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Québec

K1A 0S5

Bid Fax: (819) 997-9776

**LETTER OF INTEREST**

**LETTRE D'INTÉRÊT**

Comments - Commentaires

**Vendor/Firm Name and Address**

Raison sociale et adresse du

fournisseur/de l'entrepreneur

**Issuing Office - Bureau de distribution**

Electronics, Simulators and Defence Systems Div.  
/Division des systèmes électroniques et des systèmes de  
simulation et de défense

11 Laurier St. / 11, rue Laurier

8C2, Place du Portage

Gatineau

Québec

K1A 0S5

<b>Title - Sujet</b> Request for Information TPS Request for Information: Tactical Power System (TPS)	
<b>Solicitation No. - N° de l'invitation</b> W8476-206276/D	<b>Date</b> 2023-04-14
<b>Client Reference No. - N° de référence du client</b> W8476-206276	<b>GETS Ref. No. - N° de réf. de SEAG</b> PW-\$\$QF-125-29040
<b>File No. - N° de dossier</b> 125qf.W8476-206276	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> Eastern Standard Time EST <b>on - le 2023-12-29</b> Heure Normale du l'Est HNE	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Lacoursiere, Paul	<b>Buyer Id - Id de l'acheteur</b> 125qf
<b>Telephone No. - N° de téléphone</b> (343) 551-1529 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> DEPARTMENT OF NATIONAL DEFENCE 101 COLONEL BY DR. MGen Georges R. Pearkes Building OTTAWA Ontario K1A0K2 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

<b>Delivery Required - Livraison exigée</b> See Herein – Voir ci-inclus	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

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File No. - N° du dossier

Buyer ID - Id de l'acheteur  
125QF  
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**NOTICE:** Vendors are advised that any documentation issued under the previous LOIs have has been superseded by those documentation contained within this RFI.

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## **PART 1 – PURPOSE AND NATURE OF THE REQUEST FOR INFORMATION (RFI)**

### **1.1 Purpose of the Request for Information**

#### **1.1.1 Background**

Public Services and Procurement Canada (PSPC) is launching this Request for Information (RFI) to engage industry, through consultation, on its interest, capacity and ability to supply and deliver the requirements of the Department of National Defence's Tactical Power System (TPS) project. The Tactical Power System (TPS) will provide the Land Forces with operationally reliable and safe electric power systems, while minimizing logistical demands and environmental impacts, to be used for Headquarters, Communications, Logistics and other tactical troop concentrations during national emergencies, training and operations overseas.

#### **1.1.2 The purpose of this initial RFI is to achieve the following:**

- a) Provide industry with initial information on the preliminary requirements of the TPS project;
- b) Request detailed information and feedback from industry, including preliminary cost estimates;
- c) Determine the capability of industry to satisfy the requirements;
- d) Request preliminary interest, input and questions for a possible Industry Day;
- e) Determine any limitations and restrictions to industry capabilities, such as, but not limited to, Intellectual Property Rights and other factors that would impact their ability to bid on any resulting solicitation and/or to deliver the requirements.

Respondents are requested to provide answers and feedback related to the attached drafts documents with priority given to estimated cost estimates at Attachment One and Two. The estimated costing is required in order for Canada to prepare its final Project Approval documents.

Further amendments to this RFI may be conducted with, but not limited to, the following objectives:

- a) Provide industry with updated Statement of Requirements and sustainment requirements;
- b) Refine the requirements and further develop the procurement and sustainment strategies;
- c) Gather industry knowledge, expertise and recommendations with regard to best practices that would increase the success of a solicitation and/or identify any risks that would impact a solicitation;
- d) Obtain industry feedback on any issues that would impact their ability to bid on any resulting solicitation and/or to deliver the requirements; and
- e) Enhance competition, access and fairness to the resulting solicitation(s).

### **1.2 Nature of the Request for Information**

This is not a bid solicitation. This RFI may not result in issuance of a solicitation and will not result in the award of any contract. As a result, interested suppliers of any goods or services described in this RFI should not reserve stock or facilities, nor allocate resources, as a result of any information contained in this RFI. Nor will this RFI result in the creation of any source list. Therefore, whether or not any interested supplier responds to this RFI, this will not preclude that supplier from participating in any future procurement. Also, the procurement of any of the goods and services described in this RFI will not necessarily follow this RFI. This RFI is simply intended to solicit information and feedback from industry with respect to the matters described in this RFI.

Nothing in this RFI will be construed as a commitment from PSPC to issue a solicitation for this requirement. PSPC may use non-proprietary information provided in this review and/or in the preparation of any formal solicitation document.

PSPC will not be bound by anything stated herein and reserves the right to change at any time, any or all parts of the requirement, as it deems necessary. PSPC also reserves the right to revise its procurement approach, as it considers appropriate, either based upon information submitted in response to this RFI or for any other reason it deems appropriate.

### **1.3 Industrial and Technological Benefits**

#### **1.3.1 Application of the Industrial and Technological Benefits (ITB) Policy**

The Industrial and Technological Benefits (ITB) Policy, including the Value Proposition (VP), is not expected to apply to the Tactical Power System (TPS) project. Industry is encouraged to maximize the participation of Canadian industry to meet its requirement.

For more information about the ITB Policy, please visit [www.canada.ca/itb](http://www.canada.ca/itb)

## **PART 2 – RESPONSE INSTRUCTIONS AND INFORMATION**

### **2.1 Nature and Format of Responses Requested**

Canada's current view of its requirement for the TPS project and the preliminary technical requirements are all detailed in this RFI.

Respondents are invited to provide comments regarding the content of any elements of this RFI and related attached documents included in this RFI. Respondents can comment directly on, and return an electronic copy of the applicable Attachments listed. Alternatively, Respondents can comment on a different media and format by appropriately referencing the document and section commented on. Respondents should explain any assumptions they make in their interpretation of the requirements.

Further, Canada is seeking input and responses to specific documents covering important elements of the requirement prior to proceeding with developing its procurement strategy.

Respondents are invited to provide the name(s) of the person(s) who will participate to prepare supplier's responses.

### **2.2 Response Costs**

Canada will not reimburse any respondent for expenses incurred in responding to this RFI.

### **2.3 Treatment of Responses**

#### **2.3.1 Use of Responses**

Responses will not be formally evaluated. The responses received may be used by Canada to develop or modify procurement strategies or any draft documents contained in this RFI. Canada will review all responses received by the RFI closing date. Canada may, at its discretion, review responses received after the RFI closing date.

#### **2.3.2 Review Team**

A review team composed of representatives of PSPC and the Department of National Defence (DND) will review the responses and participate in all industry engagement activities. Canada reserves the right to hire any independent consultant, or use any Government resources that it considers necessary to review any response. Not all members of the review team will necessarily review all responses.

### **2.3.3 Confidentiality**

Respondents should indicate and mark any portions of their response that they consider proprietary or confidential. Canada will handle these portions in a confidential manner in accordance with the Access to Information Act of Canada.

### **2.3.4 Follow-up Activity**

PSPC may, at its discretion, contact any respondents to follow up with additional questions or for clarification of any aspect of a response. PSPC may, at its discretion agree to meet with respondents to provide respondents with the opportunity to present and/or demonstrate their capabilities in relation to this RFI.

Respondents' presentations are at no obligation to PSPC and respondents will be responsible for all costs associated with PSPC's invitation to make a presentation.

### **2.3.5 Fairness Monitor**

PSPC has contracted the services of an independent third party fairness monitor to oversee this procurement process and will be present at all industry engagement activities.

## **2.4 Contents of this RFI**

This RFI contains preliminary draft technical and sustainment requirements, costing information, and procurement information. Comments regarding any aspect of this RFI are requested. This RFI also may contains specific questions addressed to the industry.

## **2.5 Format of Responses**

### **2.5.1 Response Preparation and Submission**

Responses must be submitted only by Email to:

Name: Paul Lacoursiere  
Title: Contracting Authority  
Public Works and Government Services Canada  
Acquisitions Branch  
Directorate: Supply Team Lead; Navigation, Sonar and Radar Systems Division  
Address: 11 Laurier St., PDP3, Gatineau Quebec  
Telephone: Cell 343-551-1529  
E-mail address: [Paul.Lacoursiere@tpsgc-pwgsc.gc.ca](mailto:Paul.Lacoursiere@tpsgc-pwgsc.gc.ca)

Due to the nature of the Request for Information, transmission of responses by mail/courier to PSPC **will not be accepted**.

### **2.5.2 Response Content**

The first page of each document of the response provided should contain:

- a) The RFI number;
- b) The name of the company that the respondent is representing;
- c) The title, the name, and the contact information of the respondent; and
- d) The date of submission of the documents.

All pages should be identified with the company's name along with page numbers.

## 2.6 Enquiries

PSPC will not necessarily respond to enquiries in writing or by circulating answers to all interested suppliers as this is not a solicitation process. However, respondents who have questions regarding this RFI may direct their enquiries to the Contracting Authority named above in section 2.5.1:

## 2.7 Submission of Responses

### 2.7.1 Time and Place for Submission of Responses

The RFI will remain open until 30 December 2023. However, Canada is requesting responses to Attachment One and Attachment Two (Costing /Pricing), No later than 01 Aug 2023.

Suppliers interested in providing a response should deliver it in accordance with section 2.5 to the attention of the Contracting Authority by the time and the date listed above to the email address indicated in Part 2 section 2.5.

### 2.7.2 Responsibility for Timely Delivery

Each respondent should ensure their response are delivered on time to the correct email address as stated in section 2.5.

## 2.8 Security Requirements

There are no security requirements associated with responding to this RFI. Any future procurement actions undertaken in support of this requirement might require a government security clearance.

Suppliers interested in being sponsored should begin the process to obtain their security clearance by contacting the Contracting Authority.

## 2.9 Official Languages

Responses to this RFI are requested to be presented in either of the Official Languages of Canada.

## 2.10 Industry Day and Consultations

During this RFI period, the following activities may take place. A formal RFI Amendment will be submitted with details if and when required:

- Industry Day(s);
- One-on-One sessions;
- Working Group Meetings.

Canada will not reimburse any respondent for expenses incurred in relation to the attendance of any of the above activities.

Following the industry consultation period, DND will review the responses received and update the provided information as applicable. This RFI will be amended with updated documents as appropriate.

Depending on the content of the additional responses, Canada may engage in additional one-on-one industry consultation sessions.

## **PART 3 – PRELIMINARY PROCUREMENT STRATEGY**

### **3.1 Introduction**

The procurement strategy for any of the TPS project requirements has not yet been determined. PSPC

will confirm, define and identify its proposed procurement strategy following internal and industry consultations such as this initial RFI.

As outlined in section 1.2 above, nothing in this RFI will be construed as a commitment from PSPC to issue a solicitation for this requirement. No timeline has been established for the procurement of TPS Project requirements. This initial and follow-on RFI will inform the development of the potential procurement strategy, requirements and timelines.

#### **3.1.1 Approximate Schedule**

<b>Activity</b>	<b>Date</b>
Initial RFI	14 April 2023
Initial Industry Feedback for Attachments One and Two	01 June 2023
Industry Feedback on remaining Draft Documents	31 August 2023
Current RFI closure	31 December 2023
One-on-One Sessions	TBD
Working Group Meetings	TBD
RFI - Draft RFP	TBD
Posting Final RFP on CanadaBuys	TBD

#### **3.1.2 Trade Agreements**

Unless specified otherwise, the requirement is subject to the provisions of the Canada Free Trade Agreement (CFTA), Canada - European Union Comprehensive Economic and Trade Agreement (CETA), World Trade Organization Agreement on Government Procurement (WTO-AGP), Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), Canada - Chile Free Trade Agreement (CCFTA), Canada - Colombia Free Trade Agreement, Canada - Honduras Free Trade Agreement, Canada - Korea Free Trade Agreement, Canada - Panama Free Trade Agreement, Canada - Peru Free Trade Agreement (CPFTA) and the Canada - Ukraine Free Trade Agreement (CUFTA).

### **3.2 Background**

It is part of PSPC's mandate to plan, execute and manage the procurement of certain Goods and Services on behalf of DND above a certain value.

### **3.3 Additional Industry Capability**

#### **3.3.1 Indigenous Participation.**

The Government of Canada is committed to reconciliation and meaningful engagement with Indigenous Peoples. This project may have considerations for Indigenous Peoples and Firms owned by Indigenous Peoples throughout the duration of the project.

As part of Canada's commitment to reconciliation with Indigenous Peoples, this procurement may require bidders to include an Indigenous Participation Requirement that provides opportunities for Indigenous Firms (including Subcontracting) and Indigenous Peoples to participate in the performance of the federal work through the provision of training and apprenticeship, labour and goods and services. All bidders may be required to provide specific planned participation possibility through a rated criteria for the Indigenous Peoples and Firms owned by Indigenous Peoples throughout the duration of the project.

Canada has worked successfully in the past to leverage capacity building for Indigenous Peoples and is pleased to continue working collaboratively with Indigenous communities and stakeholders on all federal projects.

### **3.4 Preliminary System Requirements and Associated Costing**

The RFI will remain open until 30 December 2023. However, Canada is requesting responses to Attachment One and Attachment Two no later than 01 June 2023.

Attachment four, we will except responses, anytime, prior to the solicitation closing date.

Attachment Five, Six and Seven describes the preliminary technical requirements. Canada requests Respondents to provide responses to these draft documents no later than 31 Aug 2023 in order for Canada to prepare its final Request for Proposal (RFP) documents.

## **PART 4 – INDUSTRY DAY(S) AND ONE-ON-ONE SESSIONS**

To ensure the successful procurement of system requirements as identified by the TPS project, Canada may seek to engage industry through an Industry Day and/or one-on-one sessions, as required, with interested suppliers as part of this RFI process. Canada will engage industry with a formal amendment to the RFI to possibly discuss:

- a) Examine proposed solutions from industry to meet the TPS requirements.
- b) Establish cost estimates associated with potential solutions;
- c) Develop among Canada and industry participants a shared understanding of potential TPS procurement elements, risks, challenges, and opportunities;
- d) Discuss any additional sustainment requirements - including IP rights, supply chain collaboration, performance incentives for a more comprehensive sustainment, and understand current market capacity and interest;
- e) Develop an understanding of Canadian and international capabilities relevant to each of the TPS systems;
- f) Seek industry feedback and participation in developing the procurement and ITB strategies.

### **4.1 Invitation to Industry**

The initial Industry Day has not yet been planned. The location and timings will be published in an amendment to this RFI. The initial Industry Day objective is to review the scope of the preliminary requirements outlined in the RFI and to answer questions. It is recommended that suppliers who intend to submit a response to the RFI attend or send a representative.



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Suppliers are requested to confirm their interest by providing, in writing, to the Contracting Authority,

Dates for additional Industry Days and invitation instructions will be provided at a later date as an amendment to this RFI.

Suppliers who do not attend will not be precluded from submitting a response to the RFI.

#### **4.1.1 One-on-One Sessions**

One-on-one sessions will take place, as required, in 2-3 weeks following the Industry Day and will allow interested suppliers to present their companies, solutions, pose their questions, and raise their concerns. The outcomes and topics for discussion are expected to be as per the Industry Day session. Registration, as well as the date, time, and location, will be coordinated via e-mail with the CA.

#### **4.1.2 Working Group Meetings (if required)**

Industry may be invited to working group meetings comprised of representatives from industry and Canada to discuss specific issues, solutions and to revise solicitation documents as required. The nature and content of this activity, if required, will be determined as the consultation process unfolds.

Attendance to the working group meetings are voluntary and suppliers will be encouraged to attend the meetings. While Canada does not plan to provide new information during these meetings, any new information discussed will be posted through an update to the RFI on Buy and Sell.

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## **ATTACHMENT ONE**

### **Acquisition Milestone and Pricing Schedule**

In the following table, Canada is requesting industry to provide estimated costing information.

Any information received will only be used by the project team for Budgeting purposes.

Canada is requesting a response to this table No Later Than 02 June 2023

Contract Line Item No. (CLIN)	Description	Destination	Due Date (calendar days)	Quality Assurance Code	Unit of Issue	Unit Price	Quantity	Extended Price
001	<p><b>Milestone 1</b></p> <p>On completion and acceptance by the Technical Authority of the System Requirement Review</p> <p>On delivery and receipt by the Technical Authority of the draft documents:</p> <ul style="list-style-type: none"> <li>* Project Management Plan (DID# TPS-ACQ-PM-01)</li> <li>* Work Breakdown Structure (DID# TPS-ACQ-PM-02)</li> <li>* Master Project Schedule (DID# TPS-ACQ-PM-03)</li> <li>* Systems Engineering Management Plan (DID# TPS-ACQ-SE-02)</li> <li>* System Requirements Review (DID# TPS-ACQ-SE-04)</li> <li>* Configuration Management Plan (DID# TPS-ACQ-CM-01)</li> </ul> <p>On delivery and receipt by the Technical Authority of the final documents:</p> <ul style="list-style-type: none"> <li>* Project Management Plan (DID# TPS-ACQ-PM-01)</li> <li>* Work Breakdown Structure (DID# TPS-ACQ-PM-02)</li> <li>* Master Project Schedule (DID# TPS-ACQ-PM-03)</li> <li>* Systems Engineering Management Plan (DID# TPS-ACQ-SE-02)</li> <li>* System Requirements Review (DID# TPS-ACQ-SE-04)</li> <li>* Configuration Management Plan (DID# TPS-ACQ-CM-01)</li> </ul> <p>* On completion of monthly Project Progress Reports (DID# TPS-ACQ-PM-06), Meeting Agendas (DID# TPS-ACQ-PM-04), and Meeting Minutes (DID# TPS-ACQ-PM-05) as required</p>	Technical Authority	Contract Award + 75 days	C	Lot	\$	1	\$ Not to exceed 0.003% of sum of CLIN 0009a to OLIN 0046g
002	<p><b>Milestone 2</b></p> <p>On completion and acceptance by the Technical Authority of the Preliminary Design Review</p> <p>On delivery and receipt, by the DND Technical Authority, of the first draft document:</p> <ul style="list-style-type: none"> <li>* Equipment Breakdown Structure (DID# TPS-ACQ-SE-01)</li> <li>* Contractor Requirements Verification Matrix (DID# TPS-ACQ-SE-03)</li> <li>* Preliminary Design Review Plan (DID# TPS-ACQ-SE-05)</li> <li>* Stowage Plan (DID# TPS-ACQ-SE-11)</li> <li>* Equipment Environmental Assessment (DID# TPS-ACQ-EH-01)</li> </ul> <p>On delivery and acceptance by the DND Technical Authority of the final version:</p> <ul style="list-style-type: none"> <li>* Contractor Requirements Verification Matrix (DID# TPS-ACQ-SE-03)</li> <li>* Preliminary Design Review (DID# TPS-ACQ-SE-05)</li> <li>* Equipment Environmental Assessment (DID# TPS-ACQ-EH-01)</li> <li>* Initial Provisioning Guidance Conference (DID# TPS-ACQ-SP-05)</li> </ul> <p>* On completion of monthly Project Progress Reports (DID# TPS-ACQ-PM-06), Meeting Agendas (DID# TPS-ACQ-PM-04), and Meeting Minutes (DID# TPS-ACQ-PM-05) as required</p>	Technical Authority	Contract Award + 150 days	C	Lot	\$	1	\$ Not to exceed 0.006% of sum of CLIN 0009a to OLIN 0046g
003	<p><b>Milestone 3</b></p> <p>On completion and acceptance by the Technical Authority of the Human Engineering and User Trial and the provision of equipment detailed in Appendix AB to Annex A - Acquisition SOW for Human Engineering and User Trial</p> <p>On delivery and receipt, by the DND Technical Authority, of the first draft document:</p> <ul style="list-style-type: none"> <li>* Failure Prediction Report (DID# TPS-ACQ-LSA-01)</li> <li>* Maintenance Task List (DID# TPS-ACQ-LSA-02)</li> <li>* Training Plan (DID# TPS-ACQ-SP-03)</li> </ul>	Technical Authority	Contract Award + 17 months	C	Lot	\$	1	\$ Not to exceed 0.005% of sum of CLIN 0009a to OLIN 0046g

004	<ul style="list-style-type: none"> <li>* Human Engineering and User Trial Report (DID# TPS-ACQ-SE-06)</li> <li>* Qualification and Testing Plan (DID# TPS-ACQ-SE-07)</li> <li>* Qualification Testing Procedure(s) (DID# TPS-ACQ-SE-08)</li> </ul> <p>On delivery and acceptance by the DND Technical Authority of the final version:</p> <ul style="list-style-type: none"> <li>* Failure Prediction Report (DID# TPS-ACQ-LSA-01)</li> <li>* Maintenance Task List (DID# TPS-ACQ-LSA-02)</li> <li>* Training Plan (DID# TPS-ACQ-SP-03)</li> <li>* Human Engineering and User Trial Report (DID# TPS-ACQ-SE-06)</li> <li>* Qualification and Testing Plan (DID# TPS-ACQ-SE-07)</li> <li>* Qualification Testing Procedure(s) (DID# TPS-ACQ-SE-08)</li> <li>* Stowage Plan (DID# TPS-ACQ-SE-11)</li> </ul> <p>* On completion of monthly Project Progress Reports (DID# TPS-ACQ-PM-06), Meeting Agendas (DID# TPS-ACQ-PM-04), and Meeting Minutes (DID# TPS-ACQ-PM-05) as required</p> <p><b>Milestone 4</b></p> <p>On completion and acceptance by the DND Technical Authority of the First Article Test, and Critical Design Review</p> <p>On delivery and receipt by the DND technical Authority of the 1st draft document:</p> <ul style="list-style-type: none"> <li>* Interim Spares List (DID# TPS-ACQ-LSA-03)</li> <li>* Provisioning Parts Breakdown (DID# TPS-ACQ-LSA-04)</li> <li>* Supplementary Provisioning Technical Data (DID# TPS-ACQ-LSA-05)</li> <li>* Special Tools and and Test Equipment List (DID# TPS-ACQ-LSA-07)</li> <li>* Drawings (DID# TPS-ACQ-SP-01)</li> <li>* First Article Test Report (DID# TPS-ACQ-SE-09)</li> <li>* Critical Design Review Plan (DID# TPS-ACQ-SE-10)</li> </ul> <p>On delivery and acceptance by the DND Project Manager of the final version:</p> <ul style="list-style-type: none"> <li>* Equipment Breakdown Structure (DID# TPS-ACQ-SE-01)</li> <li>* First Article Inspection and Testing (DID# TPS-ACQ-SE-09)</li> <li>* Critical Design Review Plan (DID# TPS-ACQ-SE-10)</li> </ul> <p>* On completion of monthly Project Progress Reports (DID# TPS-ACQ-PM-06), Meeting Agendas (DID# TPS-ACQ-PM-04), and Meeting Minutes (DID# TPS-ACQ-PM-05) as required</p>	Technical Authority	Contract Award + 19 months	C	Lot	\$	1 \$	Not to exceed 0.021% of sum of CLIN 0009a to OLIN 0046g
005	<p><b>Milestone 5</b></p> <p>On successful completion and acceptance by the Technical Authority of the Physical Configuration Audit, and Final Design Acceptance, AND:</p> <p>On delivery and acceptance by the DND Technical Authority of the final version documents:</p> <ul style="list-style-type: none"> <li>* Interim Spares List (DID# TPS-ACQ-LSA-03)</li> </ul> <p>* On completion of monthly Project Progress Reports (DID# TPS-ACQ-PM-06), Meeting Agendas (DID# TPS-ACQ-PM-04), and Meeting Minutes (DID# TPS-ACQ-PM-05) as required</p>	Technical Authority	Contract Award + 20 months	C	Lot	\$	1 \$	Not to exceed 0.005% of sum of CLIN 0009a to OLIN 0046g
006	<p><b>Milestone 6</b></p> <p>On successful completion and acceptance by the Technical Authority of the Initial Provisioning Conference</p> <p>On delivery and receipt by the DND technical Authority of the 1st draft document:</p> <ul style="list-style-type: none"> <li>* Technical Publications (DID# TPS-ACQ-SP-02)</li> </ul> <p>On delivery and receipt, by the DND Technical Authority, of the final version:</p> <ul style="list-style-type: none"> <li>* Drawings (DID# TPS-ACQ-SP-01)</li> <li>* Initial Provisioning Conference (DID# TPS-ACQ-SP-06)</li> <li>* Provisioning Parts Breakdown (DID# TPS-ACQ-LSA-04)</li> </ul>	Technical Authority	Contract Award + 22 months	C	Lot	\$	1 \$	Not to exceed 0.043% of sum of CLIN 0009a to OLIN 0046g

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007	<p><b>* On completion of monthly Project Progress Reports (DID# TPS-ACQ-PM-06), Meeting Agendas (DID# TPS-ACQ-PM-04), and Meeting Minutes (DID# TPS-ACQ-PM-05) as required</b></p> <p><b>Milestone 7</b></p> <p>On successful completion and acceptance by the Technical Authority of the Initial Operating Capability as defined in Statement of Work, AND:</p> <p>On delivery and receipt by the DND Technical Authority of the 1st draft documents:</p> <ul style="list-style-type: none"> <li>* Training Presentation Material and Video (DID #TPS-ACQ-SP-04)</li> <li>* Equipment Data Protocol (EDP) (DID# TPS-ACQ-SP-07)</li> <li>* Unique Identification and Standardized Marking of Material List (TPS-ACQ-LSA-06)</li> </ul> <p>On delivery and acceptance by the DND Technical Authority of the final version:</p> <ul style="list-style-type: none"> <li>* Supplementary Provisioning Technical Data (DID# TPS-ACQ-LSA-05)</li> <li>* Unique Identification and Standardized Marking of Material List (TPS-ACQ-LSA-06)</li> <li>* Special Tools and and Test Equipment List (DID# TPS-ACQ-LSA-07)</li> <li>* Technical Publications (DID# TPS-ACQ-SP-02)</li> <li>* Training Presentation Material and Video (DID #TPS-ACQ-SP-04)</li> <li>* Equipment Data Protocol (EDP) (DID# TPS-ACQ-SP-07)</li> </ul> <p><b>* On completion of monthly Project Progress Reports (DID# TPS-ACQ-PM-06), Meeting Agendas (DID# TPS-ACQ-PM-04), and Meeting Minutes (DID# TPS-ACQ-PM-05) as required</b></p>	Technical Authority	Contract Award + 24 months	C	Lot	\$	1 \$	Not to exceed 0.021% of sum of CLIN 0009a to OLIN 0046g
008	<p><b>* On satisfactory completion and acceptance by the Technical Authority and Contracting Authority of all deliveries required by the Contract, including on-site training</b></p> <p><b>Milestone 8</b></p>	Technical Authority	Contract Award + 48 months		Lot	\$	1 \$	Not to exceed 0.02% of sum of CLIN 0009a to OLIN 0046g

Contract Line Item No. (CLIN)	Equipment Description	Destination	Unit of Issue	Quality Assurance Code	Concept of Operations Reference Sect.	Quantity	Extended Price
0009a	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Edmonton	Each	Q	4	\$	244 \$
0009b	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Shilo	Each	Q	4	\$	70 \$
0009c	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Pelawawa	Each	Q	4	\$	228 \$
0009d	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Valcartier	Each	Q	4	\$	153 \$
0009e	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Gagetown	Each	Q	4	\$	155 \$
0009f	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ GAS	7 CFSD	Each	Q	4	\$	10 \$
0009g	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ GAS	25 CFSD	Each	Q	4	\$	15 \$
0010a	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL	Edmonton	Each	Q	4	\$	182 \$
0010b	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL	Shilo	Each	Q	4	\$	55 \$
0010c	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL	Pelawawa	Each	Q	4	\$	182 \$
0010d	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL	Valcartier	Each	Q	4	\$	162 \$
0010e	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL	Gagetown	Each	Q	4	\$	119 \$
0010f	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL	7 CFSD	Each	Q	4	\$	8 \$
0010g	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL	25 CFSD	Each	Q	4	\$	12 \$
0011a	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Edmonton	Each	Q	4	\$	38 \$
0011b	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Shilo	Each	Q	4	\$	5 \$
0011c	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Pelawawa	Each	Q	4	\$	23 \$
0011d	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Valcartier	Each	Q	4	\$	15 \$
0011e	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ GAS	Gagetown	Each	Q	4	\$	18 \$
0011f	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ GAS	7 CFSD	Each	Q	4	\$	2 \$
0011g	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ GAS	25 CFSD	Each	Q	4	\$	2 \$
0012a	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL, with Gen B Power Cable	Edmonton	Each	Q	4, 11	\$	72 \$
0012b	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL, with Gen B Power Cable	Shilo	Each	Q	4, 11	\$	28 \$
0012c	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 HZ DIESEL, with Gen B Power Cable	Pelawawa	Each	Q	4, 11	\$	106 \$

MILESTONE AND PRICING SCHEDULE  
ANNEX B TO VOLUME 2 - ACQUISITION

0012d	Generator B: 4-6 kW 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	Valcartier	Each	Q	4, 11	\$	74	\$
0012e	Generator B: 4-6 kW 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	Gagetown	Each	Q	4, 11	\$	56	\$
0012f	Generator B: 4-6 kW 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	Gagetown	Each	Q	4, 11	\$	3	\$
0012g	Generator B: 4-6 kW 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	25 CFSD	Each	Q	4, 11	\$	6	\$
0013a	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Edmonton	Each	Q	5, 6	\$	25	\$
0013b	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Shilo	Each	Q	5, 6	\$	7	\$
0013c	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Pelawawa	Each	Q	5, 6	\$	40	\$
0013d	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Valcartier	Each	Q	5, 6	\$	22	\$
0013e	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Gagetown	Each	Q	5, 6	\$	16	\$
0013f	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	7 CFSD	Each	Q	5, 6	\$	2	\$
0013g	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	25 CFSD	Each	Q	5, 6	\$	2	\$
0014a	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Edmonton	Each	Q	5, 6	\$	18	\$
0014b	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Shilo	Each	Q	5, 6	\$	3	\$
0014c	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Pelawawa	Each	Q	5, 6	\$	42	\$
0014d	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Valcartier	Each	Q	5, 6	\$	21	\$
0014e	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Gagetown	Each	Q	5, 6	\$	8	\$
0014f	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	7 CFSD	Each	Q	5, 6	\$	1	\$
0014g	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	25 CFSD	Each	Q	5, 6	\$	2	\$
0015a	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Edmonton	Each	Q	5, 6	\$	5	\$
0015b	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Shilo	Each	Q	5, 6	\$	1	\$
0015c	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Pelawawa	Each	Q	5, 6	\$	8	\$
0015d	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Valcartier	Each	Q	5, 6	\$	5	\$
0015e	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Gagetown	Each	Q	5, 6	\$	6	\$
0015f	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	7 CFSD	Each	Q	5, 6	\$	1	\$
0015g	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	25 CFSD	Each	Q	5, 6	\$	1	\$
0016a	Energy Storage Unit (Small)	Edmonton	Each	Q	4	\$	122	\$
0016b	Energy Storage Unit (Small)	Shilo	Each	Q	4	\$	47	\$
0016c	Energy Storage Unit (Small)	Pelawawa	Each	Q	4	\$	173	\$
0016d	Energy Storage Unit (Small)	Valcartier	Each	Q	4	\$	126	\$
0016e	Energy Storage Unit (Small)	Gagetown	Each	Q	4	\$	100	\$
0016f	Energy Storage Unit (Small)	7 CFSD	Each	Q	4	\$	6	\$
0016g	Energy Storage Unit (Small)	25 CFSD	Each	Q	4	\$	11	\$
0017a	Energy Storage Unit (Large) for Gen Large D	Edmonton	Each	Q	5, 6	\$	25	\$
0017b	Energy Storage Unit (Large) for Gen Large D	Shilo	Each	Q	5, 6	\$	7	\$
0017c	Energy Storage Unit (Large) for Gen Large D	Pelawawa	Each	Q	5, 6	\$	40	\$
0017d	Energy Storage Unit (Large) for Gen Large D	Valcartier	Each	Q	5, 6	\$	22	\$
0017e	Energy Storage Unit (Large) for Gen Large D	Gagetown	Each	Q	5, 6	\$	16	\$
0017f	Energy Storage Unit (Large) for Gen Large D	7 CFSD	Each	Q	5, 6	\$	2	\$
0017g	Energy Storage Unit (Large) for Gen Large D	25 CFSD	Each	Q	5, 6	\$	2	\$
0018a	Energy Storage Unit (Large) for Gen Large E	Edmonton	Each	Q	5, 6	\$	18	\$
0018b	Energy Storage Unit (Large) for Gen Large E	Shilo	Each	Q	5, 6	\$	3	\$
0018c	Energy Storage Unit (Large) for Gen Large E	Pelawawa	Each	Q	5, 6	\$	42	\$
0018d	Energy Storage Unit (Large) for Gen Large E	Valcartier	Each	Q	5, 6	\$	21	\$
0018e	Energy Storage Unit (Large) for Gen Large E	Gagetown	Each	Q	5, 6	\$	8	\$
0018f	Energy Storage Unit (Large) for Gen Large E	7 CFSD	Each	Q	5, 6	\$	3	\$
0018g	Energy Storage Unit (Large) for Gen Large E	25 CFSD	Each	Q	5, 6	\$	3	\$
0018a	D Distribution Kit	Edmonton	Each	Q	8, 13	\$	25	\$
0018b	D Distribution Kit	Shilo	Each	Q	8, 13	\$	7	\$
0018c	D Distribution Kit	Pelawawa	Each	Q	8, 13	\$	40	\$
0018d	D Distribution Kit	Valcartier	Each	Q	8, 13	\$	22	\$
0018e	D Distribution Kit	Gagetown	Each	Q	8, 13	\$	16	\$
0018f	D Distribution Kit	7 CFSD	Each	Q	8, 13	\$	2	\$
0018g	D Distribution Kit	25 CFSD	Each	Q	8, 13	\$	3	\$
0020a	E Distribution Kit	Edmonton	Each	Q	8, 14	\$	18	\$
0020b	E Distribution Kit	Shilo	Each	Q	8, 14	\$	3	\$
0020c	E Distribution Kit	Pelawawa	Each	Q	8, 14	\$	43	\$
0020d	E Distribution Kit	Valcartier	Each	Q	8, 14	\$	21	\$
0020e	E Distribution Kit	Gagetown	Each	Q	8, 14	\$	8	\$
0020f	E Distribution Kit	7 CFSD	Each	Q	8, 14	\$	2	\$
0020g	E Distribution Kit	25 CFSD	Each	Q	8, 14	\$	2	\$
0021a	X Distribution Kit (Power Distribution Management Module System)	Edmonton	Each	Q	8, 16, 17, 18	\$	6	\$
0021b	X Distribution Kit (Power Distribution Management Module System)	Shilo	Each	Q	8, 16, 17, 18	\$	1	\$
0021c	X Distribution Kit (Power Distribution Management Module System)	Pelawawa	Each	Q	8, 16, 17, 18	\$	17	\$
0021d	X Distribution Kit (Power Distribution Management Module System)	Valcartier	Each	Q	8, 16, 17, 18	\$	5	\$

MILESTONE AND PRICING SCHEDULE  
ANNEX B TO VOLUME 2 - ACQUISITION

0021e	X Distribution Kit (Power Distribution Management Module System)	Gagetown	Each	Q	8, 16, 17, 18	\$	3	\$
0021f	X Distribution Kit (Power Distribution Management Module System)	7 CFSD	Each	Q	8, 16, 17, 18	\$	1	\$
0021g	X Distribution Kit (Power Distribution Management Module System)	25 CFSD	Each	Q	8, 16, 17, 18	\$	1	\$
0022a	Proposal 1A - Militarized Quadcon-size framed Trailer	Edmonton	Each	Q	20, 21	\$	110	\$
0022b	Proposal 1A - Militarized Quadcon-size framed Trailer	Shilo	Each	Q	37	\$		
0022c	Proposal 1A - Militarized Quadcon-size framed Trailer	Pelawawa	Each	Q	20, 21	\$	165	\$
0022d	Proposal 1A - Militarized Quadcon-size framed Trailer	Valcartier	Each	Q	20, 21	\$	114	\$
0022e	Proposal 1A - Militarized Quadcon-size framed Trailer	Gagetown	Each	Q	20, 21	\$	76	\$
0022f	Proposal 1A - Militarized Quadcon-size framed Trailer	7 CFSD	Each	Q	20, 21	\$	5	\$
0022g	Proposal 1A - Militarized Quadcon-size framed Trailer	25 CFSD	Each	Q	20, 21	\$	9	\$
0023a	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Edmonton	Each	Q	20, 21	\$	20	\$
0023b	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Shilo	Each	Q	20, 21	\$	10	\$
0023c	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Pelawawa	Each	Q	20, 21	\$	30	\$
0023d	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Valcartier	Each	Q	20, 21	\$	20	\$
0023e	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Gagetown	Each	Q	20, 21	\$	20	\$
0023f	Proposal 2A - Trailer that will have the Gen B+ESU(S) Combo directly attached	7 CFSD	Each	Q	20, 21	\$	2	\$
0023g	Proposal 2A - Trailer that will have the Gen B+ESU(S) Combo directly attached	25 CFSD	Each	Q	20, 21	\$	2	\$
0024a	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Edmonton	Each	Q	20, 21	\$	20	\$
0024b	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Shilo	Each	Q	20, 21	\$	10	\$
0024c	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Pelawawa	Each	Q	20, 21	\$	30	\$
0024d	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Valcartier	Each	Q	20, 21	\$	20	\$
0024e	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Gagetown	Each	Q	20, 21	\$	20	\$
0024f	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	7CFSD	Each	Q	20, 21	\$	2	\$
0024g	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	25CFSD	Each	Q	20, 21	\$	2	\$
0025a	Special Tools and Test Equipment	Edmonton	Kit	Q	N/A	\$	2	\$
0025b	Special Tools and Test Equipment	Shilo	Kit	Q	N/A	\$	2	\$
0025c	Special Tools and Test Equipment	Pelawawa	Kit	Q	N/A	\$	2	\$
0025d	Special Tools and Test Equipment	Valcartier	Kit	Q	N/A	\$	2	\$
0025e	Special Tools and Test Equipment	Gagetown	Kit	Q	N/A	\$	2	\$
0025f	Special Tools and Test Equipment	7 CFSD	Kit	Q	N/A	\$	2	\$
0025g	Special Tools and Test Equipment	25 CFSD	Kit	Q	N/A	\$	2	\$
0026a	Mobile Repair Kit (MRK)	Edmonton	Kit	Q	N/A	\$	2	\$
0026b	Mobile Repair Kit (MRK)	Shilo	Kit	Q	N/A	\$	2	\$
0026c	Mobile Repair Kit (MRK)	Pelawawa	Kit	Q	N/A	\$	2	\$
0026d	Mobile Repair Kit (MRK)	Valcartier	Kit	Q	N/A	\$	2	\$
0026e	Mobile Repair Kit (MRK)	Gagetown	Kit	Q	N/A	\$	2	\$
0026f	Mobile Repair Kit (MRK)	7 CFSD	Kit	Q	N/A	\$	2	\$
0026g	Mobile Repair Kit (MRK)	25 CFSD	Kit	Q	N/A	\$	2	\$

Option Line Item No. (OJIN)	Description	Destination	Unit of Issue		Concept of Operations Reference Sect.	Unit Price	Quantity	Extended Price
0027a	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Edmonton	Each	Q	4	\$	36	\$
0027b	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Shilo	Each	Q	4	\$	10	\$
0027c	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Pelawawa	Each	Q	4	\$	34	\$
0027d	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Valcartier	Each	Q	4	\$	22	\$
0027e	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Gagetown	Each	Q	4	\$	23	\$
0027f	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS	7 CFSD	Each	Q	4	\$	1	\$
0027g	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS	25 CFSD	Each	Q	4	\$	2	\$
0028a	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL	Edmonton	Each	Q	4	\$	24	\$
0028b	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL	Shilo	Each	Q	4	\$	8	\$
0028c	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL	Pelawawa	Each	Q	4	\$	28	\$
0028d	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL	Valcartier	Each	Q	4	\$	24	\$
0028e	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL	Gagetown	Each	Q	4	\$	17	\$
0028f	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL	7 CFSD	Each	Q	4	\$	1	\$
0028g	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL	25 CFSD	Each	Q	4	\$	1	\$
0029a	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Edmonton	Each	Q	4	\$	5	\$
0029b	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Shilo	Each	Q	4	\$	4	\$
0029c	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Pelawawa	Each	Q	4	\$	3	\$
0029d	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Valcartier	Each	Q	4	\$	2	\$
0029e	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz GAS	Gagetown	Each	Q	4	\$	2	\$
0029f	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz GAS	7 CFSD	Each	Q	4	\$	1	\$

MILESTONE AND PRICING SCHEDULE  
ANNEX B TO VOLUME 2 - ACQUISITION

0029g	Generator B: 4.6 KW, 120/240 V AC, 1 Phase, 60 Hz GAS	25 CFSD	Each	Q	4	\$	1	\$
0030a	Generator B: 4.6 KW, 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	Edmonton	Each	Q	4, 11	\$	10	\$
0030b	Generator B: 4.6 KW, 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	Shilo	Each	Q	4, 11	\$	4	\$
0030c	Generator B: 4.6 KW, 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	Pelawawa	Each	Q	4, 11	\$	15	\$
0030d	Generator B: 4.6 KW, 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	Gagetown	Each	Q	4, 11	\$	11	\$
0030e	Generator B: 4.6 KW, 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	Gagetown	Each	Q	4, 11	\$	8	\$
0030f	Generator B: 4.6 KW, 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	7 CFSD	Each	Q	4, 11	\$	2	\$
0030g	Generator B: 4.6 KW, 120/240 V AC, 1 Phase, 60 Hz DIESEL, with Gen B Power Cable	25 CFSD	Each	Q	4, 11	\$	5	\$
0031a	Generator D: 12-18 KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Edmonton	Each	Q	5, 6	\$	3	\$
0031b	Generator D: 12-18 KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Shilo	Each	Q	5, 6	\$	1	\$
0031c	Generator D: 12-18 KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Pelawawa	Each	Q	5, 6	\$	6	\$
0031d	Generator D: 12-18 KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Valcartier	Each	Q	5, 6	\$	3	\$
0031e	Generator D: 12-18 KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Gagetown	Each	Q	5, 6	\$	2	\$
0031f	Generator D: 12-18 KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	7 CFSD	Each	Q	5, 6	\$	1	\$
0031g	Generator D: 12-18 KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	25 CFSD	Each	Q	5, 6	\$	1	\$
0032a	Generator E: 25-35KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Edmonton	Each	Q	5, 6	\$	2	\$
0032b	Generator E: 25-35KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Shilo	Each	Q	5, 6	\$	2	\$
0032c	Generator E: 25-35KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Pelawawa	Each	Q	5, 6	\$	6	\$
0032d	Generator E: 25-35KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Valcartier	Each	Q	5, 6	\$	3	\$
0032e	Generator E: 25-35KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Gagetown	Each	Q	5, 6	\$	1	\$
0032f	Generator E: 25-35KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	7 CFSD	Each	Q	5, 6	\$	0	\$
0032g	Generator E: 25-35KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	25 CFSD	Each	Q	5, 6	\$	1	\$
0033a	Generator F: 50-70KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Edmonton	Each	Q	5, 6	\$	4	\$
0033b	Generator F: 50-70KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Shilo	Each	Q	5, 6	\$	0	\$
0033c	Generator F: 50-70KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Pelawawa	Each	Q	5, 6	\$	1	\$
0033d	Generator F: 50-70KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Valcartier	Each	Q	5, 6	\$	4	\$
0033e	Generator F: 50-70KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	Gagetown	Each	Q	5, 6	\$	5	\$
0033f	Generator F: 50-70KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	7 CFSD	Each	Q	5, 6	\$	0	\$
0033g	Generator F: 50-70KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	25 CFSD	Each	Q	5, 6	\$	0	\$
0034a	Energy Storage Unit (Small)	Edmonton	Each	Q	4	\$	18	\$
0034b	Energy Storage Unit (Small)	Shilo	Each	Q	4	\$	7	\$
0034c	Energy Storage Unit (Small)	Pelawawa	Each	Q	4	\$	25	\$
0034d	Energy Storage Unit (Small)	Valcartier	Each	Q	4	\$	18	\$
0034e	Energy Storage Unit (Small)	Gagetown	Each	Q	4	\$	15	\$
0034f	Energy Storage Unit (Small)	7 CFSD	Each	Q	4	\$	1	\$
0034g	Energy Storage Unit (Small)	25 CFSD	Each	Q	4	\$	1	\$
0035a	Energy Storage Unit (Large) for Gen Large D	Edmonton	Each	Q	5, 6	\$	3	\$
0035b	Energy Storage Unit (Large) for Gen Large D	Shilo	Each	Q	5, 6	\$	1	\$
0035c	Energy Storage Unit (Large) for Gen Large D	Pelawawa	Each	Q	5, 6	\$	6	\$
0035d	Energy Storage Unit (Large) for Gen Large D	Valcartier	Each	Q	5, 6	\$	3	\$
0035e	Energy Storage Unit (Large) for Gen Large D	Gagetown	Each	Q	5, 6	\$	2	\$
0035f	Energy Storage Unit (Large) for Gen Large D	7 CFSD	Each	Q	5, 6	\$	1	\$
0035g	Energy Storage Unit (Large) for Gen Large D	25 CFSD	Each	Q	5, 6	\$	1	\$
0036a	Energy Storage Unit (Large) for Gen Large E	Edmonton	Each	Q	5, 6	\$	2	\$
0036b	Energy Storage Unit (Large) for Gen Large E	Shilo	Each	Q	5, 6	\$	2	\$
0036c	Energy Storage Unit (Large) for Gen Large E	Pelawawa	Each	Q	5, 6	\$	6	\$
0036d	Energy Storage Unit (Large) for Gen Large E	Valcartier	Each	Q	5, 6	\$	3	\$
0036e	Energy Storage Unit (Large) for Gen Large E	Gagetown	Each	Q	5, 6	\$	1	\$
0036f	Energy Storage Unit (Large) for Gen Large E	7 CFSD	Each	Q	5, 6	\$	2	\$
0036g	Energy Storage Unit (Large) for Gen Large E	25 CFSD	Each	Q	5, 6	\$	2	\$
0037a	D Distribution Kit	Edmonton	Each	Q	8, 13	\$	3	\$
0037b	D Distribution Kit	Shilo	Each	Q	8, 13	\$	1	\$
0037c	D Distribution Kit	Pelawawa	Each	Q	8, 13	\$	6	\$
0037d	D Distribution Kit	Valcartier	Each	Q	8, 13	\$	3	\$
0037e	D Distribution Kit	Gagetown	Each	Q	8, 13	\$	2	\$
0037f	D Distribution Kit	7 CFSD	Each	Q	8, 13	\$	1	\$
0037g	D Distribution Kit	25 CFSD	Each	Q	8, 13	\$	2	\$
0038a	E Distribution Kit	Edmonton	Each	Q	8, 14	\$	2	\$
0038b	E Distribution Kit	Shilo	Each	Q	8, 14	\$	2	\$
0038c	E Distribution Kit	Pelawawa	Each	Q	8, 14	\$	6	\$
0038d	E Distribution Kit	Valcartier	Each	Q	8, 14	\$	3	\$
0038e	E Distribution Kit	Gagetown	Each	Q	8, 14	\$	1	\$
0038f	E Distribution Kit	7 CFSD	Each	Q	8, 14	\$	1	\$
0038g	E Distribution Kit	25 CFSD	Each	Q	8, 14	\$	1	\$



MILESTONE AND PRICING SCHEDULE  
ANNEX B TO VOLUME 2 - ACQUISITION

0038a	X Distribution Kit (Power Distribution Management Module System)	Edmonton	Each		Q	8, 16, 17, 18	\$				0	\$
0038b	X Distribution Kit (Power Distribution Management Module System)	Shilo	Each		Q	8, 16, 17, 18	\$				0	\$
0038c	X Distribution Kit (Power Distribution Management Module System)	Pelawawa	Each		Q	8, 16, 17, 18	\$				2	\$
0038d	X Distribution Kit (Power Distribution Management Module System)	Valcartier	Each		Q	8, 16, 17, 18	\$				0	\$
0038e	X Distribution Kit (Power Distribution Management Module System)	Gagelown	Each		Q	8, 16, 17, 18	\$				0	\$
0038f	X Distribution Kit (Power Distribution Management Module System)	7 CFSD	Each		Q	8, 16, 17, 18	\$				0	\$
0038g	X Distribution Kit (Power Distribution Management Module System)	25 CFSD	Each		Q	8, 16, 17, 18	\$				0	\$
0040a	Proposal 1 - Millarized Bloom-size framed Trailer	Edmonton	Each		Q	20, 21	\$				16	\$
0040b	Proposal 1 - Millarized Bloom-size framed Trailer	Shilo	Each		Q	20, 21	\$				5	\$
0040c	Proposal 1 - Millarized Bloom-size framed Trailer	Pelawawa	Each		Q	20, 21	\$				24	\$
0040d	Proposal 1 - Millarized Bloom-size framed Trailer	Valcartier	Each		Q	20, 21	\$				17	\$
0040e	Proposal 1 - Millarized Bloom-size framed Trailer	Gagelown	Each		Q	20, 21	\$				11	\$
0040f	Proposal 1 - Millarized Bloom-size framed Trailer	7 CFSD	Each		Q	20, 21	\$				4	\$
0040g	Proposal 1 - Millarized Bloom-size framed Trailer	25 CFSD	Each		Q	20, 21	\$				1	\$
0041a	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Edmonton	Each		Q	20, 21	\$				3	\$
0041b	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Shilo	Each		Q	20, 21	\$				1	\$
0041c	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Pelawawa	Each		Q	20, 21	\$				4	\$
0041d	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Valcartier	Each		Q	20, 21	\$				3	\$
0041e	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	Gagelown	Each		Q	20, 21	\$				3	\$
0041f	Proposal 2A - Trailer that will have the Gen B+ESU(S) Combo directly attached	7 CFSD	Each		Q	20, 21	\$				0	\$
0041g	Proposal 2A - Trailer that will have the Gen B+ESU(S) Combo directly attached	25 CFSD	Each		Q	20, 21	\$				0	\$
0042a	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Edmonton	Each		Q	20, 21	\$				3	\$
0042b	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Shilo	Each		Q	20, 21	\$				1	\$
0042c	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Pelawawa	Each		Q	20, 21	\$				4	\$
0042d	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Valcartier	Each		Q	20, 21	\$				3	\$
0042e	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	Gagelown	Each		Q	20, 21	\$				3	\$
0042f	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	7CFSD	Each		Q	20, 21	\$				1	\$
0042g	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	25CFSD	Each		Q	20, 21	\$				1	\$
0043a	Special Tools and Test Equipment	Edmonton	Kit		Q	N/A	\$				1	\$
0043b	Special Tools and Test Equipment	Shilo	Kit		Q	N/A	\$				1	\$
0043c	Special Tools and Test Equipment	Pelawawa	Kit		Q	N/A	\$				1	\$
0043d	Special Tools and Test Equipment	Valcartier	Kit		Q	N/A	\$				1	\$
0043e	Special Tools and Test Equipment	Gagelown	Kit		Q	N/A	\$				1	\$
0043f	Special Tools and Test Equipment	7 CFSD	Kit		Q	N/A	\$				1	\$
0043g	Special Tools and Test Equipment	25 CFSD	Kit		Q	N/A	\$				1	\$
0044a	Mobile Repair Kit (MRK)	Edmonton	Kit		Q	N/A	\$				1	\$
0044b	Mobile Repair Kit (MRK)	Shilo	Kit		Q	N/A	\$				1	\$
0044c	Mobile Repair Kit (MRK)	Pelawawa	Kit		Q	N/A	\$				1	\$
0044d	Mobile Repair Kit (MRK)	Valcartier	Kit		Q	N/A	\$				1	\$
0044e	Mobile Repair Kit (MRK)	Gagelown	Kit		Q	N/A	\$				1	\$
0044f	Mobile Repair Kit (MRK)	7 CFSD	Kit		Q	N/A	\$				1	\$
0044g	Mobile Repair Kit (MRK)	25 CFSD	Kit		Q	N/A	\$				1	\$

Firm Labour Rates for Design Changes / Additional Work Requests

Contract Line Item No. (CLIN)	Description	Unit of Issue	Estimated No. of Hours (Total for Contract)	Year 1 - Firm Rate	Year 2 - Firm Rate	Year 3 - Firm Rate	Year 4 - Firm Rate	Year 5 - Firm Rate
0047	Project Manager	Hour	55	\$	\$	\$	\$	\$
0048	Engineer - Senior	Hour	450	\$	\$	\$	\$	\$
0049	Engineer - Junior	Hour	450	\$	\$	\$	\$	\$
0050	Technical Writer	Hour	110	\$	\$	\$	\$	\$
0051	Technician - Senior	Hour	110	\$	\$	\$	\$	\$
0052	Technician - Junior	Hour	110	\$	\$	\$	\$	\$
0053	General Labour	Hour	2000	\$	\$	\$	\$	\$
0054	Field Service Representative	Hour	75	\$	\$	\$	\$	\$

Mark-Up Rates

Contract Line Item No. (CLIN)	Description	Estimated Value (Total for Contract)	Mark-Up
0055	Mark-up on Materials to effect design changes and additional work requests	\$420,000.00	%
0056	Mark-up on Sub-Contracting	\$380,000.00	%

Solicitation No. - N° de l'invitation  
W8476-206276/A RFI  
Client Ref. No. - N° de réf. du client  
W8476-206276

Amd. No. - N° de la modif.  
File No. - N° du dossier

Buyer ID - Id de l'acheteur  
125QF  
CCC No./N° CCC - FMS No./N° VME

## **ATTACHMENT TWO**

### **In-Service Support pricing Schedule**

In the following table, Canada is requesting industry to provide estimated costing information.

Any information received will only be used by the project team for Budgeting purposes.

Canada is requesting a response to this table No Later Than 02 June 2023

In-Service Support Core Services - Appendix BA to Annex B to Volume 3

CORE SERVICES - Years # 1-6

Contract Line Item No (CLIN)	Description	SOW Reference	Unit of Issue	Firm Monthly Rate	Quantity	Extended Price
0501	Project Management - Year 1	5.0	Month			
0502	Project Management - Year 2	5.0	Month			
0503	Project Management - Year 3	5.0	Month	\$	12	\$
0504	Project Management - Year 4	5.0	Month	\$	12	\$
0505	Project Management - Year 5	5.0	Month	\$	12	\$
0506	Project Management - Year 6	5.0	Month	\$	12	\$
0511	Contractor Facilities and Personnel - Year 1	6.0	Month			
0512	Contractor Facilities and Personnel - Year 2	6.0	Month			
0513	Contractor Facilities and Personnel - Year 3	6.0	Month	\$	12	\$
0514	Contractor Facilities and Personnel - Year 4	6.0	Month	\$	12	\$
0515	Contractor Facilities and Personnel - Year 5	6.0	Month	\$	12	\$
0516	Contractor Facilities and Personnel - Year 6	6.0	Month	\$	12	\$
0521	Environmental Health and Safety - Year 1	7.0	Month			
0522	Environmental Health and Safety - Year 2	7.0	Month			
0523	Environmental Health and Safety - Year 3	7.0	Month	\$	12	\$
0524	Environmental Health and Safety - Year 4	7.0	Month	\$	12	\$
0525	Environmental Health and Safety - Year 5	7.0	Month	\$	12	\$
0526	Environmental Health and Safety - Year 6	7.0	Month	\$	12	\$
0531	Maintenance Support - Year 1	8.0	Month			
0532	Maintenance Support - Year 2	8.0	Month			
0533	Maintenance Support - Year 3	8.0	Month	\$	12	\$
0534	Maintenance Support - Year 4	8.0	Month	\$	12	\$
0535	Maintenance Support - Year 5	8.0	Month	\$	12	\$
0536	Maintenance Support - Year 6	8.0	Month	\$	12	\$
0541	Engineering Support - Year 1	9.0	Month			
0542	Engineering Support - Year 2	9.0	Month			
0543	Engineering Support - Year 3	9.0	Month	\$	12	\$
0544	Engineering Support - Year 4	9.0	Month	\$	12	\$
0545	Engineering Support - Year 5	9.0	Month	\$	12	\$
0546	Engineering Support - Year 6	9.0	Month	\$	12	\$

0551	Supply Support - Year 1	10.0	Month				
0552	Supply Support - Year 2	10.0	Month				
0553	Supply Support - Year 3	10.0	Month	\$	12	\$	
0554	Supply Support - Year 4	10.0	Month	\$	12	\$	
0555	Supply Support - Year 5	10.0	Month	\$	12	\$	
0556	Supply Support - Year 6	10.0	Month	\$	12	\$	
0561	Quality Management - Year 1	11.0	Month				
0562	Quality Management - Year 2	11.0	Month				
0563	Quality Management - Year 3	11.0	Month	\$	12	\$	
0564	Quality Management - Year 4	11.0	Month	\$	12	\$	
0565	Quality Management - Year 5	11.0	Month	\$	12	\$	
0566	Quality Management - Year 6	11.0	Month	\$	12	\$	
	<b>Total</b>						

REPAIR AND OVERHAUL - Years 1 - 6

Contract Line Item Number (CLIN)	Description	NATO Stock Number (NSN)	OEM NCAGE	OEM Part Number	Minimum Repair Cost (MRC)	Maximum Repair Hours Per Unit	Unit of Issue	Estimated Arlings Year 3	Estimated Arlings Year 4	Estimated Arlings Year 5	Estimated Arlings Year 6	Firm Price or Hourly Rate Year 1	Firm Price or Hourly Rate Year 2	Firm Price or Hourly Rate Year 3	Firm Price or Hourly Rate Year 4	Firm Price or Hourly Rate Year 5	Firm Price or Hourly Rate Year 6
0600	Generator A: 2.3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS																
0600a	Receipt / Clean / Inspect						EA	44	61	58	88			\$	\$	\$	\$
0600b	Repair				\$ 3,500.00	8	Hours	349	484	698	698			\$	\$	\$	\$
0600c	Overhaul						EA	2	3	4	4			\$	\$	\$	\$
0600d	Scrap / Disposal						EA	1	2	2	2			\$	\$	\$	\$
0600e	Preparation for Delivery						EA	43	59	86	86			\$	\$	\$	\$
0601	Generator A: 2.3.5 KW 120/240 V AC, 1 Phase, 60 Hz Diesel																
0601a	Receipt / Clean / Inspect						EA	36	50	71	71			\$	\$	\$	\$
0601b	Repair				\$ 4,400.00	41	Hours	1478	2053	2916	2916			\$	\$	\$	\$
0601c	Overhaul						EA	2	3	4	4			\$	\$	\$	\$
0601d	Scrap / Disposal						EA	1	2	2	2			\$	\$	\$	\$
0601e	Preparation for Delivery						EA	35	48	69	69			\$	\$	\$	\$
0602	Generator B: 4.6 KW 120/240 V AC, 1 Phase, 60 Hz GAS																
0602a	Receipt / Clean / Inspect						EA	5	7	10	10			\$	\$	\$	\$
0602b	Repair				\$ 2,000.00	19	Hours	93	131	187	187			\$	\$	\$	\$
0602c	Overhaul						EA	0	0	1	1			\$	\$	\$	\$
0602d	Scrap / Disposal						EA	0	0	1	1			\$	\$	\$	\$
0602e	Preparation for Delivery						EA	5	7	9	9			\$	\$	\$	\$
0603	Generator B: 4.6 KW 120/240 V AC, 1 Phase, 60 Hz Diesel																
0603a	Receipt / Clean / Inspect						EA	17	24	35	35			\$	\$	\$	\$
0603b	Repair				\$ 8,000.00	75	Hours	1,269	1,792	2,613	2,613			\$	\$	\$	\$
0603c	Overhaul						EA	1	1	2	2			\$	\$	\$	\$
0603d	Scrap / Disposal						EA	1	1	1	1			\$	\$	\$	\$
0603e	Preparation for Delivery						EA	16	23	34	34			\$	\$	\$	\$
0604	Generator D: 12.18 KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.																
0604a	Receipt / Clean / Inspect						EA	6	8	11	11			\$	\$	\$	\$
0604b	Repair				\$ 1,000.00	93	Hours	560	747	1,027	1,027			\$	\$	\$	\$
0604c	Overhaul						EA	0	0	1	1			\$	\$	\$	\$
0604d	Scrap / Disposal						EA	0	0	1	1			\$	\$	\$	\$
0604e	Preparation for Delivery						EA	6	8	10	10			\$	\$	\$	\$
0605	Generator E: 2.5-35KW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.																
0605a	Receipt / Clean / Inspect						EA	5	7	10	10			\$	\$	\$	\$
0605b	Repair				\$ 35,000.00	327	Hours	1,683	2,287	3,267	3,267			\$	\$	\$	\$
0605c	Overhaul						EA	0	0	1	1			\$	\$	\$	\$
0605d	Scrap / Disposal						EA	0	0	1	1			\$	\$	\$	\$
0605e	Preparation for Delivery						EA	5	7	9	9			\$	\$	\$	\$
0606	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.																
0606a	Receipt / Clean / Inspect						EA	1	2	3	3			\$	\$	\$	\$
0606b	Repair				\$ 40,000.00	373	Hours	373	747	1,120	1,120			\$	\$	\$	\$
0606c	Overhaul						EA	0	0	0	0			\$	\$	\$	\$
0606d	Scrap / Disposal						EA	0	0	0	0			\$	\$	\$	\$
0606e	Preparation for Delivery						EA	1	2	3	3			\$	\$	\$	\$
0607	Energy Storage Unit (Small)																
0607a	Receipt / Clean / Inspect						EA	29	41	59	59			\$	\$	\$	\$
0607b	Repair				\$ 2,500.00	23	Hours	577	957	1,377	1,377			\$	\$	\$	\$
0607c	Overhaul						EA	1	2	3	3			\$	\$	\$	\$
0607d	Scrap / Disposal						EA	1	1	2	2			\$	\$	\$	\$
0607e	Preparation for Delivery						EA	28	40	57	57			\$	\$	\$	\$
0608	Energy Storage Unit (Large) for Gen Large D																
0608a	Receipt / Clean / Inspect						EA	6	8	11	11			\$	\$	\$	\$
0608b	Repair				\$ 7,000.00	65	Hours	392	523	719	719			\$	\$	\$	\$
0608c	Overhaul						EA	0	0	1	1			\$	\$	\$	\$



Contract Line Item Number (CLIN)	NSN	Description	OEM NCAGE	OEM Part Number	Estimated Annual Quantity	Unit of Issue	Minimum Order Quantity	Packaging Specification	Shelf Life (months)	Unit Price Year # 1	Unit Price Year # 2	Unit Price Year # 3	Unit Price Year # 4	Unit Price Year # 5	Unit Price Year # 6
0009		Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS			70	EA		D-1M408-0365F-000				\$	\$	\$	\$
0009a		Spark Plug			175	EA						\$	\$	\$	\$
0009b		Engine Assembly			21	EA						\$	\$	\$	\$
0009c		Control Panel Assembly			21	EA						\$	\$	\$	\$
0009d		Fuel Tank Assembly			14	EA						\$	\$	\$	\$
0009e		Fuel Filter			56	EA						\$	\$	\$	\$
0009f		Oil Filter			210	EA						\$	\$	\$	\$
0009g		Air Filter			630	EA						\$	\$	\$	\$
0009h		Engine Oil			2100	Litre						\$	\$	\$	\$
0009i		Starting Coil			42	EA						\$	\$	\$	\$
0009j		Electric Starter			21	EA						\$	\$	\$	\$
0010		Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz Diesel			57	EA						\$	\$	\$	\$
0010a		Compression Valve			143	EA						\$	\$	\$	\$
0010b		Engine Assembly			17	EA						\$	\$	\$	\$
0010c		Control Panel Assembly			17	EA						\$	\$	\$	\$
0010d		Fuel Tank Assembly			11	EA						\$	\$	\$	\$
0010e		Fuel Filter			46	EA						\$	\$	\$	\$
0010f		Oil Filter			171	EA						\$	\$	\$	\$
0010g		Air Filter			513	EA						\$	\$	\$	\$
0010h		Engine Oil			1710	Litre						\$	\$	\$	\$
0010i		Starting Coil			34	EA						\$	\$	\$	\$
0010j		Electric Starter			17	EA						\$	\$	\$	\$
0011		Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz GAS			10	EA						\$	\$	\$	\$
0011a		Spark Plug			25	EA						\$	\$	\$	\$
0011b		Engine Assembly			3	EA						\$	\$	\$	\$
0011c		Control Panel Assembly			3	EA						\$	\$	\$	\$
0011d		Fuel Tank Assembly			2	EA						\$	\$	\$	\$
0011e		Fuel Filter			8	EA						\$	\$	\$	\$
0011f		Oil Filter			30	EA						\$	\$	\$	\$
0011g		Air Filter			90	EA						\$	\$	\$	\$
0011h		Engine Oil			300	Litre						\$	\$	\$	\$
0011i		Starting Coil			6	EA						\$	\$	\$	\$
0011j		Electric Starter			3	EA						\$	\$	\$	\$
0012		Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz Diesel			35	EA						\$	\$	\$	\$
0012a		Compression Valve			88	EA						\$	\$	\$	\$
0012b		Engine Assembly			11	EA						\$	\$	\$	\$
0012c		Control Panel Assembly			11	EA						\$	\$	\$	\$
0012d		Fuel Tank Assembly			7	EA						\$	\$	\$	\$
0012e		Oil Filter			28	EA						\$	\$	\$	\$
0012f		Oil Filter			105	EA						\$	\$	\$	\$
0012g		Air Filter			315	EA						\$	\$	\$	\$
0012h		Engine Oil			1050	Litre						\$	\$	\$	\$
0012i		Starting Coil			21	EA						\$	\$	\$	\$
0012j		Electric Starter			11	EA						\$	\$	\$	\$
0013		Generator D: 12-18 kW, 120/208V, 60Hz and 230-400V, 50Hz, 3Phase.			9	EA						\$	\$	\$	\$
0013a		Fuel Injector			14	EA						\$	\$	\$	\$
0013b		Engine Assembly			3	EA						\$	\$	\$	\$
0013c		Control Panel Assembly			3	EA						\$	\$	\$	\$
0013d		Fuel Tank Assembly			2	EA						\$	\$	\$	\$
0013e		Fuel Filter and Water Separator			7	EA						\$	\$	\$	\$
0013f		Oil Filter			27	EA						\$	\$	\$	\$
0013g		Air Filter			81	EA						\$	\$	\$	\$
0013h		Speed Controller (Governor)			5	EA						\$	\$	\$	\$
0013i		Synchronizing Relay			3	EA						\$	\$	\$	\$
0013j		Automatic Voltage Controller (AVR)			3	EA						\$	\$	\$	\$
0013k		Communication Controller			4	EA						\$	\$	\$	\$
0013l		Speed Sensor			7	EA						\$	\$	\$	\$
0013m		Fuel Level Sensor			7	EA						\$	\$	\$	\$
0013n		Engine Oil Pressure Sensor			7	EA						\$	\$	\$	\$
0013o		Temperature Sensor			7	EA						\$	\$	\$	\$







In-Service Support Firm Labour Rates for TIES and FSR - Appendix BD to Annex B to Volume 3

LABOUR RATES - Years 1 - 6

Contract Line Item Number (CLIN)	Description	Estimated Annual Level of Effort	Unit of Issue	Year 1 Firm Hourly Rate	Year 2 Firm Hourly Rate	Year 3 Firm Hourly Rate	Year 4 Firm Hourly Rate	Year 5 Firm Hourly Rate	Year 6 Firm Hourly Rate
0801	Project Manager	88	Hour			\$	\$	\$	\$
0802	Engineer - Senior	25	Hour			\$	\$	\$	\$
0803	Engineer - Intermediate	55	Hour			\$	\$	\$	\$
0804	Engineer	80	Hour			\$	\$	\$	\$
0805	Designer	100	Hour			\$	\$	\$	\$
0806	Draftsman	55	Hour			\$	\$	\$	\$
0807	Technical Writer	65	Hour			\$	\$	\$	\$
0808	Technician - Electrical	165	Hour			\$	\$	\$	\$
0809	Technician - Mechanical	185	Hour			\$	\$	\$	\$
0810	Technician - Material	100	Hour			\$	\$	\$	\$
0811	General Labour	100	Hour			\$	\$	\$	\$
0812	Field Service Representative	25	Hour			\$	\$	\$	\$
0813	Trainer	150	Hour			\$	\$	\$	\$

In-Service Support Mark-Up Rates - Appendix BE to Annex B to Volume 3

MARK-UP RATES - Years 1 - 6									
CLIN	Description	Estimated Level of Effort Annually	Mark-Up Percentage Year 1	Mark-Up Percentage Year 2	Mark-Up Percentage Year 3	Mark-Up Percentage Year 4	Mark-Up Percentage Year 5	Mark-Up Percentage Year 6	
0901	Mark-up on Materials to effect equipment repair, and engineering studies	\$500,000			%	%	%	%	%
0902	Mark-up on new additions to Catalogue of Spares and Consumables	\$10,000			%	%	%	%	%
0903	Mark-up on Sub-Contracting	\$200,000			%	%	%	%	%

# TPS Concept of Operation Guidance to Industry

APPENDIX AA

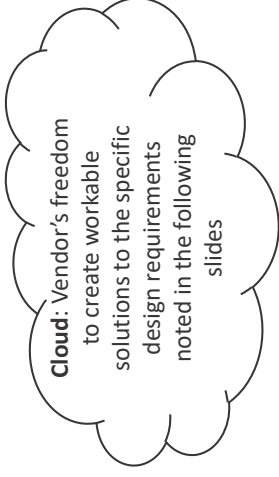
TO

ANNEX A

ACQUISITION SOW

# Introduction

- The aim of these slides to outline the TPS equipment operational concept of usage which will allow vendors to tailor their products in terms of power generation and storage, distribution, and transportation.
- Technical guidance will be provided in the project's RVM and SOW as applicable.
- The following unique icons will be used throughout the slides:



Generator

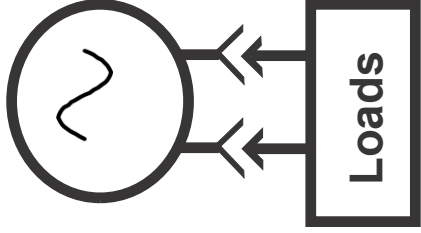
- Abbreviations:

- BC – Bi-con
- CA – Canadian Army
- CMBG – Canadian Mechanized Brigade Group
- CP - Command Post
- CPDS – Central Power Distribution System
- ECU – Environmental Conditioning Unit
- ESU – Energy storage Unit (L – large; S – Small)
- Gen – Generator (Relative size designated as A to F)
- HQSS – Headquarters Shelter System
- LVM – Logistic Vehicle Modernization (L – the light variant)
- RCAF – Royal Canadian Airforce

# Power Generation and Storage Concept

DRAFT

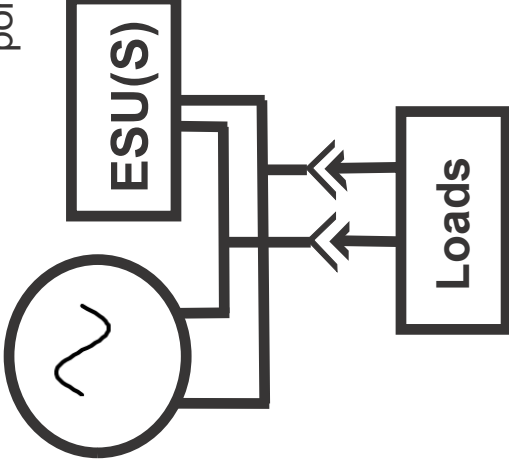
**Small**  
**(120V, 1ph, 60Hz) NEMA 5-15**  
**or 5-20 user receptacle**



**Very Common**  
Traditional use.

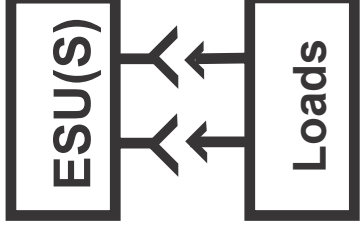
5kW = must have a 20A, 2kW can be  
15 or 20A receptacles

The ESU(S) must be a physically separate component to allow sharing between users and portability



**Very Common**

Covers off for Gen during  
refueling or low demand periods.  
Absorb surges for limited  
periods.



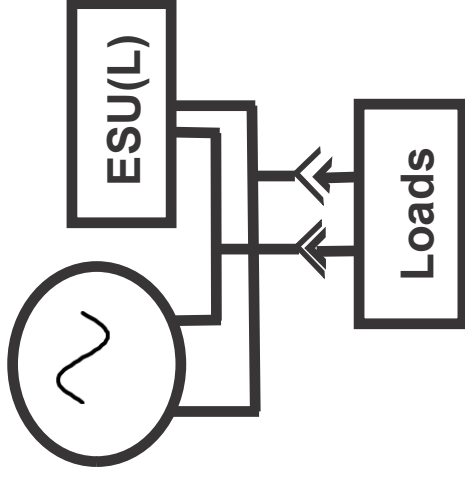
**Infrequent**

Gen cannot be (or is not)  
used. Charged from genset  
or shore power earlier.



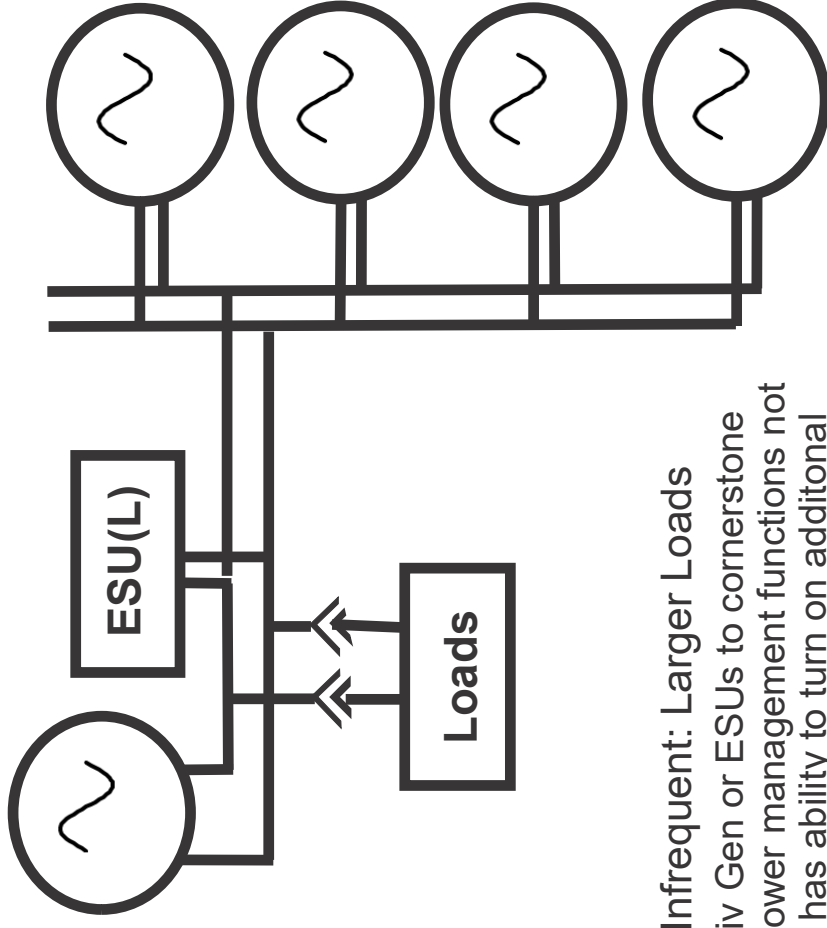
## Large (pg 1/2) (120/208V, 3ph, 60Hz plus 240/416V, 3ph, 50Hz) pin/sleeve connectors

The ESU(L) may be stand-alone or integrated into a genset. Diagrams depict where power is supplied from, not a specific physical configuration.



### Most common: Cornerstone System

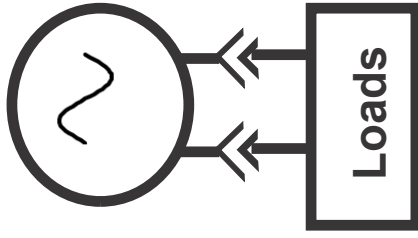
ESU power during low demand periods.  
ESU covers off gen during refueling/maint and absorbs surges for limited periods.  
Gen power for higher demands and recharging.



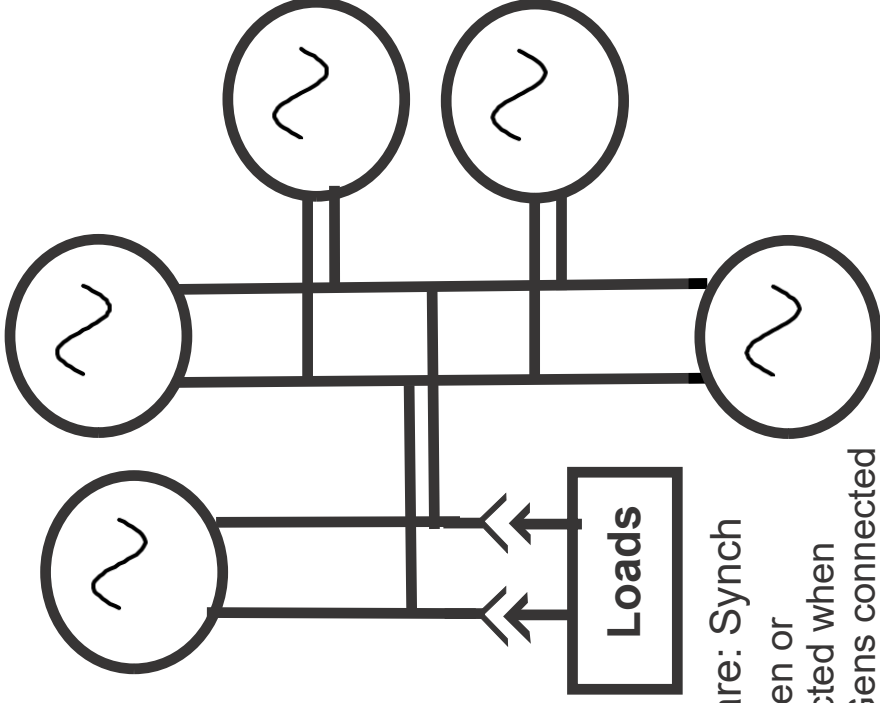
### Infrequent: Larger Loads

Adds mil/civ Gen or ESUs to cornerstone system. Power management functions not shown but has ability to turn on additional gensets, shed loads, etc.

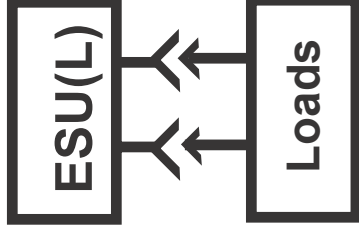
**Large (pg 2/2)**  
**(120/208V, 3ph, 60Hz plus 240/416V, 3ph, 50Hz) pin/sleeve connectors**



Rare: Traditional  
 ESU broken or  
 disconnected, or  
 possibly Gen F in rare  
 cases



Rare: Synch  
 ESU broken or  
 disconnected when  
 multiple Gens connected



Incredibly Rare: ESU only  
 Gen broken or disconnected  
 without ability to recharge  
 ESU. Very short time periods  
 only.

# Distribution Systems

# Introduction

Vendors are requested to provide distribution systems to cover the following gen(s) configuration:

## Single Phase Gen Slides:

- Gen A
- Gen B
- Gen C is expected to be removed from the project (nothing shown)

## Three Phase Gen Slides:

- Gen D Cornerstone components (as a self contained package);
- Gen E Cornerstone components (as a self contained package);
- Gen F Bare (nothing);
- All Cornerstone combinations (D+D, D+E, E+E);
- Gen E Cornerstone + Gen F support
- Gen E Cornerstone + more than one genset

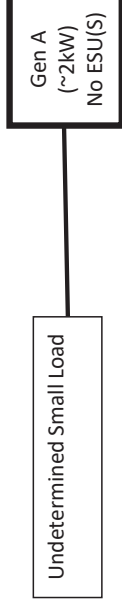
## General Notes:

- Gen D and E Cornerstone systems are the building blocks that everything else rests upon. They account for over 80% of individual quantities, and likely more than 2/3 of the various possible configurations.
- The more complicated aspects of micro-gridding are only considerations for the last three slides unless vendors need that capability as part of a cornerstone system.
- Any of the proposed distribution systems must be compatible with CPDS connectors, but it does NOT mean vendors must use CPDS legacy components (for example: different number/types of connectors to a box, different materials or shapes, longer/shorter cables, etc).
- Sizing and quantity of cables and boxes are based on a typical field unit layout with some flexibility to adapt to other scenarios.

# Single Phase Distribution Systems

DRAFT

## Single Phase Gensets: Gen A



Gen A are hand-portable gensets (diesel and gasoline) normally without an ESU(S).

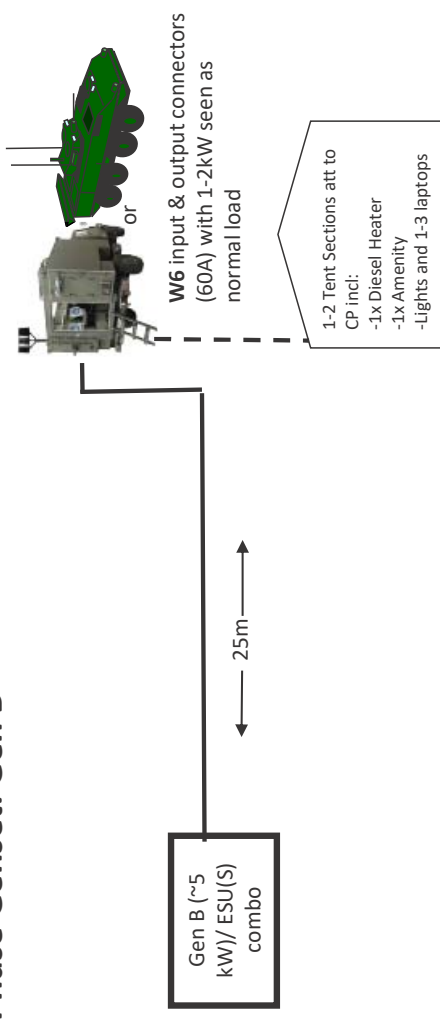
They may run any kind of small load (computers, 1x diesel heater, lighting, recharging of batteries, small tools, etc).

### Design Considerations/Preliminary Thoughts

They use COTS extension cords already within the system.

No vendor work or planning is required

## Single Phase Genset: Gen B



### Most Common Scenario (Sub-unit CP)

- 1x Vehicle CP, possibly with a section of modular tent as a penthouse. **W6** (60A pin/sleeve connection) into the Vehicle.
- Loads in the Vehicle estimated at 1-2kW, plus up to 3 kW in the tent (normally a diesel heater and a coffee pot or other small appliance).

### Other Common Scenarios

- Using the genset without a CP to power a variety of equipment (diesel heaters, lights, battery rechargers, medical equipment, tools, etc.
- Ordinary extension cords will be utilized.

### Design Consideration/Preliminary Thoughts

- 1x cheater cord taking the highest current outlet from the genset or genset/ESU(S) combination (dependant on vendor, but likely L5-30 or similar) and terminating as a W5 60A pin/sleeve connector.
- This may be a special-purpose cable or a short adapter/dongle into which a standard 25m W5 cable connects to.
- This will serve the expected majority of CP demands (radios, laptops, LED lighting, small fan) without modifying off-the-shelf generators to incorporate pin/sleeve connectors.
- Most CPs have a power-out connector (W5) which may assist in feeding the tent loads.
- Some load management may be required by users.
- All other scenarios will use existing extension cords to provide power to whatever loads are connected.

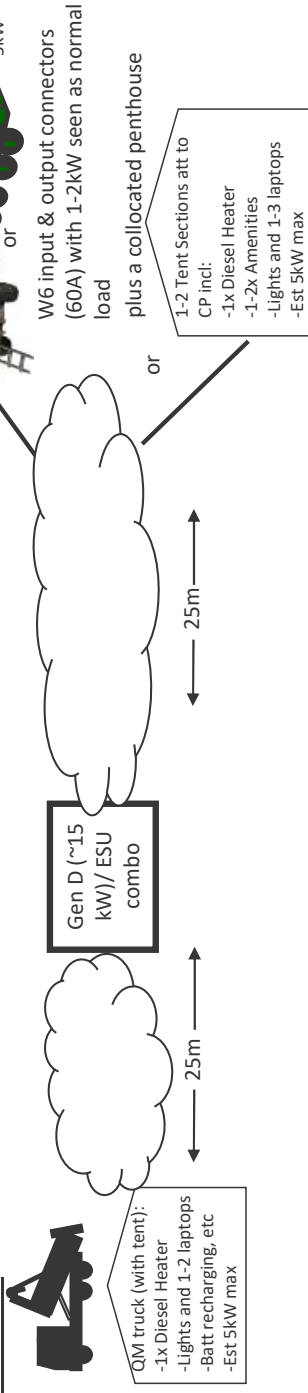
# Three Phase Distribution Systems

DRAFT



# Single Gensets: Gen D Cornerstone distribution Kit When Used as a Stand alone System

## Most Common Scenario: Admin Sub-unit



## Other Common Scenarios

-Medical staff connecting to a small HQSS shelter (W5 input) with medical equipment inside, including 1x ECU without block heater. Similar for Int staff in an analysis shelter.

## Less Common Scenarios

-Creation of a CP or office setup without a Vehicle. Users would need to lay out cables and boxes to allow use inside a canvas tent or adjacent building. Should have at least 3x terminal boxes for users. Some shorter cables may be useful, though (existing) extension cords could also be used to connect low-draw loads from the terminal boxes onwards.

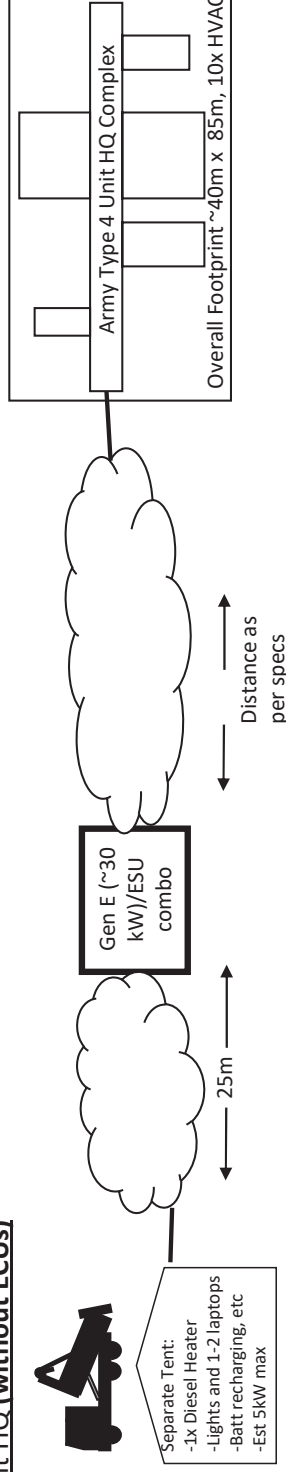
## Design Considerations/Preliminary Thoughts

- 1 x cable which connect to a 60A, W5 or W6 input (CP Vehicle, HQSS module, ECU, power distribution box, etc).
- 2-3 x Small terminal boxes to allow 3 x 20A circuits per box for users to plug devices into (similar to CPDS TDB which splits the three phase power into three duplex receptacles).
- Other cables and boxes as needed to feed the terminal boxes and complete the system.
- In DOMOPS/peacetime, QM and the CP may be collocated, and genset located further away. Like-cables must connect together to allow longer runs.
- If space on the skid allows it, an extra cable(s) and box(es) can be added for more flexibility.
- Load shedding is not a requirement at this level, but is welcomed if part of the solution.

**Solution is a basic, yet flexible package contained with the genset/ESU. At this point, no other gensets are connected to this system.**

## Single Gensets: Gen E Cornerstone distribution Kit When Used as a Stand alone System

### Most Common Scenario: Unit HQ (without ECUs)



### Description

- HQ contains up to four Vehicles plugged into the HQSS complex, 30 laptops, projectors/displays, and server equipment, and radios (much of this is contained within the Vehicles). Also includes HQSS lighting, and 2-3 amenities (coffee maker, toaster, etc).
- Up to 10x diesel heaters to provide three+ season comfort (fall, winter, spring, plus cooler summer days).
- Assume HQSS internal lighting and distribution systems can be used for most office equipment .
- Does NOT include any HQSS ECUs.
- There may be an associated nearby tent (~25m) for other users similar to the one shown on the Gen D slide (one diesel heater, a few laptops, lights, recharging of equipment, etc), with a total load of <5kW.

### Less Common Scenario

Same loads/users, but not using HQSS. For example, inside ordinary canvas or vacant existing infrastructure. This is more likely for extended periods such as a static location or some DOMOPs. Additional kit may need to be borrowed or power bars/extension cords used to properly fill this scenario, but it is not seen as happening often.

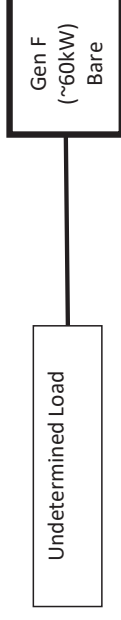
### Design Considerations/Preliminary Thoughts

- Enough cable and boxes to feed the (W5 input) internal HQSS lighting/distribution system. Note more than one entry point is required. See other diagrams/specs showing detailed layout of the HQSS complex for distances/locations.
- One other cable (~25m) and a terminal box to feed the separate tent a max of 5kW
- At least 4x terminal boxes for the HQ should the HQSS internal distribution not be used (eg: 'less common scenario' inside an armoury/gymnasium).
- Other cables or boxes as needed to feed the terminal boxes and complete the system.
- If space remains on the pallet, more can be carried to allow flexibility.
- Load shedding is desired but not critical at this stage (priority to the Vehicles, then tent-occupant, and finally HVAC).

**Solution is a basic, yet flexible package contained with the genset/ESU. At this point, no other gensets are connected to this system.**

## Single Gensets: Gen F

Seen as a rare scenario



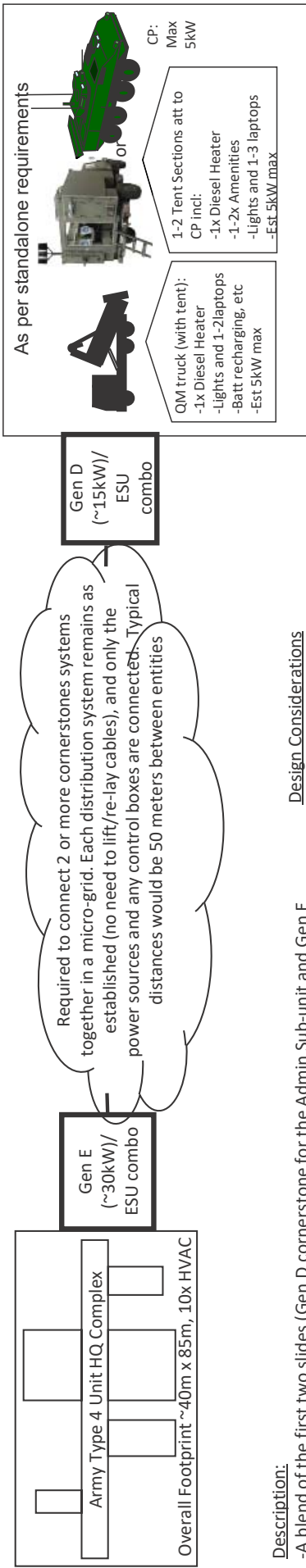
No need for vendors to plan for this since power scenarios involving Gen F are based on cornerstone systems plus additional gensets, vice a Gen F being used solo. This slide is included only to confirm it was not an oversight/omission by DND.

Design Consideration/Preliminary Thoughts

No work or planning required. Distribution reqs for Gen F will be examined only when paired with other Gens.

## Dual Gensets: Gen D and E Cornerstones (Using Connection Kit X)

Most Common Scenario: Unit HQ and Admin Sub-unit collocated (Unit HQ not using HQS ECU)



### Description:

- A blend of the first two slides (Gen D cornerstone for the Admin Sub-unit and Gen E cornerstone for the Unit HQ) but the tactical situation allows them to collocate.
- This may occur during DOMOPs, or during the administrative portion of a training event. It could also be used during a mission where there is low threat of Arty when collocation allows logistic advantages (for example, starting the nucleus of a camp).
- It will not occur in combat operations or on training events once under a tactical scenario, as there may be several hundred metres or km between the two entities.
- As no ECUs are used, it is still limited to fall, winter, spring, and cooler summer days.
- Load shedding capability is required at this point.

### Design Considerations

- Distribution systems to each user remain as per earlier work;
- Issue is how to connect two of them together, and where any required kit is carried.

**Ideal solution is the two cornerstone kits connect to each other without needing additional boxes/cables as it allows more collocation opportunities without advance planning. However, if a separate connection kit skid is acceptable if required due to the unique nature/expense/size of equipment.**

## Dual Gensets: 2x Gen D Cornerstones or 2x Gen E Cornerstones

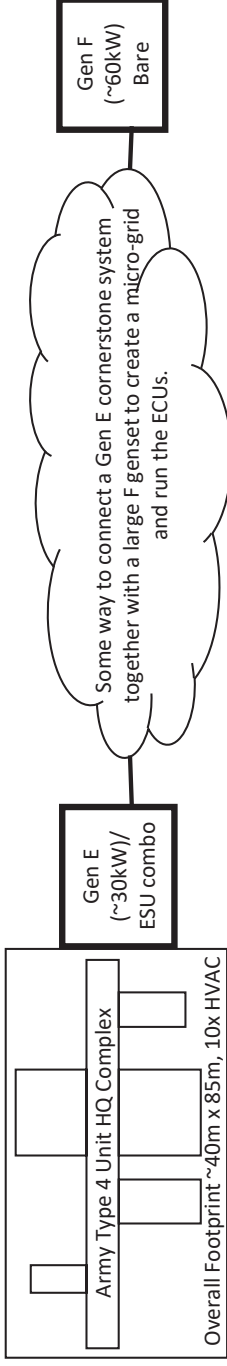
Scenario and Description (Virtually identical to above).

- 2x Gen D (~30kW) could apply when Admin or Medical sub-units collocate. If there is an arty threat or constricted terrain, the entities will remain at different locations.
- 2x Gen E (~60kW) could apply when erecting a CMBG HQ, a Tac Hel site, or the Field Hospital as they have higher power requirements and receive 2x Gen E cornerstones, vice 1x Gen E and 1x Gen D. Still restricted to diesel heaters for three+ season use (no use of ECUs).

As above.

## Dual Gensets: Gen E Cornerstone and Gen F

Most Common Scenario: Unit HQ using ECUs in the cooling mode (very hot weather) or mild cold (without the block heaters)



### Description:

- Although listed as the most common scenario, it is expected to be infrequent.
- This takes the unit HQ using HQSS from diesel heaters (three+ seasons) and allows it to use ECUs for cooling in hot weather. Most likely in deployed scenarios, but can occur in summer weather.
- On extended deployments where seasons change, the ECUs allow some heating with the same power consumption (10kW each).
- 10x ECU at 10kW = 100kW, but assume 50% demand at any given time, so approx 50kW of additional power needed above the bare HQ loading.
- If very cold temperatures are expected, diesel heaters will be taken (most energy efficient approach), or additional gensets must be connected to allow the ECUs to use their integral block heaters (next slide).

### Design Considerations/Preliminary Thoughts

- The HQ basic loads are already well served by the Gen E Cornerstone package described earlier.
- The additional power and distribution is therefore only needed to run the 10x ECUs (which are fed from the HQSS internal distribution system).
- Load shedding is essential at this stage (priority to the Vehicles/tents, then non-HQSS loads, and finally the 10x ECUs).

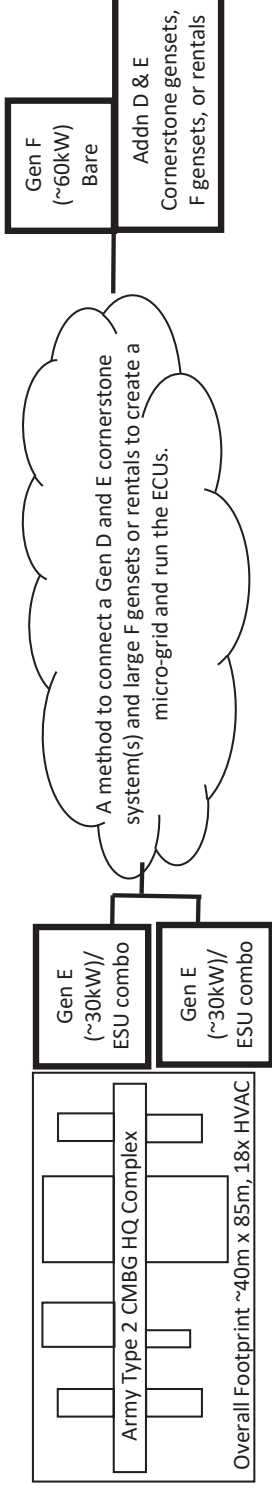
**Solution should use the same equipment already found in earlier slides**

### Less Likely Scenario Description:

- Tac Hel or the Field Hospital setting up 2-3 micro-grids (E+F) when not close enough to form a single, larger one (for example: Tac Hel HQ, flight lines, and accn/dining areas with 100+ metres between them).
- CMBG HQ setting up two adjacent micro-grids (E+F, E+F). In most cases, they will set up one larger one (E+E+F+F).

## More than two Gensets: Gen E Cornerstone plus others

Most Common Scenario: CMBG HQ using ECUs in cooling mode (est. 100kW) or heating (without the block heaters)



### Description:

- CMBG HQ running one micro-grid of 100-110kW including 18x ECUs to allow cooling in hot weather, or limited heating without block heaters in cool weather.
- The Field Hospital running one large micro-grid of 150-170kW including 27x ECUs to allow cooling in hot weather or limited heating without block heaters in cool weather.
- While the most common, this is still not expected to happen often.

### Very Rare Scenarios

- Users running the ECUs with block heaters when very cold, instead of using diesel heaters (a Unit with HQSS Type 4 (10 ECUs) at 105kW, CMBG with HQSS Type 2 (18 ECUs) at 165kW, or Field Hospital with HQSS (27 ECUs) at 250-270kW).

Note: Since ECUs weigh more and consume 10x the power of a diesel heater, these are seen as very rare. However, it could occur in some missions if a cold snap occurs with no diesel heaters present. Alternate arrangement are also possible (addn clothing, locally acquired fuel-fired heaters, etc) which will mitigate this demand. However, they are included for completeness.

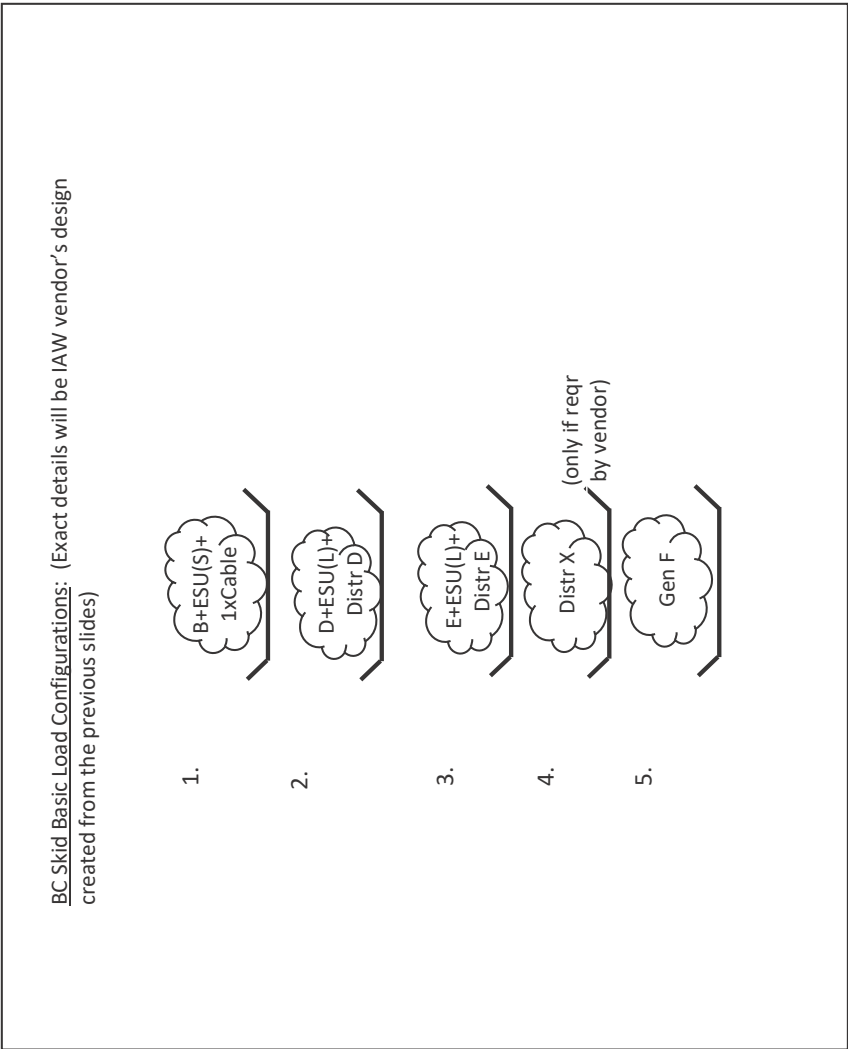
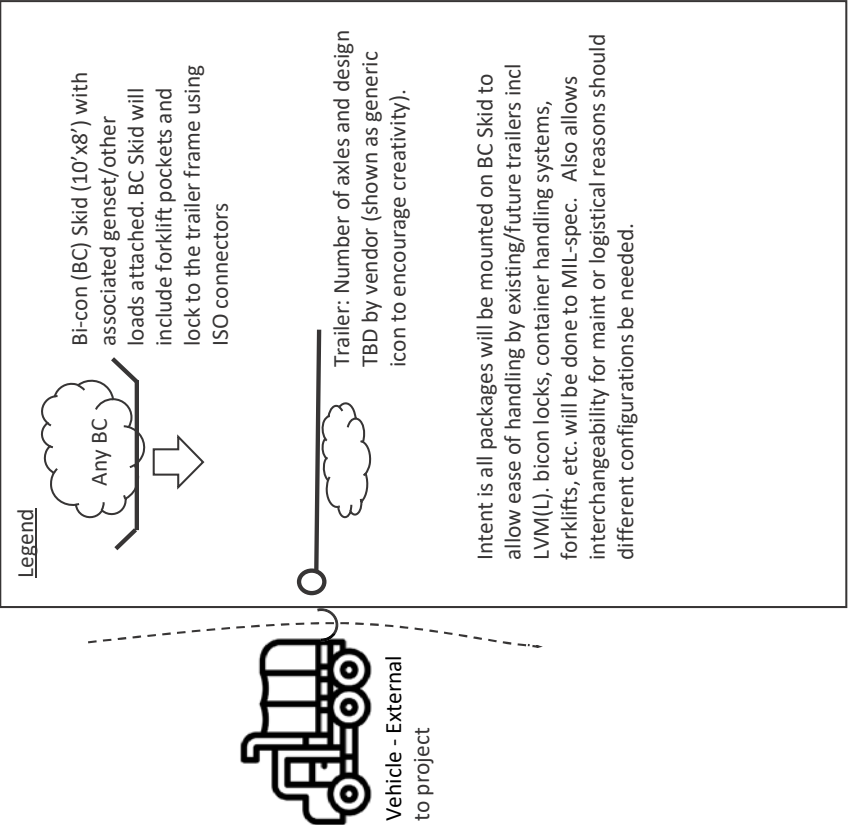
### Design Considerations/Preliminary Thoughts

- The CMBG or Fd Hosp basic loads are already well served by the two Gen E Cornerstone packages described earlier.
- Additional power distribution and management is only needed to run the 10, 18, or 27 ECUs.
- While one micro-grid is preferred for the hospital, given its large size, running two smaller micro-grids is acceptable if it capitalizes on an existing solution, vice creating a unique solution that over 95% of other users will never be able to take advantage of.
- Load shedding is essential at this stage given the amount of users.
- The solution must also accept feeds from 'common' brands of rental generators (up to 60kW).

**Ideal solution should use the same equipment already found in earlier slides**

# Transportation

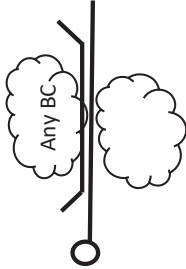
# Basic Load Configurations





Proposal #1

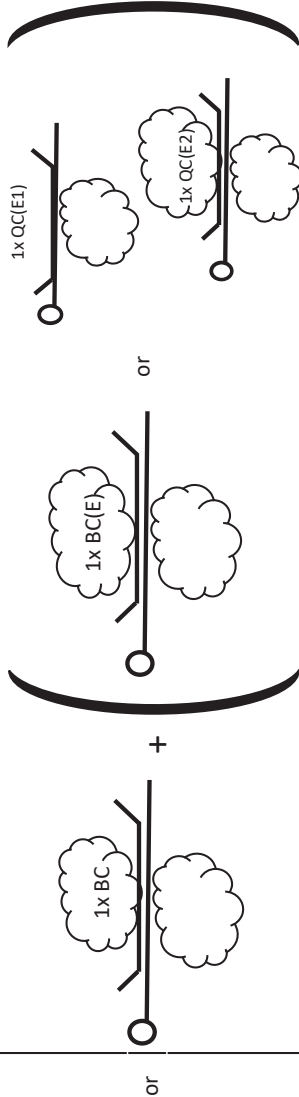
Scenario 1. All configurations can fit onto one BC skid. All trailers are identical.



Note: Distr X and Gen F are more likely to be carried by forklift and truck, vice TPS trailer, but the option does remain to use the trailers if they are empty/enough can be acquired.

Transportation Scenarios

Scenario 2. If Cornerstone E is too heavy or volume exceeds one BC skid (<20m<sup>3</sup>, though <14m<sup>3</sup> is better for stability).  
Proposed solution:



In both cases (as with solution #1), Distr X and Gen F are more likely to be carried by forklift and truck, vice TPS trailer, but the option remains to use the trailers if they are empty/enough can be acquired.

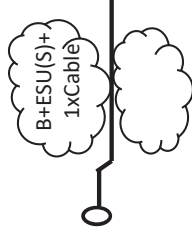
Majority of trailers are still 1x BC skid to haul the Gen B and D systems (no change from Scenario 1).

Some trailers are larger for the Gen E systems. Adv = self contained as one package.

Use 2x QC trailers. Adv = remains as one fleet (no addn design, testing, etc). Dis = If expensive, may force cuts elsewhere.

Proposal #2

Alternative Packaging Option: Put part of the Gen B fleet on commercial/ industrial trailers vice SMP trailers. (ESTIMATE = ABOUT 100 TRAILERS FROM A PROJECT TOTAL OF ABOUT 500)



(Representative Picture only)

Guidance: Primary users will be CA Reserves (est 100+ systems) plus some other users such as the RCAF. This trailer will still allow movement on all roads and limited off-road capability to support training and DOMOPs. A major advantage of hydraulic surge braking over airbrakes is that any pickup truck or the LUV(L) can tow small gensets. This cuts significant training time for the Reserves (no airbrake course, no driver wheeled course, etc) and allows more drivers.

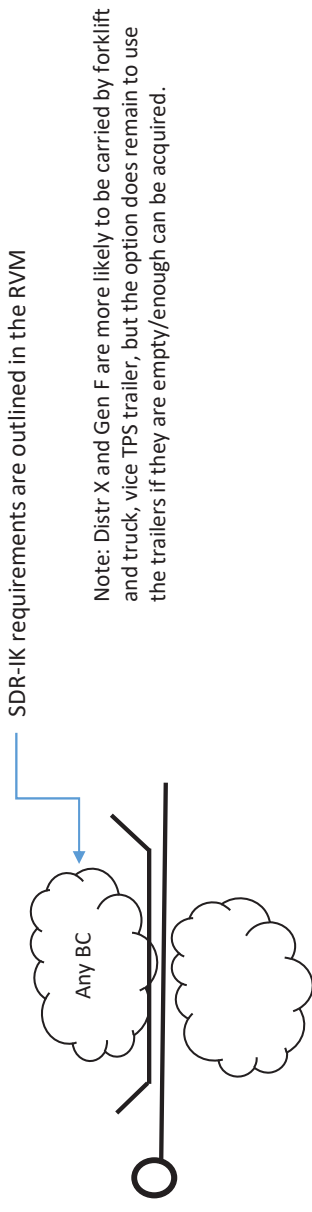
Pricing should address the following two scenarios:

- 1) the Gen B+ESU(S) Combo is attached directly to the trailer; and
- 2) the QC skid with the Gen B+ESU(S) Combo is mounted the trailer

## Transportation Scenarios

### Proposal #1

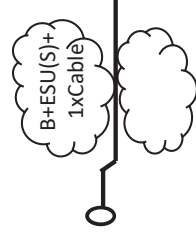
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Pricing should address the following two scenarios:

- 1) the Gen B+ESU(S) Combo is attached directly to the trailer; Band
- 2) the BC skid with the Gen B+ESU(S) Combo is mounted the trailer

Serial	Equipment Summary Checklist	CONOPS to Industry Slide Reference
1	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz GAS	4
2	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL	4
3	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz GAS	4
4	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL; with Gen B Power Cable	4, 11
5	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	5, 6
6	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	5, 6
7	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	5, 6
8	Energy Storage Unit (Small)	4
9	Energy Storage Unit (Large) for Gen Large D	5, 6
10	Energy Storage Unit (Large) for Gen Large E	5, 6
11	D Distribution kit	8, 13
12	E Distribution kit	8, 14
13	X Distribution Kit (Power Distribution Management Module System)	8, 16, 17, 18
14	Proposal 1A - Militarized Quadcon-size framed Trailer	20, 21
15	Proposal 2A- Trailer with Gen B+ESU(S) Combo directly attached	20, 21
16	Proposal 2B - Trailer with the mountable QC skid for the Gen B+ESU(S) Combo	20, 21

# Tactical Power System (TPS)

## REQUEST FOR PROPOSAL (RFP)

### IMPORTANT INFORMATION REGARDING THIS RFP:

This RFP is in 3 volumes and consists of 2 requirements. To be considered compliant, bidder must bid on the 2 requirements.

- a. Volume 1 - Bidder Instructions and Requirement
- b. Volume 2 - TPS Acquisition requirement and Resulting Contract Clauses
- c. Volume 3 - TPS In-Service Support requirement and Resulting Contract Clauses

Solicitation No. – No de l'invitation  
W8476-206276  
Client Ref. No. – No de réf. du client  
W8476-206276

Amd. No. – No de la modif.  
File No. – No du dossier

Buyer ID – Id de l'acheteur  
125QF  
CCC No./No CCC - FMS No./No VME

## **VOLUME 1 of 3**

### **TPS Bidder Instructions and Requirements** W8476-206276 Acquisition and In-Service Support

**This document contains Security  
Requirements**

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<b>PART 1 - GENERAL INFORMATION .....</b>	<b>4</b>
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## **PART 1 - GENERAL INFORMATION**

### **1.1 Introduction**

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

Part 1 General Information: provides a general description of the requirement;

Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;

Part 3 Bid Preparation Instructions: provides Bidders with instructions on how to prepare their bid;

Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;

Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided;

Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by Bidders; and

Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

Volume 2 pertains to TPS Acquisition Resulting Contract Clauses - the annexes include the Statement of Work, the Basis of Payment, the Security Requirements Checklist, the Electronic Payment Instruments, the Federal Contractors Program for Employment Equity - Certification, the Insurance Requirements, the DND 626 Task Authorization Form and any other annexes and appendices.

Volume 3 pertains to TPS In-Service Support Resulting Contract Clauses - the annexes include the Technical Statement of Work, the Logistical Statement of Work, the Basis of Payment, the Security Requirements Checklist, the Electronic Payment Instruments, the Federal Contractors Program for Employment Equity - Certification, the Insurance Requirements, the DND 626 Task Authorization Form and any other annexes and appendices.

### **1.2 Summary**

1.2.1 The Department of National Defence has a requirement for the provision of a Tactical Power System comprised of Generators, Power Management Systems, Power Distribution Systems, Synchronization, and Energy Storage.

Strong, Secure, Engaged (SSE) articulates how the Government of Canada can call upon the CAF to undertake missions for the protection of Canada and Canadians. The policy states that the CAF will be prepared to simultaneously deploy to two different theatres of operation, including one as a lead nation.<sup>1</sup> In addition to deployments, equipment is also needed to support training. Electrical power generation systems are mission critical equipment for land forces to conduct operations in all environments. SSE outlines the approach and methodology for the new direction of Defence priorities.

The period of the contract is defined as being from the date of contract award until all services and deliverables have been delivered and accepted, all warranties have expired, and no outstanding warranty issues exist. The Option is valid for one year from the contract award date.

The resulting in-service support contract (ISS) will be for a period of four years with four additional four year, optional periods. The start of the ISS contract will be from the first article TPS delivery.

The Contractor must perform in-service support work at Volume 3 in accordance with the In-Service Support Contract Technical Statement of Work and Logistical Statement of Work, which includes, but is not limited to, repair, overhaul, modification, conversion, upgrade and/or reduction to spares and other support services for the equipment and associated components such as Technical Investigation and Engineering Services (TIES), Field Service Representative (FSR), submission of reports, meetings, as appropriate, storage and parts provisioning and training. Also core Management responsibilities such as Project Management, Program Management, Project Administration, Meeting Support, Financial Services, Quality Assurance Management, Technical Engineering Support, Contract Management, Sub-Contract Management, Security, Import/Export, Supply Chain and Material Program Management and other related requirements.

- 1.2.2 " There are security requirements associated with this requirement. For additional information, consult Part 6 - Security, Financial and Other Requirements, and Part 7 - Resulting Contract Clauses. For more information on personnel and organization security screening or security clauses, Bidders should refer to the [Contract Security Program](http://www.tpsgc-pwgsc.gc.ca/esc-src/introduction-eng.html) of Public Works and Government Services Canada (<http://www.tpsgc-pwgsc.gc.ca/esc-src/introduction-eng.html>) website".
- 1.2.3 "This procurement is subject to the Controlled Goods Program. The [Defence Production Act](#) defines Canadian Controlled Goods as certain goods listed in Canada's Export Control List, a regulation made pursuant to the Export and Import Permits Act (EIPA)."
- 1.2.4 "The Federal Contractors Program (FCP) for employment equity applies to this procurement; refer to Part 5 – Certifications and Additional Information, Part 7 - Resulting Contract Clauses and the annex titled Federal Contractors Program for Employment Equity - Certification."
- 1.2.5 " This bid solicitation allows bidders to use the epost Connect service provided by Canada Post Corporation to transmit their bid electronically. Bidders must refer to Part 2 entitled Bidder Instructions, and Part 3 entitled Bid Preparation Instructions, of the bid solicitation, for further information."

### 1.3 Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.



## 1.4 Communication

As a courtesy and in order to coordinate any public announcements pertaining to this contract, the Government of Canada requests that successful Bidders notify the Contracting Authority in advance of their intention to make public an announcement related to the award of a contract.

## PART 2 - BIDDER INSTRUCTIONS

### 2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The clause [2003](#) (2020-05-28) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of [2003](#), Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days  
Insert: 365 days

#### 2.1.1 SACC Manual Clauses

Applicable to Volume 2 TPS Acquisition Resulting Contract Clauses

2030 (2020-05-28) [General Conditions - Higher Complexity - Goods](#)  
4006 (2010-08-16) Contractor to Own Intellectual Property Rights in Foreground Information  
4010 (2012-07-16) Services - Higher Complexity  
A7035T (2007-05-25) List of Proposed Subcontractors

Applicable to Volume 3 - TPS In-Service Support Resulting Contract Clauses

2035 (2020-05-28) [General Conditions - Higher Complexity - Services](#)  
4006 (2010-08-16) Contractor to Own Intellectual Property Rights in Foreground Information  
4012 (2012-07-16), Goods – Higher Complexity  
A7035T (2007-05-25) List of Proposed Subcontractors

### 2.2 Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by using Epost Connect. For bids closing at the Bid Receiving Unit in the National Capital Region (NCR) the email address is:

[tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca](mailto:tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca)

Note: Bids will not be accepted if emailed directly to this email address. This email address is to be used to open an epost Connect conversation, as detailed in Standard Instructions

[2003](#), or to send bids through an epost Connect message if the bidder is using its own licensing agreement for epost Connect.

Due to the nature of the bid solicitation, bids transmitted by facsimile to PWGSC will not be accepted.

## 2.3 Former Public Servant

Contracts awarded to former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts awarded to FPSs, bidders must provide the information required below before contract award. If the answer to the questions and, as applicable the information required have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply with Canada's request and meet the requirement within the prescribed time frame will render the bid non-responsive.

For the purposes of this clause "former public servant" is any former member of a department as defined in the [Financial Administration Act](#), R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- a. an individual;
- b. an individual who has incorporated;
- c. a partnership made of former public servants; or
- d. a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means a pension or annual allowance paid under the [Public Service Superannuation Act](#) (PSSA), R.S., 1985, c. P-36, and any increases paid pursuant to the [Supplementary Retirement Benefits Act](#), R.S., 1985, c. S-24 as it affects the PSSA. It does not include pensions payable pursuant to the [Canadian Forces Superannuation Act](#), R.S., 1985, c. C-17, the [Defence Services Pension Continuation Act](#), 1970, c. D-3, the [Royal Canadian Mounted Police Pension Continuation Act](#), 1970, c. R-10, and the [Royal Canadian Mounted Police Superannuation Act](#), R.S., 1985, c. R-11, the [Members of Parliament Retiring Allowances Act](#), R.S. 1985, c. M-5, and that portion of pension payable to the [Canada Pension Plan Act](#), R.S., 1985, c. C-8.

### Former Public Servant in Receipt of a Pension

As per the above definitions, is the Bidder an FPS in receipt of a pension? **Yes ( ) No ( )**

If so, the Bidder must provide the following information, for all FPSs in receipt of a pension, as applicable:

- a. name of former public servant;
- b. date of termination of employment or retirement from the Public Service.

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental

websites as part of the published proactive disclosure reports in accordance with [Contracting Policy Notice: 2012-2](#) and the [Guidelines on the Proactive Disclosure of Contracts](#).

### Work Force Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? **Yes ( ) No ( )**

If so, the Bidder must provide the following information:

- a. name of former public servant;
- b. conditions of the lump sum payment incentive;
- c. date of termination of employment;
- d. amount of lump sum payment;
- e. rate of pay on which lump sum payment is based
- f. period of lump sum payment including start date, end date and number of weeks; and
- g. number and amount (professional fees) of other contracts subject to the restrictions of a work force adjustment program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including Applicable Taxes.

## 2.4 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than seven (7) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by Bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

## 2.5 Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in \_\_\_\_\_ (*insert the name of the province or territory*).

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidders.

## 2.6 Improvement of Requirement During Solicitation Period

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least \_\_\_\_\_ days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

## 2.7 Bid Challenge and Recourse Mechanisms

- (a) Several mechanisms are available to potential suppliers to challenge aspects of the procurement process up to and including contract award.
- (b) Canada encourages suppliers to first bring their concerns to the attention of the Contracting Authority. Canada's [Buy and Sell](#) website, under the heading "[Bid Challenge and Recourse Mechanisms](#)" contains information on potential complaint bodies such as:
  - Office of the Procurement Ombudsman (OPO)
  - Canadian International Trade Tribunal (CITT)
- (c) Suppliers should note that there are **strict deadlines** for filing complaints, and the time periods vary depending on the complaint body in question. Suppliers should therefore act quickly when they want to challenge any aspect of the procurement process.

## **PART 3 - BID PREPARATION INSTRUCTIONS**

### **3.1 Bid Preparation Instructions**

Canada requests that bidders submit its bid electronically **via epost**:

Canada requests that the Bidder submits its bid in accordance with section 08 of the 2003 standard instructions. The epost Connect system has a limit of 1GB per single message posted and a limit of 20GB per conversation.

The bid must be gathered per section and separated as follows:

Section I: Technical Bid  
Section II: Financial Bid  
Section III: Certifications  
Section IV: Additional Information

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Due to the nature of the bid solicitation, bids transmitted by facsimile will not be accepted.

#### **3.1.1 Section I: Technical Bid**

In their technical bid, Bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability "and describe their approach") in a thorough, concise and clear manner for carrying out the work.

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that Bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

#### **3.1.2 Section II: Financial Bid**

Bidders must submit a price for all elements detailed in the Financial Bid Evaluation Matrix tables 1, 2.a and 2.b at Annex C of this Volume.

##### **3.1.2.1 Electronic Payment of Invoices – Bid**

Bidders who are willing to accept payment of invoices by Electronic Payment Instruments, complete Electronic Payment Instruments and identify which ones are accepted. Acceptance of Electronic Payment Instruments will not be considered as an evaluation criterion.

#### **3.1.3 Exchange Rate Fluctuation**

SACC Manual clause [C3010T](#) (2014-11-27), Exchange Rate Fluctuation Risk Mitigation,

#### **3.1.4 Section III: Certifications**

Bidders must submit the certifications and additional information required under Part 5.

## PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

### 4.1 Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical, financial evaluation criteria, point rates of (50-50)
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.
- (c) Canada will utilize **a two-step approach** and the phased evaluation process as fully described herein.
- (d) **Step One:** Will be an evaluation of all the documentation received with the bid. Step one will be using the Phased Bid Compliance Process as detailed in 4.1.2.
- (e) **Step Two:** TPS Performance Verification (ACQ), Will be a physical evaluation of the equipment proposed in Step One. **NOTE:** Only the bids found compliant in step one will be invited to participate in Step Two.

#### 4.1.2. Phased Bid Compliance Process (PBCP) (Step One only)

##### 4.1.2.1 General

- (a) Canada is conducting the PBCP for Step One described below for this requirement.
- (b) Notwithstanding any review by Canada at Phase I or II of the PBCP, Bidders are and will remain solely responsible for the accuracy, consistency and completeness of their Bids and Canada does not undertake, by reason of this review, any obligations or responsibility for identifying any or all errors or omissions in Bids or in responses by a Bidder to any communication from Canada.

THE BIDDER ACKNOWLEDGES THAT THE REVIEWS IN PHASE I AND II OF THIS

PBCP ARE PRELIMINARY AND DO NOT PRECLUDE A FINDING IN PHASE III THAT THE BID IS NON-RESPONSIVE, EVEN FOR MANDATORY REQUIREMENTS WHICH WERE SUBJECT TO REVIEW IN PHASE I OR II AND NOTWITHSTANDING THAT THE BID HAD BEEN FOUND RESPONSIVE IN SUCH EARLIER PHASE. CANADA MAY DEEM A BID TO BE NON-RESPONSIVE TO A MANDATORY REQUIREMENT AT ANY PHASE.

THE BIDDER ALSO ACKNOWLEDGES THAT ITS RESPONSE TO A NOTICE OR A COMPLIANCE ASSESSMENT REPORT (CAR) (EACH DEFINED BELOW) IN PHASE I OR II MAY NOT BE SUCCESSFUL IN RENDERING ITS BID RESPONSIVE TO THE MANDATORY REQUIREMENTS THAT ARE THE SUBJECT OF THE NOTICE OR CAR, AND MAY RENDER ITS BID NON-RESPONSIVE TO OTHER MANDATORY REQUIREMENTS.

- (c) Canada may, in its discretion, request and accept at any time from a Bidder and consider as part of the Bid, any information to correct errors or deficiencies in the Bid that are clerical or administrative, such as, without limitation, failure to sign the Bid or any part or to checkmark a box in a form, or other failure of format or form or failure to acknowledge; failure to provide a procurement business number or contact information such as names, addresses and telephone numbers; inadvertent errors in numbers or calculations that do not change the amount the Bidder has specified as the price or of any component thereof that is subject to evaluation. This shall not limit Canada's right to request or accept any information after the bid solicitation closing in circumstances where the bid solicitation expressly provides for this right. The Bidder will have the time period specified in writing by Canada to provide the necessary documentation. Failure to meet this deadline will result in the Bid being declared non-responsive.
- (d) The PBCP does not limit Canada's rights under Standard Acquisition Clauses and Conditions (SACC) 2003 (2018-05-22) Standard Instructions – Goods or Services – Competitive Requirements nor Canada's right to request or accept any information during the solicitation period or after bid solicitation closing in circumstances where the bid solicitation expressly provides for this right, or in the circumstances described in subsection (c).
- (e) Canada will send any Notice or Compliance Assessment Report (CAR) by any method Canada chooses, in its absolute discretion. The Bidder must submit its response by the method stipulated in the Notice or CAR. Responses are deemed to be received by Canada at the date and time they are delivered to Canada by the method and at the address specified in the Notice or CAR. An email response permitted by the Notice or CAR is deemed received by Canada on the date and time it is received in Canada's email inbox at Canada's email address specified in the Notice or CAR. A Notice or CAR sent by Canada to the Bidder at any address provided by the Bidder in or pursuant to the Bid is deemed received by the Bidder on the date it is sent by Canada. Canada is not responsible for late receipt by Canada of a response, however caused.

#### **4.1.2.2 Phase I: Financial Bid**

- (a) After the closing date and time of this bid solicitation, Canada will examine the Bid to determine whether it includes a Financial Bid and whether any Financial Bid includes all information required by the solicitation. Canada's review in Phase I will be limited to identifying whether any information that is required under the bid solicitation to be included in the Financial Bid is missing from the Financial Bid. This review will not assess whether the Financial Bid meets any standard or is responsive to all solicitation requirements.



- (b) Canada's review in Phase I will be performed by officials of the Department of Public Works and Government Services.
- (c) If Canada determines, in its absolute discretion that there is no Financial Bid or that the Financial Bid is missing all of the information required by the bid solicitation to be included in the Financial Bid, then the Bid will be considered non-responsive and will be given no further consideration.
- (d) For Bids other than those described in c), Canada will send a written notice to the Bidder ("Notice") identifying where the Financial Bid is missing information. A Bidder, whose Financial Bid has been found responsive to the requirements that are reviewed at Phase I, will not receive a Notice. Such Bidders shall not be entitled to submit any additional information in respect of their Financial Bid.
- (e) The Bidders who have been sent a Notice shall have the time period specified in the Notice (the "Remedy Period") to remedy the matters identified in the Notice by providing to Canada, in writing, additional information or clarification in response to the Notice. Responses received after the end of the Remedy Period will not be considered by Canada, except in circumstances and on terms expressly provided for in the Notice.
- (f) In its response to the Notice, the Bidder will be entitled to remedy only that part of its Financial Bid which is identified in the Notice. For instance, where the Notice states that a required line item has been left blank, only the missing information may be added to the Financial Bid, except that, in those instances where the addition of such information will necessarily result in a change to other calculations previously submitted in its Financial Bid, (for example, the calculation to determine a total price), such necessary adjustments shall be identified by the Bidder and only these adjustments shall be made. All submitted information must comply with the requirements of this solicitation.
- (g) Any other changes to the Financial Bid submitted by the Bidder will be considered to be new information and will be disregarded. There will be no change permitted to any other Section of the Bidder's Bid. Information submitted in accordance with the requirements of this solicitation in response to the Notice will replace, in full, **only** that part of the original Financial Bid as is permitted above, and will be used for the remainder of the bid evaluation process.
- (h) Canada will determine whether the Financial Bid is responsive to the requirements reviewed at Phase I, considering such additional information or clarification as may have been provided by the Bidder in accordance with this Section. If the Financial Bid is not found responsive for the requirements reviewed at Phase I to the satisfaction of Canada, then the Bid shall be considered non-responsive and will receive no further consideration.
- (i) Only Bids found responsive to the requirements reviewed in Phase I to the satisfaction of Canada, will receive a Phase II review.

**4.1.2.3 Phase II: Technical Bid – Applies to eligible Mandatory Criteria only, point-rated excluded except if there is a minimum mandatory requirement.**

- (a) Canada's review at Phase II will be limited to a review of the Technical Bid to identify



any instances where the Bidder has failed to meet any Eligible Mandatory Criterion. This review will not assess whether the Technical Bid meets any standard or is responsive to all solicitation requirements. Eligible Mandatory Criteria are all mandatory technical criteria that are identified in this solicitation as being subject to the PBCP. Mandatory technical criteria that are not identified in the solicitation as being subject to the PBCP, will not be evaluated until Phase III.

- (b) Canada will send a written notice to the Bidder (Compliance Assessment Report or "CAR") identifying any Eligible Mandatory Criteria that the Bid has failed to meet. A Bidder whose Bid has been found responsive to the requirements that are reviewed at Phase II will receive a CAR that states that its Bid has been found responsive to the requirements reviewed at Phase II. Such Bidder shall not be entitled to submit any response to the CAR.
- (c) A Bidder shall have the period specified in the CAR (the "Remedy Period") to remedy the failure to meet any Eligible Mandatory Criterion identified in the CAR by providing to Canada in writing additional or different information or clarification in response to the CAR. Responses received after the end of the Remedy Period will not be considered by Canada, except in circumstances and on terms expressly provided for in the CAR.
- (d) The Bidder's response must address only the Eligible Mandatory Criteria listed in the CAR as not having been achieved, and must include only such information as is necessary to achieve such compliance. Any additional information provided by the Bidder which is not necessary to achieve such compliance will not be considered by Canada, except that, in those instances where such a response to the Eligible Mandatory Criteria specified in the CAR will necessarily result in a consequential change to other parts of the Bid, the Bidder shall identify such additional changes, provided that its response must not include any change to the Financial Bid.
- (e) The Bidder's response to the CAR should identify in each case the Eligible Mandatory Criterion in the CAR to which it is responding, including identifying in the corresponding section of the original Bid, the wording of the proposed change to that section, and the wording and location in the Bid of any other consequential changes that necessarily result from such change. In respect of any such consequential change, the Bidder must include a rationale explaining why such consequential change is a necessary result of the change proposed to meet the Eligible Mandatory Criterion. It is not up to Canada to revise the Bidder's Bid, and failure of the Bidder to do so in accordance with this subparagraph is at the Bidder's own risk. All submitted information must comply with the requirements of this solicitation.
- (f) Any changes to the Bid submitted by the Bidder other than as permitted in this solicitation, will be considered to be new information and will be disregarded. Information submitted in accordance with the requirements of this solicitation in response to the CAR will replace, in full, **only** that part of the original Bid as is permitted in this Section.
- (g) Additional or different information submitted during Phase II permitted by this section will be considered as included in the Bid, but will be considered by Canada in the evaluation of the Bid at Phase II only for the purpose of determining whether the Bid meets the Eligible Mandatory Criteria. It will not be used at any Phase of the evaluation to increase or decrease any score that the original Bid would achieve without the benefit of such additional or different information. For instance, an Eligible Mandatory Criterion that requires a mandatory minimum number of points to achieve

compliance will be assessed at Phase II to determine whether such mandatory minimum score would be achieved with such additional or different information submitted by the Bidder in response to the CAR. If so, the Bid will be considered responsive in respect of such Eligible Mandatory Criterion, and the additional or different information submitted by the Bidder shall bind the Bidder as part of its Bid, but the Bidder's original score, which was less than the mandatory minimum for such Eligible Mandatory Criterion, will not change, and it will be that original score that is used to calculate any score for the Bid

- (j) CCanada will determine whether the Bid is responsive for the requirements reviewed at Phase II, considering such additional or different information or clarification as may have been provided by the Bidder in accordance with this Section. If the Bid is not found responsive for the requirements reviewed at Phase II to the satisfaction of Canada, then the Bid shall be considered non-responsive and will receive no further consideration.
- (k) Only Bids found responsive to the requirements reviewed in Phase II to the satisfaction of Canada, will receive a Phase III evaluation.

#### **4.1.2.4 Phase III: Final Evaluation of the Bid**

- (a) In Phase III, Canada will complete the evaluation of all Bids found responsive to the requirements reviewed at Phase II. Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical, financial and value proposition evaluation criteria.
- (b) A Bid is non-responsive and will receive no further consideration if it does not meet all mandatory evaluation criteria of the solicitation.

#### **4.1.3 Technical Evaluation**

Mandatory and point rated technical evaluation criteria are included in Annex A of this Volume.

#### **4.1.4 Financial Evaluation**

##### **Mandatory Financial Criteria**

Bidders must complete the Financial Bid Evaluation Matrix at Annex C of this Volume.

#### **4.1.5 Value Proposition Evaluation**

Mandatory, minimum assessment values and rated evaluation criteria are included in Annex D of this Volume

### **4.2 Basis of Selection**

#### **4.2.1 Basis of Selection – Highest Combined Rating of Technical Merit and Price**

To be declared responsive, a bid must:

- a. comply with all the requirements of the bid solicitation; and
- b. meet all mandatory criteria; and

- a. obtain the required minimum points specified (*choose "for each criterion" OR "for criterion number \_\_\_\_" OR "for criteria numbers \_\_\_\_ , \_\_\_\_"*) for the technical evaluation, and
  - b. obtain the required minimum of \_\_\_\_ (*insert minimum number of points*) points overall for the technical evaluation criteria which are subject to point rating.  
The rating is performed on a scale of \_\_\_\_ (*insert total number of available points*) points.
2. Bids not meeting (choose "(a) or (b) or (c)" OR "(a) or (b) or (c) and (d)") will be declared non-responsive.
3. The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be \_\_\_\_ % (*insert the percentage for technical merit*) for the technical merit and \_\_\_\_ % (*insert the percentage for price*) for the price.
4. To establish the technical merit score, the overall technical score for each responsive bid will be determined as follows: total number of points obtained / maximum number of points available multiplied by the ratio of \_\_\_\_ % (*insert the percentage for technical merit*).
5. To establish the pricing score, each responsive bid will be prorated against the lowest evaluated price and the ratio of \_\_\_\_ % (*insert the percentage for price*).
6. For each responsive bid, the technical merit score and the pricing score will be added to determine its combined rating.
7. Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted. The responsive bid with the highest combined rating of technical merit and price will be recommended for award of a contract.

The table below illustrates an example where all three bids are responsive and the selection of the contractor is determined by a 60/40 ratio of technical merit and price, respectively. The total available points equals 135 and the lowest evaluated price is \$45,000 (45).

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**Basis of Selection - Highest Combined Rating Technical Merit (60%) and Price (40%)**

		Bidder 1	Bidder 2	Bidder 3
Overall Technical Score		115/135	89/135	92/135
Bid Evaluated Price		\$55,000.00	\$50,000.00	\$45,000.00
Calculations	Technical Merit Score	$115/135 \times 60 = 51.11$	$89/135 \times 60 = 39.56$	$92/135 \times 60 = 40.89$
	Pricing Score	$45/55 \times 40 = 32.73$	$45/50 \times 40 = 36.00$	$45/45 \times 40 = 40.00$
Combined Rating		83.84	75.56	80.89
Overall Rating		1st	3rd	2nd

### **4.3. STEP TWO TPS Performance Verification (ACQ)**

#### **4.3.1 General description**

**STEP TWO**, consists of the Performance Verification of a Bidder's proposed TPS, achieved through the TPS Physical Verification, as outlined at Volume 1 – Bidder Instructions and Requirements, Annex A – Bid Evaluation Plan, Appendix AB – Performance Verification Procedures.

Within ten (10) calendar days of completion of Step One, Bidders deemed responsive in Step One will be notified of exact times and dates for delivery of their proposed TPS, which is to be in accordance with Volume 1, Bidder Instructions and Requirements, Annex A– Bid Evaluation Plan, Appendix AB - TPS Verification Procedures.

Canada will provide the Bidder at least ten (10) working days' notice before the required date of delivery. Canada will conduct all required verification for each complete Bidder's TPS equipment Configuration in accordance with Volume 1 - Bidder Instructions and Requirements, Annex A– Bid Evaluation Plan.

Each day prior to the start of scheduled verification testing, Bidders will be provided with a two (2) hour time period during which they may inspect and perform necessary repairs to their TPS. Necessary repairs shall be limited to repairing or replacing failed TPS components with parts meeting the same fit, form and function. Design changes to any TPS component shall not be permitted. Repairs shall not be permitted at any other time during the verification testing. This two (2) hour time period is not transferrable to the TPS verification testing time periods.

Bidders remain solely responsible for ensuring that they have sufficient spares and appropriately trained personnel available to effect repairs.

TPS systems which do not pass a mandatory requirement, which includes achieving a minimum pass mark of 99 out of 163.5 as identified in Volume 1 - Bidder Instructions and Requirements, , Appendix AA –TPS Acquisition-In Service Support Evaluation, Table 5 – Verification (Technical) Point-Rated Criteria, during the scheduled verification test period for that requirement will be deemed non-responsive and will not be retested for that requirement.

#### **4.4 Basis of Selection (Selection Methodology for overall bid)**

##### **4.4.1 To be declared responsive a bid must:**

- (a) comply with all the requirements of the bid solicitation;
- (b) meet all mandatory criteria including:
  - 1. Achieving a minimum pass standard identified in Volume 1- Bidder Instructions and Requirements;
  - 2. Volume 1, Appendix AA – TPS Acquisition/In Service Support Evaluation – a minimum score of 65 out of 100 for the Rated Environmental Evaluation Criteria at Table 2;
  - 3. Volume 1, Appendix AA – TPS Acquisition/In Service Support Evaluation - a minimum score of 99 out of 163.5 for the Part A – TPS Acquisition Evaluation, based on the combined total points for acquisition rated criteria at Table 3 and Table 4;
  - 4. Volume 1, Appendix AA– TPS Acquisition/In Service Support Evaluation – a minimum score of 69 out of 110 for ISS Management Evaluation from Table 3; and
- (c) The Bidder's TPS solution must pass Table 5 of Volume 1, Appendix AA – TPS Acquisition/In Service Support Evaluation and achieve the minimum pass standards outlined at paragraph 5.1.1.(b).

Bids not meeting 5.1.1 (a) and (b) at the end of Phase 1 will be declared non-responsive and receive no further consideration.

Bids not meeting 5.1.1 (a) and (b) and (c) during Phase 2 will be declared non-responsive and receive no further consideration.

#### 4.4.2 Lowest Cost-per-Weighted Point Rating Application

##### 4.4.2.1 General Approach

The cost per weight point will be determined separately for each bidder's Acquisition and the ISS proposals. These values will be added together to obtain a single value for each bidder, based on 70% of their acquisition's cost per weight point and 30% of their ISS' cost per weight point. **Note that score for the Rated Environmental Evaluation Criteria is not included as part of the weight point total.**

##### 4.4.2.2 Pricing Score

To establish the lowest cost-per-weighted point score, each responsive bid's total price, in accordance with Volume 1 – Bidder Instructions and Requirements, Annex B – Bid Evaluation Plan, Appendix BD, will be divided into the total number of weighted points acquired for the acquisition and ISS bids. Refer to the Table below for more details.

4.4.2.3 Following the successful completion of the evaluations in Phase 1 and Phase 2, the compliant Bidder with the responsive, combined lowest cost-per-weighted point for both the TPS Acquisition and In-Service Support bids will be recommended for the award of both contracts.

##### Example Illustration:

The table below illustrates an **example** where all three bids are responsive, and the selection of the contractor is determined by an overall lowest - cost-per- weighted point score:

NOTE: The cost per weighted point scores will be rounded to two (2) decimal places.

<b>Phase 1 Assessment</b>			
Acquisition Maximum Score Achievable	163.5 (minimum pass mark of 99 points)		
	<b>Bidder 1</b>	<b>Bidder 2</b>	<b>Bidder 3</b>
Bidder's Acquisition Score	109	118	138
All bidders achieved the Acquisition minimum pass score			
ISS Maximum Score Achievable	110 (minimum pass mark of 69 out of 110 points)		
Bidder's ISS Score	85	75	100
All bidders achieved the ISS minimum pass score			
<b>Phase 2: TPS Performance Verification (Acquisition)</b>			
	Maximum Score – 105 points (Minimum pass mark of 65 out of 105 points)		
	<b>Bidder 1</b>	<b>Bidder 2</b>	<b>Bidder 3</b>
	65	75	85
All bidders achieved the verification minimum pass score			
<b>Cost-per-Weighted Point Rating Application</b>			
	<b>Bidder 1</b>	<b>Bidder 2</b>	<b>Bidder 3</b>
Total Acquisition Score Achieved (Phase 1+2)	174	193	223
Bidder's Acquisition bid (\$M)	95.7	117.0	122.5
ACQ Cost-per-Weighted Point	<b>\$0.55M</b>	<b>\$0.61M</b>	<b>\$0.55M</b>
Total ISS Score Achieved (Phase 1)	85	75	100
Bidder's ISS bid (\$M)	20.5	25.7	31.4

ISS Cost-per-Weighted Point	<b>\$0.24M</b>	<b>\$0.34M</b>	<b>\$0.32M</b>
<b>Final Cost-per-Weighted Point</b>			
Based on 70% ACQ Points+ 30% ISS Points	=70%x(0.55)+ 30%x(0.24)	=70%x(0.61)+ 30%x(0.34)	=70%x(0.55)+ 30%x(0.32)
	<b>=\$0.46M</b>	<b>=\$0.53M</b>	<b>=\$0.48M</b>

In this example, Bidder 1 would be declared the overall winning proposal based on a score of \$0.46M/weighted point.

## PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and additional information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue, whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

### 5.1 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid:

#### 5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, **if applicable**, the Integrity declaration form available on the [Forms for the Integrity Regime](http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html) website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

## **5.2 Additional Certifications Required with the Bid**

### **5.2 Certifications Precedent to Contract Award and Additional Information**

The certifications and additional information listed below should be submitted with the bid but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame specified will render the bid non-responsive.

#### **5.2.1 Integrity Provisions – Required Documentation**

In accordance with the section titled Information to be provided when bidding, contracting or entering into a real property agreement of the [Ineligibility and Suspension Policy \(http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html\)](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html), the Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process.

#### **5.2.2 Federal Contractors Program for Employment Equity - Bid Certification**

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the [Employment and Social Development Canada \(ESDC\) - Labour's](https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#) website (<https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#>).

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid list at the time of contract award.

Canada will also have the right to terminate the Contract for default if a Contractor, or any member of the Contractor if the Contractor is a Joint Venture, appears on the ["FCP Limited Eligibility to Bid"](#) list during the period of the Contract.

The Bidder must provide the Contracting Authority with a completed annex titled Federal Contractors Program for Employment Equity - Certification, before contract award. If the Bidder is a Joint Venture, the Bidder must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification, for each member of the Joint Venture.

#### **5.2.3 Additional Certifications Precedent to Contract Award**

##### **5.2.3.1 Status and Availability of Resources**

The Bidder certifies that, should it be awarded a contract as a result of the bid solicitation, every individual proposed in its bid will be available to perform the Work as required by Canada's representatives and at the time specified in the bid solicitation or agreed to with Canada's representatives. If for reasons beyond its control, the Bidder is unable to provide the services of an individual named in its bid, the Bidder may propose a substitute with similar qualifications and experience. The Bidder must advise the Contracting Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the



Bidder: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Bidder has proposed any individual who is not an employee of the Bidder, the Bidder certifies that it has the permission from that individual to propose his/her services in relation to the Work to be performed and to submit his/her résumé to Canada. The Bidder must, upon request from the Contracting Authority, provide a written confirmation, signed by the individual, of the permission given to the Bidder and of his/her availability. Failure to comply with the request may result in the bid being declared non-responsive.

SACC Manual clause [A3010T](#) (2010-08-16) Education and Experience

## **PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS**

### **6.1 Security Requirements**

6.1.1. At the date of bid closing, the following conditions must be met:

- (a) the Bidder must hold a valid organization security clearance as indicated in Part 7 - Resulting Contract Clauses;
- (b) the Bidder's proposed individuals requiring access to classified or protected information, assets or sensitive work sites must meet the security requirements as indicated in Part 7 - Resulting Contract Clauses;
- (c) the Bidder must provide the name of all individuals who will require access to classified or protected information, assets or sensitive work sites;
- (d) the Bidder proposed location of work performance and document safeguarding must meet the security requirements as indicated in Part 7- Resulting Contract Clauses;
- (e) the Bidder must provide the addresses of proposed sites or premiseses of work performance and document safeguarding as indicated in Part 3-section IV Additional information.

6.1.2 For additional information on security requirements, Bidders should refer to the [Contract Security Program](#) of Public Works and Government Services Canada <https://www.tpsgc-pwgsc.gc.ca/esc-src/introduction-eng.html> or [ssicontratsinternationaux.issinternationalcontracts@tpsgc-pwgsc.gc.ca](mailto:ssicontratsinternationaux.issinternationalcontracts@tpsgc-pwgsc.gc.ca) website.

### **6.2 Financial Capability**

### **6.3 Controlled Goods Requirement**

SACC Manual clause [A9130T](#) (2019-11-28) Controlled Goods Program

### **6.4 Insurance Requirements**

The Contractor is responsible for deciding if insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any insurance acquired or maintained by the Contractor is at its own expense and for its own

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benefit and protection. It does not release the Contractor from or reduce its liability under the Contract.

## **PART 7 - RESULTING CONTRACT CLAUSES**

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

**Refer to Volume 2 – Resulting TPS Acquisition Contract Clauses**

**Refer to Volume 3 – Resulting TPS In-Service Support Contract Clauses**

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**APPENDIX AA TO ANNEX A –  
TECHNICAL BID EVALUATION**

# **TACTICAL POWER SYSTEM (TPS) PROJECT**

## **REQUEST FOR INFORMATION (RFI)**

**SOLICITATION: W8476-206276/D**

### **TPS ACQUISITION/IN-SERVICE EVALUATION**

**APPENDIX AA**

**TO**

**ANNEX A**

**TO**

**VOLUME 1**

## **BIDDER INSTRUCTIONS AND REQUIREMENTS**

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## 1 ACQUISITION AND IN-SERVICE SUPPORT MANAGEMENT - MANDATORY REQUIREMENTS

Mandatory requirements in Table 1 are evaluated on a pass/fail basis. The Bidder's proposal must address the mandatory requirements specified below.

TABLE 1– MANAGEMENT MANDATORY CRITERIA

### 1.1 Company Profile

	The Bidder must demonstrate: <ul style="list-style-type: none"> <li>it has the capability to deliver the anticipated volume of work; and</li> <li>it has the capability to deliver the work in accordance with the quality requirements of the solicitation/contract; and</li> <li>it has the requisite level of expertise necessary to deliver the work; and</li> <li>it has a minimum of five (5) years of experience within the last ten (10) years delivering at least one of the following: <ul style="list-style-type: none"> <li>(i) in-service support for Tactical Power for military projects;</li> <li>(ii) conducting repair and overhaul work for military projects; or</li> <li>(iii) Design, development, manufacture and delivery of military projects.</li> </ul> </li> </ul>	M
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### 1.2 Draft Plans and documents

1.	ACQ Project Management Plan	The Bidder must submit with their proposal a Project Management Plan as per CDRL/DID TPS-ACQ-PM-01	M
2.	ACQ Master Project Schedule	The Bidder must submit with their proposal a Master Project Schedule as per CDRL/DID TPS-ACQ-PM-03	M
3.	ACQ Systems Engineering Management Plan	The Bidder must submit with their proposal a Systems Engineering Management Plan as per CDRL/DID TPS-ACQ-SE-02	M
4.	ISS Support Management Plan	The Bidder must submit with their proposal a Support Management Plan as per CDRL/DID TPS- ISS-PM-01	M
5.	Equipment Qualification Testing Program	The Bidder must submit with their proposal a Qualification Testing Program as per CDRL/DID TPS-ACQ-SE-07	M
6.	Preliminary Configuration Management Plan	The Bidder must submit with their proposal a preliminary Configuration Management Plan as per CDRL/DID TPS-	M

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	ISS-ES-01	
7. Preliminary Quality Plan	The Bidder must submit with their proposal a preliminary Quality Plan as per ISO 9001:2015	<b>M</b>
9. Preliminary Equipment Environmental Assessment	The Bidder must submit with their proposal a preliminary Equipment Environmental Assessment as per CDRL/DID TPS- ACQ-EH-01	<b>M</b>

### 1.3 Curriculum Vitae (CV)

The Bidder's proposal must contain the following Curriculum Vitae (CV) as part of their Bid proposal:

1.	The Bidder must submit a CV for each of their proposed: TPS Acquisition Project Manager (ACQ PM); TPS In-Service Support Project Manager (ISS PM); and TPS In-Service Support Life Cycle Material Manager – Contractor Support Person (ISS LCMM-CSP).	<b>M</b>
2.	The CV for the TPS ACQ PM must demonstrate: <ul style="list-style-type: none"> <li>• The PM has a minimum of two (2) years of experience within the last ten (10) years as a project manager on military projects for <ul style="list-style-type: none"> <li>o (i) Tactical Power or</li> <li>o (ii) Design, development, manufacture and delivery of military projects.</li> </ul> </li> </ul>	<b>M</b>
3.	The CV for the TPS ISS PM (can be the same individual as the acquisition Project Manager if the qualifications are met) must demonstrate: <ul style="list-style-type: none"> <li>• The PM has a minimum of two (2) years of experience within the last ten (10) years as a project manager on military projects for <ul style="list-style-type: none"> <li>o (i) Tactical Power or</li> <li>o (ii) Repair and overhaul (R&amp;O) work.</li> </ul> </li> </ul>	<b>M</b>
4.	The CV for one (1) TPS ACQ LCMM-CSP must demonstrate: <ul style="list-style-type: none"> <li>• The LCMM-CSP has successfully completed Life Cycle Material Manager DRMIS training. The Bidder must demonstrate this by providing this DRMIS course certificate.</li> <li>• The LCMM-CSP has a minimum of two (2) years of experience within the last five (5) years as a Life Cycle Material Manager for military equipment.</li> </ul>	<b>M</b>
5.	The Bidder must provide confirmation that the embedded TPS ISS LCMM-CSP is able to communicate fluently, orally and in writing, in both official languages (English and French) in the performance of their duties.	<b>M</b>

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#### 1.4 TPS-RVM

The Bidder's proposal must contain the following statement:

1.	The Bidder must provide a statement of compliance, confirming that the TPS to be delivered under the Contract must fully comply with the mandatory requirements of TPS-RVM - Volume 2; Appendix AB to Annex A.	<b>M</b>
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#### 2 Environment Evaluation

Bidder must demonstrate their capability to meet the evaluation requirements as specified in Table 2. These will be assessed with a minimum pass score of 65 points required from the total available 100 points. Note that point score for the Rated Environmental Evaluation Criteria assess for a bidder is not included as part of their overall weight point total.

**Table 2 - Rated Environmental Evaluation Criteria**

Point Rated Environmental Requirements				Cross Reference to Evidence of Compliance
No.	Topic	Evaluation Requirement	Points Available	
RE1	Regulatory Compliance History	The bidder has not been convicted with an offence in the last 3 years under any federal environmental acts and regulations, i.e., the bidder is not listed in the Canadian Environmental Offenders Registry in the last 3 years (calculated from the date of bid submission): <a href="https://environmental-protection.canada.ca/offenders-registry">https://environmental-protection.canada.ca/offenders-registry</a> Yes – 30 points	30	

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Point Rated Environmental Requirements			Cross Reference to Evidence of Compliance
No.	Topic	Evaluation Requirement	Points Available
		No/No response provided – 0 points	
RE2	Environmental Management System (EMS)	<p>The Bidder's EMS has an ISO 14001 certification received within the last three (3) years from the date of bid submission, and the Bidder has provided a copy of the ISO 14001 certificate obtained within the last 3 years by an accredited body.</p> <ul style="list-style-type: none"> <li>• Certificate provided – 50 points</li> <li>• Certification not provided, but instead: <ul style="list-style-type: none"> <li>1. the Bidder has an environmental policy, and a copy of the policy has been submitted, which: <ul style="list-style-type: none"> <li>a. has been signed by the Bidder's top management, <ul style="list-style-type: none"> <li>o policy signed – 2 points</li> <li>o policy not signed – 0 points</li> </ul> </li> <li>b. includes statements of commitment for: <ul style="list-style-type: none"> <li>• compliance with applicable laws and regulations, <ul style="list-style-type: none"> <li>o statement included – 2 points</li> <li>o statement not included – 0 points</li> </ul> </li> <li>• continual improvement of environmental performance, and <ul style="list-style-type: none"> <li>o statement included – 2 points</li> <li>o statement not included – 0 points</li> </ul> </li> <li>• Pollution prevention. <ul style="list-style-type: none"> <li>o statement included – 2 points</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>	50
			8



Point Rated Environmental Requirements			Cross Reference to Evidence of Compliance
No.	Topic	Evaluation Requirement	Points Available
		<ul style="list-style-type: none"> <li>statement not included – 0 points</li> </ul>	
		2. the Bidder has provided a list identifying the significant environmental aspects of the activities, products and services of the Bidder's organization, <ul style="list-style-type: none"> <li>list provided – 5 points</li> <li>list not provided – 0 points</li> </ul>	5
		3. the Bidder has provided a list of legal requirements that apply to the significant environmental aspects identified in RE2.2 above, <ul style="list-style-type: none"> <li>list provided – 5 points</li> <li>list not provided – 0 points</li> </ul>	5
		4. the Bidder has provided a copy of a report (produced within the last three (3) years (from the date of bid submission) that evaluates the compliance of the activities, products and services of the Bidder's organization, with relevant environmental legislation and regulations, <ul style="list-style-type: none"> <li>report provided – 5 points</li> <li>report not provided – 0 points</li> </ul>	5
		5. the Bidder has provided a list of environmental objectives and targets which are consistent with the environmental policy of the Bidder's organization, <ul style="list-style-type: none"> <li>list provided – 3 points</li> <li>list not provided – 0 points</li> </ul>	3

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Point Rated Environmental Requirements			Cross Reference to Evidence of Compliance
No.	Topic	Evaluation Requirement	Points Available
		6. the Bidder has provided a list of procedures put in place to minimize or mitigate the environmental risks of the operating activities, <ul style="list-style-type: none"> <li>o list provided - 5 point</li> <li>o list not provided – 0 points</li> </ul>	5
		7. the Bidder has provided a copy of the Bidder's Emergency Preparedness and Response Plan (e.g. fire, chemical spill, severe weather, etc.), and <ul style="list-style-type: none"> <li>o plan provided – 5 points</li> <li>o plan not provided – 0 points</li> </ul>	5
		8. the bidder has provided example(s) of the Bidder's preventive and protective measures used to mitigate environmental risks (e.g. engineering controls). <ul style="list-style-type: none"> <li>o example(s) provided – 4 points</li> <li>o example(s) not provided – 0 points</li> </ul>	4
RE3	Hazardous Materials Management Plan	The Bidder's organization has a Hazardous Materials Management Plan, and the Bidder has provided a copy of the Plan, which includes the following information: <ul style="list-style-type: none"> <li>• Hazardous Materials Receipt, <ul style="list-style-type: none"> <li>o information included – 5 points</li> <li>o information not included – 0 points</li> </ul> </li> <li>• Hazardous Materials Storage, <ul style="list-style-type: none"> <li>o information included – 5 points</li> <li>o information not included – 0 points</li> </ul> </li> <li>• Hazardous Materials Use, <ul style="list-style-type: none"> <li>o information included – 5 points</li> </ul> </li> </ul>	20

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Point Rated Environmental Requirements			Cross Reference to Evidence of Compliance
No.	Topic	Evaluation Requirement	Points Available
		<div><div><div>○ information not included – 0 points</div><div><div>• Hazardous Materials Disposal,</div><div>○ information included – 5 points</div><div>○ information not included – 0 points</div></div></div></div>	
Total Points available for the Point Rated Environmental Requirements = 100 points			

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### 3 ACQUISITION - TECHNICAL CRITERIA

Bidders must meet all mandatory requirements listed at Table 3, and achieve a minimum score of 94 points out of the 156 available points for the technical point rated criteria at Table 4A and 4B for a bid to be considered responsive and to proceed further in the evaluation process.

**Compliance Statement Evaluation** – Bidders must demonstrate their capability to meet the mandatory and point-rated criteria in accordance with the TPS-RVM – Appendix AB to Annex A TPS Acquisition SOW.

**TABLE 3 – ACQUISITION TECHNICAL MANDATORY CRITERIA**

TPS-RVM Reference Number	Evaluated Criteria	Does not meet the Criteria	Meets the Criteria
1.3.1	<ul style="list-style-type: none"> <li><i>Reliable Electrical Power:</i> The performance of electrical power is consistently able to be trusted in performing the CAF core duties. Criteria: The electrical power will not be lost during the test protocol TPS-VER-TP-04 &amp; TPS-TP-05</li> </ul>	Fail	Pass
1.3.2	<ul style="list-style-type: none"> <li><i>High Efficiency:</i> It is expected that the electrical power system will achieve maximum productivity with minimum wasted or expense. The efficiency of TPS, when configured in a microgrid with multiple generators and an ESU(L), must be improved by 30% from the same generators operating in a standalone setup. Criteria: The fuel saving for HQSS Army Type 4 load profile must be greater than 30% measured as per test protocol TPS-VER-TP-04.</li> </ul>	Fail	Pass
1.3.5	<ul style="list-style-type: none"> <li><i>Interoperability</i> The ability to interoperate with ally or coalition partners while conducting joint (including CJOC, RCAF and RCN) operations in a hostile environment. The Tactical Power System must be compatible to operate with the existing Central Power Distribution Systems (CPDS). Criteria: All electrical power Input and output Connectors must meet pin and sleeve connector as per IEC- 309 for 120/208 VAC, TPN&amp;G, 5 Wire and Single Phase 120-208 VAC SPN&amp;G, 4 Wire.</li> </ul>	Fail	Pass

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TPS-RVM Reference Number	Evaluated Criteria	Does not meet the Criteria	Meets the Criteria
	Criteria: as per test protocol TPS-VER-TP-05		
1.5.7	The TPS for a HQSS Type 4 must be deployed within thirty (30) minutes by maximum of six (6) Soldiers from any MOC with only one (1) of the six (6) persons trained on the TPS and the remaining five three (5) with no TPS training. Criteria: as per test protocol TPS-VER-TP-01	Fail	Pass
1.6.9	The TPS for a HQSS Type 4 must be recovered and stowed back to original condition within sixty (60) minutes by maximum of six (6) Soldiers from any MOC with only one (1) of the six (6) persons trained on the TPS and the remaining five three (5) with no TPS training. Criteria: as per test protocol TPS-VER-TP-06	Fail	Pass
1.9.2	Except for 12 to 70 kW generators, the heaviest component of the TPS must weigh less than 130 kg (286 lb). Criteria: as per test protocol TPS-VER-TP-02	Fail	Pass
1.9.3	The heaviest power distribution box in the TPS must weigh less than 54.5 kg (120 lb). Criteria: as per test protocol TPS-VER-TP-02	Fail	Pass
1.9.4	The heaviest cable in the TPS must weigh less than 34 kg (75 lb). Criteria: as per test protocol TPS-VER-TP-02	Fail	Pass
1.18.9	First line scheduled maintenance must be conducted on the TPS with no power interruption to the users. Criteria: The generator must be capable to be synchronized, taken off the grid for conducting the first line scheduled maintenance as per RVM para 1.8.7. as per test protocol TPS-VER-TP-04	Fail	Pass

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TPS-RVM Reference Number	Evaluated Criteria		Does not meet the Criteria	Meets the Criteria
1.21.1.1	When required, the TPS must not emit any visible light.		Fail	Pass
1.21.2.1	The maximum noise level generated by the TPS must not exceed 72 dBA Sound Pressure Level at a distance of seven (7) m in any direction from the unit.		Fail	Pass
1.22.3.8	For cables and wires, Manipulation at -51°C temperature means all cables and wires must be able to be bent to radius equal to five times the diameter of the cable or wire without damage to the insulation material. Criteria: as per test protocol TPS-VER-TP-09		Fail	Pass
1.22.4.4 & 2.6.3	The TPS must be operated, without damage and meet all performance requirements (during and after exposure), in high temperature as described in MIL-STD-810G, Method 501.5 High Temperature, Procedure II (Operation) at +49 °C temperature. Criteria: Diesel Generators and associated distribution box at 115% full load must operate for one (1) Hour without tripping or malfunction. as per test protocol TPS-VER-TP-10		Fail	Pass
1.22.10.1	The TPS must start and operate to meet all performance requirements, without any manual adjustments, for an altitude range of sea level to 1,200 m above sea level.		Fail	Pass
1.22.11.1.8	The TPS must be moved, assembled/disassembled, connected/ disconnected, started, and operated, without damage and meet all performance requirements, on terrain that: Is inclined up to 15 degrees in any direction.		Fail	Pass
2.1.5	The 2-3.5 KW gasoline Generator must be man portable by maximum of four soldiers from 5 to 95 percentile as defined in Canadian Forces Anthropometric survey DRDC-2015-R186 Criteria: as per test protocol TPS-VER-TP-02		Fail	Pass

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TPS-RVM Reference Number	Evaluated Criteria					Does not meet the Criteria	Meets the Criteria
2.6.13	The Generator must meet STANAG 4135 electrical Steady State and transient power output characteristics must be as follows:					Fail	Pass
	Criteria: as per test protocol TPS-VER-TP-05						
	Electric Power Quality	Frequency	Voltage				
	Manual Regulation	± 5%	+ 10% / -5%				
	Regulation	0.25%	1%				
	Voltage Modulation	-	1%				
	Short term steady state stability (30 Sec)	0.5% bandwidth	1% bandwidth				
	Short term steady state stability (4 hr)	1% bandwidth	2% bandwidth				
	Application of rated load	Transient	4% Under	15% Dip			
		Recovery time	2 Sec	0.5 Sec			
	Rejection of rated load	Transient	4% Over	15% Rise			
		Recovery time	2 Sec	0.5 Sec			
	Max waveform deviation factor			5%			
Individual waveform harmonic			2%				
2.7.2	The generator must have a digital control panel display unit that provides a status indicator for the following: Criteria: as per test protocol TPS-VER-TP-04						
2.7.2.1	Output Voltage for phase and line voltages;					Fail	Pass
2.7.2.2	Output frequency;						
2.7.2.3	Output power per phase and total three phase power					Fail	Pass
2.7.2.4	Engine Oil Pressure					Fail	Pass

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TPS-RVM Reference Number	Evaluated Criteria	Does not meet the Criteria	Meets the Criteria
2.7.2.5	Engine Coolant Temperature;	Fail	Pass
2.7.2.6	Battery charging current;	Fail	Pass
2.7.2.7	Battery Voltage;	Fail	Pass
2.7.2.8	Power output circuit breaker status ON/OFF/TRIPPED;	Fail	Pass
2.7.2.9	Battle-Short switch ON/OFF;	Fail	Pass
2.7.2.10	Engine Speed in rpm;	Fail	Pass
2.7.2.11	Synchronization relay or Parallel operation ON/OFF including the power consumption for the Master and Slave generators;	Fail	Pass
2.7.2.12	Generator fuel level indicator;	Fail	Pass
2.7.2.13	Generator Low Level warning indicator; and	Fail	Pass
2.7.2.14	Generator Overload warning indicator.	Fail	Pass
2.7.3	The generator must be equipped with self-diagnostic fault indicator for the following: Criteria: as per test protocol TPS-VER-TP-04		
2.7.3.1	Short circuit or electrical overload;	Fail	Pass
2.7.3.2	Reverse Power;	Fail	Pass
2.7.3.3	Over Voltage;	Fail	Pass
2.7.3.4	Low engine Oil pressure;	Fail	Pass



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TPS-RVM Reference Number	Evaluated Criteria	Does not meet the Criteria	Meets the Criteria
2.7.3.5	High coolant temperature;	Fail	Pass
2.7.3.6	Low battery voltage; and	Fail	Pass
2.7.3.7	Low fuel.	Fail	Pass
4.3.2	The ESU (S) battery power pack must be in the range of 2.5 to 5 KWhr.	Fail	Pass
4.3.3	The ESU (L) battery power pack must be in the range of 12.5 to 15 KWhr.	Fail	Pass
4.5.11	The DC/AC inverter must be able to communicate with the RTU to provide the status of voltage and current fed into the grid. Criteria: as per test protocol TPS-VER-TP-04	Fail	Pass
6.1.6.3	TPS equipment stowed inside the SDR-IK must have full accessibility to allow the user to pick up and partially deploy any equipment with minimum requirement to remove other equipment up to three (3) items.	Fail	Pass

TABLE 4A – ACQUISITION TECHNICAL POINT RATED CRITERIA

TPS-RVM Reference Number	Evaluated Criteria	Does not meet Criteria	Meets the Criteria – Points Awarded
1.15.2.4	All Sub-Systems equipment, components, parts, and consumables of the TPS should be completely interchangeable within the family of like items without degradation of performance as listed below:		
	Fleets from 12 to 70 kW Generators should have the following common items: Air filters	0	1

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TPS-RVM Reference Number	Evaluated Criteria	Does not meet Criteria	Meets the Criteria – Points Awarded
	Fuel/water separator filters	0	1
	Oil filters	0	1
	Temperature sensors,	0	1
	Oil Pressure sensors	0	1
	Speed Sensors	0	1
	fuel sensors	0	1
	fuel pickup pumps	0	1
	fuel pumps	0	1
	Battle Short Switch	0	1
	Electrical control panels	0	1
1.22.10.2	At the altitude from 1,200 m to 3,000 m above sea level, the TPS should start and operate to meet all performance requirements without any manual adjustments.	0	1
2.2.3	The engine should meet all performance requirements, without performance degradation or the need for adjustment and calibration to accommodate changes in the fuel used, using fuels in accordance with: STANAG 4362; and CAN/CGSB-3.517 fuels consisting of up to 5% vol/vol of Biodiesel, conforming to ASTM D-6751, Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels	0	3

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TPS-RVM Reference Number	Evaluated Criteria	Does not meet Criteria	Meets the Criteria – Points Awarded
2.2.17	The engine exhaust pipe should be equipped with silencer, spark arrestor, rain cap and should have as minimum of two 90 degrees angle bends;	0	1
2.2.18	The engine air-intake filter should be washable. Criteria: as per test protocol TPS-VER-TP-11	0	2
4.3.4	The capacity of the ESU(S) battery bank should be scalable by adding additional power pack using plug and play connectors for a maximum battery bank capacity of ten (10) KW/hr	0	3
4.3.5	The capacity of the ESU(L) battery bank should be scalable by adding additional power pack using plug and play connectors for a maximum battery bank capacity of forty-five (45) KW/hr	0	3
4.4.5	The battery charger system should be capable to fast charge the ESU(L) battery pack within two (2) hours from a state of complete discharge	0	2
4.5.9	The output of the DC/AC inverter system should be able to be configured/selected as 50 or 60 Hz. Criteria: as per test protocol TPS-VER-TP-05	0	3
4.5.10	The output of the DC/AC inverter system should be able to be configured/selected as 120/208 or 240/416 V AC, three phase. Criteria: as per test protocol TPS-VER-TP-05.	0	2
4.5.12	The DC/AC inverter should be packaged with the Energy Storage Unit. Criteria: as per test protocol TPS-VER-TP-04	0	2
6.1.6.4	TPS equipment stowed inside the SDR-IK must have full accessibility to allow the user to pick up and partially deploy any equipment without the need to remove any other equipment.	0	4

TABLE 4B – ACQUISITION PERFORMANCE POINT RATED CRITERIA

TPS-RVM Ref. #	Evaluated Criteria	Evaluation Performance Level										Point Rated			
		0	1	2	3	4	5	6	7	8	9	10	Perf. Level #	Weight	Points Scored
	<ul style="list-style-type: none"><li><i>High Efficiency:</i> The electrical power system should achieve maximum productivity with minimum wasted or expense. The efficiency of TPS, when configured in a microgrid with multiple generators and an ESU(L), must be improved by 30% from the same generators operating in a standalone setup.</li></ul> The efficiency of TPS, when configured in a microgrid with multiple generators and an ESU(L), should be improved by 50% from the same generators operating in a standalone setup.	X = 30%	32% ≥ X > 30%	34% ≥ X > 32%	36% ≥ X > 34%	38% ≥ X > 36%	40% ≥ X > 38%	42% ≥ X > 40%	44% ≥ X > 42%	46% ≥ X > 44%	48% ≥ X > 46%	50% ≥ X > 48%	10	7	70
1.3.3.1															
1.3.3.2	Criteria: The fuel saving for HQSS Army Type 4 load profile must be equal to or greater than 30% measured as per test protocol TPS-VER-TP-04.														
1.5.7	The TPS for HQSS Army Type 4 must be deployed within 30 minutes by a maximum of 6 soldiers from any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training.	X ≤ 30 minutes	29 ≥ X > 30 minutes	28 ≥ X > 29 minutes	27 ≥ X > 28 minutes	26 ≥ X > 27 minutes	25 ≥ X > 26 minutes	24 ≥ X > 25 minutes	23 ≥ X > 24 minutes	22 ≥ X > 23 minutes	21 ≥ X > 22 minutes	20 minutes ≥ X	10	1	10
1.5.8	The TPS for a HQSS Type 4 should be deployed within 20 minutes by maximum of 6 soldiers from any MOC trained on the TPS.  Criteria: Manually (i.e. by hand) 40 minutes by no more than six (6) persons trained on the TPS														

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TPS-RVM Ref. #	Evaluated Criteria	Evaluation Performance Level			Point Rated
1.6.9	The TPS for a HQSS Type 4 must be recovered and stowed back to original condition within 60 minutes by a maximum of 6 soldiers from any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training.		40 minutes ≥ X		
1.6.10	The TPS for a HQSS Type 4 should be recovered by hand and stowed back to original condition within 40 minutes by a maximum of 6 soldiers from any MOC trained on the TPS;		42 ≥ X > 40 minutes	10	1
			44 ≥ X > 42 minutes		10
			46 ≥ X > 44 minutes		
			48 ≥ X > 46 minutes		
			50 ≥ X > 48 minutes		
			52 ≥ X > 50 minutes		
			54 ≥ X > 52 minutes		
			58 ≥ X > 54 minutes		
			60 ≥ X >58 minutes		
			X ≤ 60 minutes		
1.18.7	First level scheduled maintenance tasks must take no longer than thirty (30) minutes, 99% of the time.		20 minutes ≥ X		
1.18.8	First level scheduled maintenance tasks should take twenty (20) minutes to complete. Criteria: Oil including oil filter change for Family of 2 to 3.5 KW generators as per test protocol TPS-VER-TP-11		21 ≥ X > 20 minutes	10	.2
			22 ≥ X > 21 minutes		
			23 ≥ X > 22 minutes		
			24 ≥ X > 23 minutes		
			25 ≥ X > 24 minutes		
			26 ≥ X > 25 minutes		
			27 ≥ X > 26 minutes		
			28 ≥ X > 27 minutes		
			29 ≥ X > 28 minutes		
			X ≤ 30 minutes		
1.18.7	First level scheduled maintenance tasks must take no longer than thirty (30) minutes, 99% of the time.		20 minutes ≥ X		
1.18.8	First level scheduled maintenance tasks should take twenty (20) minutes to complete. Criteria: Oil including oil filter change for Family of 4 to 6 KW generators as per test protocol TPS-VER-TP-11		21 ≥ X > 20 minutes	10	.3
			22 ≥ X > 21 minutes		
			23 ≥ X > 22 minutes		
			24 ≥ X > 23 minutes		
			25 ≥ X > 24 minutes		
			26 ≥ X > 25 minutes		
			27 ≥ X > 26 minutes		
			28 ≥ X > 27 minutes		
			29 ≥ X > 28 minutes		
			X ≤ 30 minutes		

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TPS-RVM Ref. #	Evaluated Criteria	Evaluation Performance Level				Point Rated			
1.18.7	First level scheduled maintenance tasks must take no longer than thirty (30) minutes, 99% of the time.	20 minutes ≥ X	21 ≥ X > 20 minutes	22 ≥ X > 21 minutes	23 ≥ X > 22 minutes	24 ≥ X > 23 minutes	10	.5	5
1.18.8	First level scheduled maintenance tasks should take twenty (20) minutes to complete. Criteria: Oil including oil filter change for Family of 12 to 18 KW generators as per test protocol TPS-VER-TP-11	20 minutes ≥ X	21 ≥ X > 20 minutes	22 ≥ X > 21 minutes	23 ≥ X > 22 minutes	24 ≥ X > 23 minutes	10	.5	5
1.18.7	First level scheduled maintenance tasks must take no longer than thirty (30) minutes, 99% of the time.	20 minutes ≥ X	21 ≥ X > 20 minutes	22 ≥ X > 21 minutes	23 ≥ X > 22 minutes	24 ≥ X > 23 minutes	10	.5	5
1.18.8	First level scheduled maintenance tasks should take twenty (20) minutes to complete. Criteria: Oil including oil filter change for Family of 25 to 35 KW generators as per test protocol TPS-VER-TP-11	20 minutes ≥ X	21 ≥ X > 20 minutes	22 ≥ X > 21 minutes	23 ≥ X > 22 minutes	24 ≥ X > 23 minutes	10	.5	5
1.18.7	First level scheduled maintenance tasks must take no longer than thirty (30) minutes, 99% of the time.	20 minutes ≥ X	21 ≥ X > 20 minutes	22 ≥ X > 21 minutes	23 ≥ X > 22 minutes	24 ≥ X > 23 minutes	10	.5	5
1.18.8	First level scheduled maintenance tasks should take twenty (20) minutes to complete. Criteria: Oil including oil filter change for Family of 50 to 70KW generators as per test protocol TPS-VER-TP-11	20 minutes ≥ X	21 ≥ X > 20 minutes	22 ≥ X > 21 minutes	23 ≥ X > 22 minutes	24 ≥ X > 23 minutes	10	.5	5

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TPS-RVM Ref. #	Evaluated Criteria	Evaluation Performance Level			Point Rated
4.4.3	The battery charger system must be capable to fast charge the ESU(L) battery Pack within four (4) hours from a state of complete discharge.	132 minutes $\geq$ X	10	.5	5
4.4.4.	The battery charger system should be capable to fast charge the ESU(L) battery pack within two (2) hours from a state of complete discharge.	144 $\geq$ X > 132 minutes			
		156 $\geq$ X > 144 minutes			
		168 $\geq$ X > 156 minutes			
		180 $\geq$ X > 168 minutes			
		192 $\geq$ X > 180 minutes			
		204 $\geq$ X > 192 minutes			
		216 $\geq$ X > 204 minutes			
		228 $\geq$ X > 216 minutes			
		240 $\geq$ X > 228 minutes			
		X $\leq$ 240 minutes			
1.22.3.6	The TPS should be capable to operate within 20 minutes without damage and meet all performance requirements (during and after exposure) in low temperature as described in MIL-STD-810G, Method 502.5 Low Temperature, Procedure II (Operation) at -51°C temperature.  Criteria: The TPS should be capable to operate within 20 minutes without damage after low temperature storage of the equipment for 24 Hr at -51°C temperature as per test protocol TPS-VER-TP-08.	20 minutes $\geq$ X	10	1	10

**Total Points available for the Technical / Performance Point Rated Criteria = 156 points**

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#### 4 ACQUISITION & ISS: POINT RATED CRITERIA – MANAGEMENT

Table 5 covers the management related criteria for the Bidder's Proposal in response to both Vol 2 - TPS Acquisition and Vol 3 - TPS In-Service Support. The total number of Management Points is obtained by adding all the individual point scores for Management Rated Criteria within Table 5 for Acquisition and ISS proposals separately. The maximum available Management Point Score for Vol 2 - Acquisition is 15 with a minimum score of 9 points required. These points will be added to the score from Table 4A and 4B. The maximum available Management Point Score for Vol 3 -TPS In-Service Support is 110 points with a minimum score of 69 points required.

##### TABLE 5– MANAGEMENT POINT RATED CRITERIA

##### 4.1 Acquisition

##### 4.1.1 Organization Responsibilities (Max 5 points)

The Bidder should provide a list of organizational roles and responsibilities and name a Project Manager as the single point of contact for the project. This is for experience evaluation purposes only.

Points will be awarded by Canada from its review of the following documents: Company Profile and the Contractor's Acquisition Project Manager curriculum vitae.

1.	<div>The Bidder has <ul style="list-style-type: none"> <li>provided an organizational chart describing roles and responsibilities,</li> <li>identified an Acquisition Project Manager with a demonstrated minimum of two (2) years of experience within the last ten (10) years as a project manager on military projects for <ul style="list-style-type: none"> <li>(i) Tactical Power or</li> <li>(ii) Repair and overhaul (R&amp;O) work.</li> </ul> </li> </ul> </div>	<div>0</div> <div>or</div>
2.	<div>The Bidder has <ul style="list-style-type: none"> <li>provided an organizational chart describing roles and responsibilities,</li> <li>identified an Acquisition Project Manager with a demonstrated minimum of two (2) years of experience within the last ten (10) years as a project manager on military projects for <ul style="list-style-type: none"> <li>(i) Tactical Power or</li> <li>(ii) Repair and overhaul (R&amp;O) work.</li> </ul> </li> </ul> </div>	<div>3</div> <div>or</div>



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	<ul style="list-style-type: none"> <li>the In-Service Support Project Manager identified is the same as the Acquisition Project Manager</li> </ul>	
3.	<p>The Bidder has</p> <ul style="list-style-type: none"> <li>provided an organizational chart describing roles and responsibilities,</li> <li>identified an Acquisition Project Manager with a demonstrated minimum of five (5) years of experience within the last eight (8) years as a project manager on military projects for <ul style="list-style-type: none"> <li>(i) Tactical Power or</li> <li>(ii) Repair and overhaul (R&amp;O) work.</li> </ul> </li> <li>the In-Service Support Project Manager identified is the same as the Acquisition Project Manager</li> </ul>	5

#### 4.1.2 Risk Management Plan (Max 10 Points)

The Bidder should provide a risk management plan that addresses the risks inherent in the work, and includes risk assessment, risk prioritization and risk mitigation strategies. The plan should include how the risks will be managed through the contract and the frequency of updates. Points will be awarded by Canada from its review of the following documents: Project Management Plan

1.	The Bidder has demonstrated basic knowledge of the risk issues.	1 or 3 or 6 or 10
2.	The Bidder demonstrates understanding of the risks involved in ACQ for TPS, subsystem and ancillary equipment contracts and: <ul style="list-style-type: none"> <li>identifies and prioritized the risks.</li> </ul>	
3.	The Bidder demonstrates understanding of the risks involved in ACQ for TPS, subsystem and ancillary equipment contracts, and: <ul style="list-style-type: none"> <li>identifies and prioritized the risks, and</li> <li>Includes a risk mitigation plan.</li> </ul>	
4.	The Bidder demonstrates understanding of the risks involved in ACQ for TPS, subsystem and ancillary equipment contracts, and: <ul style="list-style-type: none"> <li>identifies and prioritized the risks; and</li> <li>includes a risk mitigation plan, and</li> </ul>	

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	• provides an example risk mitigation plan currently implemented on another R&O project.	<b>Total Points available for the Point Rated Criteria – Acquisition (Management) = 15 points</b>	

## 4.2 In-Service Support

### 4.2.1 Organization Responsibilities (Max 5 points)

The Bidder should provide a list of organizational roles and responsibilities and name a Project Manager as the single point of contact for the project. This is for experience evaluation purposes only.

Points will be awarded by Canada from its review of the following documents: Company Profile, and the Contractor's In-Service Support Project Manager curriculum vitae. In-service support (ISS) means all activities, including, but not limited to, engineering services (such as maintenance, repair, test and upgrade), logistics (such as parts supply, documentation and training) and related management functions, necessary to maintain a CF platform throughout its service life.

1.	<p>The Bidder has</p> <ul style="list-style-type: none"> <li>• provided an organizational chart describing roles and responsibilities,</li> <li>• identified an In-Service Support Project Manager with a demonstrated minimum of two (2) years of experience within the last ten (10) years as a project manager on military projects for <ul style="list-style-type: none"> <li>o (i) Tactical Power or</li> <li>o (ii) Repair and overhaul (R&amp;O) work.</li> </ul> </li> </ul>	<b>0</b> <b>or</b>
2.	<p>The Bidder has</p> <ul style="list-style-type: none"> <li>• provided an organizational chart describing roles and responsibilities identified an In-Service Support Project Manager with a demonstrated minimum of two (2) years of experience within the last ten (10) years as a project manager on military projects for <ul style="list-style-type: none"> <li>o (i) Tactical Power or</li> <li>o (ii) Repair and overhaul (R&amp;O) work.</li> </ul> </li> <li>• the In-Service Support Project Manager identified is the same as the Acquisition Project Manager</li> </ul>	<b>3</b> <b>or</b>
3.	<p>The Bidder has</p> <ul style="list-style-type: none"> <li>• provided an organizational chart describing roles and responsibilities,</li> </ul>	<b>5</b>

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	<ul style="list-style-type: none"> <li>identified an In-Service Support Project Manager with a demonstrated minimum of five (5) years of experience within the last eight (8) years as a project manager on military projects for <ul style="list-style-type: none"> <li>(i) Tactical Power or</li> <li>(ii) Repair and overhaul (R&amp;O) work.</li> </ul> </li> <li>the In-Service Support Project Manager identified is the same as the Acquisition Project Manager</li> </ul>	
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#### 4.2.2 Cost and Control (Max 15 points)

Bidders should indicate how the cost and schedule will be controlled and how modifications and additional tasks will be met and managed.

Points will be awarded by Canada from its review of the following document ISS Support Management Plan.

1.	The Bidder provided details of: <ul style="list-style-type: none"> <li>the interrelationship between the company cost accounting system and the cost control system.</li> </ul>	1 or
2.	The Bidder provided details of: <ul style="list-style-type: none"> <li>the interrelationship between the company cost accounting system and the cost control system; and</li> <li>how cost and schedule control of the contracted tasks will be met and managed.</li> </ul>	5 or
3.	The Bidder provided details of: <ul style="list-style-type: none"> <li>the interrelationship between the company cost accounting system and the cost control system;</li> <li>how cost and schedule control of the contracted tasks will be met and managed; and</li> <li>the interrelationship between the tasks and various roles of personnel involved in the cost control process.</li> </ul>	10 or
4.	The Bidder provided details of: <ul style="list-style-type: none"> <li>the interrelationship between the company cost accounting system and the cost control system;</li> <li>how cost and schedule control of the contracted tasks will be met and managed;</li> <li>the interrelationship between the tasks and various roles of personnel involved in the cost control process, and</li> <li>its capability to collect and segregate actual costs on an ongoing real-time basis.</li> </ul>	15

Please note that **Criteria 3.2 will be further evaluated as part of Part 6, Article 2 - Financial Capability**

#### 4.2.3 Logistical Procedures (Max 5 points)

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The Bidder should state specifically in a narrative and provide evidence that it has the ability to meet, or is performing, or has performed all procedures applicable to the work to be performed under the Contract in accordance with A-LM-184-001/IS-001 (please confirm this pub# is accurate). Points will be awarded by Canada from its review of the following documents: Company Profile and ISS Support Management Plan.

1.	The Bidder demonstrates basic awareness of the logistic issues for the performance of the work	1 or
2.	The Bidder describes the logistics issues for the performance of the work and provided evidence of ability to manage them.	2 or
3.	The Bidder describes the logistics issues for the performance of the work and cites past experience in implementing DND logistic procedures.	3 or
4.	The Bidder describes the logistics issues for the performance of the work, cites past experience in implementing DND logistic procedures and currently has a well-established in-house logistical team implementing the DND procedures.	5

#### 4.2.4 Sub-contracting (Max 10 Points)

The Bidder should identify potential subcontractors and identify the work to be performed by these subcontractors. The Bidder should provide details on how quotes will be solicited, how subcontractors will be selected and how the quality and delivery schedules of subcontracted work will be monitored to ensure compliance with the SOW and Contract requirements. The Bidder should outline any previous experience with its proposed subcontractors.

Points will be awarded by Canada from its review of the following documents: Project Management Plan and ISS Support Management Plan.

1.	The Bidder identifies its potential subcontractors but does not demonstrate the company has knowledge of subcontracting processes.	1 or
2.	The Bidder identifies its potential subcontractors and their roles in fulfilling the requirements of the SOW, and identifies potential issues involved in the subcontracting process.	5 or
3.	The Bidder identifies its potential subcontractors and their roles in fulfilling the requirements of the SOW, and identifies potential issues involved in the subcontracting process, provides evidence of past experience in resolving or mitigating the issues involved in the subcontracting process.	10

#### 4.2.5 Risk Management Plan (Max 10 Points)

The Bidder should provide a risk management plan that addresses the risks inherent in the work, and includes risk assessment, risk prioritization and risk mitigation strategies. The plan should include how the risks will be managed through the contract and the frequency of updates.

Points will be awarded by Canada from its review of the following documents: ISS Support Management Plan.

1.	The Bidder has demonstrated basic knowledge of the risk issues.	1
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			<b>or</b>
2.	The Bidder demonstrates understanding of the risks involved in ISS for TPS, subsystem and ancillary equipment R&O contracts and: <ul style="list-style-type: none"> <li>identifies and prioritized the risks.</li> </ul>		<b>3</b>
3.	The Bidder demonstrates understanding of the risks involved in ISS for TPS, subsystem and ancillary equipment contracts or R&O contracts, and: <ul style="list-style-type: none"> <li>identifies and prioritized the risks, and</li> <li>includes a risk mitigation plan.</li> </ul>		<b>6</b>
4.	The Bidder demonstrates understanding of the risks involved in ISS for TPS, subsystem and ancillary equipment contracts or R&O contracts, and: <ul style="list-style-type: none"> <li>identifies and prioritized the risks; and</li> <li>includes a risk mitigation plan, and</li> <li>provides an example risk mitigation plan currently implemented on another R&amp;O project.</li> </ul>		<b>10</b>

#### 4.2.6 Technical Data Management (Max 10 points)

The Bidder should demonstrate its capability to manage and update technical data for the project.

Points will be awarded by Canada from its review of the following documents: Company Profile and ISS Support Management Plan.

1.	The Bidder demonstrates technical data capability and CAD system.	<b>1</b>
2.	The Bidder demonstrates technical data capability and CAD system and has at least five (5) years' experience in production of technical data for various contracts.	<b>or</b>
3.	The Bidder demonstrates technical data capability and CAD system and has more than five (5) years' experience in providing technical data for DND or any other foreign military projects.	<b>5</b>
		<b>or</b>
		<b>10</b>

#### 4.2.7 Engineering Personnel (Max 10 Points)

The Bidder should demonstrate that it has access to qualified Engineering personnel to support the work to be performed under the contract.

Points will be awarded by Canada from its review of the following documents: Company Profile and Contractor's personnel curriculum vitae (and associated certifications).

1.	The Bidder demonstrates one (1) Professional Engineer that is a member in good standing of a provincial or territorial association or order, or if from a foreign jurisdiction, a member in good standing of a professional association or order of that jurisdiction recognized in Canada.	<b>1</b>
2.	The Bidder demonstrates one (1) Professional Mechanical Engineer, and one (1) Professional Electrical Engineer that are members in good standing of a provincial or territorial association or order, or if from a foreign jurisdiction, members in good standing of a professional association or order of that jurisdiction recognized in	<b>or</b>
		<b>3</b>

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	Canada.	or
	The Bidder demonstrates one (1) Professional Mechanical Engineer, and one (1) Professional Electrical Engineer, and one (1) Professional Material Engineer that are members in good standing of a provincial or territorial association or order, or if from a foreign jurisdiction, members in good standing of a professional association or order of that jurisdiction recognized in Canada.	
3.	<p>The Bidder demonstrates two (2) additional engineers comprised of the following:</p> <ul style="list-style-type: none"> <li>Professional Mechanical Engineers, Professional Electrical Engineers, or Professional Material Engineers that are members in good standing of a provincial or territorial association or order, or if from a foreign jurisdiction, members in good standing of a professional association or order of that jurisdiction recognized in Canada.</li> </ul>	6 or
	The Bidder demonstrates one (1) Professional Mechanical Engineer, and one (1) Professional Electrical Engineer, and one (1) Professional Material Engineer that are members in good standing of a provincial or territorial association or order, or if from a foreign jurisdiction, members in good standing of a professional association or order of that jurisdiction recognized in Canada.	
4.	<p>The Bidder demonstrates three (3) or more additional engineers comprised of the following:</p> <ul style="list-style-type: none"> <li>Professional Mechanical Engineers, Professional Electrical Engineers, or Professional Material Engineers that are members in good standing of a provincial or territorial association or order, or if from a foreign jurisdiction, members in good standing of a professional association or order of that jurisdiction recognized in Canada.</li> </ul>	10

#### 4.2.8 Technical staff (Max 15 points)

The Bidder should provide specific qualifications and experience for the personnel proposed to perform the work under the contract. Information should include the individual's name and any relevant training and expertise in the area required relating to TPS contracts or R&O contracts for military projects. The proposal should also include how many in-house personnel will be licensed technicians and OEM certified trade-personnel that could be allocated to perform the work under the contract. Bidders should indicate resources available to produce electronic manuals, technical drawings and other logistic and engineering documentation.

Points will be awarded by Canada from its review of the following documents: Company Profile and Contractor personnel curriculum vitae.

1.	<ul style="list-style-type: none"> <li>Mechanical</li> <li>Electrical</li> </ul>	1 or
2.	The technical staff includes at least one (1) certified technician in each field:	5

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	<ul style="list-style-type: none"> <li>Electrical</li> </ul> <p>The staff also includes:</p> <ul style="list-style-type: none"> <li>One (1) Shop foreman with a minimum of five (5) years shop foreman experience within the last ten (10) years, of which at least one (1) year of the five (5) year period comprised of supervisory experience for in-service support contracts for Tactical Power equipment contracts or R&amp;O contracts for military projects.</li> </ul>	<b>or</b>
3.	<p>The technical staff includes at least one (1) certified technician in each field:</p> <ul style="list-style-type: none"> <li>Mechanical</li> <li>Electrical</li> </ul> <p>The technical staff also includes:</p> <ul style="list-style-type: none"> <li>One (1) Shop foreman with a minimum of five (5) years shop foreman experience within the last ten (10) years, of which at least one (1) year of the five (5) year period comprised of supervisory experience for in-service support contracts for Tactical Power equipment contracts or R&amp;O contracts for military projects; and</li> </ul>	<b>10 or</b>
4.	<p>The technical staff includes at least one (1) certified technician in each field:</p> <ul style="list-style-type: none"> <li>Mechanical</li> <li>Electrical</li> <li>Material</li> </ul> <p>The technical staff also includes:</p> <ul style="list-style-type: none"> <li>One (1) Shop foreman with a minimum of five (5) years shop foreman experience within the last ten (10) years, of which at least one (1) year of the five (5) year period comprised of supervisory experience for in-service support contracts for Tactical Power equipment contracts or R&amp;O contracts for military projects;</li> <li>one (1) technical writer able to produce electronic manuals, technical drawings and other engineering documentation.</li> </ul>	<b>15</b>

#### 4.2.9 Configuration Management (Max 10 Points)

The Bidder's Configuration Management (CM) Plan should demonstrate how it will manage the configuration of the TPS. Points will be awarded by Canada from its review of the following document: Configuration Management Plan.

1.	The Bidder provided a CM plan demonstrating basic awareness of configuration management requirements.	<b>1</b>
2.	The Bidder provided a CM plan demonstrating basic awareness of configuration management requirements, but does not completely address the four fundamental	<b>or 3</b>



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	elements of configuration management, which are organization, responsibilities, reports and control.	<b>or</b>
3.	The Bidder provided a CM plan demonstrating the four fundamental elements of configuration management and how it will be handled for the project, including organization, responsibilities, reports and control.	<b>6 or</b>
4.	The Bidder provided a CM plan demonstrating the four fundamental elements of configuration management and how it will be handled for the project, including organization, responsibilities, reports and control. In addition, the Bidder has at least five (5) year of experience within the last ten (10) years in CM on In-Service Support activities for Tactical Power and ancillary equipment contracts or other military R&O contracts.	<b>10</b>

#### 4.2.10 Production Capability (Max 20 Points)

The Bidder should provide a written production plan which outlines the startup, production, ordering of parts and corresponding time required for each task from time of contract award. The production plan should demonstrate how the routine 45 calendar day turnaround time (TAT) for repair work and 90 day TAT for overhaul work will be met. The Bidder should provide a narrative to indicate how it intends to monitor the ISS for the TPS equipment contract or R&O process to ensure the routine TAT is met throughout the period of the ISS Contract. The Production Plan should describe the process of how each operation is to be conducted (Bidders may choose to submit a flow chart in the explanation).

Points will be awarded by Canada from its review of the following documents: Company Profile, and ISS Support Management Plan.

1.	The Bidder provided an ISS support management plan demonstrating basic awareness of in-service support activities.	<b>1 or</b>
2.	The Bidder provided an ISS support management plan, and <ul style="list-style-type: none"> <li>Demonstrates the process and how each operation is executed and the respective organizational responsibilities.</li> </ul>	<b>5 or</b>
3.	The Bidder provided an ISS support management plan, and <ul style="list-style-type: none"> <li>Demonstrates the process and how each operation is executed and the respective organizational responsibilities, and</li> <li>Demonstrates at least twenty-four (24) months of experience in the last five (5) years in executing a production plan with processes for each operation on Military equipment.</li> </ul>	<b>10 or</b>
4.	The Bidder provided an ISS support management plan, and <ul style="list-style-type: none"> <li>Demonstrates the process and how each operation is executed and the respective organizational responsibilities;</li> <li>Demonstrates at least twenty-four (24) months of experience in the last five (5) years in executing a production plan with processes for each operation on Military equipment; and</li> <li>Demonstrates the production plan detailing procedures for handling urgent requirements including priority repair requests (PRR).</li> </ul>	<b>15 or</b>
5.	The Bidder provided an ISS support management plan, and	<b>20</b>



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		<ul style="list-style-type: none"><li>• Demonstrates the process and how each operation is executed and the respective organizational responsibilities; and</li><li>• Demonstrates at least twenty-four (24) months of experience in the last five (5) years in executing a production plan with processes for each operation on Military equipment; and</li><li>• Demonstrates the production plan detailing procedures for handling urgent requirements including priority repair requests (PRR); and</li><li>• Demonstrates the production plan detailing procedures in place for handling workload surges while continuing to meet Turn Around Time (TAT).</li></ul>			
Total Points available for the Point Rated Criteria – ISS Management =110 points					

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## 5 PERFORMANCE VERIFICATION (ACQUISITION)

A bidder will be invited to participate in the performance verification process upon successful completion of Phase 1 to 3 as described at Annex A - Bid Evaluation Plan, including all mandatory and minimum point rated scores outlined in Tables 1 to 5.

All mandatory criteria within Table 6 must be achieved for a bid to be considered for responsiveness.

**TABLE 6 – PERFORMANCE VERIFICATION -TECHNICAL MANDATORY CRITERIA**

TPS-RVM Reference Number	Mandatory Criteria	Pass	Fail	Comments
1.3.1	<ul style="list-style-type: none"> <li><i>Reliable Electrical Power:</i> The performance of electrical power is consistently able to be trusted in performing the CAF core duties. Criteria: The electrical power will not be lost during the test protocol TPS-VER-TP-004&amp; TPS-TP-005</li> </ul>			
1.3.3	<ul style="list-style-type: none"> <li><i>High Efficiency:</i> It is expected that the electrical power system will achieve maximum productivity with minimum wasted or expense. The efficiency of TPS, when configured in a microgrid with multiple generators and an ESU(L), must be improved by 20% from the same generators operating in a standalone setup. Criteria: The fuel saving for HQSS Army Type 4 shelter must be greater than 30% measured as per test protocol TPS-VER-TP-04.</li> </ul>			
1.3.7	<ul style="list-style-type: none"> <li><i>Interoperability</i> The ability to interoperate with ally or coalition partners while conducting joint (including CJOC, RCAF and RCN) operations in a hostile environment. The Tactical Power System must be compatible to operate with the existing Central Power Distribution Systems (CPDS). Criteria: All electrical power Input and output Connectors must meet pin and sleeve connector as per IEC- 309 for</li> </ul>			

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TPS-RVM Reference Number	Mandatory Criteria	Pass	Fail	Comments
	120/208 VAC, TPN&G, 5 Wire and Single Phase 120-208 VAC SPN&G, 4 Wire. Criteria: as per test protocol TPS-VER-TP-05			
1.5.7	The TPS for a HQSS Type 4 must be deployed within 30 minutes by a maximum of 6 soldiers from any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training.			
1.5.9	The TPS for a HQSS Type 4 must be deployed within 30 minutes by a maximum of 6 soldiers from any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training; Criteria: as per test protocol TPS-VER-TP-01			
1.6.9	The TPS for a HQSS Type 4 must be recovered and stowed back to original condition within 60 minutes by a maximum of 6 soldiers from any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training. Criteria: as per test protocol TPS-VER-TP-06			
1.9.2	Except for Tactical Generators, the heaviest component of the TPS must weigh less than 130 kg (286 lb). Criteria: as per test protocol TPS-VER-TP-02			
1.9.3	The heaviest power distribution box in the TPS must weigh less than 54.5 kg (120 lb). Criteria: as per test protocol TPS-VER-TP-02.			
1.9.4	The heaviest cable in the TPS must weigh less than 34 kg (75 lb). Criteria: as per test protocol TPS-VER-TP-02			
1.18.7	First level scheduled maintenance tasks must take no longer than 30 minutes, 99% of the time.			
1.18.9	First line scheduled maintenance must be conducted on the TPS with no power interruption to the users. Criteria:			

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TPS-RVM Reference Number	Mandatory Criteria	Pass	Fail	Comments
	The generator must be capable of being taken off the grid for conducting the first line scheduled maintenance as per RVM para 1.8.7 as per test protocol TPS-VER-TP-11			
1.21.1.1	When required, the TPS must not emit any visible light.			
1.21.2.2	The maximum noise level generated by the TPS must not exceed 60 dBA Sound Pressure Level at a distance of seven (7) m in any direction from the unit.			
1.22.3.8	For cables and wires, Manipulation at -51°C temperature means all cables and wires must be able to be bent to radius equal to five times the diameter of the cable or wire without damage to the insulation material. Criteria: as per test protocol TPS-VER-TP-09			
1.22.4.4 & 2.6.3	The TPS must be operated, without damage and meet all performance requirements (during and after exposure), in high temperature as described in MIL-STD-810G, Method 501.5 High Temperature, Procedure II (Operation) at +49 °C temperature. Criteria: Diesel Generators and PMU-400 distribution box at 115% full load must operate for one (1) Hour without tripping or malfunction. as per test protocol TPS-VER-TP-10			
1.22.4.4 & 2.6.3	The TPS must be operated, without damage and meet all performance requirements (during and after exposure), in high temperature as described in MIL-STD-810G, Method 501.5 High Temperature, Procedure II (Operation) at +49 °C temperature. Criteria: Diesel Generators and PMU-400 distribution box at 115% full load must operate for two (2) Hour without tripping or malfunction. as per test protocol TPS-VER-TP-10			
1.22.10.1	The TPS must start and operate to meet all performance requirements, without any manual adjustments, for an altitude range of sea level to 1,200 m above sea level.			

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Client Ref. No. – N° de réf. du client <b>W8476-155245</b>	File No. – N° du dossier <b>024qf W8476-155245</b>	VOLUME 1 – BIDDER INSTRUCTIONS AND REQUIREMENTS APPENDIX BA TO ANNEX B

TPS-RVM Reference Number	Mandatory Criteria	Pass	Fail	Comments
1.22.11.1.8	Is inclined up to 15 degrees in any direction.			
2.1.5	The 2-3.5 KW Generator must be man portable by maximum of four soldiers from 5 to 95 percentile as defined in Canadian Forces Anthropometric survey DRDC-2015-R186 Criteria: as per test protocol TPS-VER-TP-02			
2.2.16	The engine exhaust pipe must be equipped with a silencer, spark arrestor and rain cap. Criteria: as per test protocol TPS-VER-TP-11			
2.6.12	The Generator must meet STANAG 4135 electrical Steady State and transient power output characteristics must be as follows:			
	Electric Power Quality			
	Manual Regulation	Frequency ± 5%	Voltage + 10% / -5%	
	Regulation	0.25%	1%	
	Voltage Modulation	-	1%	
	Short term steady state stability (30 Sec)	0.5% bandwidth	1% bandwidth	
	Short term steady state stability (4 hr)	1% bandwidth	2% bandwidth	
	Application of rated load	Transient	4% Under	15% Dip
	Recovery time	2 Sec	0.5 Sec	
	Rejection of rated load	Transient	4% Over	15% Rise
	Recovery time	2 Sec	0.5 Sec	
	Max waveform deviation factor		5%	
2.7.2	Individual waveform harmonic		2%	
	The generator must have a digital control panel display unit that provides a status indicator for the following: Criteria: as per test protocol TPS-VER-TP-05.			

Solicitation No. – N° de l'invitation <b>W8476-155245/A</b>	Amd. No. – N° de la modif. <b>024qf</b>	Buyer ID – Id de l'acheteur <b>024qf</b>
Client Ref. No. – N° de réf. du client <b>W8476-155245</b>	File No. – N° du dossier <b>024qf W8476-155245</b>	VOLUME 1 – BIDDER INSTRUCTIONS AND REQUIREMENTS APPENDIX BA TO ANNEX B

TPS-RVM Reference Number	Mandatory Criteria	Pass	Fail	Comments
2.7.2.1	Output Voltage for phase and line voltages;			
2.7.2.2	Output frequency;			
2.7.2.3	Output power per phase and total three phase power			
2.7.2.4	Engine Oil Pressure			
2.7.2.5	Engine Coolant Temperature;			
2.7.2.6	Battery charging current;			
2.7.2.7	Battery Voltage;			
2.7.2.8	Power output circuit breaker status ON/OFF/TRIPPED;			
2.7.2.9	Battle-Short switch ON/OFF;			
2.7.2.10	Engine Speed in rpm;			
2.7.2.11	Synchronization relay or Parallel operation ON/OFF including the power consumption for the Master and Slave generators;			
2.7.2.12	Generator fuel level indicator;			
2.7.2.13	Generator Low Level warning indicator; and			
2.7.2.14	Generator Overload warning indicator.			
2.7.3	The generator must be equipped with self-diagnostic fault indicator for the following: Criteria:			
	as per test protocol TPS-VER-TP-05			
2.7.3.1	Short circuit or electrical overload;			
2.7.3.2	Reverse Power;			
2.7.3.3	Over Voltage;			
2.7.3.4	Low engine Oil pressure;			
2.7.3.5	High coolant temperature;			
2.7.3.6	Low battery voltage; and			
2.7.3.7	Low fuel.			
4.4.3	The battery charger system must be capable to fast charge the ESU(L) battery Pack within four (4) hours from a state of complete discharge.			
4.5.3	The inverter must have at least 5 USB chargers.			

Solicitation No. – N° de l'invitation <b>W8476-155245/A</b>	Amd. No. – N° de la modif. <b>024qf</b>	Buyer ID – Id de l'acheteur <b>024qf</b>
Client Ref. No. – N° de réf. du client <b>W8476-155245</b>	File No. – N° du dossier <b>024qf W8476-155245</b>	VOLUME 1 – BIDDER INSTRUCTIONS AND REQUIREMENTS APPENDIX BA TO ANNEX B

TPS-RVM Reference Number	Mandatory Criteria	Pass	Fail	Comments
	Criteria: as per test protocol TPS-VER-TP-05 The DC/AC inverter must be able to communicate with the RTU to provide the status of voltage and current fed into the grid.			
4.5.8	Criteria: as per test protocol TPS-VER-TP-04 TPS equipment stowed inside the SDR-IK must have full accessibility to allow the user to pick up and partially deploy any equipment with minimum requirement to remove other equipment up to three (3) items.			
6.1.6.3	Criteria: as per test protocol TPS-VER-TP-01			

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Client Ref. No. – N° de réf. du client <b>W8476-155245</b>	File No. – N° du dossier <b>024qf W8476-155245</b>	VOLUME 1 – BIDDER INSTRUCTIONS AND REQUIREMENTS APPENDIX BA TO ANNEX B

TABLE 7 – PERFORMANCE VERIFICATION (TECHNICAL) POINT-RATED CRITERIA

A minimum score of 65 points out of the 105 available points for the rated criteria at Tables 7 must be achieved for a bid to be considered responsive and to proceed further in the evaluation process.

TPS-RVM Reference Number	Evaluated Criteria	Evaluation Performance Level										Point Rated			
		0	1	2	3	4	5	6	7	8	9	10	Perf. Level #	Weight	Points Scored
1.3.3.2	<ul style="list-style-type: none"><li><i>High Efficiency:</i> The electrical power system should achieve maximum productivity with minimum waste or expense. The efficiency of TPS, when configured in a microgrid with multiple generators and an ESU(L), should be improved by up to 50% from the same generators operating in a standalone setup.</li></ul> <p>Criteria:</p> <p>The fuel saving for HQSS Army Type 4 load profile must be at least 30% greater as measured by test protocol TPS-VER-TP-04.</p>	X = 30%	32% ≥ X > 30%	34% ≥ X > 32%	36% ≥ X > 34%	38% ≥ X > 36%	40% ≥ X > 38%	42% ≥ X > 40%	44% ≥ X > 42%	46% ≥ X > 44%	48% ≥ X > 46%	50% ≥ X > 48%	10	7	70
1.5.8	<p>The TPS for a HQSS Type 4 should be deployed within 20 minutes by maximum of 6 soldiers from any MOC trained on the TPS.</p> <hr/> <p>Manually (i.e. by hand) Mandatory 30 minutes by no more than six (6) persons trained on the TPS</p>	X ≤ 30 minutes	30 ≥ X > 29 minutes	29 ≥ X > 28 minutes	28 ≥ X > 27 minutes	27 ≥ X > 26 minutes	26 ≥ X > 25 minutes	25 ≥ X > 24 minutes	24 ≥ X > 23 minutes	23 ≥ X > 22 minutes	22 ≥ X > 22 minutes	21 minutes ≥ X	10	1	10



TPS-RVM Reference	Evaluated Criteria	Evaluation Performance Level	Point Rated		
1.6.10	The TPS for a HQSS Type 4 should be recovered by hand and stowed back to original condition within 40 minutes by a maximum of 6 soldiers from any MOC trained on the TPS.  Manually (i.e. by hand) Mandatory 60 minutes by no more than six (6) persons trained on the TPS as per test protocol TPS-VER-TP-06	40 minutes $\geq$ X	10	1	10
		42 $\geq$ X > 40 minutes			
		44 $\geq$ X > 42 minutes			
		46 $\geq$ X > 44 minutes			
		48 $\geq$ X > 46 minutes			
		50 $\geq$ X > 48 minutes			
		52 $\geq$ X > 50 minutes			
		54 $\geq$ X > 52 minutes			
		58 $\geq$ X > 54 minutes			
		60 $\geq$ X > 58 minutes			
1.18.8	First level scheduled maintenance tasks should take twenty (20) minutes to complete.  Criteria: Oil including oil filter change for generator families from 12 - 70 KW as per test protocol TPS-VER-TP-11 Manually (i.e. by hand) from 20 to 30 minutes by no more than one (1) persons trained on the TPS	X $\leq$ 60 minutes	10	.5	5
		X $\leq$ 30 minutes			
		20 minutes $\geq$ X			
		21 $\geq$ X > 20 minutes			
		22 $\geq$ X > 21 minutes			
		23 $\geq$ X > 22 minutes			
		24 $\geq$ X > 23 minutes			
		25 $\geq$ X > 24 minutes			
		26 $\geq$ X > 25 minutes			
		27 $\geq$ X > 26 minutes			

1.22.3.6  The TPS should be capable to operate within 20 minutes without damage and meet all performance requirements (during and after exposure) in low temperature as described in MIL-STD-810G, Method 502.5 Low Temperature, Procedure II (Operation) at -51°C temperature. The TPS should be capable to operate within 20 minutes without damage after low temperature storage of the equipment for 24 Hr at -51°C temperature as per test protocol TPS-VER-TP-08.	X ≤ 30 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	29 ≥ X > 28 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	28 ≥ X > 27 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	27 ≥ X > 26 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	26 ≥ X > 25 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	25 ≥ X > 24 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	24 ≥ X > 23 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	23 ≥ X > 22 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	22 ≥ X > 21 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	21 ≥ X > 20 minutes	0	1	2	3	4	5	6	7	8	9	10	10
	20 minutes ≥ X	0	1	2	3	4	5	6	7	8	9	10	10
		0	1	2	3	4	5	6	7	8	9	10	10
		0	1	2	3	4	5	6	7	8	9	10	10
Total Points scored for Performance Verification (Technical) = 105													

**TACTICAL POWER SYSTEM  
(TPS) PROJECT**

**REQUEST FOR INFORMATION (RFI)**

**CITATION: W8476-206276/D**

**VERIFICATION PROCEDURES**

**APPENDIX AB**

**TO**

**ANNEX A**

**TO**

**VOLUME 1**

**BIDDER INSTRUCTIONS AND REQUIREMENTS**

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## 1. TPS-VER-TP-01. Mandatory Requirement for Deployment of a TPS for the HQSS Type 4 complex

1.5.7	The TPS for the Headquarters Shelter System (HQSS) Type 4 complex must be deployed within 30 minutes by a maximum of 6 bidder personnel from any Military Occupation Code (MOC) with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training.	Mandatory	Demonstration / Testing
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### 1.1. Conditions

1. The bidder must provide the stowage arrangement for TPS equipment to be used
2. The deployment of the TPS for the HQSS Type 4 complex must be without any of the following safety issues:
  - a. Tripping hazards;
  - b. Damage or malfunction of TPS equipment;
  - c. Blocking emergency exit pathways;
  - d. The deployment of the system must remain within the boundaries of 80 m x 40 m area; and
  - e. There must be no physical harm endured by the deployment team at any time during testing.
3. The deployment of the TPS for the HQSS Type 4 complex must be functional; and
4. The same deployment of the TPS for the HQSS Type 4 complex will be used in the efficiency evaluation testing TPS-VER-TP-03 without any changes to the layout.

Should the results of the test reach any of these conditions, the results will indicate a failed execution of the task:

1. Time to deploy exceeds 30 minutes (consider safety as priority);
2. Upon confirmed completion of the deployment, the TPS does not meet the standard outlined by the Field Engineering manual B-GL-361-012/FP-001 for ACCOMMODATION, INSTALLATIONS AND ENGINEERING SERVICES;
3. An excess of 6 military persons of any MOC is required to deploy the TPS at any point in the test; and
4. The bivouac layout is changed from its original configuration as outlined by **Figure 1**.

### 1.2. Standards Reference

Field Engineering Manual	B-GL-361-012/FP-001
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### 1.3. Personnel Required

- 6 X from the Bidders personnel to simulate soldiers of any MOC (At least one trained on the TPS).
- 1 X Timekeeper
- 1 X Bidder representative

### 1.4. Equipment required

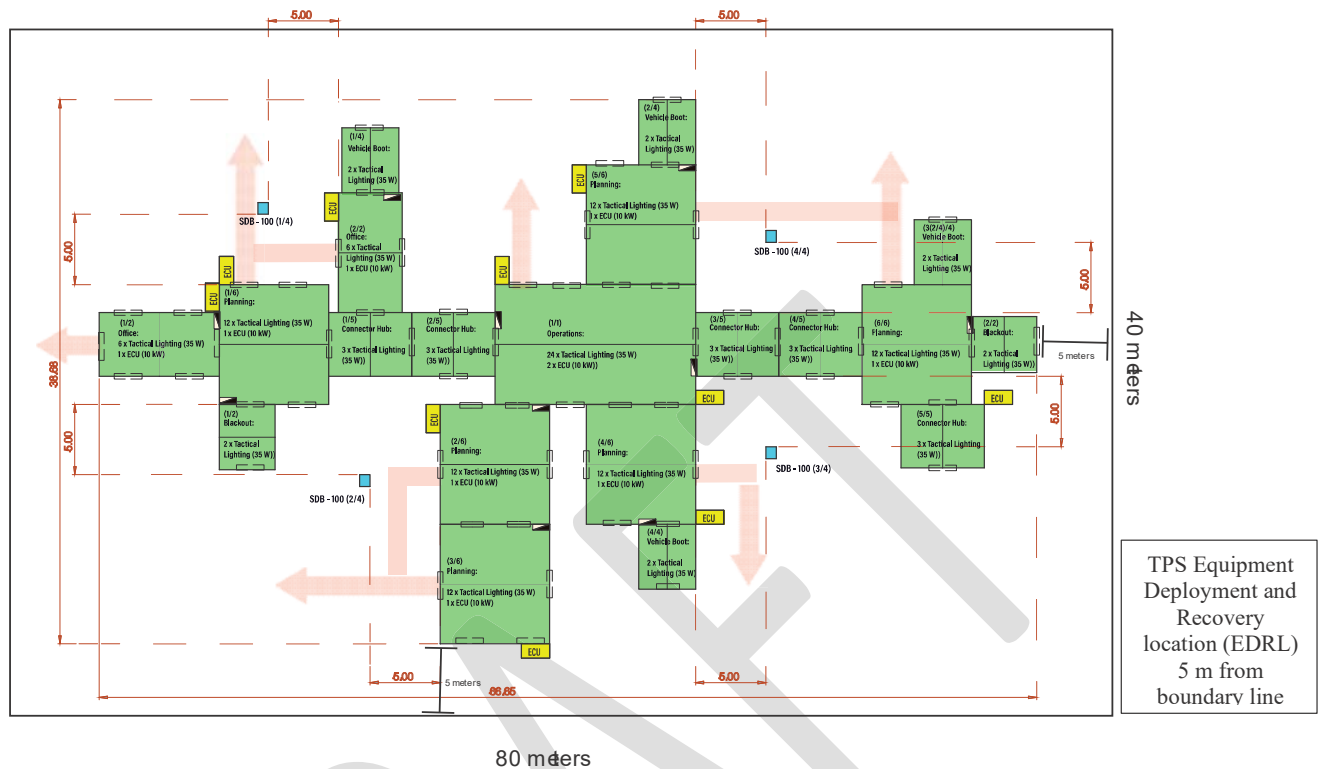
- 1 each of 12-18 KW, 25-35 KW, and 50-70 KW generators mounted on quadcon pallet as per vendor's proposed design;
- All power management and distribution boxes as per vendor proposed design;
- All cables and associated tools as per vendor's proposed design; and
- Material Handling equipment (to be provided by 3<sup>rd</sup> Party Test org)

### 1.5. Described Individual Tasks

*Table 1. Individual specified tasks for test integration*

Bidder personnel of any MOC	Successfully execute the deployment of the TPS for the HQSS Type 4 complex
Timekeeper - DND	Track the chronometer for accurate time reading of the task.
Third Party Test Engineer	Ensure that the test conditions and associated personnel conform to the conditions outlined at Figure 1

## 1.6. Relevant Figures



**Figure 1:** TPS deployment layout for HQSS Type 4 Complex.

## 1.7. Step-by-Step Test Procedure Instructions

*Table 2. Step-by-step test procedure for TPS-VER-TP-01*

Step #	Description
1	Vendor is to position their shipping apparatus outside the TPS Equipment Deployment and Recovery Location (EDRL). The EDRL must be five (5) meters away from the complex boundary line as shown at Figure 1.
2	The six (6) Bidder's personnel, forming the TPS deployment team (TPS DT) are to remove and place their various equipment package loads (ie: TPS loaded on quadcon pallets) into the EDRL to represent the operational setup of the TPS.
3	The bidder will be allowed fifteen (15) minutes to inspect the complex area.
4	The Timekeeper and the test engineer will conduct a brief walk around of the site and inspect the site, TPS DT and the TPS

	equipment for any potential obstructions or abnormalities to the equipment.
5	Once confirmed, the timekeeper will signal the TPS DT to start and the chronometer will be initiated.
6	The TPS DT will deploy the TPS as per Figure 1.
7	During the deployment, the TPS DT must not alter or change the bivouac layout and must respect its boundaries.
8	The TPS DT will signal to the Timekeeper and the bidder upon completion of the deployment of the TPS.
9	The timekeeper and the bidder will confirm the resultant time with the TPS DT.
10	The Bidder and the Timekeeper will conduct a functional inspection of the TPS.

### 1.8. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	
Testing Location			
Street No.		City	
Province		Country	
Weather Conditions			
Temperature ( °C )		Percent Prec. (%)	
Humidity		Sky Condition	Clear/Clo udy/Rain/ Snow
List of Test Equipment			Calibration Date



Name of Personnel			
Name of Bidder Authorized Person  (Bidder Test Engineer)			
Name of Test Engineer			
Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	Vendor is to position their shipping apparatus outside the TPS Equipment Deployment and Recovery (EDR) location. The EDRL must be five (5) meters away from the complex boundary line as shown at Figure 1..		
2	The six (6) Bidder's personnel, forming the TPS deployment team (TPS DT) are to remove and place their various equipment package loads (ie: TPS loaded on quadcon pallets) into the EDRL to represent the operational setup of the TPS.		
3	The bidder will be allowed fifteen (15) minutes to inspect the deployed area.		
4	The Timekeeper and the bidder will conduct a brief walk around of the site and inspect the site, TPS DT and the TPS equipment for any potential obstructions or abnormalities to the equipment.		
5	Once confirmed, the timekeeper will signal the TPS DT to start and the chronometer will be initiated.		
6	The TPS DT will deploy the TPS as per Figure 1.		
7	During the deployment, the TPS DT must not manipulated the bivouac layout and must respect its boundaries.		

8	The TPS DT will signal to the Timekeeper and the bidder upon completion of the deployment of the TPS.		
9	The timekeeper and the bidder will confirm the resultant time with the TPS DT.		
10	The Bidder and the Timekeeper will conduct a functional inspection of the TPS.		
Final Test Result		Pass / Fail	
Date and Time of Result			

X

Bidder Test Engineer

X

Date

X

Test Engineer

X

Date

## 2. TPS-VER-TP-02. Weight Test

1.9.1	Except for Tactical Generators, the heaviest component of the TPS must weigh less than 130 kg (286 lb).	Mandatory	Testing
1.9.3	The heaviest power distribution box in the TPS must weigh less than 54.5 kg (120 lb).	Mandatory	Testing
1.9.4	The heaviest cable in the TPS must weigh less than 34 kg (75 lb).	Mandatory	Testing

### 2.5. Conditions

1. The portability of the 4 to 6 kW Generator must be accomplished without the following:
  - a. Damage or malfunction of TPS equipment.

Should the results of the test reach any of these conditions, the results will indicate a failed execution of the task:

1. An inability to lift the 4 to 6 kW gasoline generator through the intended layout as demonstrated in Figure 1;
2. One or more components of the TPS exceeds 130 kg (286 lbs);
3. The heaviest PDB in the TPS exceeds 54.5 kg (120 lbs); and
4. The heaviest cable in the TPS exceeds 34 kg (75 lbs).

The test setting will be conducted in an indoor climate-controlled setting.

### 2.6. Standards Reference

CAF Anthropometric Survey	DRDC-2015-R186
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### 2.7. Personnel Required

- 1 X Test engineer
- 1 X Bidder

### 2.8. Described Individual Tasks

*Table 3. Individual specified tasks for test integration TPS-VER-TP-02*

Bidder personnel	Successfully carry the 4 to 6 kW gasoline generators as per the TPS deployment.
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Test engineer	Ensure Test protocol is followed accurately.
Bidder	Ensure Test protocol is followed accurately.

## 2.9. Step-by-step Test Procedure Instructions

Table 4. Step-by-step test procedure for TPS-VER-TP-02

Step #	Description
1	The vendor's equipment layout should be as per the setup from TPS-VER-TP-1 step 2.
2	The bidder will identify the heaviest cable in the TPS.
3	The bidder personnel will place the cables onto the scale for measurement.
4	The scale value will be allowed to stabilize (shows a consistent reading) and the component weight is recorded.
5	The bidder will identify the heaviest PDB in the TPS.
6	The bidder personnel will place the PDB onto a designated scale.
7	The scale value will be allowed to stabilize (shows a consistent reading) and the component weight is recorded.
8	The bidder will identify the heaviest TPS component, excluding generators (if the heaviest component has already been weighed at step 5, then skip to step 11).
9	The bidder personnel will place the heaviest TPS components onto the scale.
10	The scale value will be allowed to stabilize (shows a consistent reading) and the component weight is recorded.
11	The observers will review the results with the bidder and confirm the values.

## 2.10. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	

Testing Location			
Street No.		City	
Province		Country	
Weather Conditions			
Temperature ( °C )		Percent Prec. (%)	
Humidity		Sky Condition	Clear/ Cloudy/ Rain/Snow
List of Test Equipment			Calibration Date
Name of Personnel			
Name of Bidder Authorized Person (Bidder Test Engineer)			
Name of Test Engineer			
Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	The vendor's equipment layout must be in accordance with the setup from TPS-VER-TP-1 step 2.		
2	The bidder will identify the heaviest cable in the TPS.		
3	The bidder personnel will place the cables onto the scale for measurement.		
4	The scale value will be allowed to stabilize (shows a consistent reading) and the component weight is recorded.		

5	The bidder will identify the heaviest PDB in the TPS.		
6	The bidder personnel will place the PDB onto a designated scale.		
7	The scale value will be allowed to stabilize (shows a consistent reading) and the component weight is recorded.		
8	The bidder will identify the heaviest TPS component, excluding generators (if the heaviest component has already been weighed at step 5, then skip to step 11).		
9	The bidder personnel will place the heaviest TPS components onto the scale.		
10	The scale value will be allowed to stabilize (shows a consistent reading) and the component weight is recorded.		
11	The observers will review the results with the bidder and confirm the values.		
Final Test Result		Pass / Fail	
Date and Time of Result			

**X**

Bidder Test Engineer

**X**

Date

X

Test Engineer

X

Date

DRAFT

### 3. TPS-VER-TP-03. Portability Test

2.1.6	The 4 to 6 KW gasoline Generator should be man portable by maximum of 4 soldiers from 5 to 95 percentile as defined in Canadian Forces Anthropometric survey DRDC-2015-R186	Desired	Demonstration / Testing
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#### 3.1. Conditions

1. The portability of the 4 to 6 kW gasoline Generator be accomplished according to the following:
  - a. There must be no obstacles between the carrying team and the end point at any time during testing.
  - b. There must be no damage or malfunction of TPS equipment; and
  - c. There must be no physical harm endured by the deployment team at any time during testing.

The test will require the execution of the following tasks successfully:

- Lifting the 4 to 6 kW generator from the floor and placing it on a surface not greater than 152 cm (5 ft) above the floor;
- Carry the object 10 m (33 feet);
- The lifting frequency must not exceed one (1) lift in five (5) minutes or twenty (20) lifts per eight (8) hours;
- Whenever possible, handles, grasp areas, or hoist points must be located above the center of gravity and in a manner to preclude uncontrolled swinging or tilting when lifted;
- They must be located to provide at least 5 cm (2 in) of clearance from obstructions during handling; and
- The location of handles must not interfere with installing, removing, operating, or maintaining the equipment.

The test setting will be conducted in an indoor climate-controlled setting.

#### 3.2. Standards Reference

MIL-STD-1472F	Section 5.9.11.3
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### 3.3. Personnel Required

- 4 X Bidder personnel
- 1 X Third Party Test engineer
- 1 X Bidder Representative

### 3.4. Described Individual Tasks

*Table 5. Individual specified tasks for test integration TPS-VER-TP-03*

Bidder personnel	Successfully carry the 4 to 6 kW generators as per the TPS deployment.
Test engineer	Ensure Test protocol is followed accurately.
Bidder	Ensure Test protocol is followed accurately.

### 3.5. Step-by-step Test Procedure Instructions

*Table 6. Step-by-step test procedure for TPS-VER-TP-03*

Step #	Description
1	Vendor is to position their shipping apparatus outside the TPS Equipment Deployment and Recovery (EDR) location. The EDRL must be five (5) meters away from the complex boundary line as shown at Figure 1.
2	The four (4) Bidder's personnel, forming the TPS deployment team (TPS DT) are to remove and place their various equipment package loads (ie: TPS loaded on quadcon pallets) into the EDRL to represent the operational setup of the TPS.
<b>3</b>	<b>Horizontal Carry</b>
3a	The bidder personnel will bring the 4 to 6 kW generator to the starting location for the 10 m (33 feet) carry test.
3b	The test engineer and the bidder will highlight the 10 m (33 feet) mark as the designated end point of the carry.
3c	The bidder will be allowed fifteen (15) minutes to inspect the deployed area.
3d	Once signaled, the four (4) bidder personnel will lift the 4 to 6 kW generator to the intended target on a single carry.
3e	Throughout the lift, the test engineer and the bidder will observe the carry distance of the object's center of gravity from the carrying

	handles for each of the bidder personnel (there must be no physical obstruction of the handles within 5 cm or 2 inches of each soldier's grasp).
3f	Once complete, the bidder personnel will perform a controlled drop of the generator at the target location.
3g	The observers and the bidder will conduct a functional inspection of the generator.
<b>4</b>	<b>Vertical Carry</b>
4a	A 152 cm (5 foot) platform will be placed in front of the generator
4b	The bidder will be allowed fifteen (15) minutes to inspect the deployed area.
4c	Once complete, the bidder personnel will be instructed to lift the generator and place the object onto the platform.
4d	The bidder personnel will then be signaled to do so.
4e	Once complete, a 5-minute pause will be given to the bidder personnel before proceeding to lift the object down from the platform.
4f	Upon completion of the 5 minutes, the bidder personnel will be instructed to remove the object from the raised platform back to the starting position on the ground.
4g	The bidder personnel will then be signaled to do so.
4h	The observers and the bidder will conduct a functional inspection of the generator.
4i	The observers will review the results with the bidder and confirm the values.

### 3.6. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	
Testing Location			
Street No.		City	

Province		Country	
Weather Conditions			
Temperature ( °C )		Percent Prec. (%)	
Humidity		Sky Condition	Clear/ Cloudy/ Rain/Snow
List of Test Equipment			Calibration Date
Name of Personnel			
Name of Bidder Authorized Person (Bidder Test Engineer)			
Name of Test Engineer			
Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	Vendor is to position their shipping apparatus outside the TPS Equipment Deployment and Recovery (EDR) location. The EDRL must be five (5) meters away from the complex boundary line as shown at Figure 1..		
2	The four (4) Bidder's personnel, forming the TPS deployment team (TPS DT) are to remove and place their various equipment package loads (ie: TPS loaded on quadcon pallets) into the EDRL to represent the operational setup of the TPS.		
3	<b>Horizontal Carry</b>		
3a	The bidder personnel will bring the 4 to 6 kW generator to the starting location for the 10 m (33 feet) carry test.		

3b	The test engineer and the bidder will highlight the 10 m (33 feet) mark as the designated end point of the carry.		
3c	The bidder will be allowed fifteen (15) minutes to inspect the deployed area.		
3d	Once signaled, the four (4) bidder personnel will lift the 4 to 6 kW generator to the intended target on a single carry.		
3e	Throughout the lift, the test engineer and the bidder will observe the carry distance of the object's center of gravity from the carrying handles for each of the bidder personnel (there must be no physical obstruction of the handles within 5 cm or 2 inches of each soldier's grasp).		
3f	Once complete, the bidder personnel will perform a controlled drop of the generator at the target location.		
3g	The observers and the bidder will conduct a functional inspection of the generator.		
4	<b>Vertical Carry</b>		
4a	A 152 cm (5 foot) platform will be placed in front of the generator		
4b	The bidder will be allowed fifteen (15) minutes to inspect the deployed area.		
4c	Once complete, the bidder personnel will be instructed to lift the generator and place the object onto the platform.		
4d	The bidder personnel will then be signaled to do so.		
4e	Once complete, a 5-minute pause will be given to the bidder personnel before proceeding to lift the object down from the platform.		

4f	Upon completion of the 5 minutes, the bidder personnel will be instructed to remove the object from the raised platform back to the starting position on the ground.		
4g	The bidder personnel will then be signaled to do so.		
4h	The observers and the bidder will conduct a functional inspection of the generator.		
4i	The observers will review the results with the bidder and confirm the values.		
Final Test Result		Pass / Fail	
Date and Time of Result			

X

Bidder Test Engineer

X

Date

X

Test Engineer

X

Date

#### 4. TPS-VER-TP-04. Generator Efficiency for HQSS Type 4 Complex Load Profile and Reliability Test

1.3.3	The electrical power system will achieve maximum productivity with minimum wasted or expense. The efficiency of TPS, when configured in a microgrid with multiple generators and an ESU(L), must be improved by 30% from the same generators operating in a standalone setup.	Mandatory	Test/Analysis
	The efficiency of TPS, when configured in a microgrid with multiple generators and an ESU(L), must be improved by 50% from the same generators operating in a standalone setup.	Desirable	Test/Analysis

##### 4.1. Conditions

The test setting will be conducted in an indoor climate-controlled setting with appropriate ventilation to meet the generator demands for air intake and exhaust expulsion.

Should the results of the test reach any of these conditions, the results will indicate a failed execution of the task:

1. The weight difference of the fuel consumed falls below the 30% improvement mark;
2. The generator fails to supply the required power demand as show in **Figure 2** at any point in the test;
3. Any personnel near the generator are subject to harm due to the generator's operation; and
4. The TPS system is damaged at any point in the test procedure.
5. Upon reaching a 115% peak of the maximal load value of the HQSS Army Type 4 complex, the TPS breaker is tripped or the power supply is deemed insufficient.

##### 4.2. Equipment Required

- 2 X 50 kW Load Bank (GSM)
- 2 X 10 kW Load Bank (GSM)
- 1 X Weight Scale (GSM)
- 1 X Fuel (Type – Volume)
- Vendor's equipment list as per TPS-VER-TP-01

#### 4.3 Personnel

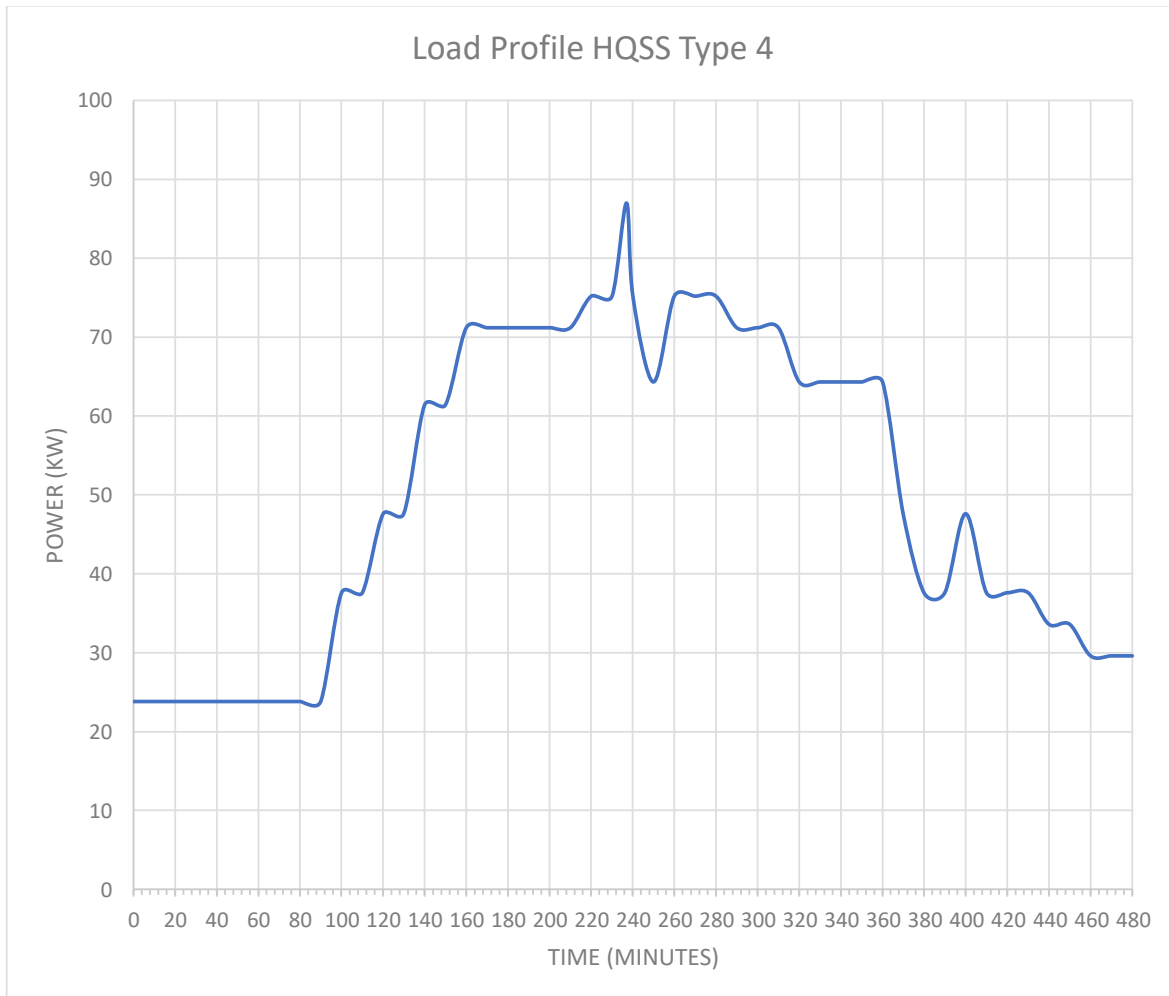
- Bidder will require one person at each load bank for load simulation
- 1 X Third Party Test engineer
- 1 X Bidder Representative

#### 4.4. Described Individual Tasks

*Table 7. Individual specified tasks for test integration TPS-VER-TP-04*

Test engineer	<ul style="list-style-type: none"><li>○ Measure the weight of the generator assembly prior to fuel loading.</li><li>○ Measure the weight of the generator assembly upon fuel loading.</li><li>○ Measure the weight of the generator following power supply</li></ul>
Bidder	

#### 4.5. Relevant Figures and Equations



**Figure 2:** HQSS Type 4 profile.



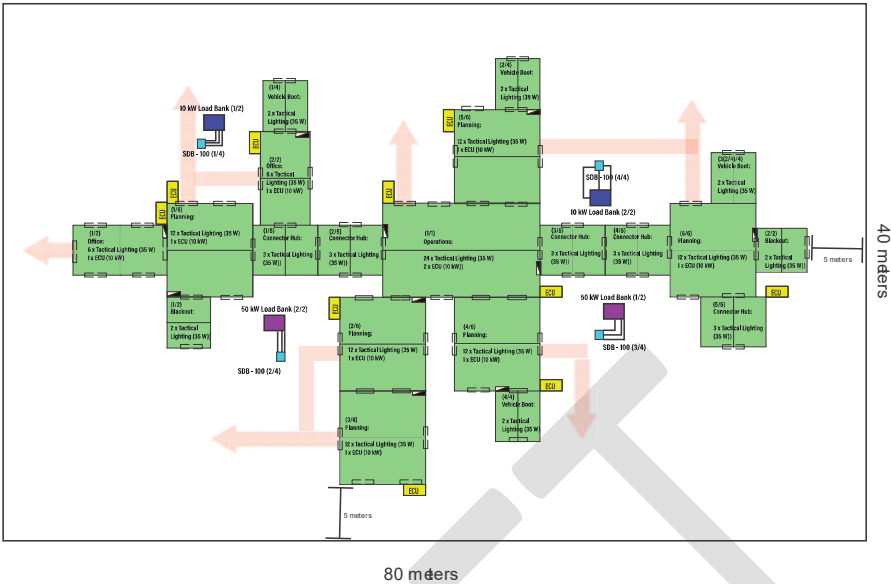


Figure 3: Load Bank Layout Configuration

$\% \text{ Efficiency} = M \cdot \frac{c}{GW}$		Equation 1
$M$	The total mass of fuel consumed in Kg.	
$c$	The power density of the chosen fuel expressed in (W/Kg)	
$GW$	The Total power produced within one cycle of the load profile	

#### 4.6. Step-by-step Test Procedure Instructions

*Table 8. Step-by-step test procedure for TPS-VER-TP-04 - Baseline*

Step #	Description
1	The generator fuel tank is emptied and ensured to dry prior to initial weighing.
2	The generator is placed on a scale to be weighed.
3	The initial weight is recorded by both observers.
4	Commercially available fuel is added to the generator and filled to a prerequisite volume.
5	The generator loaded with the fuel is now placed on the scale and the weight is recorded by both observers.
6	All generators are turned on at max capacity for 8 hours straight.
7	The TPS distribution system is connected to the generators and the load banks.
8	The system can run for one full cycle of the load profile.  Note the change in load behavior between minute 237 and minute 240 of the switch schedule (Table 7).
9	Once completed, the load bank, the generator and the TPS system are turned off.
10	The generator is weighed immediately following completion of the test and the value is recorded by both observers.
11	The efficiency is calculated according to Equation 1 and recorded by both observers.

Table 9: Load Bank Switch Schedule

Load Schedule (Minutes)	Total Power (kW)	10 kW Load Bank (1/2)				10 kW Load Bank (2/2)				50 kW Load Bank (1/2)									50 kW Load Bank (2/2)								
		1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
0	23.8																										
10	23.8																										
20	23.8																										
30	23.8																										
40	23.8																										
50	23.8																										
60	23.8																										
70	23.8																										
80	23.8																										
90	23.8																										
100	37.6																										
110	37.6																										
120	47.6																										
130	47.6																										
140	61.4																										
150	61.4																										
160	71.2																										
170	71.2																										
180	71.2																										
190	71.2																										
200	71.2																										
210	71.2																										
220	75.2																										
230	75.2																										
237	87																										
240	75.2																										
250	64.3																										
260	75.2																										
270	75.2																										
280	75.2																										
290	71.2																										
300	71.2																										
310	71.2																										
320	64.3																										
330	64.3																										
340	64.3																										
350	64.3																										
360	64.3																										
370	47.6																										
380	37.6																										
390	37.6																										
400	47.6																										
410	37.6																										
420	37.6																										
430	37.6																										
440	33.6																										
450	33.6																										
460	29.6																										
470	29.6																										
480	29.6																										

*Table 10. Step-by-step test procedure for TPS-VER-TP-04 – Micro-Grid Simulation*

Step #	Description
1	Each generator fuel tank is emptied and ensured to dry prior to initial weighing.
2	Each generator is placed on a scale to be weighed.
3	The initial weight is recorded by both observers.
4	Commercially available fuel is added to the generator and filled to a prerequisite volume.
5	The generator loaded with the fuel is now placed on the scale and the weight is recorded by both observers.
6	The TPS system is connected to the generators and the load bank.
7	One designated individual is set in front of each load bank to control the switches as per the schedule in <b>Table 9</b>
8	The Observers provide the GO signal at the ready and a timer is started.
9	The generators are tested to provide power to the load banks as per the schedule in <b>Table 9</b> . Every 10 minutes, the load bank switches are adjusted to match the schedule.
10	The system is run through one full 8 hour cycle.
11	Once completed, the load bank, the generator and the TPS system are turned off.
12	The generator is weighed immediately following completion of the test and the value is recorded by both observers.
13	The efficiency is calculated according to Equation 1 and recorded by both observers.

## 4.7. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	
Testing Location			
Street No.		City	
Province		Country	
Weather Conditions			
Temperature ( °C )		Percent Prec. (%)	
Humidity		Sky Condition	Clear/Cloudy/Rain/Snow
List of Test Equipment		Calibration Date	
Name of Personnel			
Name of Bidder Authorized Person (Bidder Test Engineer)			
Name of Test Engineer			
Dry Weight of Generator (kg)		Wet Weight of Generator (kg)	
Final Weight of Generator (kg)		Calculated Efficiency (%)	
Baseline Protocol			
Step #	Description	Test Engineer Initials	TPS Bidder Initials

1	The generator fuel tank is emptied and ensured to dry prior to initial weighing.		
2	The generator is placed on a scale to be weighed.		
3	The initial weight is recorded by both observers.		
4	Commercially available fuel is added to the generator and filled to a prerequisite volume.		
5	The generator loaded with the fuel is now placed on the scale and the weight is recorded by both observers.		
6	All generators are turned on at max capacity for 8 hours straight.		
7	The TPS system is connected to the generator and the load bank.		
8	The system can run for one full cycle of the load profile.  Note the change in load behaviour between minute 237 and minute 240 of the switch schedule (Table 7).		
9	Once completed, the load bank, the generator and the TPS system are turned off.		
10	The generator is weighed immediately following completion of the test and the value is recorded by both observers.		
11	The efficiency is calculated according to Equation 1 and recorded by both observers.		
Micro-Grid Protocol			
Step #	Description		

1	Each generator fuel tank is emptied and ensured to dry prior to initial weighing.		
2	Each generator is placed on a scale to be weighed.		
3	The initial weight is recorded by both observers.		
4	Commercially available fuel is added to the generator and filled to a prerequisite volume.		
5	The generator loaded with the fuel is now placed on the scale and the weight is recorded by both observers.		
6	The TPS system is connected to the generators and the load bank.		
7	One designated individual is set in front of each load bank to control the switches as per the schedule in <b>Table 9</b>		
8	The Observers provide the GO signal at the ready and a timer is started.		
9	The generators are tested to provide power to the load banks as per the schedule in <b>Table 9</b> . Every 10 minutes, the load bank switches are adjusted to match the schedule.		
10	The system is run through one full 8 hour cycle.		
11	Once completed, the load bank, the generator and the TPS system are turned off.		
12	The generator is weighed immediately following completion of the test and the value is recorded by both observers.		

13	The efficiency is calculated according to Equation 1 and recorded by both observers.		
Final Test Result		Pass / Fail	
Date and Time of Result			

X

Bidder Test Engineer

X

Date

X

Test Engineer

X

Date



## 5. TPS-VER-TP-05. Electrical Power Quality Requirement

2.6.13	The Generator must meet STANAG 4135 electrical Steady State and transient power output characteristics must be as follows: (see Table 9)	Mandatory	Testing
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### 5.1. Conditions

The TPS must be capable of supplying electrical power with the following quality:

**Table 11:** Electrical Power Quality Table.

Electric Power Quality		Frequency	Voltage
Manual Regulation		$\pm 5\%$	+ 10% / -5%
Regulation		0.25%	1%
Voltage Modulation		-	1%
Short term steady state stability (30 Sec)		0.5% bandwidth	1% bandwidth
Short term steady state stability (4 hr)		1% bandwidth	2% bandwidth
Application of rated load	Transient	4% Under	15% Dip
	Recovery time	2 Sec	0.5 Sec
Rejection of rated load	Transient	4% Over	15% Rise
	Recovery time	2 Sec	0.5 Sec
Max waveform deviation factor			5%
Individual waveform harmonic			2%

The generators will be connected to the data logger (for a single phase test) in the configuration seen in the following image:

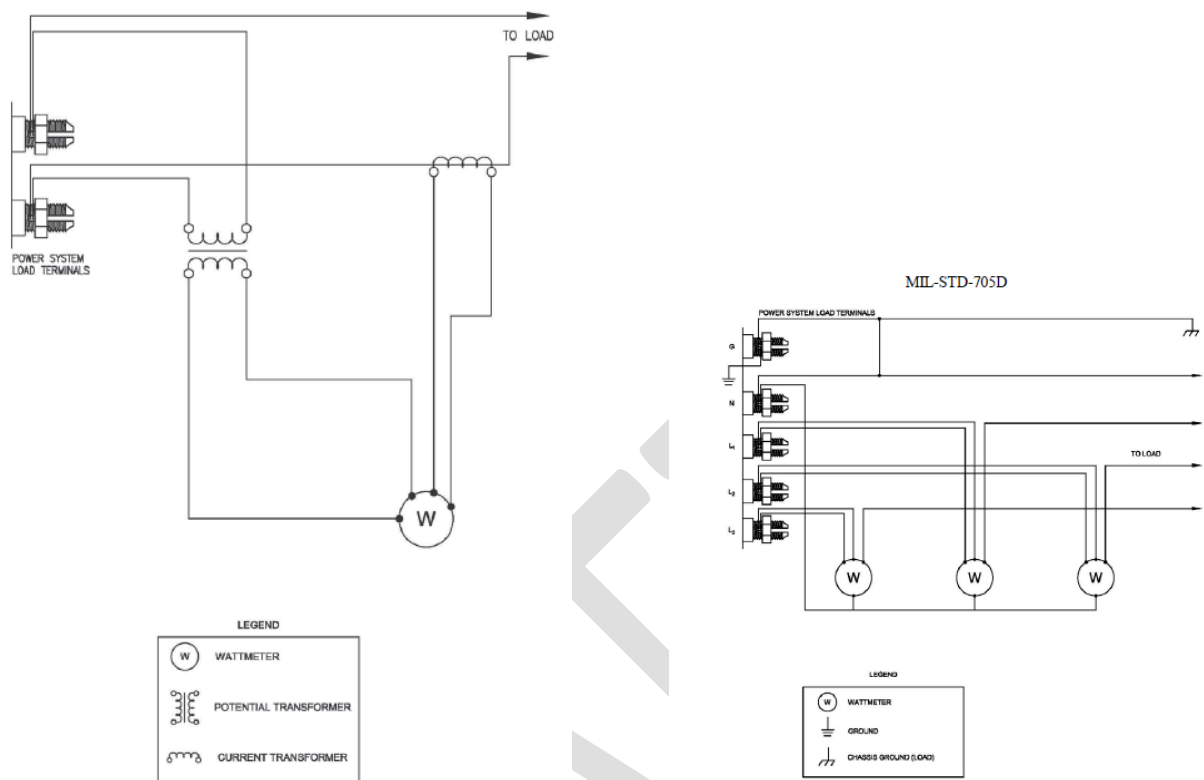


Figure 4. (a) Single phase wattmeter with potential and current transformer. (b) Three wattmeters used on unbalanced three-phase, five-wire system.

5.2. Standards Reference

MIL-STD-705D	METHOD 608.1-12
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5.3. Personnel Required

- 1 X Test engineer
- 1 X Bidder representative

5.4. Equipment List

- 4-6 kW diesel generator;
- 12-18 kW generator;
- 25-35 kW generator; and
- 50-70 kW generator

### 5.5. Described Individual Tasks

*Table 12. Individual specified tasks for test integration TPS-VER-TP-05*

Test engineer	Ensure Test protocol is followed accurately.
Bidder	Ensure Test protocol is followed accurately.

### 5.6. Step-by-step Test Procedure Instructions

*Table 13. Step-by-step test procedure for TPS-VER-TP-05*

Step #	Description
1	The bidder will select one generator from the following family of generators: <ul style="list-style-type: none"> <li>○ 4-6 kW diesel generator;</li> <li>○ 12-18 kW generator;</li> <li>○ 25-35 kW generator; and</li> <li>○ 50-70 kW generator.</li> </ul>
2	Select one generator from the family of generators and perform a functional check of the object. Inspect the object for any visible indications of damage.
3	Connect the generator to the data logger in accordance with MIL-STD-705D 205.1-10 (see Figure 4) with respect to a 3-phase configuration.
<b>4</b>	<b>Manual Voltage Regulation</b>
4a.	Begin operating the system at the rated frequency (60 Hz) and voltage (120 VAC) at no load.
4b.	With the power system operating at rated voltage, rated frequency, modulate the voltage to 10% above the rated value (132VAC) and allow the data logger to collect a minimum of 1 second worth of data.
4c.	Proceed to modulate the voltage to 5% below the rated voltage (114 VAC) and allow the data logger to collect a minimum of 1 second worth of data.
<b>5</b>	<b>Manual Frequency Regulation</b>
5a.	Begin operating the system at the rated frequency (60 Hz) and voltage (120 VAC) at no load.
5b.	With the power system operating at rated voltage, rated frequency, modulate the frequency to 5% above the rated value (63 Hz) and allow the data logger to collect a minimum of 1 second worth of data.

5c.	Proceed to modulate the voltage to 5% below the rated frequency (57 Hz) and allow the data logger to collect a minimum of 1 second worth of data.
6	<b>Application of the Rated load:</b>
6a.	Begin operating the system at the rated frequency (60 Hz) and voltage (120 VAC) at no load.
6b.	The load profile will be set from the minute one hundred and eighty (180) of Table 9 to the minute two hundred and twenty (220).
6c.	The TPS will be allowed time to run and stabilize over the course of 5 minutes.
7	<b>Rejection of the Rated load:</b>
7a.	Begin operating the system at the rated frequency (60 Hz) and voltage (120 VAC) at no load.
7b.	The load profile will be set from the minute two hundred and twenty (220) of Table 9 to the minute one hundred and eighty (180).
7c.	The TPS will be allowed time to run and stabilize over the course of 5 minutes.
8	<b>The TPS is turned off and the Data is collected for analysis.</b>

### 5.7. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	
Testing Location			
Street No.		City	
Province		Country	
Weather Conditions			
Temperature ( °C )		Percent Prec. (%)	
Humidity		Sky Condition	Clear/ Cloudy/ Rain/Snow
List of Test Equipment			Calibration Date

Name of Personnel			
Name of Bidder Authorized Person (Bidder Test Engineer)			
Name of Test Engineer			
Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	<p>The bidder will select one generator from each the following family of generators:</p> <ul style="list-style-type: none"> <li>○ 4-6 kW diesel generator;</li> <li>○ 12-18 kW generator;</li> <li>○ 25-35 kW generator; and</li> <li>○ 50-70 kW generator.</li> </ul>		
2	Select one generator from the family of generators and perform a functional check of the object. Inspect the object for any visible indications of damage.		
3	Connect the generator to the data logger in accordance with MIL-STD-705D 205.1-10 (see Figure 4) with respect to a 3-phase configuration.		
4	<b>Manual Voltage Regulation</b>		
4a.	Begin operating the system at the rated frequency (60 Hz) and voltage (120 VAC) at no load.		
4b.	With the power system operating at rated voltage, rated frequency, modulate the voltage to 10% above		

	the rated value (132VAC) and allow the data logger to collect a minimum of 1 second worth of data.		
4c.	Proceed to modulate the voltage to 5% below the rated voltage (114 VAC) and allow the data logger to collect a minimum of 1 second worth of data.		
<b>5</b>	<b>Manual Frequency Regulation</b>		
5a.	Begin operating the system at the rated frequency (60 Hz) and voltage (120 VAC) at no load.		
5b.	With the power system operating at rated voltage, rated frequency, modulate the frequency to 5% above the rated value (63 Hz) and allow the data logger to collect a minimum of 1 second worth of data.		
5c.	Proceed to modulate the voltage to 5% below the rated frequency (57 Hz) and allow the data logger to collect a minimum of 1 second worth of data.		
<b>6</b>	<b>Application of the Rated load:</b>		
6a.	Begin operating the system at the rated frequency (60 Hz) and voltage (120 VAC) at no load.		
6b.	The load profile will be set from the rated power output to the peak power output of the selected generator.		
6c.	The TPS will be allowed time to run and stabilize over the course of 5 minutes.		
<b>7</b>	<b>Rejection of the Rated load:</b>		

7a.	Begin operating the system at the rated frequency (60 Hz) and voltage (120 VAC) at no load.		
7b.	The load profile will be set from the peak power output to the rated power output of the generator.		
7c.	The TPS will be allowed time to run and stabilize over the course of 5 minutes.		
8	<b>The TPS is turned off and the Data is collected for analysis.</b>		
Final Test Result		Pass / Fail	
Date and Time of Result			

X

Bidder Test Engineer

X

Date

X

Test Engineer

X

Date

#### 6. TPS-VER-TP-06. Mandatory Requirement for Recovery of HQSS Army Type 4

1.6.9	The TPS for a HQSS Type 4 must be recovered and stowed back to original condition within 60 minutes by maximum of 6 bidder personnel from any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training.	Mandatory	Demonstration / Testing
1.6.10	The TPS for a HQSS Type 4 should be recovered by hand and stowed back to original condition within 40 minutes by a maximum of 6 soldiers from any MOC trained on the TPS;	Desirable	

#### 6.4. Conditions

1. The bidder must provide packing arrangement for the stowage plan.
2. The Recovery of the TPS for a HQSS Type 4 must be without any of the following safety issues:
  - a. Tripping hazards;
  - b. Damage or malfunction of TP's equipment;
  - c. The recovery of the system must be recovered and placed in the deployment platform used in the stowage plan; and
  - d. There must be no physical harm endured by the personnel at any time during testing.
3. The Recovery of the TPS for a HQSS Type 4 must be functional; and
4. The Recovery of the TPS for a HQSS Type 4 must be returned to its initial stowage plan as provided by the bidder.

Should the results of the test reach any of these conditions, the results will indicate a failed execution of the task:

- Time to recover exceeds 60 minutes (consider safety as priority);
- An excess of 6 contractor persons required to recover the TPS at any point in the test; and
- The HQSS layout is manipulated from its original configuration as outlined by Figure 1.

#### 6.5. Standards Reference

Field Engineering Manual	B-GL-361-012/FP-001
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#### 6.6. Personnel Required

- 6 X Bidder personnel (At least one trained on the TPS).



- 1 X Timekeeper
- 1 X Bidder representative

#### 6.7. Described Individual Tasks

*Table 14. Individual specified tasks for test integration TPS-VER-TP-06*

Bidder personnel of any MOC	Successfully execute the recovery of the TPS for HQSS Army Type 4 complex
Test Engineer	Track the chronometer for accurate time reading of the task.
Bidder	Ensure that the test conditions and associated personnel conform to the test condition outlined at Figure 1;

#### 6.8. Step-by-step Test Procedure Instructions

*Table 15. Step-by-step test procedure for TPS-VER-TP-06*

Step #	Description
1	The six bidder personnel, the TPS deployment team (TPS DT), are to arrive on site with an appropriate trailer to house the TPS system
2	The bidder will be allowed fifteen (15) minutes to inspect the deployed area.
3	The TPS DT will wait for the Timekeeper's signal to begin.
4	The Timekeeper and the bidder will conduct a brief walk around of the site and inspect the site, TPS DT and the TPS equipment for any potential obstructions or abnormalities to the equipment.
5	Once confirmed, the timekeeper will signal the TPS DT to start and the chronometer will be initiated.
6	The TPS DT will recover the TPS as per the bidder's packaging plan.
7	During the recovery, the TPS DT must not manipulated the bivouac layout and must respect its boundaries.
8	The TPS DT will signal to the Timekeeper and the bidder upon completion of the deployment of the TPS.

9	The timekeeper and the bidder will confirm the resultant time with the TPS DT.
10	The Bidder and the Timekeeper will conduct a functional inspection of the TPS and the Stowage plan to compare to the original packaging plan (as provided by the bidder).
11	Once the inspection is complete, the results are to be tallied and shared with the TPS DT.
12	Both parties must sign on the results confirming that they approve, otherwise a retest can be scheduled.

### 6.9. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	
Testing Location			
Street No.		City	
Province		Country	
Weather Conditions			
Temperature ( °C )		Percent Prec. (%)	
Humidity		Sky Condition	Clear/Cloudy/Rain/Snow
List of Test Equipment			Calibration Date
Name of Personnel			

Name of Bidder Authorized Person (Bidder Test Engineer)			
Name of Test Engineer			
Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	The six bidders personnel, the TPS deployment team (TPS DT), are to arrive on site with an appropriate trailer to mount the TPS system		
2	The bidder will be allowed fifteen (15) minutes to inspect the deployed area.		
3	The TPS DT will wait for the Timekeeper's signal to begin.		
4	The Timekeeper and the bidder will conduct a brief walk around of the site and inspect the site, TPS DT and the TPS equipment for any potential obstructions or abnormalities to the equipment.		
5	Once confirmed, the timekeeper will signal the TPS DT to start and the chronometer will be initiated.		
6	The TPS DT will recover the TPS as per the bidder's stowage plan.		
7	During the recovery, the TPS DT must not manipulated the bivouac layout and must respect its boundaries.		
8	The TPS DT will signal to the Timekeeper and the bidder upon completion of the deployment of the TPS.		
9	The timekeeper and the bidder will confirm the resultant time with the TPS DT.		

10	The Bidder and the Timekeeper will conduct a functional inspection of the TPS and the stowage platform to compare to the original packaging plan (as provided by the bidder).		
11	Once the inspection is complete, the results are to be tallied and shared with the TPS DT.		
12	Both parties must sign on the results confirming that they approve, otherwise a retest can be scheduled.		
Final Test Result			Pass / Fail
Date and Time of Result			

X

Bidder Test Engineer

X

Date

X

Test Engineer

X

Date

## 7. TPS-VER-TP-07. Mandatory Requirement for Low Temperature Operation – Procedure II – Operation

1.22.3.5	The TPS must be operated, without damage and meet all performance requirements (during and after exposure), in low temperature as described in MIL-STD-810G, Method 502.5 Low Temperature, Procedure II (Operation) at -37°C temperature.	Mandatory	Demonstration / Testing
1.22.3.6	The TPS should be capable to operate within 20 minutes without damage and meet all performance requirements (during and after exposure) in low temperature as described in MIL-STD-810G, Method 502.5 Low Temperature, Procedure II (Operation) at -51°C temperature.	Desirable	Demonstration / Testing

### 7.4. Test Levels and Conditions

#### 7.4.1. Climate Conditions

1. Climate conditions will be set to those specified in table 502.5-I of MIL-STD-810G Summary of low temperature cycle ranges. Test climate conditions will be set to Cold (C2) with an ambient air temperature of -37 °C (-35 °F) and an induced environment temperature of -37 °C (-35 °F) .

#### 7.4.2. Exposure Duration

- A minimum storage period of 24 hours following temperature stabilization of the test item (MIL-STD-810G Method 502.2.3.2 b.)

#### 7.4.3. Test Item Configuration

- The TPS test configuration will be in a tactical deployment setting (MIL-STD-810G Method 502.2.3.3).

### 7.5. Standards Reference

MIL-STD-810G	METHOD 502.5
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## 7.6. Equipment Required

- o 1 x 50-70 kW Generator

## 7.7. Described Individual Tasks

*Table 16. Individual specified tasks for test integration TPS-VER-TP-07*

Test item Manipulators	Present to manipulate the test item under testing.
Test Engineer	Records the data required in the test report.
Bidder	Ensures that the test protocol is being followed accurately.

## 7.8. Step-by-Step Test Procedure Instructions

*Table 17. Step-by-step test procedure for TPS-VER-TP-08*

Step #	Description
1	Before starting the test, review pretest information in the test plan to determine test details (e.g., procedures, test item configuration, cycles, durations, parameter levels for storage/operation, etc.).
2	All test items require a pretest standard checkout at standard ambient conditions to provide baseline data. Conduct the checkout as follows (change of step sequence may be required for large test items):
2a	Conduct a complete visual examination of the test item, with special attention to stress areas such as corners of molded cases and document the results.
2b	Install temperature sensors in or on the test item as required to determine the test item temperature(s). If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.
2c	Conduct an operational checkout at standard ambient conditions (Turn on Generator and let run for 5 minutes).
2d	If the test item operates satisfactorily, proceed to the first test procedure as determined from the test plan. If not, resolve the problems and repeat Step 2.
3	Place the test item in its operational configuration and installed in the test chamber.

4	Adjust the chamber air temperature to -37 °C (-35 °F) at a rate not to exceed 3°C/min (5°F/min).
5	Maintain this for at least 24 hours following temperature stabilization of the test item. If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item
6	Conduct an operational checkout at standard ambient conditions by turning on the Generator and letting it run for 5 minutes.
7	Adjust the chamber air temperature to standard ambient conditions (at a rate not to exceed 3 °C/min (5°F/min)), and maintain it until the test item has achieved temperature stabilization.
8	Conduct a complete visual examination of the test item and document the results.
9	If appropriate, conduct an operational checkout of the test item and document the results.
10	Compare these data with the pretest data.

### 7.9. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	
Testing Location			
Street No.		City	
Province		Country	
List of Test Equipment			Calibration Date
Test Item Rated Temperature (°C)			

Test Item Testing Temperature (°C)	
Name of Personnel	
Name of Bidder Authorized Person (Bidder Test Engineer)	
Name of Test Engineer	
Pretest – General Information	
Test Facilities and Instrumentation	
Required test procedures(s)	
Critical components (if applicable)	
Test duration	
Test item configuration	
test level, duration, and method of stress application	
Location of instrumentation/sensors	
Test item installation details	
Cooling provisions (if appropriate)	
Type of protective clothing required	
Pretest – Method 502.5 Specific Information	
Item nomenclature	
Item model	



Item Serial Number	
Manufacturer	
General Appearance/condition	
Specific physical anomalies	
Environmental test history of the specific item	
During Test – General Information	
Performance Check (Critical Parameters prior to testing)	
Performance Check (Critical Parameters post testing)	
Test Facility (Environmental Conditions applied to the test item)	
Test Item Response	
Test Interruptions	
During Test – Method 502.5 Specific Information	
Chamber Temperature Versus Time Conditions	
Test Item Temperatures (measurement locations)	
Protective clothing used during manipulation tests	
Post Test – General Information	
Test Item Manufacturer	
Test Item Serial Number	

Test Equipment identification (including accessories)	
Any Deviations from the planned test program	
Performance data collected on the same parameters and operational levels as pretest	
Room ambient test conditions recorded periodically during test period	
Other data specified in the methods	
Initial Failure Analysis if Applicable	
Post Test – Method 502.5 Specific Information	
Length of time Required for each performance check	
Temperature-time versus data (test item and chamber)	
Protective clothing used to set-up or disassemble the test item	
Appropriate anthropometric measurements of personnel performing manipulation tests	
any deviations from the original test plan	

Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	Before starting the test, review pretest information in the test plan to determine test details (e.g., procedures, test item configuration, cycles, durations, parameter levels for storage/operation, etc.).		
2	All test items require a pretest standard checkout at standard ambient conditions to provide baseline data. Conduct the checkout as follows (change of step sequence may be required for large test items):		
2a	Conduct a complete visual examination of the test item, with special attention to stress areas such as corners of molded cases, and document the results.		
2b	Install temperature sensors in or on the test item as required to determine the test item temperature(s). If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.		
2c	Conduct an operational checkout at standard ambient conditions by turning on the Generator and letting it run for 5 minutes.		
2d	If the test item operates satisfactorily, proceed to the first test procedure as determined from the test plan. If not, resolve the problems and repeat Step 2.		
3	Place the test item in its operational configuration and installed in the test chamber.		

4	Adjust the chamber air temperature to - 37 °C (-35 °F) at a rate not to exceed 3 °C/min (5°F/min).		
5	Maintain this for at least two hours following temperature stabilization of the test item. If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item		
6	Conduct an operational checkout (turn on Generator and let run for 5 minutes)		
7	Adjust the chamber air temperature to standard ambient conditions (at a rate not to exceed 3 °C/min (5°F/min)), and maintain it until the test item has achieved temperature stabilization.		
8	Conduct a complete visual examination of the test item and document the results.		
9	If appropriate, conduct an operational checkout of the test item and document the results.		
10	Compare these data with the pretest data.		
Final Test Result		Pass / Fail	
Date and Time of Result			


X

Bidder Test Engineer

X

Date

X

Test Engineer

X

Date

DRAFT

## 8. TPS-VER-TP-08. Mandatory Requirement for Low Temperature Test – Procedure I – Storage

1.22.3.4	The TPS must be stored and transported, without damage and meet all performance requirements (during and after exposure), in low temperature as described in MIL-STD-810G, Method 502.5 Low Temperature, Procedure I (Storage) at -51°C temperature.	Mandatory	Demonstration / Testing
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### 8.4. Test Levels and Conditions

#### 8.4.1. Climate Conditions

2. Climate conditions will be set to those specified in table 502.5-I of MIL-STD-810G Summary of low temperature cycle ranges. Test climate conditions will be set to Sever Cold (C3) with an ambient air temperature of -51 °C (-60 °F) and an induced environment temperature of -51 °C (-60 °F).
3. The frequency of occurrence is characterized by table 502.5-II Frequency of occurrence of extreme low temperatures:
  - a. -51 °C (-60 °F) at 20 percent
  - b. -54 °C (-65 °F) at 10 percent
  - c. -57 °C (-71 °F) at 5 percent
  - d. -61 °C (-78 °F) at 1 percent

#### 8.4.2. Exposure Duration

- A minimum storage period of 24 hours following temperature stabilization of the test item (MIL-STD-810G Method 502.2.3.2 b.)

#### 8.4.3. Test Item Configuration

- The TPS test configuration will be in a shipping/storage container (MIL-STD-810G Method 502.2.3.3).

### 8.5. Standards Reference

MIL-STD-810G	METHOD 502.5
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### 8.6. Equipment Required

1 X 50-70 kW Generator

### 8.7. Described Individual Tasks

*Table 18. Individual specified tasks for test integration TPS-VER-TP-07*

Test item Manipulators	Present to manipulate the test item under testing.
Test Engineer	Records the data required in the test report.
Bidder	Ensures that the test protocol is being followed accurately.

### 8.8. Step-by-Step Test Procedure Instructions

*Table 19. Step-by-step test procedure for TPS-VER-TP-07*

Step #	Description
1	Before starting the test, review pretest information in the test plan to determine test details (e.g., procedures, test item configuration, cycles, durations, parameter levels for storage/operation, etc.).
2	All test items require a pretest standard checkout at standard ambient conditions to provide baseline data. Conduct the checkout as follows (change of step sequence may be required for large test items):
2a	Conduct a complete visual examination of the test item, with special attention to stress areas such as corners of molded cases, seals and document the results.
2b	Install temperature sensors in or on the test item as required to determine the test item temperature(s). If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.
2c	Conduct an operational checkout at standard ambient conditions by turning on the Generator and letting it run for 5 minutes.
2d	If the test item operates satisfactorily, proceed to the first test procedure as determined from the test plan. If not, resolve the problems and repeat Step 2.
3	Place the test item in its storage configuration and install it in the test chamber.
4	Adjust the chamber air temperature to -51°C (-60°F) at a rate not to exceed 3°C/min (5°F/min).

5	Following temperature stabilization of the test item maintain the storage temperature 24 hours. If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.
6	Conduct a visual examination of the test item and compare the results with the pretest data. Record any pertinent physical changes or the fact that there were no obvious changes.
7	Adjust the chamber air temperature to standard ambient conditions (at a rate not to exceed 3°C/min (5°F/min)) and maintain it until the test item has achieved temperature stabilization.
8	Conduct a complete visual examination of the test item and document the results.
9	If appropriate, conduct an operational checkout of the test item and document the results.
10	Compare these data with the pretest data.

### 8.9. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	
Testing Location			
Street No.		City	
Province		Country	
List of Test Equipment			Calibration Date
Name of Personnel			
Item Rated Temperature (°C)			



Item Tested Temperature (°C)	
Name of Bidder Authorized Person (Bidder Test Engineer)	
Name of Test Engineer	
Pretest – General Information	
Test Facilities and Instrumentation	
Required test procedures(s)	
Critical components (if applicable)	
Test duration	
Test item configuration	
test level, duration, and method of stress application	
Location of instrumentation/sensors	
Test item installation details	
Cooling provisions (if appropriate)	
Type of protective clothing required	
Pretest – Method 502.5 Specific Information	
Item nomenclature	
Item model	
Item Serial Number	
Manufacturer	

General Appearance/condition	
Specific physical anomalies	
Environmental test history of the specific item	
During Test – General Information	
Performance Check (Critical Parameters prior to testing)	
Performance Check (Critical Parameters post testing)	
Test Facility (Environmental Conditions applied to the test item)	
Test Item Response	
Test Interruptions	
During Test – Method 502.5 Specific Information	
Chamber Temperature Versus Time Conditions	
Test Item Temperatures (measurement locations)	
Protective clothing used during manipulation tests	
Post Test – General Information	
Test Item Manufacturer	
Test Item Serial Number	
Test Equipment identification (including accessories)	

Any Deviations from the planned test program	
Performance data collected on the same parameters and operational levels as pretest	
Room ambient test conditions recorded periodically during test period	
Other data specified in the methods	
Initial Failure Analysis if Applicable	
Post Test – Method 502.5 Specific Information	
Length of time Required for each performance check	
Temperature-time versus data (test item and chamber)	
Protective clothing used to set-up or disassemble the test item	
Appropriate anthropometric measurements of personnel performing manipulation tests	
any deviations from the original test plan	

Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	Before starting the test, review pretest information in the test plan to determine test details (e.g., procedures, test item configuration, cycles, durations, parameter levels for storage/operation, etc.).		
2	All test items require a pretest standard checkout at standard ambient conditions to provide baseline data. Conduct the checkout as follows (change of step sequence may be required for large test items):		
2a	Conduct a complete visual examination of the test item, with special attention to stress areas such as corners of molded cases, seals and document the results.		
2b	Install temperature sensors in or on the test item as required to determine the test item temperature(s). If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.		
2c	Conduct an operational checkout at standard ambient conditions by turning on the Generator and letting it run for 5 minutes.		
2d	If the test item operates satisfactorily, proceed to the first test procedure as determined from the test plan. If not, resolve the problems and repeat Step 2.		
3	Place the test item in its storage configuration and install it in the test chamber.		

4	Adjust the chamber air temperature to - 51°C (-60°F) at a rate not to exceed 3°C/min (5°F/min).		
5	Following temperature stabilization of the test item maintain the storage temperature 24 hours. If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.		
6	Conduct a visual examination of the test item and compare the results with the pretest data. Record any pertinent physical changes or the fact that there were no obvious changes.		
7	Adjust the chamber air temperature to standard ambient conditions (at a rate not to exceed 3°C/min (5°F/min)) and maintain it until the test item has achieved temperature stabilization.		
8	Conduct a complete visual examination of the test item and document the results.		
9	If appropriate, conduct an operational checkout of the test item and document the results.		
10	Compare these data with the pretest data.		
Final Test Result		Pass / Fail	
Date and Time of Result			

X  
\_\_\_\_\_  
Bidder Test Engineer

X  
\_\_\_\_\_  
Date

X  
\_\_\_\_\_  
Test Engineer

X  
\_\_\_\_\_  
Date

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## 9. TPS-VER-TP-09. Mandatory Requirement for Low Temperature Operation – Cable Manipulation

1.22.3.8	For cables and wires, manipulation at -51°C temperature means all cables and wires must be able to bend to radius equal to five times the diameter of the cable or wire without damage to the insulation material.	Mandatory	Demonstration / Testing
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### 9.4. Test Levels and Conditions

#### 9.4.1. Climate Conditions

- Climate conditions will be set to those specified in table 502.5-I of MIL-STD-810G Summary of low temperature cycle ranges. Test climate conditions will be set to Sever Cold (C3) with an ambient air temperature of -51 °C (-60 °F) and an induced environment temperature of -51 °C (-60 °F).
- The frequency of occurrence is characterized by table 502.5-II Frequency of occurrence of extreme low temperatures:
  - 51 °C (-60 °F) at 20 percent
  - 54 °C (-65 °F) at 10 percent
  - 57 °C (-71 °F) at 5 percent
  - 61 °C (-78 °F) at 1 percent

#### 9.4.2. Exposure Duration

- A minimum storage period of 24 hours following temperature stabilization of the test item (MIL-STD-810G Method 502.2.3.2 b.)

### 9.5. Standards Reference

MIL-STD-810G	METHOD 502.5
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### 9.6. Described Individual Tasks

Table 20. Individual specified tasks for test integration TPS-VER-TP-06

Test item Manipulators	Present to manipulate the test item under testing.
Test Engineer	Records the data required in the test report.
Bidder	Ensures that the test protocol is being followed accurately.

### 9.7. Step-by-Step Test Procedure Instructions

Table 21. Step-by-step test procedure for TPS-VER-TP-09

Step #	Description
1	Before starting the test, review pretest information in the test plan to determine test details (e.g., procedures, test item configuration, cycles, durations, parameter levels for storage/operation, etc.).
2	All test items require a pretest standard checkout at standard ambient conditions to provide baseline data. Conduct the checkout as follows (change of step sequence may be required for large test items):
2a	Conduct a complete visual examination of the test item, with special attention to stress areas such as corners of molded cases, and document the results.
2b	Install temperature sensors in or on the test item as required to determine the test item temperature(s). If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.
2c	Record the nominal diameter of the cable prior to manipulation.
2d	Record the intended arc diameter for bending the cable (5 times the radius) as per <b>Error! Reference source not found.</b>
3	Proceed to bend the cable to the intended radius and maintain bend for 10 seconds.
4	Un-bend the cable to its original configuration
5	Conduct a complete visual examination of the test item and document the results. Any visible tears of the insulation indicate a failure.
6	Conduct an operational checkout by filling Table 15 and 16.
7	Adjust the chamber air temperature to standard ambient conditions (at a rate not to exceed 3°C/min (5°F/min)), and maintain it until the test item has achieved temperature stabilization.
8	Conduct a complete visual examination of the test item and document the results.
9	If appropriate, conduct an operational checkout of the test item and document the results.



10	Compare these data with the pretest data.
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### 9.8. Test Report

TPS-VER-TP Test Report				
Date (dd/mm/yyyy)			Time	
Testing Location				
Street No.			City	
Province			Country	
List of Test Equipment				Calibration Date
Test Item Rated Temperature (°C)				
Test Item Testing Temperature (°C)				
Name of Personnel				
Name of Bidder Authorized Person (Bidder Test Engineer)				
Name of Test Engineer				
Pretest – General Information				
Test Facilities and Instrumentation				
Required test procedures(s)				

Critical components (if applicable)		
Test duration		
Test item configuration		
test level, duration, and method of stress application		
Location of instrumentation/sensors		
Test item installation details		
Cooling provisions (if appropriate)		
Type of protective clothing required		
	Pretest – Method 502.5 Specific Information	
Item nomenclature		
Item model		
Item Serial Number		
Manufacturer		
General Appearance/condition		
Specific physical anomalies		
Environmental test history of the specific item		
Cable Type	Vendor Part Description	Nominal Diameter (mm)
Radius of Bend (mm)		
Cable Assembly 100A, three phase, 5 wire 2 AWG, (NSN 6150-21-921-7828 or vendor's equivalent)		

Cable Assembly 100A, three phase, 5 wire 2 AWG, (NSN 6150-20-000-0567 or vendor's equivalent);			
Cable Assembly 60A, three phase, 5 wire 6 AWG, (NSN 6150-20-000-1284 or vendor's equivalent);			
Cable Assembly 30A, three phase, 5 wire 10 AWG, (NSN 6150-20-000-1275 or vendor's equivalent);			
Cable Assembly 200A, 1 wire 2/0 AWG, (NSN 6150-20-001-5755 or vendor's equivalent);			
Cable Assembly 200A, 1 wire 2/0 AWG, (NSN 6150-20-001-5751 or vendor's equivalent);			
Cable Assembly 200A, 1 wire 2/0 AWG, (NSN 6150-20-001-5752 or vendor's equivalent);			
	During Test – General Information		
Performance Check (Critical Parameters prior to testing)			
Performance Check (Critical Parameters post testing)			
Test Facility (Environmental Conditions applied to the test item)			
Test Item Response			
Test Interruptions			
	During Test – Method 501.5 Specific Information		

Chamber Temperature Versus Time Conditions			
Test Item Temperatures (measurement locations)			
Protective clothing used during manipulation tests			
Cable Type	Vendor Part Description	Radius of Bend (mm)	Observed Damage
Cable Assembly 100A, three phase, 5 wire 2 AWG, (NSN 6150-21-921-7828 or vendor's equivalent)			
Cable Assembly 100A, three phase, 5 wire 2 AWG, (NSN 6150-20-000-0567 or vendor's equivalent);			
Cable Assembly 60A, three phase, 5 wire 6 AWG, (NSN 6150-20-000-1284 or vendor's equivalent);			
Cable Assembly 30A, three phase, 5 wire 10 AWG, (NSN 6150-20-000-1275 or vendor's equivalent);			
Cable Assembly 200A, 1 wire 2/0 AWG, (NSN 6150-20-001-5755 or vendor's equivalent);			
Cable Assembly 200A, 1 wire 2/0 AWG, (NSN 6150-20-001-5751 or vendor's equivalent);			
Cable Assembly 200A, 1 wire 2/0 AWG, (NSN 6150-20-001-5752 or vendor's equivalent);			
	Post Test – General Information		
Test Item Manufacturer			

Test Item Serial Number		
Test Equipment identification (including accessories)		
Any Deviations from the planned test program		
Performance data collected on the same parameters and operational levels as pretest		
Room ambient test conditions recorded periodically during test period		
Other data specified in the methods		
Initial Failure Analysis if Applicable		
	Post Test – Method 501.5 Specific Information	
Length of time Required for each performance check		
Temperature-time versus data (test item and chamber)		
Protective clothing used to set-up or disassemble the test item		
Appropriate anthropometric measurements of personnel performing manipulation tests		
any deviations from the original test plan		

Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	Pretest Standard Ambient Checkout		
1a	Conduct a complete visual examination of the test item, with special attention to stress areas such as corners of molded cases and document the results.		
1b	Install temperature sensors in or on the test item as required to determine the test item temperature(s). If not possible to instrument internal components, base any additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.		
1c	Record the nominal diameter of the cable prior to manipulation.		
1d	Record the intended arc diameter for bending the cable (5 times the radius)		
2	Proceed to bend the cable to the intended radius and maintain bend for 10 seconds.		
3	Un-bend the cable to its original configuration		
4	Conduct a complete visual examination of the test item and document the results. Any visible tears of the insulation indicate a failure.		
5	Conduct an operational checkout by filling <b>Error! Reference source not found.</b> 15 and Table 16		
6	Adjust the chamber air temperature to standard ambient conditions (at a rate not to exceed 3°C/min (5°F/min)) and maintain it until the test item has achieved temperature stabilization.		
7	Conduct a complete visual examination of the test item and document the results.		
8	If appropriate, conduct an operational checkout of the test item and document the results.		

9	Compare these data with the pretest data.		
Final Test Result		Pass / Fail	
Date and Time of Result			

X  
\_\_\_\_\_  
Bidder Test Engineer

X  
\_\_\_\_\_  
Date

X  
\_\_\_\_\_  
Test Engineer

X  
\_\_\_\_\_  
Date

## 10. TPS-VER-TP-10. Mandatory Requirement for High Temperature Operation – Procedure II – Operation

1.22.4.4	The TPS must be operated, without damage and meet all performance requirements (during and after exposure), in high temperature as described in MIL-STD-810G, Method 501.5 High Temperature, Procedure II (Operation) at +49 °C temperature.	Mandatory	Demonstration / Testing
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### 10.1. Test Levels and Conditions

#### 10.1.1. Climate Conditions

4. Climate conditions will be set to those specified in table 501.5-I of MIL-STD-810G Summary of high temperature diurnal cycle ranges. Test climate conditions will be set to Hot Dry (A1) with an ambient air temperature of 49°C (120°F) and an induced environment temperature of 71°C (160 °F).
5. The corresponding relative humidity value for the given test condition is:
  - a. 3 % RH at Ambient Air Conditions
  - b. 1 % RH at Induced Conditions.

#### 10.1.2. Exposure Duration

- The item will be exposed above the surface of the Earth; and
- Inside an unventilated enclosure.

#### 10.1.3. Test Item Configuration

- The TPS test configuration will be in its normal operating configuration (MIL-STD-810G Method 501.2.3.4).

### 10.2. Standards Reference

MIL-STD-810G	METHOD 501.5
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### 10.3. Described Individual Tasks

Table 22. Individual specified tasks for test integration TPS-VER-TP-06

Test item Manipulators	Present to manipulate the test item under testing.
Test Engineer	Records the data required in the test report.



Bidder	Ensures that the test protocol is being followed accurately.
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#### 10.4. Step-by-Step Test Procedure Instructions

*Table 23. Step-by-step test procedure for TPS-VER-TP-10*

Step #	Description
1	Pretest Standard Ambient Checkout:
1a	In order to determine thermal response, install temperature sensors in, on or around the test item (ie: Engine block, radiator, exhaust, and Enclosure).
1b	Conduct a complete visual examination of the test item, with special attention to stress areas such as corners of molded cases, and document the results.
1c	Conduct an operational checkout at standard ambient conditions (turn on generator and let it run for 5 minutes) and record the results
1d	If the test item operates satisfactorily, proceed to the first test procedure as determined from the test plan. If not, resolve the problems and repeat Step 1 above.
2	Procedure II - Operation
2a	With the test item in the chamber in its operational configuration, install any additional temperature sensors necessary to measure the maximum temperature response of the test item, ensuring the functioning components are included.
2b	For constant temperature exposure, adjust the chamber air conditions to the required temperature of 49 °C (120 °F) and 3% RH.
2c	Maintain the chamber conditions for at least 2 hours following test item temperature stabilization. If it is not possible to instrument internal components, base the additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.
2d	Conduct as thorough a visual examination of the test item as possible considering chamber access limitations and document the results for comparison with pretest data.
2e	Conduct a complete visual examination of the test item and document the results.

2f	Operate the test item and allow its temperature to re-stabilize. Conduct an operational checkout of the test item (turn on the generator and let run for 5 minutes).
2g	With the test item not operating, adjust the chamber air temperature to controlled ambient conditions and maintain until the test item temperature has stabilized.
2h	Conduct a complete visual examination and operational checkout in accordance with the approved test plan and document the results for comparison with pretest data. See paragraph 5 for analysis of results.

### 10.5. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	
Testing Location			
Street No.		City	
Province		Country	
List of Test Equipment			Calibration Date
Name of Personnel			
Name of Bidder Authorized Person (Bidder Test Engineer)			

Name of Test Engineer	
Pretest – General Information	
Test Facilities and Instrumentation	
Required test procedures(s)	
Critical components (if applicable)	
Test duration	
Test item configuration	
test level, duration, and method of stress application	
Location of instrumentation/sensors	
Test item installation details	
Cooling provisions (if appropriate)	
Type of protective clothing required	
Pretest – Method 501.5 Specific Information	
Item nomenclature	
Item model	
Item Serial Number	
Manufacturer	
General Appearance/condition	
Specific physical anomalies	
Environmental test history of the specific item	
Thermocouple locations	
During Test – General Information	

Performance Check (Critical Parameters prior to testing)	
Performance Check (Critical Parameters post testing)	
Test Facility (Environmental Conditions applied to the test item)	
Test Item Response	
Test Interruptions	
During Test – Method 501.5 Specific Information	
Chamber Temperature Versus Time Conditions	
Test Item Temperatures (measurement locations)	
Protective clothing used during manipulation tests	
Post Test – General Information	
Test Item Manufacturer	
Test Item Serial Number	
Test Equipment identification (including accessories)	
Any Deviations from the planned test program	
Performance data collected on the same parameters and operational levels as pretest	
Room ambient test conditions recorded periodically during test period	
Other data specified in the methods	
Initial Failure Analysis if Applicable	

Post Test – Method 501.5 Specific Information	
Length of time Required for each performance check	
Temperature-time versus data (test item and chamber)	
Protective clothing used to set-up or disassemble the test item	
Appropriate anthropometric measurements of personnel performing manipulation tests	
any deviations from the original test plan	

Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	Pretest Standard Ambient Checkout:		
1a	In order to determine thermal response, install temperature sensors in, on or around the test item (ie: Engine block, radiator, exhaust, and Enclosure).		
1b	Conduct a complete visual examination of the test item, with special attention to stress areas such as corners of molded cases, and document the results.		
1c	Conduct an operational checkout at standard ambient conditions (turn on generator and let it run for 5 minutes) and record the results		
1d	If the test item operates satisfactorily, proceed to the first test procedure as determined from the test plan. If not, resolve the problems and repeat Step 1 above.		
2	Procedure II - Operation		

2a	With the test item in the chamber in its operational configuration, install any additional temperature sensors necessary to measure the maximum temperature response of the test item, ensuring the functioning components are included.		
2b	For constant temperature exposure, adjust the chamber air conditions to the required temperature of 49 °C (120 °F) and 3% RH.		
2c	Maintain the chamber conditions for at least 2 hours following test item temperature stabilization. If it is not possible to instrument internal components, base the additional soak time on thermal analysis to ensure temperature stabilization throughout the test item.		
2d	Conduct as thorough a visual examination of the test item as possible considering chamber access limitations and document the results for comparison with pretest data.		
2e	Conduct a complete visual examination of the test item and document the results.		
2f	Operate the test item and allow its temperature to re-stabilize. Conduct an operational checkout of the test item (turn on the generator and let run for 5 minutes).		
2g	With the test item not operating, adjust the chamber air temperature to controlled ambient conditions and maintain until the test item temperature has stabilized.		
2h	Conduct a complete visual examination and operational checkout in accordance with the approved test plan and document the results for comparison with pretest data. See paragraph 5 for analysis of results.		
Final Test Result		Pass / Fail	
Date and Time of Result			

X  
\_\_\_\_\_  
Bidder Test Engineer

X  
\_\_\_\_\_  
Date

X  
\_\_\_\_\_  
Test Engineer

X  
\_\_\_\_\_  
Date

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## 11. TPS-VER-TP-11. Mandatory Requirement for First Level Scheduled Maintenance

1.18.7	First level scheduled maintenance tasks must take no longer than thirty (30) minutes, 99% of the time.	Mandatory	Demonstration / Testing
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### 11.1. Conditions

The execution of TPS-VER-TP-11 must be completed by conducting a complete oil change and filter for every member of the following families of generators:

- 2-3.5 kW;
- 4-6 kW
- 12-18 kW;
- 25-35 kW; and
- 50-70 kW.

Should the results of the test reach any of these conditions, the results will indicate a failed execution of the task:

- Oil is spilled within the generator enclosure;
- Damage is sustained to any of the generator components; or
- 30 minutes is exceeded.

### 11.2. Described Individual Tasks

*Table 24. Individual specified tasks for test integration TPS-VER-TP-12*

Bidder personnel	Conduct the maintenance activity for generator being tested.
Test Engineer	Records the data required in the test report.
Bidder	Ensures that the test protocol is being followed accurately.

### 11.3. Step-by-Step Test Procedure Instructions

*Table 25. Step-by-step test procedure for TPS-VER-TP-11*

Step #	Description
1	The bidder personnel is presented in front of the generator with all the necessary tools to conduct a complete oil change and a swapping of the oil filter.



2	A functional checkout is completed for the generator and it can run for 5 minutes.
3	The generator is then turned off and the Engineer and the test bidder are allowed 15 minutes to conduct an inspection of the item.
4	Once the inspection is complete, the test engineer and the bidder signal to the bidder personnel to begin and a timer is started.
5	The bidder personnel must conduct a full oil change and a swap of the oil filter within the allocated time frame.
6	Once the maintenance has been completed, the bidder personnel is to signal to the test engineer and the bidder of the completed task and the timer is stopped.
7	All parties will conduct a visual inspection and a functional checkout of the generator where it can run for 5 minutes.
8	The generator is turned off following the functional checkout.
9	If the inspection is completed successfully, the bidder, and test engineer will approve the recorded time and sign the test report.

#### 11.4. Test Report

TPS-VER-TP Test Report			
Date (dd/mm/yyyy)		Time	
Testing Location			
Street No.		City	
Province		Country	
List of Test Equipment			Calibration Date
Name of Personnel			

Name of Bidder Authorized Person (Bidder Test Engineer)				
Name of Test Engineer				
Family of Generator	4 to 6 kW	12 to 18 kW	25 to 35 kW	50 to 70 kW

Step #	Description	Test Engineer Initials	TPS Bidder Initials
1	The bidder personnel is presented in front of the generator with all the necessary tools to conduct a complete oil change and a swapping of the oil filter.		
2	A functional checkout is completed for the generator and it can run for 5 minutes.		
3	The generator is then turned off and the Engineer and the test bidder are allowed 15 minutes to conduct an inspection of the item.		
4	Once the inspection is complete, the test engineer and the bidder signal to the bidder personnel to begin and a timer is started.		
5	The bidder personnel must conduct a full oil change and a swap of the oil filter within the allocated time frame.		
6	Once the maintenance has been completed, the bidder personnel is to signal to the test engineer and the bidder of the completed task and the timer is stopped.		
7	All parties will conduct a visual inspection and a functional checkout of the generator where it can run for 5 minutes.		
8	The generator is turned off following the functional checkout.		

9	If the inspection is completed successfully, the bidder and test engineer will approve the recorded time and sign the test report.		
Final Test Result		Pass / Fail	
Date and Time of Result			

X

Bidder Test Engineer

X

Date

X

Test Engineer

X

Date

**TACTICAL POWER SYSTEM  
(TPS)**

**REQUEST FOR INFORMATION (RFI)  
SOLICITATION NO: W8476-206276/D**

**STATEMENT OF WORK (SOW)**

**ANNEX A**

**TO**

**VOLUME 2 - ACQUISITION**

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- Appendix AB – Tactical Power System Requirement Verification Matrix (TPS-RVM)
- Appendix AC – TPS Deliverable List (to be issued later)
- Appendix AD – Contract Data Requirement List (CDRL) (to be issued later)
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- Appendix AF – Commercial Engineering Drawings and Associated Lists (to be issued later)
- Appendix AG - Generic Statement of Work (SOW) for Publications (to be issued later)



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## 1.0 INTRODUCTION

### 1.1 General

1.1.1 The Tactical Power System (TPS) will provide the Land Forces with operationally reliable and safe electric power systems, while minimizing logistical demands and environmental impacts, to be used for Headquarters, Communications, Logistics and other tactical troop concentrations during national emergencies, training and operations overseas.

1.1.2 *Strong, Secure, Engaged* (SSE) articulates how the Government of Canada can call upon the Canadian Armed Forces (CAF) to undertake missions for the protection of Canada and Canadians. The policy states that the CAF will be prepared to simultaneously deploy to simultaneously defend Canada, meet NORAD obligations, meet NATO commitments, and contribute to nine international deployments. This predicates a need for over 7000 personnel in multiple locations. In addition to deployments, equipment is also needed to support training. Electrical power generation systems are mission critical equipment for land forces to conduct operations in all environments. SSE outlines the approach and methodology for the new direction of Defense priorities. The TPS project supports three SSE initiatives:

- a. Initiative 41. “Improve the Army’s ability to operate in remote regions by investing in modernized communications, shelters, power generation, advanced water purification systems, and equipment for austere environments.”<sup>1</sup>
- b. Initiative 64. “Improve the capabilities of the Joint Deployable Headquarters and Signals Regiment, including the portable structures that house the headquarters when deployed and the equipment employed by that headquarters for command, control, and communications.”<sup>2</sup>
- c. Initiative 102. “Examine alternative energy options and their potential use for operations.”<sup>3</sup> Reduce carbon footprint through green infrastructure and focus on energy efficiency.

To accomplish its mission objectives, the CAF requires an efficient, modernized electrical power generation and distribution system for tactically deployed forces on operations and training. While electrical power is required by all components of the CAF, the Canadian Army (CA) will be the predominant user. The level at which the CA trains to fight is at the brigade

<sup>1</sup> *Strong, Secure, Engaged* Canada’s Defence Policy 2017, p.37.

<sup>2</sup> Ibid, 41.

<sup>3</sup> Ibid, 76.

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group level. “The brigade group consists of approximately 4,800 soldiers, organized in eight major units including Artillery, Armour, Infantry, Engineer, and Combat Service Support. Combinations of these units operate together in “battle groups” to provide the joint force with the requisite firepower, mobility, protection, sustainment, and command and control functions to effectively coordinate their employment.”<sup>4</sup> The TPS will support the brigade group level and below, as well as non-CA elements, with the necessary general-purpose electrical power for mission critical equipment. The CAF is more capable than ever before due to giant leaps in technology including digitalization of our headquarters at all levels. Nonetheless, this technology dependency forces the CAF to rely heavily on an assured and uninterrupted energy supply.

1.1.3 The TPS will facilitate the operational requirement from electrical power needed in deployed environment while minimizing logistical demands and environmental impacts. The TPS consists of Sub-Systems and Ancillaries as listed below, with definitive specifications covered in Appendix AA – Tactical Power System - Requirement Verification Matrix (TPS-RVM):

1.1.4 Tactical Power System must consist of the following Subsystems:

- Diesel Generators;
- Power Distribution & Management; and
- Energy Storage Units (ESU);

**The ESU is considered as ancillary equipment as it will not be part of all TPS configurations.**

## 1.2 Scope

1.2.1 This Acquisition Statement of Work (SOW) describes the work required for the development, production, qualification, and delivery of the TACTICAL POWER SYSTEM (TPS) by the Contractor.

1.2.2 This SOW does not include work related to In-Service Support (ISS) as this work will be covered under the ISS SOW. ISS is defined as all activities, including, but not limited to, engineering services (such as maintenance, repair, test and upgrade), logistics (such as parts supply, documentation and training) and related management functions, necessary to maintain a CAF platform throughout its service life.

<sup>4</sup> *Strong, Secure, Engaged* Canada’s Defence Policy 2017, p.36.

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- 1.2.3 The TPS project will procure safe, reliable, modular, scalable Tactical Power Systems to be deployed in austere environments.
- 1.2.4 The TPS will be pivotal in enabling command and control for ongoing training and domestic and international operations.
- 1.2.5 The firm quantities and options of TPS are outlined in Appendix AB TPS Deliverable List under the Table 1 - TPS Sub-Systems and Ancillaries Quantity List.
- 1.2.6 The schedule for the Initial Operational Capacity (IOC) and Full Operational Capability (FOC) deliverable quantities is outlined in Appendix AB TPS Deliverable List under the Table 2 - TPS Sub-Systems and Ancillaries Delivery Schedule.
- 1.2.7 Subject to Contracting Authority/Technical Authority approval, the agreed optional quantities of TPS are outlined in Appendix AB TPS Deliverable List under the Table 1 - TPS Sub-Systems and Ancillaries Quantity List.

### 1.3 Acronyms and Abbreviations

- 1.3.1 Unless otherwise specified in this document, a "day" will be considered a calendar day.
- 1.3.2 The following list of acronyms and abbreviations are applicable to this SOW:

AECTP	Allied Environmental Conditions Testing Publications
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
CAF	Canadian Armed Forces
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CFSS	Canadian Forces Supply System
CFTO	Canadian Forces Technical Order
CI	Configuration Items
CJOC	Canadian Joint Operations Command
CM	Configuration Management
CMO	Configuration Management Organization
CMP	Configuration Management Plan
COTS	Commercial Off-the-Shelf
CPDS	Central Power Distribution System
CSA	Canadian Standards Association
CSH	Central Stock Holdings

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DAOD	Defence Administrative Orders and Directives
DCIEM	Defence and Civil Institute of Environmental Medicine
dBA	Decibels
DND	Department of National Defence
DID	Data Item Descriptions
DIR	Document Information Record
DR	Design Review
EBS	Equipment Breakdown Structure
ECP	Engineering Change Proposal
EHSA	Environmental Health and Safety Assessment
ESD	Electrostatic Discharge
FAIT	First Article Inspection Test
FAU	First Article Unit
FCA	Functional Configuration Audit
FDA	Final Design Acceptance
FED-STD	Federal Standard
FOC	Full Operating Capability
FPU	First Production Unit
FSR	Field Service Representative
FTP	File Transfer Protocol
GFCI	Ground Fault Circuit Interrupter
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GSM	Government Supplied Material
HE&UT	Human Engineering and User Trial
TPS	TACTICAL POWER SYSTEM
TPS-RVM	TACTICAL POWER SYSTEM Requirement Verification Matrix
IECS	Improved Environmental Clothing System
ILS	Integrated Logistics Support
IOC	Initial Operating Capacity
IP	Ingress Protection
IPC	Initial Provisioning Conference
ISO	International Organization for Standardization
ISS	In-Service Support
LRU	Line Repair Units
MCOTS	Modified Commercial Off-the-Shelf
MHE	Material Handling Equipment
MIL-HDBK	Military Handbook
MILPRF	Military Performance Specification
MIL-STD	Military Standard
MOC	Military Occupation Code
MS	Microsoft

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MTBF	Mean Time Between Failures
NATO	North Atlantic Treaty Organization
NDQAR	National Defence Quality Assurance Representative
NEMA	National Electrical Manufacturers Association
NOR	Notice of Revision
NSN	NATO Stock Number
OEM	Original Equipment Manufacturer
PCA	Physical Configuration Audit
PDR	Preliminary Design Review
PM	Project Manager
PMP	Project Management Plan
PPE	Personal Protection Equipment
PRM	Progress Review Meeting
QMS	Quality Management System
QTP	Qualification Testing Program
RFC	Request for Clarification
RFD	Request for Deviation
RFW	Request for Waiver
RVMP	Requirements Verification Matrix Plan
SAE	Society of Automotive Engineers
SCC	Standard Council of Canada
SCN	Specification Change Notice
SE	System Engineering
SEM	System Engineering Management
SEMP	System Engineering Management Plan
SOW	Statement of Work
SRR	System Requirements Review
STANAG	Standardization Agreement
STTE	Special Tools and Test Equipment
UII	Unique Identification of Item
ULC	Underwriters Laboratory of Canada
WBS	Work Breakdown Structure

## 1.4 Concept of Operations

- 1.4.1 The TPS purpose will provide land-based elements (including RCAF, medical, or other organizations operating on land) a rapidly deployable, reliable source of general purpose power to allow freedom from civilian power grids, both in Canada and abroad. Typical loads include, but are not limited to, radios, computers, the climate control equipment they will be used within, and recharging numerous types of equipment.

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- 1.4.2 It will be regularly moved around the battlefield and support small scale deployments for extended periods of time. It may also form the first building block of power for larger, static deployments (such as the camp in Kandahar, Afghanistan) until other projects and initiatives take over. In those case, loads will become significantly larger as amenities such as accommodation or ablution facilities become available.
- 1.4.3 The inherent portability and modularity of the system makes it suitable for use across multiple stakeholders as ruggedized electrical power systems in harsh climatic and austere conditions.
- 1.4.4 Deployment of the TPS will be by road, rail, sea, or air, packed in a range of cargo containers specified by the Technical Authority. The TPS cargo containers, as described in the Stowage Plan section of the SOW, will be moved using in-service CAF Material Handling Equipment (MHE) assets.
- 1.4.5 Additional details are included at Appendix AA.

## 1.5 Concept of Support

- 1.5.1 See the Statement of Work for the In-Service Support contract.

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## **2.0 APPLICABLE DOCUMENTS**

### **2.1 References**

- 2.1.1 Unless otherwise specified, the version of document listed herein will be that version in effect on the date of Request for Proposal (RFP) release.
- 2.1.2 For documents that are revised after the date of RFP release due to changes in law and regulations, the revised version will apply.
- 2.1.3 Any standards listed within this SOW which are publicly available will not be provided by Canada.

### **DND Publications**

B-GA-007-002/AF-001	TECHNIQUES AND EQUIPMENT
D-01-100-215/SF-000	SPECIFICATION FOR PREPARATION OF MATERIEL CHANGE NOTICES
D-01-400-002/SF-000	SPECIFICATION FOR LEVELS OF ENGINEERING DRAWINGS AND ASSOCIATED LISTS
D-02-002-001/SG-001	CANADIAN FORCES STANDARD IDENTIFICATION MARKING OF CANADIAN MILITARY PROPERTY
D-80-001-204/SF-001	“SPECIFICATION FOR CLOTH, COATED, WATERPROOF, WEATHER RESISTANT, 460 G/M <sup>2</sup> ” (2012-08-10)
DCIEM 98-CR-15	DEFENCE AND CIVIL INSTITUTE OF ENVIRONMENTAL MEDICINE
DND DWG 9776280-1	SHIPPING AND STORAGE CONTAINER, MISCELLANEOUS EQUIPMENT

### **Other Documents**

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ANSI/UL 263	FIRE RESISTANCE RATINGS
ASTM D-6751	STANDARD SPECIFICATION FOR BIODIESEL FUEL BLEND STOCK (B100) FOR MIDDLE DISTILLATE FUELS
ASTM E-119	STANDARD TEST METHODS FOR FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIALS
CAN/CGSB-3.517	AUTOMOTIVE LOW-SULFUR DIESEL FUEL
CSA C22.1-10	GROUNDING AND BONDING
CSA C22.2 NO. 0.3	“TEST METHODS FOR ELECTRICAL WIRES AND CABLES”
CSA C22.2 NO. 43-13	GROUND AND BONDING EQUIPMENT
DEF STAN 00-35	DEFENCE STANDARD: ENVIRONMENTAL HANDBOOK FOR DEFENCE MATERIEL (PART 5)/3 INDUCED MECHANICAL ENVIRONMENTS
EIA-649	CONFIGURATION MANAGEMENT, REVISION B, APRIL 2011
FED-STD-191A	FEDERAL TEST METHOD STANDARD 191A-593I
FED-STD-595C	FEDERAL STANDARD COLORS USED IN GOVERNMENT PROCUREMENT
ISO 3864-1	“GRAPHICAL SYMBOLS – SAFETY COLOURS AND SAFETY SIGNS – PART 1: DESIGN PRINCIPLES FOR SAFETY SIGNS IN WORKPLACES AND PUBLIC AREAS
ISO 7010	“GRAPHICAL SYMBOLS – SAFETY COLOURS AND SAFETY SIGNS USED IN WORKPLACES AND PUBLIC AREAS”
MIL-HDBK-454	MILITARY HANDBOOK GENERAL GUIDELINES FOR ELECTRONIC EQUIPMENT



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MIL-PRF-24667C	PERFORMANCE SPECIFICATION COATING SYSTEM, NON-SKID, FOR ROLL, SPRAY, OR SELF-ADHERING APPLICATION
MIL-STD-461F	INTERFACE STANDARD REQUIREMENTS FOR THE CONTROL OF ELECTROMAGNETIC INTERFERENCE CHARACTERISTICS OF SUBSYSTEMS AND EQUIPMENT
MIL-STD-810G	TEST METHOD STANDARD ENVIRONMENTAL ENGINEERING CONSIDERATIONS AND LABORATORY TESTS
MIL-STD 1472G	DESIGN CRITERIA STANDARD HUMAN ENGINEERING
MIL-STD-1474D	DESIGN CRITERIA STANDARD NOISE LIMITS
MIL-STD-3009	INTERFACE STANDARD LIGHTING, AIRCRAFT, NIGHT VISION IMAGING SYSTEM (NVIS) COMPATIBLE
NATO STANAG 4370	ALLIED ENVIRONMENTAL CONDITIONS TESTING PUBLICATIONS (AETCP) 230 Ed 1, Leaflet 2311/1

## 2.2 TPS - Requirements Verification Matrix (TPS-RVM)

2.2.1 Appendix AA – TACTICAL POWER SYSTEM Requirement Verification Matrix (TPS-RVM) provides comprehensive and detailed descriptions of the specific TPS technical and performance requirements.

2.2.2 The Contractor must deliver TPS that complies to the TPS-RVM.

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### **3.0 CONTRACT DELIVERABLE DATA**

#### **3.1 Data Item Descriptions (DID) and Contract Data Requirements List (CDRL)**

- 3.1.1 The Contractor must prepare and deliver all data specified in each DID and associated CDRL.
- 3.1.2 Upon receipt of Canada's comments, the Contractor must revise and resubmit all applicable data items as specified in the CDRL instructions.
- 3.1.3 The descriptions and field contents of the CDRL are provided in Appendix AC – Contract Data Requirement List (CDRL).
- 3.1.4 The descriptions and field contents of the DIDs are provided in Appendix AD – Data Item Description (DID).
- 3.1.5 The contractor must revise and re-submit all data deliverables within 15 days from the receipt of TA comment on the data deliverable.

#### **3.2 Delivery of Data**

- 3.2.1 Unless otherwise specified in a DID, the Contractor must prepare all data delivered under this SOW in Microsoft Office or Adobe formats/versions, or other formats/versions acceptable to DND.
- 3.2.2 The Contractor must provide a secure File Transfer Protocol (FTP) site to allow sharing/access of documents with DND.

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## 4.0 PROJECT MANAGEMENT

### 4.1 General

4.1.1 The Contractor must establish, provide and maintain a Project Management capability to:

- Manage the project scope, risks, cost, schedule and quality;
- Provide data and deliverables; and
- Perform financial management and contract administration.

4.1.2 The Contractor must implement and maintain the Project Management Plan for the duration of the Contract. The Project Management Plan must show the integration of Project Plans (System Engineering Management, Configuration Management, Integrated Logistic Support Management, Risk Management, Quality Management and the In Service Support management Plans). The contractor must closely monitor and implement Project Plans throughout the lifecycle to ensure a smooth transition between the acquisition and the ISS phases.

4.1.3 The Contractor must co-ordinate the activities of both the Acquisition and ISS Contracts so that the outcomes of one are supportive and consistent with the other.

### 4.2 Project Management Organization Chart

4.2.1 The Contractor must establish, provide and maintain a project management organization chart to plan, execute and control all Work in accordance with cost, schedule and performance requirements of the TPS Acquisition and ISS Contracts to:

- Interface and co-ordinate with Canada; and
- Plan and control the work of subcontractors as required.

4.2.2 The Contractor must designate by name a Project Manager (PM) before the kick-off meeting with authority within the Contractor's organization to manage all work required under the Acquisition Contract and ISS Contract until Full Operation Capability (FOC).

4.2.3 Once FOC has been achieved, the PM responsibilities must be transferred and controlled through the ISS Contract.

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4.2.4 The PM must have a minimum of 2 years of experience within the last 10 years as a project manager on military projects for: power systems, subsystems and ancillary equipment; or repair and overhaul (R&O) work.

4.2.5 The Contractor's PM must be the primary point of contact with the Technical Authority and Contract Authority for all issues related to the Work and Contract.

### **4.3 Project Management Plan (PMP)**

4.3.1 The Contractor must prepare and submit a PMP in accordance with CDRL/DID TPS-ACQ-PM-01, Project Management Plan.

4.3.2 The contractor must maintain and make appropriate amendments to the approved PMP and Master Project Schedule throughout the term of the contract to reflect current and planned project activities. The contractor must submit all revisions of the PMP and the schedule updates to Technical Authority and Contracting Authority for review and approval.

### **4.4 Project Scheduling**

4.4.1 The Contractor must prepare and submit a Work Breakdown Structure (WBS) in accordance with CDRL/DID TPS-ACQ-PM-02, Work Breakdown Structure.

4.4.2 The Contractor must use the approved WBS in executing the delivery of the Work on this Contract.

4.4.3 The Contractor must prepare and submit a TPS Master Project Schedule in accordance with CDRL/DID TPS-ACQ-PM-03, TPS Master Project Schedule.

4.4.4 The Contractor must include all the Acquisition Contract related activities and Integrated Logistics Support (ILS) requirements of the ISS Contract in the TPS Master Project Schedule.

4.4.5 The Contractor must baseline the TPS Master Project Schedule at the first Progress Review Meeting (PRM).

4.4.6 The Contractor must obtain written approval from the Technical Authority prior to revising the baseline TPS Master Project Schedule.

4.4.7 The Contractor must manage, track, and report actual progress against the approved baseline TPS Master Project Schedule.

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4.4.8 Changes to the Contractor's TPS Master Project Schedule will not preclude compliance with the requirements of the CDRL.

#### **4.5 Risk Management**

4.5.1 The Contractor must conduct Risk Management as described in the PMP under risk and issue management.

4.5.2 The Risk Management Plan is a component of the PMP and must be implemented in a manner providing visibility to Canada regarding the risks affecting TPS Project objectives including cost, schedule, quality and TPS technical performance.

4.5.3 The Contractor must input and manage all risks and issues identified by the Contractor and Canada during the life of the Contract in accordance with the Contractor's risk management processes identified in the PMP.

4.5.4 The Contractor must maintain a Risk Register and provide Canada with 24/7 access to it through the secure FTP site.

4.5.5 The Contractor must enter all risks identified by the Contractor and Canada into the Risk Register.

#### **4.6 Meetings**

##### **4.6.1 General**

4.6.1.1.1 Meetings must be held at the Contractor's facilities, DND sites, or a location mutually agreed to by both Canada and the Contractor.

4.6.1.1.2 For meetings held at Contractor facilities, the Contractor must provide a meeting room, cleared to the appropriate security level, of a size sufficient to accommodate the attendees.

4.6.1.1.3 The Contractor must make available when needed a meeting room large enough for a minimum of 15 people to attend meetings involving DND, PWGSC, Industry Canada, and the Contractor. The meeting room must be equipped with a computer and projector to enable presentations.

4.6.1.2 The Contractor must combine site visits and meetings whenever possible.

4.6.1.3 The Contractor must coordinate meeting arrangements with the Contracting Authority or Technical Authority.

4.6.1.4 The Contractor and Canada will co-chair all meetings.

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- 4.6.1.5 The Contractor or Canada, by mutual agreement, may convene video or telephone conferences in lieu of face-to-face meetings.
- 4.6.1.6 As an alternative to personnel travelling to attend a meeting, the Contractor must have internet access and the ability to use a speaker phone (for voice) and Internet (for video) to support discussions with the Technical Authority, Procurement Authority, and Contract Authority.
- 4.6.1.7 The Contractor must ensure that subject matter experts, having the requisite expertise to address all aspects of the subjects being discussed, attend the meetings.
- 4.6.1.8 The Contractor must prepare and submit a Meeting Agenda for all meetings including system reviews in accordance with CDRL/DID TPS-ACQ-PM-04, Meeting Agenda.
- 4.6.1.9 The Contractor must prepare and submit Meeting Minutes for all meetings including system reviews in accordance with CDRL/DID TPS-ACQ-PM-05, Meeting Minutes.
- 4.6.1.10 The Contractor must provide supporting documentation, schedules, lists, test reports, drawings, specifications, design analysis and any other pre and post review data as appropriate in support of meetings a minimum of 10 days prior to the meeting.
- 4.6.2 **Kick-off Meeting**
- 4.6.2.1 The Contractor must prepare for and participate in a project Kick-off Meeting, no later than 30 days after Contract award, at which an integrated approach will be taken to the Acquisition Contract and the ISS Contract.
- 4.6.2.2 The Contractor must submit the Kick-Off meeting agenda in accordance with CDRL/DID TPS-ACQ-PM-04, Meeting Agenda.
- 4.6.2.3 The purpose of the Kick-off Meeting is to review and clarify project management, system engineering, configuration management, and the ISS management plan.
- 4.6.3 **Progress Reports**
- 4.6.3.1 The Contractor must provide Project Progress Reports in accordance with CDRL/DID TPS-ACQ-PM-06, Project Progress Report.
- 4.6.4 **Progress Review Meetings (PRMs)**

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- 4.6.4.1 The Contractor must be responsible for scheduling, planning, and organizing the PRMs.
- 4.6.4.2 The Contractor must convene the first PRM within 30 days following the Kick-off Meeting and every 3 months thereafter.
- 4.6.4.3 Whenever possible, the Contractor must coordinate and hold concurrent meetings with the ISS PRMs, unless otherwise mutually agreed, to formally report project progress to Canada.
- 4.6.5 **Other Meetings**
  - 4.6.5.1 In addition to the meetings specified above, the Contractor and/or Canada may schedule reviews, such as conferences, briefings and technical meetings, to assist in achieving the requirements of the SOW.
  - 4.6.5.2 The Contractor must schedule such meetings in conjunction with PRMs whenever possible.
- 4.6.6 **Action Items**
  - 4.6.6.1 The Contractor must record all action items arising from meetings, reviews or correspondence. The minutes of the meeting must be reviewed at the end of the meeting.
  - 4.6.6.2 The Contractor must establish and maintain an Action Item Register to monitor issues, assign responsibility, direct action and track status.
  - 4.6.6.3 The Contractor must review the additions and changes to the Action Item Register at the conclusion of any meeting where additions and changes were made, and document them in the Meeting Minutes.
  - 4.6.6.4 The Contractor must collect, document and preserve all pertinent information in the Action Item Register.
  - 4.6.6.5 The Contractor must retain all information in the Action Item Register accessible through the secure FTP site for the duration of the Contract.
- 4.6.7 **Initial Operating Capability (IOC)**
  - 4.6.7.1 The TPS project will be considered to have reached IOC when the Contractor delivers, with DND approval, the following:

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- The TPS Sub-Systems and Ancillaries as listed in Appendix AC – TPS Deliverable List under the column for IOC Quantity in Table 2 – TPS Sub-Systems and Ancillaries Delivery Schedule;
- The ILS Deliverables as listed in Appendix AC – TPS Deliverable List under the column for IOC in Table 3 - TPS ILS Schedule;
- Spares (including Sub-Systems, Ancillaries, LRUs, repair parts and consumables), Mobile Repair Kits, STTE, and any other required ILS items;
- Instructional packages for operators and maintainers to allow CAF curriculum development and implementation.
- A minimum of 5 percent of the spares/provisioning items (based on DND decisions during the IPC);
- First Initial Cadre Training package; and
- Technical Publications (English only).

4.6.7.2 The Contractor must complete IOC within 90 days after Final Design Acceptance (FDA) or within 2 years of Contract award whichever is earlier.

4.6.7.3 At FDA, DND will identify which Stowage Plan the Contractor must use for IOC TPS delivery.

4.6.7.4 At IOC, DND will identify all the TPS complex types, quantities, and locations for the balance of TPS equipment.

4.6.7.5 At IOC, DND will identify the Stowage Plan the Contractor must use for TPS deliveries before Full Operating Capability (FOC).

#### 4.6.8 **Full Operating Capability (FOC)**

4.6.8.1 The TPS project will be considered to have reached FOC when the Contractor delivers, with DND approval, the following:

- All TPS Sub-Systems and Ancillaries listed in Appendix AC – Equipment Deliverable List under the column for FOC Quantity in Table 2 – TPS Sub-System and Ancillaries Delivery Schedule have been delivered;
- The ILS Deliverables as listed in Appendix AB – TPS Deliverable List under the column for FOC in Table 3 - TPS ILS Schedule have been delivered;



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- The balance of the remaining spares (including Sub-Systems, Ancillaries, LRUs, repair parts and consumables) and support not supplied as part of the IOC have been delivered;
- Technical Publications and drawings have been provided to DND Document Information Record (DIR), and are available in both official languages via the DND publications depot website; and
- Remaining Initial Cadre Training has been delivered and subjected by DND to training evaluation and has been modified as necessary.

4.6.8.2 The Contractor must achieve FOC within 24 months of IOC.

## **5.0 SYSTEMS ENGINEERING**

### **5.1 Systems Engineering (SE) Concept**

**5.1.1** System Engineering is an interdisciplinary approach that encompasses a sequence of engineering activities and decisions that transform operational need into an operational system with the verified performance needed to provide the requirement capability.

**5.1.2** This section describes the work to be performed by the Contractor in support of design, development, integration, development of First Article Unit (FAU), qualification, verification and acceptance of the TPS including engineering support throughout the production and equipment life cycle.

### **5.2 General Requirements**

#### **5.2.1 Equipment Breakdown Structure (EBS)**

5.2.1.1 The Contractor must prepare and submit an EBS in accordance with CDRL/DID TPS-ACQ-SE-01, Equipment Breakdown Structure (family tree).

5.2.1.2 The Contractor must maintain the EBS as the design evolves indicating changes.

### **5.3 Systems Engineering (SE)**

**5.3.1** The Contractor must develop and implement TPS SE processes to ensure the SE effort is properly documented and controlled for the duration of the Contract. The SE processes must include the following:

- Requirement Review;

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- Development of Requirement Verification Matrix;
- Link each requirement to certain test standard or test procedure;
- Develop verification plan including test plan and test procedures;
- Develop Preliminary Engineering Drawings and Technical Data Packages;
- Develop the First Article Unit (FAU);
- Conduct Human Engineering and User Trial;
- Conduct equipment qualification;
- Conduct failure investigation analysis and issue failure investigation report when needed;
- Redesign, retrofit the FAU and repeat the test when needed;
- Develop First Article Testing and Inspection Report;
- Baseline the qualified FAU hereinafter will be known as First Production Unit;
- Conduct Functional Configuration Audit & Physical Configuration Audits (FCA/PCA);
- Baseline Engineering Drawings and develop Technical Data Packages; and
- Provide engineering support throughout the production and equipment lifecycle.

#### **5.4 Systems Engineering Management Plan (SEMP)**

**5.4.1** The Contractor must prepare and submit a SEMF in accordance with CDRL/DID TPS-ACQ-SE-02, Systems Engineering Management Plan.

**5.4.2** The Contractor must provide a detailed schedule identifying when and where all post contract award TPS system requirements, included under the TPS-RVM, will be verified.

**5.4.3** The Contractor must use the approved SEMF to implement and maintain the Systems Engineering Management Plan throughout the project lifecycle.

#### **5.5 Systems Engineering (SE) Reviews**

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### 5.5.1 General

- 5.5.1.1 The Contractor must conduct technical reviews, meetings and audits in accordance with the approved SEMP and the scheduling requirements of this SOW.
- 5.5.1.2 In addition to regularly scheduled meetings, additional meetings can be requested by either party to maintain technical oversight of the project and to address risk or problem areas.
- 5.5.1.3 The Contractor must document, implement and adhere to a technical problem resolution and corrective action process in accordance with the approved PMP and also, the ISS SOW, Technical Problem Management.
- 5.5.1.4 The Contractor must prepare and submit a Contractor Requirements Verification Matrix (CRVM) in accordance with CDRL/DID TPS-ACQ-SE-03, Contractor Requirements Verification Matrix.
- 5.5.1.5 The Contractor must track all technical problems are tracked in accordance with Section **Error! Reference source not found.**, Action Items.

### 5.5.2 System Reviews

- 5.5.2.1 The Contractor must identify, schedule and conduct the following System Reviews in accordance with the approved SEMP by the Technical Authority:
  - System Requirements Review (SRR);
  - Preliminary Design Review (PDR);
  - Design Reviews (DRs) as required;
  - Human Engineering and User Trial (HE&UT);
  - Qualification Testing Plan (QTP);
  - First Article Inspection Testing (FAIT); and
  - Critical Design Review (CDR)

#### 5.5.2.2 System Requirements Review (SRR)

- 5.5.2.2.1 The purpose of the System Requirement Review (SRR) is to baseline the requirement and to ensure a mutual understanding between different project stockholders on the concept of operation and support for the TPS, how the equipment will be used in the

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field, and to define the acceptable equipment performance and the fail/pass criteria for each requirement prior the development of CRVM by the contractor.

5.5.2.2.2 The Contractor must conduct a SRR within 30 days of the Kick-Off Meeting.

5.5.2.2.3 The SRR must be conducted at the Contractor's facilities or at a location mutually agreed upon with Canada.

5.5.2.2.4 The Contractor must prepare and submit a SRR Report in accordance with CDRL/DID TPS-ACQ-SE-04, Systems Requirements Review Report that provides the details of the SRR.

### **5.5.2.3 Preliminary Design Review (PDR)**

5.5.2.3.1 The purpose of the PDR is to permit the Technical Authority to closely observe the Contractor's preliminary design; to evaluate the progress, technical adequacy and risk resolution (on a technical, cost, and schedule basis); and to establish the preliminary design baseline for the TPS.

5.5.2.3.2 The Contractor must present the solution to each approved change – as a result of the SRR at the PDR – having sufficient information to enable DND to provide feedback and comments on the implemented solutions.

5.5.2.3.3 The Contractor must conduct PDR within 30 days following approval of the SRR in accordance with CDRL/DID TPS-ACQ-SE-05, Preliminary Design Review Plan.

5.5.2.3.4 The Contractor must present and provide any technical data requested by the Technical Authority that would be relevant to the conducting of the PDR at least ten 10 days in advance of the PDR.

### **5.5.2.4 Design Reviews (DR)**

5.5.2.4.1 The purpose of a DR is to permit the Technical Authority and the Contractor to meet to discuss technical issues of importance.

5.5.2.4.2 A DR may be requested by either party and must be conducted by the Contractor.

### **5.5.2.5 Human Engineering and User Trial (HE&UT)**

5.5.2.5.1 The purpose of the HE&UT is to incorporate user feedback and to eliminate any unsafe and unintended human interaction in order to influence the design of the TPS

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by allowing the TPS to be used by troops during an actual training exercise at a military base.

- 5.5.2.5.2 The Contractor must provide, at its own expense, the TPS Sub-Systems and Ancillaries listed in Appendix AB – TPS Deliverable List under the column for HE&UT in Table 2 – TPS Sub-Systems and Ancillaries Delivery Schedule.
- 5.5.2.5.3 The TPS Sub-Systems and Ancillaries must be consistent with the PDR preliminary baseline as augmented by any design reviews.
- 5.5.2.5.4 The Contractor must be ready to ship the TPS Sub-Systems and Ancillaries for the HE&UT within 120 days after the PDR.
- 5.5.2.5.5 The Technical Authority will advise the actual shipping date 30 days prior to the start of the HE&UT.
- 5.5.2.5.6 The Contractor must provide a minimum of two Field Service Representatives (FSRs) and one human engineering specialist during the HE&UT to provide user familiarization, instructions and guidance on the set-up, operation, tear-down, to collect observation and user trial data and to provide direction on packaging the TPS.
- 5.5.2.5.7 The FSRs must provide 2 days of user familiarization to the User Trial troops on the use of the equipment.
- 5.5.2.5.8 The Contractor must comply with Department of National Defence (DND) policies, orders, directives, instructions and best practices when accessing DND owned or controlled lands, buildings or equipment
- 5.5.2.5.9 The duration of the HE&UT will be up to 10 working days.
- 5.5.2.5.10 The location of the HE&UT will be at CFB Gagetown, in Oromocto, New Brunswick, Canada.
- 5.5.2.5.11 The Contractor must pack and ship the TPS to the Trial location and then its return to its facilities.
- 5.5.2.5.12 The Contractor must provide spares (including Sub-Systems, Ancillaries, Line Repair Units (LRUs), repair parts and consumables), Mobile Repair Kits, Special Tools and Test Equipment (STTE), and any other required ILS items necessary to support the HE&UT.

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5.5.2.5.13 The Contractor must prepare and submit a HE&UT Report in accordance with CDRL/DID TPS-ACQ-SE-06.

#### 5.5.2.6 **Critical Design Review (CDR)**

5.5.2.6.1 The purpose of the CDR is to optimize the develop design concept based on Performance capability, Reliability, Availability, Maintainability and Life Cycle Cost and to determine whether the detailed design of the TPS confirms with the baseline System Requirement Review (SRR).

5.5.2.6.2 The Contractor must conduct a CDR within 30 days following approval of the Human Engineering and User Trial Report.

5.5.2.6.3 The Contractor must conduct the CDR in accordance with CDRL/TPS-ACQ-SE-10, Critical Design Review Plan.

5.5.2.6.4 The Contractor must deliver the CDR baseline for final approval.

5.5.2.6.5 The manufacture of the First Production Unit (FPU) must be based on this final baseline design.

5.5.2.6.6 During the Critical Design Review, the contractor must include and present a Stowage Plan in accordance with the following:

- Appendix AA (TPS Concept of Operational Guidance to Industry) that outlines 6 three-phase distribution system configurations;
- The 10 HQSS complex types listed at Drawing Reference 126500 – HQSS Layout (to be issued).
- CDRL/DID TPS-ACQ-SE-11 Stowage Plan, for each of the 16 configurations/complex types listed above with the following cargo containers and pallet options:
  - Standard CAF Container – NSN 8145-21-914-4367
  - Aircraft Pallet - HCU-6/E 88 X 108" - 463-L Dual Rail pallet (NSN 1670-00-820-4896) in accordance with CFTO B-GA-007-002/AF-001

5.5.2.6.7 The Contractor must stow the TPS complex types in accordance with the approved Stowage Plan.

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- 5.5.2.6.8 The Contractor must ship the TPS complex types in accordance with the identified cargo containers in a short-term preservation status developed within the ISS Contract under CDRL/DID TPS-ISS-MS-03, Preservation and Preparation for Shipment Procedures.
- 5.5.2.6.9 Each component of the TPS (including any packaging) must be marked for identification purposes in accordance with CFTO D-02-002-001/SG-001 with the following exception that fabric components must be marked in accordance with DND DWG 8190124.
- 5.5.2.6.10 The Technical Authority will provide the NATO Stock Number for the TPS as required when it has been catalogued.
- 5.5.2.6.11 All instruments, decals, and data plates must be marked in metric units with imperial equivalent in brackets. Where international symbols are not possible, bilingual markings are required. Warning or precautionary data plates must be provided in bilingual format, English and French, to protect personnel or equipment.
- 5.5.2.7 Qualification and Testing Plan (QTP)**
- 5.5.2.7.1 The Contractor must prepare and submit to the Technical Authority a QTP in accordance with CDRL/DID TPS-ACQ-SE-07, Qualification and Testing Plan.
- 5.5.2.7.2 The QTP must start within 30 days prior to the HE&UT and must be completed within 90 days from the QTP start date.
- 5.5.2.7.3 The Contractor must prepare and submit a QTP Report that includes qualification test procedures in accordance with CDRL/DID TPS-ACQ-SE-08, Qualification Test Procedure(s).
- 5.5.2.8 First Article Inspection and Testing (FAIT)**
- 5.5.2.8.1 The Contractor must conduct the FAIT in accordance with CDRL/DID TPS-ACQ-SE-03, Contractor Requirement Verification Matrix within 30 days of completion of the QTP.
- 5.5.2.8.2 The Contractor must perform First Article Inspection and Testing (FAIT) on the first article units of each TPS Sub-Systems and Ancillaries equipment.
- 5.5.2.8.3 The Contractor must perform FAIT on the Mobile Repair Kits and STTE as defined in the ISS SOW.

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- 5.5.2.8.4 The Contractor must prepare and submit a FAIT Report in accordance with CDRL/DID TPS-ACQ-SE-09, First Article Inspection and Testing Report.
- 5.5.2.8.5 The Contractor must complete a Physical Configuration Audit (PCA) and the Functional Configuration Audit (FCA) in conjunction with the FAIT to confirm that the baseline First Article Unit hereinafter will be known as the First Production Unit (FPU) configuration matches the authorized technical documentation.
- 5.5.2.8.6 The PCA/FCA must be conducted within 30 days of submitting the FAIT Report.

### **5.5.3 Final Design Acceptance (FDA)**

- 5.5.3.4 Once the FPU is established and after the completion of Physical Configuration Audit and the Functional Configuration Audit (FCA/PCA); the Contractor must seek and receive FDA from the Technical Authority prior to the commencement of full production.

## **6.0 QUALITY MANAGEMENT**

### **6.1 Quality Management System**

- 6.1.1 The Contractor must have and apply a Quality Management System (QMS) compliant with the requirements in ISO 9001:2008 that defines and controls the systems, processes and product quality under this contract. The Contractor must notify the Technical Authority of any changes to the QMS Certification status of the Contractor.
- 6.1.2 The Contractor must ensure that the tests, trials and inspections collectively address all TPS quality requirements.

### **6.2 National Defence Quality Assurance Representative (NDQAR)**

- 6.2.1 Although the ultimate responsibility for quality of TPS and other contracted deliverables in terms of technical and performance compliance remains with the Contractor, Canada may conduct verification activities to ensure that the Contractor's quality plans and processes are implemented in a compliant manner to the SOW and are resulting in specified TPS product conformance levels. The verification activities will include, but not be limited to, witnessing/observing key quality conformance inspections, tests and trials, performing quality audits, and occasional witnessing of Contractor internal quality audits and audits of key subcontractors.
- 6.2.2 The Contractor must provide all the necessary assistance to the Technical Authority or NDQAR for conducting the verification activities. This assistance must include



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providing all inspection, test and trial activity plans in advance of operations to permit the Technical Authority or NDQAR identify events of interest to witness.

- 6.2.3 The Contractor must provide the Technical Authority or NDQAR access to its Quality System, facilities and work. The Technical Authority reserves the right to perform the verification activities at sub-contractors' facilities.
- 6.2.4 The Contractor must implement corrective measures to the Quality System elements to address any deficiencies or deviations from the prescribed or documented procedures or instances of practices which might have an adverse effect upon the quality of the TPS.

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## **7.0 CONFIGURATION MANAGEMENT (CM)**

### **7.1 General**

7.1.1 The Contractor must, throughout the period of this Contract, develop, implement and maintain CM processes for the TPS in accordance with EIA-649-B, Configuration Management, Revision B, April 2011.

7.1.2 The Contractor's CM must encompass the CM requirements of design, manufacturing, test, trials and support of the TPS, all pertinent documentation, software, physical media and physical parts representing or comprising the TPS.

7.1.3 As a minimum, the Contractor's CM must include the following elements:

- Configuration Management Plan (CMP);
- CM Organization;
- Configuration identification;
- Establishment of baselines;
- Configuration control;
- Configuration audits; and
- Subcontractor control.

7.1.4 The Contractor's CM for acquisition must be designed so as to seamlessly transition into the ISS Configuration Management Plan upon conclusion of the Acquisition Contract.

### **7.2 Configuration Management Plan (CMP)**

7.2.1 The Contractor must prepare and submit a CMP in accordance with CDRL/DID TPS-ACQ-CM-01, Configuration Management Plan.

7.2.2 The Contractor must provide any additional information required by the Technical Authority to understand the processes and procedures described or referred in the CMP.

7.2.3 The Contractor must perform CM for TPS in accordance with the approved CMP.

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7.2.4 Canada reserves the right to audit the Contractor's CM Program throughout the period of the Contract upon 15 days' notice.

7.2.5 The Contractor must implement any necessary measures to correct discovered discrepancies at its sole cost and expense.

### **7.3 Configuration Items (CI)**

7.3.1 The Contractor must select and recommend CIs to Canada for acceptance.

7.3.2 The Contractor must ensure these CIs are based on the proposed TPS and the maintenance concept that is anticipated for the life of the TPS.

7.3.3 The Contractor must prepare and submit changes to the CIs identified in the EBS.

### **7.4 Configuration Control and Change Management**

#### **7.4.1 General**

7.4.1.1 The Contractor must perform Configuration Control in accordance with the approved CMP.

#### **7.4.2 Request for Clarification (RFC)**

7.4.2.1 The purpose of a Request for Clarification (RFC) is to seek clarification from the DND Technical Authority of the TPS-RVM, where a specification is considered by the Contractor to be ambiguous, unclear, or is simply not understood.

7.4.2.2 The Contractor must submit a RFC in accordance with CDRL/DID TPS-ACQ-CM-02, Request for Clarification.

#### **7.4.3 Engineering Change Proposal (ECP)**

7.4.3.1 An ECP is required to propose and receive approval for any changes to the technical specification, configuration design, documentation or drawings that form part of the established baseline at the CDR.

7.4.3.2 The Contractor must prepare and submit an ECP as necessary in accordance with CDRL/DID TPS-ACQ-CM-03, Engineering Change Proposal.

7.4.3.3 Proposed ECPs may be either of two types of Classes:

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- Class I – engineering changes that affect fit, form or function – These may have an impact on functions, performance, compatibility with interfacing products, safety, environmental impact, frequency of maintenance, or the ability of the TPS to operate in a particular harsh environment. They may also impact price, delivery schedule or warranties; and
- Class II – engineering changes that are minor and the impact is sufficiently small that they do not impact any of the Class I factors.

7.4.3.4 The Contractor must obtain acceptance for Class I ECPs from the Contract Authority and Technical Authority as these may have a contractual implication.

7.4.3.5 The Contractor must obtain the Technical Authority concurrence of the classification of Class II ECPs before approving them.

7.4.3.6 The Contractor must be the approving authority for Class II ECPs.

7.4.3.7 The Contractor must establish and maintain a traceable process to track the effectiveness of engineering changes.

#### 7.4.4 **Specification Change Notice (SCN)**

7.4.4.1 An SCN is used to transmit and record the exact authorized change to a specification. Revisions to specifications can be inserted into an ECP and be approved as part of an ECP, or where that is not practical, submitted to the Technical Authority during ECP implementation.

7.4.4.2 If revisions to specifications are not processed as part of ECPs, then the Contractor must submit SCNs which provide an instruction to delete replaced wording and insert the newly authorized wording.

#### 7.4.5 **Request for Deviation (RFD)**

7.4.5.1 An RFD may be used when an item, prior to manufacture, does not conform to the approved configuration documentation.

7.4.5.2 The Contractor must prepare and submit the RFD in accordance with DND form 675, Waiver and Deviation.

7.4.5.3 The Contractor must not manufacture items that incorporate a known non-conformance from requirements unless an RFD has been approved by the Technical Authority.

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7.4.5.4 If the Contractor desires to manufacture a non-conforming configuration, it may prepare and submit an RFD, which clearly describes and contrasts the conforming and proposed configurations, seeking authorization from the Technical Authority.

#### 7.4.6 Request for Waiver (RFW)

7.4.6.1 An RFW is used when it is requested to waive a certain requirement that can't be met throughout the qualification process for the TPS.

7.4.6.2 The Contractor must prepare and submit the RFW in accordance with DND form 675, Waiver and Deviation.

7.4.6.3 The Contractor must not offer for acceptance items that incorporate a known departure from requirements unless an RFW has been approved by the Technical Authority and Contracting Authority.

7.4.6.4 If the Contractor desires to offer for delivery a non-conforming configuration, it may prepare and submit an RFW, which clearly describes and contrasts the conforming and offered configurations, seeking authorization from the Technical Authority.

#### 7.4.7 Notice of Revision (NOR)

7.4.7.1 Notices of Revision (NORs) define revisions to drawings, associated lists or other Contract referenced configuration documentation. NORs are required when these documents are not under the control of the ECP originator and will require revision after ECP acceptance.

7.4.7.2 In these circumstances the Contractor must prepare a NOR to control update of the affected documentation and submit a copy to the Technical Authority for their records.

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## **8.0 INTEGRATED LOGISTIC SUPPORT**

### **8.1 Logistics Support Analysis**

#### **8.1.1 Failure Prediction Report**

8.1.1.1 The Contractor must develop and submit for Technical Authority review and acceptance a Failure Prediction Report in accordance with CDRL/DID TPS-ACQ-LSA-01, Failure Prediction Report.

#### **8.1.2 Maintenance Task Lists (MTL)**

8.1.2.1 The Contractor must develop and submit MTL identifying TPS preventive and corrective maintenance tasks in accordance with CDRL/DID TPS-ACQ-LSA-02, Maintenance Task List. These must be in two parts:

- Part 1 – Corrective Maintenance Tasks
- Part 2 – Preventive Maintenance Tasks

#### **8.1.3 Interim Spare Parts List (ISPL)**

8.1.3.1 The Contractor must develop and submit for Technical Authority review and acceptance an ISPL in accordance with CDRL/DID TPS-ACQ—LSA-03, Interim Spare Parts List.

8.1.3.2 When developing the ISPL, the Contractor must take into consideration the predicted annual usage as described in CDRL/DID TPS-ACQ-LSA-01 and predicted item failure rates from the approved Failure Predication Report.

#### **8.1.4 Provisioning Parts Breakdown (PPB)**

8.1.4.1 The Contractor must develop and submit for review and acceptance a PPB in accordance with CDRL/DID TPS-ACQ-LSA-04, Provisioning Parts Breakdown.

8.1.4.2 When developing the PPB, the Contractor must take into consideration the predicted annual usage as described in CDRL/DID TPS-ACQ-LSA-01, and predicted item failure rates from the approved Failure Predication Report.

8.1.4.3 The PPB must be consistent with the illustrated parts list in the applicable Technical Publication developed under CDRL/DID TPS-ACQ-SP-02.

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8.1.4.4 Whenever there is a change to the provisioning data that have been submitted with the approved PPB, the Contractor must provide to the Technical Authority a Materiel Change Notices in accordance with D-01-100-215/SF-000, Specification for Preparation of Materiel Change Notices.

#### 8.1.5 **Supplementary Provisioning Technical Data (SPTD)**

8.1.5.1 The Contractor must prepare and submit for Technical Authority review and approval SPTD in accordance with CDRL/DID TPS-ACQ-LSA-05, Supplementary Provisioning Technical Data for any item requiring cataloguing.

8.1.5.2 The Technical Authority will inform the Contractor of assigned NSNs. The Contractor must incorporate the updates of NSNs in all related ILS products that contain NSNs, including but not limited to, labels, drawings, technical publications, and training materials.

#### 8.1.6 **Unique Identification and Standardized Marking of Material List (Equipment Identification Plate Data)**

8.1.6.1 The Contractor must develop and deliver a Unique Identification and Standardized Marking of Material List (Equipment Identification Plate Data) in accordance with CDRL/DID TPS-ACQ-LSA-06, Unique Identification and Standardized Marking of Materiel List (Equipment Identification Plate Data) for all items requiring identification with the Unique Identification of Items (UII) mark.

8.1.6.2 The Contractor must apply the UII mark to the item for those items marked with identification plates.

#### 8.1.7 **Special Tools and Test Equipment (STTE)**

8.1.7.1 The Contractor must develop and submit for Technical Authority review and acceptance a STTE in accordance with CDRL/DID TPS-ACQ-LSA-07, Special Tools and Test Equipment List.

8.1.7.2 When developing the STTE the Contractor must discuss with the Technical Authority how the geographic dispersal of TPS sites, and the number of equipment at each site, affects the number of STTE needed.

### 8.2 **Logistics Support Products**

#### 8.2.1 **Drawings**

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8.2.1.1 The Contractor must prepare and deliver to the Technical Authority a set of TPS Level 3 drawings and associated lists in accordance with CDRL/DID TPS-ACQ-SP-01, Drawings.

8.2.1.2 Drawing level definitions can be found in D-01-400-002/SF-000, Specification for Levels of Engineering Drawings and Associated Lists. The drawings and associated lists must be consistent with Appendix AE Commercial Engineering Drawings and Associated Lists.

8.2.1.3 The Contractor must provide bilingual drawings in English and French.

## 8.2.2 Technical Publications

8.2.2.1 The Contractor must prepare and deliver to the Technical Authority a set of Technical Publications in accordance with CDRL/DID TPS-ACQ-SP-02, Technical Publications.

8.2.2.2 The technical publications must be consistent with Appendix AF Generic Statement of Work (SOW) for Publications.

## 8.2.3 Validation of Technical Publications

8.2.3.1 The Contractor must validate during the HE&UT and the FCA/PCA phases the technical publications against the TPS to ensure that all content is correct, sufficient, feasible and suitable to the specified requirements and ultimate environment.

8.2.3.2 The Contractor must validate the operating and maintenance procedures including checkout, calibration, alignment, scheduled removal and replacement instructions, and associated check lists.

8.2.3.3 The Contractor must validate disassembly, cleaning, inspection, testing, repair, replacement, reassembly, troubleshooting, preventive maintenance checks and services, and similar maintenance procedures. In addition, all other data such as schematic diagrams, wiring data, and parts catalogues must be checked against source data to ensure the accuracy of such information.

8.2.3.4 Upon completion of the validation, the Contractor must submit for Technical Authority review and acceptance a Certificate of Validation in accordance with C-01-100-100/AG-006, Part 12.



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## 8.2.4 Official Languages and Translation Accuracy Check

- 8.2.4.1 The Contractor must provide and maintain all TPS technical publications, drawings and training material including video in both official languages – English and French in accordance with C-01-100-100/AG-006, Writing, Format and Production of Technical Publications, 1996-03-01, Part 2, Bilingual Requirements.
- 8.2.4.2 Bilingual documents must be published in side-by-side format as described in Figure 2-1-1 of C-01-100-100/AG-006.
- 8.2.4.3 The Contractor must not translate technical publications, drawings or training material until they have been validated in English by the Technical Authority.
- 8.2.4.4 The Contractor must subject all translated material to the Translation Accuracy Check (TAC) process prior to the production of the reproducible copy.
- 8.2.4.5 Upon each successful completion of the TAC, the Contractor must prepare and sign a Certificate of Translation Accuracy Check (refer to C-01-100-100/AG-006).

## 8.2.5 Retention of Drawings and Technical Publications

- 8.2.5.1 The Contractor must be responsible to provide an updated set of Drawings and Technical Publications in the original format to the DND for the purpose of retention and sustaining the equipment.

## 8.3 Training

### 8.3.1 Scope of Training

- 8.3.1.1 This section addresses Initial Cadre Training (ICT), and provision of training presentation material and video.

### 8.3.2 Training Plan

- 8.3.2.1 The Contractor must prepare and submit a Training Plan in accordance with CDRL/DID TPS-ACQ-SP-03, Training Plan for Technical Authority review and acceptance.

### 8.3.3 Initial Cadre Training (ICT)

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- 8.3.3.1 The Contractor must provide ICT for CAF personnel who will operate and/or maintain the TPS until CAF assumes all responsibility for steady-state training at FOC.
- 8.3.3.2 The DND Technical Authority will coordinate the selection of personnel to receive training, the scheduling of the training sessions, and the administration of travel and accommodations for DND employees only.
- 8.3.3.3 The Contractor must prepare and present training courses 10 times to a maximum of 30 CAF personnel each time. Approximately half of these personnel will be Operators and the other half will be Electrical Systems Generation Technicians, Materials Technicians, Vehicle Technicians, and/or Electro-optics Technicians. Personnel from the National Defence Headquarters (NDHQ), who will be involved in managing the TPS, may also attend as observers.
- 8.3.3.4 The training locations must be on CAF bases, such as, but not be limited to: Edmonton, Valcartier, Petawawa, Gagetown, Kingston, Borden, Montreal, Cold Lake, Winnipeg/Shilo, Bagotville, or Ottawa, or at the OEM's facility.
- 8.3.3.5 The first two ICT must be conducted approximately 30 days prior to the TPS IOC, so that it can be immediately put into use while the information is still fresh. The first two ICT must be conducted in English and location will be either Petawawa or Edmonton.
- 8.3.3.6 The remaining ICT's must be conducted by the Contractor at locations and dates to be selected by the Technical Authority. They will be English, French, or Bilingual depending on location.
- 8.3.3.7 The Contractor must review and incorporate into the ICT lessons learned from the TPS training presented during the HE&UT summarized in the report submitted in accordance with CDRL/DID TPS-ACQ-SE-06.

#### 8.3.4 Training Material

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- 8.3.4.1 The Contractor must prepare and deliver to the Technical Authority for review and acceptance TPS Training Material in accordance with CDRL/DID TPS-ACQ-SP-04. Training material must include computer-based distance learning (self-taught) material, and hands-on (student and instructor) material.
- 8.3.4.2 Simulation aspects must include equipment breakdown/assembly models and a synthetic environment to practice programming/using the functions of the PMM.
- 8.3.4.3 The curriculum must include, but not be limited to, safety considerations, basic theory, inspections, operations, operator troubleshooting/maintenance, and technician troubleshooting/maintenance.
- 8.3.4.4 As part of the Training Material, the Contractor must provide to the Technical Authority a bilingual digital version for use in distance learning with video captions, and narrative voice in SCORM file format.
- 8.3.4.5 At the beginning of each ICT, the Contractor must provide a copy of the accepted Training Material to each student

## 8.4 Initial Provisioning

### 8.4.1 Initial Provisioning Guidance Conference (IPGC)

- 8.4.1.1 The Contractor must participate with Technical Authority and Contracting Authority in an IPGC.
- 8.4.1.2 The Contractor must make all necessary plans and arrangements for the IPGC and invite the participants including those from DND and PWGSC.
- 8.4.1.3 The Contractor must conduct this Conference in accordance with CDRL/DID TPS-ACQ-SP-05, Initial Provisioning Guidance Conference Agenda.
- 8.4.1.4 During the IPGC, the Contractor must prepare the minutes and provide it to all attendees at the end of meeting.

### 8.4.2 Initial Provisioning Conference (IPC)

- 8.4.2.1 The IPC must be held at the Contractor's facility 90 days before IOC, where the Sub-Systems and Ancillaries can be viewed, the drawings and logistic support analysis submissions are readily available, and the technical experts are accessible and can easily participate, as required.

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- 8.4.2.2 The IPC must be chaired by the Technical Authority with participation from the Contractor.
- 8.4.2.3 The Contractor must conduct this IPC in accordance with CDRL/DID TPS-ACQ-SP-06, Initial Provisioning Conference Agenda.
- 8.4.2.4 The Contractor must record all decisions in minutes prepared and submitted in accordance with CDRL/DID TPS-ACQ-SP-06.
- 8.4.2.5 The Contractor must implement the action items from the Action Item List generated from the IPC and upkeep it over the life of the Contract.
- 8.4.2.6 The Contractor must provide and deliver a detailed quotation with firm prices to the Contracting Authority on the agreed IPC selections.

#### 8.4.3 Equipment Data Protocol (EDP)

- 8.4.3.1 The Contractor must develop and provide the EDP required data to load and to build the TPS equipment breakdown structure into the SAP-based DRMIS data information in accordance with CDRL/DID TPS-ACQ-SP-07, Equipment Data Protocol.

### 8.5 Embedded Contractor:

- 8.5.1 The Contractor must provide Life Cycle Material Manager – Contractor Support Person (LCMM-CSP) The LCMM-CSP position shall be staffed twelve (12) month after contract award and continue to the Initial Operational Capability (IOC) as defined in the TPS Acquisition Contract
- 8.5.2 The LCMM-CSP must be able to perform their duties in both official languages (English and French)
- 8.5.3 The LCMM-CSP must be embedded in National Defense Headquarters (NDHQ) - Director Combat Support Equipment Management (DCSEM) throughout the duration specified in 8.5.1 above.
- 8.5.4 The LCMM-CSP must have a minimum of two (2) years of experience within the last five (5) years as a Life Cycle Material Manager for military equipment
- 8.5.5 LCMM-CSP support service must be provided seven and half (7.5) hours per day (between 7AM and 5 PM Eastern Standard Time), five (5) days per week (Monday to Friday), 52 weeks a year, excluding statutory holidays.

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- 8.5.6 The LCMM-CSP must not have any contractual, financial or supply decision making authority.
- 8.5.7 The LCMM-CSP must not represent the Crown in any function / decision / activity.
- 8.5.8 The LCMM-CSP must have limited and controlled access privileges to Defense Resources Management Information System (DRMIS) and other LCMM support computer tools.
- 8.5.9 Prior to staffing the position, the LCMM-CSP must be DRMIS trained for LCMM activities. DND will not pay for this training but once the LCMM-CSP is trained any new or upgraded system applications introduced training will be provided by DND.
- 8.5.10 DND will provide building access, office space, a computer terminal and telephone/e-mail access for one (1) LCMM-CSP whose access will be limited to that needed to provide Contractor support to the TPS
- 8.5.11 Prior to staffing the position, the LCMM-CSP must possess a valid security clearance at the level of SECRET with approved documentation.
- 8.5.12 The LCMM-CSP scope of responsibilities may include but not be limited to the following initial set-up activities:
- Loading data into DRMIS to get it up and running with respect to its use in supporting the TPS.  
This includes the following data sets:
    - Provisioning and cataloguing data;
    - Material Master Record (MMR), using Material Identification Requests (MIRs);
    - Equipment Master Record (EMR);
    - Functional Location (FLOC);
    - Equipment Structure; and
    - Master Task List (MTL).
  - Enter into DRMIS the Document Information Record (DIR) identifying the technical documentation needed by the CAF to operate and maintain the HQSS and to enable engineering tasks. The DIR will include technical publications and drawings. Load electronic copies of this documentation into DRMIS;
  - Enter into DRMIS any Equipment Application Codes (EACs), which identify the applicability of any HQSS elements to the system;
  - Enter into DRMIS Equipment Registration Numbers (ERNs), which provide a coded link to the National Defense Index of Documentation (NDID). Ensure that HQSS technical publications provided by the Contractor are marked with proper NDID identification;
  - Create any Equipment Support Lists (ESLs), which identify items of support required for the maintenance of HQSS equipment; and

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- Create any Equipment Check Lists (ECLs), which identify a group of NSN items that comprise an equipment set, such as the Tactical Lighting Kits, or comprise the Mobile Repair Kit. 5.3.17. The LCMM-CSP scope of responsibilities include but not be limited to the following on-going life cycle support activities; and
- Provide to the Technical Authority a month-end report summarizing the tasks performed during each month stating actions, decisions and status.

## 8.6 Environmental Health and Safety

### 8.6.1 Compliance

- 8.6.1.1 In accordance with the *Prohibition of Certain Toxic Substances Regulations (SOR/2012-285)*, the substances listed under this regulation must not be incorporated in any part of the equipment.
- 8.6.1.2 In accordance with the *Products Containing Mercury Regulations (SOR/2014-254)*, if Mercury is present in any part of the equipment, the Mercury content limit must comply with the regulation (SOR/2014-254).
- 8.6.1.3 In accordance with the *Polychlorinated Biphenyls (PCBs) Regulations (SOR/2008-273)*, if PCBs are present in any part of the equipment, they must comply with the regulation (SOR/2008-273). If such substances must be used, the Contractor must certify that there is no technically or economically feasible PCB-free alternative.

The Contractor certifies that:

( ) there is no technically or economically feasible PCB-free alternative .

- 8.6.1.4 In accordance with the *Prohibition of Asbestos and Products containing Asbestos Regulations (PAPCAR): SOR/2018-196*, only asbestos-free parts must be offered.
- 8.6.1.5 The Contractor must offer engines compliant with the *Off-Road Small Spark-Ignition Engine Emission Regulations (SOR/2003-355)* and *Off-road Compression-Ignition (Mobile and Stationary) and Large Spark-Ignition Engine Emission Regulations (SOR/2020-258)*. For engines seeking military exemption, labelling requirements must be met.
- 8.6.1.6 The promulgation of new or amended legislation, regulations, policies or directives throughout this Contract period may necessitate changes to support processes and activities. These changes must be incorporated as required to ensure compliance throughout the Contract period.

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## 8.6.2 Technical Documentation

- 8.6.2.1 The Contractor must ensure that all contract deliverables are reviewed for EHS risks, and must include appropriate warnings and instructions to mitigate the EHS risks.

## 8.6.3 Health and Safety

- 8.6.3.1 Where Work of the TPS is performed at government owned facilities, the contractor must implement and comply with a general safety program for activities that must conform to the following publications, which contain the major occupational health and safety regulatory instruments that have been approved for application throughout DND and the CAF:

- A-GG-040-004/AG-001 – General Safety Program – Volume 1, Policy and Program, and
- Canada Labour Code, Part II.

## 8.6.4 Controlled Products

- 8.6.4.1 The Contractor and any subcontractor(s) must avoid the use of any controlled products/substances, as part of the Work under this Contract, where feasible and as dictated by regulatory requirements.
- 8.6.4.2 The use of controlled products must be reviewed in consultation with the Technical Authority, to determine whether replacement by other less hazardous products that meet performance requirements can be utilized, and if so, to replace these controlled products with products of less hazard.
- 8.6.4.3 The Contractor must not increase the number of controlled products in any changes to the existing configuration, without a measurable increase in equipment performance, and without authorization from the Technical Authority.

## 8.6.5 Restrictions

- 8.6.5.1 Halocarbons identified within Schedule 4 of the Ozone-Depleting Substances Regulations, with the exception of HCFC-123, and items 1 to 9 on Schedule 1 of the Federal Halocarbon Regulation, 2003, are not to be incorporated into the design, operation or maintenance of equipment, products or support services.

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8.6.5.2 Elemental mercury (liquid/vapour forms) and mercury compounds, Asbestos and Polychlorinated Biphenyls (PCBs) must not be incorporated into the design, operation or maintenance of equipment, products, or support services.

#### **8.6.6 Environmental Management System & Occupational Health and Safety Management System**

8.6.6.1 The Contractor must implement and maintain an Environmental Management System (EMS) which is consistent with the principles presented in ISO 14001. Certification to this standard is preferred but not mandatory. The Bidder must, however, have a formalized set of procedures and control measures in place to demonstrate environmental compliance and minimize environmental impact of the work

8.6.6.2 The Contractor must have an Occupational Health and Safety Management System (OHSMS) consistent with the principles presented in OHSAS 18001.

8.6.6.3 The OHSMS requirement is applicable to the Contractor. The Contractor must make a reasonable effort to monitor and ensure that all subcontractors are in compliance with the applicable environmental, health and safety laws and regulations.

8.6.6.4 The Contractor must keep accurate and complete EHS records and documentation, which must be made available to the Technical Authority upon request.

#### **8.6.7 Equipment Environmental Assessment (EEA)**

8.6.7.1 The Contractor must prepare and submit an Equipment Environmental Assessment (EEA) for TA approval. The EEA includes the list of integrated hazardous substances and chemical products incorporated in the equipment design. The EEA must include Safety Data Sheets (SDS) for all hazardous chemical products in accordance with WHMIS 2015 requirements. The Contractor may provide confidential information in a separate document. Note: Proprietary information will be treated with confidentiality.



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### ATTACHMENT 1: Personnel Protective Equipment (PPE) and Improved Environmental Clothing System (IECS)

PRE-CONTRACT AWARD - To be provided and worn by Bidder Personnel at the Third Party Verification Testing			
Category	Item	NSN	Remarks
Personnel Personal Protective Equipment (PPE)	SAFETY BOOTS	Not applicable	As a minimum, all PPE must be certified by the Canadian Standards Association (CSA).
	SAFETY GLASSES	Not applicable	
	HELMET, HARD HAT	Not applicable	
	WORKING GLOVES	Not applicable	
Personnel Improved Environmental Clothing System (IECS)	Not required for Pre-Contract Award	Not applicable	
POST-CONTRACT AWARD - To be provided and worn by Canadian Armed Forces Soldiers at the Human Engineering and User Trial (Bidders will not be required to provide this equipment)			
Category	Item	NSN	Remarks
Personnel (Personal Protective Equipment (PPE))	Fighting order, including but not limited to:		PPE and IECS sizes are not limited to the sizes identified with the listed NSNs. The sizes of the PPE and IECS will vary to accommodate the range in size of persons.
	VEST, TACTICAL LOAD CARRYING	8415-21-920-3713	
	FRAGMENTATION VEST,PERSONAL PROTECT	8470-21-912-4592	
	BALLISTIC EYEWEAR KIT	8465-20-001-1700	
	GLOVES LIGHTWEIGHT THERMAL/MORTAR	8415-20-000-1677	
	MASK, CHEMICAL BIOLOGICAL	4240-21-906-0613	
	HELMET, GROUND TROOPS'-PARACHUTISTS'	8470-21-912-7604	
Personnel (Improved Environmental Clothing System (IECS))	Environmental clothing, including but not limited to:		
	MITTEN SHELLS, EXTREME COLD WEATHER	8415-01-555-4183	
	MITTEN INSERTS, EXTREME COLD	8415-01-555-	

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	WEATHER	4031
	BOOTS, EXTREME COLD WEATHER	8430-21-104-6910
	PARKA, EXTREME COLD WEATHER	8415-21-913-6641
	TROUSERS, EXTREME COLD WEATHER	8415-21-798-8596
	GLOVES, COLD WEATHER	8415-21-920-0061

**TACTICAL POWER SYSTEM (TPS)**

**REQUEST FOR INFORMATION (RFI)**

**SOLICITATION: W8476-206276/D**

**TACTICAL POWER SYSTEM REQUIREMENTS VERIFICATION MATRIX (TPS-RVM)**

**APPENDIX AB TO**

**ANNEX A**

**ACQUISITION STATEMENT OF**

**WORK**

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**Means of Compliance:** The techniques being used to prove compliance with the Tactical Power System (TPS) Verification Plan and the requirement specification include: Compliance Statement, , Documentation, Certification, Analysis, Inspection, Demonstration and Testing.

**Verification Gate:** The stage of the project when a requirement must be verified.

**TPS Verification Plan:** The TPS Verification Plan, in accordance with Appendix AB Annex A of Volume 1.

**Documentation:** A record demonstrating that the Tactical Power System (TPS) meets the specified standards and requirements. Compliance documentation includes, but is not limited to, data, test reports (including test procedures and test results), analysis, equivalence reports, drawings, certificates, and original equipment manufacturer technical literature. Documentation data must be approved by the Technical

Authority. If documentation data is considered inadequate, the Technical Authority reserves the right to invoke test or analysis, at the Contractor's expense.

**Certification:** Conformance certification documentation from an accredited independent third party.

**Analysis:** Verification through technical evaluations of calculations, computations, drawings, models, simulations, and analytical solutions, reduced data and representative data to determine if the item conforms to the specified requirements of the specifications. Analysis must not be limited to raw data but must contain justification as to how the data verifies that the requirement will be met. Analysis data must be approved by the Technical Authority. If analysis data is considered inadequate, the Technical Authority reserves the right to invoke test, at the Contractor's expense.

**Inspection:** Examination using the physical senses, gauges or simple measurements to determine compliance with requirements. It may require moving or partial disassembling of the item to accomplish the examination.

**Demonstration:** Demonstration is a method of verification whereby the properties, characteristics, and parameters of the item are determined by observation alone, with no or minimal use of instrumentation for quantitative measurements. This method is used when a specification requirement does not contain a specific numerical parameter that must be measured. Pass/fail criteria are simple yes/no indications of functional performance since no quantitative values are specified. Demonstration also includes operation of the system under operational conditions to show that it meets requirements (i.e. Trial).

**Test:** An action by which the operability, supportability, or performance capability of an item is verified when subjected to controlled conditions that are real or simulated. These verifications may use special test equipment or instrumentation to obtain accurate quantitative data for analysis. Test results, including data analysis, must be provided in a test report. Required tests must be conducted on the TPS equipment. The Technical Authority must be informed of the date and location of all tests conducted. The Technical Authority, including any other Department of National Defence/Canadian Armed Forces representatives, reserves the right to witness all of the tests. Equivalency tests may be proposed and will be subject to Technical Authority approval. In addition to a test report including test results and data analysis, an equivalency test must also include a gap analysis. Combined tests may be proposed and will be subject to Technical Authority approval. Canada reserves the right to conduct their own independent testing to verify requirements.

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## GENERAL

- 1.1 This document will provide the technical requirements to support the *TPS Concept of Operation Guidance to Industry* issued under a Request for Information letter released by Canada. Further refinements to this document may occur prior to the release of a Request for Proposal (RFP).
- 1.2 Table 1 below shows the Requirement Verification Matrix populated by Canada for each requirement, with mandatory Means of Compliance and Verification Gates.
- 1.3 The Verification Matrix defines the Means of Compliance and Verification Gates that must be followed and met by the Contractor to verify compliance with each requirement.
- 1.4 All Means of Compliance must be executed by the Contractor and approved by the Technical Authority.

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<b>1.</b>	<b>TPS – SYSTEM LEVEL REQUIREMENTS</b>	Header			
<b>1.1</b>	<b>General</b>	Header			
1.1.1	This specification outlines the requirements of the Department of National Defence (DND) of Canada for the Tactical Power System (TPS).	Information			
1.1.2	This document is referred to as the Tactical Power System - Requirement Verification Matrix (TPS-RVM).	Information			
1.1.3	<i>Strong, Secure, Engaged</i> (SSE) Canada's Defence Policy outlines the government level of ambition for the CAF and presents a new strategic vision for defence. This is a vision in which Canada is: <ul style="list-style-type: none"> <li>a. <b>Strong at home</b>, its sovereignty well-defended by a CAF also ready to assist in times of natural disaster, other emergencies, and search and rescue;</li> <li>b. <b>Secure in North America</b>, active in a renewed defence partnership in NORAD and with the United States; and</li> <li>c. <b>Engaged in the world</b>, with the CAF doing its part in Canada's contributions to a more stable, peaceful world, including through peace support operations and peacekeeping.</li> </ul>	Information			

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	<p>In order to meet these objectives, Canada needs an agile, multi-purpose, combat-ready military, operated by highly trained, well-equipped women and men, secure in the knowledge that they have the full support of their government and their fellow Canadians. SSE presents a new strategic vision and ambition for the CAF. To this end, SSE identifies key investments, through initiatives, in the CA. The initiatives that apply to the TPS project are:</p> <ol style="list-style-type: none"> <li><u>Initiative #41</u>. Improve the Army's ability to operate in remote regions by investing in modernized communications, shelters, <b>power generation</b>, advanced water purification systems, and equipment for austere environments;</li> <li><u>Initiative #64</u>. Improve the capabilities of the Joint Deployable Headquarters and Signal Regiment, including the portable structures that house the headquarters when deployed and the <b>equipment employed</b> by that headquarters for command, control, and communications;<sup>1</sup> and</li> </ol>				
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<sup>1</sup> Strong, Secure, Engaged Canada's Defence Policy 2017, p.41.



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	<p>c. <u>Initiative #102</u>. Examine <b>alternative energy options</b> and their potential use for operations.<sup>2</sup> Reduce carbon footprint through green infrastructure and focus on energy efficiency.</p> <p>Acquiring a TPS capability would continue to ensure the operational readiness and force protection of the CAF by allowing it to operate in all environments. This investment will continue to ensure interoperability between the RCAF, RCN, other CAF organizations, and allies.</p>					
1.2	<p><b>Tactical Power System (TPS):</b> Tactical Power System must consist of the following Subsystems:</p>	Information				
1.2.1	<ul style="list-style-type: none"> <li>Diesel Generators;</li> </ul>	Mandatory				
1.2.2	<ul style="list-style-type: none"> <li>Energy Storage;</li> </ul>	Mandatory				
1.2.3	<ul style="list-style-type: none"> <li>Power Distribution &amp; Management; and</li> </ul>	Mandatory				
1.2.4	<ul style="list-style-type: none"> <li>Packaging</li> </ul>					
1.3	<p><b>High-level Mandatory Requirement</b></p> <p>The project has the following high-level mandatory requirements:</p>	Heading				

<sup>2</sup> Ibid, p.76.

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1.3.1	<ul style="list-style-type: none"> <li><i>Responsiveness:</i> Must control the production and distribution of electrical power to users.</li> </ul>	Mandatory			
1.3.2	<ul style="list-style-type: none"> <li><i>Flexibility:</i>  Must be mobile, scalable, and configurable in terms of system components, and scalable in terms of power output.  Must reduce visual, noise, and heat signatures (compared to current fleets).  Must be set-up and dismantled by hand or with common hand tools, utilizing a plug and play concept of design in system equipment.</li> </ul>	Mandatory			

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1.3.3	<ul style="list-style-type: none"><li><i>Sustainability:</i> Must use NATO common or commercially available replacement parts, and hardware and software components must be upgradable. Must use commercially available generator fuel which does not require special handling or storage beyond standard fuel requirements.</li></ul>	Mandatory			
1.3.3.1	The electrical power system should achieve maximum productivity with minimum wasted or expense. The efficiency of TPS, when configured in a microgrid with multiple generators and an ESU(L), must be improved by 30% from the same generators operating in a standalone setup.	Mandatory		Testing / Analysis	Testing / Analysis
1.3.3.2	The electrical power system should achieve maximum productivity with minimum wasted or expense. The efficiency of TPS, when configured in a microgrid with multiple generators and an ESU(L), should be improved by 50% from the same generators operating in a standalone setup	Desirable		Testing / Analysis	Testing / Analysis
1.3.4	<ul style="list-style-type: none"><li><i>Survivability:</i> Must continue to provide power during sustained operations with demanding environmental, weather and threat conditions.</li></ul>	Mandatory		Testing /Demonstration	Testing /Demonstration

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1.3.5	<ul style="list-style-type: none"> <li><i>Interoperability</i> Must provide compatible power to ally or coalition partners while conducting joint (including RCAF and RCN) operations in a hostile environment</li> </ul>	Mandatory		Analysis / Endurance Testing	Analysis / Endurance Testing
1.3.6	<ul style="list-style-type: none"> <li><i>Training</i> Must be operated by a soldier in any Military Occupational Structure Identification (MOSID), relying on Operator Manuals and unit level training, (no formal national level operator training course beyond Initial Cadre Training (ICT)).</li> </ul>	Mandatory		Demonstration / Analysis	Demonstration / Analysis
<b>1.4</b>	<b>Applicable Documents</b>	Information			
1.4.1	The documents listed in this section form part of this TPS-RVM to the extent specified herein, and are supportive of the requirement specification.	Information			
1.4.2	Unless otherwise specified, the issue, revision or amendment of documents effective for this Contract must be those in effect on the date of bid closing.	Information			

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1.4.3	In the event of a conflict between the documents referenced herein and the contents of the TPS-RVM, then the contents of the TPS-RVM will take precedence.	Information			
<b>1.5</b>	<b>Deployment</b>	Header			
1.5.1	All Sub-systems and components of the TPS must be:	Mandatory			Demonstration / Testing
1.5.1.1	Unloaded by hand from a Standard Military Pattern (SMP) Cargo Trailer / Truck in accordance with section 1.10.4 with simple handles and grasp areas integrated into the TPS sub-systems and components in accordance with section 1.8.1;				
1.5.1.2	Moved by TPS sub-systems and component on terrain in accordance with section 1.22.11 for a distance of at least 10 m to the setup site with simple, handles and grasp areas integrated into the TPS sub-systems in accordance with section 1.8.1, and with any protective cover for components in accordance with section 1.7;				
1.5.1.3	Unpacked, assembled and connected to TPS sub-systems and components to fully operate on terrain in accordance with section 1.22.11	Mandatory			Demonstration / Testing

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1.5.2	Operated in all environmental conditions specified under section 1.22 without any degradation of its original performance.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.5.3	Moved by hand wearing Personal Protective Equipment (PPE) and Improved Environmental Clothing System (IECS);	Mandatory		Demonstration / Testing	Demonstration / Testing
1.5.4	Deployed safely by a maximum of 6 soldiers of any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training without any injury to any personnel or any damage to the TPS equipment;	Mandatory		Demonstration / Testing	Demonstration / Testing
1.5.5	Exception to section 1.5.1.2: TPS equipment weighing 130 kg (286 lb.) and over must be permanently mounted on dedicated skid for a standard military cargo trailer.	Mandatory		Compliance Statement	Compliance Statement
1.5.6	The TPS for HQSS Brigade Medical Station (BMS) must be deployed within 20 minutes by a maximum of 4 soldiers from any MOC with only 1 of the 4 persons trained on the TPS and the remaining 3 with no TPS training.	Mandatory		Demonstration / Testing	Demonstration / Testing

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1.5.7	The TPS for a HQSS Type 4 must be deployed within 30 minutes by a maximum of 6 soldiers from any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.5.8	The TPS for a HQSS Type 4 should be deployed within 20 minutes by maximum of 6 soldiers from any MOC trained on the TPS.	Desirable		Demonstration / Testing	Demonstration / Testing
1.5.9	The TPS for a HQSS Type 2 must be deployed within 40 minutes by a maximum of 8 soldiers from any MOC with only 1 of the 8 persons trained on the TPS and the remaining 7 with no TPS training.	Mandatory		Demonstration / Testing	Demonstration / Testing
<b>1.6</b>	<b>Withdrawal</b>	Header			
1.6.1	All Sub-systems and components of the TPS must be :	Mandatory		Compliance Statement	Compliance Statement
1.6.2	Disconnected, packed up, and moved by hand on terrain in accordance with section 1.22.11;	Mandatory		Demonstration / Testing	Demonstration / Testing
1.6.3	Loaded from ground into Cargo Containers or standard military cargo trailers dedicated for TPS with handles and grasp areas integrated into the TPS Sub-systems and components (or protective cover in accordance with section 1.7);	Mandatory		Demonstration / Testing	Demonstration / Testing

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1.6.4	Recovered by maximum of 6 soldiers of any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training;	Mandatory		Demonstration / Testing	Demonstration / Testing
1.6.5	Operable in all environmental conditions specified under section 1.22 without any degradation of its original performance;	Mandatory		Demonstration / Testing	Demonstration / Testing
1.6.6	Operable safely without any injury to any personnel; and	Mandatory		Demonstration / Testing	Demonstration / Testing
1.6.7	Operable safely without any damage to the TPS equipment.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.6.8	The TPS for a HQSS UMS must be recovered and stowed back to original condition within 40 minutes by a maximum of 4 soldiers from any MOC with only 1 of the 4 persons trained on the TPS and the remaining 3 with no TPS training.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.6.9	The TPS for a HQSS Type 4 must be recovered and stowed back to original condition within 60 minutes by a maximum of 6 soldiers from any MOC with only 1 of the 6 persons trained on the TPS and the remaining 5 with no TPS training.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.6.10	The TPS for a HQSS Type 4 should be recovered by hand and stowed back to original condition within 40 minutes by a maximum of 6 soldiers from any MOC trained on the TPS;	Desirable		Demonstration / Testing	Demonstration / Testing
1.6.11	The TPS for a HQSS Type 2 must be recovered and stowed back to original condition within 90 minutes by maximum of 8 soldiers from any	Mandatory		Demonstration / Testing	Demonstration / Testing



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	MOC with only 1 of the 8 persons trained on the TPS and the remaining 7 with no TPS training; nd				
1.6.12	The TPS for a HQSS Type 2 should be recovered and stowed back to original condition within 70 minutes by maximum of 8 soldiers from any MOC with only 1 of the 8 persons trained on the TPS and the remaining 7 with no TPS training.	Desirable		Demonstration / Testing	Demonstration / Testing
<b>1.7</b>	<b>Protective Hard Cover</b>	Header			
1.7.1	The Sub-systems and components of the TPS such as the Micro-grid controller and Special Tools and Test Equipment (STTE) must have a hard cover to protect against climatic and environmental elements when in stored outdoors and in transit.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.7.2	TPS sub-systems and components deployed outdoor must be capable to withstand climatic and environmental elements specified under section 1.5.2 without any performance degradation.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.7.3	Any Protective Cover solution must be simple and easy to use with limited digital dexterity required in the following conditions:	Definition		Compliance Statement	Compliance Statement
1.7.3.1	Wet;	Mandatory		Demonstration / Testing	Demonstration / Testing
1.7.3.2	Snow;	Mandatory		Demonstration / Testing	Demonstration / Testing
1.7.3.3	Sleet;	Mandatory		Demonstration / Testing	Demonstration / Testing

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1.7.3.4	Blowing Sand and dust;	Mandatory		Demonstration / Testing	Demonstration / Testing
1.7.3.5	Cold temperature in accordance with section 1.22.3;	Mandatory		Demonstration / Testing	Demonstration / Testing
1.7.3.6	High temperature in accordance with section 1.22.4;	Mandatory		Demonstration / Testing	Demonstration / Testing
1.8	<i>Handling</i>	Header			
1.8.1	<i>Carrying Handles and Grasp Areas</i>	Header			
1.8.1.1	The quantity of lifting handles on each TPS Component must accommodate the recommended number of persons to safely push/pull/lift the equipment.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.8.1.2	Persons handling the equipment must be allotted sufficient space around the perimeter of the object to accommodate them physically and to permit each member to move forward safely without interference from adjacent team members or with the equipment being moved.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.8.1.3	The location of handles must not interfere with installing, removing, operating, maintaining, or repairing the equipment.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.9	<i>Weight Limit</i>	Header			

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1.9.1	TPS equipment weighing 130 kg (286 lb.) and over must be permanently mounted on a skid for standard military cargo trailer dedicated for TPS;	Mandatory		Compliance Statement	Compliance Statement
1.9.2	Except for 12 to 70 kW generators, the heaviest component of the TPS must weigh less than 130 kg (286 lb).	Mandatory		Testing	Testing
1.9.3	The heaviest power distribution box in the TPS must weigh less than 54.5 kg (120 lb).	Mandatory		Testing	Testing
1.9.4	The heaviest cable in the TPS must weigh less than 34 kg (75 lb).	Mandatory		Testing	Testing
<b>1.10</b>	<b>Transportability</b>	Header			
1.10.1	The TPS must have the same mobility including setup and tear down times as the Canadian Forces sub-units of sections it supports and be transportable by trucks and trailers.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.2	<b>Cargo Containers</b>	Header			
1.10.2.1	TPS components including the skid must be able to be securely stowed, stored and transported in Standard CAF ISO containers, NSN 8145-21-914-4367	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.2.2	The cargo containers carrying the TPS must be able to be secured and moved using in-service Canadian Armed Forces (CAF) Material Handling Equipment (MHE) assets to load the ISO containers onto logistics vehicles in accordance with section 1.10.4, train flatbed, ships, or aircraft in accordance with sections 1.10.2, 1.10.3, 1.10.5, and 1.10.7 without damage to the TPS (during and after exposure), and without any equipment degradation and fully serviceable after movement.	Mandatory		Demonstration / Testing	Demonstration / Testing

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1.10.2.3	The components of the TPS (including any protective cover in accordance with section 1.7) must be able to be secured inside the cargo containers without damage to the component or degradation in performance during and after transportation.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.3	<i>Aircraft Pallets</i>	Header			
1.10.3.1	Each component of the TPS (including any protective cover in accordance with section 1.7) must fit on the HCU-6/E 88 X 108" – 463-L Dual Rail pallet (NSN 1670-00-820-4896) in accordance with CFTO B-GA-007-AF-001 for secure stowage, storage, and transportation by air, inside aircraft without damage to the TPS (during and after exposure), without any equipment degradation and fully serviceable after transportation.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.3.2	The components of the TPS (including any protective cover in accordance with section 1.7) must be able to be secured to the pallet in accordance with section 1.10.3 without damage to the component or degradation in performance during and after transportation.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.4	<i>Land Transportation</i>	Header			
1.10.4.1	Each component of the TPS (including any protective cover in accordance with section 1.7) when stowed in an ISO containers in following logistics vehicles, while traversing sloped, rough roads, trails, and cross country terrain, without damage to the TPS (during and after	Mandatory		Demonstration / Testing	Demonstration / Testing

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	exposure), and without any equipment degradation and fully serviceable after transportation:				
1.10.4.1.1	Logistic Vehicle Modernization (LVM-L) Light variant.	Mandatory		Demonstration / Testing	Compliance Statement
1.10.4.1.2	Medium Support Vehicle System (MSVS).	Mandatory		Demonstration / Testing	Compliance Statement
1.10.4.1.3	Logistic Vehicle Modernization (LVM-H) Heavy variant.	Mandatory		Demonstration / Testing	Compliance Statement
1.10.4.2	Each component of the TPS (including any protective cover in accordance with section 1.7) must be land transportable on the following logistics vehicles as weather deck cargo, while traversing sloped, rough roads, trails, and cross country terrain, without damage to the TPS (during and after exposure), and without any equipment degradation and fully serviceable after transportation:	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.4.2.1	Logistic Vehicle Modernization (LVM-L) Light variant.	Mandatory		Demonstration / Testing	Compliance Statement
1.10.4.2.2	Medium Support Vehicle System (MSVS).	Mandatory		Demonstration / Testing	Compliance Statement

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1.10.4.2.3	Logistic Vehicle Modernization (LVM-H) Heavy variant.	Mandatory			Compliance Statement
1.10.4.3	Each component of the TPS (including any protective cover in accordance with section 1.7) must be land transportable by the following logistic vehicles, while traversing sloped, rough roads, trails, and cross country terrain, without damage to the TPS (during and after exposure), and without any equipment degradation and fully serviceable after transportation:	Mandatory			Demonstration / Testing
1.10.4.3.1	Logistic Vehicle Modernization (LVM) Light and Heavy variants: <ul style="list-style-type: none"> <li>Dimensions TBD</li> </ul>	Mandatory			Compliance Statement
1.10.4.3.2	Medium Support Vehicle System (MSVS) Cargo: <ul style="list-style-type: none"> <li>Ingress opening dimensions: 1,780mm height; 1,917mm width</li> <li>Cargo space dimensions: 1,780mm height; 1,917mm width; 2,578mm length</li> </ul>	Mandatory			Compliance Statement
1.10.5	<i>Train Transport</i>	Header			
1.10.5.1	Each component of the TPS (including any protective cover in accordance with section 1.7) when stowed in an ISO containers in flatbed without damage to the TPS (during and after exposure), and without any equipment degradation and fully serviceable after transportation.	Mandatory			Demonstration / Testing

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1.10.6	<i>Sea Transportation</i>	Header			
1.10.6.1	Each component of the TPS (including any protective cover in accordance with section 1.7) when stowed in the ISO containers in accordance with section 1.10.2 must be sea transportable on vessels without damage to the TPS (during and after exposure), and without any equipment degradation and fully serviceable after transportation.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.7	<i>Air Transportation</i>	Header			
1.10.7.1	Each component of the TPS (including any protective cover in accordance with 1.7) when stowed in the ISO containers in accordance with section 1.10.2 must be air transportable inside the following aircraft without damage to the TPS (during and after exposure), without any equipment degradation and fully serviceable after transportation:	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.7.1.1	CC-177 Globemaster III; and	Mandatory		Compliance Statement	Compliance Statement

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<i>1.10.7.1.2</i>	CC-130 Hercules (J-variant).	Mandatory		Compliance Statement	Compliance Statement
<i>1.10.7.2</i>	Each component of the TPS (including any protective cover in accordance with section 1.7) when stowed within an ISO containers in accordance with section 1.10.2 must be air transportable, slung under the CH-147 Chinook without damage to the TPS (during and after exposure), without any equipment degradation and fully serviceable after transportation.	Mandatory		Demonstration / Testing	Demonstration / Testing
<i>1.10.7.3</i>	Each component of the TPS (including any protective cover in accordance with section 1.7) when stowed on the pallet in accordance with section 1.10.3 must be air transportable inside the following aircraft without damage to the TPS (during and after exposure), without any equipment degradation and fully serviceable after transportation:	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.7.3.1	CC-177 Globemaster III; and	Mandatory		Compliance Statement	Compliance Statement
1.10.7.3.2	CC-130 Hercules (J-variant).	Mandatory		Compliance Statement	Compliance Statement
<i>1.10.7.4</i>	Each component of the TPS (including any protective cover in accordance with section 1.7) must be air transportable, slung under the CH-147 Chinook without damage to the TPS (during and after exposure), without any equipment degradation and fully serviceable after transportation.	Mandatory		Demonstration / Testing	Demonstration / Testing



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1.10.7.4.1	Under slung loads are defined in accordance with DEF STAN 00-35 Defence Standard: Environmental Handbook for Defence Materiel, (Part5)/3 Induced Mechanical Environments.	Information		Demonstration / Testing	Demonstration / Testing
1.10.7.5	Each component of the TPS (including any protective cover in accordance with section 1.7) must be air transportable inside the CH-147 Chinook without damage to the TPS (during and after exposure), without any equipment degradation and fully serviceable after transportation.	Mandatory		Demonstration / Testing	Demonstration / Testing
1.10.7.5.1	The maximum internal cargo space of the CH-147 Chinook is the following: 193 cm height; 228 cm width; 929 cm length. The maximum floor load is 1,465 kg/m².	Information			
1.11	<b>Stacking</b>	Header			
1.11.1	Like components of the TPS (including any protective cover in accordance with section 1.7), without being packaged in industrial crates in accordance with the ISS SOW, must be securely stackable (nest on top of each other) up to a height of 182.9 cm (6 ft), without damage to the equipment (during and after exposure), without any equipment degradation and fully serviceable after transportation.	Mandatory		Demonstration	Demonstration

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1.11.2	The components of the power distribution units in accordance with section 3 must be securely stackable for maximum of 3 levels high.	Mandatory		Demonstration	Demonstration
1.11.3	<b>Service Life and Sustainability</b>				
1.11.4	The TPS must have the same mobility including setup and tear down times as the Canadian Forces sub-units of sections it supports and be transportable by trucks and trailers.	Mandatory		Compliance Statement	Compliance Statement
1.11.5	The TPS must have a service life (starting at the date of first usage of the TPS) and sustainability of at least 20 years when used in any combination of the climatic and environmental conditions in accordance with section 1.22.	Mandatory		Endurance Testing	Compliance Testing
1.11.6	The TPS will be expected to be deployed for 26 weeks (1 week = 7 days) per year (i.e. annual usage).	Definition			
1.11.7	The TPS will be expected to operate 168 hours per week.	Definition			
1.11.8	The TPS will be expected to be moved and set up 36 times per year and stricken and moved 36 times per year.	Definition			
<b>1.12</b>	<b>Corrosion Protection</b>	Header			
1.12.1	The TPS components must be designed, and material selected and/or treated to resist corrosion over the entire service life of the TPS in accordance with section 1.13 and section 1.22.5.3 in the climatic and environmental conditions in accordance with section 1.22.	Mandatory		Compliance Statement	Compliance Statement

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<b>1.13</b>	<b>Materials and/or Surface Treatment</b>	Header			
1.13.1	The TPS must have a non-reflective, dull matte surface finish.	Mandatory		Demonstration	Demonstration
1.13.2	Except for cable assemblies, components of the TPS exposed to the exterior climate must be of colour 34094 (flat green 383) in accordance with Federal Standard 595C or Technical Authority approved equivalent.	Mandatory			Compliance Statement
<b>1.14</b>	<b>Modularity and Flexibility</b>	Header			
1.14.1	The TPS must be deployable and modular.	Mandatory		Compliance Statement	Compliance Statement
1.14.2	The TPS must be flexible in its interconnectivity and not limit or restrict deployment scenarios.	Mandatory		Compliance Statement	Compliance Statement
1.14.3	The TPS must be flexible and modular to enable a Commander to individually tailor the configuration of the TPS over the course of the equipment life to meet mission requirements	Mandatory		Compliance Statement	Compliance Statement
<b>1.15</b>	<b>Interchangeability</b>	Header			
1.15.1	All Sub-Systems equipment, components, parts, and consumables of the TPS must be completely interchangeable within the same like items without any adjustment or degradation of performance:	Mandatory		Compliance Statement	Compliance Statement

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1.15.2	All Sub-Systems equipment, components, parts, and consumables of the TPS should be completely interchangeable within the family of like items without degradation of performance as listed below:	Header			
<i>1.15.2.1</i>	All fleets of tactical generators should have common Air filters, Fuel/water separator filters, Oil filters, Temperature sensors, Oil Pressure sensors, Speed Sensors, fuel sensors, fuel pickup pumps, fuel pumps and Electrical control panels;	Desirable			Demonstration
<i>1.15.2.2</i>	Fleets of 2 to 3.5 kW generators should have common Air filters, Fuel/water separator filters, Oil filters, Temperature sensors, Oil Pressure sensors, Speed Sensors, fuel sensors, fuel pickup pumps, fuel pumps and Electrical control panels;	Desirable			Demonstration
<i>1.15.2.3</i>	Fleets from 4 to 6 kW Generators should have common Air filters, Fuel/water separator filters, Oil filters, Temperature sensors, Oil Pressure sensors, Speed Sensors, fuel sensors, fuel pickup pumps, fuel pumps and Electrical control panels;	Desirable			Demonstration
<i>1.15.2.4</i>	Fleets from 12 to 70 kW Generators should have common Air filters, Fuel/water separator filters, Oil filters, Temperature sensors, Oil Pressure sensors, Speed Sensors, fuel sensors, fuel pickup pumps, fuel pumps, battle short switch and Electrical control panels; and	Desirable			Demonstration
<b>1.16</b>	<b>Reliability</b>	Header			
1.16.1	The TPS in accordance with section 1.2 must have a minimum Mean Time Between Failure (MTBF) of 3000 hours 95% of the time in any deployed configuration, including set-ups, recovery and in-transit.	Mandatory			Analysis

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1.16.2	TPS failure in this context is defined as any condition that cannot be repaired at first line of maintenance performing a first, second and limited third level of repairs or unscheduled maintenance.	Definition			
1.16.3	No component of the TPS must exhibit one type of repetitive failure occurring on a regular basis and become a common equipment failure.	Mandatory		Endurance testing	Analysis
<b>1.17</b>	<b>Availability</b>	Header			
1.17.1	The TPS must maintain an operational availability, $A_0$ of not less than 98%. Operational Availability refers to the time that the TPS in accordance to section 1.2 is available for operation including the time of which the TPS is not in service and ready to complete the mission. Availability is calculated as:  $A_0 = \text{MTBF} / (\text{MTBF} + \text{MTTR})$  Where MTBF is Mean Time Between Failure; and Where MTTR is Mean Time To Repair which is equal to the time needed to diagnose the equipment, order and receive spare parts, and the time to repair or replace any parts.	Mandatory		Compliance Statement	Compliance Statement
<b>1.18</b>	<b>Maintenance and Repair</b>	Header			
1.18.1	The TPS must not degrade in performance when stored for extended periods of at least 6 months.	Mandatory		Analysis	Analysis

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1.18.2	The TPS must be capable of being maintained and repaired (i.e. first and second level of repairs including limited third level) in climatic and environmental conditions in accordance with section 1.22.	Mandatory			Demonstration
1.18.3	<b><i>Lines of Maintenance:</i></b>	Header			
1.18.3.1	1 <sup>st</sup> (First) Line: In land combat operations, the line of maintenance is the echelon at which a combat services support function is performed. The “1 <sup>st</sup> (First) Line” is the support organic to a unit such as an Administration Company deployed with the unit. This includes Mobile Repair Teams (MRTs) and deployed workshops for General Support.	Definition			
1.18.3.2	2 <sup>nd</sup> (Second) Line: The “2 <sup>nd</sup> (Second) Line” is the support organic to a brigade (ie: Service Battalion) and division. The Garrison at which the unit belongs to.	Definition			
1.18.3.3	3 <sup>rd</sup> (Third) Line: The “3 <sup>rd</sup> (Third) Line” is the national base support level such as 202 Workshop or Repair and Overhaul (R&O) Facility established for the equipment.	Definition			
1.18.4	<b><i>Maintenance Levels:</i></b>	Header			
1.18.4.1	1 <sup>st</sup> (First) Level: Technician’s first level maintenance tasks generally involve preventive maintenance, faultfinding, limited corrective maintenance, and initial recovery tasks. These tasks must take no longer than 1 hour, 99% of the time. Technicians will have access to the necessary	Definition			

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	common tools available at Direct Support, as defined in B-GL-342-001/FP-000 Land Equipment Management System.				
1.18.4.2	<p>2<sup>nd</sup> (Second) Level:            Second level maintenance will be performed by CAF technicians and will involve intermediate corrective maintenance and recovery tasks. These tasks must take no longer than 4 hours, 99% of the time. Technicians will have access to the necessary common tools available at Direct Support, as defined in B-GL-342-001/FP-000 Land Equipment Management System. If the task is performed at a General Support Workshop, then the technician will have access to tools and test equipment and limited fabrication equipment.</p>	Definition			
1.18.4.3	<p>3<sup>rd</sup> (Third) Level:            Third level maintenance will involve corrective maintenance and repair and overhaul maintenance tasks. The corrective maintenance tasks must take no longer than 4 to 20 hours, 99% of the time. Third level maintenance will be done at Garrison General Support Units or 202 Workshop or Repair &amp; Overhaul (R&amp;O) Workshops. Technicians will have access to the necessary common &amp; special tools available at General Support, as defined in B-GL-342-001/FP-000 Land Equipment Management System. If the task is performed at a General Support Workshop, then the technician will have access to Special Tools and Test Equipment (STTE) and fabrication equipment.</p>	Definition			

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1.18.5	<b>Repair:</b> Corrective maintenance activity which restores an item to serviceable condition by identifying and correcting faults or replacing pieces of the item with new, reconditioned, overhauled or rebuilt components. Repair work will be initiated by the unit/end user.	Definition					
1.18.6	<b>Overhaul:</b> The restoration of an item to its original condition and life expectancy. It includes the replacement of worn, damaged or life expired parts, the incorporation of approved modifications, and refurbishment as necessary.	Definition					
1.18.7	First level scheduled maintenance tasks must take no longer than 30 minutes, 99% of the time.	Mandatory.				Demonstration / Analysis	Demonstration / Analysis
1.18.8	First level scheduled maintenance tasks should take twenty (20) minutes to complete	Desirable				Demonstration / Analysis	Demonstration / Analysis
1.18.9	Third level scheduled maintenance tasks must take no longer than thirty 30 minutes, 99% of the time.	Mandatory.				Demonstration / Analysis	Demonstration / Analysis
1.18.10	First line scheduled maintenance must be conducted on the TPS with no power interruption to the users.	Mandatory.				Demonstration	Demonstration
<b>1.19</b>	<b>Safety and Human Engineering:</b>	Header					
1.19.1	<b>Personnel.</b>	Header					



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1.19.1.1	Any reference to the words 'person(s)', 'people', 'personnel', 'occupant(s)', 'staff', 'operator(s)', 'technician(s)', 'soldier(s)', or "troops" in this TPS-RVM must be considered as a person with a stature and weight between the 95th percentile male and the 5th percentile female of the Canadian Land Forces population in accordance with Defence and Civil Institute of Environmental Medicine (DCIEM) 98-CR-15.	Definition			
1.19.1.2	The TPS design must allow handling by persons wearing Personal Protective Equipment (PPE) and Improved Environmental Clothing System (IECS). Note: The mitten is a large, bulky mitten which reduces dexterity.	Mandatory			Demonstration
1.19.1.3	The TPS must be designed in accordance with MIL-STD-1472G sections 4 and 5 (as applicable) to not present any safety or health hazards to any person in contact with the TPS during its service life.	Mandatory			Compliance Statement
1.19.1.4	The TPS design must comply with MIL-HDBK-454, Guideline 1 Safety Design Criteria- Personnel Hazards.	Mandatory			Compliance Statement
1.19.1.5	The TPS must not have any inherent safety hazards associated with, but not limited to, its stowage, storage, transportation, assembly/disassembly, deployment, connection, start-up, operation, packing/unpacking, maintenance, or repair.	Mandatory			Demonstration
1.19.1.6	The TPS and the materials used in its fabrication must not create safety, health hazards and negative environmental impact.	Mandatory			Demonstration / Analysis

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1.19.1.7	The TPS must incorporate a fail-safe design in those areas where failure can cause catastrophic through-damage to equipment, injury to personnel, or inadvertent operation of critical equipment, or an environmental hazard.	Mandatory			Compliance Statement
1.19.1.8	The TPS connector must incorporate a fail-safe design to prevent inadvertent human error while connecting the equipment together.	Mandatory			Demonstration / Analysis
1.19.1.9	All rotating and moving surfaces must be enclosed to prevent injury from accidental contact, and marked with warning or caution signs visible to any person in contact with the equipment.	Mandatory			Demonstration
1.19.1.10	All surfaces and edges that are likely to be in contact with personnel at any time during the life of the equipment must not be sharp or abrasive; they must be smooth or protected to prevent injury.	Mandatory			Demonstration
1.19.1.11	Any surface that may come into contact with unprotected human skin must adhere to precautions in accordance with MIL-STD-1472G, Section 5.7.6.9, Thermal Contact Hazards.	Mandatory			Demonstration
1.19.1.12	All surfaces that may be in contact with personnel during the life of the equipment must not cause electrical shock.	Mandatory			CSA Certification
1.19.1.13	The design of the TPS must minimize the likelihood of pinch injuries to hands or any other body part.	Mandatory			Demonstration
1.19.1.14	The design of the TPS must not cause personnel a head hazard.	Mandatory			Demonstration

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1.19.1.15	The design of the TPS must not create a tripping hazard for personnel.	Mandatory		Demonstration	Demonstration
1.19.1.16	Any hazard associated with the TPS must be identified and indicated with a warning or caution sign visible to any person in contact with the equipment.	Mandatory		Demonstration	Demonstration
1.19.1.17	The TPS must comply with all the safety labeling requirements of MIL-STD-1472G, section 5.7.2.	Mandatory		Demonstration	Demonstration
1.19.1.18	In addition to section 1.19.1.17 labeling requirements, TPS components must be labeled with their maximum stacking capability.	Mandatory		Demonstration	Demonstration
1.19.1.19	The TPS must not expose personnel and equipment to fire hazards, exhaust and toxic gas accumulation in the supply ducting, electrical shock hazards, health hazards and noise hazards	Mandatory		Demonstration	Demonstration
1.19.1.20	Mercury, asbestos and polychlorinated (PCBs) must not be incorporated into the design, operation and maintenance of the TPS.	Mandatory		Compliance Statement	Compliance Statement
1.19.1.21	The TPS must not expose personnel to back injury during deployment, movement and recovery of equipment.	Mandatory		Compliance Statement	Compliance Statement
1.20	<b>Codes, Acts, Regulations, Policy, and Certifications:</b>	Header			
1.20.1	The TPS must meet applicable Canada Labour Code and its associated Occupational Health and Safety Acts and Regulations, and federal and provincial Environmental Acts and associated Regulations.	Mandatory		Compliance Statement	Compliance Statement

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1.20.1.1	The TPS must meet all applicable federal and provincial safety standards.	Mandatory		Compliance Statement	Compliance Statement
1.20.1.2	The TPS must comply with applicable CSA standards.	Mandatory		<b>Certification</b>	<b>Certification</b>
1.20.1.3	All electrical, mechanical, plumbing and fuel related components of the TPS must be certified by the Canadian Standards Association (CSA) or by a certification body accredited by the CSA or the Standards Council of Canada (SCC).	Mandatory		<b>Certification</b>	<b>Certification</b>
1.20.1.4	The portable diesel generator must comply with CSA Standard C22.2-No 100.	Mandatory		<b>Certification</b>	<b>Certification</b>
1.20.1.5	The Power Distribution Panel must comply with CSA Standard C22.2-No 29.	Mandatory		<b>Certification</b>	<b>Certification</b>
1.20.1.6	The wires and cables must comply with CSA Standard C.22.2 No 49	Mandatory		<b>Certification</b>	<b>Certification</b>
1.20.1.7	The wires and cables must comply with CSA Standard C.22.2 No 96.1-04	Mandatory		<b>Certification</b>	<b>Certification</b>
1.20.1.8	The wires and cables must comply with CSA Standard C.22.2 No 0.3-01.	Mandatory		<b>Certification</b>	<b>Certification</b>
1.20.1.9	Optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheaths that are installed must not convey flame or continue to burn for more than 1 minute when tested in conformance with the Vertical Flame Test in Clause 4.11.1 of CSA C22.2 No. 0.3, "Test Methods for Electrical Wires and Cables," (FT1 rating).	Mandatory		<b>Certification</b>	<b>Certification</b>

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1.20.1.10	Any airborne chemical agent emitted by the TPS must conform to acceptable limits in accordance with the Canada Labour Code, Part II, Occupational Health and Safety Regulations, Part 10 Hazardous Substances, Section 10.19 (1) Control of Hazards.	Mandatory			<b>Certification / Testing</b>
1.20.1.11	Non-current-carrying metal parts of the TPS must be bonded in accordance with CSA C22.2 No. 41-13 Ground and bonding equipment (Tri-national standard, with NMX-J-590-ANCE and UL 467), and CSA C22.1-10 Grounding and Bonding.	Mandatory			<b>Certification</b>
1.20.1.12	All conductive objects of the TPS must be grounded and bonded together in accordance with CSA C22.2 No. 41-13 ground and bonding equipment (Tri-national standard, with NMX-J-590-ANCE and UL 467), and CSA C22.1-10 Grounding and Bonding, to protect against electrical malfunction or lightning strike.	Mandatory			<b>Certification</b>
<b>1.21</b>	<b>Signature:</b>	Header			
1.21.1	<i>Visual Signature</i>	Header			
1.21.1.1	When required, the TPS must not emit any visible light.	Mandatory			Demonstration
1.21.1.2	The TPS must have no shiny surfaces that makes the equipment visible beyond 100 m.	Mandatory			Demonstration
1.21.2	<i>Acoustic Signature</i>				

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1.21.2.1	The maximum noise level generated by the TPS must not exceed 72 dBA Sound Pressure Level at a distance of 7 m in any direction from the unit.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.21.2.2	The maximum noise level generated by the TPS should not exceed 60 dBA Sound Pressure Level at a distance of 7 m in any direction from the unit.	Desirable		Demonstration/ Testing	Demonstration/ Testing
1.21.3	<i>Electromagnetic Signature</i>				
1.21.3.1	The TPS must comply with electromagnetic emission and susceptibility requirements for army ground systems in accordance with the following MIL-STD-461G frequency bands:	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.21.3.1.1	RE 102 from 2 MHz to 18 GHz, Navy Mobile and Army;	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.21.3.1.2	CE 102 from 10 KHz to 10 MHz; and	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.21.3.1.3	RS 103 from 2 MHz to 40 GHz.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22	<b>Climatic and Environmental Conditions:</b>	Header			
1.22.1	The TPS must be stowed, stored, transported, deployed/withdrawn, unpacked/packed, assembled/disassembled, connected/disconnected, started and operated to complete tactical missions and training, day and night, throughout the wide range of global environments and weather conditions found all year round within the geographic regions identified in the TPS-RVM.	Mandatory		<b>Demonstration</b> / Testing	<b>Demonstration</b> / Testing

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1.22.2	The TPS must meet all performance requirements without physical damage to the TPS or personnel, during and after exposure (e.g. deployment, withdrawal, unpacked/packed, assembly/disassembly, connected/disconnected, start-up, operation, stowage, storage, or in-transit) to any combination of the ambient and induced climatic and environmental conditions identified in the TPS-RVM.	Mandatory			Demonstration/ Testing
1.22.3	<b>Low Temperature:</b>				
1.22.3.1	The TPS must be unpacked/packed, assembled/disassembled, set connected/disconnected, started, and operated, without damage and meet all performance requirements (during and after exposure), in all environments associated with climatic categories C0 Mild Cold, C1 Intermediate Cold, C2 Cold, and C3 Severe Cold, in accordance with NATO STANAG 4370- Allied Environmental Conditions Testing Publications (AETCP) 230 Ed 1, Leaflet 2311/1.	Mandatory			Demonstration/ Testing
1.22.3.2	Exception to section 1.22.2. above: The Micro-grid controller must be unpacked/packed, assembled/disassembled, connected/disconnected, started, and operated, without damage and meet all performance requirements (during and after exposure), in all environments associated with climatic categories C0 Mild Cold, C1 Intermediate Cold, and C2 Cold (modified to -37°C), in accordance with NATO STANAG 4370- Allied Environmental Conditions Testing Publications (AETCP) 230 Ed 1, Leaflet 2311/1.	Mandatory			Demonstration/ Testing

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1.22.3.3	The TPS must be stored and transported without damage, and meet all performance requirements (during and after exposure), in all environments associated with climatic categories C0 Mild Cold, C1 Intermediate Cold, C2 Cold, and C3 Severe Cold, in accordance with NATO STANAG 4370- Allied Environmental Conditions Testing Publications (AETCP) 230 Ed 1, Leaflet 2311/1.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.3.4	The TPS must be stored and transported without damage, and meet all performance requirements (during and after exposure), in low temperature as described in MIL-STD-810G, Method 502.5 Low Temperature, Procedure I (Storage) at -51°C temperature.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.3.5	The TPS must be operated within 20 minutes without damage and meet all performance requirements (during and after exposure), in low temperature as described in MIL-STD-810G, Method 502.5 Low Temperature, Procedure II (Operation) at -37°C temperature.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.3.6	The TPS should operate within 20 minutes in low temperature conditions without damage and meet all performance requirements (during and after exposure) as described in MIL-STD-810G, Method 502.5 Low Temperature, Procedure II (Operation) at -51°C temperature.	Desirable		Demonstration/ Testing	Demonstration/ Testing
1.22.3.7	The TPS must be manipulated without damage and without a decrease in handling performance in low temperature as described in MIL-STD-810G, Method 502.5 Low temperature, Procedure III (Manipulation) at -51°C temperature.	Mandatory		Demonstration/ Testing	Demonstration/ Testing



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1.22.3.8	For cables and wires, manipulation at -51°C temperature means all cables and wires must be able to bend to radius equal to five times the diameter of the cable or wire without damage to the insulation material. Assume personnel wearing PPE	Information			
1.22.4	<i>High Temperature.</i>	Header			
1.22.4.1	The TPS must be unpacked/packed, assembled/disassembled, connected/disconnected, started, and operated, without damage and meet all performance requirements (during and after exposure), in all environments associated with climatic categories A1 Extreme Hot Dry, A2 Hot Dry, and A3 Intermediate, in accordance with NATO STANAG 4370- Allied Environmental Conditions Testing Publications (AETCP) 230 Ed 1, Leaflet 2311/1.	Mandatory			Demonstration/ Testing
1.22.4.2	The TPS must be stored and transported without damage, and meet all performance requirements (during and after exposure), in all environments associated with climatic categories A1 Extreme Hot Dry, A2 Hot Dry, and A3 Intermediate, in accordance with NATO STANAG 4370- Allied Environmental Conditions Testing Publications (AETCP) 230 Ed 1, Leaflet 2311/1.	Mandatory			Demonstration/ Testing
1.22.4.3	The TPS must be stored and transported without damage, and meet all performance requirements (during and after exposure), in high temperature as described in MIL-STD-810G, Method 501.5 High Temperature, Procedure I (Storage) at +71°C temperature.	Mandatory			Demonstration/ Testing

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1.22.4.4	The TPS must be operated without damage, and meet all performance requirements (during and after exposure), in high temperature as described in MIL-STD-810G, Method 501.5 High Temperature, Procedure II (Operation) at +49 °C temperature.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.4.5	The TPS must comply with MIL-STD-810G, Method 501.5 High Temperature, Procedure III (Tactical-Standby to Operational) for immediate assembly at +49 °C after storage and transportation at +71°C, without damage and meeting all performance requirements.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.5	<b>Humidity</b>	Header			
1.22.5.1	The TPS must be unpacked/packed, assembled/disassembled, connected/disconnected, started, operated, stored, and transported, without damage and meet all performance requirements (during and after exposure), in all environments associated with climatic categories: B3 Humid Hot Coastal Desert, B2 Wet Hot, and B1 Wet Warm, in accordance with NATO STANAG 4370- Allied Environmental Conditions Testing Publications (AETCP) 230 Ed 1, Leaflet 2311/1.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.5.2	The TPS must comply with MIL-STD-810G, Method 507.5 Humidity, Procedure II (Aggravated).	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.5.3	The TPS must show no evidence of material swelling due to moisture absorption, degradation of electrical properties in insulating material, electrical shorts, oxidation, galvanic corrosion, failure to operate safely, or other defects which are detrimental to the intended function when exposed to humidity as described in MIL-STD-810G, Method 507.5, Humidity, Procedure II.	Mandatory		Demonstration/ Testing	Demonstration/ Testing

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1.22.6	<b>Solar Radiation (Sunshine)</b>	Header			
1.22.6.1	The TPS must be unpacked/packed, assembled/disassembled, set up/struck down, started, operated, stored, and transported, without damage and meet all performance requirements (during and after exposure), under full solar loading as described in MIL-STD-810G, Method 505.5 Solar Radiation, Procedure I – Cycling (heating and/or minimal actinic effects) which includes the combination of solar radiation and high ambient temperature environments.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.7	<b>Rain</b>	Header			
1.22.7.1	The TPS must safely operate and withstand without damage, (short-circuit, or breaker tripping, or malfunctioning, or wire swelling, or accumulation of rain water inside the TPS equipment), during and after exposure to blowing rain as described in MIL-STD-810G, Method 506.5 Rain, Procedure I (Rain and Blowing Rain).	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.7.2	The TPS must safely operate and withstand without damage, (short-circuit, or breaker tripping, or malfunctioning, or wire swelling, or accumulation of rain water inside the TPS equipment), during and after exposure to blowing rain as described in MIL-STD-810G, Method 506.5 Rain, Procedure II (Exaggerated).	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.8	<b>Icing and Freezing Rain</b>	Header			
1.22.8.1	The TPS must operate and withstand, without damage and meet performance requirements, during exposure, after exposure, and after removal of an accumulation of up to 13mm of ice/freezing rain as described in MIL-STD-810G, Method 521.3 Icing/Freezing Rain.	Mandatory		Demonstration/ Testing	Demonstration/ Testing

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1.22.8.2	Exception to section 1.22.8.1 This requirement is not applicable to the micro-grid controller.	Information			
1.22.9	<i>Sand and Dust</i>	Header			
1.22.9.1	The TPS must operate without damage or dust ingress and meet all performance requirements during and after exposure to blowing dust conditions as described in MIL-STD-810G Method 510.5 Sand and Dust, Procedure I - Blowing Dust.	Mandatory			Demonstration/ Testing
1.22.9.2	The TPS must operate without damage or sand ingress and meet all performance requirements during and after exposure to blowing sand conditions as described in MIL-STD-810G Method 510.5 Sand and Dust, Procedure II - Blowing Sand.	Mandatory			Demonstration/ Testing
1.22.10	<i>Altitude</i>	Header			
1.22.10.1	The TPS must start and operate to meet all performance requirements, without any manual adjustments, for an altitude range from sea level to 1,200 m above sea level.	Mandatory			Compliance Statement
1.22.10.2	The TPS should start and operate to meet all performance requirements without any manual adjustments for an altitude range above 1,200 m to 3000 m above sea level.	Desirable			Analysis
1.22.11	<i>Terrain/Ground</i>	Header			
1.22.11.1	The TPS must be moved, assembled/disassembled, connected/disconnected, started, and operated, without damage and meet all performance requirements, on terrain that:	Mandatory			Demonstration/ Testing
1.22.11.1.1	Has minor fixed obstacles of up to 12 cm or mounds/depressions that are unlimited in their length;	Mandatory			Demonstration/ Testing

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1.22.11.1.2	Is uneven;	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.11.1.3	Is covered with snow, ice or mud;	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.11.1.4	Is flat;	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.11.1.5	Is hard (e.g. concrete, cement, asphalt);	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.11.1.6	Is soft (e.g. sand, gravel);	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.11.1.7	Is wet/moist soft, shapeless mass of matter (i.e. mushy); and/or	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.11.1.8	Is inclined up to 15 degrees in any direction.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.12	<i>Vibration</i>	Header			
1.22.12.1	The TPS must fully operate without damage and meet all performance requirements during and after exposure to ground transport vibration environment as described in MIL-STD-810G, Method 514.6 Vibration, Procedure I - General Vibration, Category 4 Secured Cargo - Composite Wheeled Vehicle:	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.12.1.1	Vibration Profile described in Table 514.6C-VI; and	Mandatory		Demonstration/ Testing	Demonstration/ Testing

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1.22.12.1.2	Exposure Duration described in section 2.1.4 b. Two-wheeled trailer and wheeled vehicles.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.12.2	The TPS must fully operate without damage and meet all performance requirements, during and after exposure to air transport vibration environment as described in MIL-STD-810G, Method 514.6 Vibration, Procedure I - General Vibration, Category 7 Aircraft –Jet:	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.12.2.1	Vibration Profile described in Table 514.6C-VII, C-17 Platform; and	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.12.2.2	Exposure Duration: 1 hour per axis.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.12.3	While stowed inside an ISO container in accordance with section 1.10.2, the TPS must fully operate without damage and meet all performance requirements, during and after exposure to air transport vibration environment as described in MIL-STD-810G, Method 514.6 Vibration, Procedure I - General Vibration, Category 7 Aircraft –Jet:	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.12.3.1	Vibration Profile described in Table 514.6C-VII, C-17 Platform; and	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.12.3.2	Exposure Duration: 1 hour per axis.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.12.4	While stowed inside an ISO container in accordance with section 1.10.2, the TPS must remain fully operable, without damage and meet all performance requirements, during and after exposure to ground transport vibration environment as described in MIL-STD-810G, Method 514.6 Vibration, Procedure III - Large Assembly Transportation:	Mandatory		Demonstration/ Testing	Demonstration/ Testing

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1.22.12.4.1	Annex C - Section 2.3 Category 6 Truck/trailer - large assembly transport; and	Mandatory			Demonstration/ Testing
1.22.12.4.2	Refer to TOP 1-1-011, Section 7.28 Load Vibration Course for description of terrain types.	Mandatory			Demonstration/ Testing
1.22.13	<i>Shock</i>	Header			
1.22.13.1	The TPS (in Protective Cover in accordance with section 1.7 or Hard-Sided Storage, as applicable) must fully and safely operate without damage and meet all performance requirements, during and after subjection to infrequent, non-repetitive shocks as described in MIL-STD-810G, Method 516.6 Shock, Procedure I Functional Shock of 20g, Table 516.6-II.	Mandatory			Demonstration/ Testing
1.22.13.2	The TPS (in Protective Cover in accordance with section 1.7 or Hard-Sided Storage, as applicable) must fully and safely operate without damage and meet all performance requirements, during and after subjection to infrequent, non-repetitive shocks as described in MIL-STD-810G, Method 516.6 Shock, Procedure VI Bench Handling.	Mandatory			Demonstration/ Testing
1.22.13.3	The TPS (in Protective Cover in accordance with section 1.7 or Hard-Sided Storage, as applicable) must fully and safely operate without damage and meet all performance requirements, during and after subjection to infrequent, non-repetitive shocks as described in MIL-STD-810G, 516.6 Procedure IV Transit Drop, Table 516.6-VI.	Mandatory			Demonstration/ Testing
1.22.13.4	While stowed inside a cargo container in accordance with section 1.7, the TPS must fully and safely operate without damage and meet all performance requirements, during and after the cargo container is subject to shock as described in MIL-STD-810G, Method 516.6 Shock,	Mandatory			Demonstration/ Testing

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	Procedure IV Transit Drop, Table 516.6-VI (Note C), and tailored condition drop height of 15 cm.				
1.22.13.5	While stowed inside a cargo container in accordance with section 1.7, the TPS must fully and safely operate without damage and meet all performance requirements, during and after the cargo container is subject to shock as described in MIL-STD-810G, Method 516.6 Shock, Procedure VII - Pendulum Impact.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.14	<i>Fungus &amp; Salt Spray</i>	Header			
1.22.14.1	The TPS must withstand, without damage or accumulation and meet all performance requirements, exposure to fungus as described in MIL-STD-810G, Method 508.6 Fungus.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.14.2	The TPS equipment in accordance with Para 1.2 must meet ASTM C1338 for fungus growth.	Mandatory		Demonstration/ Testing	Demonstration/ Testing
1.22.15	<i>Freeze/thaw</i>	Header			





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2.1.2.3	12 KW to 18KW Generator skid mounted;	Mandatory		Compliance Statement	Compliance Statement
2.1.2.4	25 KW to 35KW Generator skid mounted; and	Mandatory		Compliance Statement	Compliance Statement
2.1.2.5	50 KW to 70 KW Generator skid mounted;	Mandatory		Compliance Statement	Compliance Statement
2.1.3	The generator must comply with Mil-Std-633G for family of Mobile Electrical Power Generating source, general description information and characteristic data;	Mandatory		Compliance Statement	Compliance Statement
2.1.4	The generator must comply with Mil-Std-705 for military standard generator sets, engine driven, method of tests and instructions.	Mandatory		Compliance Statement	Compliance Statement
2.1.5	The 2 KW to 3.5 KW Generator must be man portable by a maximum of two soldiers from 5 to 95 percentile as defined in Canadian Forces Anthropometric survey DRDC-2015-R186.	Mandatory		Demonstration/Testing	Demonstration/Testing
2.1.6	The 4 to 6 KW gas Generator should be man portable by maximum of 4 soldiers from 5 to 95 percentile as defined in Canadian Forces Anthropometric survey DRDC-2015-R186	Desirable		Demonstration/Testing	Demonstration/Testing
2.2	Engine:	Header			
2.2.1	The engine must be 4 cycle diesel engine;	Mandatory		Compliance Statement	Compliance Statement

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2.2.2	The engine must be capable to burn diesel fuels such as Diesel DL-1, DL-2; Jet Fuel including JP5, JP-8, Jet-A1 and Jet-A in compliance with STANAG 4362 and LFCO 21-19;	Mandatory		Demonstration/ Testing	Demonstration/ Testing
2.2.3	The engine should meet all performance requirements, without performance degradation or the need for adjustment and calibration to accommodate changes in the fuel used, using fuels in accordance with: STANAG 4362 and CAN/CGSB-3.517 for fuels consisting of up to 5% vol/vol of Biodiesel, conforming to ASTM D-6751, Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels	Desirable		Compliance Statement	Compliance Statement
2.2.4	The engine must provide maximum torque output at 1800 rpm;	Mandatory		Compliance Statement	Compliance Statement
2.2.5	Except for 2 KW to 3.5 KW Generators, the engine speed controller (Governor) must be electronic governor, dual setting at 1800 and 1500 rpm to provide alternating current of 60 and 50 Hz;	Mandatory		Compliance Statement	Compliance Statement
2.2.6	All TPS Generators, including the 2 KW to 3.5 KW diesel Generators, the engine speed controller (Governor) should be electronic governor, dual setting at 1800 and 1500 rpm to provide alternating current of 60 and 50 Hz;	Desirable		Compliance Statement	Compliance Statement
2.2.7	The engine speed must be manually adjustable for changing the output frequency to $\pm 5\%$ ;	Mandatory		Demonstration	Demonstration
2.2.8	The engine must be equipped with a priming pump lever manually operated and electrical fuel injection self-priming pump;	Mandatory		Demonstration	Demonstration

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2.2.9	The engine must be equipped with an auxiliary fuel pump 24 VDC;	Mandatory		Demonstration	Demonstration
2.2.10	The engine must be equipped with a fuel water separator filter;	Mandatory		Demonstration	Demonstration
2.2.11	The engine electrical starter must be 24 VDC;	Mandatory		Demonstration	Demonstration
2.2.12	The engine for the 2 to 3.5 KW generators family must have self-recoil pull cord start capability;	Mandatory		Demonstration	Demonstration
2.2.13	The engine must have a standard NATO 24VDC receptacle to jump start the engine when needed;	Mandatory		Demonstration	Demonstration
2.2.14	The engine must be EPA Certified to Tier 3 Engine or higher;	Mandatory		Demonstration	Demonstration
2.2.15	The engine should be EPA Certified to Tier 4 Engine or higher;	Desirable		Demonstration	Demonstration
2.2.16	The engine exhaust pipe must be equipped with a silencer, spark arrestor and rain cap.	Mandatory		Demonstration	Demonstration
2.2.17	The engine exhaust pipe should be equipped with a silencer, spark arrestor, rain cap and should have a minimum of two 90 degrees angle bends; and	Desirable		Demonstration	Demonstration
2.2.18	The engine air-intake filter should be washable.	Desirable		Demonstration	Demonstration
2.3	<b>Engine fuel tank:</b>	Header			
2.3.1	Except for the 2 to 3.5 KW generators, the engine internal fuel tank must be large enough to support full load operation for a minimum of 12 hours;	Mandatory		Demonstration	Demonstration

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2.3.2	The engine internal fuel tank for the 2 to 3.5KW generators must be large enough to support full load operation for a minimum of 6 hours;	Mandatory		Demonstration	Demonstration
2.3.3	The engine internal fuel tank for 2 to 3.5KW generators should be large enough to support full load operation for a minimum of 8 hours	Desirable		Demonstration	Demonstration
2.3.4	The engine internal fuel tank must be capable to be connected to an external fuel source using auxiliary fuel line NSN 4720-00-021-3320;	Mandatory		Demonstration	Demonstration
2.3.5	Except for family below 5 kW generators, the auxiliary fuel line must be supplied and stored inside the generator enclosure.	Mandatory		Demonstration	Demonstration
2.4	<b>Engine Safety Requirement and Sensor Indicators:</b>	Header			
2.4.1	The engine must have built-in safety sensors to provide self-diagnostic indication on the Generator Control Panel, pre-warning alarm, and to safely shut-down the engine in the following events:	Mandatory		Demonstration	Demonstration
2.4.1.1	Engine Over Temperature;	Mandatory		Demonstration	Demonstration
2.4.1.2	Power overload	Mandatory		Demonstration	Demonstration
2.4.1.3	Engine Over Speed;	Mandatory		Demonstration	Demonstration
2.4.1.4	Low Engine Oil Pressure;	Mandatory		Demonstration	Demonstration
2.4.1.5	Low Engine Fuel;	Mandatory		Demonstration	Demonstration
2.4.2	Except for the 2-3.5 KW generators, the engine must be equipped with a dead-crank safety switch for use during maintenance;	Mandatory		Demonstration	Demonstration

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2.4.3	All engine rotating parts must be shielded;	Mandatory		Demonstration	Demonstration
2.4.4	The engine alternator must charge the 24 VDC battery and provide power for the generator control;	Mandatory		Demonstration	Demonstration
2.4.5	The alternator must be protected by a DC Circuit Breaker;	Mandatory		Demonstration	Demonstration
2.4.6	The Generator must be equipped with a Selector-Switch, Auto-Off-Local, for controlling the operation of the engine and the generator.	Mandatory		Demonstration	Demonstration
2.4.7	The Generator must be equipped with a Battle-Short-Switch to override the engine and generator safety controller. The Battle-Short-Switch must be used only when the electrical power output is operational critical.	Mandatory		Demonstration	Demonstration
2.4.8	The control panel must be equipped with switchable tactical panel light to allow night operation.	Mandatory		Demonstration	Demonstration
2.4.9	The control panel must be equipped with an access door cover to prevent any visible light from escaping the generator.	Mandatory		Demonstration	Demonstration
2.5	<b>Generator Enclosure:</b>	Header			
2.5.1	The generator environmental protection enclosure must be designed for outdoor and must meet NEMA 4;	Mandatory		Demonstration	Demonstration

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2.5.2	The generator acoustic enclosure must reduce the engine noise to a maximum of 72 dBA @ 7 meters (23 feet) when the engine access doors are closed;	Mandatory		Demonstration	Demonstration
2.5.3	The generator acoustic enclosure must be capable to support Speech Interference Level (SIL-4 Limit) of Category E as defined in Mil-Std-1474D-Design criteria Standard for noise limit.	Mandatory		Demonstration	Demonstration
2.5.4	The enclosure must be designed for maximum accessibility to different engine and generator parts including batteries and storage compartments without the need to remove panels using tools.	Mandatory		Demonstration	Demonstration
2.5.5	Generator enclosure air intake and discharge must be designed to provide low infrared and heat signatures	Mandatory		Demonstration	Demonstration
<b>2.6</b>	<b>Electrical Generator:</b>	Header			
2.6.1	The electrical generator must be designed for continuous output rating;	Mandatory		Demonstration	Demonstration
2.6.2	Electrical generator must be capable to carry an additional 15% of the rated load for period of 1 hour without overheating;	Mandatory		Demonstration	Demonstration
2.6.3	Electrical generator should be capable to carry an additional 15% of the rated load for period of 2 hour without overheating;	Desirable		Demonstration	Demonstration
2.6.4	The electrical generator must be brushless	Mandatory		Demonstration	Demonstration
2.6.5	The electrical generator must be double winding and capable to be configured to 120/208 or 240/416 three phase AC output;	Mandatory		Demonstration	Demonstration

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2.6.6	The temperature rise for generator winding must be class H or higher	Mandatory		Demonstration	Demonstration
2.6.7	The electrical generator must be equipped with an electronic Automatic Voltage Regulator (AVR)	Mandatory		Demonstration	Demonstration
2.6.8	The electrical generator must be equipped with an electronic synchronizing relay to automatically synchronize two electrical generators for parallel operation as Master and Slave generators;	Mandatory		Demonstration	Demonstration
2.6.9	The generator controller must be equipped with a master selector switch Auto-Off-Local to provide a capability of auto-start for micro-grid or standalone operations	Mandatory		Demonstration	Demonstration
2.6.10	The generator must be capable of operating continuously at any load between 25% and 100% of the rated load.	Mandatory		Demonstration	Demonstration
2.6.11	The generator should operate effectively when loaded to as low as 10% of the rate load (at an ambient temperature of 40°C and an altitude of 1000m).	Desirable		Demonstration	Demonstration
2.6.12	The generator must be equipped with a Miniature Circuit Breaker MCB in compliance with CSA C22.2 No.5.1, and of a quick-make, quick-break type designed to open or close a circuit by non-automatic means and to automatically disconnect the generator output terminals in the event of an over current or short-circuit, capable to carry the full load current at an ambient of 40 °C, and must have minimum 3,000 KA SYM RMS interrupting current @ 240 VAC without damage to itself when properly applied within its ratings.	Mandatory		Demonstration	Demonstration



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2.6.13	Mandatory					Testing
	The Generator must meet STANAG 4135 electrical Steady State with transient power output characteristics as follows:					
	Electric Power Quality	Frequency	Voltage			
	Manual Regulation	± 5%	+ 10% / -5%			
	Regulation	0.25%	1%			
	Voltage Modulation	-	1%			
	Short term steady state stability (30 Sec)	0.5% bandwidth	1% bandwidth			
	Short term steady state stability (4 hr)	1% bandwidth	2% bandwidth			
	Application of rated load	Transient	4% Under	15% Dip		
		Recovery time	2 Sec	0.5 Sec		
	Rejection of rated load	Transient	4% Over	15% Rise		
		Recovery time	2 Sec	0.5 Sec		
	Max waveform deviation factor			5%		
	Individual waveform harmonic			2%		

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<b>2.7</b>	<b>Generator Controls and Indicators:</b>	Header			
2.7.1	Generator control panel must have the following controls:	Mandatory		Compliance Statement	Compliance Statement
2.7.1.1	Master control switch Auto-Off-Local:	Header			
2.7.1.1.1	2 to 3.5 KW Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.1.2	4 to 6 KW Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.1.3	12 KW and above Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.2	Output power ON/OFF switch;	Header			
2.7.1.2.1	2 to 3.5 KW Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.2.2	4 to 6 KW Generators	Mandatory		Compliance Statement	Compliance Statement

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2.7.1.2.3	12 KW and above Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.3	Output voltage manual adjustment;	Header			
2.7.1.3.1	2 to 3.5 KW Generators	Desirable		Compliance Statement	Compliance Statement
2.7.1.3.2	4 to 6 KW Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.3.3	12 KW and above Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.4	Output frequency manual adjustment;	Header			
2.7.1.4.1	2 to 3.5 KW Generators	Desirable		Compliance Statement	Compliance Statement
2.7.1.4.2	4 to 6 KW Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.4.3	12 KW and above Generators	Mandatory		Compliance Statement	Compliance Statement

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2.7.1.5	Battle-short switch;	Header			
2.7.1.5.1	2 to 3.5 KW Generators	Not Applicable			
2.7.1.5.2	4 to 6 KW Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.5.3	12 KW and above Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.6	Cold weather start switch,	Header			
2.7.1.6.1	2 to 3.5 KW Generators	Desirable		Compliance Statement	Compliance Statement
2.7.1.6.2	4 to 6 KW Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.6.3	12 KW and above Generators; and	Mandatory		Compliance Statement	Compliance Statement
2.7.1.7	Emergency Shut-down switch.	Header			

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2.7.1.7.1	2 to 3.5 KW Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.7.2	4 to 6 KW Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.1.7.3	12 KW and above Generators	Mandatory		Compliance Statement	Compliance Statement
2.7.2	The generator must have a digital control panel display that provides a status indicator for the following:	Mandatory		Compliance Statement	Compliance Statement
2.7.2.1	Output Voltage for phase and line voltages;	Mandatory		Compliance Statement	Compliance Statement
2.7.2.2	Output frequency;	Mandatory		Compliance Statement	Compliance Statement
2.7.2.3	Output power per phase and total three phase power	Mandatory		Compliance Statement	Compliance Statement
2.7.2.4	Engine Oil Pressure	Mandatory		Compliance Statement	Compliance Statement
2.7.2.5	Engine Coolant Temperature;	Header		Compliance Statement	Compliance Statement

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2.7.2.5.1	2 to 3.5 KW Generators	Not Applicable			
2.7.2.5.2	4 to 6 KW Generators	Not Applicable			
2.7.2.5.3	12 KW and above Generators	Mandatory			Compliance Statement
2.7.2.6	Battery charging current;	Mandatory			Compliance Statement
2.7.2.7	Battery Voltage;	Mandatory			Compliance Statement
2.7.2.8	Power output circuit breaker status ON/OFF/TRIPPED;	Mandatory			Compliance Statement
2.7.2.9	Battle-Short switch ON/OFF;	Mandatory			Compliance Statement
2.7.2.10	Engine Speed in rpm;	Mandatory			Compliance Statement
2.7.2.11	Synchronization relay or Parallel operation ON/OFF including the power consumption for the Master and Slave generators;	Mandatory			Compliance Statement

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2.7.2.12	Generator fuel level indicator;	Mandatory		Compliance Statement	Compliance Statement
2.7.2.13	Generator Low Level warning indicator; and	Mandatory		Compliance Statement	Compliance Statement
2.7.2.14	Generator Overload warning indicator.	Mandatory		Compliance Statement	Compliance Statement
2.7.3	The generator must be equipped with a self-diagnostic fault indicator for the following:	Header			
2.7.3.1	Short circuit or electrical overload;	Mandatory		Compliance Statement	Compliance Statement
2.7.3.2	Reverse Power;	Mandatory		Compliance Statement	Compliance Statement
2.7.3.3	Over Voltage;	Mandatory		Compliance Statement	Compliance Statement
2.7.3.4	Low engine Oil pressure;	Mandatory		Compliance Statement	Compliance Statement
2.7.3.5	High coolant temperature;	Mandatory		Compliance Statement	Compliance Statement

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2.7.3.6	Low battery voltage; and	Mandatory		Compliance Statement	Compliance Statement
2.7.3.7	Low fuel.	Mandatory		Compliance Statement	Compliance Statement
3	<b>Power Distribution and Power Management System:</b>	Header			
3.1	The Power Distribution and Power Management System must meet all requirements specified under article 1 above, TPS System Level Requirement.	Mandatory		Compliance Statement	Compliance Statement
3.2	2 to 3.5 KW and 4 to 6 KW Generators: The following distribution requirements apply:	Header			
3.2.1	The 2 to 3.5 KW and 4 to 6 KW Generators along with any associated ESU(S) must use common extension cords.	Mandatory		Compliance Statement	Compliance Statement
3.2.2	The 4 to 6 kW generators must have a 25m connection cable to allow a connection between the highest current 120 V output on the generator and the W5 connector input of most command post vehicles	Mandatory		Compliance Statement	Compliance Statement
3.2.3	The 2 to 3.5 KW and 4 to 6 KW Generators must have a simple weatherproof device which can plug into the generator/ESU receptacles	Mandatory		Compliance Statement	Compliance Statement



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	to measure instantaneous power (up to 6kW, single phase) of connected loads and the peak load				
3.2.4	The 2 to 3.5 KW and 4 to 6 KW Generators monitoring device should allow strip-recording of data to allow better analysis of a battle-day/exercise/operation. The device should store data when unplugged/removed until cleared or over-written.	Desirable		Compliance Statement	Compliance Statement
3.3	The following will apply to the distribution systems associated with the Family of 12 KW and above Generators:	Header			
3.3.1	The distribution concept must be a series of cables and distribution boxes beginning at the three-phase generator/ESU which terminates in (single-phase) receptacles for users and three-phase pin/sleeve connectors.	Mandatory		Compliance Statement	Compliance Statement
3.3.2	The normal distribution system must only accommodate North American voltages/frequencies.	Mandatory		Compliance Statement	Compliance Statement
3.3.3	TPS cables must be compatible with the in-service Central Power Distribution System (CPDS)	Mandatory		Compliance Statement	Compliance Statement
3.3.4	The Terminal Box must be the last/smallest box in the system to be used to plug in 120V equipment.	Mandatory		Compliance Statement	Compliance Statement

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3.3.5	Boxes must be olive drab or desert tan in colour.	Mandatory			Compliance Statement
3.3.6	Any shiny or reflective surface must have the ability to be covered.	Mandatory			Compliance Statement
3.3.7	Cable colour must be industry standard (dark)	Mandatory			Compliance Statement
3.4	<b><i>Distribution Support Equipment</i></b>	Header			
3.4.1	Grounding rods/plates must be included for each box (except terminal boxes).	Mandatory			Compliance Statement
3.4.2	Grounding rod/plate installation and removal tools must be included (scaled one per distribution system). If the same tools are used for the generator/ESU, only one set is required per skid, not two).	Mandatory			Compliance Statement
3.4.3	Cables over 10m which exceed a two-person lift (74.4kg) must have a means to allow easier transport, laying, and recovery over longer distances.	Mandatory			Compliance Statement
3.4.4	Heavy duty interlocking cable protectors must be provided to permit vehicles to drive over cables safely.	Mandatory			Compliance Statement

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3.4.5	Cable protectors overall length must be at least 4m, with a high visibility band/colour and be anchorable into the ground.	Mandatory		Compliance Statement	Compliance Statement
3.4.6	Cables and boxes must have appropriate storage on/within the Bi-con skids to protect them from the environment, theft, and damage when not in use	Mandatory		Compliance Statement	Compliance Statement
3.5	<b>Cables</b>	Header			
3.5.1	Cables must come in no more than 4 different lengths to assist with layout planning, minimize confusion in the field, and allow easier inventory management/mixing of kits.	Mandatory		Compliance Statement	Compliance Statement
3.5.2	The longest cable must be no more than 30m.	Mandatory		Compliance Statement	Compliance Statement
3.5.3	Cables must have quick-connect pin and sleeve connector fittings at each end.	Mandatory		Compliance Statement	Compliance Statement
3.5.4	Fittings must be chosen to alert and prevent operators from mismatching amperages and voltages	Mandatory		Compliance Statement	Compliance Statement
3.5.5	Cables must remain flexible (1:5 bend ratio) from A2 to C2 conditions.	Mandatory		Compliance Statement	Compliance Statement
3.5.6	Cables should remain flexible (1:5 bend ratio) in A3 to C3 conditions.	Desirable		Compliance Statement	Compliance Statement

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<b>3.6</b>		<b><i>Distribution Boxes</i></b>		Header			
3.6.1		The base of all boxes must stand clear of the ground (at least 150 mm) to prevent water, sand, etc. from entering or covering it and to be more visible to personnel and vehicles.		Mandatory		Compliance Statement	Compliance Statement
3.6.2		Boxes must not tip over in windy conditions.		Mandatory		Compliance Statement	Compliance Statement
3.6.3		Termination boxes must include a loop/hole near the edge to allow hanging by a carabineer, cord/rope, or bolt/screw on supports such as tent frames, trees/beams, plywood, side of vehicles, etc.		Mandatory		Compliance Statement	Compliance Statement
3.6.4		All boxes must have a weatherproof means to insert a temporary identifier (index card, etc.) to allow the operator to temporarily identify it.		Mandatory		Compliance Statement	Compliance Statement
3.6.5		All boxes must have a green indicator light or a digital display showing when power is present at the input (one indicator per phase).		Mandatory		Compliance Statement	Compliance Statement
3.6.6		All boxes which include 120V AC receptacles (including all terminal boxes) must have a green indicator light or digital display showing when power is present at each receptacle/duplex receptacle		Mandatory		Compliance Statement	Compliance Statement
3.6.7		Termination box.		Header			
3.6.7.1		Exterior Termination Box, which must have at least three 120V duplex receptacles (NEMA 5-15 or 5-20) including GFCI protection and rated for outdoor use.		Mandatory		Compliance Statement	Compliance Statement
3.7		<b><i>Power Management Module (PMM)</i></b>		Header			

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3.7.1	General: The PMM may not be required as a stand-alone device depending on how vendors design the generator/ESU combination. The PMM provides the management and control of a micro-grid when two or more generators and at least one ESU are connected together. The PMM acts as the interface to the human operator who monitors, controls and makes adjustments to the system as required.	Information			
3.7.2	If the PMM is a laptop device or tablet, it must be based on commonly available operating systems which allow routine upgrades.	Mandatory			Compliance Statement
3.7.3	The PMM must include the following functions:				
3.7.3.1	The PMM must control which power sources are active to meet the current loading.	Mandatory			Compliance Statement
3.7.3.2	The PMM must control up to six sources at one time.	Mandatory			Compliance Statement
3.7.3.3	The PMM must designate one generator as the main power source, and another as the backup that will come on line if the main system fails.	Mandatory			Compliance Statement
3.7.3.4	With all power sources active, and loads exceeding capacity, the PMM must shed lower priority loads until loads return to generator/ESU capacity.	Mandatory			Compliance Statement

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3.7.3.5	The PMM must indicate to what degree loads are balanced between phases to allow corrective action by the operator.	Mandatory		Compliance Statement	Compliance Statement
3.7.3.6	The PMM should have automatic load adjustment to balance between phases.	Desirable		Compliance Statement	Compliance Statement
3.7.3.7	If laptop/tablet based, the PMM must have a training or demonstration mode to allow operators to train in a simulated environment before connecting to actual equipment	Mandatory		Compliance Statement	Compliance Statement
3.7.3.8	The PMM must receive data from a sensor connected to an external grid to allow the automatic switchover to host nation power if TPS assets fail.	Mandatory		Compliance Statement	Compliance Statement
3.7.3.9	The PMM software and firmware must download diagnostics and strip-records by a removable (type TBD) memory device	Mandatory		Compliance Statement	Compliance Statement
3.7.3.10	The PMM must not transmit through Wi-Fi, Bluetooth, or other wireless transmission.	Mandatory		Compliance Statement	Compliance Statement
3.7.3.11	The PMM must use a removable (type TBD) memory device or hardware connection to a computer to allow upgrades to software and firmware.	Mandatory		Compliance Statement	Compliance Statement
3.7.4	<u>Controller and HMI</u>	Header			
3.7.4.1	The PMM must detect all TPS components within the micro-grid.	Mandatory		Compliance Statement	Compliance Statement
3.7.4.2	Incoming data must include device ID/type of device and various operating parameters about the device including: on/off, current,	Mandatory		Compliance Statement	Compliance Statement

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	voltage, frequency, power produced, and actual power load/demand for the last 30 days of operation.				
3.7.4.3	Other parameters such as engine temperature, oil and fuel levels, etc to reduce physical visits to generators should be included.	Desirable		Compliance Statement	Compliance Statement
3.7.4.4	Faults or warnings must be visibly and audibly alerted.	Mandatory		Compliance Statement	Compliance Statement
3.7.4.5	Other functions, screens, or sub-menus must allow further investigation once acknowledged.	Mandatory		Compliance Statement	Compliance Statement
3.7.5	<b>Survivability</b>	Header			
3.7.5.1	If not laptop/tablet based, PMM equipment must be protected from weather to allow outdoor operation.	Mandatory		Compliance Statement	Compliance Statement
3.7.5.2	All plugs and sockets must have weather resistant covers.	Mandatory		Compliance Statement	Compliance Statement
3.7.5.3	PMM hardware must meet environmental requirements of section 4.3.	Mandatory		Compliance Statement	Compliance Statement
3.7.5.4	PMM electromagnetic emissions must comply with applicable Industry Canada, FCC, and NATO emission standards.	Mandatory		Compliance Statement	Compliance Statement

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3.7.5.5	PMM modules (if not DND laptops) must pass the NATO Road/Cross Country Vibration Test Mil Std 810E.	Mandatory		Compliance Statement	Compliance Statement
3.7.5.6	During a PMM failure or loss of connection, the micro-grid must revert to a fail-safe state where generators/ESU will continue to provide power.	Mandatory		Compliance Statement	Compliance Statement
3.8	<b>Maintainability</b>	Header			
3.8.1	DND maintenance of the PMM must be limited to conducting updates to software and firmware.	Mandatory		Compliance Statement	Compliance Statement
3.8.2	If required, routine operator inspections and maintenance must be 3 minutes or less.	Mandatory		Compliance Statement	Compliance Statement
3.8.3	As no first line maintenance is anticipated for the PMM, any repairs must be executed under the established In-Service Support contract.	Mandatory		Compliance Statement	Compliance Statement
3.8.4	The PMM must be designed with enough flexibility so changes (including software/firmware updates) in generators, ESU, or renewable energy components from other manufacturers can be incorporated with minimal software upgrades/conversions.	Mandatory		Compliance Statement	Compliance Statement
3.8.5	<u>Availability:</u> PMM availability must be at least 0.999.	Mandatory		Compliance Statement	Compliance Statement



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3.8.6	<u>Reliability</u> : the PMM must have a MTBF of at least 50,000 hours	Mandatory		Compliance Statement	Compliance Statement
4	<b>POWER STORAGE REQUIREMENTS:</b>	Header			
4.1	The Power Storage System must meet all requirements specified under article 1 above, TPS System Level Requirement.	Mandatory		Compliance Statement	Compliance Statement
4.2	The Energy Storage System (ESU) must consist of the following:	Mandatory		Compliance Statement	Compliance Statement
4.2.1	Battery Bank;	Mandatory		Compliance Statement	Compliance Statement
4.2.2	Battery Charging System; and	Mandatory		Compliance Statement	Compliance Statement
4.2.3	DC/AC Two-Way Inverter System.	Mandatory		Compliance Statement	Compliance Statement
4.3	<b>Battery Banks</b>	Header			
4.3.1	The battery bank must be portable by maximum of 2 soldiers from 5 to 95 percentile as defined in the Canadian Forces Anthropometric Survey DRDC-2015-R186.	Mandatory		Compliance Statement	Compliance Statement
4.3.2	The ESU (S) battery power pack must be in the range of 2.5 to 5 KW/hr.	Mandatory		Compliance Statement	Compliance Statement

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4.3.3	The ESU (L) battery power pack must be in the range of 12.5 to 15 KW/hr.	Mandatory		Compliance Statement	Compliance Statement
4.3.4	The capacity of the ESU(S) battery bank must be scalable by adding additional power pack using plug and play connectors for a maximum battery bank capacity of ten (10) KW/hr	Mandatory		Compliance Statement	Compliance Statement
4.3.5	The capacity of the ESU(L) battery bank must be scalable by adding additional power pack using plug and play connectors for a maximum battery bank capacity of forty-five (45) KW/hr	Mandatory		Compliance Statement	Compliance Statement
4.3.6	The battery bank must comply with A-LM-158-004/AG-001 - TRANSPORTATION MANUAL VOLUME 4 MOVEMENT OF MATERIEL, Ch. 15 TRANSPORTATION OF DANGEROUS GOODS; and A-LM-117-001/FP-001 –TRANSPORTATION OF DANGEROUS GOODS BY CANADIAN FORCES AIRCRAFT for air transportation.	Mandatory		Compliance Statement	Compliance Statement
4.3.7	The Battery Power Pack must be designed for outdoor use and meet the climatic conditions specified under section 1.22 above.	Mandatory		Compliance Statement	Compliance Statement
4.3.8	The Battery Power Pack must withstand 2500 charge/discharge cycles.	Mandatory		Compliance Statement	Compliance Statement

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4.3.9	The Battery Bank must communicate with the RTU to provide the status of charge, available power and the capacity.	Mandatory		Compliance Statement	Compliance Statement
4.3.10	The battery banks must have a fail-safe design to ensure against fire hazards, damage to equipment, injury to personnel, or cause an environmental impact.	Mandatory		Compliance Statement	Compliance Statement
<b>4.4</b>	<b><i>Battery Charging System:</i></b>	Header			
4.4.1	The battery charger for the ESU(S) must be integral to the ESU(S) and able to be carried by maximum of 2 soldiers from 5 to 95 percentile as defined in the Canadian Forces Anthropometric Survey DRDC-2015-R186.	Mandatory		Compliance Statement	Compliance Statement
4.4.2	The battery charger for the ESU(L) must be integral to the ESU(L)				
4.4.3	The battery charger must use the excess energy available from the grid to charge the battery bank.	Mandatory		Compliance Statement	Compliance Statement
4.4.4	The battery charger system must be capable to fast charge the ESU(L) battery Pack within four (4) hours from a state of complete discharge	Mandatory		Compliance Statement	Compliance Statement
4.4.5	The battery charger system should be capable to fast charge the ESU(L) battery pack within two (2) hours from a state of complete discharge	Desirable		Compliance Statement	Compliance Statement
4.4.6	The battery charger must self-adjust charging current without raising battery temperature to safety limit.	Mandatory		Compliance Statement	Compliance Statement

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4.4.7	The battery charger must communicate with the RTU to provide the status of charging current and battery temperature.	Mandatory		Compliance Statement	Compliance Statement
4.4.8	The battery charger must be designed for outdoor use and meet the climatic conditions specified under Para 1.22 above.	Mandatory		Compliance Statement	Compliance Statement
<b>4.5</b>	<b>DC to AC Inverter System</b>	Header			
4.5.1	The DC/AC inverter system must be portable by maximum of 2 soldiers from 5 to 95 percentile as defined in the Canadian Forces Anthropometric Survey DRDC-2015-R186.	Mandatory		Compliance Statement	Compliance Statement
4.5.2	The input voltage of the DC/AC inverter system must be 28 VDC.	Mandatory		Compliance Statement	Compliance Statement
4.5.3	The inverter for the ESU(S) must have at least two USB Type A and two USB Type C charging ports.	Mandatory		Compliance Statement	Compliance Statement
4.5.4	The DC/AC inverter system must be designed for outdoor use and meet the climatic conditions specified under Para 1.22 above.	Mandatory		Compliance Statement	Compliance Statement
4.5.5	ESU(S): The output of the DC/AC inverter system must be 120V, Single phase 60 Hz, and 240V, Single phase 50/60 Hz	Mandatory		Compliance Statement	Compliance Statement
4.5.6	ESU(S): The output of the DC/AC inverter system should include 240V, Single phase 50/60 Hz.	Desirable		Compliance Statement	Compliance Statement
4.5.7	The ESU(S) must include a 120V port rated at 20 A.	Mandatory		Compliance Statement	Compliance Statement

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4.5.8	ESU(L): The output of the DC/AC inverter system must be 208V, 3 phase 60 Hz, and 216V, 3 phase 50/60 Hz	Mandatory		Compliance Statement	Compliance Statement
4.5.9	The output of the DC/AC inverter system should be able to be configured/selected as 50 or 60 Hz.	Desirable		Compliance Statement	Compliance Statement
4.5.10	The output of the DC/AC inverter system should be able to be configured/selected as 120/208 or 240/416 VAC, three phase.	Desirable		Compliance Statement	Compliance Statement
4.5.11	The DC/AC inverter must communicate with the RTU to provide the status of voltage and current fed into the grid.	Mandatory		Compliance Statement	Compliance Statement
4.5.12	The DC/AC inverter should be packaged with the Energy Storage Unit.	Desirable		Compliance Statement	Compliance Statement
<b>5</b>	<b>PACKAGING REQUIREMENT</b>	Header			
<b>5.1</b>	<b>Skids and Containers</b>	Header			
<b>5.1.1</b>	<b>General Requirements</b>	Header			
<b>5.1.1.1</b>	The families of 2 to 3.5 KW and 4 to 6 KW Generators (Gasoline), and ESU(S), can be carried by any land-based vehicle in the CAF including lighter vehicles such as civilian pickup-trucks and vans, snowmobiles (LOS), quad-runners, and even pack-animals or by hand for short distances. They may also be moved by helicopter or fixed wing air transport, or various ships and watercraft.	Information			

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5.1.1.2	Given the relatively low weight and volume of small generators, there are no specific requirements for packaging. The 4 to 6 KW Generators (Diesel) and 12 to 70 kW generators, ESU(L), and distribution system equipment will almost exclusively be mounted to skids based on a Bi-con footprint (approximately 8' x 10', or ½ of an 20' ISO container). Further guidance is available as noted at Sect 1.1 This will enable handling and movement by most forklifts and heavy equipment and fits the decks of many vehicles and trailers.	Information			
5.1.1.3	Bi-con skids will lock onto a TPS-supplied trailer frame (or other similar trailers) as described later in this section to allow towing.	Mandatory		Compliance Statement	Compliance Statement
5.1.2	<b>Skids</b>	Header			
5.1.2.1	Skids must conform to the MIL-Std-3037 for ISO containers, maintaining the capabilities of the standard ISO 20ft intermodal footprint for commonality and be compatible with the standard SeaLock connector(s).	Mandatory		Compliance Statement	Compliance Statement
5.1.2.2	Equipment mounted to a Bi-con skid must be removable by maintenance staff using common hand tools.	Mandatory		Compliance Statement	Compliance Statement
5.1.2.3	Skids must have forklift pockets in all four directions, remaining accessible if the ground compresses 50 mm.	Mandatory		Compliance Statement	Compliance Statement

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5.1.2.4	Skids must have lifting point attachments to allow movement by a crane, hoist, helicopter, or other similar equipment. The use of spreader bars is acceptable.	Mandatory		Compliance Statement	Compliance Statement
5.1.2.5	The skid holding the Family of 4 to 6 kW generator (Diesel) system must have brackets for one diesel jerry can.	Mandatory		Compliance Statement	Compliance Statement
5.1.2.6	Skids must have appropriate locations to store and secure smaller TPS specific operator tools and equipment (wrenches, testers, common consumables, etc	Mandatory		Compliance Statement	Compliance Statement
5.1.2.7	Boxes must withstand the weight of a 130kg person if stepped on.	Mandatory		Compliance Statement	Compliance Statement
5.1.3	<b>Survivability</b>	Header			
5.1.3.1	Skids and trailer must pass the rail-impact test as per MIL-STD-810H when loaded in their heaviest configuration	Mandatory		Compliance Statement	Compliance Statement
5.1.3.2	Any shiny or reflective surface must have the ability to be covered.	Mandatory		Compliance Statement	Compliance Statement
5.1.3.3	Skids must have appropriate locations to store camouflage nets large enough to cover the skid/container as well as the trailer supporting it.	Mandatory		Compliance Statement	Compliance Statement

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5.1.3.4	Containers must have appropriate locations to store camouflage nets (and poles if required).	Mandatory		Compliance Statement	Compliance Statement
5.1.3.5	Skids holding generators or ESUs must come equipped with a fire extinguisher(s) and bracket(s), fire blanket(s), and/or other equipment that are accessible from ground level even when the skid is mounted on the trailer to extinguish the appropriate type of fire.	Mandatory		Compliance Statement	Compliance Statement
5.1.4	<b>Trailers.</b>	Header			
5.1.4.1	Trailers are not required for the Family of 2 to 3.5 KW and 4 to 6 KW Generators (Gasoline), and ESU(S).	Information			
5.1.4.2	The Bi-con skids described in section 5.1 must lock onto a TPS-supplied trailer frame for towing.	Mandatory		Compliance Statement	Compliance Statement
5.1.4.3	The trailer must accept one Bi-con skid or one Bi-con container.	Mandatory		Compliance Statement	Compliance Statement
5.1.4.4	The trailer must match the cross county mobility of the Logistic Vehicle Modernization - Light (LVM-L) while carrying a full payload.	Mandatory		Compliance Statement	Compliance Statement
5.1.4.5	The trailer must be a 2.2 Tonne trailer modified to carry the extra weight of a Bi-con skid, generator set, ESU(L), and associated hardware.	Mandatory		Compliance Statement	Compliance Statement
5.1.4.6	The trailer must have radial tires compatible with LVM-L truck spare tires;	Mandatory		Compliance Statement	Compliance Statement



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5.1.4.7	The trailer brake system must be an air to hydraulic brake system.	Mandatory			Compliance Statement
5.1.4.8	The trailer air hose for the standard and emergency braking system must be compatible with the towing truck air system;	Mandatory			Compliance Statement
5.1.4.9	The trailer tongue weight must be between 7 and 15% of the total curb weight of the trailer when fully loaded with the generator and associated accessories;	Mandatory			Compliance Statement
5.1.4.10	Minimum ground clearance must be no less than 260mm when carrying with the heaviest configuration skid.	Mandatory			Compliance Statement
5.1.4.11	Trailer components must have maximum component commonality with the LVM(L) trailer (gladhands, jacks, spare tire mounts, etc)	Mandatory			Compliance Statement
5.1.4.12	Minimum fording must be no less than 750mm on a hard-bottomed water obstacle.	Mandatory			Compliance Statement
5.1.4.13	Trailers must be a single or double axle.	Mandatory			Compliance Statement
5.1.4.14	Trailer tongues must accept different inserts or be adjustable to allow connection to civilian and military prime movers.	Mandatory			Compliance Statement
5.1.4.15	Trailers must have safety chains with safety latches.	Mandatory			Compliance Statement

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5.1.4.16	Trailer must have a foldable stabilizing leg system for levelling	Mandatory			Compliance Statement
5.1.4.17	Trailer tongues must have a manually operated jack system for levelling and connecting to prime movers.	Mandatory			Compliance Statement
5.1.4.18	Trailer tongues must not interfere with the LVM(L) tailgate opening to the horizontal position.	Mandatory			Compliance Statement
5.1.4.19	The trailer must be equipped with a tool box for stowage of the ground rods, ground rod puller and drover, external fuel hoses, ground wires and grounding lugs.	Mandatory			Compliance Statement
5.1.4.20	The trailer must be equipped with a grounding split-bolt terminal for bonding of the trailer and the generator chassis to the ground.	Mandatory			Compliance Statement
5.1.4.21	The trailer must be equipped with a manual hand-break safety system to prevent the trailer from rolling when deployed on sloped terrain.	Mandatory			Compliance Statement
5.1.4.22	The trailer must have an electrical connector compatible with the LVM-L towing connector for the control of the tailgate lighting system including blackout tailgate light;	Mandatory			Compliance Statement
5.1.4.23	The trailer should retain the tactical/blackout capability when connected to a 12 V civilian system.	Desirable			Compliance Statement
5.1.4.24	Trailers must be equipped with mud flaps behind the wheels, and wheel splash/stone throw protection above the wheels.	Mandatory			Compliance Statement

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Section #	Requirement Description	Type of Requirement	Compliance to Desirable Yes / No	Means of Compliance Post-Contract Award	Means of Compliance Pre-Contract Award
5.1.5	<b>STOWAGE DEPLOYMENT AND RECOVERY KIT REQUIREMENT</b>	Header			
5.1.5.1	The Stowage, Deployment and Recovery – Installation Kit (SDR-IK) must be provided for the following as described at Appendix AA:	Header			
5.1.5.1.1	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz DIESEL; with ESU(S) and Gen B Power Cable.	Mandatory		Compliance Statement	Compliance Statement
5.1.5.1.2	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase, with ESU(L) and D Distribution kit.	Mandatory		Compliance Statement	Compliance Statement
5.1.5.1.3	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase, with ESU(L) and E Distribution kit.	Mandatory		Compliance Statement	Compliance Statement
5.1.5.1.4	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase, with X Distribution Kit.	Mandatory		Compliance Statement	Compliance Statement
5.1.5.2	The SDR-IK must be able to be securely stowed, stored and transported in a standard CAF ISO Container as per para 1.10.2, Cargo Trailers and skids specifically designed to securely the stow TPS load for deployment and recovery of the system.	Mandatory		Compliance Statement	Compliance Statement
5.1.5.3	The SDR-IK stowage plan must be approved by the TPS TA prior conducting the shock and vibration test as per Para 1.22.12 and 1.22.13.	Mandatory		Compliance Statement	Compliance Statement
5.1.5.4	TPS equipment stowed inside the SDR-IK must have full accessibility to allow the user to pick up and partially deploy any equipment with minimum requirement to remove other equipment up to 3 items.	Mandatory		Compliance Statement	Compliance Statement

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Section #	Requirement Description	Type of Requirement	Compliance to Desirable Yes / No	Means of Compliance Post-Contract Award	Means of Compliance Pre-Contract Award
5.1.5.4.1	TPS equipment stowed inside the SDR-IK should have full accessibility to allow the user to pick up and partially deploy any equipment without the need to remove any other equipment.	Desirable		Compliance Statement	Compliance Statement
5.1.5.5	The payload inside the SDR-IK must be evenly distributed.	Mandatory		Compliance Statement	Compliance Statement
5.1.5.6	The center of gravity must be sufficiently low to allow transportation of SDR-IK on inclined terrain of 15 degrees without tipping over the load.	Mandatory		Compliance Statement	Compliance Statement

**TACTICAL POWER SYSTEM (TPS)**

**REQUEST FOR INFORMATION (RFI)  
SOLICITATION: W8476-206276/D**

**IN-SERVICE-SUPPORT (ISS)**

**STATEMENT OF WORK (SOW)**

**ANNEX A**

**TO**

**VOLUME 3 – IN-SERVICE SUPPORT**

## **Annex A: Draft In-Service Support (ISS) SOW**

### **DND Publications**

MATERIEL GROUP L1 EMS INSTRUCTION-01	CONDUCTING ENVIRONMENTAL ASSESSMENT (ADM(Mat) EMS - Operational Control (mil.ca))
A-GG-040-004/AG-001	GENERAL SAFETY PROGRAM – VOLUME 1, POLICY AND PROGRAM, 2005-09-10
A-LM-184-001/JS-001	SPECIAL INSTRUCTIONS REPAIR AND OVERHAUL CONTRACTORS, 2010-08-25
B-GL-342-001/FP-000	LAND EQUIPMENT MANAGEMENT SYSTEM, 2001-09-10
C-01-100-100/AG-005	ACCEPTANCE OF COMMERCIAL AND FOREIGN GOVERNMENT PUBLICATIONS AS ADOPTED PUBLICATIONS, 1996-02-29
C-01-100-100/AG-006	SPECIFICATION - WRITING, FORMAT AND PRODUCTION OF TECHNICAL PUBLICATIONS.
C-02-008-001/TS-000	GENERAL SAFETY LITHIUM BATTERIES HANDLING, STORAGE PRESERVATION AND DISPOSAL INSTRUCTIONS, 1995-02-08
C-02-015-001/AG-000	UNSATISFACTORY CONDITION REPORTING.
D-01-002-007/SG-001	REQUIREMENTS FOR THE PREPARATION OF CONFIGURATION MANAGEMENT PLANS
D-01-100-211/SF-000	SPECIFICATION PRESERVATION, STORAGE AND HANDLING INSTRUCTIONS.
D-01-100-214/SF-000	SPECIFICATION FOR PREPARATION OF PROVISIONING DOCUMENTATION FOR CANADIAN FORCES EQUIPMENT, 2002-05-01
D-01-100-215/SF-000	SPECIFICATION FOR PREPARATION OF MATERIEL CHANGE NOTICES (MCN) FOR CANADIAN EQUIPMENT, 2002-05-01
D-01-400-002/SF-000	SPECIFICATION FOR LEVELS OF ENGINEERING DRAWINGS AND ASSOCIATED LISTS, 2011-03-01

### **Other Documents**

ANSI/NCSL Z540-1-1994	AMERICAN NATIONAL STANDARD FOR CALIBRATION – CALIBRATION LABORATORIES AND MEASURING AND
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ASME Y14.24

ASME Y 14.34M

ASME Y14-35M

ASME Y14.5M

CANADA LABOUR CODE

EIA-649-B

GEIA-HB-649

GEIA-859-A

ISO 10005:2005

TEST EQUIPMENT – GENERAL  
REQUIREMENTS.

TYPES AND APPLICATIONS OF  
ENGINEERING DRAWINGS, 1999

ASSOCIATED LISTS, 1996

REVISION OF ENGINEERING DRAWINGS  
AND ASSOCIATED DOCUMENTS, 1997

DIMENSIONING AND TOLERANCING, 2009

PART II

CONFIGURATION MANAGEMENT, REVISION  
B, APRIL 2011

IMPLEMENTATION GUIDE FOR  
CONFIGURATION MANAGEMENT.

DATA MANAGEMENT, REVISION A.

QUALITY MANAGEMENT SYSTEMS –  
GUIDELINES FOR QUALITY PLANS.

DRAFT

## **1. REQUIREMENTS**

### **1.1. Definitions of “Core,” “Tasking” and “Free Flow”**

1.1.1. The Work provided under this SOW is either Core Work, or Tasking Work, or Free Flow Work.

#### **1.1.2. Core**

1.2.1. Core Work is provided and invoiced under a firm price paid to the contractor on a monthly basis, and comprises that Work described in Sections 5 to 11 of this Statement of Work (SOW).

#### **1.1.3. Tasking**

1.1.3.1. Tasking Work is “as and when requested work” provided and invoiced pursuant to an individual DND 626 Task Authorization authorized by the Procurement Authority or the Contracting Authority under the existing terms and conditions of the ISS Contract. Tasking Work comprises that Work described in Sections 12, 13, 14, 16, and 17 of this SOW.

#### **1.1.4. Free Flow**

1.1.4.1. Free Flow Work comprises that Work described in Section 15 of this SOW. Free Flow Work is provided and invoiced pursuant to:

- Pre-authorized third level repair under the Maximum Repair Cost (MRC); and
- Authorized overhaul under a firm price basis.

1.1.4.2. The Contractor will receive a Selection Notice and Priority Summary (SNAPS) to define the Work.

## **2. SCOPE**

2.1 This ISS SOW describes the Work and consequent deliverables required of the Contractor to provide the necessary:

- Integrated Logistic Support (ILS) Work (such as spares, maintaining technical publications, training) for the TPS; and
- ISS Work (such as third level repair, overhaul, parts supply, configuration management, system engineering and technical investigations, engineering changes, project management and embedded contractor) to support the TPS throughout its life cycle.

2.2 ISS is defined as all activities, including, but not limited to, engineering services (such as maintenance, repair, test and upgrade), logistics (such as parts supply, documentation and training) and related management functions, necessary to maintain a Canadian Armed Forces (CAF) platform throughout its service life.



2.2.1 The goals of the ILS and ISS are to:

- 2.2.1.1 Ensure an adequate range and depth of TPS logistic support;
- 2.2.1.2 Ensure adequate and timely in-service support over the life of the TPS;
- 2.2.1.3 Optimize Department of National Defence (DND) Life Cycle Material Management (LCMM) Workload;
- 2.2.1.4 Minimize TPS life cycle cost; and
- 2.2.1.5 Maximize TPS mission readiness.

### **3 CONCEPT OF SUPPORT**

#### **3.1 General**

- 3.1.1 The Concept of Support explains how TPS will be maintained and supported in CAF facilities.
- 3.1.2 The objectives of the Concept of Support are to provide a TPS that is functional and reliable throughout its service life, and to optimize the workload to DND personnel.

#### **3.2 Canadian Armed Forces Responsibilities**

- 3.2.1 CAF personnel will conduct first and second level maintenance and some from the third level maintenance with deployed and operational TPS.
- 3.2.2 The CAF will pack and ship TPS Sub-Systems and Ancillaries to the Contractor's facility for third level maintenance and overhaul.
- 3.2.3 Upon completion of their mission, CAF units will determine the state of the TPS material, and if it is in need of third level maintenance or overhaul, the CAF will ship it to the Contractor facility.
- 3.2.4 Inventory to support TPS first and second level maintenance will be held for general support at Depots, Canadian Forces Bases and Service Battalions across Canada.
- 3.2.5 When DND needs spares over the life of TPS, or needs to replace Special Tools and Test Equipment (STTE), DND will normally order these from the Contractor through a DND 626 Task Authorization.

### **4 Levels of Maintenance**

#### **4.1 First Level Maintenance**

- 4.1.1 First level maintenance will be performed either by CAF operators or by CAF technicians.
- 4.1.2 A CAF operator's first level maintenance tasks will take no longer than 15 minutes, 99% of the time. The operator will use at most basic tools and not require any special tools.
- 4.1.3 Technician's first level maintenance tasks generally involve preventive maintenance, faultfinding, limited corrective maintenance, and initial recovery tasks. These tasks will take no longer than 1 hour, 99% of the time. Technicians will have access to the necessary common tools available at Direct Support, as defined in B-GL-342-001/FP-000 Land Equipment Management System.

#### 4.2 Second Level Maintenance

- 4.2.1 Second level maintenance will be performed by CAF technicians and will involve intermediate corrective maintenance and recovery tasks.
- 4.2.2 These tasks will take no longer than 3 hours, 99% of the time. The Work will be done by a qualified CAF Material Technician, Vehicle Technician or Electro-optics Technician. If the Work is performed at the TPS, then the technician will have access to common tools available at Direct Support. If the task is performed at a General Support Workshop, then the technician will have access to tools and test equipment and limited fabrication equipment.

#### 4.3 Third Level Maintenance

- 4.3.1 The third level maintenance beyond the established capabilities of the second line maintenance organization and normally provided by resources administered by NDHQ (The Depot or Contractor's facilities) normally established to provide third level maintenance.

### 5. (CORE) PROJECT MANAGEMENT

#### 5.1. Support Management Plan

- 5.1.1. The Contractor must prepare, submit, implement and maintain a Support Management Plan in accordance with CDRL/DID TPS-ISS-PM-TBD, Support Management Plan.

#### 5.2. Project Management Organization

- 5.2.1. The Contractor must establish, provide and maintain a project management organization to plan, execute and control all Work in accordance with cost, schedule and performance requirements of the ISS Contract to:
- Interface and co-ordinate with Canada; and
  - Plan and control the work of subcontractors as required.
- 5.2.2. The Contractor must designate by name an ISS Project Manager (PM) at or before the kick-off meeting with authority in the Contractor's organization to manage all Work required under the ISS Contract.
- 5.2.3. The ISS PM must have a minimum of 2 years of experience within the last 10 years as a project manager on military projects involving power generation, management and distribution systems, or repair and overhaul (R&O) work.
- 5.2.4. The Contractor's PM must be the primary point of contact between the Technical Authority (TA), Contracting Authority, Procurement Authority, and the Contractor for all issues related to the Work.

### **5.3. Plant Shutdown/Vacation Period**

- 5.3.1. At least 30 days prior to a plant shutdown or vacation period, the Contractor must submit for TA approval a plan describing how DND will continue to be supported during the plant shutdown / vacation period.

### **5.4. Office Services**

- 5.4.1. The Contractor must perform the secretarial, administrative and clerical work necessary to carry out the Work with respect to the preparation, filing, transmission and retention of all forms, reports and correspondence, relating to the movement, accounting, storage, repair, overhaul, quality control and investigation of materiel.

### **5.5. Accident/Incident Reports**

- 5.5.1. The Contractor must submit accident/incident reports in relation to any work dealing with the TPS in accordance with CFTO A-GG-040-001/AG-001, through the supporting the National Defence Quality Assurance Region (NDQAR).

### **5.6. ISS Performance Status Reports**

- 5.6.1. Commencing at the Initial Operational Capability (IOC) of the TPS, the Contractor must prepare and submit a monthly ISS Performance Status Report in

accordance with CDRL/DID TPS-ISS- PM-TBD, ISS Performance Status Report.

## **5.7. ISS Meetings**

### **5.7.1. General**

- 5.8.1.1. Meetings must be convened at the Contractor's facilities, DND sites, or other agreed upon locations.
- 5.8.1.2. For meetings held at Contractor facilities, the Contractor must provide a meeting room, cleared to the appropriate security level, of a size sufficient to accommodate the attendees.
- 5.8.1.3. The Contractor must coordinate meeting arrangements with the Contracting Authority or TA.
- 5.8.1.4. The Contractor and Canada will co-chair all meetings.
- 5.8.1.5. The Contractor or Canada, by mutual agreement, may convene video or telephone conferences in lieu of face-to-face meetings.
- 5.8.1.6. The Contractor must combine site visits and meetings whenever possible.
- 5.8.1.7. The Contractor must make available when needed a meeting room large enough for a minimum of 15 people to attend meetings involving DND, PWGSC, Innovation, Science and Economic Development Canada, and the Contractor. This space must be equipped with a computer and projector to enable presentations.
- 5.8.1.8. As an alternative to personnel travelling to attend a meeting, the Contractor must have Internet access and the ability to use a speaker phone (for voice) and Internet (for video) to support discussions with the TA, Procurement Authority, and Contracting Authority.
- 5.8.1.9. The Contractor must ensure that subject matter experts with expertise to address the subjects being discussed attend the meetings.
- 5.8.1.10. The Contractor must prepare and submit a Meeting Agenda for all meetings including system reviews in accordance with CDRL/DID TPS-ISS-PM-TBD, Meeting Agenda.
- 5.8.1.11. The Contractor must prepare and submit Meeting Minutes for all meetings including system reviews in accordance with CDRL/DID TPS-ISS-PM-TBD, Meeting Minutes.

5.8.1.12. The Contractor must provide supporting documentation, schedules, lists, test reports, drawings, specifications, design analysis and any other pre and post review data as appropriate in support of meetings a minimum of 10 days prior to the meeting.

5.8.2. Kick-Off Meeting

5.8.2.1. The Contractor must prepare for and participate in a project Kick-Off Meeting, no later than 30 days after Contract award, at which an integrated approach will be taken to the Acquisition Contract and the ISS Contract.

5.8.2.2. The Contractor must submit the Kick-Off meeting agenda in accordance with CDRL/DID TPS-ISS-PM-TBD, Meeting Agenda.

5.8.3. ISS Performance Review Meetings

5.8.3.1. The Contractor must schedule, plan and organize the ISS Performance Review Meetings.

5.8.3.2. ISS Performance Review Meetings must be conducted quarterly and must address the topics identified in CDRL/DID TPS-ISS-PM-TBD, ISS Performance Review Meeting.

5.8.3.3. The Contractor must coordinate and hold concurrent meetings with the Acquisition contract PRMs, unless otherwise mutually agreed, to formally report project progress to Canada.

5.8.3.4. Prior to IOC, ISS must be an agenda item (for example, dealing with Logistic Support Analysis, and readiness for ISS at IOC) on the primarily Acquisition focused PRMs.

5.8.4. Other Meetings

5.8.4.1. In addition to the meetings specified above, the Contractor and/or Canada may schedule reviews, such as conference calls, webinars (conference calls augmented by simultaneous images on the Internet), video conferences, briefings and technical interchange meetings, as required to assist in achieving the requirements of the SOW.

**5.9. Creation of File Transfer Protocol (FTP) Site**

5.9.1. The Contractor must establish, maintain and populate a secure TPS FTP site to provide DND with controlled access to TPS technical data such as

specifications, drawings, technical publications, training material, technical problem reports, and an action item register.

5.9.2. The data on the FTP site must be subject to the Contractor's Configuration Management and Technical Data Management procedures.

5.9.3. The FTP site must be available at the project Kick-Off Meeting.

## **5.10. Action Items**

5.10.1. The Contractor must record all action items arising from meetings, reviews or correspondence.

5.10.2. The Contractor must establish and maintain an Action Item Register to monitor issues, assign responsibility, direct action and track status.

5.10.3. The Contractor must review the additions and changes to the Action Item Register at the conclusion of any meeting where additions and changes were made, and document them in the Meeting Minutes.

5.10.4. The Contractor must collect, document and preserve all pertinent information in the Action Item Register.

5.10.5. The Contractor must retain all information in the Action Item Register accessible through the secure FTP site for the duration of the Contract.

## **6. (CORE) CONTRACTOR FACILITIES AND PERSONNEL**

### **6.1. Third Level Repair Workshop**

6.1.1. The Contractor must have a workshop complete with all tools and test equipment and safety features needed to inspect, clean and repair or overhaul and test TPS sub-systems, ancillaries and associated items.

6.1.2. The Contractor must have a secure workshop area as per the Security Requirements Checklist (SRCL) as applicable.

6.1.3. The Contractor's workshop must be ready for use to support the TPS at IOC and thereafter for the duration of the ISS Contract.

### **6.2. Warehouse Space**

6.2.1. The Contractor must provide sufficient warehouse space to store and process TPS materiel and spares, including space to receive, inspect, clean, dry,

package, store and prepare TPS sub-systems, ancillaries and associated items for shipment.

6.2.2. As a minimum, the warehouse must accommodate a surge up to 10 % of each sub-system and ancillary deliverable as defined in the Acquisition Contract.

6.2.3. The Contractor's warehouse space must be ready for use to support the TPS at IOC and thereafter for the duration of the ISS Contract.

### 6.3. **Contractor Personnel**

6.3.1. Contractor personnel must have sufficient engineering and technical expertise, relevant to TPS technology, to provide knowledgeable advice and direction with regard to technical concerns, and to conduct technical investigations and support.

6.3.2. At IOC, the Contractor must provide a trained and certified (as applicable) workforce to conduct full / complete TPS repair and overhaul activities.

## 7. **(CORE) HEALTH AND SAFETY**

### 7.1. **Compliance**

7.1.1. The Contractor and its subcontractors must comply in all respects with all Canadian Health and Safety legislation, and their regulations in force in the relation to the provisions of Goods and Service.

7.1.2. The Contractor must comply and ensure its employees and subcontractors comply with DND policies, orders, directives, instructions and best practices when accessing DND owned or controlled lands, buildings or equipment.

7.1.3. The promulgation of new or amended legislation, regulations, policies or directives throughout this Contract period may necessitate changes to support processes and activities. The Contractor must incorporate these changes to ensure compliance throughout the Contract period.

### 7.2. **Technical Documentation**

7.2.1. The Contractor must ensure that all contract deliverables are reviewed for EHS risks, and must include appropriate warnings and instructions in direct relation to the EHS risks.

### 7.3. **Health and Safety**

7.3.1. Where ISS Work of the TPS is performed at government owned facilities, the contractor must implement and comply with a general safety program for ISS activities that must conform to the following publications, which contain the major occupational health and safety regulatory instruments that have been approved for application throughout DND and the CAF:

- A-GG-040-004/AG-001 – General Safety Program – Volume 1, Policy and Program; and
- Canada Labour Code, Part II.

#### **7.4. Environmentally Controlled Products**

7.4.1. The Contractor must use low-risk chemical products for equipment maintenance and repair where feasible. Low-risk chemical products are defined as those that do not contain substances regulated under the Canadian Environmental Protection Act, 1999 (CEPA) and listed on Schedule 1 of CEPA.

7.4.2. The Contractor is responsible for ensuring that all work carried out on DND equipment by staff, or duly appointed sub-contractors, under any contract awarded as a result of this solicitation is;

- Completed using personnel qualified and certified in the scope of work that they are undertaking and,
- In compliance with all applicable municipal, territorial, provincial, federal environmental protection statutes and regulations.

7.4.3. Prior to the commencement of work the Contractor must have in place an Emergency / Spill Response Plan, processes and procedures for the identification, management, handling and disposal of all substances, pollutants and material covered by the applicable municipal, territorial, provincial, federal environmental protection statutes and regulations.

7.4.4. In accordance with the Prohibition of Certain Toxic Substances Regulations (SOR/2012-285), the substances listed under this regulation must not be incorporated in any equipment parts.

7.4.5. In accordance with the Products Containing Mercury Regulations (SOR/2014-254), if Mercury is present in any equipment parts, the Mercury content limit must comply with the regulation (SOR/2014-254).

7.4.6. In accordance with the Polychlorinated Biphenyls (PCBs) Regulations (SOR/2008-273), if PCBs are present in any part of the equipment, they must comply with the regulation (SOR/2008-273). If such substances must be used, the Contractor must certify that there is no technically or economically feasible PCB-free alternative.

The Contractor certifies that:

( ) there is no technically or economically feasible PCB-free alternative.



- 7.4.7. In accordance with the Prohibition of Asbestos and Products containing Asbestos Regulations (PAPCAR): SOR/2018-196, only asbestos-free parts must be offered.

The Contractor must certify that the parts offered are asbestos-free.

**7.5. Restrictions**

- 7.5.1 Halocarbons identified within Schedule 4 of the Ozone-Depleting Substances Regulations, with the exception of HCFC-123, and items 1 to 9 on Schedule 1 of the Federal Halocarbon Regulation, 2003, are not to be incorporated into the design, operation or maintenance of equipment, products or support services.

- 7.5.2. Mercury, Asbestos and Polychlorinated Biphenyls (PCBs) must not be incorporated into the design, operation or maintenance of equipment, products, or support services.

**7.6. Lithium Batteries**

- 7.6.1. The Contractor must use the procedures in C-02-008-001/TS-000, General Safety Lithium Batteries Handling, Storage Preservation and Disposal Instructions, if any Lithium or Lithium-polymer batteries are used.

**7.7. Environmental Management System & Occupational Health and Safety Management System**

- 7.7.1. The Contractor must implement and maintain an Environmental Management System (EMS) which is consistent with the principles presented in ISO 14001. Certification to this standard is preferred but not mandatory. The Contractor must, however, have a formalized set of procedures and control measures in place to achieve environmental compliance and minimize environmental footprint with the requirements of the Work.

- 7.7.2. The Contractor must have an Occupational Health and Safety Management System (OHSMS) consistent with the principles presented in OHSAS 18001.

- 7.7.3. The OHSMS requirement is applicable to the Contractor. The Contractor must make a reasonable effort to monitor and ensure that all subcontractors are in compliance with the applicable environmental, health and safety laws and regulations.

- 7.7.4. The Contractor must keep accurate and complete EHS records and documentation, which must be made available to the TA upon request.

## **7.8. Equipment Environmental Assessment (EEA)**

7.8.1. The Contractor must update the Equipment Environmental Assessment (EEA) delivered as part of the acquisition contract under any the following circumstances:

- There are changes related to the items identified on the Hazardous Substances & Chemical Products table; or
- New items/components are introduced as a result of configuration changes or modifications that contain any hazardous substances and/or chemical products identified in the EEA.
- As requested by Canada.

## **8. (CORE) MAINTENANCE SUPPORT**

### **8.1. Contractor Performed Maintenance**

8.1.1. R&O Findings Report

8.1.1.1. The Contractor must prepare, compile and submit a R&O Findings Report in accordance with CDRL/DID TPS-ISS-MS-TBD, Repair or Overhaul Findings Report.

8.1.1.2. In those instances when the Contractor can find nothing wrong with an item sent to it for repair, the Contractor must include in the R&O Findings Report the 'No Fault Found' finding so that the root cause can be investigated. For example, the cause could be incorrect operating procedures, an intermittent problem or faulty diagnosis. Also, the problem may only be evident when the equipment is wet, very cold, subjected to electromagnetic interference, etc,

### **8.2. Obsolescence**

8.2.1. The contractor must source and manage obsolescence at their own expense when performing R&O or when DND encounters obsolescence during any first and second level repair work.

8.2.2. The Contractor must obtain TA approval to substitute parts, so long as they are fit, form, function equivalent, and do not negatively affect safety, reliability, durability, cost, or maintenance diagnostics.

- 8.2.3. In the event of substitution of a part due to obsolescence, the Contractor must update any affected logistics support products, such as, but not limited to, drawings, technical publications and training material at its own expense.

### **8.3. Loss or Damage to DND Materiel**

- 8.3.1. The Contractor must report to the NDQAR all instances of loss or damage to DND owned materiel in its custody within 2 days of confirmation of its discovery.
- 8.3.2. Equipment damaged due to preservation and packaging failures in shipments must be reported to the NDQAR using form CF 777, Unsatisfactory Condition Report (UCR), supported by photographs in accordance with CFTO C-02-015-001/AG-000

### **8.4. Stop Repair Action**

- 8.4.1. The Contractor must comply immediately with all stop repair instructions. Detailed procedures are contained in A-LM-184-001/JS-001.

### **8.5. Annual Repair Forecast – SNAPs**

- 8.5.1. The Contractor must notify the Procurement Authority when the cost for a selected repairable line item exceeds the current (fiscal) year forecast (CYF) in the SNAPs report.
- 8.5.2. The Contractor must stop work on the line item until written approval is received from the Procurement Authority (PA) or the SNAPs forecast is amended.

## **9. (CORE) ENGINEERING SUPPORT**

### **9.1. Configuration Management**

- 9.1.1. The Contractor must apply EIA-649-B, Configuration Management Standard, April 2011, the associated handbook, GEIA-HB-649, Implementation Guide for Configuration Management, October 2005 and D-01-002-007/SG-001, Requirements for the Preparation of Configuration Management Plans. The approach to configuration management as described below is a follow-on to that described in the Acquisition Contract Configuration Management Plan, but adapted to be suitable for the TPS in-service phase.
- 9.1.2. The Contractor must prepare and submit an ISS Configuration Management Plan in accordance with CDRL/DID-ISS-ES-TBD, Configuration Management Plan.

- 9.1.3. The Contractor must implement and conduct the TPS Configuration Management in accordance with the approved Configuration Management Plan.
- 9.1.4. The Contractor must control changes to the configuration of the system and its equipment following configuration control procedures described in its Configuration Management Plan.
- 9.1.5. The Contractor must establish and maintain a TPS Equipment Breakdown Structure (EBS) in accordance with CDRL/DID-ISS-ES-TBD, Equipment Breakdown Structure identifying all parts of the TPS down to the lowest repairable or replaceable item, and must update this list as changes are authorized by the TA.
- 9.1.6. The Contractor must maintain the TPS configuration, ensuring that the EBS, drawings, technical publications and training material remain synchronized, current and correct.
- 9.1.7. To propose changes to the configuration of the system, the Contractor must submit an Engineering Change Proposal (ECP) for TA review and approval in accordance with CDRL/DID-ISS-ES-TBD, Engineering Change Proposal.
- 9.1.8. The Contractor must track and report the status of proposed configuration changes and the implementation status of authorized changes. This information must be included in an appendix to the monthly ISS Status Performance Report.
- 9.1.9. Over the life of the TPS, advances are likely to be made in TPS technology, materials and procedures. The Contractor must be proactive in keeping abreast of these advances and advise the TA accordingly through the Technical Problem Management and Technical Investigation and Engineering Support processes.

## **9.2. Technical Data Management**

- 9.2.1. The Contractor must manage all TPS Technical Data in its custody.
- 9.2.2. The Contractor must maintain a technical information library containing any policies, regulations, procedures, methods, and task descriptions required for the performance of the Contract.
- 9.2.3. The Contractor must ensure that staff, including the staff of its sub-contractors (if any), are aware of, and have access to, the technical information library for documentation appropriate to the procedures and tasks that the Contractor requires them to undertake.

- 9.2.4. The Contractor must use for general guidance GEIA-859-A, Data Management and D-01-002-007/SG-001. The GEIA-859-A standard is an industry/government consensus-based approach to the acquisition, management, access, use, review, acceptance, archival, and disposal of data.

### **9.3. Technical Problem Management**

- 9.3.1. This section deals with identifying, reporting, tracking, and resolving of technical problems.
- 9.3.2. The Contractor must establish a Technical Problem Management (TPM) database and associated management procedures to identify, investigate, create corrective action plans, including interim workarounds as required, and resolve technical problems with the TPS.
- 9.3.3. This database must enable Technical Problem Reports to be generated and continuously monitored and to be summarized in the ISS Performance Status Reports.
- 9.3.4. Technical Problem Reports must be prepared and submitted in accordance with CDRL/DID TPS-ISS-ES-TBD, Technical Problem Report.

## **10. (CORE) SUPPLY SUPPORT**

### **10.1. Transaction Documentation**

- 10.1.1. The Contractor's Document Control Group (DCG) facilities must file and retain the following auditable transaction documentations by applicable account (Repairable Materiel Account) warehouse either by Stock Code or by Requisition Number, in accordance with Part 3 of A-LM-184-001/JS-001: Stock Code sequence followed by requisition number; or Requisition number.

### **10.2. Contractor Supply Accounting**

- 10.2.1. Materiel held on Repairable Materiel Account (RMA) must be accounted for as per the Canadian Forces Supply System (CFSS) automated procedures in accordance with A-LM-184-001/JS-001.
- 10.2.2. Regardless of the system used, the Contractor must maintain an audit trail acceptable to DND.
- 10.2.3. Any automated or manual materiel accounting system must first be approved by the Procurement Authority.
- 10.2.4. Supply accounting records for DND materiel must be maintained separate from other company records.

### **10.3. Stocktaking**

- 10.3.1. The Contractor must initiate and complete a one hundred per cent (100%) manual stocktaking of material provided by the Crown held on the Contractors RMA as a minimum once every two years in accordance with PART 6 of A-LM-184-001/JS- 001.

### **10.4. Selection Notice Observation Message (SNOM)**

- 10.4.1. Contractors wishing to make observations on information contained in the SNAPS, including Maximum Repair Cost (MRC), must do so by submitting their observations using the Selection Notice Observation Message (SNOM) in accordance with PART 2 of A-LM-184-001/JS-001

### **10.5. Customs & Excise**

- 10.5.1. DND is responsible for clearing Customs of all DND materiel consigned to R&O Contractors. If a Contractor sub-contracts to an out of country location, the Contractor is responsible for the preparation of all the necessary customs documentations. Customs Brokers must not be utilized unless specifically authorized by the Procurement Authority.

### **10.6. Warranty Consideration**

- 10.6.1. The Contractor must action Materiel returned under warranty in accordance with PART 10 of A-LM-184-001/JS-001.

### **10.7. Contractor use of DND Equipment/Publications**

- 10.7.1. The Contractor must not use DND owned publications, tools, test-equipment, or jigs and fixtures for commercial work without the written consent of DND.
- 10.7.2. In instances where DND has provided such consent, PSPC will negotiate suitable compensation for DND.
- 10.7.3. All requests must be directed to the Procurement Authority through PSPC.

## **11. (CORE) QUALITY MANAGEMENT**

### **11.1. Quality Management System**

- 11.1.1. The Contractor must implement and maintain a Quality Management System, and also provide assistance to DND Quality Assurance Representatives in accordance with Contract clauses regarding quality.

- 11.1.2. The Contractor must submit a TPS Quality Plan in accordance with CDLR/DID TPS-ISS-QA-TBD, Quality Management Plan.
- 11.1.3. The Contractor must implement the approved Quality Plan.
- 11.1.4. The Contractor must retain all records relevant to the quality of its products and services for the duration of the Contract.

## **11.2. Government Quality Assurance (GQA)**

- 11.2.1. Although the ultimate responsibility for quality of TPS and other contracted deliverables in terms of technical and performance compliance remains with the Contractor, Canada may conduct verification activities to ensure that the Contractor's quality plans and processes are implemented in a contractually compliant manner and are resulting in specified TPS product conformance levels. The verification activities will include, but not be limited to, witnessing/observing key quality conformance inspections, tests and trials, performing quality audits, and occasional witnessing of Contractor internal quality audits and audits of key subcontractors.
- 11.2.2. The Contractor must provide all the necessary assistance to the TA, his representative or DND Quality Assurance Representative (QAR) for carrying out the verification activities. This assistance must include providing all inspection, test and trial activity plans in advance of operations to permit the TA or DND QAR identify events of interest to witness.
- 11.2.3. The Contractor must provide the QAR, TA or their representative access to all aspects of its quality system, facilities and Work. The TA reserves the right to perform the verification activities at sub-contractors' facilities.
- 11.2.4. The Contractor should provide a secure working office with dedicated internet/phone connection for DND QAR.
- 11.2.5. The Contractor must implement corrective measures to the quality system elements at no additional cost to Canada for addressing any deficiencies or deviations from the prescribed or documented procedures or instances of practices which might have an adverse effect upon the quality of the TPS.

## **12. (TASKING) PROJECT MANAGEMENT**

### **12.1. Operational Surges and Emergencies – Embedded Contractor**

- 12.1.1. The Contractor must provide additional support from the LCMM-CSP, if and when tasked through a DND 626 Task Authorization for any operational surges or emergencies.

### **13. (TASKING) CONTRACTOR'S FACILITIES AND PERSONNEL**

#### **13.1. Field Service Representative (FSR) Support**

##### **13.1.1. FSR Support to CFBs**

- 13.1.1.1. The Contractor must provide a FSR, if and when tasked through a DND 626 Task Authorization.

##### **13.1.2. FSR Support to Combat Operations**

- 13.1.2.1. The Contractor must provide FSR support, if and when tasked through a DND 626 Task Authorization, in accordance with Appendix AC - Deployment of Contractor Personnel Restrictions and Regulations.
- 13.1.2.2. Contractor personnel will not normally perform TPS maintenance within a combat zone, but under exceptional circumstances, Contractor FSRs could be temporarily embedded within the CAF General Support element of the maintenance organization in a theatre of operations.

### **14. (TASKING) LOGISTICS SUPPORT PRODUCTS**

#### **14.1. Additional Initial Cadre Training (ICT)**

- 14.1.1. The Contractor must provide additional sessions of ICT if and when tasked through a DND 626 Task Authorization.

#### **14.2. Refresher Training**

- 14.2.1. The Contractor must provide refresher training if and when tasked through a DND 626 Task Authorization.
- 14.2.2. The scope of the refresher training must not exceed the scope of ICT.

#### **14.3. Delivery of TPS Spares/Provisioning Items**

- 14.3.1. The contractor must deliver TPS spares/provisioning items, if and when tasked through a DND 626 Task Authorization.

### **15. (FREE FLOW) MAINTENANCE SUPPORT**

#### **15.1. Repair and Overhaul (R&O) Definitions**

- 15.1.1. The term 'Repair' is defined as:



Corrective maintenance activity which restores an item to serviceable condition by identifying and correcting faults or replacing pieces of the item with new, reconditioned, overhauled or rebuilt components. Repair Work will be initiated by the unit/end user.

15.1.2. Third level repair must include any associated first and/or second level repairs, adjustment or part replacement and any procedures needed to make the item serviceable.

15.1.3. The term 'Overhaul' is defined as:

The restoration of an item to its original condition and life expectancy. It includes the replacement of worn, damaged or life expired parts; the incorporation of approved modifications; and refurbishment as necessary.

15.1.4. Overhaul work must be approved by the TA. The scope of Overhaul for TPS Sub-Systems is defined in Para 15.11 and the scope of Overhaul for Ancillaries is defined in Para 15.12.

## **15.2. Triggers for Contractor Performed Maintenance**

15.2.1. DND will ship TPS Sub-Systems, Ancillaries and/or their Line Replaceable Units (LRUs) to the Contractor for Repairs:

- Third Level Repair (unit initiated) – TPS Sub-Systems, Ancillaries and/or their LRUs in need of repair beyond the capability of the CAF at first and second level.
- LRU Repair (unit initiated) – An LRU is a modular assembly that is designed to be removed and replaced quickly at first or second level and repaired at third level.

15.2.2. DND will ship TPS Sub-Systems, Ancillaries and/or their Line Replaceable Units (LRUs) to the Contractor for Overhaul when the second level repair facility is not able to reinstate the equipment performance, within 20% of OEM performance value, and the equipment has failed the Acceptance Test Procedure. The equipment will be tagged as Beyond Local Repair (BLR) and sent to contractor's R&O facility for Overhaul work.

15.2.3. If the TA determines and approves that the TPS Sub-Systems, Ancillaries, or their LRUs are in need of overhaul upon completion of a mission or due to deteriorated conditions, DND will ship the components to the Contractor for overhaul.

15.2.4. With TA approval, the Contractor must perform scheduled overhaul of the TPS Sub-Systems and Ancillaries in accordance with approved maintenance plans.

### 15.3. Maximum Repair Cost

- 15.3.1. Maximum Repair Cost (MRC) is defined in A-LM-184-001/JS-001, Part 1, Annex B1, paragraph 6 d. as “The maximum amount authorized, which includes all labour and material cost, to be expended to repair an item.” It is a guard against the possibility of an item being repaired at a cost that exceeds its value to DND, and must not be interpreted as the amount that DND intends to pay.
- 15.3.2. The MRC must not be exceeded without authorization of the Procurement Authority.
- 15.3.3. The minimum number of TPS sub-system and ancillary equipment which may be processed through the R&O facility may be zero.
- 15.3.4. The forecast quantity is dependent upon the field usage of TPS, the quantity in service and R&O historical data. The current forecasts shown in Table 1 below are given for guidance only and will be updated annually to reflect previous historical data.

Table 1: Maximum Repair Cost and Estimated R&O Annual Work Flow

Item	Description	Estimated Annual R&O work flow	MRC – \$ CAD
1	Generator A: 2-3.5 KW 120/240 V AC, 1 Phase, 60 Hz Diesel	88	\$ 850.00
2	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz GAS	71	\$ 4,400.00
3	Generator B: 4-6 KW 120/240 V AC, 1 Phase, 60 Hz Diesel	10	\$ 2,000.00
4	Generator D: 12-18 kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	35	\$ 8,000.00
5	Generator E: 25-35kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	11	\$ 10,000.00
6	Generator F: 50-70kW, 120/208V, 60Hz and 230/400V, 50Hz, 3Phase.	10	\$ 35,000.00
7	Energy Storage Unit (Small)	3	\$ 40,000.00
8	Energy Storage Unit (Large) for Gen Large D	59	\$ 2,500.00
9	Energy Storage Unit (Large) for Gen Large E	11	\$ 7,000.00
10	D Distribution kit	10	\$ 8,500.00
11	E Distribution kit	12	\$ 8,000.00
12	X Distribution Kit (Power Distribution Management Module System)	10	\$ 12,500.00

13	Proposal 1 - Militarized Bicon-size framed Trailer	3	\$ 8,500.00
14	Proposal 2A - Trailer with Gen B+ESU(S) Combo directly attached	10	TBDL
15	Proposal 2B - Trailer with the mountable Bicon skid for the Gen B+ESU(S) Combo	10	TBDL
16	Special Tools and Test Equipment (currently a placeholder)	TBDL	TBDL
17	Mobile Repair Kit (MRK) (currently a placeholder)	TBDL	TBDL

#### **15.4. Cost Control**

- 15.4.1. The Contractor must monitor the cost of each repair on a daily basis to ensure that total repair costs remain within approved limits.
- 15.4.2. Appropriate management control procedures must be in place and records maintained, and be available for review and/or audit on request.

#### **15.5. Costing Records**

- 15.5.1. The Contractor must prepare forms and maintain records on a daily basis which will provide:

- a cost listing, by serial number if applicable, of each item or job lot going through the repair line;
- a detail of the extent of work carried out, in-process inspections completed and materiel embodied at any stage of the repair process;
- the average cost of repair, by NSN; and
- the total repair cost for an item (NSN), by work order.

**NOTE:** This data must be provided as requested by the Procurement Authority and/or NDQAR.

#### **15.6. Repair and Overhaul Work - Receipt, Cleaning and Inspection**

- 15.6.1. The Contractor must perform an in-inspection within 2 days upon the receipt of the TPS, sub-system and ancillary equipment. The work must include:

- Material handling and receipt of the TPS, sub-systems and ancillary equipment including verification of the shipping documents;
- Cleaning the TPS, sub-systems and ancillary equipment prior to inspection; and
- Inspecting the equipment including troubleshooting, faultfinding, testing and verification to develop the in-inspection report and estimated cost of repair, if applicable.

## **15.7. Repair and Overhaul Work Control**

- 15.7.1. The Contractor must initiate a Work control process, including raising a serialized work order number within 2 days of equipment receipt.
- 15.7.2. The Contractor must cross reference the DRMIS control number and its work order number.
- 15.7.3. The DRMIS control number must be closed when the work is completed.
- 15.7.4. The Contractor must keep open its Work control number until completion of the Work, and invoice clearance.
- 15.7.5. The Contractor must ensure that the repair of all DND equipment is controlled by a serial numbered work order in accordance with PART 2 of A-LM-184-001/JS-001. Upon completion of work, the work order must include as a minimum the following:
  - a contract serial number against which all costs incurred are chargeable;
  - the NATO Stock Number (NSN) and/or Part Number (PN), description, quantity and serial number, if any, of item repaired;
  - A cross-reference to all Supply Documents. This includes receipt, issues and returns, including scrap activity, finalization of repair, inspection, and final acceptance;
  - reference to the applicable technical data;
  - details of the work performed;
  - a list of all the parts, by part number and description, found unserviceable and requiring repair and/or overhaul, ensuring that the repair scheme is referenced;

- a list of parts required, identifying the stores from which issued (eg, CIS, GFOS, AAS or CFM);
- repair cost estimate; and
- The identity of the person opening the work order.

15.7.6. The Contractor must provide to the DND QAR, and as necessary amend, a list of Contractor personnel authorized to open work orders.

## **15.8. Repair and Overhaul Standards and Certification**

15.8.1. The Contractor must perform TPS third level maintenance in accordance with Terms and Conditions of this Contract as well as A-LM-184-001/JS-001, Special Instructions, Repair and Overhaul Contractors.

15.8.2. All Repair, Overhaul and Replacement Work must meet OEM specifications, and the latest Drawings and Technical Publications.

15.8.3. The contractor must develop and submit for TA approval Acceptance Test Procedures (ATP) for the TPS subsystems in accordance with CDRL/DID TPS-ISS-MS-TBD, Acceptance Test Procedures.

15.8.4. The applicable ATP must be conducted on the item repaired and overhauled to ensure its functionality and serviceability.

15.8.5. All parts and materials used in R&O must be of the same fit, form and function as in the originally delivered TPS, unless otherwise authorized by the TA.

15.8.6. After Repair and/or Overhaul, TPS must be preserved in accordance with the procedures resulting from CDRL/DID TPS-ISS-MS-TBD, Preservation and Preparation for Shipment Procedures.

15.8.7. Upon completion of repair or overhaul Work, the Contractor QAR must certify in writing on the CFSS/DRMIS Supply Document that the item(s) have been inspected, tested and are in accordance with CDRL/DID TPS-ISS-MS-TBD, Acceptance Test Procedures.

## **15.9. Repair of Sub-Systems**

15.9.1. The Contractor must perform repair on the Tactical Power System and subsystems including material, hardware and software. The Work must include item receiving, inspecting, cleaning, repair, defective item replacement, restoration, packaging, storage, and reporting.

- 15.9.2. If the Contractor has developed superior methods and materials to those stipulated in this standard, then the Contractor must document these and submit a description of the proposed methods to the TA for authorization.

#### **15.10. Repair of Sub-systems Including LRU**

- 15.10.1. Repair must resolve the reported fault(s), but may not restore the entire unit to a like-new condition.
- 15.10.2. Contractor performed repair of ancillaries must include, but not be limited to:
- Receiving, inspection, and cleaning;
  - Correction of reported fault(s);
  - Replacement or repair of damaged items;
  - Conducting acceptance testing of repaired or replaced items to confirm serviceability and readiness for use;
  - Preparation of the items for shipping, or preservation and storage; and
  - Reporting.

#### **15.11. Overhaul of Sub-Systems**

- 15.11.1. Upon TA approval, Contractor performed Overhaul of Sub- Systems must include:
- Receiving, inspection, and cleaning (including drying);
  - Restoration of the equipment's original condition and life expectancy, including rework of assemblies as necessary;
  - Incorporation of approved modifications;
  - Complete acceptance testing to confirm serviceability and readiness for use;
  - Preparation of the items for shipping, or preservation and storage; and
  - Reporting.
- 15.11.2 Equipment Inspection:
- Conduct an Acceptance in-inspection;

- Based on the in-inspection, produce an estimated cost on the equipment received for overhaul;
- If the total estimated cost exceeds 75% of replacement cost, the item will be replaced rather than overhauled; and
- The performance of the overhauled equipment must be reinstated back to the OEM specifications.

### **15.13. Repair and Overhaul Turn Around Time**

- 15.13.1. Turn Around Time (TAT) is defined as that period of time from the date of receipt at the Contractor's facility to the date the item is serviceable, packed, and ready for shipment.
- 15.13.2. The turn-around time must not exceed 45 days for repair, or 90 days for overhaul.
- 15.13.3. When the Contractor receives from DND a Priority Repair Request (PRR), the Contractor must treat it as an immediate operational requirement and meet the need as quickly as possible by repair or replacement. While a PRR usually refers to repair, it may also refer to an overhaul subject to TA approval.

### **15.14. Parts Needed by the Contractor for Repair or Overhaul**

- 15.14.1. The Contractor must provide the parts needed to perform repair or overhaul.

### **15.15. Repair and Overhaul Labeling**

- 15.15.1. The Contractor must maintain an equipment repair log and attach labels on repaired or overhauled items. The label must show, as a minimum, the repair or overhaul date, work order number, and counter reading if applicable.

### **15.16. Repair and Overhaul Packaging, Handling, Storage and Transportability**

- 15.16.1. For Repair and Overhaul, Canada will provide and pay for shipping to and from the Contractor's facility.
- 15.16.2. The Contractor must be responsible for any internal transportation within their facility or between the Contractor and any sub-contractor facility.
- 15.16.3. Under exceptional circumstances, the Contractor must arrange the commercial shipment as requested by the TA, and as directed through a DND 626 Task Authorization process.

**15.17. Preservation and Preparation for Shipment**

- 15.17.1. The Contractor must develop and follow Preservation and Preparation for Shipment Procedures as outlined in CDRL/DID TPS-ISS-MS-TBD, Preservation and Preparation for Shipment Procedures.

**15.18. Marking Shipments**

- 15.18.1. The Contractor must mark all shipments in accordance with A-LM-184-001/JS-001, Part 8 Transportation, sections 5 and 6, and also Annex C8 of the standard.

**15.19. Discrepancies in Shipments**

- 15.19.1. The Contractor must action discrepancies in shipments in accordance with PART 3 of A-LM-184-001/JS-001.
- 15.19.2. The Contractor must inspect, repair and/or repaint reusable metal or wooden containers. If a requirement to repair, replace or provide a reusable container or other packaging material has been identified, it will become a charge against the R&O contract at a negotiated rate shown in the "basis of payment" and on the repair work order.

**15.20. Loss or Damage to DND Materiel**

- 15.20.1. The Contractor must report to the NDQAR all instances of loss or damage to DND owned materiel in his custody within 2 working days of confirmation of its discovery.
- 15.20.2. Loss or damage of materiel in transit must be actioned in accordance with Part 8 of A-LM-184-001/JS-001.

**15.21. Condemn and Disposal**

- 15.21.1. TPS Sub-Systems, Ancillaries or LRUs shipped to the Contractor for repair or overhaul may be worn or damaged beyond economical repair. In this case the Contractor must apply the provisions of A-LM-184-001/JS-001, Part 7, Disposal/Transfer, paragraphs 9, 10 and 11 which present standard procedures for the scrapping of items, and introduce the possibility of cannibalizing equipment for useable repair assemblies and parts.
- 15.21.2. In this context, the Contractor must refer the matter, along with the necessary details, to the TA for decision. The TA will respond with direction to either:



- Scrap – condemn the item and contact the local National Defence Quality Assurance Representative (NDQAR) for disposal instructions
- Cannibalize – condemn the item with authorization to remove and reuse serviceable parts

15.21.3. When disposing of refrigeration/air conditioning systems, the Contractor must follow the Federal Halocarbon Regulations, 2003, and send to the TA a "Dismantling, Decommissioning and Destruction Notice" as per TPS- ISS-EH-TBD, Dismantling, Decommissioning and Destruction Notice. The TA will respond by providing appropriate direction.

## **15.22. Receipt of Unauthorized Work**

15.22.1. If the Contractor receives items for repair Work that are not within the scope of work upon receipt, the Contractor must contact the NDQAR and seek direction. The Contractor will either be directed to perform the repairs or to send the items back to the originator. These actions must be recorded on the applicable document.

15.22.2. The Contractor must report within 2 days to the NDQAR any items received in error that do not belong to TPS upon receipt and must not proceed with any Work including inspection and cleaning.

## **16. (TASKING) SUPPLY SUPPORT**

### **16.1. Supply Support Services**

16.1.1. Upon receiving a demand for a part from Canada, within 30 calendar days, the Contractor must provide the part and ship it to the DND Supply Depot identified in a Task Authorization/Supply Demand.

16.1.2. The Contractor must provide parts that are deemed by the TA being urgently needed by the required delivery date through the Task Authorization process.

### **16.2. Surges**

16.2.1. The Contractor must support a surge in operations if requested by the TA through the DND 626 Task Authorization process.

16.2.2. The Contractor must provide, within 90 calendar days after receipt of a DND 626 Task Authorization, the parts sufficient to support at least 2 months of high-intensity operations.

### **16.3. Replacement of Damaged, Destroyed or Abandoned Assets**

- 16.3.1. From time to time due to events such as, but not limited to, accidents and battle damage, DND may require replacement TPS. In accordance with the DND 626 Task Authorization process, the Contractor must supply the required TPS quantities.

**16.5. Issue of Shelf Life Items**

- 16.5.1. The Contractor must not issue any materiel if there is less than 12 months remaining on its designated shelf life, unless otherwise approved by the TA.

**17. (TASKING) ENGINEERING SUPPORT**

**17.1. Technical Investigation and Engineering Support**

- 17.1.1. Recommendations regarding cost reduction, product improvement, and failure investigations, must be submitted in proposal format to the TA, and include the cost of the Work proposed, justification for the Work, and the business case to support the Work. If authorized in accordance with the DND 626 Task Authorization process, this will become a Technical Investigations and Engineering Support (TIES) tasking.
- 17.1.2. The Contractor must perform Technical Investigations and Engineering Support (TIES) tasks as individually authorized by the TA, such as, but not limited to:
- Conducting specialized testing;
  - Performing specialist engineering studies, such as durability, human factors, safety and health, reliability and maintainability;
  - Providing engineering assessments and recommendations (for example, regarding trends, failures (including repetitive failures), defects, safety hazards, corrosion, and technology insertion);
  - Rationalizing the system preventive maintenance requirements in areas where there is a potential for significant improvements in maintenance effectiveness or efficiency;
  - Performing battle damage assessments, and determining how to return equipment to a serviceable state, or if it can be cannibalized for parts;
  - Building prototypes, conducting tests and reporting results;
  - Designing and developing modifications / upgrades / conversions, preparing modification installation instructions and providing modification installation kits; and

- Assessing regulatory compliance, especially regarding safety and protection of the environment;
- 17.1.3. A TIES request may be initiated by either the TA or the Contractor. The Contractor must use CDRL/DID TPS-ISS-ES-TBD, Technical Investigation and Engineering Support Tasking Request, for this purpose.
- 17.1.4. On completion of an engineering investigation, the Contractor must report its findings to the TA as soon as possible, but no later than within 7 days, or other timeframe agreed to by the TA.
- 17.1.5. The TA reserves the right to request a separate investigation, with which the Contractor (and any affected manufacturing supplier) must cooperate.