



### **NOTICE**

This documentation has been reviewed by the technical authority and does not contain controlled goods.

### **AVIS**

Le présent document a été examiné par l'autorité technique et ne vise pas de marchandises contrôlées

## **STATEMENT OF WORK FOR A MODULAR INDOOR RANGE**

### **1 SCOPE**

#### **1.1 Purpose**

This document identifies the work requirements for a modular indoor range required by the Government of Canada.

#### **1.2 Background**

The Department of National Defence (DND) is establishing a unit's training capability at Canadian Forces Base (CFB) Kingston. Canadian Armed Forces (CAF) members must maintain a high level of proficiency in firing of small arms (9 mm; 5.56 mm) in static and tactical situations. DND has a requirement for a twenty-five meter (25 m) indoor range that allows for lane firing at stationary targets, as well as the integration of a DND-owned simulation system enabling the simulation of realistic operational scenarios requiring fast decision making.

#### **1.3 Terminology**

The following terms provided are applicable to Annex B – Statement of Work.

- a. "Range" will be used in place of "modular indoor range", "modular range", and "indoor range";
- b. "Part" is defined as individual whole pieces of the range which cannot be sub-divided and require replacement when damaged or non-functional;
- c. "Component" is defined as individual pieces of the range which can be sub-divided in constituent parts and are repairable or replaceable as a unit;
- d. "Consumable" is defined as a part or component intended to be used up or "consumed" through operation and use of the range, requiring replacement;
- e. "Contracting Authority" will be represented by "CA";
- f. "Procurement Authority" will be represented by "PA";
- g. "Technical Authority" will be represented by "TA";
- h. "Public Services and Procurement Canada" and "Public Works and Government Services Canada" will be represented by "PSPC";

- i. “Operator” is defined as the personnel operating the range including:
  - i. Range Safety Officers;
  - ii. Range Staff; and
  - iii. Training staff.
- j. “Shooter” is defined as the personnel firing on the range with either live fire or simulated-fire weapons; and
- k. A Professional Engineer (P.Eng) is licensed by and registered with a professional engineering society in Canada, to perform engineering work. Engineers licensed by or registered with an engineering society outside of Canada, which has an equivalency agreement with or is considered equivalent by a Canadian Engineering Society, will be considered equivalent for the purposes of this document.

## **2 APPLICABLE DOCUMENTS**

### **2.1 General**

The following documents form part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract. The version of document enforced must be the version active as of RFP posting date.

### **2.2 Order of Precedence**

Unless otherwise noted herein, in the event of a conflict between the text of this document and the references cited, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### **2.3 Documents and Standards**

#### **2.3.1 Government of Canada Standards**

- a. B-GL-381-001/TS-000 – Operational Training - Training Safety;

#### **2.3.2 Other Government Standards**

- a. N/A

#### **2.3.3 Commercial Publications**

- a. N/A

## **3 PROJECT MANAGEMENT**

### **3.1 Project Management Plan**

The Contractor must establish, maintain, and follow a project management plan. The plan must detail, at a minimum, the following elements;

#### **3.1.1 Master Schedule**

The master schedule must:

- a. Describe in detail all the activities to be performed from the time of contract award to final written acceptance of the range by the TA, including:
  - i. Manufacturing;
  - ii. Documentation preparation;
  - iii. Site preparation and site access;

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- iv. Delivery and installation; and
- v. Testing and verification.
- b. Include a work breakdown structure;
- c. Highlight the critical path; and
- d. Identify project milestones.

### 3.1.2 Communications Plan

The communications plan must:

- a. Include contact information (name, position, organization, telephone number and e-mail address) for the primary points of contact for the contracting, financial, and technical aspects of the project; and
- b. Identify the flow of communication for the project.

### 3.1.3 Simulator Integration Plan

The simulator integration plan must:

- a. Outline how the simulator requirements will be provided for; and
- b. Establish the provisions enabling sharing of all necessary data between the Crown's simulator provider (i.e. Meggitt Training Systems) and the Contractor to ensure full functionality of the simulator once installed in the range.

### 3.1.4 Quality Assurance

The project management plan must outline the Contractor's quality assurance plan and processes;

### 3.1.5 Testing and Verification Plan

The testing plan must describe the Contractor's plan for performing the certification and testing required in paragraphs 3.2.4 Initial Inspection at Contractors Facility and 3.2.5 Acceptance Inspection.

## **3.2 Meetings**

### 3.2.1 Kick-Off Meeting

Within two (2) weeks of contract award, the CA will schedule a Kick-Off Meeting to be held in the contractor's facility. The Kick-Off Meeting must be held within 90 calendar days. The meeting topics must include;

- a. Introduction of the main participants involved in this project;
  - i. The Contractor representatives, including the project manager and the primary points of contact; and
  - ii. The Crown representatives including:
    - 1. The CA;
    - 2. The PA; and
    - 3. The TA.
- b. Review and discuss the submitted project management plan and schedule;
- c. Discuss the submission of technical documentation;
- d. Discuss inspection, testing, and verification;
- e. Conduct a preliminary design review:
  - i. To discuss the locations of requirements as specified in Volume 2 Annex C -

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- Specification; and
- ii. Identify the location of accessories and components.
- f. Discuss security requirements;
- g. Address any new questions, concerns and/or comments; and
- h. Discuss contract options.

### 3.2.2 Final Design Review

A Final Design Review (FDR) will be held at the Contractor's facility, to confirm and finalize the locations of requirements as specified in Volume 2 Annex C – Specifications. The FDR must be held no later than 120 days after the kick-off meeting. The Crown will chair the FDR. The Contractor will provide data and personnel for the efficient conduct of the FDR.

### 3.2.3 Progress Review Meeting(s)

Progress Review Meetings (PRM) must be held at a minimum once a month to discuss the progress of the project; any problems encountered and to work towards solutions. The Crown will chair the PRMs. The Contractor will provide data and personnel for the efficient conduct of the PRMs. Meeting location will be discussed and determined, as agreed upon between the Contractor and the Crown.

### 3.2.4 Initial Inspection at Contractors Facility

Prior to delivery and installation at the delivery location the Crown will perform an initial inspection of the range modules at the Contractor's manufacturing facility. If required the inspection can be performed in parts at multiple facilities. The Contractor must:

- a. Provide to the TA in writing, confirmation of readiness for initial inspection at least thirty (30) calendar days prior to readiness for inspection;
- b. Provide support as outlined in paragraph 4.1 Contractor Facility Site Support.
- c. With the TA or an authorized representative present to witness:
  - i. Perform preliminary and indicative tests in accordance with 4.3.1.1 - General Inspection;
  - ii. Confirm the range dimensions are in accordance with the Contractor's design documents;
  - iii. Demonstrate complete ballistic containment and protection;
  - iv. Demonstrate compliance of the shooting lanes;
  - v. Demonstrate compliance of the shooting stalls;
  - vi. Demonstrate compliance of the Open Preparation Area / Shooting Gallery;
  - vii. Demonstrate compliance of the control room;
  - viii. Demonstrate compliance of the air filtration;
  - ix. Demonstrate compliance of lead contamination containment;
  - x. Demonstrate compliance with the simulator infrastructure requirements;
  - xi. Demonstrate compliance for all doorway requirements; and
  - xii. Demonstrate compliance with design and construction requirements.
- d. Allow for a preliminary on-site inspection by the simulator installation contractor's representatives in preparation of the simulator installation.

### 3.2.5 Acceptance Inspection

After delivery and installation of the range and prior to acceptance the Crown will perform an

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acceptance inspection. For the purposes of acceptance inspection the pre-assembled condition and performance of the range will be “new” and “meeting the performance and specifications outlined in Volume 2 Annex C – Specification”. As part of the acceptance inspection the Contractor must:

- a. Provide to the TA in writing confirmation of installation and readiness for acceptance testing;
- b. Have fully assembled the range;
- c. With the TA or authorized representative present to witness:
  - i. Perform testing in accordance with 4.3.1 - Post-Installation Testing;
  - ii. Confirm the range dimensions are in accordance with the Contractors design documents;
  - iii. Demonstrate complete ballistic containment and protection;
  - iv. Demonstrate compliance of the shooting lanes
  - v. Demonstrate compliance of target systems;
  - vi. Demonstrate compliance of the shooting stalls;
  - vii. Demonstrate compliance of the Open Preparation Area / Shooting Gallery
  - viii. Demonstrate compliance of the control room
  - ix. Demonstrate compliance of the range controls;
  - x. Demonstrate compliance of the lighting and electrical system;
  - i. Demonstrate compliance of the Heating, Ventilation and Air Conditioning (HVAC) System, air filtration, and air flow;
  - ii. Demonstrate compliance of lead contamination containment;
  - xi. Demonstrate compliance with the simulator infrastructure requirements;
  - xii. Demonstrate compliance for all doorway requirements; and
  - xiii. Demonstrate compliance with design and construction requirements.
- d. Allow for an on-site inspection of the simulator installation contractor’s representatives in preparation of the simulator installation.

#### 3.2.6 Other Meeting(s)

Additional meetings might be required and must be approved by the Crown Authorities as identified in the Contract.

#### 3.2.7 Meeting Location(s)

Unless otherwise specified all meetings will take place either at the Contractors facilities or by a virtual meeting location (such as teleconference or video conference).

### **3.3 Project Management Documents**

#### 3.3.1 Language

All project management documentation must be in English.

#### 3.3.2 Project Management Plan

The Contractor must provide an electronic copy of the project management plan, developed in accordance with paragraph 3.1 – Project Management Plan, within thirty calendar (30) days of contract award;

#### 3.3.3 Project Status Updates

The Contractor must provide a project status update once every calendar month commencing with

the delivery of the project management plan, and at least 5 business days prior to the next scheduled progress review meeting.

#### 3.3.3.1 Project Status Updates content

Project Status updates must:

- a. Include a list showing the work elements and milestones in the master schedule which have been completed since the previous update;
- b. Include a list of work elements that are or will be in progress, and milestones that will be met during the next reporting period;
- c. Include an updated copy of the master schedule;
- d. Identify work elements that have been delayed or moved up;
- e. Highlight any changes to the project critical path; and
- f. Include any changes or updates to the project management plan.

#### 3.3.4 Meeting agendas

The Contractor must provide a draft meeting agenda, to be amended or approved by the CA or appropriate Government of Canada representative, at least ten (10) business days prior to each scheduled meeting;

#### 3.3.5 Meeting Minutes / Summary

The Contractor must provide a draft copy of minutes or summary for each meeting (including virtual meetings) where discussion took place. A draft copy of the minutes or summary must be provided to the CA or lead Government of Canada representative present for comment and approval within five (5) business days of conclusion of the meeting. Upon receipt of approval, a final copy including changes requested must be issued by the contractor within five (5) business days.

## 4 SYSTEM ENGINEERING

### 4.1 Contractor Facility Site Support

During Crown visits, including its authorized representatives, to a Contractor's facility the Contractor must provide at a minimum:

- a. At least one person as a subject matter expert to answer all inquiries and operate the range and related equipment as required for the duration of the visit;
- b. All necessary tools and facilities to assist the Crown's representatives; and
- c. An indoor space with office furniture to enable meetings, including private meetings by just the government representatives, or be used as a temporary workspace.

### 4.2 Simulator Integration Support

The Contractor must provide full support to the Crown and the Crown's simulator provider (Meggitt Training Systems) to aid in the full integration of the simulator system in the range.

#### 4.2.1 Simulator Installation

The Crown and its representatives will provide, install, and maintain the simulator system that will be used in the range.

### 4.3 Testing

The Contractor must arrange for testing and verification of the following system components, to demonstrate and verify the condition and performance of the range, for acceptance by the TA or an authorized representative. Testing will be witnessed by the TA or an authorized representative.

#### 4.3.1 Post-Installation Testing

Prior to acceptance of the range at a new installation location, the Contractor must arrange for the following requirements to be tested and verified after installation is completed.

##### 4.3.1.1 General Inspection

A general inspection of the condition of the range must be conducted, including a written report containing all the observations made to ensure the range is received as required by Volume 2 Annex C - Specifications.

##### 4.3.1.2 Air Quality

The air quality must be tested in accordance with B-GL-381-001/TS-000 Chapter 3 Section 2, to obtain a time-weighted lead concentration, and maximum time and rounds exposure for all users. The crown will provide the requisite DND standard test equipment, DND personnel to conduct testing during a 1 day 8-hour shooting session.

Note: For the safety of all users DND does not permit a concentration of more than 0.15 mg/m<sup>3</sup>.

##### 4.3.1.3 Air Flow

The air flow must be tested, by a P.Eng with targets, tables, and backdrops present for normal use. Final testing must clearly demonstrate that the air flow meets the required standards. At a minimum testing must be conducted at the firing line, in the preparation area and at least 500 cm (196 in) downrange of the firing line, at the four shooter breathing zones.

##### 4.3.1.4 Exhaust Air Quality

The exhaust air must be tested by a P.Eng or independent testing body, and the lead particulate concentration must be measured. Lead particulate levels must meet the requirement.

##### 4.3.1.5 Electrical and Lighting System

The electrical and lighting system, including emergency lighting must be tested to confirm performance, by a P.Eng or qualified electrician. Final testing must clearly demonstrate that the electrical and lighting system meets the requirement.

##### 4.3.1.6 Range Control Systems

The range control systems must be tested by a qualified technician. Final testing must clearly demonstrate that the range control system meets the requirement.

##### 4.3.1.7 Retrieval System

The target retrieval system must be tested. Final testing must clearly demonstrate that the target retrieval system meets the requirement.



#### 4.3.1.8 Sound transmission

Sound transmission on the exterior and inside the control must be tested with all 8 lanes in use. Final testing must clearly demonstrate that the sound insulation and barrier(s) meet the requirement.

#### 4.3.1.9 Temperature Control, Heating and Cooling System

The range temperature control, and heating, ventilating, and cooling systems, must be tested by a P.Eng or qualified HVAC technician to confirm the systems meets the requirement.

#### 4.3.1.10 Two-way intercom and camera system

The two-way intercom system must be tested. Final testing must clearly demonstrate that the intercom and camera system meets the requirement.

#### 4.3.1.11 Water ingress

The range roof and all weather seals must be tested. Final testing must clearly demonstrate that the weather seals provide the protection required.

### 4.3.2 Government Furnished Equipment and Crown Support

For the purposes of testing and verification at the installation location, the Crown will make available to the Contractor a maximum of:

- a. One (1) shooter per lane as required for testing each equipped with:
  - i. One (1) C8-SFW (M4) rifle;
  - ii. One (1) Sig Sauer P226 pistol; and
  - iii. One (1) MP5-N submachine gun or personal defence weapon equivalent.
- b. 7000 rounds of NATO standard 9mm ammunition;
- c. 7000 rounds of NATO standard 5.56mm ammunition;
- d. Two (2) virtual target simulator systems; and
- e. Sampling equipment to enable air quality sampling over an 8-hour 1 day test period, in accordance with paragraph 4.3.1.2.

### 4.3.3 Damage during testing

The testing described in section 4.3 Testing, with the exception of testing requiring the firing of live ammunition, must be non-destructive. The Contractor is not required to repair damage, incurred during testing, that would normally occurring during the daily operation of the range and does not interfere or prevent the full operation and use of the range, such as surface marks and scratches.

## 4.4 **Preparation for Delivery and Installation**

Confirmation of the mechanism for the provision of the range infrastructure requirements at the installation site, as indicated by the Contractor's documentation, will be confirmed by the Crown within 120 days of contract award.

The Contractor must contact the TA and CA no later than 10 business days prior to the 120 day deadline to discuss confirmation of the provisions.

## 4.5 **Delivery and Installation**

Delivery must not commence until receipt of written approval from the TA has been received by the Contractor, following the initial inspection of the range at the Contractors facility, as described in



paragraph 3.2.4 - Initial Inspection at Contractors Facility.

The Contractor must be responsible for all aspects of the delivery and installation of the range and all associated components required for the successful completion of all work elements as identified under this Contract.

In each installation of the range, the Contractor must completely remove and properly dispose of all seals, sealants, and gaskets, etc. used in the sealing together of each module. All such materials must be replaced with new materials.

#### 4.5.1 Site responsibilities

The Contractor is responsible for the installation site during delivery, installation, and assembly including:

- a. Work site safety;
- b. Site clean-up at the end of each day;
- c. Site clean-up after installation;
- d. Recycling of waste preparation materials where possible;
- e. Disposal of waste;
- f. Temporary toilets and sanitation stations; and
- g. Protection to the incomplete range, components, and equipment during construction, from the elements, including overnight storage.

The Contractor must provide the request(s) in writing to the TA no later than thirty (30) days prior to the scheduled delivery date. At the request of the Contractor the Crown will provide:

- a. One (1) on-site security guard (either over night or 24-hour) to monitor the construction site; and/or
- b. Site security in the form of a temporary fence.

#### 4.5.2 Government Provided Infrastructure

The Crown will provide the following to the final installation location:

- a. An electrical provision and hook-up, as outlined in Appendix 1 of Annex B;
- b. A natural gas provision and hook-up, as outlined in Appendix 1 of Annex B; and
- c. A municipal water provision, as outlined in Appendix 1 of Annex B.

#### 4.5.3 Security Requirements

##### 4.5.3.1 General DND Site Access

No unauthorized electronic devices must be brought into DND and Crown controlled access areas. Unauthorized electronics brought into a controlled access area will be subject to search and seizure.

All personnel accessing controlled DND facilities or travelling onto controlled Crown property must:

- a. Provide valid government issued photo identification, (including full name) for identity verification; and
- b. Sign in and out each time they enter or leave a controlled area.

#### 4.5.3.2 Visit Clearance Request

At least 30 days prior to any meeting (including delivery and installation), on a DND facility, the contractor must provide a complete list of attendees to the TA to complete a visit clearance request, in English or Canadian French. The list of attendees must include:

- a. Full name (First, Last, Initials);
- b. Birthdate;
- c. Birth Location;
- d. Personal Reference Identifier (PRI) if available;
- e. Security Clearance; and
- f. Nationality.

### 4.6 Certifications

The Contractor is responsible for arranging, obtaining, and providing to the Crown, certifications for the modular range, including preliminary verification of compliance with the specification outlined in Volume 2 Annex C.

#### 4.6.1 Testing and Certification Reports

The Contractor must provide to the TA:

- a. Pre-delivery certification and test reports – within ten (10) business days of testing completion, one (1) electronic copy; and
- b. Post-delivery certification and test reports – within ten (10) business days of testing completion, one (1) electronic copy.

The Contractor must provide to the range delivery location:

- a. Post-delivery certification and test reports – One (1) electronic copy, within 20 business days of installation completion.

##### 4.6.1.1 Certification and Test Report Content

Test reports must:

- a. Be in English;
- b. Be provided for each test to be performed as detailed in paragraph 4.3;
- c. Detail:
  - i. Testing body qualifications;
  - ii. Test method and materiel;
  - iii. Test result summaries;
  - iv. Raw test data; and
  - v. Discussion and notes as applicable.
- d. Be signed and dated by a P.Eng confirming the authenticity of the information contained in the report.

### 4.7 Range Acceptance

Upon receipt of test reports and certification which clearly demonstrate compliance with the specification outlined in Volume 2 Annex C, the TA will confirm in writing within 5 business days, formal acceptance of the range.

#### **4.8 DND Certification and Licensing Assistance**

The Contractor must provide assistance to the TA in obtaining certification and licensing from the DND Range certification body. At a minimum, if and when requested by the Crown, the Contractor must:

- a. Provide Technical assistance and information to the TA as required, including at a minimum, but not limited to:
  - i. Review of the safety cases analysis by a P.Eng;
  - ii. Provide an analysis of ricochet potential in the range;
  - iii. Draft copies of drawings of the range in an electronic format; and
  - iv. Consultation with the TA as required.
- b. Make arrangements, at no additional cost to the Crown, for Crown personnel to visit, inspect, and utilize at least one range previously manufactured by the manufacturer. The range(s) visited must:
  - i. Be designed and manufactured by the manufacturer of the range to be delivered to the Crown; and
  - ii. For the feature(s) being inspected and utilized, have the same features as the range to be delivered to the Crown.

### **5 INTEGRATED LOGISTIC SUPPORT**

#### **5.1 Documentation**

##### **5.1.1 General Requirements**

- a. All documentation must be provided in English and Canadian French unless specifically stated otherwise;
- b. All electronic documentation must be provided in the following formats, at a minimum, as appropriate for the information contained:
  - i. Drawings in both:
    1. Drawing Interchange Format (.dxf) compatible with AutoCAD or a TA approved equivalent; and
    2. Portable Document Format (.pdf) compatible with Adobe Acrobat X.
- c. Manuals in:
  - i. Formats compatible with Microsoft Office 2010 Professional; or
  - ii. Portable Document Format (.pdf) compatible with Adobe Acrobat X.
- d. Documentation provided in .pdf must enable copying of text to other word editing or spreadsheet software.

##### **5.1.2 Technical Documents**

###### **5.1.2.1 Draft Documentation**

Draft copies of the following technical documents must be submitted to the TA, in English only:

- a. Operator manual – 60 calendar days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy;
- b. Maintenance manual – 60 calendar days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy;
- c. Preliminary Range Layout Drawings – Within 30 calendar days of contract award, one (1)

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- electronic copy, and two (2) paper copies (one copy on 8.5” x 14” and one on minimum 11” x 17”, or their ANSI equivalents);
- d. Spare parts list – 60 calendar days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy;
- e. Recommended spare parts list – 60 calendar days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy;
- f. Range infrastructure requirements – Within 30 calendar days of contract award, one (1) electronic copy; and
- g. Training documentation – 60 calendar days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy.

Documentation provided for bidding purposes will not be considered delivered for contract purposes

The TA must approve all documentation before final acceptance of the range will be provided. The Contractor must update and revise the documentation as directed by the TA within 15 business days of receipt of feedback.

When a draft copy of documentation is received by the TA, the TA will provide written feedback to the Contractor for editing or confirmation of approval of the document within the later of:

- a. Ten (10) business days from document receipt; or
- b. Ten (10) business days of the initial inspection as outlined in paragraph 3.2.4 Initial Inspection at Contractors Facility.

Please note that manuals are returned to a contractor for correction or amendment an average of two to three (2 to 3) times before a final version is approved.

#### 5.1.2.2 Technical Documentation Final Versions

Final versions of the following documentation must be provided to the TA:

- a. Operator manual – Five (5) business days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy;
- b. Maintenance manual – Five (5) business days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy;
- c. Product data summaries manual – Within 90 calendar days of contract award, one (1) electronic copy;
- d. Range Layout Drawings – Five (5) business days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy, and two (2) paper copies (one copy on 8.5” x 14” and one on minimum 11” x 17”, or their ANSI equivalents);
- e. Spare parts manual – 30 calendar days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy;
- f. Recommended spare parts list – 30 calendar days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy;
- g. Range infrastructure requirements – Within 60 calendar days of contract award, one (1) electronic copy; and
- h. Training documentation – Five (5) business days prior to the scheduled arrival of the range at the installation site, one (1) electronic copy;

Final copies of the follow documentation must be provided to the installation site during range

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delivery and installation:

- a. Operator manual – One (1) electronic copy, two (2) paper copies;
- b. Maintenance manual – One (1) electronic copy, two (2) paper copies;
- c. Product data summaries manual – One (1) electronic copy;
- d. Spare parts manual – One (1) electronic copy;
- e. Range infrastructure requirements – One (1) electronic copy, one (1) paper copy; and
- f. Training documentation – One (1) electronic copy, one (1) paper copy.

#### 5.1.2.3 Operator Manual

The operator manual must include at a minimum:

- a. Recommendations on lead contamination containment procedures and detailed instructions on equipment and accessories used to limit lead contamination and exposure;
- b. Instructions on care, cleaning, and basic maintenance of the range;
- c. Detailed operating instructions for the range;
- d. Range conduct in compliance with DND standard B-GL-381-001/TS-000
- e. Safety warnings and instructions for the range, including recommended safety equipment;
- f. List of the primarily held or regularly replaced parts and components with part numbers and National Stock Numbers, and replacement schedule;
- g. Start-up and shutdown procedures;
- h. Regulatory procedures;
- i. Control procedures;
- j. Emergency procedures;
- k. Seasonal operational instructions;
- l. Range Layout Drawings;
- m. Material Safety Data Sheets;
- n. Table of contents;
- o. Keyword and topic index with page numbers; and
- p. Contact information for further assistance.

#### 5.1.2.4 Maintenance Manual

The maintenance manual must include at a minimum:

- a. Account for lead contamination and exposure in all instructions;
- b. Trouble-shooting instructions;
- c. Preventative maintenance schedule based on # rounds fired (e.g. every 10,000 rounds) hours of operation, or regular time schedule (e.g. once a month) as appropriate:
  - i. The preventative maintenance schedule must include a supporting table listing the consumables to be replaced and the replacement schedule.
- d. Preventative maintenance procedures:
  - i. Preventative maintenance procedures must prevent the collection of water on the floor below the ballistic and sound damping tiles.
- e. Regularly maintenance schedule based on # rounds fired (e.g. every 10,000 rounds), regular time schedule (e.g. once a month) as appropriate:
  - i. The regular maintenance schedule must include a supporting table listing the consumables to be replaced and the replacement schedule.

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- f. Regular maintenance procedures:
  - i. Regular maintenance procedures must prevent the collection of water on the floor below the ballistic and sound damping tiles.
- g. Material Safety Data Sheets;
- h. Table of contents;
- i. Range Layout Drawings;
- j. Electrical diagrams for the Range;
- k. Electrical diagrams for the HVAC and filtration system;
- l. Mechanical and component diagrams for the HVAC and filtration system;
- m. Instructions for converting the range heating source from natural gas to propane and the reverse, if available.
- n. Recommended cleaning methods and procedures;
- o. Complete instructions on the care, cleaning, and maintenance of each component of the range;
- p. Demilitarization and disposal instructions;
- q. Keyword and topic index with page numbers;
- r. Safety warnings and instructions, including recommended safety equipment; and
- s. Contact information for further assistance.

#### 5.1.2.5 Range Layout Drawings

The range layout drawings must:

- a. Be stamped and signed by a P. Eng;
- b. Show to scale the range layout with component location and appropriate measurements;
- c. Include at a minimum the following views:
  - i. Top-down;
  - ii. Long side; and
  - iii. 3-dimensions from upper corner.
- d. Show the mechanical electrical components; and
- e. Be provided with to scale on both 8.5” x 14” and at a minimum 11” x 17”, or ANSI equivalent.

#### 5.1.2.6 Product Data Summaries Manual

The product data summaries manual must include data summaries and product data sheets for the major range components including:

- a. Bullet trap and collection system parts;
- b. Target retrieval system;
- c. Heating, air conditioning and ventilation system;
- d. Operator station;
- e. System software; and
- f. Shooter controls.

##### 5.1.2.6.1 Data Summary information

Product data summary must include the following data, as appropriate:

- a. Original equipment manufacturer;
- b. Make and model;

- c. Serial numbers;
- d. Manufacturer's catalogue sheets; and
- e. Performance charts and diagrams used to illustrate standard manufactured products.

#### 5.1.2.7 Parts Manual

The parts manual must contain:

- a. Exploded view drawings of the range with replaceable parts clearly labeled and identified; and
- b. A complete list of all replaceable parts components or assemblies in the Range including:
  - i. Part name;
  - ii. Part number;
  - iii. Original manufacturer if different than Contractor (with NCAGE if available);
  - iv. Original manufacturer part number if different than Contractor's part number;
  - v. NSN (National Stock Number or NATO Stock Number);
  - vi. Part value/cost on the date of contract award;
  - vii. Estimated shelf life; and
  - viii. Estimated service life

#### 5.1.2.8 Range Infrastructure Requirements

The range infrastructure requirements must provide all the information and drawings to enable establishment of the necessary infrastructure for the range prior to the installation including:

- a. Electrical requirements including power provision, and electrical connection requirements;
- b. Footing requirements including layout, specifications, and preparation instructions to properly support the range;
- c. A requirement for a concrete or asphalt surface at least 2 m wide outside of the maintenance bays to enable snow clearing operations;
- d. Range plan, weight and weight distribution, and design profiles; and
- e. Ranges clearance requirements.

#### 5.1.2.9 Training Documentation

Training documentation must:

- a. Cover the topics as outlined in paragraph 5.2.1 Training Topics;
- b. Includes:
  - i. Trainee and Trainer manual(s);
  - ii. Trainer presentations, slideshows, and videos;
  - iii. Course schedule and outline with time estimates;
  - iv. Course requirements (e.g. classroom, tables, computer, projector, etc.)
  - v. Trainee evaluation forms;
  - vi. Course completion certificate template.

## 5.2 Training

The Contractor must provide operator training, in the style of “Train the Trainer”. The training course must:

- a. Take no more than five (5), 8 hour, consecutive business days to complete;



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- b. Accommodate 5 to 8 student trainers;
- c. Train attendees in the topics specified in paragraph 5.2.1;
- d. Train and qualify attendees to train operators on the topics specified in paragraph 5.2.1;
- e. Train and qualify attendees to train shooters utilizing the range;
- f. Train and qualify attendees to train and qualify trainers of the range;
- g. Provide an opportunity for the attendees to use the range;
- h. Include one copy of the student training manuals and materials for each attendee; and
- i. Provide opportunities, and answers to all attendee questions about the use and care range, and training on the use and care of the range.

#### 5.2.1 Training Topics

The training must cover at a minimum the following topics:

- a. Range overview;
- b. Facility access points;
- c. Storage and containment availability;
- d. Operation and programming of the target retrieval system;
- e. Operation of the two-way remote intercom system equipment;
- f. Individual lane controls;
- g. Operation of camera's and access points;
- h. The bullet capture system
- i. Electrical system overview;
- j. Lighting overview;
- k. Roof overview;
- l. The HVAC system including but not limited to the following topics;
  - i. HVAC operation;
  - ii. Temperature control;
  - iii. Exhaust fan; and
  - iv. Air flow.
- m. Introduce the Health and Safety features that form part of the range;
- n. Review recommended lead contamination containment procedures;
- o. Review recommended procedures for limiting lead exposure;
- p. Emergency evacuation procedures;
- q. Review the operation manual with the attendees;
- r. Infrastructure operator maintenance; and
- s. Technical support contract information.

#### 5.2.2 Training course location, time and facilities

Training must take place within 90 business days of range acceptance. At least 30 days prior to the scheduled delivery of equipment, the contractor must contact the TA to:

- a. Arrange specific training dates;
- b. Confirm training location; and
- c. Confirm training location's primary point of contact.

## **6 TECHNICAL REQUIREMENTS**

### **6.1 Deliverables**

The Contractor must:

- a. Provide and install a range, meeting the requirements outlined in Volume 2 Annex C – Specification;
- b. Complete the Project Management Tasks outlined in paragraph 3 - Project Management
- c. Provide Engineering Support in accordance with paragraph 4.1 - Contractor Facility Site Support, and paragraph 4.2 - Simulator Integration Support;
- d. Complete and pass testing in accordance with paragraph 4.3 - Testing;
- e. Deliver and install the range and all accessories in accordance with paragraph 4.4 - Preparation for Delivery and Installation, and 4.5 - Delivery and Installation;
- f. Provide certifications in accordance with paragraph 4.6 - Certifications;
- g. Provide assistance in accordance with paragraph 4.8 - DND Certification and Licensing Assistance;
- h. Provide all the documentation in accordance with paragraph 5.1 - Documentation;
- i. Provide a copy of all certifications as required and when requested;
- j. Provide training in accordance with paragraph 5.2 - Training; and
- k. Provide engineering support in accordance with paragraph 4 - System Engineering.