copie imprimée de l'index des documents

* Consulter la définition du National Institute of Standards and Technology et de la Library of Congress à l'adresse <http://itl.nist.gov/iad/894.05/loc/definitions.html> (en anglais seulement).

† Afin de garantir la compatibilité, la norme ISO/IEC DIS 9660:1988 (E), 6.8.2.1, impose une structure de répertoire d'au plus huit (8) niveaux. Elle impose également une longueur de chemin d'accès maximale vers chaque fichier. La longueur du chemin d'accès est la longueur totale de tous les répertoires pertinents, de l'identificateur de fichier (nom de fichier avec extension) et du nombre de répertoires pertinents. La longueur du chemin d'accès ne peut dépasser 255 caractères. La somme de la longueur du nom du fichier et de son extension ne peut excéder 30 caractères.

Appendix E: Civil Checklist for Specifications and Drawings

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development (50% complete unless otherwise noted)	Interim (85% complete unless otherwise noted)
SPECIFICATIONS	Division 01 - General Requirements		-outline specifications for all general requirements (coordinated) and major components	-provide specification sections edited for project specific requirements
	Division 02 - Existing Conditions			
	Division 03 - Concrete			
	Division 31 - Earthwork			
	Division 32 - Exterior Improvements			
	Division 33 - Utilities			
	Division 34 - Transport			

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development (50% complete unless otherwise noted)	Interim (85% complete unless otherwise noted)
DRAWINGS	000 - Title Sheet/ Drawing List		-provide a drawing list (coordinated)	-provide a drawing list (coordinated)
	100 - Existing Condition Site Survey	-verified site plan (at least one block around site) including boundaries, topography, existing buildings, setbacks and easements, locations of on/off-site utilities (sewer, potable water, steam and gas)	-provide all pertinent topographic information including contours at appropriate intervals with spot elevations in clear legible format (100% complete)	
			-indicate all underground utilities including inverts and depths; size and type, including structures outside of site limit required for connection to existing services (100% complete)	
			-show borehole and test pit locations and elevations (100% complete)	
			-indicate locations of potential archaeological artifacts and historic preservation considerations [if applicable] (100% complete)	
			-show existing and new survey monuments (100% complete)	

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development (50% complete unless otherwise noted)	Interim (85% complete unless otherwise noted)
DRAWINGS	101 - Site Plan	-site location plan (at least 2km around site) including site relative to location of major landmarks, operations centre, major parking facilities, major roads, airfield, etc	-updated site location plan from Concept Report	-updated site location plan from Design Development Phase
		-legend identifying existing and proposed conditions	-legend identifying existing and proposed conditions	-updated legend identifying existing and proposed conditions
		-provide the location of the building for the preferred design option and indicate orientation and massing as well as future building expansion potential	-position of building on site	-position of building on site (100% complete)
			-provide building finished floor area at ground floor and building area	-provide building finished floor area at ground floor and building area (100% complete)
			-indicate limits of work	-indicate limits of work (100% complete)
		-for the preferred design option, indicate parking (military/civilian) and service areas, as well as general landscape design including green spaces (hard and soft)	-indicate accessible route from parking areas and road/street to main facility entrance, planting areas and turf areas	-indicate roads, walkways, accessible routes from parking and public street to building entrance, parking and other paved areas, and planted areas
			-indicate preliminary barrier-free access, path of travel	-clearly indicate barrier-free access, path of travel and clearances, complete with notes and dimensions

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development (50% complete unless otherwise noted)	Interim (85% complete unless otherwise noted)
DRAWINGS	101 - Site Plan (con't)		-indicate all types of pavement materials	-show pavement markings and signage
				-Identify all curb, pavement and sidewalk radii
			-provide graphic representation of regulatory data including zoning, setbacks, rights of way, easements, parking data, etc. (100% complete)	
			-provide a legal description of the property [where applicable] (100% complete)	
			-indicate the limiting distance setbacks from each exposed building face, based on completed calculations of percentage of unprotected openings	-finalize location of limiting distance setbacks from each exposed building face, based on percentage of unprotected openings (100% complete)
		-indicate fire suppression water supplies, fire hydrants, fire department access routes for the preferred design option	-indicate fire department access routes and fire lanes	-provide locations and sizes of fire suppression water supply lines at building, fire hydrants, fire department access routes and fire lanes
			-provide locations of flood plains and wetlands [where applicable] (100% complete)	
			-show all buildings, roads, parking, signage, lighting, walkways, stairs, ramps, railings, fences and site furnishings	-provide locations of adjacent buildings relative to the new building with regards to limiting distance (100% complete)

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development (50% complete unless otherwise noted)	Interim (85% complete unless otherwise noted)
DRAWINGS	102 - Demolition Plan		-indicate elements to be demolished (85% complete). These must be graphically distinct from elements to remain/be protected/be refurbished, etc	-indicate elements to be demolished (100% complete). These must be graphically distinct from elements to remain/be protected/be refurbished, etc
				-clearly identify work to be completed by others
	103 - Hazardous Removals Plan		-indicate removal of underground storage tanks, contaminated soils, abandoned wells, etc, complete with preliminary details	-indicate removal of underground storage tanks, contaminated soils, abandoned wells, etc, complete with developed details
	104 - Site Interference Plan (note that all Mechanical/ Electrical work shall be referenced back to drawings 401 and 501 respectively)			-indicate site elements to be constructed
				-provide sufficient dimensions or coordinates to identify the exact location of the proposed work
				-provide relative locations of all below (i.e. sewers, gas, steam, electrical, pumping station, oil/grit interceptors, water main, etc) and above ground utilities (i.e. electrical, steam vaults, fire hydrants, valve, manholes, catch basins, etc), curbs, landscaping and site removals

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development (50% complete unless otherwise noted)	Interim (85% complete unless otherwise noted)
DRAWINGS	110 series - Grading/ Drainage Plan	-indicate grading and drainage for the preferred design option	-show building footprint and approximate finished floor elevations	-show building footprint and finished floor elevation (100% complete)
				-Indicate proposed grades with existing contours/grades provided in background light font
			-show proposed drainage direction flow arrows and slopes	-indicate surface drainage with slopes
				-major overland flow route indicated
			-indicate approximate location of proposed drainage structures and outlets, including storm water management features	-have drainage structures numbered and top of grate elevation shown
				-grading clearly defined at curbs, sidewalk and top of retaining walls
				-indicate horizontal and vertical control points
			-show pavement design, curb and sidewalk type	-identify light/heavy duty pavement areas (100% complete)
				-identify top of slopes, ditch centre lines and culvert inverts
				-provide typical site sections, dimensions and proposed site development features
				-100yr storm water ponding contour elevation in parking lot(s) over catch basins and in retention ponds
				-identify all rip-rap or other erosion control measures
				-all existing and new hydrants and valves are shown

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development (50% complete unless otherwise noted)	Interim (85% complete unless otherwise noted)
DRAWINGS	120 series - Servicing (Site Utilities) Plan	-indicate storm and sewer for the preferred design option	-show sizes and locations of domestic and fire suppression water supply lines including fire hydrant locations	-show sizes and locations of domestic and fire suppression water supply lines including fire hydrant locations
			-show sanitary sewer lines, steam/condensate lines and chilled water supply/return lines (if applicable)	-show sanitary sewer lines, steam/condensate lines and chilled water supply/return lines (if applicable)
			-show any potential conflicts with existing utility locations and depths	-identify pipe material, type of pipe, pipe diameter and inverts at 1m within proposed building foundation for all underground utilities and anticipated flows
				-show building footprint and finished floor elevation (100% complete)
				-indicate proposed underground utilities with existing utilities provided in background light font
				-provide horizontal location and vertical depths of new services, manholes, drainage structures, head walls, culverts, valves, valve chambers, pumping stations, roof leader tie-in points
				-provide location of storm sewer foundation drain and depth
				-all existing and new watermains with associated hydrants are shown; sizes of existing mains are provided
				-provide structure data table

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development (50% complete unless otherwise noted)	Interim (85% complete unless otherwise noted)
DRAWINGS	130 series - Landscaping Plan		-show general areas of planting	-show general areas of planting including preliminary plant lists, preliminary materials selection (paving, site furniture), water features, etc
	150 series - Details: Plans, Sections, Elevations			-all related details for civil works (i.e. pavement markings, signs, road pavement structures, retaining walls, fences, bollards, underground piping, thrust restraints, concrete thrust blocks, fire hydrants, valves, head walls, etc) -provide typical road sections, dimensions and proposed site development features, including pavement/curb and sidewalk type

Annexe E : Aide-mémoire génie civil pour les devis et plans

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception (achèvement à 50 % sauf indication contraire)	Soumission provisoire (achèvement à 85 % sauf indication contraire)
DEVIS	Division 01 - Exigences générales		-le devis préliminaire (une table des matières) pour tous les exigences générales (coordonnés) et pour les éléments majeurs	-fournir une section de devis adaptée aux exigences particulières du projet
	Division 02 - Conditions existantes			
	Division 03 - Béton			
	Division 31 - Terrassements			
	Division 32 - Aménagements extérieurs			
	Division 33 - Services publics			
	Division 34 - Transports			

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception (achèvement à 50 % sauf indication contraire)	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	000 - Page couverture/ Liste des plans		-fournir une liste (coordonnée) de plans	-fournir une liste (coordonnée) de plans achevée à 100 %
	100 - Conditions existantes/ Relevé topographique	-le plan d'emplacement vérifié (au moins un quadrilatère autour de l'emplacement) y compris les limites de l'emplacement, la topographie, les bâtiments existants, les retraits et les servitudes, l'emplacement des services d'utilités sur l'emplacement et hors de l'emplacement (égouts sanitaires, eau potable, réseau de valeur et gaz)	-renseignements topographiques pertinents avec courbes de niveau à intervalles appropriés, cotes de niveau lisibles (achèvement à 100%)	
			-montrer tous les services publics souterrains (radiers, profondeurs, dimensions, type, y compris les structures à l'extérieur des limites de l'emplacement requises pour le raccordement aux services existants (achèvement à 100 %)	
			-montrer les emplacements et niveaux des trous de sondage (achèvement à 100 %)	
			-indiquer l'emplacement des artefacts archéologiques potentiels et les considérations relatives à la préservation du patrimoine, s'il y a lieu (achèvement à 100 %)	
			-montrer les bornes d'arpentage existantes ou nouvelles (achèvement à 100 %)	

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Elaboration de la conception (achèvement à 50 % sauf indication contraire)	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	101 - Plan d'emplacement	-le plan de l'emplacement actuel (dans un rayon de deux [2] km) tenant compte des points d'intérêt, du centre d'activité, des principaux stationnements, des chemins importants et des terrains d'aviation	- le plan de l'emplacement actuel mis à jour à partir du rapport d'étude conceptuelle (conception)	-une mise à jour du plan de l'emplacement de l'élaboration de la conception
		-légende indiquant les conditions existantes et proposées	-légende indiquant les conditions existantes et proposées	-une mise à jour de la légende, identifier les conditions existantes et proposées
		-fournir l'emplacement du bâtiment pour l'option de conception retenue et indiquer l'orientation et la masse du bâtiment ainsi que le potentiel d'agrandissement futur du bâtiment	-position du bâtiment sur le site	-position du bâtiment sur le site (achèvement à 100 %)
			-indiquer la superficie de plancher finie au rez-de-chaussée et l'aire du bâtiment	-indiquer la superficie de plancher finie au rez-de-chaussée et l'aire du bâtiment (achèvement à 100 %)
			-indiquer les limites des travaux	-indiquer les limites des travaux (achèvement à 100 %)
		-pour l'option de conception retenue, indiquer les aires de stationnement (pour militaires/civils) et de services, ainsi que la conception générale du paysage y compris les espaces verts (terrassement et aménagement)	-indiquer la voie accessible à partir des aires de stationnement et le chemin ou la rue vers l'entrée principale, les secteurs de plantations et les aires gazonnées	-indiquer les routes, trottoirs, chemins accessibles depuis le terrain de stationnement et la voie publique jusqu'à l'entrée du bâtiment, le stationnement et les autres surfaces revêtues, et les aires de plantations
			-indiquer la voie d'accès sans obstacles, le chemin de circulation	-indiquer clairement l'accès sans obstacles, la voie de circulation et les dégagements, avec notes et dimensions
			-indiquer tous les types de matériaux routiers	-montrer les marquages de chaussée et la signalisation
				-indiquer le rayon de toutes les bordures, de la chaussée et des trottoirs

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Elaboration de la conception (achèvement à 50 % sauf indication contraire)	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	101 - Plan d'emplacement (suite)		-fournir une représentation graphique des données réglementaires, notamment sur le zonage, les reculs, les emprises, les servitudes, le stationnement, etc. (achèvement à 100%)	
			-fournir une description juridique de la propriété [s'il y a lieu] (achèvement à 100%)	
		-indiquer l'alimentation d'eau pour la protection d'incendie, les bornes d'incendie, les voies d'accès exigées pour le service d'incendie, pour l'option de conception retenue	-indiquer les distances limitatives de recul par rapport à chacune des faces exposées du bâtiment, sur la base des calculs du pourcentage d'ouvertures non protégées	-finaliser les distances limitatives par rapport à chacune des faces exposées du bâtiment, sur la base des calculs du pourcentage d'ouvertures non protégées (achèvement à 100%)
			-indiquer les voies d'accès exigées pour le service d'incendie	-fournir l'emplacement et les dimensions des canalisations d'eau pour la lutte contre l'incendie du bâtiment, les bornes d'incendie, les voies d'accès exigées pour le service d'incendie
			-indiquer l'emplacement des plaines inondables et des zones humides [s'il y a lieu] (achèvement à 100%)	
			-indiquer tous les bâtiments, chemins, stationnements, signalisations, éclairages, trottoirs, escaliers, rampes, garde-fous, clôtures et accessoires de l'emplacement	-indiquer l'emplacement des bâtiments adjacents par rapport au nouveau bâtiment en ce qui a trait à la distance limitative (achèvement à 100%)

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Elaboration de la conception (achèvement à 50 % sauf indication contraire)	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	102 - Plan de démolition		-indiquer les éléments à démolir (achèvement à 85 %). Ces éléments doivent être distincts sur le plan graphique des éléments à conserver/protéger/remettre en état, etc.	-indiquer les éléments à démolir (achèvement à 85 %). Ces éléments doivent être distincts sur le plan graphique des éléments à conserver/protéger/remettre en état, etc.
				-indiquer clairement les travaux qui <u>doivent être exécutés par des tiers</u>
	103 - Plan d'enlèvement des matières dangereuses		-indiquer l'enlèvement des réservoirs souterrains, des sols contaminés, des puits abandonnés, etc., fournir des détails préliminaires	-indiquer l'enlèvement des réservoirs souterrains, des sols contaminés, des puits abandonnés, etc., fournir des détails élaborés
	104 - Plan des interférences sur le site (prendre note que tous les travaux de mécanique et d'électricité doivent se rapporter aux plans 401 et 501, respectivement)			-indiquer tous éléments du site à <u>construire</u> -fournir suffisamment de dimensions ou de coordonnées pour déterminer l'emplacement exact des travaux <u>proposés</u> -indiquer l'emplacement relatif de tous les services publics souterrains (p. ex. égouts, conduites de gaz ou de vapeur, câbles électriques, stations de pompage, intercepteurs d'huile ou de grosses particules, conduites d'eau, etc.) et de surface (p. ex. câbles électriques, locaux techniques, bornes d'incendie, vannes, trous d'homme, bassins de rétention, etc.), les bordures, l'aménagement paysager et les éléments à enlever du site

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Elaboration de la conception (achèvement à 50 % sauf indication contraire)	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 110 - Plan de Nivellement/ Drainage	-indiquer le nivellement et le drainage pour l'option de conception retenue	-montrer l'empreinte du bâtiment et le niveau approximatif des planchers finis	-montrer l'empreinte du bâtiment et le niveau des planchers finis (achèvement à 100 %)
				-montrer les niveaux proposés ainsi que les niveaux et/ou courbes de niveau actuels (en arrière-plan) en utilisant une police n°10
			-indiquer le sens et la pente de drainage proposés	-indiquer les surfaces de drainage et les pentes
				-principaux tracés d'écoulement en surface indiqués
			-indiquer l'emplacement approximatif des structures de drainage proposées et exutoires, y compris les caractéristiques de retenue de l'eau de pluie	-montrer les structures de drainage numérotées et l'altitude au niveau de la grille
				-nivellement clairement défini au niveau des bordures, des trottoirs et de la partie supérieure des murs de soutènement
				-indiquer les points de contrôle horizontaux et verticaux
			-montrer les structures de chaussée et le genre de bordures et de trottoirs	-désigner les zones des revêtements de chaussées pour service léger/intense (achèvement à 100%)

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Elaboration de la conception (achèvement à 50 % sauf indication contraire)	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 110 - Plan de Nivellement/ Drainage (suite)			-indiquer le sommet des pentes, les axes de fossé et les radiers de ponceau
				-fournir les coupes types de l'emplacement, les dimensions et les caractéristiques d'aménagement proposées pour l'emplacement
				-courbes de niveau d'accumulation d'eau pour l'averse de pluie ayant une fréquence de récurrence de 100 ans dans les stationnements au-dessus des bassins de décantation et de rétention
				-indiquer les enrochements et autres mesures de contrôle de l'érosion
				-toutes les bornes d'incendie et tous les robinets existants et nouveaux sont indiqués

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Elaboration de la conception (achèvement à 50 % sauf indication contraire)	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 120 - Plan des services de l'emplacement [Services publics] (suite)	-indiquer les égouts pluviaux et sanitaires de l'option de conception privilégiée	-indiquer les dimensions et l'emplacement des canalisations d'eau domestique et d'eau pour la lutte contre l'incendie y compris l'emplacement des bornes-fontaines	-indiquer les dimensions et l'emplacement des canalisations d'eau domestique et d'eau pour la lutte contre l'incendie y compris l'emplacement des bornes-fontaines
			-indiquer les canalisations d'égout sanitaire, les canalisations de vapeur et de condensat et les canalisations d'alimentation en eau refroidie et de retour, s'il y a lieu	-indiquer les canalisations d'égout sanitaire, les canalisations de vapeur et de condensat et les canalisations d'alimentation en eau refroidie et de retour, s'il y a lieu
			-indiquer toutes les incompatibilités possibles avec l'emplacement et la profondeur des services publics existants	-préciser le matériau, le type, le diamètre et les radiers des tuyaux à moins de 1 m des fondations du bâtiment proposé pour tous les services publics souterrains, ainsi que les débits prévus
				-montrer l'empreinte du bâtiment et le niveau du sol fini (achèvement à 100%)
				-indiquer les services publics souterrains proposés avec les services publics existants en utilisant une police sur un arrière-plan pâle
				-fournir l'emplacement horizontal et la profondeur verticale des nouveaux services, regards, structures de drainage, murs d'amont, ponceaux, robinets, soupapes, chambre des vannes, stations de pompage, tuyaux de descente de toit

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Elaboration de la conception (achèvement à 50 % sauf indication contraire)	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 120 - Plan des services de l'emplacement (Services publics)			-fournir l'emplacement et la profondeur de drain de fondation (eau de pluie)
				-toutes les conduites principales d'eau nouvelles et existantes avec les bornes d'incendie connexes sont indiquées; les dimensions des conduites principales existantes sont fournies
	Série 130 - Plan d'aménagement paysager		-montrer les zones générales de plantations	-montrer les zones générales de plantations, y compris les listes préliminaires de végétaux, le choix préliminaire des matériaux (pavés, accessoires de l'emplacement), jeux d'eau, etc.
	Série 150 - Détails : plans, coupes, élévations			-tous les détails concernant les travaux de génie civil (p. ex. marquage des chaussées, signalisation, structures des chaussées, murs de soutènement, clôtures, bornes de protection, canalisations souterraines, matériel à supportage élastique, massifs d'ancrage en béton, bornes d'incendie, vannes, murs d'amont, etc.)
				-fournir les coupes types des chaussées routières, les dimensions et les caractéristiques d'aménagement proposées pour l'emplacement, y compris les structures des chaussées/bordures et les types de trottoirs

Appendix F: Structural Checklist for Calculations, Specifications and Drawings

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
CALCULATIONS	Gravity Loads and Lateral Loads	- Specify the design criteria, such as: the importance factor, the various occupancy loads (live loads), the climatic data for snow, wind and seismic	- Provide the various preliminary calculations for the climatic loads, such as snow, wind and seismic	- Provide the final calculations (100%) for the climatic loads, such as snow, wind and seismic
	Foundation		- Provide preliminary foundation calculations	- Provide final (100%) foundation calculations
	Progressive Collapse	-If applicable, indicate how the proposed system is not vulnerable to progressive collapse	- If applicable, provide preliminary calculations with regards to progressive collapse	- Provide final calculations (100%) with regards to progressive collapse
	Blast	-If applicable, indicate location and charge (NEQ) of PESs from the new facility (ES) for external blast effects and internal explosions.	-if applicable, indicate external and internal blast loads for design	-if applicable, indicate external and internal blast loads for design
			-if applicable, indicate component response criteria	-if applicable, indicate updated component response criteria
			-if applicable, list software used for design	-if applicable, provide an updated list of software used for design

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
SPECIFICATIONS	Division 01 - General Requirements		-Outline specifications for general requirements (coordinated) and all major components	-50% completion of specifications within these Divisions
	Division 02 - Existing Conditions			
	Division 03 - Concrete			-90% completion of specifications within these Divisions
	Division 04 - Masonry			
	Division 05 - Metals			
	Division 06 - Wood, Plastics and Composites			
	Division 31 - Earthwork			-80% completion of specifications within this Division

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	000 - Title Sheet/ Drawing List		-Provide a drawing list (coordinated)	-Provide a drawing list (coordinated)
	200 - Regulatory Data/ General Notes/ Key Plans/ Legends		-Include the Design Standards references	-For Design Standards, include a reference to the National Building Code of Canada (noting the latest edition), as well as a reference to the various CSA Standards used in the design, specifically noting the Standards' most current year of release (i.e. CSA O86-14, CAN/CSA S16-14, etc)
			-provide Dead Load design criteria (broken down)	-For Design Loads, Dead Loads: indicate Self-weight and Superimposed Dead Loads (broken down) for Ground/main Floor, upper floors, roofs, mezzanines, partitions and parking garages
			-provide Live Loads design criteria	-For Design Loads, Live Loads: indicate loads due to Use and Occupancy for the ground/main floor, upper floors, mezzanine, concentrated loads, exit stairs, public corridors, balconies, mechanical areas, parking garages, crane capacity, load on guards, truck/helicopter/vehicle concentrated loads
			-provide design criteria for Snow, Ice & Rain Loads	-For Design Loads, Loads due to Snow, Ice & Rain: indicate the Importance Factor (Is), Ground Snow Load (Ss), Ground Rain Load (Sr), roof specified snow load, unbalanced snow load, drift load for height differentials, snow distributions and snow loading factors as per NBCC Commentary G. Also specify if roof drains are designed to retain water for storm management or for controlled flow within a 24hr period

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	200 - Regulatory Data/ General Notes/ Key Plans/ Legends (con't)		-Provide Wind Loads	- For Design Loads, Loads due to Wind: indicate the Importance Factor (I_w), 1/50 hourly wind pressure for structural components, wind load applied as per NBCC Commentary I, factored horizontal force (V) at base and overturning moment (M) in both N-S and E-W directions
				- For Design Loads: indicate Full and Partial Loadings, applied as per NBCC
			-provide Seismic Design Criteria: $S_a(0.2)$, $S_a(0.5)$, $S_a(1.0)$, $S_a(2.0)$, Soil Site Class, F_a , F_v , I_e , $I_e F_a S_a(0.2)$, type of SFRS with R_d and R_o in both N-S-and E-W directions	-For Design Loads, Loads due to Earthquakes: indicate $S_a(0.2)$, $S_a(0.5)$, $S_a(1.0)$, $S_a(2.0)$, Soil Site Class, F_a , F_v , I_e , $I_e F_a S_a(0.2)$, type of SFRS with R_d and R_o in both N-S-and E-W directions (specify applicable standard and clause for each SFRS used), type of irregularities, method of analysis: specify if Static or Dynamic (if Dynamic, specify type of procedure), T_a , $S(T_a)$, Torsion Sensitivity Factor B , M_v , J , Base shear (V) and Moment at base (M) in both N-S and E-W directions, maximum interstorey deflection. NOTE: if Dynamic analysis is used, provide Static values as well, specify which method of analysis provides governing conditions, and clearly indicate which values are used in the design
			-if applicable, provide external blast loads, indicating location and charge (NEQ) of various PESs, with their distance to the new facility (ES)	-For External Blast Loads: Indicate various PES with their NEQ, distance of building to PES, overpressure, duration, impulse; provide maximum allowable ductility ratio and end rotation for various structural elements

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	200 - Regulatory Data/ General Notes/ Key Plans/ Legends (con't)		-if applicable, provide internal blast loads, indicating various NEQs with their location inside the new facility	-For Internal Blast Loads: indicate various NEQs with their location inside the building
			-provide Foundation Notes	-For Foundation Notes, clearly reference the geotechnical report and date as well as provide a description of bearing stratum and foundation type; factored bearing capacity (ULS); allowable bearing capacity (SLS); frost protection depth; retaining structures criteria (lateral earth pressures and hydrostatic pressures) and sub-grade preparation for footings and slab on grade
				-For Pile Foundation Notes: indicate pile type (driven or bored piles, concrete, steel tubes or HP piles, composite), diameter and wall thickness, steel grade or concrete strength, depth, refusal criteria, bearing capacity, safety factor, pile capacity, splice information, testing information

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	200 - Regulatory Data/ General Notes/ Key Plans/ Legends (con't)		-Provide Concrete and Reinforcing steel Notes	- For Concrete Notes provide concrete requirements (28 day compressive strength, exposure class, nom. size coarse aggregate, air content, max. w/c ration) for various concrete items such as footings, foundation walls, interior slabs on grade, exterior slabs on grade, floor slabs, columns, beams, grade beams, retaining walls, etc. Provide all other relevant information for concrete covers, grout, slab on grade, hardeners, etc
				- For Reinforcing Steel Notes provide the types of bars and wire mesh, steel detailing information, lap/splice locations and lengths, various embedments, etc
			-Provide Structural steel/Masonry/Wood Notes	- For Structural Steel Notes provide steel grades for various elements, bolts and welding information, requirements for connections (shear and others), etc
				-For OWSJ Notes Provide permitted deflections, cambers, bridging, Loads for connections, etc
				- For Steel Deck Notes provide the thickness and depth, coating, deck attachment pattern, etc
				- Provide Notes for Masonry, Wood, Pre-Engineered Structures, Cold Formed Steel, Precast, etc

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	205 - Location, Site Plan, Typical Details			-Provide typical details for stepped footings, adjacent footings, footings adjacent to underground services
				-Provide typical details for subgrade preparation for slab on grade; slab on grade construction joints and control joints; slab on grade below masonry walls and stairs
				-Provide typical details for pits and trenches; interior columns; reinforcing for holes through floors, roofs and walls
				-Provide typical details for wall horizontal and vertical construction joints and control joints, corner wall reinforcing and masonry reinforcing
				-Provide typical details for elevator hoist beam anchorage to slab, block header supports, crane supports, lintels, anchor bolts, openings through steel deck, housekeeping pads, lateral restraint at top of block walls and roof anchors
				-Provide details or requirements for non-structural elements such as cladding, walls, mechanical/electrical equipment, ceiling systems, lighting, shelving, etc
	206 to 209 - Demolition		-indicate the extent of work to be demolished (i.e. framing, openings in load-bearing walls/floors/roofs, foundations/slabs removals, etc)	-provide updated details on the extent of work to be demolished
				-provide temporary shoring/bracing/supports where required
				-provide notes to define the sequencing of demolition work

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	210 series - Foundation & Ground Floor Plans	-Indicate the proposed structural systems, columns, bay sizes, expansion or seismic joints, foundations and lateral systems.	-Indicate footings or piles (with preliminary dimensions) and foundation walls, slabs-on-grade, pilasters, expansion joints complete with structural grid lines dimensioned	-Indicate the structural system complete with grids and dimensions
				-Indicate the vertical design loads, including dead and superimposed dead loads, occupancy live loads, snow loads (including build-ups), mechanical equipment loads, construction loads, crane loads, special loading considerations (compact shelving, heavy vehicles, storage, heavy partitions for vaults, etc)
				-Foundation plans shall indicate exterior and interior foundation walls located from grid lines, with typical dimensions
				-Foundation plans shall indicate sole plates and/or piles (indicate length of piles if piles are required), pilasters, expansion joints, anchors, excavation/shoring/backfill, location of known existing services, construction sequence of underpinning, frost protection, groundwater conditions, settlement, blasting of rock (protection of nearby structures) and sulphate/calcium resistance; for piles, indicate imposed service loads
				-Indicate slabs-on-grade complete with slab thickness, elevation, sub-base and saw cuts
				-Clearly indicate floor elevations (geodetic) complete with floor level changes, stairs and ramps.
				-Provide assumed bearing elevations relative to grid lines
				-Indicate floor finishing tolerances, slopes for drainage, drain openings, etc
				-Indicate graphical representation of construction materials for walls and floors

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	210 series - Floor & Roof Plans	-Indicate the proposed structural systems, columns, bay sizes, expansion or seismic joints, foundations and lateral systems.	-Indicate framing and preliminary sizes of major structural elements complete with structural grid lines dimensioned	-Provide a benchmark plan showing live and dead loads used in calculating the structure
				-Forces, moments, shears and torsion for the preparation of shop drawings and connection details (distinguished factored and specified loads) shall be indicated
				-Indicate horizontal design loads for joists and steel deck connections for diaphragm action
				-Indicate the vertical design loads, including dead and superimposed dead loads, occupancy live loads, snow loads (including build-ups), mechanical equipment loads, construction loads, crane loads, special loading considerations (compact shelving, heavy vehicles, storage, heavy partitions for vaults, etc)
				-Provide location and size of main structural elements such as beams, posts, trusses, columns, slabs (cambering of structural elements), etc, complete with dimensions, deflections, vibrations
				-Indicate main openings for stairs, elevators, mechanical shafts, etc as well as saw cuts and expansion joints
				-Indicate reinforcing bars and placement order
				-Clearly indicate grade, floor, mezzanine and roof elevations (geodetic) complete with floor changes, stairs and ramps
				-Provide assumed bearing elevations relative to grid lines
				-Indicate floor finishing tolerances, slopes for drainage, drain openings, etc
				-Indicate graphical representation of construction materials for walls and floors

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	220 series - Elevations (exterior)		-Indicate lateral resisting system; provide elevation views showing brace and/or shear wall locations; clearly indicate elevations for ground floor, upper floors, mezzanines and roofs	-Clearly indicated grade, floor, mezzanine, roof and equipment elevations (geodetic)
				-Shear wall elevations complete with openings and reinforcing details cross-referenced to schedules
				-Truss elevations showing factored member forces
				-Cross-bracing complete with member factored loads and connection factored loads
				-Major openings in frame members
				-Lateral deflection of the building
				-Graphical representation of construction and finish materials
	225 series - Elevations (interior)		-Indicate lateral resisting system; provide elevation views showing brace and/or shear wall locations; clearly indicate elevations for ground floor, upper floors, mezzanines and roofs	-Clearly indicate grade, floor, mezzanine, roof and equipment elevations (geodetic)
				-Indicate shear wall elevations complete with openings and reinforcing details cross-referenced to schedules
				- Indicate truss elevations showing factored member forces
				- Indicate cross-bracing complete with member factored loads and connection factored loads
				- Indicate major openings in frame members

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	230 series - Building Sections (transverse/ longitudinal)		-clearly show major framing elements; provide elevation views showing brace and/or shear wall locations; clearly indicate elevations for ground floor, upper floors, mezzanines and roofs	-Indicate the location of main openings through structural shear walls
			-Clearly indicate "interconnected floor spaces and mezzanines"	-Provide reinforcing details for main openings through structural walls, complete with cross-referencing to schedules
				-Clearly indicate "interconnected floor spaces" and mezzanines"
				-Clearly indicated graphical representation of systems and equipment interference for structural, mechanical, electrical, communications, security, etc, complete with cross-referenced notes and dimensions
	235 series - Wall Sections			-Wall sections showing structural elements, as applicable: girts, block walls, reinforced concrete walls, tilt-up panels, studs, brick supporting elements, etc
	240 series - Large Scale Plans		-For fairly large buildings: provide large scale foundation plans, ground floor plans and roof plans, with appropriate key plans	-For fairly large buildings: provide large scale foundation plans, ground floor plans and roof plans, with appropriate key plans

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	250 series - Plan/Section Details		-Provide foundation sections, showing preliminary footing/foundation wall sizes, detail at junction slabs	-Foundation sections showing minimum frost cover, detail at junction slabs, wall reinforcing, connection details of walls to foundation walls, grade beams, piers, etc
				-Floors and roof sections showing connection of slabs and deck to supporting members (walls or beams)
				-Details of beam/joist connections to columns and walls, sections at various openings, etc
				-Plan and elevation details of piers, pile caps, piles, base plates, concrete beams and slabs, walls, etc
				-Applied fireproofing, all required fire resistance rating of structural assembly to be shown, with type of material to use
				-Details of interconnection of structural members provided but not finalized
	270 series - Stairs, Ramps and Conveying Systems			-Provide plans, sections and details of stairs, ramps, escalators & elevators
	290 series - Schedules			-60% completion of Footing Schedule showing location , size, thickness, reinforcing and elevation of bottom of footing
				-60% completion of Column Schedules showing column types, base plate, pier types, footing types, elevations, loads
				-60% completion of Beams Schedule
				-60% completion of Walls Schedule
				-60% completion of Slab Schedule

Annexe F : Aide-mémoire structure pour les calculs, devis et plans

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
CALCULS	Charges de gravité et charges latérales	- Préciser les critères de calcul, comme le coefficient de risque, les surcharges d'occupation (charges vives), les données climatiques pour la neige et le vent, ainsi que les données parasismiques	- Fournir les calculs préliminaires pour les charges climatiques comme la neige et le vent, ainsi que pour les données parasismiques	- Fournir les calculs définitifs (à 100%) pour les charges climatiques comme la neige et le vent, ainsi que pour les données parasismiques
	Fondations		- Fournir les calculs préliminaires pour les fondations	- Fournir les calculs définitifs (à 100 %) pour les fondations
	Effondrement progressif	-S'il y a lieu, indiquer dans quelle mesure le système proposé n'est pas vulnérable à un effondrement progressif	-S'il y a lieu, fournir les calculs préliminaires concernant l'effondrement progressif	-S'il y a lieu, fournir les calculs définitifs (à 100%) concernant l'effondrement progressif
	Résistance au Souffle	-S'il y a lieu, indiquer l'emplacement et la charge (NEQ) des sièges potentiels d'explosion (SPE) par rapport aux nouvelles installations (sièges exposés) pour les effets de souffle externes et pour les explosions internes	-S'il y a lieu, indiquer les charges explosives internes et externes pour fins de calcul	-S'il y a lieu, indiquer les charges explosives internes et externes pour fins de calcul
			-S'il y a lieu, indiquer les critères de réponse des composants	-S'il y a lieu, indiquer les critères de réponse révisés des composants
			-S'il y a lieu, fournir une liste des logiciels utilisés pour les calculs	-S'il y a lieu, fournir une liste révisée des logiciels utilisés pour les calculs

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
DEVIS	Division 01 - Exigences générales		-Décrire les devis pour les exigences générales (coordonnés) et pour tous les éléments majeurs	-Achèvement à 50 % des sections de devis à l'intérieur de ces divisions
	Division 02 - Conditions existantes			
	Division 03 - Béton			
	Division 04 - Maconnerie			-Achèvement à 90 % des sections de devis à l'intérieur de ces divisions
	Division 05 - Métaux			
	Division 06 - Bois, plastiques et composites			
	Division 31 - Terrassements			-Achèvement à 80 % des sections de devis à l'intérieur de ces divisions

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	000 - Page couverture/ Liste de plans		-fournir une liste de plans (coordonnée)	-fournir une liste de plans (coordonnée)
	200 - Données réglementaires/ notes générales/ plans clés/ légendes		-inclure les références pour les normes de conception	-Inclure les normes de conception avec références au Code national du bâtiment – Canada (en notant l'année de la dernière édition) et aux diverses normes CSA servant à la conception, avec mention spécifique de l'année de parution, (p.ex. CSA O86-14, CAN/CSA S16-14, etc)
			-fournir des critères de conception pour les charges permanentes (ventilées)	-Charges de calcul – charges permanentes : inclure les poids propres et les charges permanent superposées (ventilées) pour le rez-de-chaussée, les étages supérieurs, les toitures, les mezzanines, les cloisons et les stationnements intérieurs
			-fournir les critères de conception pour les surcharges	-Charges de calcul - surcharges : indiquer les surcharges dues à l'usage et à l'occupation pour le rez-de-chaussée, les étages supérieurs, les mezzanines, les escaliers d'issue, les corridors publics, des balcons, les locaux de mécanique et les stationnements intérieurs, de même que la capacité des ponts roulants, les charges sur les garde-corps et les surcharges concentrées des camions/hélicoptères/véhicules.

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	200 - Données réglementaires/ notes générales/ plans clés/ légendes (suite)		-fournir les critères de conception pour les surcharges de neige, de glace et de pluie	-Surcharges de neige, de glace et de pluie: indiquer le coefficient de risque (Is), la surcharge de neige au sol (Ss), la surcharge de pluie au sol (Sr), la surcharge de neige spécifiée pour le toit, la surcharge de neige non équilibrée, les surcharges d'accumulation dues aux changements de niveaux, et les facteurs de distribution et de surcharge de neige conformément au Commentaire G du CNBC; indiquer si les drains de toit sont conçus pour gérer l'eau de pluie en la retenant, ou pour contrôler le débit durant 24 heures.
			-fournir les charges dues au vent	- Charges de calcul - surcharges dues au vent : indiquer le coefficient de risque (Iw), la pression dynamique de référence à 1:50 pour les composants structuraux, la surcharge de vent appliquée conformément au Commentaire I du CNBC, la force horizontale pondérée (V) à la base et le moment de renversement (M) dans les directions nord-sud et est-ouest
				- Charges de calcul : indiquer les charges complètes et partielles, appliquées conformément au CNBC

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	200 - Données réglementaire/ notes générales/ plans clés/ légendes (suite)		-fournir les critères de conception parasismiques: Sa(0,2), Sa (0,5), Sa (1,0), Sa (2,0), catégorie d'emplacement, Fa, Fv, Ie, IeFaSa (0,2), type de SFRS avec Rd et Ro dans les directions nord-sud et est-ouest	-Charges de calcul - forces sismiques : indiquer Sa(0,2), Sa(0,5), Sa(1,0), Sa(2,0), catégorie d'emplacement, Fa, Fv, Ie, IeFaSa (0,2), type de SFRS avec Rd et Ro dans les directions nord-sud et est-ouest (spécifier la norme et l'article applicables pour chaque SFRS employé), et type d'irrégularités; spécifier si la méthode d'analyse est statique ou dynamique (si elle est dynamique, préciser le type de procédure), Ta, S(Ta), le facteur de sensibilité à la torsion B, Mv, J, le cisaillement à la base (V) et le moment à la base (M) dans les directions nord-sud et est-ouest, ainsi que le déplacement maximal entre les étages. NOTA : si l'on procède à une analyse dynamique, fournir aussi les valeurs statiques, préciser quelle méthode d'analyse fournit les conditions prévalentes et indiquer clairement quelles valeurs sont utilisées pour la conception
			-S'il y a lieu, indiquer les charges de souffle externes, en précisant l'emplacement et la charge (quantité nette d'explosifs NEQ) des divers SPE, et leur distance par rapport aux nouvelles installations (sièges exposés)	-Pour les charges de souffle externes : indiquer les divers SPE avec leur NEQ, la distance entre le SPE et le bâtiment, la surpression, la durée, l'impulsion; fournir le rapport de ductilité admissible maximal et la rotation d'extrémité maximale des divers éléments structuraux
			-S'il y a lieu, indiquer les charges explosives internes, en précisant les divers NEQ et leur emplacement à l'intérieur des nouvelles installations	-Pour les charges explosives internes, indiquer les divers NEQ et leur emplacement à l'intérieur du bâtiment

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	200 - Données réglementaires/ notes générales/ plans clés/ légendes (suite)		-fournir des notes sur les fondations	-Notes sur les fondations – mentionner clairement le rapport géotechnique et la date, décrire la couche d'assise et le type de fondation, et indiquer la capacité portante pondérée (état limite ultime - ÉLU), la capacité portante admissible (état limite de tenue en service - ÉLTS); la profondeur de protection contre le gel; les critères relatifs aux structures de soutènement (pression latérale du sol et pression hydrostatique) et le moyen de préparation du sol de fondation pour recevoir des semelles et une dalle sur le sol
				-Notes sur les fondations sur pieux: indiquer le type de pieux (pieux vissés ou forés, pieux en béton, en tube d'acier ou en H, composites), diamètre et épaisseur des parois, nuance d'acier ou résistance du béton, profondeur, critères de refus, capacité portante, facteur de sécurité, capacité des pieux, renseignements sur les épissures, renseignements sur les essais

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	200 - Données réglementaires/ notes générales/ plans clés/ légendes (suite)		-fournir des notes sur le béton et l'acier d'armature	- Notes sur le béton – les exigences relatives au béton (résistance à la compression à 28 jours, classe d'exposition, grosseur nominale des granulats grossiers, teneur en air et rapport eau- ciment maximal) pour les divers éléments en béton, tels que les semelles et les murs de fondation, les dalles sur le sol intérieures et extérieures, les dalles de plancher, les colonnes, les poutres, les longrines, les murs de soutènement; tout autre renseignement pertinent à propos des recouvrements de béton, du coulis, de la dalle sur le sol, des durcisseurs, etc.
				- Note sur l'acier d'armature – les types de barres et de treillis métalliques, les renseignements détaillés sur l'armature, les emplacements et longueurs des chevauchements, les divers enrobages, etc.
				- Notes sur l'acier de charpente – spécifier la nuance de l'acier des divers éléments, les renseignements sur les boulons et soudures, les exigences relatives aux assemblages (ex. en cisaillement) etc
				-Notes sur les poutrelles à treillis en acier – spécifier les flèches permises, les cambrures, les entretoises, les charges aux assemblages, etc.
			-fournir des notes sur l'acier de charpente/ la maçonnerie/ le bois	- Notes sur le pontage en acier – fournir l'épaisseur, la profondeur, l'enduit, le patron des éléments de fixation du pontage, etc.
				- fournir les notes sur la maçonnerie, le bois, l'acier formé à froid, le béton préfabriqué, les bâtiments préfabriqués en métal etc.

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	205 - Plans de localisation et d'implantation, et détails types			-fournir les coupes et détails typiques des semelles en gradins, et des semelles adjacentes <u>aux services souterrains</u>
				-fournir les coupes et détails typiques de la préparation du sol de fondation pour les dalles sur sol, les joints de construction et de contrôle pour dalles sur sol, les dalles sur sol sous les <u>murs de maçonnerie et les escaliers</u>
				-fournir les coupes et détails typiques des puits et caniveaux; des colonnes intérieures; du renforcement des ouvertures dans les planchers, <u>toitures et murs</u>
				-fournir les coupes et détails typiques des joints de construction et de contrôle horizontaux et verticaux dans les murs, l'armature de coin des murs et l'armature des murs de maçonnerie
				-fournir les coupes et détails typiques de l'ancrage de la poutre de levage d'ascenseur dans la dalle, le support des linteaux de blocs, les supports de ponts roulants, les linteaux, les boulons d'ancrage, les ouvertures dans le platelage en acier, les dalles de propreté, les dispositifs de retenue latérale au haut des murs en blocs, les ancrages pour protection anti-chute
				-fournir les exigences ou détails relatifs aux éléments non structuraux comme les revêtements, les murs, les appareils mécaniques/électriques, les plafonds, les systèmes d'éclairage, les étagères, etc

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	206 à 209 - Démolition		-indiquer l'étendue des ouvrages à démolir (i.e. charpente, ouvertures dans les murs porteurs/ planchers/ toits, enlèvement des fondations/ dalles, etc)	-fournir les détails révisée de l'étendue des ouvrages à démolir
				-spécifier les étalements/ renforts/ supports temporaires là où requis
				-fournir des notes pour définir la séquence des travaux de démolition
	Série 210 - Plans des fondations et du rez-de- chaussée	-indiquer le système structural projeté, les colonnes, les dimensions des baies, les joints d'expansion ou parasismiques, les systèmes de résistance laterale et les systèmes de fondation	-Indiquer les semelles ou les pieux (avec dimensions préliminaires) et les murs de fondation, les dalles sur sol, les pilastres, les joints d'expansion, ainsi que les lignes d'axes de la structure dimensionnées	-Indiquer le système structural, avec les lignes d'axes et les dimensions de la structure
				-Indiquer les charges de conception verticales : charges permanentes, charges permanentes superposées, surcharges d'occupation, surcharges de neige (y compris la neige accumulée), charges d'équipements mécaniques, charges de construction, charges de ponts roulants, charges spéciales (rayonnages à forte densité, véhicules lourds, entreposage, cloisons épaisses pour chambres fortes)
				-les plans doivent indiquer les murs de fondation extérieurs et intérieurs par rapport aux lignes d'axes avec les dimensions typiques

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 210 - Plans des fondations et du rez-de- chaussée (suite)	-indiquer le système structural projeté, les colonnes, les dimensions des baies, les joints d'expansion ou parasismiques, les systèmes de résistance latérale et les systèmes de fondation	-Indiquer les semelles ou les pieux (avec dimensions préliminaires) et les murs de fondation, les dalles sur sol, les pilastres, les joints d'expansion, ainsi que les lignes d'axes de la structure dimensionnées	-les plans doivent indiquer les semelles et les pieux (si des pieux sont nécessaires, indiquer la longueur), les dalles sur sol, les pilastres, les joints d'expansion, les ancrages, l'excavation, l'étaiyage, le remblayage, l'emplacement des services existants connus, la séquence des travaux de reprise en sous-oeuvre, la protection contre le gel, l'état de l'eau souterraine, le tassement, le dynamitage (protection des structures voisines) et la résistance aux sulfates et au calcium; dans le cas des pieux, indiquer les charges de service
				-indiquer les dalles sur sol, y compris l'épaisseur, le niveau, la couche de fondation, traits de scie
				-indiquer clairement les niveaux (géodésiques) des étages avec les différences de niveaux, les escaliers et les rampes
				-fournir les élévations estimées pour les surfaces d'appui par rapport aux lignes de référence
				-indiquer les tolérances de finition de plancher, les pentes de drainage, les ouvertures pour drains. etc.
				-fournir une représentation graphique des matériaux de construction des murs et des planchers

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 210 - Plans d'étages et de toits	-indiquer le système structural projeté, les colonnes, les dimensions des baies, les joints d'expansion ou parasismiques, les systèmes de résistance latérale et les systèmes de fondations	-Indiquer l'ossature et les dimensions préliminaires des principaux éléments structuraux, ainsi que les lignes d'axes de la structure dimensionnées	-fournir un plan de référence illustrant les charges permanentes et les surcharges servant à concevoir la structure
				-les forces, moments, la préparation des cisaillements et torsion utilisés pour dessins d'atelier et la conception des assemblages (distinguer les charges pondérées des charges admissibles) doivent être indiqués
				-indiquer les charges de conception horizontales pour les solives/poutrelles et les fixations du platelage en acier pour assurer l'action du diaphragme
				-indiquer les charges de calcul verticales : charges permanentes, charges permanentes superposées, surcharges d'occupation, surcharges de neige (y compris la neige accumulée), charges d'équipements mécaniques, charges de construction, charges de ponts roulants, charges spéciales (rayonnages à haute densité, véhicules lourds, entreposage, cloisons épaisses pour chambres fortes, etc)
				-fournir l'emplacement et la taille des principaux éléments structuraux comme les poutres, les poteaux, les fermes, les colonnes, les dalles (cambrure des éléments structuraux), avec les dimensions, flèches, vibrations
				-indiquer les principales ouvertures (escaliers, ascenseurs, puits mécaniques, etc.) de même que les traits de scie et les joints d'expansion

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 210 - Plans d'étages et de toits (suite)			<ul style="list-style-type: none"> -indiquer les barres d'armature et l'ordre dans lequel elles doivent être placées -indiquer clairement les niveaux du rez-de-chaussée, des étages, des mezzanines et des toits (géodésiques), avec les différences de niveaux, les escaliers et les rampes -fournir les élévations estimées pour les surfaces d'appui par rapport aux lignes de référence -indiquer les tolérances de finition de plancher, les pentes de drainage, les ouvertures pour drains, etc -fournir une représentation graphique des matériaux de construction des murs et des planchers
	Série 220 - Élévations (extérieures)		<ul style="list-style-type: none"> -Indiquer le système de résistance latérale; fournir des vues en élévation pour montrer l'emplacement des contreventements et(ou) des murs de cisaillement; indiquer clairement les élévations pour le rez-de -chaussée, les étages supérieurs, les mezzanines et les toits 	<ul style="list-style-type: none"> -indiquer clairement les niveaux (géodésiques) de rez-de-chaussée, des étages, des mezzanines, des toits et des équipements -montrer en élévation les murs de cisaillement, avec ouvertures et détails d'armature proprement référés aux légendes des murs -montrer les élévations des fermes indiquant les forces pondérées dans les membrures -montrer les contreventements indiquant les charges pondérées des membrures et des assemblages -montrer les principales ouvertures dans les éléments de charpente -indiquer la flèche latérale du bâtiment -fournir une représentation graphique des matériaux de construction et de finition

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 225 - Élévations (intérieures)		-Indiquer le système de résistance latérale; fournir des vues en élévation pour montrer l'emplacement des contreventements et(ou) des murs de cisaillement; indiquer clairement les élévations pour le rez-de -chaussée, les étages supérieurs, les mezzanines et les toits	-indiquer clairement les niveaux (géodésiques) du rez-de-chaussée, des étage, des mezzanine, des toit et des équipements
				-indiquer les élévations des murs de contreventement, avec ouvertures et renvois (détails d'armature) aux tableaux de murs
				-montrer les élévations des fermes indiquant les forces pondérées dans les membrures
				-montrer les contreventements indiquant les charges pondérées des membrures et des assemblages
				- indiquer les principales ouvertures dans les éléments de charpente
	Série 230 - Coupes de bâtiment (transversales/ longitudinales)		-montrer clairement les principaux éléments de structure; fournir des vues en élévation pour montrer l'emplacement des contreventements et(ou) des murs de cisaillement; indiquer clairement les élévations pour le rez-de -chaussée, les étages supérieurs, les mezzanines et les toits	-indiquer l'emplacement des principales ouvertures dans les murs de cisaillement
				-fournir les détails d'armature des principales ouvertures dans les murs porteurs, avec références aux légendes des murs
			-indiquer clairement les aires communicantes et les mezzanines	-indiquer clairement les aires communicantes et les mezzanines
				-fournir une représentation graphique claire de l'interférence des systèmes et des équipements avec les éléments structuraux, mécaniques, électriques, de télécommunication et de sécurité, avec renvois, notes et dimensions

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 235 - Coupes de mur			-Coupes de mur montrant les éléments structuraux, s'il y a lieu : lisses, murs en blocs de béton, murs en béton armé, panneaux muraux pour mise en place par relèvement, montants, éléments de supportant de la brique, etc.
	Série 240 - Plans à grande échelle		-Pour les bâtiments relativement imposants : fournir des plans à grande échelle des fondations, du rez-de-chaussée et des toits, avec des plans repères appropriés	-Pour les bâtiments relativement imposants : fournir des plans à grande échelle des fondations, du rez-de-chaussée et des toits, avec des plans repères appropriés
	Série 250 - Plans et coupes (détails)		-fournir les coupes des fondations indiquant les dimensions préliminaires des semelles/murs de fondation, les détails de jonction entre les murs et les dalles	-les coupes des fondations montrant la profondeur minimale contre le gel, les détails de jonction avec les dalles, l'armature des murs, les détails de jonction entre les murs de fondation et les murs, les longrines, les pilastres, etc.
				-les coupes de planchers et de toitures montrant la jonction entre les dalles et platelages aux éléments de support (murs ou poutres)
				-les détails de jonction entre les poutres/poutrelles/solives aux colonnes et murs, les coupes aux différentes ouvertures, etc.
				-les détails en plan et en élévation des pilastres, des têtes de pieux, des pieux, des plaques de base, des poutres et dalles de béton, des murs, etc.
				-ignifugation appliquée, tous les degrés de résistance au feu de la structure doivent être indiqués, avec le type de matériaux à utiliser
				-détails de l'interconnexion des éléments structuraux fournis mais non définitifs

	Groupement/ Série/ N° de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 270 - Escaliers, rampes et systèmes transporteurs			-fournir les plans, les coupes et les détails des escaliers, rampes, escaliers mécaniques et ascenseurs
	Série 290 - Tableaux			-achèvement à 60%: le tableau des semelles indiquant leur emplacement, leurs dimensions, leur épaisseur, leurs armatures et le niveau du dessous de leur base.
				-achèvement à 60%: le tableau des colonnes indiquant les types de colonnes, les plaques de base, les types de pilasters et de semelles, les niveaux et les charges
				-achèvement à 60%: le tableau des poutres
				-achèvement à 60%: le tableau des murs
				-achèvement à 60%: le tableau des dalles

Appendix G: Architectural Checklist for Specifications and Drawings

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
SPECIFICATIONS	Division 01 - General Requirements	-outline specifications for general requirements (coordinated) and all major components	-50% completion of specifications within these Divisions
	Division 02 - Existing Conditions		
	Division 04 - Masonry		
	Division 05 - Metals		
	Division 06 - Wood, Plastics and Composites		
	Division 07 - Thermal and Moisture Protection		-90% completion of specifications within these Divisions
	Division 08 - Openings		
	Division 09 - Finishes		
	Division 10 - Specialties		
	Division 11 - Equipment		
	Division 12 - Furnishings		-20% completion of specifications within these Divisions
	Division 13 - Special Construction		
	Division 14 - Conveying Systems		-100% completion of specifications within this Division

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	000 - Title Sheet/ Drawing List	-provide a coordinated drawing list	-100% complete drawing list (coordinated)
	300 - Legends, Construction Notes, NBCC Code Matrix	-preliminary NBCC Code Matrix completed, including major occupancies and required fire separations	-90% completion of the NBCC Code Matrix, including major occupancies, occupant load, washroom calculations, required fire separations, limiting distance calculations, etc
			-Integrated legend(s) shall be coordinated with all disciplines and drawings submitted
			-provide general construction notes coordinated with all drawings submitted
	301 - Fire Separation Plans and Building Section	-provide a fire separation diagram complete with the required exits, travel distances, areas of refuge, spatial separation and exposure protection locations indicated	-Indicate all fire separations with their associated fire resistance ratings for all floor plans and for the building section (100% complete)
			-indicate on the plans the exiting route with travel distances noted (100% complete)
		-for phased projects, all the above shall be shown for each phase, including the temporary fire separations	-for phased projects, all the above shall be shown for each phase, including the temporary fire separations (100% complete)
	302 - Construction Assemblies	-provide main building envelope assemblies (i.e. walls, roofs & floors), including RSI values	-100% complete description and graphical representation of various assemblies proposed for: exterior walls, interior partitions, floors, ceilings, roofs, fire-rated assemblies for steel members
			-all assemblies shall indicate the required R-value(SI), Sound Transmission Coefficient (STC), fire resistance rating and approved listed design references to confirm compliance (100% complete)
	303/304 - Phasing Drawings	-provide preliminary phasing plans	-provide the phase outline/extent, required exits, proposed temporary construction location and assemblies (100% complete)
	305 to 309 - Demolition Drawings	-elements to be demolished, existing to remain, existing to be reused shall be clearly indicated graphically and noted	-provide items to be removed, complete with a coordinated legend and demolition notes (100% complete)

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	310 series - Floor Plans	-indicate key plans where required and a north arrow	-indicate key plans where required and a north arrow
		-provide cross-referencing to large-scale plans, sections and exterior elevations	-provide cross-referencing to large scale plans, sections, interior/exterior elevations, plan and section details
		-indicate structural gridlines dimensioned, floor lay-out with room names, interior partitions, interior doors, vertical transportation, loading bays, washrooms lay-out, service rooms, service shafts	-grid lines and bay sizes shall be coordinated with the Structural drawings (100% complete)
			-provide the location and type of structural elements, exterior walls, interior partitions and openings, coordinated with Structural, Mechanical, Electrical, Civil and all other architectural drawings submitted (100% complete)
			-Provide the room designations (room name and number) (100% complete)
			-Provide doors/shutters/screens designations coordinated with the door/window/hardware schedules
			-100% completion of dimensions for barrier-free clearances as well as turning radii shown
			-100% completion of washroom/kitchen fixtures and millwork shown
			-100% completion of geodetic elevations shown for all level changes
			-indicate grade elevations at all exterior doors
			-indicate all floor drains and slopes
			-indicate where window sprinklers and fire shutters are located with cross-references to details as required
			-indicate all stairs, ramps and elevators (100% complete)
			-provide all necessary notes coordinated with the drawings

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	310 Series - Roof Plans		-indicate roof access via stair wells, roof hatches, ladders, etc. (100% complete)
			-100% completion of all roof drains, slopes, elevations at drains indicated
		-indicate any mechanical or operational equipment, skylights, landscaping green roof, or any other development	-provide the location and all dimensions of penthouses, skylights/clerestories, sun shading devices, canopies, etc (100% complete)
			-provide the location of roof equipment (i.e. mechanical, electrical, operational or safety)
			-provide the layout and material of maintenance walkways
			-provide the layout of green roofs, complete with details
	310 Series - Reflected Ceiling Plans		-provide cross-referencing to building sections, elevations, plan/section details
			-provide a coordinated legend indicating, but not limited to: ceiling finish types, luminaires, mechanical/electrical equipment, other ceiling-mounted equipment or fixtures (100% complete)
			-indicate various ceiling material/design and height (100% complete)
			-provide bulkhead sizes and heights
			-provide wall heights
			-dimensions to locate mechanical and electrical items that are not located in a ceiling grid system
			-indicate mechanical and electrical items, including access panels, coordinated with respective drawings
			-provide cross-referencing to sections and details

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	320 to 324 - Exterior Elevations	-indicate floor and roof levels, structural gridlines, exterior materials, fenestration, canopies, louvers, mechanical penthouses, grade elevations	-provide gridlines, finish grade, floors and roof geodetic elevations coordinated with the building section drawings (100% complete)
			-indicate all exterior materials (100% complete)
			-provide a legend for the graphic representation of material (100% complete)
			-indicate all fenestration, doors, louvers, canopies, shading devices, exterior ramps and stairs, adjacent retaining walls (100% complete)
			-provide cross-referencing to building and detail sections
	325 to 329 - Interior Elevations		-identify all windows and exterior doors, ensuring that these are coordinated with the window/door schedule
			-provide gridlines, room names/numbers and dimensions (100% complete)
			-provide all barrier-free access mounting heights (100% complete)
			-provide a legend and notes
			-clearly indicate millwork, architectural features (i.e. bulkheads, pass-throughs, screens, interior doors, wall tile layout, etc)
			-provide elevations of walls with fixtures and accessories indicated and dimensioned

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	330 to 334 - Building Sections	-provide at least two critical building sections complete with floor to floor heights, clear heights, raised floors, finished grade elevations and any other critical items	-indicate gridlines, grade, floors and roof geodetic elevations [for steel roof decks, indicate low point of steel](100% complete)
			-provide room names/numbers where section is taken
			-indicate structural and mechanical equipment interference
			-indicate suspended ceilings and clear heights (100% complete)
			-provide the floor/roof type, including required fire resistance rating (100% complete)
			-clearly indicate exterior/interior walls, interconnected floor spaces and cross-referencing to wall sections
	335 to 339 - Wall Sections		-provide sections at all various types of exterior cladding (100% complete)
			-provide sections which show punched windows, curtain wall, spandrel panels, doors, overhead doors, mechanical louvers, canopies, soffits, interconnected floor spaces, clerestory fenestration, penthouse, expansion joints and any other special conditions
			-provide sections showing fire-rated partitions and assemblies, referencing approved listed assemblies
			-indicate geodetic elevations for grade, floors and roofs, consistent with Elevation drawings (100% complete)
			-indicate height of window sill and overall height, door height, suspended ceiling height and parapet heights (100% complete)
			-identify all assembly types (100% complete)
			-provide room names/numbers where section is taken
			-provide cross-referencing to section details (100% complete)

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	340 series - Large Scale Plans		-all rooms shall be fully dimensioned with fixtures and millwork located (100% complete)
			-all pipe spaces are located and coordinated with the Mechanical drawings (100% complete)
			-all washroom fixtures and accessories are identified and located (100% complete)
			-provide cross-referencing to Interior Elevations
	350 series - Plan and Section Details		-provide typical plan and section details for the building envelope, fire-rated partitions, expansion joints, interior/exterior wall intersections, edge of slab conditions, foundation walls, roof parapets, roof penetrations, etc complete with notes and dimensions (100% complete)
			-provide special condition details as is necessary to ensure performance of the building and clarity for the contractor
			-provide a detailed graphic representation and description of all components, including fire stopping, continuity of air/vapour barrier flashings sealants etc
	370 series - Stairs, Ramps and Conveying Systems		-for stair drawings, all flights and landings shall be dimensioned as well as indicate the rise/run, headroom clearance, clearance at door swings and tread design details (100% complete)
			-provide drawings for guardrail and handrail design complete with dimensions and notes (100% complete)
			-for elevator drawings, provide complete dimensions for the shaft, floor to floor height, overhead, pit, door opening and machine room, as well as door frame and cab details (100% complete)

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	380 series - Furniture/ Equipment Plan, Millwork Drawings and Signage	-provide a preliminary furniture/equipment layout plan complete with legend and notes	-provide a completely coordinated layout of furniture, systems furniture and equipment ensuring that dimensions are provided to indicate clearances (100% complete)
			-provide a legend to identify furniture and equipment ensuring that what is part of the contract and what is not in contract is clearly indicated (100% complete)
			-provide construction details of all millwork and custom components with cross-references to Interior Elevations and section details as required
			-provide signage drawings and details that are dimensioned and annotated
	390 series - Schedules: Doors, Windows, Screens, Hardware, Finishes, etc		-provide schedules for doors and door frames, interior screens, windows, curtain walls, hardware and room finishes

Annexe G : Aide-mémoire architecture pour les calculs, devis et plans

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
DEVIS	Division 01 - Exigences générales	-Décrire les devis pour les exigences générales (coordonnés) et pour tous les éléments majeurs	-Achèvement à 50 % des sections de devis à l'intérieur de ces divisions
	Division 02 - Conditions existantes		
	Division 04 - Maçonnerie		
	Division 05 - Métaux		
	Division 06 - Bois, plastiques et composites		
	Division 07 - Isolation thermique et étanchéité		-Achèvement à 90 % des sections de devis à l'intérieur de ces divisions
	Division 08 - Ouvertures et fermetures		
	Division 09 - Revêtements de finition		
	Division 10 - Ouvrages spéciaux		
	Division 11 - Matériel et équipement		-Achèvement à 20 % des sections de devis à l'intérieur de ces divisions
	Division 12 - Ameublement et décoration		
	Division 13 - Installations spéciales		
	Division 14 - Systèmes transporteurs		-Achèvement à 100 % des sections de devis à l'intérieur de ces divisions

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	000 - Page couverture/ Liste de plans	-fournir une liste (coordonnée) de plans	-fournir une liste (coordonnée) de plans achevés à 100%
	300 - Légendes, notes générales, tableau du CNB	-matrice de données préliminaire du CNB terminée, y compris les usages principaux et les séparations coupe-feu	-matrice de données du CNB achevée à 90 %, y compris les types d'occupation principaux et les séparations coupe-feu, la densité d'occupation, les calculs des salles de toilette, les séparations coupe-feu requises, les calculs des distances limitatives, etc.
			-les légendes intégrées doivent être coordonnées avec toutes les disciplines et les plans présentés
			-fournir les notes générales de construction qui sont coordonnées avec les plans présentés
	301 - Plans de séparation coupe-feu et coupe de bâtiment	-fournir un schéma des séparations coupe-feu, avec les un schéma des séparations coupe-feu avec les issues requises, les distances de déplacement, les zones de refuge et les emplacements des séparations spatiales et des éléments de protection contre la propagation du feu	-Indiquer toutes les séparations coupe-feu et leur degré de résistance au feu pour tous les plans d'étage et la coupe du bâtiment (achèvement à 100%)
		-pour les projets à plusieurs phases, tous les éléments ci-dessus doivent être montrés pour chaque phase, y compris les séparations coupe-feu temporaires	-indiquer sur les plans les voies de sortie et les distances de parcours (achèvement à 100%)

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	302 - Assemblages	-fournir les principaux assemblages de l'enveloppe (murs, toitures, planchers) avec les valeurs RSI	<p>- la description et représentation graphique de divers assemblages proposés pour les murs extérieurs, les cloisons intérieures, les planchers, les plafonds, les toitures et les assemblages résistant à la propagation des flammes pour les membrures d'acier (achèvement à 100%)</p> <p>-tous les assemblages doivent indiquer les valeurs RSI requises, l'indice de transmission des sons, le degré de résistance au feu et les références de conception approuvées pour confirmer la conformité (achèvement à 100 %)</p>
	303/304 - plans par étapes	-fournir les plans préliminaires par étapes	-fournir la description/l'étendue des étapes, les issues requises, ainsi que l'emplacement des assemblages et de la construction temporaire projetée (achèvement à 100%)
	305 to 309 - Démolition	-les éléments à démolir, les éléments existants à conserver et les éléments existants à réutiliser doivent être clairement indiqués graphiquement et notés	-fournir les éléments à enlever, avec une légende coordonnée et les notes concernant la démolition (achèvement à 100%)

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 310 - Plans des étages	-indiquer les plans repères s'il y a lieu et une flèche indiquant le nord	-indiquer les plans repères s'il y a lieu et une flèche indiquant le nord
		-fournir les références aux plans à grande échelle, coupes et élévations extérieures	-fournir les références aux plans à grande échelle, coupes, élévations intérieures/extérieures et détails en plan et en coupe
		-indiquer les lignes d'axe de structure dimensionnées, l'aménagement des étages avec les noms de salles, les cloisons intérieures, les systèmes de transport vertical, les baies de chargement, l'aménagement des salles de toilette, les locaux de service et les gaines	-les lignes d'axes et les dimensions des baies coordonnées avec les plans structuraux (achèvement à 100%)
			-fournir les emplacements et types de murs extérieurs, de cloisons intérieures et d'ouvertures coordonnés avec les génies (structural, mécanique, électrique, civil) et les autres plans d'architecture (achèvement à 100%)
			-fournir une désignation de l'espace intérieur (habituellement selon le nom et le numéro de salle) (achèvement à 100%)
			-Fournir les désignations des portes/contrevents/écrans coordonnées avec les tableaux des portes/fenêtres/quincailerie
			-Achèvement à 100% des dimensions des dégagements pour l'accès sans obstacles et rayons de braquage indiqués
			-Achèvement à 100% des accessoires de salle de toilette/cuisine et menuiseries indiquées
			-Achèvement à 100% des élévations géodésiques indiquées pour tous les changements de niveau
			-indiquer le niveau du terrain devant chaque porte extérieure
			-indiquer les drains et pentes de sol
			-indiquer les escaliers, les rampes et les ascenseurs (achèvement à 100 %)
			-fournir toutes les notes nécessaires coordonnées avec les plans

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 310 - Plans des toits		-indiquer les accès aux toits - les escaliers, trappes de toiture, échelles, etc. (achèvement à 100 %)
			-indiquer l'emplacement des drains de toits, les pentes et les niveaux des drains (achèvement à 100%)
		-indiquer l'équipement mécanique ou opérationnel, les puits de lumière, les toitures végétalisées et tout autre aménagement	-fournir l'emplacement et indiquer avec les dimensions : des constructions hors toit, aux lanterneaux/claires-voies, éléments pare-soleil, marquises, etc. (achèvement à 100 %)
			-fournir l'emplacement de l'équipement sur les toits (p. ex. <u>mécanique, électrique, opérationnel et de sécurité</u>)
			-fournir la disposition et les matériaux des passerelles d'entretien
			-fournir la disposition, les détails et la liste des végétaux de toiture végétalisée
	Série 310 - Plans des plafonds réfléchis		-fournir les références aux coupes du bâtiment, élévations et détails des plans/coupes
			-fournir une légende coordonnée indiquant, mais sans s'y limiter : les types de fini de plafond, les luminaires, l'équipement mécanique/électrique, tout autre accessoire/équipement monté au plafond (achèvement à 100%)
			-indiquer les divers matériaux/conceptions pour les plafonds et la hauteur (achèvement à 100 %)
			-indiquer les retombées de plafonds avec les niveaux et des dimensions
			-indiquer la hauteur des murs
			-indiquer les éléments mécaniques et électriques, y compris les panneaux d'accès, coordonnés avec leurs plans respectifs
			-fournir des références aux coupes et aux détails

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	320 à 324 - Élévations extérieures	-indiquer les niveaux des planchers et de la toiture, les lignes d'axes de structure, les matériaux extérieurs, la fenestration, les marquises, les louveres, les constructions hors toit, les niveaux de sol	-fournir les lignes d'axes, les sols finis, les élévations géodésiques des étages et des toits coordonnées avec les coupes du bâtiment (achèvement à 100 %)
			-indiquer les matériaux extérieurs (achèvement à 100%)
			-fournir une légende pour la représentation graphique des <u>matériaux</u> (achèvement à 100 %)
			-indiquer toutes les fenêtres, portes, louveres, éléments pare-soleil, marquises, escaliers et rampes extérieures, murs de soutènement adjacents (achèvement à 100 %)
			-fournir des références aux détails et aux coupes du bâtiment
			-identifier les fenêtres et les portes extérieures; faire en sorte que ceux-ci soient coordonnés avec les tableaux de <u>fenêtres et portes</u>
	325 à 329 - Élévations intérieures		-fournir les lignes d'axe, les noms/numéros et les dimensions des salles (achèvement à 100 %)
			-indiquer toutes les hauteurs de montage pour l'accès sans obstacles (achèvement à 100 %)
			-fournir les notes et la légende
			-indiquer clairement les menuiseries, les caractéristiques architecturales (p. ex. les retombées de plafonds, passe-plats, écrans, portes intérieures, disposition du carrelage mural, etc.)
			-fournir les élévations des murs avec les appareils sanitaires et accessoires indiqués et dimensionnés

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	330 à 334 - Coupes de bâtiment	-fournir deux coupes essentielles (minimum) du bâtiment indiquant la hauteur entre les étages, les hauteurs libres, les niveaux des planchers surélevés, les niveaux du terrain (sol fini) et toute autre information essentielle	-indiquer les lignes d'axe et les élévations géodésiques du sol, des étages et des toits [pour les couvertures en tôle, indiquer le point bas de l'acier] (achèvement à 100%)
			-fournir le nom et le numéro de salle d'où provient la coupe
			-indiquer les obstacles de l'équipement mécanique et structural
			-indiquer les hauteurs de plafonds suspendus et les dégagements (achèvement à 100%)
			-fournir les types de plancher/toit, avec DRF requis (achèvement à 100%)
			-indiquer clairement les murs extérieurs/intérieurs, les aires communicantes et les références aux coupes des murs
	335 à 339 - Coupes de mur		-fournir les coupes dans chaque type de revêtement extérieur (achèvement à 100%)
			-fournir les coupes de portes, de fenêtre perforées, de murs-rideaux, de panneaux tympan, de portes relevantes, de louveres mécaniques, de marquises, de soffites, d'aires communicantes, de claires-voies, de constructions hors toit, de joints de dilatation/ d'expansion et d'autres conditions particulières
			-fournir des coupes montrant les assemblages et les cloisons résistant à la propagation des flammes, avec les références aux assemblages approuvés indiqués énumérés
			-indiquer les élévations géodésiques du sol, des étages et des toits, en conformité avec les plans en élévation (achèvement à 100 %)

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	335 à 339 - Coupes de mur (suite)		-indiquer les hauteurs globales et des seuils/appuis des portes et fenêtres, ainsi que les hauteurs des plafonds suspendus et des parapets (achèvement à 100 %)
			-identifier les types d'assemblage (achèvement à 100%)
			-fournir les références aux détails des coupes (achèvement à 100%)
	Série 340 - Plans à grande échelle		-toutes les salles doivent être complètement dimensionnées, avec accessoires et menuiseries indiqués (achèvement à 100%)
			-toutes les châsses à tuyaux doivent être indiquées et coordonnées avec les plans mécaniques (achèvement à 100%)
			-tout les équipements et les accessoires des salles de toilette doivent être indiqués et désignés (achèvement à 100%)
			-fournir les références aux élévations intérieures
	Série 350 - Plans et coupes (détails)		-fournir les détails typiques en plan et coupe: de l'enveloppe de bâtiment, les cloisons résistant à la propagation des flammes, les joints de dilatation/ d'expansion, les intersections de murs intérieurs/extérieurs, les conditions à l'extrémité de dalle, les murs de fondation, les parapets, des pénétrations de toit, etc complets avec les notes et les dimensions (achèvement à 100%)
			-Fournir les détails d'état spéciaux au besoin pour assurer le bon comportement du bâtiment et une description claire pour l'entrepreneur
			-fournir une représentation graphique détaillée et une description de tous les composants, y compris les coupe-feu, la continuité des pare-air/vapeur, les solins, les produits d'étanchéité etc

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 370 - Escaliers, rampes et systèmes transporteurs		-les plans d'escalier : toutes les volées et paliers doivent être avec dimensions et doivent indiquer les marches/girons, échappées, espaces d'ouverture des portes et les détails de la conception des marches (achèvement à 100 %)
			-fournir les plans de conception des garde-corps et des mains courantes avec dimensions et notes (achèvement à 100 %)
			-plans d'ascenseurs : fournir les dimensions complètes pour la gaine, la hauteur de dalle à dalle, la hauteur libre, le puits, l'ouverture de porte et le local de machinerie, ainsi que les détails du bâti de porte et de la cabine (achèvement à 100 %)
	Série 380 - Plan d'ameublement/ d'équipement, dessins de menuiserie et signalisation	-fournir un plan préliminaire de l'équipement/des accessoires, avec légende et notes	-fournir un aménagement complètement coordonné de l'ameublement, du mobilier systématisé et de l'équipement pour s'assurer que les dimensions sont indiquées pour préciser les dégagements (achèvement à 100 %)
			-fournir une légende pour indiquer l'ameublement et l'équipement pour s'assurer que les éléments qui font partie du contrat et ceux qui n'en font pas partie sont clairement indiqués (achèvement à 100 %)
			-fournir les détails de construction de toutes les menuiseries et des composants personnalisés, avec les références aux élévations intérieures et aux détails des courbes, s'il y a lieu
			-fournir les détails et les plans de signalisation dimensionnés et annotés
		Série 390 - Tableaux : portes, fenêtres, quincaillerie, finitions, etc	

Appendix H: Mechanical Checklist for Calculations, Specifications and Drawings

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
CALCULATIONS	HVAC	-preliminary building loads	-detailed building loads
		-preliminary energy analysis	-detailed energy analysis
		-projections for the energy consumption of the building, taking into account architectural wall/roof design and lighting design	-provide a detailed life cycle cost analysis (LCCA) for the final building layout
		-space by space ventilation rate based on ASHRAE 62.1-2001, or other more stringent applicable Code/Standard	-provide updated space by space ventilation rate based on ASHRAE 62.1-2001, or other more stringent applicable Code/Standard
		-stairway pressurization calculations	-provide updated stairway pressurization calculations
		-Room Data Sheets to include updated design requirements for temp/humidity and noise levels	-provide updated Room Data Sheets
	Water	-supply calculations including pressure for domestic hot and cold water	-updated calculations including pressure for domestic hot water and cold water
		-supply calculations for fire suppression including water supply flow testing data	-updated calculations for fire suppression including water supply flow testing data
		-fire pump calculations	-provide updated fire pump calculations
	Drainage	-roof drainage calculations	-provide updated roof drainage calculations
	Plumbing	-fixture count coordinated with Architecture	-provide updated fixture count coordinated with Architecture
	Sanitary Waste	-pipe sizing	-provide updated pipe sizing

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
SPECIFICATIONS	Division 01 - General Requirements	-outline specifications for general requirements (coordinated) and all major components	
	Division 02 - Existing Conditions		
	Division 21 - Fire Suppression		-Part 2 of each Section shall be edited, detailing the actual equipment that is being specified for this project and ensuring all equipment references are coordinated between the specifications and drawings. Ensure all Code references match the location of the project.
	Division 22 - Plumbing		
	Division 23 - HVAC		-A fully developed and clear sequences of operations must be submitted.
	Division 25 - Integrated Automation		
DRAWINGS	000 - Title Sheet/ Drawing List		-100% complete drawing list (coordinated)
	120 series - Servicing Plans	- refer to Civil and coordinate	
	400 - Regulatory Data/ Legends/ Key Plans		-all legends to be 100% complete
	401 - Mechanical Site Plan		-all service routing and exterior equipment located, standard details included
			-coordinate with Civil DWG 104 -Site Interference Plan
	405 to 409 - Demolition	-clearly indicate existing reused and existing demolished piping, ducts, equipment	-provide an updated demolition plan which also includes proposed demolition of piping, sprinklers, ducts and equipment
		-clearly indicate existing utility lines termination	-updated to include existing utility lines modifications

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	410 series - Fire Protection: Plans, Sections, Details	-preliminary sprinkler layout	-all main water protection system piping layout and placement of sprinkler heads shown
		-indicate equipment spaces for active/passive fire safety systems	-identify water supply, water and non-water based fire extinguishing system
			-identify hazard zones with design parameters included for each hazard area
			-locate main fire suppression system components
	420 series - Plumbing: Plans, Sections, Details	-locations and approximate routing of major piping runs	-indicate all fixtures, equipment pipe layout and isolation valves
		-locations of proposed plumbing fixtures and equipment	
			-all main pipes are sized and fixture units are shown with the main pipe size
	430 series - Heating/ Cooling (Hydronic)	-schematic drawing showing main components	-indicate pipe size
			-all equipment to be labelled and drawn
	440 series - HVAC	-locations and approximate routing of major duct runs	-indicate sizes of the mains, including the air and liquid flow rate for the mains, for all the HVAC piping and ductwork
		-finalized layouts (100% complete) of Mechanical Rooms, showing locations and size of major equipment and maintenance area for all the equipment	-all equipment to be labelled and drawn to size to avoid interferences
		-provide a roof plan showing all roof-mounted equipment, with adequate access for servicing	
		-main components are shown schematically	-indicate all terminal units, valves, balancing dampers and locations of control sensors
			-majority of fire dampers shown where ductwork penetrate fire separations
			-provide details for smoke control systems (i.e. for atriums, stairwells, areas of refuge, etc)

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	450 series - Integrated Automation: Plans Sections, Details		-show a schematic of the BAS system (i.e. the computer, controllers, etc)
	470 series - Plan and Section Details		-include details on equipment and Mechanical Rooms
			-provide sections of Mechanical Rooms and highly congested areas
			-indicate equipment access and service requirements
	490 series - Schematics and Schedules	-riser diagram for sprinklers and standpipe	-single line diagram for fire suppression system
		-fire protection schedule including location of risers, area hazard rating, type of system, water coverage and sprinkler head rating	-fire protection schedule including location of risers, area hazard rating, type of system, water coverage and sprinkler head rating
			-indicate equipment schedules for chillers, boilers, pumps, air handling units, terminal units, cooling towers, air terminal devices, plumbing fixtures
		-airflow and waterflow quantities and balancing devices for all heating and cooling equipment	-provide diagrams showing airflow and waterflow quantities and balancing devices for all heating/cooling equipment
			-if equipment is used during multiple seasons (e.g. heat pumps and HRV/ERV), show separate diagrams with related parameters for each season
		-flow/energy measuring devices for systems	-provide control flow diagrams showing all sensors, valves and controllers, front end equipment and system architecture
		-control flow diagrams showing sensors, valves and controllers	
		-provide plumbing system schematics and flow diagrams	-provide plumbing system schematics and flow diagrams

Annexe H : Aide-mémoire mécanique pour les calculs, devis et plans

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
CALCULS	CVCA	-charges du bâtiment (préliminaires)	-charges du bâtiment (détaillées)
		-analyse préliminaire de l'énergie	-analyse détaillée de l'énergie
		-projections de consommation annuelle d'énergie du bâtiment, en tenant compte de la conception architecturale des murs/toiture et de la conception de l'éclairage	-fournir une analyse du coût du cycle de vie en fonction de l'aménagement final du bâtiment
		-taux de renouvellement d'air par local, en fonction de la norme ASHRAE 62.1-2001 ou autre norme/code applicable plus rigoureux	-fournir le taux de renouvellement d'air par local à jour, en fonction de la norme ASHRAE 62.1-2001 ou autre norme/code applicable plus rigoureux
		-pressurisation des cages d'escalier	-fournir les calculs à jour concernant la pressurisation des cages d'escalier
		-feuilles de données sur des espaces comprenant les exigences de conception à jour pour le degré d'humidité/de température et les niveaux de bruit	-fournir des feuilles de données à jour sur des espaces
	Eau	-alimentation en eau, dont la pression pour l'eau chaude et l'eau froide domestiques	-calculs à jour, y compris la pression d'eau chaude et d'eau froide domestiques
		-alimentation en eau des systèmes de lutte contre l'incendie, avec les résultats des essais de débit d'alimentation en eau	-calculs à jour pour les systèmes de lutte contre l'incendie, avec les résultats des essais de débit d'alimentation en eau
		-pompes d'incendie	-fournir les calculs à jour pour les pompes d'incendie
	Drainage	-évacuation des eaux du toit	-fournir les calculs à jour pour l'évacuation des eaux du toit
	Plomberie	-nombre d'accessoires coordonné avec architecture	-fournir le nombre à jour d'accessoires coordonné avec architecture
	Déchets sanitaires	-dimensions de la tuyauterie	-fournir les dimensions à jour de la tuyauterie

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
DEVIS	Division 01 - Exigences générales	-décrire les devis pour les exigences générales (coordonnés) et pour tous les éléments majeurs	
	Division 02 - Conditions existantes		
	Division 21 - Lutte contre les incendies		-la partie 2 de chaque section doit être modifiée, précisant l'équipement réel spécifié pour ce projet, pour s'assurer que tous les références à l'équipement sont coordonnés entre le devis et les plans. S'assurer que les références aux codes concordent avec l'emplacement du projet
	Division 22 - Plomberie		
	Division 23 - CVCA		
	Division 25 - Automatisation intégrée		-il faut soumettre des séquences d'opération claires et bien élaborées.

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	000 - Page couverture/ Liste des plans		-fournir une liste (coordonnée) de plans achevés à 100 %
	Série 120 - Plan des services de l'emplacement (Services publics)	- se reporter à génie civil et coordonner	
	400 - Données réglementaire/ plan clé/ légendes		-toutes les légendes terminées à 100 %
	401 - Plan d'emplacement mécanique		-toute la trajectoire d'acheminement du service et l'emplacement d'équipement extérieure, les détails standard inclus
			-coordonner avec le plan de génie civil 104 - Plan des interférences du site
	405 à 409 - Démolition	-indiquer clairement les conduites, canalisations et l'équipement existants réutilisés et démolis	-fournir un plan de démolition à jour comprenant également la démolition proposée des gicleurs, conduites, canalisations et équipement
		-indiquer clairement l'extrémité terminale des lignes de services publics	-mettre à jour pour tenir compte des modifications apportées aux lignes de services publics existantes
	Série 410 - Protection incendie: Plans, coupes et détails	-disposition préliminaire des gicleurs	-disposition de tous les tuyaux du système de protection de l'eau et montrer la position des têtes de gicleurs
		-indiquer les locaux où se trouve le matériel pour les systèmes de sécurité-incendie passifs et actifs	-indiquer l'approvisionnement en eau, les systèmes d'extinction avec ou sans eau
			-désigner les zones de danger, avec les paramètres conceptuels pour chaque zone de danger
			-indiquer l'emplacement des composants du système principal de lutte contre les incendies

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 420 - Plomberie: Plans, coupes et détails	-emplacement et parcours approximatif des principaux tronçons de tuyauterie	-indiquer les accessoires de plomberie, diamètres des tuyaux d'équipement, robinets d'isolement
		-emplacement des accessoires et d'équipement de plomberie proposés	
			-toutes les conduites principales sont dimensionnées et les accessoires sont montrés, avec les dimensions des conduites principales
	Série 430 - Chauffage et refroidissement (hydraulique)	-dessin schématique montrant les principaux composants	-indiquer les diamètres des tuyaux
			-toutes les pièces d'équipement étiquetées et dessinées
	Série 440 - CVCA	-emplacements et parcours approximatifs des principaux tronçons des conduits d'air	-indiquer les dimensions des conduites principales, y compris les débits de liquide et d'air pour les conduites, pour tous les tuyaux et conduits de CVCA
		-aménagement définitif (achevé à 100 %) des locaux mécaniques, avec l'emplacement et les dimensions des principaux systèmes avec des moyens d'accès adéquats pour l'entretien	-toutes les pièces d'équipement étiquetées et dessinées selon les dimensions pour éviter toute interférence
		-fournir le plan de toiture indiquant tout le matériel démonté sur le toit, avec des moyens d'accès adéquats pour l'entretien	
		-les principaux composants sont montrés de façon schématique	-indiquer les éléments terminaux, les vannes, les registres d'équilibrage et l'emplacement des capteurs de contrôle
			-la majorité des volets coupe-feu montrés à l'endroit où les conduits pénètrent dans les séparations coupe-feu
	Série 450 - Automatisation intégrée : plans, coupes et détails		-montrer un schéma du système de contrôle automatique de bâtiment (p. ex. l'ordinateur, les contrôleurs, etc.)

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 470 - Détails (plan et coupe)		-donner des détails sur les locaux de mécanique et de l'équipement
			-fournir les coupes des locaux de mécanique et des zones fortement congestionnées
			-indiquer les exigences relatives aux services et à l'accès à l'équipement
	Série 490 - Schémas et tableaux	-diagramme des colonnes montantes pour les gicleurs et les conduites	-schéma unifilaire pour le système de lutte contre les incendies
		-le tableau du système de lutte contre les incendies comprend l'emplacement des colonnes montantes, la catégorie de risque des zones, le type de système, l'alimentation en eau, la catégorie de température des têtes de gicleurs	-le tableau du système de lutte contre les incendies comprend l'emplacement des colonnes montantes, la catégorie de risque des zones, le type de système, l'alimentation en eau, la catégorie de température des têtes de gicleurs
			-fournir les tableaux d'équipements (refroidisseurs, chaudières, pompes, contrôles de traitement de l'air, ventilateurs, éléments terminaux, tours de refroidissement, appareils aérauliques terminaux, appareils de plomberie
			-fournir des schémas indiquant les débits d'air et d'eau, l'équilibrage des systèmes de chauffage/refroidissement
		-le débit d'air, le débit d'eau et les dispositifs d'équilibrage pour l'ensemble du matériel de chauffage et de refroidissement	-si l'équipement est utilisé au cours de plusieurs saisons, (p. ex. thermopompes, ventilateurs-récupérateurs de chaleur/ventilateurs-récupérateurs d'énergie), montrer des schémas distincts, avec les paramètres s'y rapportant pour chaque saison
		-les appareils de mesure du débit et de l'énergie pour les systèmes	-fournir les schémas de principe pour la régulation indiquant les capteurs, les robinets et les régulateurs, l'équipement frontal et l'architecture du système
		-les schémas de principe pour la régulation, indiquant les capteurs, les robinets et les régulateurs	
		-les schémas du système de plomberie ainsi que les schémas d'écoulement	-fournir les schémas du système de plomberie ainsi que les schémas d'écoulement

Appendix I: Electrical Checklist for Calculations, Specifications and Drawings

	Grouping/ Series/ DWG #	Submission Phase		
		Design Development	Interim	Final
CALCULATIONS	Illumination Levels/ Lighting Loads	-lighting requirements i.a.w. IESNA guidelines for all typical areas; opportunities for daylight harvesting identified	-lighting levels verified and number of luminaires determined (coordinated with room data sheets)	-all lighting levels tabulated with max / min / avg values, lighting load in watts/m2 verified against NECB or ASHRAE requirements, as applicable -Exterior lighting calculations to be shown on separate site plan with table of mix / min / average levels
	Power Demand		-major loads identified	-all loads and demand factors considered; final load calculations to be shown on drawings
	Emergency Power		-preliminary emergency power requirement	-emergency power sized for motor loads, peak demands, etc.
	Voltage Drop		-voltage drop calculated for at least the main feeders and main service	-voltage drop for all feeders and branch circuits verified
	Energy Budget	-typical watts/m2 for building type	-preliminary lighting and mechanical load	-all demand and diversity factors considered
	Short Circuit		-typical SC for main transformer size	-calculated and coordinated from main transformer primary to all applicable panels and distribution equipment

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
SPECIFICATIONS	Division 01 - General Requirements	-outline specifications for general requirements (coordinated) and all major components	-60% completion of all specification sections -Section 26 to include requirement for completion certificate from authority having jurisdiction, a coordination and arc flash study and applicable equipment labelling requirements
	Division 02 - Existing Conditions		
	Division 26 - Electrical		
	Division 27 - Communications		
	Division 28 - Electronic Safety & Security		
DRAWINGS	000 - Title Sheet/ Drawing List		-100% complete: drawing list (coordinated)
	500 - Legends/ Regulatory Data/ Key Plans	-60% complete: legends, design loads and calculations	-provide coordinated legends, design loads and calculations
	501 - Electrical Site Plan	-indicate existing and proposed location of power and telecommunications at the building service entrance	-100% complete: location of power and telecommunications building service entrance
		-locate transformers, pole lines, underground lines, switchgear to be removed	-100% complete: all primary feeders and exterior equipment to be removed
		-preliminary installation details for distribution equipment such as padmount transformers and base, duct banks, manholes, pole lines, etc	-100% complete: all details for electrical distribution equipment, coordinated with civil discipline as required
		-locate new primary feeders transformers, generators, vaults and connection points to municipal services	-provide the location of all service routings and exterior equipment
			-60% complete: location of area/exterior lighting

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	505 to 509 - Demolition	-indicate elements to be demolished, existing to remain, existing to be reused shall be indicated graphically and noted for conduits, transformers, panels, luminaires, etc.	-Indicate elements to be demolished, existing to remain, existing to be reused, and provide coordinated legend and demolition notes (100% complete).
		-Indicate any removal of exterior electrical distribution systems on site plan and show connection point to new systems as required.	-On site plan, indicate electrical distribution to be removed along with termination details of existing electrical distribution to remain, and provide coordinated legend and demolition notes. Provide Single Line Diagram, for removal and termination of existing high-voltage distribution . (100% complete)
	510 - Electrical: Plans, Sections, Details	-proposed single line diagram and location of electrical service rooms and closets	-updated single line diagram with main feeders, panels and transformers sized, indicate metering points if pursuing LEED M&V credit
			-indicate main feeders, panels and transformers located
			-60% complete: branch circuit panels located
			-60% complete: grounding systems for power and comms, specialized grounding systems such as lighting protection, etc.
	520 - Lighting: Plans, Sections, Details	-preliminary reflected ceiling plan / fixture layout according to room data sheets, at minimum provide narrative for light sources and controls with cut-sheets to illustrate product requirements	-60% complete: lighting reflected ceiling plan / fixture layout according to calculated illumination levels
			-100% complete luminaire schedule
			-60% complete: location of lighting control points
			-60% complete: location of all emergency lighting units and exit signs
	530 - Power - Plans Section, Details		-60% complete: location of all plug loads, direct connected loads and motor loads with associated controls
	540 - Fire alarm Plans, Sections, Details		-locate of all fire alarm system devices on floor plans
			-provide a fire alarm system riser diagram

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	560 - Large Scale Plans, Sections Details	-plan layouts of electrical rooms, showing locations and approximate sizes of major equipment, panels, generators, switchgear, etc	-60% complete: layouts and elevations for electrical rooms, installation details for interior and exterior equipment complete with space for maintenance and removal
	590 - Risers, Schematics & Schedules	-preliminary riser diagrams for signal / specialized systems	-provide coordinated riser diagrams / schematics
			-preliminary panel schedules and MCC / mechanical equip (i.e. motors, heaters) schedules
			-provide lighting control schematics with lighting zones indicated
	700 - Communications: Legends/Notes	-60% complete legends and notes	-provide coordinated legends and general notes
			-provide design load assumptions and calculations
	701 - Communications: Site Plan & Details		-indicate service routing, exterior equipment locations and standard details
	705 to 709 - Communications: Demolition	-indicate existing telecommunications proposed to be removed and/or relocated, complete with notes	-indicate existing telecommunications to be removed and/or relocated complete with notes and details as required
	710 series - Communications: Plans, Sections & Details	-proposed major routing of telecommunications systems and telecommunications equipment rooms	-provide design calculations for types of cables, lengths, signal loss, etc
			-provide a telecom tray and conduit layout
			-60% complete: layouts and elevations for telecommunication rooms
	720 series - Communications: Cable Tray Plans, Sections & Details		-provide a cable tray/conduit layout, complete with radii, intersections, etc
	760 series - Large Scale Plans, Sections & Details	-provide plan layouts of telecommunication/data rooms, showing locations and approximate sizes of major equipment	-60% complete: provide the locations of equipment, panels, horizontal and vertical racking complete with space for maintenance and removal

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	790 series - Communications: Risers, Schematics & Schedules		-provide single line drawings of telecommunications and data systems
	800 - Security: Legends/Notes	-60% complete legends and notes	-provide coordinated legends and general notes
			-provide zoning data summary (may be illustrated graphically)
	805 to 809 - Security: Demolition	-indicate existing security systems proposed to be removed and/or relocated, complete with notes	-indicate existing security systems to be removed and/or relocated, complete with notes
	850 series - Security: Plans, Sections & Details	-proposed exterior locations for CCTV, duress alarm sensors, and access controls for parking lots and security systems	-provide locations of exterior CCTV cameras, security and duress systems, etc.
		-proposed interior locations for access controls, CCTV and local panels for security system	-provide a floor plan locating access controls and local panels for security system, complete with cross references to equipment schedules and details
			-provide a reflected ceiling plan including sensors, CCTV locations, etc including clear indication of zoning, operations, etc, complete with cross-references to equipment schedules and details
	860 series - Security: Intrusion Alarm Plans, Sections & Details	-proposed exterior/interior locations for intrusion detection devices	-provide a site plan clearly indicating the locations of exterior intrusion alarms, complete with cross-references to equipment schedules and details -provide a floor plan clearly indicating the locations of interior intrusion alarms, zoning, operations, etc, complete with cross-references to equipment schedules and details
	890 series - Security: Risers Schematics & Schedules		-provide riser diagrams and schematics for security systems and intrusion alarm systems

Annexe I : Aide-mémoire électricité pour les calculs, devis et plans

	Groupement/ Série/ N° de plan	Étape de soumission		
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)	Définitive
CALCULS	Niveaux/ charge d'éclairage	-exigences relatives à l'éclairage établies conformément aux lignes directrices IESNA pour toutes les aires types; identifier la possibilité de captation de la lumière naturelle	-niveaux d'éclairage vérifiés et nombre de luminaires déterminé (coordonné avec les fiches techniques sur les salles)	-tabuler tous les niveaux d'éclairage avec les valeurs max / min / moyen, charge d'éclairage en W/m2 déterminée et vérifiée selon les exigences CNEB ou ASHRAE, s'il y a lieu -calculs d'éclairage extérieur doivent être dans un tableau indiquant les niveaux max/ min/ moyen sur un plan d'implantation séparé
	Puissance appelée		-principales charges décelées	-Tous les facteurs de charge et de demande sont pris en compte; les calculs définitifs de la charge doivent être indiqués sur les plans
	Alimentation de secours		-exigence relative à l'alimentation de secours préliminaire	-l'alimentation de secours a la capacité de supporter les charges de moteur, les pointes de demande, etc
	Chute de tension		-chute de tension calculée pour les artères et le branchement principaux	-on a vérifié la chute de tension pour tous les circuits de dérivation et artères
	Budget énergétique	-puissance en W/m2 habituelle par type de bâtiment	-charges d'éclairage et mécaniques préliminaires	-tous les facteurs de demande et de diversité doivent être pris en compte
	Court-circuit		-court-circuit type par capacité de transformateur	-calculé et coordonné du transformateur principal (primaire) jusqu'à tous les panneaux et au matériel de distribution

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
DEVIS	Division 01 - Exigences générales	-Décrire les devis pour les exigences générales (coordonnés) et pour tous les éléments majeurs	-Achèvement à 60 % de toutes les sections du devis -La section 26 doit comprendre une exigence relative au certificat d'achèvement des autorités compétentes, une coordination et une études des arcs électriques, ainsi que les exigences applicables concernant l'étiquetage de l'équipement
	Division 02 - Conditions existantes		
	Division 26 - Électricité		
	Division 27 - Communications		
	Division 28 - Sécurité et protection électroniques		
PLANS	000 - Page couverture/ Liste de plans		-achèvement à 100 % : liste des plans (coordonnée)
	500 - Données réglementaires/ plan clé/ légendes	-achèvement à 60 % : légendes, charges de calcul et calculs	-fournir les légendes coordonnées, les calculs et les charges conceptuelles

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	501 - Plan d'implantation électrique	-indiquer l'emplacement existant et proposé de l'alimentation électrique et des télécommunications à l'entrée de service du bâtiment	-achèvement à 100 % : emplacement de l'entrée de service du bâtiment pour les télécommunications et l'alimentation électrique
		-localiser les transformateurs, lignes aériennes, lignes souterraines et appareils de commutation à enlever	-achèvement à 100 % : tous les circuits auxiliaires principaux et l'équipement extérieur à enlever
		-détails préliminaires d'installation du matériel de distribution comme les transformateurs sur socle, les massifs de conduits, les trous d'homme, les lignes aériennes, etc.	-achèvement à 100 % : tous les détails concernant l'équipement de distribution électrique, coordonné avec le génie civil, s'il y a lieu
		-localiser de nouveaux équipements : artères primaires, transformateurs, groupes électrogènes, chambres et points de connexion aux services municipaux	-fournir l'emplacement et la trajectoire d'acheminement du service et d'équipement extérieur
			-achèvement à 60 % : emplacement de l'éclairage extérieur/par zone
			-coordonner avec le plan de génie civil 104 - Plan des interférences du site
	505 à 509 - Démolition	<p>-indiquer les éléments à démolir, les éléments existants à conserver et les éléments existants à réutiliser, qui doivent être clairement indiqués graphiquement et notés pour les conduits, les transformateurs, les panneaux, les luminaires, etc.</p> <p>-indiquer l'enlèvement des systèmes de distribution électrique extérieurs sur le plan de l'emplacement et montrer les points de raccordement aux nouveaux systèmes, s'il y a lieu.</p>	<p>-indiquer les éléments à démolir, les éléments existants à conserver et les éléments existants à réutiliser et fournir une légende coordonnée des notes de démolition (achèvement à 100 %).</p> <p>-Sur le plan d'implantation, indiquer la distribution électrique à enlever ainsi que les détails de terminaison de distribution électrique existante, et fournir les notes coordonnées de légende et démolitions. Fournir un schéma unifilaire pour l'enlèvement et cessation de la distribution haute tension existante (achèvement à 100%)</p>

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 510 - Électricité: Plans, coupes et détails	-schéma unifilaire proposé et emplacement des armoires et locaux électriques	-schéma unifilaire à jour avec circuits auxiliaires principaux, panneaux et transformateurs dimensionnés, indiquer les points de mesure pour l'obtention des crédits de mesure et de vérification LEED
			-indiquer l'emplacement des commutateurs, des <u>panneaux et des transformateurs</u>
			-achèvement à 60 % : emplacement des panneaux de <u>circuits de dérivation</u>
			-achèvement à 60 % : systèmes de mise à la terre pour l'alimentation électrique et les télécommunications, systèmes de mise à la terre spéciaux, comme les systèmes de protection de l'éclairage, etc.
	Série 520 - Éclairage: Plans, coupes et détails	- plan de plafond réfléchi préliminaire/disposition des luminaires selon les feuilles de données des salles, fournir au moins une description des sources d'éclairage et de la régulation, avec feuilles d'information pour illustrer les exigences relatives aux produits	-achèvement à 60 % : plan de plafond réfléchi / disposition des appareils d'éclairage selon les niveaux d'éclairement de calcul
			-fournir le tableau des luminaires achevée à 100 %
			-achèvement à 60 % : emplacement des points de <u>commande de l'éclairage</u>
			-achèvement à 60 % : emplacement de tous les appareils d'éclairage de sécurité et des panneaux SORTIE
	Série 530 - Alimentation - Plans, coupes et détails		-achèvement à 60 % : emplacement de toutes les charges des prises, des charges branchées directement et des charges de moteur, avec les commandes s'y rapportant

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	540 - Alarme incendie - Plans, coupe et détails		-emplacement de tous les dispositifs des systèmes d'alarme-incendie sur les plans d'étage -fournir un schéma des colonnes montantes du système d'alarme-incendie
	Série 560 - Plans (à grande échelle), coupes et détails	-indiquer la disposition des équipements dans les locaux électriques, montrer l'emplacement et les dimensions approximatives d'équipement principal, des panneaux, des groupes électrogènes et des commutateurs	-achèvement à 60 % : disposition et élévations des locaux électriques, détails d'installation pour l'équipement intérieur et extérieur avec espace pour l'entretien et l'enlèvement
	590 - Colonnes montantes, schémas et tableaux	-schémas préliminaires des colonnes montantes pour les systèmes spécialisés/de signalisation	-fournir des schémas coordonnés des colonnes montantes/illustrations schématiques
			-fournir les tableaux préliminaires des panneaux et les tableaux de l'équipement mécanique/centre de commande des moteurs (p. ex. moteurs, éléments chauffants)
			-fournir des schémas de la régulation de l'éclairage, avec zones d'éclairage indiquées
	700 - Communications: Légendes/Notes	-achèvement à 60 % des légendes et des notes	-fournir des légendes coordonnées et des notes générales -fournir des hypothèses quant à la charge prévue et des calculs
	701 - Communications: Plan d'emplacement et détails		-indiquer la trajectoire d'acheminement du service, l'emplacement du matériel extérieur, les détails standard
	705 à 709 - Communications : Démolition	-indiquer les télécommunications à déplacer et(ou) à enlever, avec notes	-indiquer les télécommunications à déplacer et(ou) à enlever, avec notes et détails, s'il y a lieu

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 710 - Communications: Plans, coupes et détails	-principal parcours proposé pour les systèmes de télécommunications et les locaux où se trouve l'équipement de télécommunications	-fournir les calculs de conception (types de câbles, longueurs, perte de signal, etc.) -fournir la disposition des chemins de câbles et télécommunications -achèvement à 60 % : dispositions et élévations de salles des télécommunications
	Série 720 - Communications: Plans, coupes et détails des chemins de câbles		-fournir la disposition des chemins de câbles, avec les rayons, intersections, etc.
	Série 760 - Plans, coupes et détails à grande échelle	-fournir un plan d'aménagement des salles d'électricité indiquant l'emplacement et la grosseur approximative des principales pièces d'équipement	-achèvement à 60 % : fournir l'emplacement du matériel, des panneaux, des supports horizontaux et verticaux et des locaux d'entretien et de déchets
	Série 790 - Communications : schémas de colonnes, schémas et tableaux		-fournir un schéma uniligne des systèmes de télécommunications et de données
	800 - Sécurité: Légendes/Notes	-achèvement à 60 % des légendes et des notes	-fournir des légendes coordonnées et des notes générales
			-fournir un sommaire des données de zonage (peut être illustré graphiquement)
	805 à 809 - Sécurité: Démolition	-indiquer les systèmes de sécurité existants à enlever et(ou) à déplacer, avec notes	-indiquer les systèmes de sécurité existants à enlever et(ou) à déplacer, avec notes

	Groupement/ Série/ N° de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 850 - Sécurité: Plans, coupes et détails	-emplacements proposés à l'extérieur pour la télévision en circuit fermé, les détecteurs d'alarme individuels pour les stationnements et les systèmes de sécurité	-fournir les emplacements à l'extérieur pour les caméras de télévision en circuit fermé, les détecteurs d'alarme individuels et les systèmes de sécurité, etc.
		-emplacements proposés à l'intérieur pour la régulation de l'accès, la télévision en circuit fermé et les panneaux pour le système de sécurité	-fournir un plan d'étage indiquant la régulation de l'accès et les panneaux locaux pour le système de sécurité, avec références aux détails et aux tableaux de l'équipement
			-fournir un plan de plafond réfléchi qui montre les capteurs, les écrans de télévision en circuit fermé, etc., y compris une indication claire des zones, du fonctionnement, etc., avec références aux tableaux d'équipement et détails
	Série 860 - Sécurité: Alarme anti-intrusion - Plans, coupes et détails	-emplacement proposé des dispositifs d'alarme anti-intrusion (extérieur/intérieur)	-fournir un plan d'emplacement y compris une indication claire des emplacements des alarmes anti-intrusion (extérieures), avec références aux tableaux d'équipement et détails
			-fournir un plan d'étage y compris une indication claire de l'emplacement des alarmes anti-intrusion (intérieures), des zones, du fonctionnement, etc., avec références aux tableaux d'équipement et détails
	Série 890 - Sécurité: Schémas de colonnes, schémas et tableaux		-fournir des schémas des colonnes montantes, des systèmes de sécurité et des systèmes d'alarme anti-intrusion

Appendix J: Series 900 Interior Fit-up Drawing Structure*:

000 – Title Page

900 Series – Regulatory Data/ General Notes/ Key Plans/ Legends

- 900 – NBCC Matrix/ Architectural Legends & Construction Notes
- 901 – Fire Separation Plans and Building Section
- 902 – Structural Regulatory Data/ General Notes/ Key Plans/ Legends
- 903 – Construction Assemblies
- 904 – Mechanical Regulatory Data/ General Notes/ Key Plans/ Legends
- 905 – Electrical General Notes/ Key Plans/ Legends
- 906 – Reserved
- 907 – Communications General Notes/ Key Plans/ Legends
- 908 – Security General Notes/ Key Plans/ Legends

910 Series – Demolition

- 912 – Structural
- 913 – Architectural
- 914 – Mechanical
- 915 – Electrical
- 916 – Reserved
- 917 – Communications
- 918 – Security

920 Series – Structural

930 Series – Architectural

940 Series – Mechanical

950 Series – Electrical 960

Series – Reserved

970 Series – Communications

980 Series – Security

*Note that for large projects, where a trade sequence is expected to exceed the allotted drawings noted above, the sequential number shall have one additional digit added. For example, the first drawing in an Architectural series is 9300.

Appendix J: Structural Checklist for Calculations, Specifications and Drawings

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
CALCULATIONS	Blast	-If applicable, indicate location and charge of explosives (NEQ) located inside the building, with levels of protection required	-if applicable, indicate internal blast loads for design	-if applicable, indicate internal blast loads for design
			-if applicable, indicate component response criteria	-if applicable, indicate updated component response criteria
			-if applicable, list software used for design	-if applicable, provide an updated list of software used for design
SPECIFICATIONS	Division 01 - General Requirements		-Outline specifications for general requirements (coordinated) and all major components	-50% completion of specifications within these Divisions
	Division 02 - Existing			
	Division 03 - Concrete			
	Division 04 - Masonry			
	Division 05 - Metals			-90% completion of specifications within these Divisions
	Division 06 - Wood, Plastics & Composites			

Appendix J: Submission Phase	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	000 - Title Sheet/ Drawing List		-Provide a drawing list (coordinated)	-Provide a drawing list (coordinated)
	902 - Regulatory Data/ General Notes/ Key Plans/ Legends		-Include the Design Standards references	-For Design Standards, include a reference to the National Building Code of Canada (noting the latest edition), as well as a reference to the various CSA Standards used in the design, specifically noting the Standards' most current year of release (i.e. CSA O86-14, CAN/CSA S16-14, CSA S832-12, etc)
			-provide Dead Load design criteria (broken down)	-For Design Loads, Dead Loads: indicate Self- weight and Superimposed Dead Loads (broken down) for Ground/main Floor, upper floors, roofs, mezzanines, partitions and parking garages
			-provide Live Loads design criteria	-For Design Loads, Live Loads: indicate loads due to Use and Occupancy for the ground/main floor, upper floors, mezzanine, concentrated loads, exit stairs, public corridors, balconies, mechanical areas, parking garages, crane capacity, load on guards, truck/helicopter/vehicle concentrated loads
			-provide design criteria for Snow, Ice & Rain Loads	-For Design Loads, Loads due to Snow, Ice & Rain: indicate the Importance Factor (Is), Ground Snow Load (Ss), Ground Rain Load (Sr), roof specified snow load, unbalanced snow load, drift load for height differentials, snow distributions and snow loading factors as per NBCC Commentary G. Also specify if roof drains are designed to retain water for storm management or for controlled flow within a 24hr period

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	902 - Regulatory Data/ General Notes/ Key Plans/ Legends (con't)		-Provide Wind Loads	- For Design Loads, Loads due to Wind: indicate the Importance Factor (Iw), 1/50 hourly wind pressure for structural components, wind load applied as per NBCC Commentary I, factored horizontal force (V) at base and overturning moment (M) in both N-S and E-W directions
				- For Design Loads: indicate Full and Partial Loadings, applied as per NBCC
			-provide Seismic Design Criteria: Sa(0.2), Sa (0.5), Sa (1.0), Sa (2.0), Soil Site Class, Fa, Fv, Ie, IeFaSa (0.2)	-For Design Loads, Loads due to Earthquakes: indicate Sa(0.2), Sa(0.5), Sa(1.0), Sa(2.0), Soil Site Class, Fa, Fv, Ie, IeFaSa (0.2), and indicate if seismic restraints are required for operational and functional components
			-if applicable, provide internal blast loads, indicating various NEQs with their location inside the new facility	-For Internal Blast Loads: indicate various NEQs with their location inside the building
			-if applicable, provide Foundation Notes	-For Foundation Notes, clearly reference the geotechnical report and date as well as provide a description of bearing stratum and foundation type; factored bearing capacity (ULS); allowable bearing capacity (SLS); frost protection depth; retaining structures criteria (lateral earth pressures and hydrostatic pressures) and sub-grade preparation for footings and slab on grade
				-For Pile Foundation Notes: indicate pile type (driven or bored piles, concrete, steel tubes or HP piles, composite), diameter and wall thickness, steel grade or concrete strength, depth, refusal criteria, bearing capacity, safety factor, pile capacity, splice information, testing information

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	902 - Regulatory Data/ General Notes/ Key Plans/ Legends (con't)		-Provide Concrete and Reinforcing steel Notes	- For Concrete Notes provide concrete requirements (28 day compressive strength, exposure class, nom. size coarse aggregate, air content, max. w/c ration) for various concrete items such as footings, foundation walls, interior slabs on grade, exterior slabs on grade, floor slabs, columns, beams, grade beams, retaining walls, etc. Provide all other relevant information for concrete covers, grout, slab on grade, hardeners, etc
				- For Reinforcing Steel Notes provide the types of bars and wire mesh, steel detailing information, lap/splice locations and lengths, various embedments, etc
			-Provide Structural steel/Masonry/Wood Notes	- For Structural Steel Notes provide steel grades for various elements, bolts and welding information, requirements for connections (shear and others), etc
			(see above)	-For OWSJ Notes Provide permitted deflections, cambers, bridging, Loads for connections, etc
				- For Steel Deck Notes provide the thickness and depth, coating, deck attachment pattern, etc
				- Provide Notes for Masonry, Wood, Pre-Engineered Structures, Cold Formed Steel, Precast, etc

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	902 - Location, Key Plan, Typical Details			-Provide typical details for stepped footings, adjacent footings, footings adjacent to underground services
				-Provide typical details for subgrade preparation for slab on grade; slab on grade construction joints and control joints; slab on grade below masonry walls and stairs
				-Provide typical details for pits and trenches; interior columns; reinforcing for holes through floors, roofs and walls
				-Provide typical details for wall horizontal and vertical construction joints and control joints, corner wall reinforcing and masonry reinforcing
				-Provide typical details for elevator hoist beam anchorage to slab, block header supports, crane supports, lintels, anchor bolts, openings through steel deck, housekeeping pads, lateral restraint at top of block walls and roof anchors
				-Provide details or requirements for non-structural elements such as cladding, walls, mechanical/electrical equipment, ceiling systems, lighting, shelving, etc
	912 - Demolition (for foundations, floors and roofs)	-Provide existing plans for foundations, floors and roof, and indicate locations of demolition interventions	-Indicate extent of demolition and provide notes on temporary shoring or underpinning	-Indicate cross-references with demolition details and elevations
			-Provide elevation views of demolition interventions, with notes	
				-Provide details of demolition

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	920 series - Foundation & Ground Floor Plans	-Provide existing plans and indicate on them the proposed structural members, columns, foundations and lateral systems	-Where required, indicate new footings or piles (with preliminary dimensions) and foundation walls, slabs-on-grade, pilasters, expansion joints complete with structural grid lines dimensioned	-Indicate the vertical design loads, including dead and superimposed dead loads, occupancy live loads, snow loads (including build-ups), mechanical equipment loads, construction loads, crane loads, special loading considerations (compact shelving, heavy vehicles, storage, heavy partitions for vaults, etc)
				-Foundation plans shall indicate new exterior and interior foundation walls located from grid lines, with typical dimensions
				-Foundation plans shall indicate sole plates and/or piles (indicate length of piles if piles are required), pilasters, expansion joints, anchors, excavation/shoring/backfill, location of known existing services, construction sequence of underpinning, frost protection, groundwater conditions, settlement, blasting of rock (protection of nearby structures) and sulphate/calcium resistance; for piles, indicate imposed service loads
				-Indicate slabs-on-grade complete with slab thickness, elevation, sub-base and saw cuts
				-Clearly indicate floor elevations (geodetic) complete with floor level changes, stairs and ramps.
				-Provide assumed bearing elevations relative to grid lines
				-Indicate floor finishing tolerances, slopes for drainage, drain openings, etc
				-Indicate graphical representation of construction materials for walls and floors

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	920 series - Floor & Roof Plans	-Provide existing plans and indicate on them the proposed structural members, columns, bay sizes, foundations and lateral systems.	-Where required, indicate framing and preliminary sizes of major structural elements complete with structural grid lines dimensioned	-Provide a benchmark plan showing live and dead loads used in calculating the structure
				-Forces, moments, shears and torsion for the preparation of shop drawings and connection details (distinguished factored and specified loads) shall be indicated
				-Indicate horizontal design loads for joists and steel deck connections for diaphragm action
				-Indicate the vertical design loads, including dead and superimposed dead loads, occupancy live loads, snow loads (including build-ups), mechanical equipment loads, construction loads, crane loads, special loading considerations (compact shelving, heavy vehicles, storage, heavy partitions for vaults, etc)
				-Provide location and size of main structural elements such as beams, posts, trusses, columns, slabs (cambering of structural elements), etc, complete with dimensions, deflections, vibrations
				-Indicate main openings for stairs, elevators, mechanical shafts, etc as well as saw cuts and expansion joints
				-Indicate reinforcing bars and placement order
				-Clearly indicate grade, floor, mezzanine and roof elevations (geodetic) complete with floor changes, stairs and ramps
				-Provide assumed bearing elevations relative to grid lines
				-Indicate floor finishing tolerances, slopes for drainage, drain openings, etc
				-Indicate graphical representation of construction materials for walls and floors

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	920 series - Elevations (interior)		-Indicate existing lateral resisting system; provide elevation views showing brace and/or shear wall locations; clearly indicate elevations for ground floor, upper floors, mezzanines, roofs and show all new structural interventions	-Clearly indicated grade, floor, mezzanine, roof and equipment elevations (geodetic)
				-Shear wall elevations complete with openings and reinforcing details cross-referenced to schedules
				-Truss elevations showing factored member forces
				-Indicate cross-bracing complete with member factored loads and connection factored loads
				-Major openings in frame members
				-Lateral deflection of the building
	920 series - Building Sections (transverse/ longitudinal)		-clearly show major framing elements; provide elevation views showing brace and/or shear wall locations; clearly indicate elevations for ground floor, upper floors, mezzanines and roofs -Clearly indicate "interconnected floor spaces and mezzanines"	-Indicate the location of main openings through structural shear walls
				-Provide reinforcing details for main openings through structural walls, complete with cross-referencing to schedules
				-Clearly indicate "interconnected floor spaces" and mezzanines"
	920 series - Wall Sections			-Clearly indicated graphical representation of systems and equipment interference for structural, mechanical, electrical, communications, security, etc, complete with cross-referenced notes and dimensions
	920 series - Large Scale Plans		-For fairly large buildings: provide large scale foundation plans, ground floor plans and roof plans, with appropriate key plans	-Wall sections showing structural elements, as applicable: girts, block walls, reinforced concrete walls, tilt-up panels, studs, brick supporting elements, etc
				-For fairly large buildings: provide large scale foundation plans, ground floor plans and roof plans, with appropriate key plans

	Grouping/ Series/ DWG #	Submission Phase		
		Concept Design	Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	920 series - Plan/Section Details		-If applicable, provide foundation sections, showing preliminary footing/foundation wall sizes, detail at junction slabs	-Foundation sections showing minimum frost cover, detail at junction slabs, wall reinforcing, connection details of walls to foundation walls, grade beams, piers, etc
				-Floors and roof sections showing connection of slabs and deck to supporting members (walls or beams)
				-Details of beam/joist connections to columns and walls, sections at various openings, etc
				-Plan and elevation details of piers, pile caps, piles, base plates, concrete beams and slabs, walls, etc
				-Applied fireproofing, all required fire resistance rating of structural assembly to be shown, with type of material to use
				-Details of interconnection of structural members provided but not finalized
	920 series - Stairs, Ramps and Conveying			-Provide plans, sections and details of stairs, ramps, escalators & elevators
	920 series - Schedules			-60% completion of Footing Schedule showing location , size, thickness, reinforcing and elevation of bottom of footing
				-60% completion of Column Schedules showing column types, base plate, pier types, footing types, elevations, loads
				-60% completion of Beams Schedule
				-60% completion of Walls Schedule
				-60% completion of Slab Schedule

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
SPECIFICATIONS	Division 01 - General Requirements	-outline specifications for general requirements (coordinated) and all major components	-50% completion of specifications within these Divisions
	Division 04 - Masonry		
	Division 05 - Metals		
	Division 06 - Wood, Plastics and Composites		
	Division 07 - Thermal and Moisture Protection		
	Division 08 - Openings		
	Division 09 - Finishes		-90% completion of specifications within these Divisions
	Division 10 - Specialties		
	Division 11 - Equipment		
	Division 12 - Furnishings		
	Division 13 - Special Construction		
			-20% completion of specifications within these Divisions

Appendix J: Arch	Grouping/Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	000 - Title Sheet/ Drawing List	-provide a coordinated drawing list	-100% complete drawing list (coordinated)
	900 - Legends, Construction Notes, NBCC Code Matrix	-preliminary NBCC Code Matrix completed, including major occupancies and required fire separations	-90% completion of the NBCC Code Matrix, including major occupancies, occupant load, washroom calculations, required fire separations, etc
			-Integrated legend(s) shall be coordinated with all disciplines and drawings submitted
			-provide general construction notes coordinated with all drawings submitted
	901 - Fire Separation Plans and Building Section	-provide a fire separation diagram complete with the required exits, travel distances, areas of refuge, spatial separation and exposure protection locations indicated	-Indicate all fire separations with their associated fire resistance ratings for all floor plans and for the building section (100% complete)
			-indicate on the plans the exiting route with travel distances noted (100% complete)
	903 - Construction Assemblies	-for phased projects, all the above shall be shown for each phase, including the temporary fire separations	-for phased projects, all the above shall be shown for each phase, including the temporary fire separations (100% complete)
			-100% complete description and graphical representation of various assemblies proposed for: interior partitions, floors, ceilings, fire-rated assemblies for steel members
			-all assemblies shall indicate the required Sound Transmission Coefficient (STC), fire resistance rating and approved design references to confirm compliance (100% complete)
	913 - Demolition Drawings	-elements to be demolished, existing to remain, existing to be reused shall be clearly indicated graphically and noted	-provide items to be removed, complete with a coordinated legend and demolition notes (100% complete)

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	930 series - Floor Plans	-indicate key plans where required and a north arrow	-indicate key plans where required and a north arrow
		-provide cross-referencing to large-scale plans and sections	-provide cross-referencing to large scale plans, sections, interior elevations, plan and section details
		-indicate structural gridlines dimensioned, floor lay-out with room names, interior partitions, interior doors, vertical transportation, loading bays, washrooms lay-out, service rooms, service shafts	-grid lines and bay sizes shall be coordinated with the Structural drawings (100% complete)
			-provide the location and type of structural elements, interior partitions and openings, coordinated with Structural, Mechanical, Electrical and all other architectural drawings submitted (100% complete)
			-Provide the room designations (room name and number) (100% complete)
			-Provide doors/shutters/screens designations coordinated with the door/window/hardware schedules
			-100% completion of dimensions for barrier-free clearances as well as turning radii shown
			-100% completion of washroom/kitchen fixtures and millwork shown
			-100% completion of geodetic elevations shown for all level changes
			-indicate all floor drains and slopes
			-indicate where window sprinklers and fire shutters are located with cross-references to details as required
			-indicate all stairs and ramps (100% complete)
			-provide all necessary notes coordinated with the drawings

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	930 Series - Reflected Ceiling Plans		-provide a coordinated legend indicating, but not limited to: ceiling finish types, luminaires, mechanical/electrical equipment, other ceiling-mounted equipment or fixtures (100% complete)
			-indicate various ceiling material/design and height (100% complete)
			-provide bulkhead sizes and heights
			-provide wall heights
			-indicate mechanical and electrical items, including access panels, coordinated with respective drawings
			-dimensions to locate mechanical and electrical items that are not located in a ceiling grid system
	930 series - Interior Elevations		-provide cross-referencing to sections and details
			-provide gridlines, room names/numbers and dimensions (100% complete)
			-provide all barrier-free access mounting heights (100% complete)
			-provide a legend and notes
			-clearly indicate millwork, architectural features (i.e. bulkheads, pass-throughs, screens, interior doors, wall tile layout, etc)
			-provide elevations of walls with fixtures and accessories indicated and dimensioned

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	930 Series - Building Sections	-provide at least two critical building sections complete with floor to floor heights, clear heights, raised floors, finished grade elevations and any other critical items	-indicate gridlines, grade/floor geodetic elevations (100% complete)
			-provide room names/numbers where section is taken
			-indicate structural and mechanical equipment interference
			-indicate suspended ceilings and clear heights (100% complete)
			-clearly indicate interior walls, cross-referencing to section details
	930 series - Large Scale Plans		-all rooms shall be fully dimensioned with fixtures and millwork located (100% complete)
			-all pipe spaces are located and coordinated with the Mechanical drawings (100% complete)
			-all washroom fixtures and accessories are identified and located (100% complete)
			-provide cross-referencing to Interior Elevations
	930 series - Plan and Section Details		-provide typical plan and section details for fire-rated partitions, interior wall intersections, etc complete with notes and dimensions (100% complete)
			-provide special condition details as is necessary to ensure performance of the building and clarity for the contractor
			-provide a detailed graphic representation and description of all components, including fire stopping, sealants, etc

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	930 series - Stairs & Ramps		-for stair drawings, all flights and landings shall be dimensioned as well as indicate the rise/run, headroom clearance, clearance at door swings and tread design details (100% complete)
			-provide drawings for guardrail and handrail design complete with dimensions and notes (100% complete)
	930 series - Furniture/ Equipment Plan, Millwork Drawings and Signage	-provide a preliminary furniture/equipment layout plan complete with legend and notes	-provide a completely coordinated layout of furniture, systems furniture and equipment ensuring that dimensions are provided to indicate clearances (100% complete)
			-provide a legend to identify furniture and equipment ensuring that what is part of the contract and what is not in contract is clearly indicated (100% complete)
			-provide construction details of all millwork and custom components with cross-references to Interior Elevations and section details as required
			-provide signage drawings and details that are dimensioned and annotated
	930 series - Schedules: Doors, Screens, Hardware, Finishes, etc		-provide schedules for doors and door frames, interior screens, hardware and room finishes

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
CALCULATIONS	HVAC	-preliminary building loads	-detailed building loads
		-space by space ventilation rate based on ASHRAE 62.1-2001, or other more stringent applicable Code/Standard	-provide updated space by space ventilation rate based on ASHRAE 62.1-2001, or other more stringent applicable Code/Standard
		-Room Data Sheets to include updated design requirements for temp/humidity and noise levels	-provide updated Room Data Sheets
	Plumbing	-fixture count coordinated with Architecture	-provide updated fixture count coordinated with Architecture
	Sanitary Waste	-pipe sizing	-provide updated pipe sizing
SPECIFICATIONS	Division 01 - General Requirements	-outline specifications for general requirements (coordinated) and all major components	
	Division 21 - Fire Suppression		-Part 1 of Div 21 - provide design intent for sprinkler system; Part 2 of each Section shall be edited, detailing the actual equipment that is being specified for this project and ensuring all equipment references are coordinated between the specifications and drawings. Ensure all Code references match the location of the
	Division 22 - Plumbing		
	Division 23 - HVAC		
	Division 25 - Integrated Automation		-A fully developed and clear sequences of operations must be submitted.
DRAWINGS	000 - Title Sheet/ Drawing List		-100% complete drawing list (coordinated)
	904 - Regulatory Data/ Legends/ Key Plans		-all legends to be 100% complete
	914 - Demolition	-clearly indicate existing reused and existing demolished piping, ducts, equipment	-provide an updated demolition plan which also includes proposed demolition of sprinklers, piping, ducts and equipment

Appendix J: Mech	Grouping/Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	940 series - Fire Protection: Plans, Sections, Details	-preliminary sprinkler layout	-all main water protection system piping layout and placement of sprinkler heads shown
		-indicate equipment spaces for active/passive fire safety systems	-identify water supply, water and non-water based fire extinguishing system
			-identify hazard zones with design parameters included for each hazard area
			-locate main fire suppression system components
	940 series - Plumbing: Plans, Sections, Details	-locations and approximate routing of major piping runs	-indicate all fixtures, equipment pipe layout and isolation valves
		-locations of proposed plumbing fixtures and equipment	
			-all main pipes are sized and fixture units are shown with the main pipe size
	940 series - Heating/Cooling (Hydronic)	-schematic drawing showing main components	-indicate pipe size
			-all equipment to be labelled and drawn
	940 series - HVAC	-locations and approximate routing of major duct runs	-indicate sizes of the mains, including the air and liquid flow rate for the mains, for all the HVAC piping and ductwork
		-finalized layouts (100% complete) of Mechanical Rooms, showing locations and size of major equipment and maintenance area for all the equipment	-all equipment to be labelled and drawn to size to avoid interferences
		-provide a roof plan showing all roof-mounted equipment, with adequate access for servicing	
		-main components are shown schematically	-indicate all terminal units, valves, balancing dampers and locations of control sensors
			-majority of fire dampers shown where ductwork penetrate fire separations
	940 series - Integrated Automation: Plans Sections, Details		-show a schematic of the BAS system (i.e. the computer, controllers, etc)

Appendix J: Electrical	Grouping/Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	940 series - Plan and Section Details		-include details on equipment and Mechanical Rooms
			-provide sections of Mechanical Rooms and highly congested areas
			-indicate equipment access and service requirements
	940 series - Schematics and Schedules	-riser diagram for sprinklers and standpipe	-single line diagram for fire suppression system
		-fire protection schedule including location of risers, area hazard rating, type of system, water coverage and sprinkler head rating	-fire protection schedule including location of risers, area hazard rating, type of system, water coverage and sprinkler head rating
			-indicate equipment schedules for chillers, boilers, pumps, air handling units, terminal units, cooling towers, air terminal devices, plumbing fixtures

	Grouping/ Series/ DWG #	Submission Phase		
		Design Development	Interim	Final
CALCULATIONS	Illumination Levels/ Lighting Loads	-lighting requirements i.a.w. IESNA guidelines for all typical areas; opportunities for daylight harvesting identified	-lighting levels verified and number of luminaires determined (coordinated with room data sheets)	-all lighting levels tabulated with max / min / avg values, lighting load in watts/m2 verified against NECB or ASHRAE requirements, as applicable
	Power Demand		-major loads identified	-all loads and demand factors considered; final load calculations to be shown on drawings
	Emergency Power		-preliminary emergency power requirement	-emergency power sized for motor loads, peak demands, etc.
	Voltage Drop		-voltage drop calculated for at least the main feeders and main service	-voltage drop for all feeders and branch circuits verified
	Energy Budget	-typical watts/m2 for building type	-preliminary lighting and mechanical load	-all demand and diversity factors considered
	Short Circuit		-typical SC for main transformer size	-calculated and coordinated from main transformer primary to all applicable panels and distribution equipment

Appendix J: Electrical		Submission Phase	
DWG #		Design Development	Interim (85% complete unless otherwise noted)
SPECIFICATIONS	Division 01 - General Requirements	-outline specifications for general requirements (coordinated) and all major components	-60% completion of all specification sections -Division 26 to include requirement for completion certificate from authority having jurisdiction, a coordination and arc flash study and applicable equipment labelling requirements; Division 28 to include sequence of operations and new components
	Division 26 - Electrical		
	Division 27 - Communications		
	Division 28 - Electronic Safety & Security		
DRAWINGS	000 - Title Sheet/ Drawing List		-100% complete: drawing list (coordinated)
	905 - Legends/ Regulatory Data/ Key Plans	-60% complete: legends & key plans	-provide coordinated legends and key plans
		-proposed single line diagram and location of electrical service rooms and closets	-updated single line diagram with main feeders, panels and transformers sized
	950 series - Electrical: Plans, Sections, Details		-indicate main feeders, panels and transformers located
			-100% complete: branch circuit panels located
			-60% complete: grounding systems for power and comms, specialized grounding systems such as lighting protection, etc.
	950 series - Lighting: Plans, Sections, Details	-preliminary reflected ceiling plan / fixture layout according to room data sheets, at minimum provide narrative for light sources and controls with cut-sheets to illustrate product requirements	-60% complete: lighting reflected ceiling plan / fixture layout according to calculated illumination levels
			-100% complete luminaire schedule
			-100% complete: location of lighting control points
			-60% complete: location of all emergency lighting units and exit signs

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	950 series - Power - Plans Section, Details		-60% complete: location of all plug loads, direct connected loads and motor loads with associated controls
	950 series - Fire alarm Plans section, Details		- 100% complete: location of all fire alarm system devices on floor plans -provide a fire alarm system riser diagram
	950 series - Large Scale Plans, Sections Details	-plan layouts of electrical rooms, showing locations and approximate sizes of major equipment, panels, generators, switchgear, etc	-60% complete: layouts and elevations for electrical rooms, installation details for interior and exterior equipment complete with space for maintenance and removal
	950 series - Risers, Schematics & Schedules	-preliminary riser diagrams for signal / specialized systems	-provide coordinated riser diagrams / schematics for power and lighting controls as required -preliminary panel schedules and MCC / mechanical equip (i.e. motors, heaters) schedules -provide lighting control schematics with lighting zones indicated
	907 - Communications: Legends/Notes	-60% complete legends and notes	-provide coordinated legends and general notes
	917 - Communications: Demolition	-indicate existing telecommunications proposed to be removed and/or relocated, complete with notes	-indicate existing telecommunications to be removed and/or relocated complete with notes and details as required
	970 series - Communications: Plans, Sections & Details	-proposed major routing of telecommunications systems and telecommunications equipment rooms	-provide design calculations for types of cables, lengths, signal loss, etc -provide a telecom tray and conduit layout -60% complete: locations of telecommunication rooms
	970 series - Communications: Cable Tray Plans, Sections & Details		-provide a cable tray/conduit layout, complete with radii, intersections, etc

	Grouping/ Series/ DWG #	Submission Phase	
		Design Development	Interim (85% complete unless otherwise noted)
DRAWINGS	970 series - Large Scale Plans, Sections & Details	-provide plan layouts of telecommunication/data rooms, showing locations and approximate sizes of major equipment	-60% complete: provide the locations of equipment, panels, horizontal and vertical racking complete with space for maintenance and removal
	970 series - Communications: Risers, Schematics & Schedules		-provide single line drawings of telecommunications and data systems
			-provide single line diagram of grounding systems
	908 - Security: Legends/Notes	-60% complete legends and notes	-provide coordinated legends and general notes
			-provide zoning data summary (may be illustrated graphically)
	918 - Security: Demolition	-indicate existing security systems proposed to be removed and/or relocated, complete with notes	-indicate existing security systems to be removed and/or relocated, complete with notes
	980 series - Security: Plans, Sections & Details	-proposed interior locations for access controls, CCTV and local panels for intrusion alarm	-provide a floor plan locating access controls and local panels for intrusion alarm, complete with cross references to equipment schedules and details
			-provide a reflected ceiling plan including sensors, CCTV locations, etc including clear indication of zoning, operations, etc, complete with cross-references to equipment schedules and details
	980 series - Security: Risers Schematics & Schedules		-provide riser diagrams and schematics for access control, CCTV and intrusion alarm systems

Annexe J: aménagement intérieur, série 900

Structure des plans*:

000 – Page couverture

Série 900 – données réglementaire/ notes générales/ plan clé/ légendes

900 – tableau du CNB/ légendes et notes générales d'architecture

901 – plans de séparation coupe-feu et coupe de bâtiment

902 – Structure : données réglementaire/ notes générales/ plan clé/ légendes

903 – assemblages

904 – Mécanique: données réglementaire/ notes générales/plan clé/ légendes

905 – Électricité: notes générales/plan clé/ légendes

906 – réservé

907 – Communications : données réglementaire/ notes générales/plan clé/ légendes

908 – Sécurité: notes générales/ plan clé/ légendes

Série 910 – Démolition

912 – Structure

913 – Architecture

914 – Mécanique

915 – Électricité

916 – réservé

917 – Communications

918 – Sécurité

Série 920 – Structure

Série 930 – Architecture

Série 940 – Mécanique

Série 950 – Électricité

Série 960 – Réserve

Série 970 – Communications

Série 980 – Sécurité

* Notez que pour les grands projets, où l'on prévoit qu'une discipline dépassera le nombre de plans attribués ci-dessus, le numéro séquentiel doit avoir un chiffre supplémentaire ajouté. Par exemple, le premier plan d'une série d'architecture sera 9300.

Annexe J: Aide-mémoire structure pour les calculs, devis et plans

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
CALCULS	Résistance au souffle	-S'il y a lieu, indiquer l'emplacement et la charge (NEQ) des sièges potentiels d'explosion (SPE) à l'intérieur du bâtiment, avec les niveaux de protection requis	-S'il y a lieu, indiquer les charges explosives internes pour fins de calcul	-S'il y a lieu, indiquer les charges explosives internes pour fins de calcul
			-S'il y a lieu, indiquer les critères de réponse des composants	-S'il y a lieu, indiquer les critères de réponse révisés des composants
			-S'il y a lieu, fournir une liste des logiciels utilisés pour les calculs	-S'il y a lieu, fournir une liste révisée des logiciels utilisés pour les calculs
DEVIS	Division 01 - Exigences générales		-Décrire les devis pour les exigences générales (coordonnés) et pour tous les éléments majeurs	-Achèvement à 50 % des sections de devis à l'intérieur de ces divisions
	Division 02 - Conditions existantes			
	Division 03 - Béton			
	Division 04 - Maçonnerie			-Achèvement à 90 % des sections de devis à l'intérieur de ces divisions
	Division 05 - Métaux			
	Division 06 - Bois, plastiques et composites			

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	000 - Page couverture/ Liste de plans		-fournir une liste de plans (coordonnée)	-fournir une liste de plans (coordonnée)
	902 -Données réglementaires/ notes générales/ plans clés/ légendes		-inclure les références pour les normes de conception	'-Inclure les normes de conception avec références au Code national du bâtiment – Canada (en notant l'année de la dernière édition) et aux diverses normes CSA servant à la conception, avec mention spécifique de l'année de parution, (p.ex. CSA O86-14, CAN/CSA S16- 14 etc)
			-fournir les critères de conception pour les charges permanentes (ventilées)	-Charges de calcul – charges permanentes : inclure les poids propres et les charges permanent superposées (ventilées) pour le rez-de-chaussée, les étages supérieurs, les toitures, les mezzanines, les cloisons et les stationnements intérieurs
			'-fournir les critères de conception pour les surcharges	-Charges de calcul - surcharges : indiquer les surcharges dues à l'usage et à l'occupation pour le rez-de-chaussée, les étages supérieurs, les mezzanines, les escaliers d'issue, les corridors publics, des balcons, les locaux de mécanique et les stationnements intérieurs, de même que la capacité des ponts roulants, les charges sur les garde-corps et les surcharges concentrées des camions/hélicoptères/véhicules.

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	902 -Données réglementaires/ notes générales/ plan clé/ légendes (suite)		-fournir les critères de conception pour les surcharges de neige, de glace et de pluie	-Surcharges de neige, de glace et de pluie: indiquer le coefficient de risque (Is), la surcharge de neige au sol (Ss), la surcharge de pluie au sol (Sr), la surcharge de neige spécifiée pour le toit, la surcharge de neige non équilibrée, les surcharges d'accumulation dues aux changements de niveaux, et les facteurs de distribution et de surcharge de neige conformément au Commentaire G du CNBC; indiquer si les drains de toit sont conçus pour gérer l'eau de pluie en la retenant, ou pour contrôler le débit durant 24 heures.
			-fournir les charges dues au vent	- Charges de calcul - surcharges dues au vent : indiquer le coefficient de risque (Iw), la pression dynamique de référence à 1:50 pour les composants structuraux, la surcharge de vent appliquée conformément au Commentaire I du CNBC, la force horizontale pondérée (V) à la base et le moment de renversement (M) dans les directions nord-sud et est-ouest
				- Charges de calcul : indiquer les charges complètes et partielles, appliquées conformément au CNBC
			-fournir les critères de conception parasismiques: Sa(0,2), Sa (0,5), Sa (1,0), Sa (2,0), catégorie d'emplacement, Fa, Fv, Ie, IeFaSa (0,2)	-Charges de calcul - forces sismiques : indiquer Sa(0,2), Sa(0,5), Sa(1,0), Sa(2,0), catégorie d'emplacement, Fa, Fv, Ie, IeFaSa (0,2), et indiquer si des dispositifs de retenue latérale sont requis pour les composants fonctionnels et opérationnels

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	902 - Données réglementaire/ notes générales/ plans clés/ légendes (suite)		-S'il y a lieu, indiquer les charges explosives internes, en précisant les divers NEQ et leur emplacement à l'intérieur des nouvelles installations	-Pour les charges explosives internes, indiquer les divers NEQ et leur emplacement à l'intérieur du bâtiment
			-fournir des notes sur les fondations s'il ya lieu	-Notes sur les fondations – mentionner clairement le rapport géotechnique et la date, décrire la couche d'assise et le type de fondation, et indiquer la capacité portante pondérée (état limite ultime - ÉLU), la capacité portante admissible (état limite de tenue en service - ÉLTS); la profondeur de protection contre le gel; les critères relatifs aux structures de soutènement (pression latérale du sol et pression hydrostatique) et le moyen de préparation du sol de fondation pour recevoir des semelles et une dalle sur le sol
				-Notes sur les fondations sur pieux: indiquer le type de pieux (pieux vissés ou forés, pieux en béton, en tube d'acier ou en H, composites), diamètre et épaisseur des parois, nuance d'acier ou résistance du béton, profondeur, critères de refus, capacité portante, facteur de sécurité, capacité des pieux, renseignements sur les épissures, renseignements sur les essais

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	902 - Données réglementaire/ notes générales/ plans clés/ légendes (suite)		-fournir des notes sur le béton et l'acier d'armature	- Notes sur le béton – les exigences relatives au béton (résistance à la compression à 28 jours, classe d'exposition, grosseur nominale des granulats grossiers, teneur en air et rapport eau-ciment maximal) pour les divers éléments en béton, tels que les semelles et les murs de fondation, les dalles sur le sol intérieures et extérieures, les dalles de plancher, les colonnes, les poutres, les longrines, les murs de soutènement; tout autre renseignement pertinent à propos des recouvrements de béton, du coulis, de la dalle sur le sol, des durcisseurs, etc.
				- Note sur l'acier d'armature – les types de barres et de treillis métalliques, les renseignements détaillés sur l'armature, les emplacements et longueurs des chevauchements, les divers enrobages, etc.
			-fournir des notes sur l'acier de charpente/ la maçonnerie/ le bois	- Notes sur l'acier de charpente – spécifier la nuance de l'acier des divers éléments, les renseignements sur les boulons et soudures, les exigences relatives aux assemblages (ex. en cisaillement), etc.
				-Notes sur les poutrelles à treillis en acier – spécifier les flèches permises, les cambrures, les entretoises, les charges aux assemblages, etc. - Notes sur le pontage en acier – fournir l'épaisseur, la profondeur, l'enduit, le patron des éléments de fixation du pontage, etc. - fournir les notes sur la maçonnerie, le bois, l'acier formé à froid, le béton préfabriqué, les bâtiments préfabriqués en métal etc.

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	902 - Plans de localisation et d'implantation, et détails types			-fournir les coupes et détails typiques des semelles en gradins, et des semelles adjacentes aux services souterrains
				-fournir les coupes et détails typiques de la préparation du sol de fondation pour les dalles sur sol, les joints de construction et de contrôle pour dalles sur sol, les dalles sur sol sous les murs de maçonnerie et les escaliers
				-fournir les coupes et détails typiques des puits et caniveaux; des colonnes intérieures; du renforcement des ouvertures dans les planchers, toitures et murs
				-fournir les coupes et détails typiques des joints de construction et de contrôle horizontaux et verticaux dans les murs, l'armature de coin des murs et l'armature des murs de maçonnerie
				-fournir les coupes et détails typiques de l'ancrage de la poutre de levage d'ascenseur dans la dalle, le support des linteaux de blocs, les supports de ponts roulants, les linteaux, les boulons d'ancrage, les ouvertures dans le platelage en acier, les dalles de propreté, les dispositifs de retenue latérale au haut des murs en blocs, les ancrages pour protection anti-chute
				-fournir les exigences ou détails relatifs aux éléments non structuraux comme les revêtements, les murs, les appareils mécaniques/électriques, les plafonds, les systèmes d'éclairage, les étagères, etc

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	912 -Démolition (aux fondations, planchers et toits)	-fournir les plans de l'existant pour les fondations, planchers et toits, et indiquer l'emplacement des interventions de démolition	montrer l'étendue des travaux de démolition et fournir des notes sur les étalements temporaires et les travaux de reprise en sous-oeuvre	-fournir des références aux détails de démolition et aux vues en élévation
			-fournir des vues en élévation des interventions de démolition, avec notes à l'appui	
				-fournir des détails de démolition
	Série 920 - Plans des fondations et du rez-de-chaussée	-Fournir les plans de l'existant et y indiquer le système structural projeté, les colonnes, les systèmes de résistance latérale et les systèmes de fondations	-s'il y a lieu, montrer les nouvelles semelles ou pieux (avec dimensions préliminaires), les murs de fondation, les dalles sur sol, les pilastres, les joints d'expansion, ainsi que les lignes d'axes de la structure dimensionnées	<p>-Indiquer les charges de conception verticales : charges permanentes, charges permanentes superposées, surcharges d'occupation, surcharges de neige (y compris la neige accumulée), charges d'équipements mécaniques, charges de construction, charges de ponts roulants, charges spéciales (rayonnages à forte densité, véhicules lourds, entreposage, cloisons épaisses pour chambres fortes)</p> <p>-les plans doivent indiquer les murs de fondation extérieurs et intérieurs par rapport aux lignes d'axes avec les dimensions typiques</p>

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 920 - Plans des fondations et du rez-de-chaussée (suite)	(voir ci-dessus)	(voir ci-dessus)	-les plans doivent indiquer les semelles et les pieux (si des pieux sont nécessaires, indiquer la longueur), les dalles sur sol, les pilastres, les joints d'expansion, les ancrages, l'excavation, l'étaillage, le remblayage, l'emplacement des services existants connus, la séquence des travaux de reprise en sous-oeuvre, la protection contre le gel, l'état de l'eau souterraine, le tassement, le dynamitage (protection des structures voisines) et la résistance aux sulfates et au calcium; dans le cas des pieux, indiquer les charges de service
				-indiquer les dalles sur sol, y compris l'épaisseur, le niveau, la couche de fondation, traits de scie
				-indiquer clairement les niveaux (géodésiques) des étages avec les différences de niveaux, les escaliers et les rampes
				-fournir les élévations estimées pour les surfaces d'appui par rapport aux lignes de référence
				-indiquer les tolérances de finition de plancher, les pentes de drainage, les ouvertures pour drains. etc.
				-fournir une représentation graphique des matériaux de construction des murs et des planchers

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 920 - Plans d'étages et de toits	-fournir les plans de l'existant et y indiquer le système structural projeté, les colonnes, les dimensions des baies, les joints d'expansion ou parasismiques, les systèmes de résistance latérale et les systèmes de fondations	-S'il y a lieu, indiquer la structure et les dimensions préliminaires des principaux éléments structuraux, ainsi que les lignes d'axes de la structure dimensionnées	-fournir un plan de référence illustrant les charges permanentes et les surcharges servant à concevoir la structure
				-les forces, moments, la préparation des cisaillements et torsion utilisés pour dessins d'atelier et la conception des assemblages (distinguer les charges pondérées des charges admissibles) doivent être indiqués
				-indiquer les charges de conception horizontales pour les solives/poutrelles et les fixations du platelage en acier pour assurer l'action du diaphragme
				-indiquer les charges de calcul verticales : charges permanentes, charges permanentes superposées, surcharges d'occupation, surcharges de neige (y compris la neige accumulée), charges d'équipements mécaniques, charges de construction, charges de ponts roulants, charges spéciales (rayonnages à haute densité, véhicules lourds, entreposage, cloisons épaisses pour chambres fortes etc)
				-fournir l'emplacement et la taille des principaux éléments structuraux comme les poutres, les poteaux, les fermes, les colonnes, les dalles (cambrure des éléments structuraux), avec les dimensions, flèches, vibrations
				-indiquer les principales ouvertures (escaliers, ascenseurs, puits mécaniques, etc.) de même que les traits de scie et les joints d'expansion

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 920 - Plans d'étages et de toits (suite)	(voir ci-dessus)	(voir ci-dessus)	<ul style="list-style-type: none"> -indiquer les barres d'armature et l'ordre dans lequel elles doivent être placées -indiquer clairement les niveaux du rez-de-chaussée, des étages, des mezzanines et des toits (géodésiques), avec les différences de niveaux, les escaliers et les rampes -fournir les élévations estimées pour les surfaces d'appui par rapport aux lignes de référence -indiquer les tolérances de finition de plancher, les pentes de drainage, les ouvertures pour drains, etc -fournir une représentation graphique des matériaux de construction des murs et des planchers
	Série 920 - Élévations (intérieures)		<ul style="list-style-type: none"> -Indiquer le système de résistance latérale; fournir des vues en élévation pour montrer l'emplacement des contreventements et(ou) des murs de cisaillement; indiquer clairement les élévations pour le rez-de - chaussée, les étages supérieurs, les mezzanines et les toits 	<ul style="list-style-type: none"> -indiquer clairement les niveaux (géodésiques) de rez-de-chaussée, des étages, des mezzanines, des toits et des équipements -montrer en élévation les murs de cisaillement, avec ouvertures et détails d'armature proprement référés aux légendes des murs -montrer les élévations des fermes indiquant les forces pondérées dans les membrures -montrer les contreventements en indiquant les charges pondérées des membrures et des assemblages - indiquer les principales ouvertures dans les éléments de charpente -indiquer la flèche latérale du bâtiment

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 920 - Coupes de bâtiment (transversales/ longitudinales)		-montrer clairement les principaux éléments de structure; fournir des vues en élévation pour montrer l'emplacement des contreventements et(ou) des murs de cisaillement; indiquer clairement les élévations pour le rez-de - chaussée, les étages supérieurs, les mezzanines et les toits	-indiquer l’emplacement des principales ouvertures dans les murs de cisaillement
				-fournir les détails d'armature des principales ouvertures dans les murs porteurs, avec références aux légendes des murs
			-indiquer clairement les aires communicantes et les mezzanines	-indiquer clairement les aires communicantes et les mezzanines
				-fournir une représentation graphique claire de l’interférence des systèmes et des équipements avec les éléments structuraux, mécaniques, électriques, de télécommunication et de sécurité, avec renvois, notes et dimensions
	Série 920 - Coupes de mur			-Coupes de mur montrant les éléments structuraux, s'il y a lieu : lisses, murs en blocs de béton, murs en béton armé, panneaux muraux pour mise en place par relèvement, montants, élémentssupportant de la brique, etc.
	Série 920 - Plans à grande échelle		-Pour les bâtiments relativement imposants : fournir des plans à grande échelle des fondations, du rez-de-chaussée et des toits, avec des plans repères appropriés	-Pour les bâtiments relativement imposants : fournir des plans à grande échelle des fondations, du rez-de-chaussée et des toits, avec des plans repères appropriés

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 920 - Plans et coupes (détails)		-s'il y a lieu, fournir les coupes des fondations indiquant les dimensions préliminaires des semelles/murs de fondation, les détails de jonction entre les murs et les dalles	-les coupes des fondations montrant la profondeur minimale contre le gel, les détails de jonction avec les dalles, l'armature des murs, les détails de jonction entre les murs de fondation et les murs, les longrines, les pilastres, etc.
				-les coupes de planchers et de toitures montrant la jonction entre les dalles et platelages aux éléments de support (murs ou poutres)
				-les détails de jonction entre les poutres/poutrelles/solives aux colonnes et murs, les coupes aux différentes ouvertures, etc.
				-les détails en plan et en élévation des pilastres, des têtes de pieux, des pieux, des plaques de base, des poutres et dalles de béton, des murs, etc.
				-ignifugation appliquée, tous les degrés de résistance au feu de la structure doivent être indiqués, avec le type de matériaux à utiliser
				-détails de l'interconnexion des éléments structuraux fournis mais non définitifs
	Série 920 - Escaliers, rampes et systèmes transporteurs			-fournir les plans, les coupes et les détails des escaliers, rampes, escaliers mécaniques et ascenseurs

	Groupement/ Série/ No de plan	Étape de soumission		
		Étude conceptuelle	Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 920 - Tableaux			-achèvement à 60%: le tableau des semelles indiquant leur emplacement, leurs dimensions, leur épaisseur, leurs armatures et le niveau de dessous de leur base.
				-achèvement à 60%: le tableau des colonnes indiquant les types de colonnes, les plaques de base, les types de pilastres et de semelles, les niveaux et les charges
				-achèvement à 60%: le tableau des poutres
				-achèvement à 60%: le tableau des murs
				-achèvement à 60%: le tableau des dalles

Annexe J: Aide-mémoire architecture pour les calculs, devis et plans

	Groupement/ Série/ No de plans	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
DEVIS	Division 01 - Exigences générales	-Décrire les devis pour les exigences générales (coordonnés) et pour tous les éléments majeurs	-Achèvement à 50 % des sections de devis à l'intérieur de ces divisions
	Division 04 - Maconnerie		
	Division 05 - Métaux		
	Division 06 - Bois, plastiques et composites		
	Division 07 - Isolation thermique et étanchéité		
	Division 08 - Ouvertures et fermetures		-Achèvement à 90 % des sections de devis à l'intérieur de ces divisions
	Division 09 - Revêtements de finition		
	Division 10 - Ouvrages spéciaux		
	Division 11 - Matériel et équipement		-Achèvement à 20 % des sections de devis à l'intérieur de ces divisions
	Division 12 - Ameublement et décoration		
	Division 13 - Installations spéciales		

	Groupement/ Série/ No de plans	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	000 - Page couverture/ Liste de plans	-fournir une liste (coordonnée) de plans	-fournir une liste (coordonnée) de plans achevés à 100 %
	900 - Légendes, notes générales, tableau du CNB	-matrice de données préliminaire du CNB terminée, y compris les usages principaux et les séparations coupe-feu	-matrice de données du CNB achevée à 90 %, y compris les types d'occupation principaux et les séparations coupe-feu, la densité d'occupation, les calculs des salles de toilette, les séparations coupe-feu requises, etc
			-les légendes intégrées doivent être coordonnées avec toutes les disciplines et les plans présentés
			-fournir les notes générales de construction qui sont coordonnées avec les plans présentés
	901 - Plans de séparation de coupe-feu et coupe de bâtiment	-fournir un schéma des séparations coupe-feu, avec les un schéma des séparations coupe-feu avec les issues requises, les distances de déplacement, les zones de refuge et les emplacements des séparations spatiales et des éléments de protection contre la propagation du feu	-Indiquer toutes les séparations coupe-feu et leur degré de résistance au feu pour tous les plans d'étage et la coupe du bâtiment (achèvement à 100%)
		-pour les projets à plusieurs phases, tous les éléments ci-dessus doivent être montrés pour chaque phase, y compris les séparations coupe-feu temporaires	-indiquer sur les plans les voies de sortie et les distances de parcours (achèvement à 100 %)
			-pour les projets à plusieurs phases, tous les éléments ci-dessus doivent être montrés pour chaque phase, y compris les séparations coupe-feu temporaires (achèvement à 100%)
	903 - Assemblages		- la description et représentation graphique de divers assemblages proposés pour les cloisons intérieures, les planchers, les plafonds et les assemblages résistant à la propagation des flammes pour les membrures d'acier (achèvement à 100 %)
			-tous les assemblages doivent indiquer l'indice de transmission des sons, le degré de résistance au feu et les références de conception approuvées pour confirmer la conformité (achèvement à 100 %)
	913 - Démolition	-les éléments à démolir, les éléments existants à conserver et les éléments existants à réutiliser doivent être clairement indiqués graphiquement	-fournir les éléments à enlever, avec une légende coordonnée et les notes concernant la démolition (achèvement à 100 %)

	Groupement/ Série/ No de plans	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 930- Plans d'étage	-indiquer les plans repères s'il y a lieu et une flèche indiquant le nord	-indiquer les plans repères s'il y a lieu et une flèche indiquant le nord
		-fournir les références aux plans à grande échelle et coupes	-fournir les références aux plans à grande échelle, coupes, élévations intérieures et détails en plan et en coupe
		-indiquer les lignes d'axe de structure dimensionnées, l'aménagement des étages avec les noms de salles, les cloisons intérieures, les portes intérieures, les systèmes de transport vertical, les baies de chargement, l'aménagement des salles de toilette, les locaux de service et les gaines	-les lignes d'axes et les dimensions des baies coordonnées avec les plans structuraux (achèvement à 100 %)
			-fournir les emplacements et types de cloisons intérieures et d'ouvertures coordonnées avec les génies (structural, mécanique et électrique) et les autres plans d'architecture (achèvement à 100 %)
			-fournir une désignation de l'espace intérieur (habituellement selon le nom et le numéro de salle) (achèvement à 100 %)
			-Fournir les désignations des portes/ contrevents/ écrans coordonnées avec les nomenclatures des portes/fenêtres/quincailerie
			-Achèvement à 100 % des dimensions des dégagements pour l'accès sans obstacles et rayons de braquage indiqués
			-Achèvement à 100 % des accessoires de salle de toilette/cuisine et menuiseries indiquées
			-Achèvement à 100 % des élévations géodésiques indiquées pour tous les changements de niveau
			-indiquer les drains et pentes de sol
			-indiquer l'emplacement des gicleurs de fenêtre et les rideaux coupe-feu avec des références aux détails s'il y a lieu
			-indiquer les escaliers et les rampes (achèvement à 100 %)
			-fournir toutes les notes nécessaires coordonnées avec les plans

	Groupement/ Série/ No de plans	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 930 - Plans de plafond réfléché		-fournir une légende coordonnée indiquant, mais sans s'y limiter : les types de fini de plafond, les luminaires, l'équipement mécanique/électrique, tout autre accessoire/équipement monté au plafond (achèvement à 100%)
			-indiquer les divers matériaux/conceptions pour le plafond et la hauteur (achèvement à 100 %)
			-indiquer les retombées de plafonds avec les niveaux et des dimensions
			-indiquer la hauteur des murs
			-indiquer les éléments mécaniques et électriques, y compris les panneaux d'accès, coordonnés avec leurs plans respectifs
			-indiquer, avec les dimensions, l'emplacement des éléments mécaniques et électriques situées dans un système autre que des panneaux d'un plafond suspendu
			-fournir des renvois aux coupes et aux détails
	Série 930 - Élévations intérieures		-fournir les lignes d'axe, les noms/numéros et les dimensions des salles (achèvement à 100 %)
			-indiquer toutes les hauteurs de montage pour l'accès sans obstacles (achèvement à 100 %)
			-fournir les notes et la légende
			-indiquer clairement les menuiseries, les caractéristiques architecturales (p. ex. les retombées de plafonds, passe-plats, écrans, portes intérieures, disposition du carrelage mural etc.)
			-fournir les élévations des murs avec les appareils sanitaires et accessoires indiqués et dimensionnés

	Groupement/ Série/ No de plans	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 930 - Coupes de bâtiment	-fournir deux coupes essentielles (minimum) du bâtiment indiquant la hauteur entre les étages, les hauteurs libres, les niveaux des planchers surélevés, les niveaux du terrain (sol fini) et toute autre information essentielle	-indiquer les lignes d'axe et les élévations géodésiques du sol et des étages (achèvement à 100%)
			-fournir le nom et le numéro de salle d'où provient la coupe
			-indiquer les obstacles de l'équipement mécanique et structural
			-indiquer les hauteurs de plafond suspendu et les dégagements (achèvement à 100 %)
			-indiquer clairement les murs intérieurs et les références aux coupes des murs
	Série 930 -Plans à grande échelle		-toutes les salles doivent être complètement dimensionnées, avec accessoires et menuiseries indiqués (achèvement à 100 %)
			-toutes les châsses à tuyaux doivent être indiquées et coordonnées avec les plans mécaniques (achèvement à 100%)
			-tout les équipements et les accessoires des salles de toilette doivent être indiqués et désignés (achèvement à 100 %)
			-fournir les références aux élévations intérieures
	Série 930 - Plans et coupes (détails)		-fournir les détails typiques en plan et coupe: les cloisons résistant à la propagation des flammes, les intersections de cloisons intérieurs, etc - complete avec les notes et les dimensions (achèvement à 100%)
			-Fournir les détails d'état spéciaux au besoin pour assurer le bon comportement du bâtiment et une description claire pour l'entrepreneur
			-fournir une représentation graphique détaillée et une description de tous les composants, y compris les coupe-feu, les produits d'étanchéité, etc

	Groupement/ Série/ No de plans	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 930 - Escaliers et rampes		<p>-les plans d'escalier : toutes les volées et paliers doivent être avec dimensions et doivent indiquer les marches/girons, échappées, espaces d'ouverture des portes et les détails de la conception des marches (achèvement à 100 %)</p> <p>-fournir les plans de conception des garde-corps et des mains courantes avec dimensions et notes (achèvement à 100 %)</p>
	Série 930 - Plan d'ameublement/ d'équipement, dessins de menuiserie et signalisation	-fournir un plan préliminaire de l'équipement/des accessoires, avec légende et notes	<p>-fournir un aménagement complètement coordonné de l'ameublement, du mobilier systématisé et de l'équipement pour s'assurer que les dimensions sont indiquées pour préciser les dégagements (achèvement à 100 %)</p> <p>-fournir une légende pour indiquer l'ameublement et l'équipement pour s'assurer que les éléments qui font partie du contrat et ceux qui n'en font pas partie sont clairement indiqués (achèvement à 100 %)</p>
			<p>-fournir les détails de construction de toutes les menuiseries et des composants personnalisés, avec les références aux élévations intérieures et aux détails des coupes, s'il y a lieu</p> <p>-fournir les détails et les plans de signalisation dimensionnés et annotés</p>
	Série 930 - Tableaux : portes,écrans, quincaillerie, finitions, etc		<p>-fournir les tableaux des portes et bâtis, des écrans intérieurs, de la quincaillerie et des finis des pièces</p>

Annexe J: Aide-mémoire mécanique pour les calculs, devis et plans

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
CALCULS	CVCA	-charges du bâtiment (préliminaires)	-charges du bâtiment (détaillées)
		-taux de renouvellement d'air par local, en fonction de la norme ASHRAE 62.1-2001 ou autre norme/code applicable plus rigoureux	-fournir le taux de renouvellement d'air par local à jour, en fonction de la norme ASHRAE 62.1-2001 ou autre norme/code applicable plus rigoureux
		-feuilles de données sur des espaces comprenant les exigences de conception à jour pour le degré d'humidité/de température et les niveaux de bruit	-fournir des feuilles de données à jour sur des espaces
	Plomberie	-nombre d'accessoires coordonné avec architecture	-fournir le nombre à jour d'accessoires coordonné avec architecture
	Déchets sanitaires	-dimensions de la tuyauterie	-fournir les dimensions à jour de la tuyauterie
DEVIS	Division 01 - Exigences générales	-décrire les devis pour les exigences générales (coordonnés) et pour tous les éléments majeurs	
	Division 21 - Lutte contre les incendies		-la partie 2 de chaque section doit être modifiée, précisant l'équipement réel spécifié pour ce projet, pour s'assurer que tous les références à l'équipement sont coordonnés entre le devis et les plans. S'assurer que les références aux codes concordent avec l'emplacement du projet
	Division 22 - Plomberie		
	Division 23 - CVCA		
	Division 25 - Automatisation intégrée		-il faut soumettre des séquences d'opération claires et bien élaborées.

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	000 - Page couverture/ Liste des plans		-fournir une liste (coordonnée) de plans achevés à 100 %
	904 - Données réglementaire/ plan clé/ légendes		-toutes les légendes terminées à 100 %
	914 - Démolition	-indiquer clairement les conduites, canalisations et l'équipement existants réutilisés et démolis	-fournir un plan de démolition à jour comprenant également la démolition proposée des gicleurs, conduites, canalisations et équipement
	Série 940 - Protection incendie: Plans, coupes et détails	-disposition préliminaire des gicleurs	-disposition de tous les tuyaux du système de protection de l'eau et montrer la position des têtes de gicleurs
		-indiquer les locaux où se trouve l'équipement pour les systèmes de sécurité-incendie passifs et actifs	-indiquer l'approvisionnement en eau, les systèmes d'extinction avec ou sans eau
			-désigner les zones de danger, avec les paramètres conceptuels pour chaque zone de danger
			-indiquer l'emplacement des composants du système principal de lutte contre les incendies
	Série 940 - Plomberie: Plans, coupes et détails	-emplacement et parcours approximatif des principaux tronçons de tuyauterie	-indiquer les accessoires de plomberie, diamètres des tuyaux d'équipement, robinets d'isolement
		-emplacement des accessoires et d'équipement de plomberie proposés	
			-toutes les conduites principales sont dimensionnées et les accessoires sont montrés, avec les dimensions des conduites principales
	Série 940 - Chauffage et refroidissement (hydraulique)	-dessin schématique montrant les principaux composants	-indiquer les diamètres des tuyaux
			-toutes les pièces d'équipement étiquetées et dessinées

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 940 - CVCA	-emplacements et parcours approximatifs des principaux tronçons des conduits d'air	-indiquer les dimensions des conduites principales, y compris les débits de liquide et d'air pour les conduites, pour tous les tuyaux et conduits de CVCA
		-aménagement définitif (achevé à 100 %) des locaux mécaniques, avec l'emplacement et les dimensions des principaux systèmes avec des moyens d'accès adéquats pour l'entretien	-toutes les pièces d'équipement étiquetées et dessinées selon les dimensions pour éviter toute interférence
		-fournir le plan de toiture indiquant tout le matériel démonté sur le toit, avec des moyens d'accès adéquats pour l'entretien	
		-les principaux composants sont montrés de façon schématique	-indiquer les éléments terminaux, les vannes, les registres d'équilibrage et l'emplacement des capteurs de contrôle
			-la majorité des volets coupe-feu montrés à l'endroit où les conduits pénètrent dans les séparations coupe-feu
	Série 940 - Automatisation intégrée : plans, coupes et détails		-montrer un schéma du système de contrôle automatique de bâtiment (p. ex. l'ordinateur, les contrôleurs, etc.)
	Série 940 - Détails (plan et coupe)		-donner des détails sur les locaux de mécanique et de l'équipement
			-fournir les coupes des locaux de mécanique et des zones fortement congestionnées
			-indiquer les exigences relatives aux services et à l'accès à l'équipement

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 940 - Schémas et tableaux	-diagramme des colonnes montantes pour les gicleurs et les conduites	-schéma unifilaire pour le système de lutte contre les incendies
		-le tableau du système de lutte contre les incendies comprend l'emplacement des colonnes montantes, la catégorie de risque des zones, le type de système, l'alimentation en eau, la catégorie de température des têtes de gicleurs	-le tableau du système de lutte contre les incendies comprend l'emplacement des colonnes montantes, la catégorie de risque des zones, le type de système, l'alimentation en eau, la catégorie de température des têtes de gicleurs
			-fournir les tableaux d'équipements (refroidisseurs, chaudières, pompes, contrôles de traitement de l'air, ventilateurs, éléments terminaux, tours de refroidissement, appareils aérauliques terminaux, appareils de plomberie

Annexe J: Aide-mémoire électricité pour les calculs, devis et plans

	Groupement/ Série/ No de plan	Étape de soumission		
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)	Définitive
CALCULS	Niveaux/ charge d'éclairage	-exigences relatives à l'éclairage établies conformément aux lignes directrices IESNA pour toutes les aires types; identifier la possibilité de captation de la lumière naturelle	-niveaux d'éclairage vérifiés et nombre de luminaires déterminé (coordonné avec les fiches techniques sur les salles)	-tabuler tous les niveaux d'éclairage avec les values max / min / moyen, charge d'éclairage en W/m2 déterminée et vérifiée selon les exigences CNEB ou ASHRAE, s'il y a lieu
	Puissance appelée		-principales charges décelées	-Tous les facteurs de charge et de demande sont pris en compte; les calculs définitifs de la charge doivent être indiqués sur les plans
	Alimentation de secours		-exigence relative à l'alimentation de secours préliminaire	-l'alimentation de secours a la capacité de supporter les charges de moteur, les pointes de demande, etc
	Chute de tension		-chute de tension calculée pour les artères et le branchement principaux	-on a vérifié la chute de tension pour tous les circuits de dérivation et artères
	Budget énergétique	-puissance en W/m2 habituelle par type de bâtiment	-charges d'éclairage et mécaniques préliminaires	-tous les facteurs de demande et de diversité doivent être pris en compte
	Court-circuit		-court-circuit type par capacité de transformateur	-calculé et coordonné du transformateur principal (primaire) jusqu'à tous les panneaux et au matériel de distribution

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
DEVIS	Division 01 - Exigences générales	-Décrire les devis pour les exigences générales (coordonnés) et pour tous les éléments majeurs	-Achèvement à 60 % de toutes les sections du devis -La section 26 doit comprendre une exigence relative au certificat d'achèvement des autorités compétentes, une coordination et une études des arcs électriques, ainsi que les exigences applicables concernant l'étiquetage de l'équipement
	Division 26 - Électricité		
	Division 27 - Communications		
	Division 28 - Sécurité et protection électroniques		
PLANS	000 - Page couverture/ Liste de plans		-achèvement à 100 % : liste des plans (coordonnée)
	905 - Données réglementaires/ plan clé/ légendes	-achèvement à 60 % : légendes et le plan clé	-fournir les légendes coordonnées et le plan clé
	915 - Démolition	-indiquer les éléments à démolir, les éléments existants à conserver et les éléments existants à réutiliser, qui doivent être clairement indiqués graphiquement et notés pour les conduits, les transformateurs, les panneaux, les luminaires, etc.	-indiquer les éléments à démolir, les éléments existants à conserver et les éléments existants à réutiliser et fournir une légende coordonnée des notes de démolition (achèvement à 100 %).

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 950 -Électricité : Plans, coupes et détails	-schéma unifilaire proposé et emplacement des armoires et locaux électriques	-schéma unifilaire à jour avec circuits auxiliaires principaux, panneaux et transformateurs dimensionnés
			-indiquer l'emplacement des commutateurs, des panneaux et des transformateurs
			-achèvement à 100 % : emplacement des panneaux de circuits de dérivation
			-achèvement à 60 % : systèmes de mise à la terre pour l'alimentation électrique et les télécommunications, systèmes de mise à la terre spéciaux, comme les systèmes de protection de l'éclairage, etc.
	Série 950 - Éclairage: Plans, coupes et détails	- plan de plafond réfléchi préliminaire/disposition des luminaires selon les feuilles de données des salles, fournir au moins une description des sources d'éclairage et de la régulation, avec feuilles d'information pour illustrer les exigences relatives aux produits	-achèvement à 60 % : plan de plafond réfléchi / disposition des appareils d'éclairage selon les niveaux d'éclairement de calcul
			-fournir le tableau des luminaires achevée à 100 %
			-achèvement à 100 % : emplacement des points de commande de l'éclairage
			-achèvement à 60 % : emplacement de tous les appareils d'éclairage de sécurité et des panneaux SORTIE
	Série 950 - Alimentation - Plans, coupes et détails		-achèvement à 60 % : emplacement de toutes les charges des prises, des charges branchées directement et des charges de moteur, avec les commandes s'y rapportant
	Série 950 - Alarme incendie - Plans, coupe et détails		-achèvement à 100%: emplacement de tous les dispositifs des systèmes d'alarme-incendie sur les plans
			-fournir un schéma des colonnes montantes du système d'alarme-incendie

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 950 - Plans (à grande échelle), coupes et détails	-indiquer la disposition des équipements dans les locaux électriques, montrer l'emplacement et les dimensions approximatives du matériel principal, des panneaux, des groupes électrogènes et des commutateurs	-achèvement à 60 % : disposition et élévations des locaux électriques, détails d'installation pour le matériel intérieur et extérieur avec espace pour l'entretien et l'enlèvement
	Série 950 - Colonnes montantes, schémas et tableaux		-fournir des schémas coordonnés des colonnes montantes/illustrations schématiques pour les contrôles de l'alimentation et de l'éclairage si nécessaire
			-fournir les tableaux préliminaires des panneaux et les tableaux de l'équipement mécanique/centre de commande des moteurs (p. ex. moteurs, éléments chauffants)
			-fournir des schémas de la régulation de l'éclairage, avec zones d'éclairage indiquées
	907 - Communications : Légendes/Notes	-achèvement à 60 % des légendes et des notes	-fournir des légendes coordonnées et des notes générales
	917 - Communications : Démolition	-indiquer les télécommunications à déplacer et(ou) à enlever, avec notes	-indiquer les télécommunications à déplacer et(ou) à enlever, avec notes et détails, s'il y a lieu
	Série 970 - Communications : Plans, coupes et détails	-principal parcours proposé pour les systèmes de télécommunications et les locaux où se trouve le matériel de télécommunications	-fournir les calculs de conception (types de câbles, longueurs, perte de signal, etc.)
			-fournir la disposition des chemins de câbles et télécommunications
	Série 970 - Communications : Plans, coupes et détails des chemins de câbles		-achèvement à 60 % : dispositions et élévations de salles des télécommunications
			-fournir la disposition des chemins de câbles, avec les rayons, intersections, etc.

	Groupement/ Série/ No de plan	Étape de soumission	
		Élaboration de la conception	Soumission provisoire (achèvement à 85 % sauf indication contraire)
PLANS	Série 970 - Plans, coupes et détails à grande échelle	-fournir un plan d'aménagement des salles d'électricité indiquant l'emplacement et la grosseur approximative des principales pièces d'équipement	-achèvement à 60 % : fournir l'emplacement du matériel, des panneaux, des supports horizontaux et verticaux et des locaux d'entretien et de déchets
	Série 970 - Communications : schémas de colonnes, schémas et tableaux		-fournir un schéma uniligne des systèmes de télécommunications et de données
			-fournir un schéma uniligne pour mise à la terre
	908 - Sécurité : Légendes/Notes	-achèvement à 60 % des légendes et des notes	-fournir des légendes coordonnées et des notes générales
			-fournir un sommaire des données de zonage (peut être illustré graphiquement)
	918 - Sécurité : Démolition	-indiquer les systèmes de sécurité existants à enlever et(ou) à déplacer, avec notes	-indiquer les systèmes de sécurité existants à enlever et(ou) à déplacer, avec notes
	Série 980 - Sécurité: Plans, coupes et détails	-emplacements proposés à l'intérieur pour la régulation de l'accès, la télévision en circuit fermé et les panneaux pour le système de sécurité	-fournir un plan d'étage indiquant la régulation de l'accès et les panneaux locaux pour le système de sécurité, avec les références aux détails et aux tableaux de l'équipement
			-fournir un plan de plafond réfléchi qui montre les capteurs, les écrans de télévision en circuit fermé, etc., y compris une indication claire des zones, du fonctionnement, etc., avec les références aux tableaux de matériel et détails
	Série 980 - Sécurité : Schémas de colonnes, schémas et tableaux		-fournir des schémas des colonnes montantes pour la régulation de l'accès, la télévision en circuit fermé et des systèmes d'alarme anti-intrusion



Appendix K: Waste Management

Waste management strategy shall conform to the DND Construction, Renovation, and Demolition (CRD) Non-hazardous Solid Waste Management Protocol, latest edition for projects exceeding 2000m².

Waste management strategy shall include:

- Hazardous waste disposal strategy and recommendations
- Non-hazardous waste strategy and recommendations
- Coordination with specifications and drawings across all disciplines

Annexe K : Gestion des déchets

La stratégie de gestion des déchets doit être conforme aux exigences de la plus récente version du Protocole national de gestion des déchets solides non dangereux des travaux de construction, de rénovation et de démolition (CRD) du MDN pour les projets excédant 2 000 m².

La stratégie de gestion des déchets doit comporter ce qui suit :

- Stratégie d'élimination des déchets dangereux et recommandations
- Stratégie d'élimination des déchets non dangereux et recommandations
- Coordination avec les devis et dessins pour tous les secteurs d'activité



Appendix L: Sustainability

Sustainable development shall conform to the latest iteration of *Planning for a Sustainable Future: A Federal Sustainable Development Strategy for Canada* and the *National Energy Code of Canada for Buildings*.¹

SUSTAINABILITY ANALYSIS	
LEED score sheet	Sustainable design opportunities, strategies, updated preliminary budgets (i.e., energy, water, waste)
	Which LEED water efficiency credits, energy credits, material credits, indoor environmental quality credits will be pursued. For those credits identified, provide a short description of how they will be achieved.
	EE4 or other LEED accepted energy simulation of the proposed design options, including estimated annual energy cost as predicted by EE4 using current energy cost for Ottawa
	Outlined specifications (including sustainable procurement strategies)
GreenGlobes score sheet	Project management policies and practices including integrated design process, integration of environmental purchasing and commissioning plan documentation
	Site including analysis of development area, development of strategies to minimize ecological impact, integration and enhancement of watershed features and strategies to enhance site ecology
	Energy including modeling and simulation of building energy performance; establishing and energy target, energy demand minimization strategies, integration of energy-efficient systems, integration of renewable energy sources, and planning energy-efficient transportation
	Water including meeting a proper water performance target and water conservation strategies
	Resources, building materials and solid waste including integration of systems and materials with low environmental impact, strategies to minimize the use of non-renewable resources, design strategies for building durability, adaptability and disassembly, strategies to reuse and recycle demolition waste and facilities for recycling and composting
	Emissions, effluents and other impacts including strategies to minimize air emissions, avoid ozone-depleting refrigerants, control surface run-off and prevent sewer contamination and reduce pollution
	Indoor environment including strategies for effective ventilation, source control of indoor pollutants, to optimize lighting, for thermal comfort, and for acoustic comfort

References

Canada. *Planning for a Sustainable Future: A Federal Sustainable Development Strategy* [online]. Environment Canada, Sustainable Development Office, October 2010. <<http://www.ec.gc.ca/dd-sd/default.asp?lang=En&n=F93CD795-1>>.

Canada. *The Environmentally Responsible Construction and Renovation Handbook, 2nd Edition* [online]. Public Works and Government Services Canada, March 2000. <<http://www.tpsgc-pwgsc.gc.ca/biens-property/gd-env-cnstrctn/index-eng.html>>.

Canada. *The Environmentally Responsible Green Office at a Glance* [online]. Public Works and Government Services Canada, March 2000. <<http://www.tpsgc-pwgsc.gc.ca/biens-property/env/page-1-eng.html>>.

Canada. "Indoor Air Quality: Tips for Improving the air quality in your office." [online]. Public Works and Government Services Canada, April 2005. <<http://www.tpsgc-pwgsc.gc.ca/biens-property/documents/pubs-qaiaq45-eng.pdf>>.

Canada. *An Architect's Guide for Sustainable Design of Office Buildings*. [online]. Public Works and Government Services Canada, September 1999. <<http://www.tpsgc-pwgsc.gc.ca/biens-property/archtct/index-eng.html>>.

¹ Sustainable Development is defined in broad terms as a strategy that routinely and consistently includes the consideration of the environmental, economic and societal impact of every decision made for the project.

Annexe L : Durabilité

Le développement durable doit respecter la plus récente version du document *Planifier un avenir durable - Stratégie fédérale de développement durable pour le Canada* et le *Code modèle national de l'énergie pour les bâtiments* – Canada.¹

ANALYSE DE LA DURABILITÉ	
La feuille d'évaluation du programme LEED	Les possibilités en matière de conception durable, stratégies, budgets préliminaires à jour (p. ex. énergie, eau, déchets)
	Les crédits de certification LEED que les concepteurs devront chercher à obtenir : gestion efficace de l'eau, de l'énergie et des matériaux, et qualité de l'environnement intérieur. Fournir un bref exposé de la démarche proposée pour obtenir ces crédits
	Une simulation de la consommation énergétique par le logiciel EE4 pour les options de conception envisagées, y compris le calcul estimatif des coûts annuels d'énergie selon le logiciel EE4 ou tout autre logiciel accepté par LEED en fonction des coûts énergétiques actuels dans la région d'Ottawa
	Un devis préliminaire (y compris les stratégies d'approvisionnement durable)
La feuille d'évaluation Green Globes	Politiques et pratiques de gestion de projet : processus de conception intégré, intégration de la politique sur les achats écologiques et du plan de mise en service
	Emplacement : analyse du secteur d'aménagement, élaboration de stratégies de réduction des répercussions écologiques, intégration et amélioration des caractéristiques du bassin hydrographique et stratégies visant à améliorer l'écologie de l'emplacement
	Énergie : modélisation et simulation du rendement énergétique du bâtiment; établissement d'un objectif énergétique, élaboration de stratégies de réduction de la demande énergétique, intégration de systèmes écoénergétiques et de sources d'énergie renouvelables, et planification écoénergétique du transport
	Eau : respecter une cible de consommation d'eau raisonnable et mettre en œuvre des stratégies de conservation de l'eau
	Ressources, matériaux de construction et déchets solides : intégration de systèmes et de matériaux ayant une faible incidence environnementale, de stratégies de réduction de l'utilisation des ressources non renouvelables, de stratégies de conception visant à augmenter la durabilité, l'adaptabilité et la facilité de démantèlement du bâtiment, de stratégies de réutilisation et de recyclage des déchets de démolition et d'installations pour le recyclage et le compostage
	Émissions, effluents et autres sources de pollution : stratégies de réduction des émissions atmosphériques, stratégies visant à éviter l'utilisation de frigorigènes appauvrissant la couche d'ozone, stratégies de contrôle du ruissellement de surface et de prévention de la contamination des égouts, et stratégies de réduction de la pollution
	Milieu intérieur : stratégies de ventilation efficace, de contrôle à la source des polluants intérieurs, d'optimisation de l'éclairage, de confort thermique et de confort acoustique

Références

Planifier un avenir durable - Stratégie fédérale de développement durable pour le Canada [en ligne]. Environnement Canada, Bureau du développement durable, octobre 2010. [<http://www.ec.gc.ca/dd-sd/default.asp?lang=Fr&n=F93CD795-1>]

Guide pour une construction et une rénovation respectueuses de l'environnement, 2e édition [en ligne]. Travaux publics et Services gouvernementaux Canada, mars 2000. [<http://www.tpsgc-pwgsc.gc.ca/biens-property/gd-env-cnstrctn/index-fra.html>]

La planification d'un édifice à bureaux écologique respectueuse de l'environnement [en ligne]. Travaux publics et Services gouvernementaux Canada, mars 2000. [<http://www.tpsgc-pwgsc.gc.ca/biens-property/env/page-1-fra.html>]

Qualité de l'air intérieur – Conseils pour améliorer la qualité de l'air dans votre bureau [en ligne]. Travaux publics et services gouvernementaux Canada, avril 2005. [<http://www.tpsgc-pwgsc.gc.ca/biens-property/documents/pubs-qaiaq45-fra.pdf>]

Guide de l'architecte pour la conception d'immeubles de bureaux en fonction du développement durable [en ligne]. Travaux publics et Services gouvernementaux Canada, septembre 1999. [<http://www.tpsgc-pwgsc.gc.ca/biens-property/archtct/index-fra.html>]

Appendix M: Costing

Planning and control documents may use 279 x 472 fold-out pages; or drawing sizes indicated in the *DND CAD/BIM Standard*.

Cost Control Plan

Pre-Tender Substantive (Class 'A') Estimate	<ul style="list-style-type: none">• Shall be in trade divisional format, latest edition issued by the Canadian Institute of Quantity Surveyors• Shall be based on complete construction drawings and specifications prepared prior to calling competitive tenders• Shall include a summary, full back up, items of work, quantities, unit prices and amounts• Shall be sufficient to allow a detailed reconciliation/negotiation with any contractor's proffered tender
Substantive (Class 'B') Estimate	<ul style="list-style-type: none">• Shall be in elemental cost analysis format, latest edition issued by the Canadian Institute of Quantity Surveyors• Shall be based on design development drawings and outline specifications, which include the designs of all major systems and subsystems, as well as the results of all site/installation investigations• Shall provide for the establishment of realistic cost objectives• Shall include a summary, full back up, items of work, quantities, unit prices and amounts• Shall be sufficient to obtain effective project approval (EPA)
Indicative (Class 'C') Estimate	<ul style="list-style-type: none">• Shall be in elemental cost analysis format latest edition issued by the Canadian Institute of Quantity Surveyors• Shall be based on a full description of the preferred concept design option, construction/design experience, and market conditions• Shall provide for the establishment of realistic investment objectives• Shall include a summary, full back up, items of work, quantities, unit prices and amounts• Shall be sufficient for making the correct investment decision and obtaining preliminary project approval (PPA)
Indicative (Class 'D') Estimate	<ul style="list-style-type: none">• Shall be in elemental cost analysis format, latest edition issued by the Canadian Institute of Quantity Surveyors with cost per m² for current industry statistical data for the appropriate building type and location• Shall be based on a statement of requirements, and an outline of potential solutions• Shall provide an indication (rough order of magnitude) of the final project cost• Shall be sufficient for allowing a comparison and ranking of options being considered and to develop an investment analysis report (IAR)

Annexe M : Établissement des coûts

Les documents de planification et de contrôle peuvent comporter des encarts dépliant de 279 mm x 472 mm ou des plans respectant le format prévu par la *Norme de CAO/BIM du MDN*.

Estimation fondée pré-appel d'offres (catégorie A)	<ul style="list-style-type: none">• Doit être établie selon le formulaire ventilé des corps de métiers, édition la plus récente publiée par l'Institut canadien des économistes en construction• Doit être fondée sur un jeu complet de dessins et de devis de construction préparés avant le lancement des appels d'offres• Doit comprendre un sommaire, un jeu complet de documents justificatifs, l'énumération des travaux, les quantités, les prix unitaires et les montants• Doit être suffisante pour permettre de contrôler la concordance et de négocier dans les détails avec tous les entrepreneurs qui déposent des propositions
Estimation fondée (catégorie B)	<ul style="list-style-type: none">• Doit être établie selon le formulaire d'analyse des coûts par éléments de construction, édition la plus récente publiée par l'Institut canadien des économistes en construction• Doit être fondée sur les dessins d'élaboration de la conception et les devis préliminaires, qui tiennent compte de tous les grands systèmes et sous-systèmes, ainsi que des résultats de toutes les analyses sur l'emplacement et dans les installations• Doit permettre de fixer des objectifs financiers réalistes• Doit comprendre un sommaire, un jeu complet de documents justificatifs, l'énumération des travaux, les quantités, les prix unitaires et les montants• Doit être suffisante pour obtenir l'approbation définitive du projet (ADP)
Estimation indicative (catégorie C)	<ul style="list-style-type: none">• Doit être établie selon le formulaire d'analyse des coûts par éléments de construction, édition la plus récente publiée par l'Institut canadien des économistes en construction• Doit être fondée sur une description complète de l'option privilégiée de l'étude conceptuelle, des résultats techniques de la construction et de la conception et de la conjoncture du marché• Doit être suffisante pour permettre d'établir des objectifs d'investissement judicieux• Doit comprendre un sommaire, un jeu complet de documents justificatifs, l'énumération des travaux, les quantités, les prix unitaires et les montants• Doit être suffisante pour permettre de prendre des décisions d'investissement judicieuses et d'obtenir l'approbation préliminaire du projet (APP)
Estimation indicative (catégorie D)	<ul style="list-style-type: none">• Doit être conforme à la plus récente version du format d'analyse des coûts par élément émis par l'Institut canadien des économistes en construction, y compris le coût par mètre carré selon les données statistiques courantes de l'industrie pour le type et l'emplacement appropriés du bâtiment• Doit être fondée sur un énoncé des exigences et un sommaire des solutions envisageables• Doit donner une idée (ordre de grandeur approximatif) du coût final du projet• Doit être suffisante pour permettre de comparer et de classer les options envisagées et pour élaborer un rapport d'analyse des investissements (RAI)

Life-cycle Costing Analysis

Life-cycle costing (LCC) methodology shall follow the methods and procedures of ASTM E917-05 (R2010) Standard Practice for Measuring Life-Cycle Costs of Buildings and Building Systems with the following exceptions particular to Federal projects:

- Life-cycle costing shall be based on a 40-year study period, unless otherwise indicated in the Project Brief.
- Discount and escalation rates used in LCC shall be those provided by DND.
- LCC analysis calculates the present value cost of accommodation (PVCOA) in place of the usual present value.

Procedure and approach:

- LCC shall be integrated into the design process.
- As building design evolves, LCC shall follow the same approach, paralleling the focus to the current level of detail study. It is important for the effective development of the project that commitments are made and retained on the building systems during the concept design phase.
- Building systems shall be analyzed for appropriateness during the first stages of the design development phase. A commitment on direction for the systems will be made at this time and any further LCC studies will be focused on detail within each system.

Practices: The following practices are required when conducting LCC analyses for building design. They are listed here to address common concerns and frequently asked questions:

- When defining alternatives for life-cycle costing, an acceptable level of overall building services shall be assured throughout the analysis period.
- Design alternatives shall be compared against a baseline reference alternate that is the lowest first cost of the alternatives being considered. The baseline alternate offers a viable system, employing state-of-the-art design features in compliance with all project

La méthodologie du calcul des coûts du cycle de vie (CCCV) doit respecter les méthodes et les procédures de la norme E917-05 (R2010) de l'ASTM (Standard Practice for Measuring Life-Cycle Costs of Buildings and Building Systems), sous réserve des exceptions suivantes, surtout en ce qui concerne les projets fédéraux:

- Les coûts du cycle de vie doivent être fondés sur une période d'étude de 40 ans, sauf indication contraire dans l'énoncé de projet.
- Les taux d'actualisation et d'indexation utilisés dans l'application de cette méthodologie doivent être fournis par le MDN.
- L'analyse du CCCV calcule la valeur actualisée du coût des locaux (VACL), plutôt que la valeur actualisée habituelle.

Procédure et méthode

- Les coûts du cycle de vie doivent être intégrés au processus de conception.
- Au fur et à mesure de l'évolution d'un bâtiment, les coûts du cycle de vie doivent respecter la même méthode, en reprenant l'orientation du niveau actuel de l'étude détaillée. Il est important, pour élaborer efficacement la conception du projet, de respecter les engagements en ce qui concerne les systèmes du bâtiment pendant la phase de l'étude conceptuelle.
- On doit analyser l'à-propos des systèmes du bâtiment au cours des premières étapes de la phase d'élaboration de la conception. Il faut alors adopter un engagement en ce qui concerne l'orientation en matière de systèmes, et toutes les autres études de CCCV doivent porter essentiellement sur les détails de chaque système.

Pratiques : Les pratiques suivantes doivent être appliquées à l'analyse du CCCV pour la conception des bâtiments. Nous en dressons la liste ci-après pour répondre aux préoccupations communes et aux questions posées fréquemment à ce sujet.

- Dans la définition des solutions de rechange pour le CCCV, on doit assurer, pendant toute la durée de l'analyse, un niveau satisfaisant de services généraux dans le bâtiment.
- On doit comparer les solutions de rechange pour la conception à une norme de base de référence représentant le coût initial le plus avantageux pour les solutions de rechange envisagées. Cette norme de base permet d'aménager un système viable, faisant appel à des

requirements. Where existing conditions form part of the baseline alternate, the analysis not only includes intended project work, but also the additional costs necessary to achieve code compliance and reliable operation over the analysis period.

- The analysis period shall be chosen to fully represent all costs. When optimizing the design of a single system, all compared alternatives shall be considered over the same analysis period. Where possible, the analysis period should be the smallest whole multiple of the service lives for the major systems involved in the analysis. Service lives of HVAC equipment can be found in the ASHRAE applications manual.
- Costs that have already been incurred or should be incurred, regardless of the chosen alternative, may be deemed “sunk” and excluded from the analysis. Include a summary table of “sunk” costs.
- Baseline and alternative first costs are typically those estimated for the construction award date. The life-cycle cost analysis can assume that the award date can be considered the zero point in time for the analysis period, with all other event times referenced to the construction award date. For greater simplicity, the year of design decision can also be considered as the zero point in time, and it can be assumed that the construction award should occur in that year.
- Salvage values for alternatives are typically zero. However, in those cases where scrap values could influence decisions, the present value is calculated as its future value (scrap value) discounted back to the present from the year of occurrence.
- Future one-time costs, such as replacement costs, are established by escalating a present-day value (using the prescribed escalation rate) to its future value in the year it occurs, then discounting that value back to its present value (using the prescribed discount rate).
- For instances where an alternative has a service life beyond the analysis period, allowance is to be made for the associated residual service worth. This calculation involves identifying the future residual value at the end of the analysis period, then discounting the amount

caractéristiques de conception de pointe en plus de respecter toutes les exigences du projet. Si les conditions existantes font partie de cette norme de base, l'analyse doit tenir compte non seulement des travaux visés dans le cadre du projet, mais aussi des frais supplémentaires à engager pour respecter les codes et assurer la fiabilité du fonctionnement pendant la période faisant l'objet de l'analyse.

- On doit choisir la période de l'analyse de façon à tenir fidèlement compte de tous les coûts. Dans l'optimisation de la conception d'un système individuel, on doit étudier toutes les solutions de rechange comparées pendant la même période d'analyse. Dans toute la mesure du possible, cette période devrait correspondre au multiple entier le plus faible de la durée utile des services pour les grands systèmes faisant l'objet de l'analyse. On peut consulter le Manuel des applications de l'ASHRAE pour connaître la durée utile du matériel de chauffage, ventilation et conditionnement d'air (CVCA).
- On pourrait considérer comme irrécupérables et exclure de l'analyse les coûts qui ont déjà été engagés ou qu'il faudrait engager, sans égard à la solution de rechange retenue. Joindre un tableau sommaire des coûts irrécupérables.
- Les coûts initiaux de la norme de base et de la solution de rechange sont généralement ceux qui sont estimés pour la date de l'attribution du contrat de construction. Dans l'analyse des coûts du cycle de vie, on peut supposer que la date de l'attribution du contrat constitue le point de départ ou « point zéro » de la période de l'analyse et établir le calendrier des autres activités par rapport à la date de l'attribution de ce contrat. Pour une simplicité accrue, on peut aussi considérer que l'année de décision portant sur la conception constitue le point de départ, et on peut supposer que le contrat de construction devrait être attribué dans cette année.
- Les valeurs de récupération pour les solutions de rechange s'établissent généralement à zéro. Toutefois, dans les cas où les valeurs de rebut pourraient avoir une incidence sur les décisions, on calcule la valeur actualisée selon la valeur de rebut future, que l'on réactualise à la date du jour, à partir de l'année où se déroule l'activité.
- On établit les coûts ponctuels futurs, p. ex. la valeur à neuf, en indexant la valeur du jour (selon le taux d'indexation prescrit) en fonction de sa valeur future dans l'année où ces coûts sont engagés, puis en réactualisant cette valeur en fonction de la valeur actuelle (selon le taux d'actualisation prescrit).
- Dans les cas où la durée utile d'une solution de rechange dépasse la période de l'analyse, il faut constituer une provision pour la valeur utile résiduelle correspondante. Ce calcul consiste à établir la valeur résiduelle projetée à la fin de la période de l'analyse, puis

back to the present. The future residual value can be approximated by multiplying the future investment value (less future salvage value at the end of its service life) by the proportion of time remaining in the analysis period, compared to its service life.

- Annually recurring fixed costs include those costs where increases have no real growth, such as costs that increase at the general inflation rate.
- Fuel costs represent a special case of recurring escalating costs. Uniform present worth values are available from NIST data, correlating specific fuel types by sector/location for a defined analysis period. For simplicity, demand charges will be assumed to escalate at the same rate as consumption charges.
- Investment and replacement actions over time may affect recurring costs. For simplicity, unless otherwise directed, fluctuating recurring cost savings will be assumed to be proportionate to the savings realized at the start of the analysis period.
- Calculate the savings to investment ratio (SIR) for comparisons of dissimilar alternatives, such as comparing an HVAC alternative to a lighting alternative. Calculate net savings for comparisons of similar alternatives, such as optimizing insulation thickness in a wall.
- A sensitivity analysis is required whenever assumptions may be considered questionable. This simply requires conducting multiple LCC analyses using extremes of cost parameters in question.
- Due to possible margins of error in estimating costs, alternatives with a life-cycle cost differential of less than 10 percent can be judged inconclusive by DND.
- To define energy related cost impacts for alternatives that are influenced by weather and/or varying loads/ schedules, the energy use modeling program DOE2 or other approved software is to be used.

à réactualiser le résultat en fonction de la valeur actuelle. On peut calculer approximativement la valeur résiduelle projetée en multipliant la valeur projetée de l'investissement (moins la valeur de récupération projetée à la fin de la durée utile) par le pourcentage de la durée à couvrir dans la période de l'analyse par rapport à la durée utile.

- Les frais fixes annuels récurrents comprennent les coûts dont l'indexation n'enregistre aucune croissance réelle, p. ex. les coûts qui augmentent selon le taux général d'inflation.
- Les coûts du mazout représentent un cas particulier de frais indexés récurrents. On peut consulter les données du National Institute of Standards and Technology pour connaître les valeurs actualisées uniformes, en établissant la corrélation entre certains types de mazout par secteur ou par emplacement pour une période d'analyse définie. Par souci de simplicité, il faut supposer que les frais de demande augmentent au même rythme que les frais de consommation.
- À la longue, les activités d'investissement et de remplacement peuvent avoir une incidence sur les frais récurrents. Par souci de simplicité et sauf indication contraire, il faut supposer que les variations des économies de frais récurrents sont proportionnelles aux économies réalisées au début de la période de l'analyse.
- Calculer le ratio des économies par rapport aux investissements (REI) pour comparer les solutions de rechange différentes, p. ex. une solution de rechange de CVCA et une solution de rechange d'éclairage. Calculer les économies nettes pour comparer des solutions de rechange analogues, p. ex. l'optimisation de l'épaisseur de l'isolant dans un mur.
- Il faut procéder à une analyse de sensibilité dans tous les cas où on peut considérer que les hypothèses sont douteuses. Il faut simplement procéder à différentes analyses de CCCV en faisant appel aux extrêmes des paramètres de coûts en cause.
- Étant donné les marges d'erreur possibles dans l'estimation des coûts, le MDN pourra juger peu concluantes des solutions de rechange accusant un écart de moins de 10 % par rapport aux coûts du cycle de vie.
- Pour définir les incidences financières liées à l'énergie pour les solutions de rechange déterminées par les conditions météorologiques et/ou des charges et des calendriers variables, on doit faire appel au programme de modernisation de l'utilisation de l'énergie DOE2 ou à un autre logiciel approuvé.

Value Engineering (VE) Study

A value engineering study is a one-time analysis of the design for a particular project. The objective is to reduce the overall life-cycle cost and capital cost of the project while meeting the project objectives and requirements, without compromising stated quality and performance. To achieve this, the study shall be undertaken by a team of Architectural and Engineering specialists who are not involved in the day-to-day management of the project under review.

The value engineering study shall include diagrams, narratives, and sketches with calculations to demonstrate the life-cycle cost effectiveness of all aspects of the project.

Généralités : une EA de la valeur est une analyse ponctuelle de la conception d'un projet donné. Le but est de réduire le coût global du cycle de vie et le coût en capital tout en respectant les objectifs et les exigences du projet, mais sans sacrifier la qualité et la performance existantes. Pour ce faire, l'étude doit être confiée à une équipe d'experts en architecture et en génie qui ne participe pas à la gestion courante du projet à l'étude.

L'EA de la valeur doit comporter des graphiques, des rapports et des schémas appuyés par des calculs établissant la rentabilité de tous les aspects du projet sur toute la durée du cycle de vie.



Appendix N: Schedule Analysis

Planning and control documents may use 279 x 472 fold-out pages; or drawing sizes indicated in the *DND CAD/BIM Standard*.

Time planning and scheduling shall include:

- A work breakdown structure, which includes a list of tasks and subtasks by discipline and anticipated completion dates; deliverables by phase and a schedule in Gantt chart format including milestone dates for the design portion (from consultant contract award to tender) and the construction portion (from construction contract award to completion of construction), including baseline and critical path
- Identification of risks and impacts on procurement strategy

Control shall include progress of tasks and schedule against the baseline and critical path complete with explanatory narratives for deviations.

Earned value analysis shall include:

[Reserved for future development]

Annexe N : Analyse du calendrier

Les documents de planification et de contrôle peuvent comporter des encarts dépliant de 279 mm x 472 mm ou des dessins respectant le format prévu par la *Norme de CAO/BIM du MDN*.

La planification du calendrier et l'ordonnancement des travaux doivent :

- comprendre une structure de répartition des travaux (liste des tâches et des sous-tâches par secteur d'activité, dates d'achèvement prévues), les produits à livrer pour chaque phase du projet et un calendrier sous forme de diagramme de Gantt qui indique les jalons de la conception (de la présentation des soumissions jusqu'à l'adjudication du contrat à l'Expert-conseil) et de la construction (de l'adjudication du contrat de construction jusqu'à l'achèvement des travaux), y compris le calendrier de départ et le chemin critique;
- faire état des risques et des répercussions sur la stratégie d'approvisionnement.

Le document de contrôle de l'avancement doit indiquer la progression des tâches et l'avancement du projet par rapport au calendrier de départ et au chemin critique, avec notes explicatives concernant les écarts constatés.

Analyse de la valeur acquise

[Réservé pour d'éventuelles nouveautés]



Appendix O: Risk Analysis

Risk analysis documents may use 279 x 472 fold-out pages; or drawing sizes indicated in the *DND CAD/BIM Standard*.

A risk management strategy is crucial to integrate project planning into procurement and operational planning. All the stakeholders of the project will serve as an integral part in developing the risk management strategy.

Risk management plan shall:

- Qualify/quantify probability of risk event and its impact on project or related work, that is, low, medium, or high
- Identify project risks associated with development, technical implementation, and management issues that can affect cost, quality, schedule, and safety
- Apply a dollar value to high risk/probability impact events
- Include contingency plans for possible changes to the work, budget, and schedule
- Prioritize risk events, for example concentrate on risk events with high probability and medium to high impact, and identify life-cycle costs
- Develop risk response, for example evaluate alternatives for mitigation of risks involved

Risk management checklist design stage shall identify availability and accuracy of as-built documentation and existing conditions reports. It shall prevent the following:

- Errors and omissions
- Inaccurate estimates
- Construction document data coordination inadequacies
- Misinterpretation/misunderstanding of documents

Annexe O : Analyse des risques

Les documents d'analyse des risques peuvent comporter des encarts dépliants de 279 mm x 472 mm ou des dessins respectant le format prévu par la *Norme de CAO/BIM du MDN*.

Il est essentiel qu'une stratégie de gestion des risques intègre la planification du projet à la planification des achats et des opérations. Tous les intervenants du projet feront partie intégrante de l'élaboration de la stratégie de gestion des risques.

Le plan de gestion des risques doit :

- Qualifier et quantifier la probabilité des événements à risque et leur incidence sur le projet ou sur les travaux connexes, c.-à-d. faible, moyenne, élevée
- Déterminer les risques du projet relatifs à la réalisation des travaux, à la mise en application technique et à la gestion qui peuvent affecter les coûts, la qualité, le calendrier et la sécurité
- Appliquer une valeur en dollars aux événements comportant une incidence élevée et/ou probable de risque
- Comprendre des plans d'intervention en cas de changements éventuels aux travaux, au budget et au calendrier
- Établir la priorité des événements à risque, p. ex. porter une attention particulière aux événements à risque à probabilité élevée et à incidence moyenne à élevée, et établir les coûts du cycle de vie
- Élaborer une réaction au risque, p. ex. évaluer les solutions de rechange afin de réduire les risques

La liste de contrôle de gestion des risques à l'étape de la conception doit indiquer l'accessibilité et la précision des documents d'après exécution et des rapports sur les conditions existantes. Cette liste doit viser à empêcher les problèmes suivants.

- Erreurs et omissions
- Estimations inexactes
- Coordination inadéquate des données dans les documents de construction
- Mauvaise interprétation/compréhension des documents

Risk identification construction stage shall include:

- Suitability of methods to execute the design
- Commissioning issues (start-up/turn over difficulties)
- Contractor construction strategy
- Contractor inexperience
- Resources used being less qualified than required
- Availability/suitability/performance of resource
- Restricted working conditions
- Climate: winter conditions, rain, wind, water levels
- Health and safety issues

La liste des risques à l'étape de la construction doit énumérer les risques liés aux éléments suivants.

- Pertinence des méthodes d'exécution à concevoir
- Problèmes de mise en service (difficultés de démarrage/transfert)
- Stratégie de construction de l'Entrepreneur
- Inexpérience de l'Entrepreneur
- Ressources utilisées moins compétentes que celles exigées
- Disponibilité/adéquation/rendement des ressources
- Conditions de travail restreintes
- Climat (conditions hivernales, pluie, vent, niveau de l'eau)
- Problèmes de santé et de sécurité

APPENDIX 25, ATTACHMENT F
CANADA TECHNICAL REQUIREMENTS
FOR
APPENDIX 25
DESIGN SERVICES

DND TECHNICAL REQUIREMENTS

3

1.	Architectural	3
2.	Structural	3
3.	Mechanical	3
4.	Electrical	5
Table 4-1		8
5.	Civil	8
6.	Telecommunications	9
7.	Fire Safety	9
8.	Energy Analysis	9
9.	O&M Documentation	10

DND TECHNICAL REQUIREMENTS

1. Architectural

- 1.1. Aim. The Contractor shall ensure that the design of the project conforms to the requirements of the National Building Code (NBC), including amendments, and any other applicable codes and authorities having jurisdiction. In case of conflict the most stringent requirement will apply, unless directed otherwise by Canada.
- 1.2. The Contractor shall consult trade publications and other “state of the art” sources to ensure that the design is constructible, technically current and feasible. While it is desirable to be current with respect to technology and products, this project is not to be a test for unproven technology or products.
- 1.3. The Contractor shall coordinate the work of all disciplines, eliminate technical conflicts and shall provide sufficient cross-references in the construction documents, both within and between disciplines, to clearly illustrate the intent of the design.
- 1.4. The Contractor shall submit for all disciplines, a bound summary of final calculations, complete with index. Include computer input/output, design criteria, assumptions and results of research or trade reviews.
- 1.5. Provide seismic restraints for mechanical and electrical installation and other building elements as required by the NBCC. Confirm with: S832-01 “CSA Guideline to Seismic Risk Reduction of Operational and Functional Components (OFCs) of Buildings.”

2. Structural

- 2.1. The foundations will be designed and constructed for the site specific geotechnical conditions. Local conditions are to be pursued because of experiences with significant soil variations over relatively short distances. The Contractor is to formulate conclusions to extent of existing conditions and the adequacy of geotechnical report for the proper design and installation of the foundation. Note that there will be stringent limits on foundation or slab settlements and decline, which are proper to the equipment that will be installed.
- 2.2. The Contractor shall ensure that the structural system proposed is constructible. The Design-Builder shall provide details and sequence of construction for shoring, underpinning, bracing or temporary measures required for safety and integrity of the structure during all stages of construction.
- 2.3. The Contractor shall check and ensure that if construction loads exceed NBCC occupancy loads, additional supports will be used or the design will account for the most critical load combinations.

3. Mechanical

- 3.1. Three feasible mechanical design options shall be analyzed for selection by Canada.
- 3.2. All design should be done according to most recent edition of the National Building Code and the Canadian Labour Code.
- 3.3. No utility lines under buildings.
- 3.4. The Contractor shall specify a centralized building Energy Management Control System (EMCS) compatible with existing systems on the base or wing and connected to report and execute control functions from an independent remotely located workstation.
- 3.5. The controls should indicate the full points list on the drawings and specifications as well as all control sequences and proposed set points.

3.6. Provide meters to ensure that all services (natural gas or propane, electricity, steam and water) are metered and that the readings are communicated /logged to the EMCS and trended for at least one year, after which data shall be exported for record keeping.

3.7. Air handling units, pumps and boilers shall be in enclosed mechanical rooms or penthouses with direct access from outside the building. All mechanical spaces must be designed and shown on the drawings in a suitable scale (no smaller than 1:50) and detailing access locations to ensure that all maintenance and repair functions can be easily and safely performed. Any roof mounted equipment must have provisions for safe access.

3.8. For all systems, drawings shall include fully detailed riser diagrams, flow diagrams and control schematics illustrating all components, sensors and set points.

3.9. Where boilers are required use at least 2, each sized to 70% of peak load. Design for operation without licensed boiler operators.

3.10. Provide floor drains in new mechanical spaces as well as washrooms, recycling rooms and janitor's rooms.

3.11. For hot water heating systems reverse return design is preferred.

3.12. No grooved couplings on domestic water. For copper piping use type L above ground and type K for buried pipes.

3.13. All electronic plumbing fixtures to be hard wired, unless instructed otherwise (photovoltaic powered can be considered).

3.14. All equipment shall be selected and installed with due consideration given to reliability, maintenance and availability of parts and service. Equipment of common manufacture is desirable to permit interchange of parts and reduce cost of maintenance.

3.15. Specify energy star qualified products where applicable but always high efficiency and low water consumption products and systems.

3.16. All equipment should have seismic restraints and vibration isolation to minimize noise and risks to operation.

3.17. Ventilation rates shall conform to latest ASHRAE 62 recommendations but not less than the rates prescribed by ASHRAE 62-89 or the sanitation clauses of the Canada Labour Code regulations, and must be designed for effective ventilation so that flow sweeps the space. Design air ducts systems for ease of balancing. HRV/ERVs should not hinder free cooling.

3.18. Specifications for HVAC equipment must impose compliance with the Federal halocarbon regulations (records, tests and leak reporting) as well as provisions of the Canada Labour Code (health and safety regulations).

3.19. Provide sprinkler system or high pressure water fog type system, required by the authority having jurisdiction (Canadian Forces Fire Marshal).

3.20. The Consultant shall use the same fuel source as the generator as the primary building heat and domestic hot water (DHW) heating source unless they can demonstrate using a full Life Cycle Cost (LCC) analysis that a more cost-effective source can be utilized. The Consultant shall determine the economic

feasibility of supplementing heated DHW and/or building heat with solar energy and/or heat reclamation technology. The consultant shall also provide a LCC analysis for other feasible options like the use of geothermal heat pumps. LCC shall be based on a 40year life expectancy for the facility and shall include all intermediate replacement and O&M costs.

3.21. Design for best affordable energy performance and provide LCC Analysis. When evaluating green building ratings consultant is to seek the maximum achievable points in energy savings. Design economically for the lowest GHG emissions.

4. Electrical

4.1. The primary electrical distribution systems at the radar station is existing. The Contractor shall visit the site and obtain the electrical characteristics, ratings, configuration, and details of the system. Available existing site drawings and power system distribution information will be made available by the Wing Construction Engineering Officer.

4.2. The Contractor shall determine the adequacy of the existing primary system capacity to supply the proposed facility electrical load. Determine the point of connection to the existing system, extend the primary feeder or provide new feeder as required, provide manholes, switchgear, load break junctions, cables, pad mounted transformer and other associated equipment.

4.3. All underground conductors shall be copper.

4.4. The design shall incorporate DND standard specifications for pad mounted transformers, high voltage underground cables, load break junctions, sectionalizing switchgear, concrete encased duct banks and manholes. The design shall also incorporate DND standard drawings for the installation of 4 way load break junction on precast manhole, sectionalizing switchgear on precast manhole, pad mounted transformer on vault type base, concrete encased duct banks and installation of cables in direct buried raceway. These drawings and specifications as applicable to the project will be available from Canada. The capacity of the oil filled transformer shall be no more than 80% of service size.

4.5. Provide a digital, microprocessor-based, 3-phase power meter/monitor. Equipment to be similar to Power Measurement Ltd ION model 7650 (Equivalent from Schneider or Cutler-Hammer), able to withstand surge and transient tests as per ANSI/IEEE C37-90A and equipped with communication port to support both the RS-232C and the RS485 standards. Provide 10 Base T or 10Base FI, Ethernet port. Provide software and license to permit interface with base central metering system. Install one dedicated 25mm spare conduit from meter to EMCS computer location and telephone room/backboard. Confirm specific requirements with Base Construction Engineering to ensure compatibility with base monitoring system.

4.6. Provide parallel type surge protection at the service entrance location. Where critical and sensitive loads are part of the system, provide a multiple layer design approach. Consider the provision of surge suppression at the panel boards feeding critical loads such as computer systems or HVAC control equipment sensitive to surges. Surge suppression systems to be integral to the panel or adjacent to it to minimize lead length. Connect surge suppressor to a dedicated breaker in the panel protected.

4.7. Analyze the anticipated disturbances and the effects of harmonic distortion and design the distribution system accordingly. If a significant number of non-linear loads are installed in the facility, perform a harmonic distortion evaluation during the design phase.

4.8. Electrical equipment such as switchboards, panelboards, motor control centres and meter socket enclosures must be marked to warn persons of potential electric shock and arc flash hazards. This labeling is required for all new & modified installations in accordance with the 2009 Code requirement. In addition, the warning label must also include information regarding "arc flash hazard category (0 to 4)" and the "Flash

Protection Boundary” as defined in NFPA 70E. Projects specifications must include short circuit study and flash hazard analysis. The warning label shall be of a permanent type design (i.e. a lamacoid or self-adhesive label) acceptable to the Electrical Safety Inspection Authority. It shall be mounted in a visible position and depending on the size and design of the equipment; more than one label may be required as determined by the Inspector.

4.9. Electrical system power factor correction equipment, if required, shall be designed to maintain 92 to 95% power factor with building in normal full operation. Select the most appropriate system and determine the type and location of the equipment. Where determined to be not required in the initial design, all motors 20 HP and above shall be connected with local capacitors. Where it is found to be preferable to provide after the building is in operation, make required space provisions.

4.10. Provide panel boards with copper bus bars and bolted on circuit breakers. Specify 3 phase motors .373kW output and above. Use reduced voltage starters for large motors: 7.5kW 208 volt or 22.4kW 600 Volt and above. Use adjustable motor circuit interrupters (MCP's) with combination motor starters. Motor starters shall be grouped in motor control centres with all connections at master terminal board section located at end: EEMAC Class II, Type C.

4.11. Provide EMT raceways for all interior power, lighting and line voltage control conductors. [Except where AC90, non-metallic sheathed cables or non-metallic conduit is specifically permitted]. Use flexible metal conduit for final connections to dry type transformers and motors in dry locations, maximum length 500mm. Use liquid tight flexible metal conduit for connection to motors in damp wet or corrosive locations. Maximum length 500 mm.

4.12. Run 2 - 25 mm spare conduits up to ceiling space from each flush panel. Terminate conduits in 152 x 152 x 102 mm junction boxes in ceiling space. Provide a separate insulated bonding wire in all conduits. Minimum wire size for power and lighting shall be No. 12 AWG. Minimum wire size for control wiring shall be No. 14 AWG. Conductors No. 10 and larger shall be stranded. Use RW90 for interior and RWU90 for exterior wiring. Minimum conduit size: 19 mm. Install all wiring in or under floor slabs in rigid PVC conduit. Use Type AC90 armoured cable only for connections from conduit systems to luminaires in accessible ceilings. Install cable drops for luminaires of sufficient length to allow the luminaire to be relocated to any location within a 3000 mm radius.

4.13. Use wiring devices of grade similar to Hubbell or Leviton Cat. No.6262 for receptacles and Hubbell or Leviton Cat. No 1201 for switches. Use metal cover plates for all devices. For finished areas, use vertically brushed stainless steel cover plates.

4.14. To comply with Barrier Free and Universal design criteria, device mounting height shall be as follows:

- (a) Light switches: 1000mm
- (b) Receptacles, telephone/data and TV outlets: 500mm
- (c) Manual pull stations: 1200mm.

4.15. Lighting systems energy use shall meet or exceed ASHRAE/IES 90.1 2004. Design lighting system to comply with the 9th edition of the Lighting Handbook of the Illuminating Engineering Society of North America for each specific area of usage. Illumination levels lower than those established by the Canada Occupational Safety and Health Regulations made pursuant to part IV of the Canada Labour Code are not permitted. Office spaces using furniture with built-in lighting shall not have a general illumination level lower than 300 lux average maintained and a combined task and general lighting level lower than 500 lux average maintained. In offices containing visual display terminals (VDT), the VCP shall not be lower than 80.

4.16. Refer to the DND Lighting and Lighting Controls Design Guideline, see reference list in SOW) for specific selection criteria. Provide fluorescent lighting fixtures where lighting controls can be used to achieve energy savings for large open areas having multiple workstations. Design system to permit the relocation of recessed fluorescent fixtures by one tile in all directions without disconnecting the fixture. Use program rapid start electronic ballasts and high performance T8 lamps where occupancy sensors may be utilized. Use industrial fluorescent fixtures with reflectors with upper component of at least 10%, for all shop areas. Where wraparound fixtures are used, provide "lift and shift" (hanging) type lenses. Do not use incandescent lamps except in areas where incandescent dimming is required. Use PL lamps in pot lights in lieu of incandescent lamps. Use high bay fluorescent lighting for high ceiling applications. Use pulse start metal halide luminaires where the task lighting controls are not practical and where ceiling heights are 8000 mm or higher and only after a successful comparative analysis with other lamps is provided. Provide enclosed and gasketed luminaires capable of starting and operating lamp in ambient temperatures down to -30 degrees C in outdoor entrance areas as required. Equip suspended luminaires with safety chain, [cord and plug suitable for hanging with power hook and single twist lock receptacle]. Provide mounting details for luminaires over 10 Kg in weight. All HID luminaires to be equipped with safety chain, cord and plug suitable for hanging with power hook and single twist lock receptacle. [25%] of HID luminaires shall provide illumination during the striking cycle of the lamps. Do not use 1000W HID lamps without prior approval.

4.17. Install local on/off controls for all areas. Consider the use of multilevel switching, for fluorescent fixtures. Provide switching of perimeter lighting adjacent to windows to allow complementary use of natural light to reduce energy consumption. Co-ordinate and design lighting controls in close coordination with the end user of the particular system or area. Incorporate occupancy sensors, photocells, time clocks and contactors to maximize energy conservation. [Consider the use of programmable low voltage lighting control]. Use occupancy sensors in areas such as offices, conference rooms etc. where the use of the space is intermittent.

4.18. Provide metal halide luminaires for parking lot and front entrance walkway lighting. Provide reinforced concrete base extending 1200 mm above finished grade. Control parking and walkway lighting with photocells and time switch arrangement. Provide manual override and contactor system to provide one point of control.

4.19. Provide LED type bilingual exit lights. (Pictogram accepted as alternate).

4.20. Provide sealed, maintenance free, battery units. Minimum 10 years design life expectancy. Supply voltage 120V or 347V AC. Output voltage: 12V or 24V DC.

4.21. Battery unit sized in compliance with NBC. Provide built-in quartz lamp heads as required. Size circuit conductors to remote lamps to limit voltage drop to 5% of marked output voltage of unit equipment. Arrange emergency lights so that the failure of any one lamp will not leave the area normally illuminated by it in total darkness.

4.22. Provide, update and coordinate with mechanical consultant all electrical data to complete energy budget calculations. Provide complete design calculations with submissions indicated below. Make assumptions, if required, to complete calculations for early submissions. Provide short circuit current calculations for each critical point in the supply and distribution system. For lighting calculations, provide the following: Calculation formula used, dimensions, room cavity height, room cavity ratio, reflectances, co-efficient of utilization, all light loss factors, lamp lumens, design lighting level in lux, fixture type designation, fixture quantity, total Watts, total average maintained lux, and Watts per m².

Table 4-1

Calculations	Concept Development	Design Development (33%) & Construction Documents (66%, 99%)	Final Construction Documents (100%)
Illumination	X	X	X
Power Demand	X	X	X
Emergency Power		X	X
Risk Value of Loss due to lightning	X		X
Voltage Drop		X	X
Reactive Power (KVAR)		X	X
Energy Budget	X	X	X
Max. connected lighting load (W/m ²)	X	X	X
Short Circuit		X	X

5. Civil

5.1. Ensure the civil engineering requirements for this project conform to the minimum requirements described in latest version of the DND document "Site Development Design Criteria" unless specific directions to the contrary are provided by Canada.

5.2. Verify the adequacy of existing water distribution, sanitary sewers and storm sewers proposed for servicing the facility to suit specific SOW and DND PM directions and the minimum requirements described in the DND document "Site Development Design Criteria." The Contractor is responsible for determining and identifying early on in the design process if they believe there may be a problem or concern with any of the existing site services based on existing capacities, their knowledge of the design requirements, and their experience.

5.3. Topographic and geotechnical surveys of the site will be completed by the Contractor.

5.4. Verify siting of buildings for conformance to the NBCC, CETO's and other local and regional applicable codes, policies and standards. Reference locations of these to the nearest vertical and horizontal control monuments using survey coordinated monuments based on Geodetic Survey of Canada (GSC) datum.

5.5. The Contractor shall assess impact on overall drainage of the site. Blend and coordinate grading and site features to provide a useable and easily maintained ground surface free of ponding, flooding or erosion.

5.6. Design roads, parking lots, sidewalks and other site features to provide good circulation, capacity to meet the anticipated demand and easy access to and in the vicinity of the installations. Provide access for firefighting as required by the NBC and any additional directions from the Canadian Forces Fire Marshall (CFFM) or his designates. Coordinate all elements to produce safe and functional design that also facilitates snow removal operations.

5.7. Complete drawings, specifications and details for the proposed site development features as required and including, where part of the project, water and wastewater systems, storm water management and control

systems, roadways, pavements, curbing, driveways, ramps, sidewalks, fencing, retaining structures, embankments, dyking, exterior solid waste management facilities, pump stations, reservoirs, hydrants, exterior bulk fuel storage tanks, site landscaping, fire access routes, traffic control signs, lighting etc.

5.8. Define the basic construction project footprint, receiving areas for contractor's material or equipment and any stockpile locations as practical to suit contractor activities including the primary exclusive worksite, temporary storage locations for reusable soils, temporary office space and sanitation facilities and any dedicated site access points as necessary. Obtain approval for any exclusive use worksites and shared use areas from Canada (following consultations with the site Commanding Officer, Engineer Services) prior to finalization of the designs.

5.9. Minimum Civil Requirements for submissions as per DND Document and Submission Standards.

6. Telecommunications

6.1. The Contractor shall design communications systems services into the building(s) from the service provider connection points. The Contractor to develop voice and data telecommunication networks, public address systems, cable television, and closed circuit television networks as required, in accordance with the most current version of all applicable Codes, Standards and Design Guidelines. In cases where a conflict or discrepancy exists between standards and/or codes, the most stringent standard or code will apply. As new standards, addendums or amendments are adopted within the industry during the Contract Period, they will be added to the applicable list.

6.2. The Contractor shall note that the project will require two independent telecommunication cable network systems including two separate telecommunication pathway and spaces systems for classified (RED) and unclassified (BLACK) networks. The Contractor shall design one comprehensive system throughout the facility and both communications rooms. DND in-house staff or other qualified Specialists will develop the Design, Cable/Conduit plan, and Specifications for the second system. Except that the conduit configuration and conduit specifications for the second system will be provided to the Contractor for inclusion in the main Design and Specifications, the Contractor will have no other design responsibilities with respect to the second system. The DND Communications Design Authority will co-ordinate details between the two systems during the Design Development and Construction Documents Phases and ensure that the Contractor is aware of the relevant information between the two systems on a need to know basis.

7. Fire Safety

7.1. The Contractor is responsible for providing adequate water supply/storage system and pressure for fire protection services.

7.2. Fire detection and protection network to be designed, installed and tested in accordance with the requirements of the National Building Code and to comply with the DND Fire Protection Engineering Design Guide, as well as being compatible with existing alarm surveillance networks.

8. Energy Analysis

8.1. The Contractor shall develop an energy budget at the Concept Design phase. The objective is to attain the lowest practical energy consumption based on life cycle cost principles. The Contractor shall update this budget during each subsequent design phase to reflect refinements and changes.

8.2. The energy analysis, including the energy summary report form, shall be submitted with the Concept Report and revised and resubmitted with the Design Development Submission and the Construction Documents. The updates shall reflect all the latest architectural and engineering changes to the project. The

Contractor shall substantiate design proposals which increase the established energy budget during Design Development and obtain acceptance of Canada.

8.3. The Contractor shall conduct sensitivity analysis of energy variables and profiles for each of the major system concepts being considered for incorporation in the design, showing feasible changes in values above and below those used in the base concept.

8.4. The energy analysis program shall simulate all energy consumed in the building on a monthly basis for a full year. The energy consumed shall be costed to produce a dollar per square meter cost for each month and a dollar total for the year. The program shall be based on hourly calculations or the bin method, time equated. It shall, as a minimum, be capable of providing schedules for:

- (a) Occupied – unoccupied;
- (b) Lights;
- (c) Ventilation;
- (d) Other equipment;
- (e) Night set back; and
- (f) Warm up periods.

8.5. The building shall be divided into zones. The energy consumed and the energy cost shall be given for each zone. This shall be listed as total fuel (in its common quantity) and total dollar cost. Also show the fuel and energy quantity and dollar cost per square meter for each zone. This shall be separated into:

- (a) Heating;
- (b) Cooling;
- (c) Ventilation;
- (d) Mechanical equipment;
- (e) Other equipment;
- (f) Domestic hot water; and
- (g) Special equipment.

8.5.1. The output shall be in tabular form with the appropriate column headings.

9. O&M Documentation

9.1. The O&M documentation includes the following:

- (a) The O&M Manual consists of four separate sections, all prepared by the Design Build Team; and,
- (b) The Occupant's Manual comprises of one or more volumes depending on the quantity of information gathered and are prepared by the Contractor. When several volumes are required, the subdivisions should follow a logical sequence to avoid duplication.

9.2. The Contractor shall include in the O&M Manual all necessary information on the building envelope and building services and systems in accordance with guidance provided in ISO 9001.7.51.CT11 Operations and Maintenance Manual Template. For each building system, describe the system, the design intent and the sequence of operations. Organize the manual into system sections that a qualified maintenance technician can use to safely and efficiently operate, diagnose and maintain the building systems, in both normal and emergency modes, and perform equipment performance verifications.

9.3. The Occupants Manual shall be written in accordance with ISO 9001.7.51.CT12 Occupant Manual Template. It shall include a basic description of products and systems that are within the control of the occupant such as hoists, PA system, exhaust systems, etc. In addition, it shall describe the building systems as operated by the occupant such as thermostat settings, specific zones covered by a given thermostat, lights operated by a given switch, lock operations and key system etc. Include basic troubleshooting that would be within the scope of the occupant given the personnel are not trained technicians, and do not have access to equipment rooms.

DRAFT

APPENDIX 25, ATTACHMENT H

UD BFA COMPLIANCE MINOR VARIANCE FORM

FOR

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

UD/BFA Compliance / Minor Variance Form

Conformité/dérogation à la conception universelle (CU)/l'accessibilité

Part A: Building Identification - Partie A : Identification du bâtiment

Building Name: Nom du bâtiment :	Building for 12 ^e Escadron de radar
Address: Adresse :	Lac Castor, Québec
	Street/City/Province/Postal Code - Rue/Ville/Province/Code postal
Location: Emplacement :	3 Wing / 3 ^e Escadre Lac Castor, Québec
Building Category: Catégorie de bâtiment :	New Construction - Nouvelle construction

<input type="checkbox"/>	Existing / Crown Owned Existant appartenant à l'État	<input type="checkbox"/>	New / Crown Owned Nouveau appartenant à l'État	<input type="checkbox"/>	Leased Loué
<input type="checkbox"/>	Heritage Patrimonial	<input type="checkbox"/>	Surplus Excédentaire	<input type="checkbox"/>	Custody Transfer Transfert de garde

Part B: Variance Requested - Partie B : Dérogation demandée

<input type="checkbox"/>	<u>limited compliance</u> (some UD/BFA requirements apply while others do not) <u>à conformité limitée</u> (certaines dispositions de la norme de CU/d'accessibilité s'appliquent, d'autres non)
<input checked="" type="checkbox"/>	<u>easily adaptable</u> (all or some requirements can be easily retrofitted) <u>aisément adaptable</u> (la totalité ou certaines des dispositions peuvent être facilement appliquées en rattrapage)
<input type="checkbox"/>	<u>exempt</u> (UD/BFA requirements do not apply) <u>exempté</u> (les dispositions de la norme de CU/d'accessibilité ne s'appliquent pas)

Justification for Minor Variance / Exemption - Justification de la dérogation/l'exemption

The new radar building will be used exclusively for operation from the RTOC and for maintenance when in garrison at 3e Squadron, Lac Castor.

Meeting rooms, toilets and lounges will remain in the current radar head complex. The main function of the new radar building will be to furnish a secure and quality environment to assure the operation and maintenance of the ROTC. The radar building will not be accessible for handicapped personnel, and the squadron does not require an handicapped accessible building for the following reasons; (a) This building will not be the primary workplace of any technicians. This installation will be used only as the need arises. (b) No Canadian Forces radar technician will require a handicapped accessible toilet facility (to meet universality of service). (c) Since this installation is co-located, the time to visit this facility will take less than 5 minutes (That is to say this building is very functional and will not be used for practical demonstration.) (d) There is a handicapped accessible toilet in the building for all visiting personnel who require access.

Part C: Building Type - Partie C : Type de bâtiment

National Building Code of Canada: - Code national du bâtiment - Canada :

Group - Groupe : F / Division 3: Low Hazard Industrial Occupancies – F/Division 3 : Établissements industriels à risques faibles

Major Occupancy Classification - Classement des usages principaux

Recommended by: Recommandé par :	Demetre Bomis, DCPD 5-3	Date:	7-Nov-2011
Approved by: Approuvé par :	Murray Gallant, DCAE 5 Chief Architect ~ ADM(IE)/DGME - Architecte principal ~ SMA(IE) / DGGM	Date:	12-Jan-2012

Part D: Minor Variance Summary - Partie D : Sommaire des dérogations

Print Form Submit by Email - Imprimer le formulaire Soumettre par courriel

Section		Compliant – à conformité totale	limited compliance - à conformité limitée	easily adaptable - aisément adaptable	Exempt - exempté	Remarks - Remarques
3	General Requirements - Exigences générales					
3.1	Area Allowance Superficie	x				
3.2	Operating Controls Commandes de fonctionnement	x				
3.3	Floor and Ground Surfaces Surfaces de plancher et de sol	x				
3.4	Protrusion Hazards Obstacles en saillie	x				
4	Interior Requirements- Exigences pour l'intérieur					
4.1	Circulation Circulation	x				Main Floor.
4.2	Drinking Fountains Fontaines à boire					None
4.3	Washroom Facilities Toilettes					None
4.4	Bathing Facilities Installations pour le bain et la douche					None
4.5	Communications Communications	x				
4.6	Seating Places assises					None

5	Vehicular Access - Accès aux véhicules					
5.2	Passenger Pick-up Areas Aires d'embarquement de passagers					None
5.3	Parking Stationnement					None
6	Exterior Requirements- Exigences pour l'extérieur					
6.1	Accessible Routes Voies accessibles			x		
6.2	Exterior Stairs Escaliers extérieurs					None
6.3	Exterior Ramps Rampes extérieurs					None
6.4	Lighting Éclairage	x				
6.5	Signage Signalisation	x				
6.6	Pedestrian Crossings Passages pour piétons					None
6.8	Rest Area Seating Places assises dans l'aire de repos					None
7	Residential Accommodation – Logements résidentiels					
7.1	Visitable Dwelling Units Logements visitables					None
7.2	Accessible Dwelling Units Logements accessibles					None

APPENDIX 25, ATTACHMENT L
OPTION ANALYSIS
FOR
TACTICAL CONTROL RADAR (TCR)
MODERNIZATION PROJECT

Table of Contents

1. DESCRIPTION OF SERVICES – OPTION ANALYSIS.....	3
1.1. Objective	3
1.2. Tasks	3
1.3. Analysis Criteria	4
1.4. Deliverables.....	4

DRAFT

1. DESCRIPTION OF SERVICES – OPTION ANALYSIS

1.1. Objective

1.1.1. The purpose of this work is to study the project's requirements, as well as the factors, constraints and opportunities that will influence the ultimate construction solution. Based on this study the Option Analysis will develop and analyse a minimum of three distinct concept options. Based on the analysis of the options, the Contractor must recommend one concept option.

1.1.2. This phase will be considered completed when a preferred concept option has been selected and a fully documented Concept Report including a Concept Phase Construction Cost Estimate has been approved by Canada.

1.2. Tasks

1.2.1. Review the SOR(I) (Attachment B) to develop and validate the project Design Program. Include a list of all additional information required by the Contractor to complete the Options Analysis. Review applicable codes and authorities having jurisdiction, and identify conflicts with governing requirements.

1.2.2. Prepare an Options Analysis on the following:

- (a) Option 1. Modify the existing building.
- (b) Option 2. Replace the radar section of the building.
- (c) Option 3. Construct an addition to the radar section of the building and replace the existing radome with a roof.

1.2.3. Produce single line concept designs / footprints with cost estimates of the various options.

1.2.4. Produce Options Analysis Report.

1.2.5. Validate the following:

- (a) Functional descriptions and detailed characteristics/parameters/requirements of all spaces;
- (b) Occupancy characteristics of the work spaces;
- (c) Functional relationships between all spaces;
- (d) General Equipment, shelving and furniture requirement expectations for all workspaces and specific layout details;
- (e) Establish "other" functional space requirements that may emerge during the analysis period and repeat foregoing assessment as decisions are made to add scope;
- (f) Environmental requirements (both inside and outside the building);
- (g) Architectural, Structural, Civil, Mechanical, Electrical, requirements, interior and exterior;
- (h) Fire protection requirements;
- (i) Code requirements and Standards; and

(j) Other data, criteria and assumptions required for the Design Development Phase.

1.3. Analysis Criteria

1.3.1. Option Evaluation – Identified options will be evaluated based on financial and qualitative criteria.

1.3.2. Financial criteria will assess the cost of each option using Net Present Value (NPV) analysis and will examine, for each option, the risk associated with achieving the Departmental goal of reducing the costs of real estate, operating and maintenance.

1.3.3. Qualitative criteria will consider opportunities and constraints that will impact the accommodation alternatives for the users. Quality will consider such issues as timing, health and safety, user satisfaction, unit morale, operational effectiveness, quality of life, environmental impact and sustainability.

1.3.4. The following factors, in order of relative importance, are to be used as option evaluation criteria:

- (a) Satisfaction of the functional requirement;
- (b) Relative effectiveness/efficiency of the options identified;
- (c) Total capital cost;
- (d) & M costs; and
- (e) Cost effectiveness (NPV 25 years).

1.3.5. The facility is to provide a nominal 40 year anticipated useful life with mechanical electrical recapitalization at 20 years.

1.3.6. NPV analysis is to be undertaken for a 25 year time period.

1.4. Deliverables

1.4.1. Options analysis report documenting the findings of the analysis. Include Conclusions and Recommendations – Based on the analysis of financial and qualitative criteria prepare recommendations and conclusions for the report in which the pros and cons of each option are evaluated. Evaluations are to be properly supported.

1.4.2. Prepare and deliver a formal Option Analysis Presentation to DND at CFB Cold Lake. This will include the preparation of overhead slides of sketches of all options considered, a discussion of the various studies, their findings and conclusions, and discussion of the options considered.

Contract No. - N° de Contrat
- Id de l'acheteur
W8485-155257

Amd. No. - N° de la modif.

Buyer ID

164BQ

Client Ref. No. - N° de réf. du client
/N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No.

APPENDIX 26
DEFINITIONS
FOR
TACTICAL CONTROL RADAR (TCR)
MODERNIZATION PROJECT

Contract No. - N° de Contrat
- Id de l'acheteur
W8485-155257

Amd. No. - N° de la modif.

Buyer ID

164BQ

Client Ref. No. - N° de réf. du client
/N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No.

1. DEFINITION OF TERMS.....	3
1.1. Achieved Availability (Aa).....	3
1.2. Commercial-Off-The-Shelf (COTS).....	3
1.3. Graceful Degradation	3
1.4. Government Furnished Resources (GFR)	3
1.5. Government Furnished Equipment (GFE)	3
1.6. Government Supplied Materiel (GSM).....	3
1.7. Government Furnished Information (GFI)	3
1.8. First Level Maintenance	4
1.9. Second Level Maintenance	4
1.10. Third Level Maintenance	4
1.11. Mean Time To Repair (MTTR)	5
1.12. Mean Time Between Critical Failures (MTBCF)	5
1.13. Mobility	5
1.14. Military Off-The-Shelf (MOTS)	5
1.15. Uninterruptible Power Supply (UPS).....	5
1.16. Probability of detection (Pd)	5
1.17. Resolution	5
1.18. Track	6
1.19. Transportability	6

1. DEFINITION OF TERMS

The following definitions are used in Annex A, Statement of Work. Their meaning shall be as defined below:

1.1. Achieved Availability (Aa)

A measure of availability under ideal conditions. Aa assumes that an item is unavailable only while corrective and preventive maintenance are being actively performed. "Ideal conditions" exist when the stipulated tools, parts, skilled manpower, manuals, support equipment and other required support items are available. Aa excludes delays such as ready time, supply downtime, administrative downtime, etc. Aa may be expressed, as a percentage, by the following formula:

$$Aa = (1 - (CM + PM) / Ts) \times 100, \text{ where}$$

Ts = Specified Operating Time (8760 hours annually)

CM = Corrective Maintenance (annual hours)

PM = Preventive Maintenance (annual hours)

1.2. Commercial-Off-The-Shelf (COTS)

Any item that is of a type customarily used by the general public or by non-governmental entities or for governmental purposes, and has been sold/leased and approved for operational use. For complex electronic COTS systems, the replacement of individual sub-systems with sub-systems providing the same basic functionality is not considered to be altering the COTS status of the overall system, as long as the replacement sub-system meets the above COTS criteria and the bidder can clearly demonstrate that the integration of the new sub-system represents a low technical and schedule risk. Such replacements are subject to approval by Canada.

1.3. Graceful Degradation

Graceful degradation is the property that enables a system to continue operating properly in the event of the failure of some of its components, without degradation of service or performance.

1.4. Government Furnished Resources (GFR)

All materials, parts, components, equipment, specifications, articles, services, information/data, personnel or other resources that may be supplied to a Contractor by the Crown for purposes of the contract work.

1.5. Government Furnished Equipment (GFE)

Government Furnished Equipment (GFE) refers to DND-owned items that will be loaned to the contractor and returned to DND in essentially the same condition, subject to ordinary wear and tear.

1.6. Government Supplied Materiel (GSM)

Government Supplied Materiel (GSM) is materiel that will not be returned to DND. The contractor will incorporate GSM into the end product or consume it in the manufacture or maintenance process.

1.7. Government Furnished Information (GFI)

Government Furnished Information (GFI) is any information that DND will provide to the contractor to enable contract fulfillment.

1.8. First Level Maintenance

First Level maintenance activities include:

- (a) go/no-go checks using front panel indications, maintenance software, Built-In Test (BIT) and/or system diagnostic routines;
- (b) verifying system/sub-system serviceability;
- (c) system/sub-system calibrations, alignments/adjustments;
- (d) periodic physical hardware inspections;
- (e) periodic servicing including lubrication, cleaning and filter changes;
- (f) isolating faulty Line Replaceable Units (LRUs) using BIT, maintenance software, General Purpose Test Equipment (GPTE) and technical documentation;
- (g) removal and replacement of faulty LRUs;
- (h) performing limited component replacement, alignment and adjustment; and
- (i) restoral of equipment to full operational status.

1.9. Second Level Maintenance

Second Level maintenance activities include:

- (a) fault-finding equipment/systems to isolate a fault beyond the BIT capability;
- (b) replacing faulty electronic and mechanical components;
- (c) aligning or adjusting replacement modules/units;
- (d) further analysis of faulty LRUs and limited system-level repair;
- (e) non-routine alignments and/or adjustments;
- (f) external diagnostics, special test equipment and more in-depth alignments, as required; and
- (g) restoral of equipment to full operational status.

1.10. Third Level Maintenance

Third Level maintenance activities include all maintenance activities beyond the scope of First and Second Level including in-depth troubleshooting, repair and verification of faulty equipment. Third Level maintenance is generally conducted by Contractors using a Third Line facility.

1.11. Mean Time To Repair (MTTR)

The average period of time required for corrective maintenance on all of repairable/replaceable items in a product or system at all levels of maintenance under stated conditions as detailed in the SOW. The system MTTR includes time to detect a failure, time to isolate it to an LRU, time to remove the LRU and replace it with a functional unit and time to verify that the functionality of the system has been restored. The sum of all corrective maintenance times at any specific level of repair, divided by the total number of failures for all items repaired at that level, during a particular interval under stated conditions.

$MTTR = \text{Total Corrective Maintenance Time} / \text{Total Number of Corrective Maintenance Actions}$

1.12. Mean Time Between Critical Failures (MTBCF)

The average period of time during which the product or system performs its function within the specified performance limits under stated conditions as detailed in the SOW. A critical failure is a failure that prevents the system from performing its assigned mission. This includes all critical hardware and software failures that occur.

$MTBCF = \text{Total Ops Time} / \text{Total Number of Ops Failures}$

1.13. Mobility

Movement of the TCR system over shorter distance using equipment integral to the squadrons – the trucks, trailers, possibly mobilizers or contractor supplied equipment (eg: antenna trailer). Mobility requires movement of the system equipment over rough terrain in diverse locations and climates. Mobility also means being able to place the equipment and shelters in a precise position, using squadron mobility equipment at the deployment location or onto a lift mechanism at the garrison building. The squadron's transportability / mobility equipment must be capable of off-loading the equipment from a CC130 and CC117.

1.14. Military Off-The-Shelf (MOTS)

An item that has been developed and produced to military or commercial standards and specifications is readily available for delivery from an industrial source and may be procured without change to satisfy a military requirement.

1.15. Uninterruptible Power Supply (UPS)

UPS provides load power at all times through a battery that is continuously charged by input power. The power is always online; therefore no switching is called for during power failures. Double-converter system is another name for an online UPS since it must convert AC input power to DC for charging the battery and afterward convert DC to AC for use by the load.

1.16. Probability of detection (Pd)

The probability that a correct radar plot message is derived when a target is present (source – ICAO Document 8071).

1.17. Resolution

The capability of the sensor to discriminate between two aircraft in close proximity and to produce target reports for both.

Contract No. - N° de Contrat
- Id de l'acheteur
W8485-155257

Amd. No. - N° de la modif.

Buyer ID

164BQ

Client Ref. No. - N° de réf. du client
/N° VME
W8485-155257

File No. - N° du dossier
164BQW8485-155257

CCC No. /N° CCC - FMS No.

1.18. Track

A succession of radar reported positions for one aircraft sometimes correlated and smoothed by a special tracking algorithm (source - ICAO Document 8071).

1.19. Transportability

Capability to ship the TCR System using transportation equipment over a long distance. Transportability requires movement from a garrison to a deployed location by road, using the squadron's fleet of vehicles and integral equipment (the typical 'road move'). Transportability also refers to the use of the squadron's vehicles and ancillary equipment to move the system from a disembarkation point (jetty or airfield) to a deployment location (eg: as a K-Loader may not be available at a remote airfield). The squadron's transportability / mobility equipment must be capable of off-loading the equipment from a CC130 and CC117.

DRAFT

APPENDIX 27

IN-SERVICE SUPPORT REQUIREMENTS OPTION

FOR THE

TACTICAL CONTROL RADAR (TCR)

MODERNIZATION PROJECT

Table of Contents

1. SCOPE	3
1.1. Purpose	3
1.2. Maintenance Concept	3
1.3. Availability	4
2. APPLICABLE DOCUMENTS	4
Table 2-1: Applicable Documents.....	5
3. CONFIGURATION MANAGEMENT	5
3.2. Aim	5
3.3. Configuration Management Plan (CMP)	5
3.4. Configuration Control	6
3.6. Configuration Status Accounting (CSA)	6
3.7. Configuration Audit.....	6
4. OBSOLESCENCE MANAGEMENT	7
4.5. Work Description	7
5. IN-SERVICE SOFTWARE SUPPORT	8
5.1. Licensed Software.....	8
Table 5-1: Software Error Severity	8
6. TECHNICAL DATA MANAGEMENT.....	8
6.1. Deliverable Documents Update	8
Table 6-1: Applicable DIDs	9
7. REPAIR AND OVERHAUL (R&O).....	9
7.1. Repair and Overhaul Requirements.....	9
7.2. Receipt:	10
7.3. Work Control:	10
7.4. Annual Repair Forecast – SNAPS:.....	10
7.5. Cost Control:	10
7.6. Costing Records:.....	10
7.7. Maintenance Support – Minor Repairs:.....	10
7.8. Supply Support/ In Service Support:	11
7.9. Warranty Consideration.....	12
7.10. Contractor Use of DND Equipment/Publications	12
7.11. Publications	12
7.12. Office Services	12
7.13. Minutes of Meetings	12
7.14. Plant Shutdown/Vacation Period.....	12
7.15. Reports.....	12
8. SPARES PROCUREMENT.....	12
9. ENGINEERING SERVICES	12
9.2. Work Description	12

1. SCOPE

1.1. Purpose

1.1.1. Canada intends to procure up to three modern 3-D Tactical Control Radars (TCR) and associated communications equipment to replace the aging TPS-70 radars. The purpose of this APPENDIX is to define the work that the Contractor must perform for the In-Service Support (ISS) of the new TCR systems should Canada exercise the option for ISS.

1.1.2. This APPENDIX details Contractor tasks and deliverables that will enable Canada to maintain the TCR system in its operational role for its estimated life of 20 years, with the full functionality and performance present in the delivered system. Some of the processes and documentation that were established in the TCR production phase will be maintained during the ISS phase, as detailed in this APPENDIX. Configuration Management, Obsolescence Management, Technical Data Management and Repair and Overhaul are important processes during the in-service support phase. This APPENDIX also includes a provision for other Contractor-provided Engineering Services. Engineering Services will be tasked by Canada as Additional Work Requirements (AWRs).

1.1.3. This APPENDIX is organized into the following sections:

- (a) Scope (Section 1);
- (b) Applicable Documents (Section 2);
- (c) Configuration Management (Section 3);
- (d) Obsolescence Management (Section 4);
- (e) In-Service Software Support (Section 5);
- (f) Technical Data Management (Section 6);
- (g) Repair and Overhaul (Section 7);
- (h) Spare Procurement (Section 8); and
- (i) Engineering Services (Section 9).

1.1.4. Sub-sections of this APPENDIX are followed by a list of Data Items that are associated with the work. The Data Item Descriptions (DIDs) are found in Appendix 02. The Contract Data Requirements List (CDRL) can be found in Appendix 01.

1.2. Maintenance Concept

1.2.1. The TCR system maintenance concept is based upon experience with similar equipment under similar conditions. DND technicians will be performing first and limited second level maintenance on the TCR system. All third and selected second level maintenance will be performed by the Contractor. The maintenance concept is based on the premise that all TCR equipment will incorporate the necessary design features (e.g. redundancy, automatic re-configuration, remote monitoring, Built-In-Test-Equipment (BITE), and diagnostics) to keep site maintenance requirements and associated manning to a minimum.

1.2.2. For the purpose of this APPENDIX, the term "level of maintenance" (first, second or third) is used to define the complexity and scope of maintenance work. These levels of maintenance are defined as:

1.2.3. First Level Maintenance: First Level maintenance activities include:

- (a) go/no-go checks using front panel indications, maintenance software, Built-In Test (BIT) and/or system diagnostic routines;
- (b) verifying system/sub-system serviceability;
- (c) system/sub-system calibrations, alignments/adjustments;
- (d) periodic physical hardware inspections;
- (e) periodic servicing including lubrication, cleaning and filter changes;
- (f) isolating faulty Line Replaceable Units (LRUs) using BIT, maintenance software, General Purpose Test Equipment (GPTE), and technical documentation;
- (g) removal and replacement of faulty LRUs;
- (h) performing limited component replacement, alignment, and adjustment; and
- (i) restoral of equipment to full operational status.

1.2.4. Second Level Maintenance: Second Level maintenance activities include:

- (a) fault-finding equipment/systems to isolate a fault beyond the BIT capability;
- (b) replacing faulty electronic and mechanical components;
- (c) aligning or adjusting replacement modules/units;
- (d) further analysis of faulty LRUs and limited system-level repair;
- (e) non-routine alignments and/or adjustments;
- (f) external diagnostics, special test equipment, and more in-depth alignments, as required; and
- (g) restoral of equipment to full operational status.

1.2.5. Third Level Maintenance: Third Level maintenance activities include all maintenance activities beyond the scope of First and Second Level including in-depth troubleshooting, repair and verification of faulty equipment. For this contract, third level maintenance will be conducted by the Contractor.

1.3. Availability

1.3.1. The TCR system (CSM only) must have a monthly availability of 99% under minimally attended conditions 24 hours per day, 7 days per week, with downtime for preventive maintenance (24 hours per quarter).

2. APPLICABLE DOCUMENTS

2.1. The following documents form part of this Statement of Work to the extent referenced herein. Unless otherwise specified, the applicable version is the issue available upon issuance of the Request for Proposal:

Table 2-1: Applicable Documents

Document Number	Document Name	Latest Revision
A-LM-184-001/JS-001	Special Instructions – Repair and Overhaul Contractors	2016-01-30
C-02-015-001/AG-000	Policy Procedures and Guidelines – Unsatisfactory Condition Reporting	2004-01-30
D-01-100-215/SF-000	Preparation of Materiel Change Notices for Canadian Forces Equipment	2002-05-01
D-02-006-008/SG-001	The Design Change, Deviation and Waiver Procedure	1985-05-16
MIL-STD-973	Configuration Management (Reference Only)	1992-04-17
NDSI 27	National Defence Security Instructions (NDSI) 27	

3. CONFIGURATION MANAGEMENT

3.1. Configuration Management (CM) is an engineering discipline that integrates the operational, technical and logistic actions of identifying, controlling, reporting and validating the functional and physical characteristics of a product, during its life cycle.

3.2. Aim

3.2.1. The aim of Configuration Management in this APPENDIX is to identify, evaluate, approve and document changes to the TCR system throughout the in-service phase. The CM process advises Canada of Contractor-initiated changes that will address equipment performance or support issues and seek approval of changes, when required. The CM process may also be used to address potential changes that have been identified by Canada. The CM process ensures that a suitable product baseline is maintained throughout the life cycle of the TCR system and that all changes to this baseline are methodically controlled and tracked.

3.3. Configuration Management Plan (CMP)

3.3.1. The CMP describes the procedures for Configuration Management (CM) application, all CM tasks, CM participants and their roles. The Contractor must update the Project Management Plan (PMP), produced during the equipment acquisition phase, to reflect the In-Service Support phase of the contract.

3.3.2. The Contractor must perform in-service CM in accordance with the Contractor provided PMP as per CDRL Item A001.

3.3.3. The Contractor must maintain and update the PMP (CM Section) throughout the life of the in-service support contract.

3.4. Configuration Control

3.5. Throughout the in-service phase, the Contractor must maintain the Functional, Allocated and Product Baselines for the TCR system. The Contractor must track and document changes, and must maintain the System Design Document (SDD) as per CDRL item B003 and associated documentation for each Configuration Item (CI).

3.5.1. The Contractor must advise Canada of any equipment updates, upgrades or parts substitution in the design. If the specification is changed, the Contractor must submit a Specification Change Notice (SCN) in accordance with CDRL item B020. The Contractor must include, as a minimum, change activity for hardware and software as follows:

- (a) Hardware: changes arising from obsolescence, non-availability of spares, or correction of latent defects; and
- (b) Software: changes arising from upgrades or new releases of commercial software products, correction of latent defects, and revisions to firmware or drivers to accommodate changes to interfaces.

3.5.2. The Contractor must use Materiel Change Notice (MCN) form contained in Appendix 3, Publications List of Annex A, Statement of Work, to identify a new part which is the same form, fit, and function as the part that is currently in the TCR system. Guidance to complete the MCN form is available from D-01-100-215/SF-000 "Preparation of Materiel Change Notices for Canadian Forces Equipment". The Contractor must submit the MCN in accordance with CDRL item C010.

3.5.3. The Contractor must provide updates in electronic format for all technical publications that are affected by ECPs or MCNs. The electronic format must be the native file format for the application that was used to produce the technical publication. All blank pages, figures, illustrations and foldouts must be embedded within the file(s). All illustrations (Figures) must be delivered as separate individual TIFF images in accordance with Adobe Systems Inc. specification "TIFF Revision 6", compressed to CCITT Group 4.

3.5.4. Under the Engineering Services provisions in Section 9, below, Engineering Change Requests (ECRs) may be submitted by Canada to the Contractor to request upgrades or changes during the in-service support period. In response to an ECR, the Contractor must prepare and submit an ECP in accordance with CDRL item B019 and with the Configuration Management process.

3.5.5. The Contractor's configuration control procedures must ensure that the Functional, Allocated and Product baselines are consistent with each other and with the contract requirements.

3.5.6. For a deviation or waiver request, the Contractor must use the DND 675 – Request for Deviation and Waiver form. The DND 675 form and guidance to completing the form are available in D-02-006-008/SG-001 "The Design Change, Deviation and Waiver Procedure".

3.6. Configuration Status Accounting (CSA)

3.6.1. The Contractor must perform Configuration Status Accounting (CSA) in order to provide traceability of changes, waivers, and deviations from established configuration baselines. CSA reports must be submitted in accordance with CDRL Item A001 Project Management Plan. If Canada is not provided access to the Contractor's current CSA database, CSA reports must be provided to the TA at intervals not exceeding six (6) months.

3.7. Configuration Audit

3.7.1. Canada may conduct periodic configuration audits to verify and document that the as-built or modified CI and its baseline configuration are in agreement, accurate, and complete, and that the CI satisfies all functional requirements. The Contractor must perform configuration activities as detailed in accordance with CDRL item A001 Project Management Plan.

4. OBSOLESCENCE MANAGEMENT

4.1. Obsolescence of parts or equipment assemblies can be major reasons for change. This section describes Contractor tasks to proactively identify, analyze and resolve obsolescence issues so that the TCR system performance can be maintained for the planned life of the equipment.

4.2. The Contractor must use an Obsolescence Management process documented in the PMP, to forecast and analyze potential support issues that may arise from obsolescence, and must advise Canada of such issues using the Configuration Management process.

4.3. The Contractor must identify and analyze potential changes arising from obsolescence issues including:

- (a) Discontinued items;
- (b) Original Equipment Manufacturer (OEM) plans to cease manufacture of parts or equipment assemblies;
- (c) Loss of OEM repair capability; and
- (d) Loss of OEM product support.

4.4. The Contractor must resolve obsolescence issues to ensure the TCR system availability is not compromised.

4.5. Work Description

4.5.1. The Contractor must monitor and be cognizant of the availability of the parts comprising the system. The Contractor must ensure an adequate supply of the parts needed to perform the Repair and Overhaul work (Section 7 of this APPENDIX) to the end of the in-service support contract. The Contractor must advise Canada of the estimated quantity of additional parts needed to perform the Repair and Overhaul work to the planned equipment end of life so that life-time buy decisions can be made. The Contractor must advise Canada, in writing, within 30 days of a manufacturer/supplier announcement that an item on the Provisioning Parts Breakdown (PPB) will no longer be available. Where the Contractor is the manufacturer of the obsolete item, the Contractor must provide Canada, in writing, a minimum of 180 calendar days' notice before cessation of manufacture.

4.5.2. The Contractor must use the MCN form in accordance with CDRL item C010 - Materiel Change Notice (MCN) to advise Canada of parts that are obsolete or expected to become obsolete, and are being replaced by a new part or equipment assembly which is the same form, fit, and function as the obsolete item.

4.5.3. While obsolete part(s) are still available, the Contractor must advise on the quantity that is available and the recommended quantity to buy in order to support the TCR system for the estimated life of the equipment. The Contractor must use the MCN form to indicate the quantity available and the recommended quantity that should be procured, under the "Remarks" section of the MCN form.

4.5.4. The Contractor must also use a MCN to amend errors or omissions in provisioning data.

4.5.5. The Contractor must use the ECP form in accordance with CDRL item B019 - Engineering Change Proposal (ECP) for any obsolescence issues that would affect the Functional, Allocated or Product baselines.

5. IN-SERVICE SOFTWARE SUPPORT

5.1. Licensed Software

5.1.1. The Contractor must provide all commercially available enhancements, extensions, improvements, upgrades, updates, releases, versions, renames, rewrites, cross-grades, components and back grades or other modifications to the Licensed Software developed or published by the Contractor or its licensor at no cost to Canada. The Contractor must provide such software changes in the form of Maintenance Releases, in object-code form. All Maintenance Releases will become part of the Licensed Software and will be subject to the conditions of Canada's license with respect to the Licensed Software. Unless otherwise agreed with Canada, the Contractor must provide at least one Maintenance Release during any twelve (12) month maintenance period.

5.1.2. The Contractor must perform software correction services to repair software errors that cause the functional and performance criteria not to be met, or cause the Licensed Software to perform in a manner that is inconsistent with the software documentation. The Contractor must correct software errors in accordance with the severity, as determined by Canada and communicated to the Contractor, based on the following definitions:

Table 5-1: Software Error Severity

Software Error Severity	Description of Severity Level	Target Response Time
Severity 1	Indicates total inability to use a Licensed Program, resulting in a critical impact on user objectives	Within twenty-four (24) hours of notification by Canada;
Severity 2	Indicates ability to use a Licensed Program but user operation is severely restricted	Within seventy-two (72) hours of notification by Canada;
Severity 3	Indicates ability to use a Licensed Program with limited functions which are not critical to overall user operations	Within fourteen (14) days of notification by Canada
Severity 4	Indicates that the problem has been bypassed or temporarily corrected and is not affecting user operations	Within ninety (90) days of notification by Canada.

5.1.3. The Contractor must report software correction activity through a section in a Monthly R&O Status Report. The report on software correction activity must document, as a minimum, each software error reported, the software program(s)/products(s) affected, the severity of the error, the time taken to repair the error, and repair status.

6. TECHNICAL DATA MANAGEMENT

6.1. Deliverable Documents Update

6.1.1. The Contractor must maintain and update the following TCR deliverable documents, as a minimum, for the duration of the in-service support phase for TCR system. Updates to deliverable documents are typically required as a result of errors or omissions noted by Canada or the Contractor, or may arise from an ECP or an MCN. The amended documents must conform to the applicable Data Item Description, Appendix 02.

Table 6-1: Applicable DIDs

PM-001	Project Management Plan (Configuration Management portion only)
SE-003	System Design Document (SDD)
SE-004	Product Specifications (PS)
SE-005	Interface Control Document (ICD)
ILS-002	Maintenance Plan
ILS-020	Engineering Drawings and Associated Lists
ILS-022	Supplementary Provisioning Technical Documentation (SPTD)
ILS-026	Special Packaging, Handling, Storage and Transportability (PHST) Consideration Items List
ILS-027	Packaging Data
ILS-028	Material Safety Data Sheet (MSDS)
ILS-029	Calibration/Measurement Requirement Summary (CMRS)
ILS-033	Long Lead Time Item List (LLTIL)

7. REPAIR AND OVERHAUL (R&O)

7.1. Repair and Overhaul Requirements

7.1.1. All Repair and Overhaul requirements must be managed, transacted and accounted for in accordance with the most current and up to date version of the DND Special Instructions for Repair and Overhaul Contractors, document A-LM-184-001/JS-001. Among other things, this document will cover:

- (a) In and Out of country: For step by step instruction on in and out of country repair process refer to Annex B in the A-LM-184-001/JS-001. This model will describe the roles and responsibilities in the end to end repair process.
- (b) Major Equipment: For complete instructions on receipt of Major Equipment, refer to Chapter 2 in the A-LM-184-001/JS-001
- (c) Accountable Advance Spares For complete instruction on AAS, refer to Chapter 8.2.7 in the A-LM-184-001/JS-001

7.1.2. Extent of Work/Types of Equipment: Refer to Chapter 1.2 of A-LM-184-001/JS-001 for further information on the different types of DND Equipment that are authorized for repair and the category types.

7.2. Receipt:

7.2.1. Refer to Ch. 2.0 of the A-L-M 184 for complete instruction on how to process receipts

7.2.2. Discrepancies in Shipments: The Contractor must action discrepancies in shipments in accordance with Chapter 2.1 of A-LM-184-001/JS-001.

7.3. Work Control:

7.3.1. The Contractor must ensure that the repair of all DND equipment is controlled by a serial numbered work order IAW Chap 3 of A-LM-184-001/JS-001.

7.3.2. Completion of Work: Refer to Chapter 3.1 of A-LM-184-001/JS-001.

7.3.3. Stop Repair Action: The Contractor must comply immediately with all stop repair instructions. Detailed procedures are contained in Chapter 3.2 of A-LM-184-001/JS-001.

7.4. Annual Repair Forecast – SNAPs:

7.4.1. Refer to Chapter 4 of the A-LM-184-001/JS-001 for more information.

7.5. Cost Control:

7.5.1. Refer to Chapter 5.0 of the A-LM-184-001/JS-001 for more information

7.6. Costing Records:

7.6.1. The Contractor must prepare forms and maintain records IAW Chapter 6.0 of the A-LM-184-001/JS-001.

7.6.2. Invoice/Claims for Payment (AAS Spares):

7.6.2.1. The Contractor must submit monthly invoices for AA spare parts, IAW Chapter 6.1 of the A-LM-184-001/JS-001.

7.7. Maintenance Support – Minor Repairs:

7.7.1. Refer to Chapter 7.0 of the A-LM-184-001/JS-001 for more information

7.7.2. Mobile Repair Parties (MRPs): Refer to Chapter 7.1 of the A-LM-184-001/JS-001 for more information

7.7.3. Equipment Turn Around Time (TAT): Refer to Chapter 7.2 of the A-LM-184-001/JS-001 for more information

7.7.4. Priority Repair Request (PRR): Refer to Chapter 7.3 of the A-LM-184-001/JS-001 for more information

7.7.5. Special Investigations & Technical Studies (SITs): Refer to Chapter 7.4 of the A-LM-184-001/JS-001 for more information

7.7.6. Technical Investigations & Engineering Studies (TIES): Refer to Chapter 7.5 of the A-LM-184-001/JS-001 for more information

7.7.7. Termination of Contract: Refer to Chapter 7.6 of A-LM-184-001/JS-001.

7.8. Supply Support/ In Service Support:

7.8.1. Transaction Documentation: Refer to Chapter 8.1 of A-LM-184-001/JS-001 for more information

7.8.2. Contractor Supply Accounting: Refer to Ch. 8.2. For explanation of CRPA/CIS

7.8.3. Contractor Issue Spares (CIS) Materiel Received Off Contract/Procurement: Refer to Chapter 8.2.3 of A-LM-184-001/JS-001 for more information

7.8.4. Shortage of Contract Issue Spares (CIS): Refer to Section 8.2.4 of A-LM-184-001/JS-001.

7.8.5. Ordering/Receiving Catalogued CIS in DRMS: Refer to Section 8.2.5 of A-LM-184-001/JS-001.

7.8.6. Government Furnished Overhaul Spares (GFOS): Refer to Section 8.2.6 for further explanation and detail.

7.8.7. Accountable Advance Spares (AAS): Refer to Section 8.2.7 for further explanation and detail.

7.8.8. Management of DND-Owned Spares: Refer to Chapter 8.3.1 of A-LM-184-001/JS-001 for more information

7.8.9. Spares Review: Refer to Chapter 8.4 of A-LM-184-001/JS-001 for more information

7.8.10. Importation of AAS: Refer to Chapter 8.4.1 of A-LM-184-001/JS-001 for more information

7.8.11. Loan of Government Furnished Information/Government Furnished Equipment (GFI/GFE): Refer to Section 8.4.2 for further explanation and detail.

7.8.12. Stocktaking: Refer to Section 8.5 for further explanation and detail

7.8.13. Selection Notice Observation Message (SNOM): Refer to Chapter 8.6 of A-LM-184-001/JS-001

7.8.14. Embodiment Fees: Refer to section 8.7 of A-LM-184-001/JS-001 for further explanation and detail.

7.8.15. Loss or Damage to DND Materiel: Refer to section 8.8 of A-LM-184-001/JS-001 for further explanation and detail.

7.8.16. Scrap – Custody & Disposal: Refer to section 8.9 of A-LM-184-001/JS-001 for further explanation and detail.

7.8.17. Packaging: Refer to section 8.10 of A-LM-184-001/JS-001 for further explanation and detail.

7.8.18. Reusable Container: Refer to Chapter 8.11 of the A-LM-184-001/JS-001.

7.8.19. Transportation/Shipment Identification/ Mode of Shipment/Loss or Damage in Transit/General Claims Procedures: Refer to Chapter 8.12 of the A-LM-184-001/JS-001 for more information

7.8.20. Customs & Excise: Refer to Chapter 8.12 of the A-LM-184-001/JS-001 for more information

7.9. Warranty Consideration

7.9.1. Refer to Chapter 9.0 of the A-LM-184-001/JS-001 for more information.

7.10. Contractor Use of DND Equipment/Publications

7.10.1. Refer to Chapter 10.0 of the A-LM-184-001/JS-001 for more information.

7.11. Publications

7.11.1. Refer to Chapter 11 of A-LM-184-001/JS-001 for more information.

7.12. Office Services

7.12.1. Refer to Ch. 12 of A-LM-184-001/JS-001 for further explanation.

7.13. Minutes of Meetings

7.13.1. Refer to Ch. 13 of A-LM-184-001/JS-001 for further explanation.

7.14. Plant Shutdown/Vacation Period

7.14.1. Refer to Ch. 14 of A-LM-184-001/JS-001 for further explanation.

7.15. Reports

7.15.1. Refer to Ch. 15 of A-LM-184-001/JS-001 for complete list of reports available to contractors.

8. SPARES PROCUREMENT

8.1. The Contractor must provide Canada with a method of procuring additional spare parts, as required, during any of the In-Service Support option periods. The option to procure additional spare parts must not be restricted to R&O activity, and must apply to replenishment of spares.

8.2. The Contractor must determine the requirement for spares, obtaining the spares, maintaining custody of the spares, accounting for the spares in an approved manner for use on the R&O repair line and for the disposal (when so directed) of the spares in accordance with A-LM-184-001/JS-001.

9. ENGINEERING SERVICES

9.1. The aim of Engineering Services is to provide a mechanism for the Contractor to respond to Crown requests for engineering services that are not covered by the other tasks described in this APPENDIX.

9.2. Work Description

9.2.1. Engineering Services will be tasked as Additional Work Requirements (AWRs) to the Contractor using a DND 626 - Task Authorization Form. The Contractor must perform, as a minimum, the following classes of tasks or services, upon request by Canada:

- (a) Studies, option analyses and technical investigations;
- (b) Engineering Change Proposal (ECP); and

(c) Field Service Representatives (FSR).

9.2.2. Studies, option analyses and technical investigations would typically be assigned if the equipment was not meeting specification standards or if there were repetitive failures. The Contractor must prepare and deliver reports in accordance with the task description - detailing the results of the work, including the relevant data. On an as-required basis, when directed by the NDQAR or Government-assigned QA representative, the Contractor must complete a Technical Investigation Report (CF 1057).

9.2.3. When authorized by Canada, the Contractor must prepare an ECP in response to a Crown-initiated Engineering Change Request (ECR). Each ECR will be submitted using a DND 626 - Task Authorization Form. ECRs will typically be initiated in order to:

- (a) Correct a deficiency that is not otherwise covered by the Contract;
- (b) Add or modify interface or interoperability requirements;
- (c) Make a significant and measurable change in the operational capabilities or logistics supportability of the system or item;
- (d) Generate life cycle cost-savings; or
- (e) Maintain the equipment availability for the life of the TCR system.

9.2.4. An FSR will be requested by Canada to have the Contractor provide expert technical assistance on problems which require the technical knowledge, skills and/or experience that is not immediately available within Crown resources. FSR support may be provided on-site or remotely, depending on the nature of the requirement, as agreed by Canada and the Contractor for the assigned task.