

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
**Bid Receiving - PWGSC / Réception des  
soumissions - TPSGC**  
**11 Laurier St. / 11, rue Laurier**  
**Place du Portage, Phase III**  
**Core 0A1 / Noyau 0A1**  
**Gatineau, Québec K1A 0S5**  
**Bid Fax: (819) 997-9776**

**REQUEST FOR PROPOSAL**  
**DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government  
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services  
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

<b>Title - Sujet</b> TRAPS NG PHASE 1 & 2	
<b>Solicitation No. - N° de l'invitation</b> 9F010-120008/A	<b>Date</b> 2012-05-17
<b>Client Reference No. - N° de référence du client</b> 9F010-120008	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$HN-329-60492	
<b>File No. - N° de dossier</b> hn329.9F010-120008	<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> <b>on - le 2012-07-03</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Daylight Saving Time EDT	
<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> Dumaresq, Steve	<b>Buyer Id - Id de l'acheteur</b> hn329
<b>Telephone No. - N° de téléphone</b> (819) 956-3487 ( )	<b>FAX No. - N° de FAX</b> (819) 953-4944
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> CANADIAN SPACE AGENCY 3701 CARLING AVE BLDG 65 P.O.BOX 11490 H OTTAWA Ontario K2H8S2 Canada	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

**Vendor/Firm Name and Address**  
**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**  
Electrical & Electronics Products Division  
11 Laurier St./11, rue Laurier  
6B1, Place du Portage, Phase III  
Gatineau, Québec K1A 0S5

<b>Delivery Required - Livraison exigée</b> See Herein	<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/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

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**PART 1 - GENERAL INFORMATION**

**1. Security Requirement**

There is no security requirement associated with the requirement.

**2. Statement of Work**

The contractor will be required to provide the goods and/or services in accordance with the technical requirements stated herein at Annex "A".

**2.1 Delivery Requirement**

Delivery is requested to be completed within 6 months following contract award.

**2.2 Delivery Offered**

While delivery is requested as indicated above, the best delivery that could be offered is\_\_\_\_\_.

**2.3 Contractor Representatives**

Name and telephone number of the person responsible for :

**General enquiries**

Name: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Facsimile: \_\_\_\_\_  
E-mail: \_\_\_\_\_

**Delivery follow-up**

Name: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Facsimile: \_\_\_\_\_  
E-mail: \_\_\_\_\_

**3. Debriefings**

After contract award, 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 of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

**You are reminded that this solicitation requires the compliance and/or completion of requirements attached as an Annex and forming part of this document.**

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## PART 2 - BIDDER INSTRUCTIONS

### 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* (<https://buyandsell.gc.ca/policy-and-guidelines/>) 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 2003 (2012-03-02) 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: sixty (60) days  
Insert: ninety (90) calendar days

**Section 8** of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Insert: Upon request by Canada, the bidder must send written confirmation of the bid within five (5) working days.

#### 1.1 SACC Manual Clauses

SACC Reference	Section	Date
A9033T	Financial Capability	2011-05-16
B1000T	Condition of Material	2007-11-30

#### 1.2 Technical Documentation

**TECHNICAL/DESCRIPTIVE LITERATURE MUST BE SUBMITTED AS PART OF THE BID PACKAGE PRIOR TO THE BID CLOSING DATE. FAILURE TO COMPLY WILL RENDER YOUR BID NON-RESPONSIVE.**

### 2. Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

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

### 3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than ten (10) calendar days before the bid closing date. Enquiries received after that time may not be answered.

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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 questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

#### **4. Applicable Laws**

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

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.

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

### **1. Bid Preparation Instructions**

Canada requests that bidders provide their bid in separately bound sections as follows:

**Section I: Technical Bid ( 2 hard copies )**

**Section II: Financial Bid and Certifications ( 1 hard copy )**

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

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders are encouraged to:

- 1) use paper containing fibre certified as originating from a sustainably-managed forest and/or containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

**Section I: Technical Bid ( 2 hard copies)**

In their technical bid, bidders will explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

**Section II: Financial Bid and Certifications ( 1 hard copy )**

Bidders must submit their financial bid in accordance with the Basis of Payment. The total amount of Goods and Services Tax (GST) or Harmonized Sales Tax (HST) must be shown separately, if applicable. Bidders will also submit the certifications required under Part 5.

#### **1.1. Exchange Rate Fluctuation**

- 1. Unless otherwise specified in the bid solicitation, bids must be in Canadian currency.
- 2. Bidders may request Canada to assume the risk for exchange rate fluctuation. This request must be specifically made at time of bidding.
- 3. The foreign currency component is defined as the element of the price that will be directly affected by exchange rate fluctuations. It could include the net price FOB foreign manufacturer's plant, costs associated with applicable duty, excise tax, Goods and Services Tax or Harmonized Sales Tax, if applicable, entry fees, transportation costs or delivery charges payable in a foreign currency, and any other charges

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associated with being the importer of record if they originated from and are required to be paid in a foreign currency.

4. The foreign value of the foreign currency component of the bid or negotiated price must be provided with the bid. Form PWGSC-TPSGC 9411, Claim for Exchange Rate Adjustments, may be used for this purpose. If milestone payments are proposed, it is recommended to indicate on the above form the foreign currency component associated with each milestone event.
5. All bids are evaluated in Canadian currency. Therefore, for evaluation purposes, the noon rate quoted by the Bank of Canada as being in effect on date of bid closing, or such other date as may be specified in the bid solicitation, will be applied as the initial conversion factor for the specified currency. (Column 3 of the above form will be completed by the Contracting Authority.)
6. Rates proposed by bidders will not be accepted for the purposes of this exchange rate adjustment provision.
7. If there are two (2) identical bids, and provided that the bid selected would still be considered the most advantageous to Canada, preference will be given to the Bidder who assumes all or part of the exchange rate adjustment risk over a bidder who does not assume any of this risk. Furthermore, preference will be given to the Bidder who assumes all of the exchange rate adjustment risk over a bidder who assumes only part of this risk.
8. Canada will pay the exchange rate adjustment amount in Canadian currency using the prevailing noon rate on the date of payment by Canada or, as applicable, in accordance with one of the following clauses: C3015C, C3020C, C3025C, or C3030C.

## **1.2 Pricing Basis**

The bidder must quote firm prices in Canadian dollars, DDP Delivered Duty Paid (destination), with the Goods and Services Tax (GST) and/or the Harmonized Sales Tax (HST) extra, as applicable. Freight charges to destination and all applicable Custom duties and Excise taxes must be included.

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## PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

### 1. Evaluation Procedures

Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria. All bids must be completed in full and provide all of the information requested in the bid solicitation to enable full and complete evaluation.

#### 1.1 Technical Evaluation

##### 1.1.1 Mandatory Technical Criteria

Responses to the mandatory requirements will be evaluated on a simple, stringent pass/fail basis. Proposals not meeting each mandatory requirement will be considered non-compliant and given no further consideration.

The following Mandatory factors will be taken into consideration in the evaluation of each bid:

- Technical compliance to the Statement of Work (SOW) at Annex "A";
- Simply stating a compliancy to a criteria is insufficient. Bidders must present a clearly organized, printed (i.e., not handwritten) proposal that includes all necessary technical and descriptive literature, in order to clearly demonstrate their compliancy to all items presented in the Statement of Work (SOW) at Annex "A";
- Acceptance of terms and conditions as mentioned in the bid solicitation;
- Completion of the proposal.

##### 1.1.2 Point Rated Technical Criteria

The rating is performed on a scale of 23 points. Proposals should address every rated requirement with all necessary technical and descriptive information, in order to clearly demonstrate their compliancy in order to obtain maximum points.

1. Converter Physical Dimensions ( maximum 2 points )  
Due to packaging constraints, the converters must be 17.3 cm tall or less.
  - 1.1 Up to 17.3 cm tall ( 2 points )
  - 1.2 17.3 cm tall ( 1 point )
2. Repairs / Calibration ( maximum 2 points )  
The supplier must be able to perform repairs and/or calibration within 20 working days after receipt of the returned equipment, 95% of the time.
  - 2.1 Up to 10 working days ( 2 points )
  - 2.2 More than 10 working days and up to 20 working days ( 1 point )

3. Ramping ( maximum 5 points )  
Provide ability for controller to set ramp rate for individual channels (as defined in the LabVIEW SCADA), as required.
  - 3.1 Ramping of individual channels ( 5 points )
  - 3.2 No ramping of individual channels ( 0 points )
4. Power indicator ( maximum 1 point )  
Preferably one green LED that is lit when unit is powered; dark when not powered.
  - 4.1 One green LED that is lit when unit is powered; dark when not powered ( 1 point )
  - 4.2 Non-green LED or indicator other than as requested ( 0 points )
5. Fault indicator ( maximum 1 point )  
Preferably one red LED that is lit when the unit is in fault condition; dark when status OK
  - 5.1 One red LED that is lit when unit is in fault condition; dark when status OK ( 1 point )
  - 5.2 Non-red LED or indicator other than as requested ( 0 points )
6. Converters with On-Board Processing ( maximum 6 points )  
The company should have experience developing and manufacturing power converters with on-board processors.
  - 6.1 More than 5 years ( 6 points )
  - 6.2 More than 3 years and up to 5 years ( 4 points )
  - 6.3 More than 1 year and up to 2 years ( 2 points )
  - 6.4 Up to 1 year ( 0 points )
7. Output Paralleling ( maximum 6 points )  
The company should have experience developing and manufacturing power converters and the infrastructure required to enable their outputs to be paralleled.
  - 7.1 More than 5 years ( 6 points )
  - 7.2 More than 3 years and up to 5 years ( 4 points )
  - 7.3 More than 1 year and up to 2 years ( 2 points )
  - 7.4 Up to 1 year ( 0 points )

## 1.2 Financial Evaluation

The following **Mandatory** factors will be taken into consideration in the evaluation of each bid:

- Compliance with the pricing requirements and the Pricing Schedule presented at Annex "B";
- Highest Overall Combined Rating Technical Merit (60%) and Bid Price (40%).

The Bid price will be the sum of all items total price (items 1 and 2 total price at Annex "B" herein);

Example: The combined ranking will be calculated as shown.  
In this example bidder 2 has the highest total score.

Highest Overall Combined Rating Technical Merit (60%) and Price (40%)			
	Bidder 1	Bidder 2	Bidder 3
Technical Points (Maximum 23)	20	23	15
Total Bid Price	60,000	55,000	50,000
Result			
Technical Points	$(20/23) \times 60 = 52.17$	$(23/23) \times 60 = 60$	$(15/23) \times 60 = 39.13$
Price Points	$*50,000/60,000 \times 40 = 33.33$	$*50,000/55,000 \times 40 = 36.36$	$*50,000/50,000 \times 40 = 40.00$
Total Points	85.5	96.36	79.13

\*Represents the lowest priced responsive proposal.

### 1.3 Conditions/Certifications Precedent to Contract

- Federal Contractors Program as specified in Part 5.

## 2. Basis of Selection

Highest Overall Combined Rating Technical Merit (60%) and Bid Price (40%).

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive (compliant). The responsive bid with the highest total points score will be recommended for award of a contract.

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## PART 5 - CERTIFICATIONS

Bidders must provide the required certifications to be awarded a contract. Canada will declare a bid non-responsive if the required certifications are not completed and submitted as requested.

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after award of a contract. The Contracting Authority will have the right to ask for additional information to verify bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications or to comply with the request of the Contracting Authority for additional information will also render the bid non-responsive.

### 1. Certifications Precedent to Contract Award

The certifications listed below should be completed and submitted with the bid, but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

#### 1.1 Federal Contractors Program - Certification

##### Federal Contractors Program - \$200,000 or more

1. The Federal Contractors Program (FCP) requires that some suppliers, including a supplier who is a member of a joint venture, bidding for federal government contracts, valued at \$200,000 or more (including all applicable taxes), make a formal commitment to implement employment equity. This is a condition precedent to contract award. If the Bidder, or, if the Bidder is a joint venture and if any member of the joint venture, is subject to the FCP, evidence of its commitment must be provided before the award of the Contract.

Suppliers who have been declared ineligible contractors by Human Resources and Skills Development Canada (HRSDC) are no longer eligible to receive government contracts over the threshold for solicitation of bids as set out in the Government Contracts Regulations. Suppliers may be declared ineligible contractors either as a result of a finding of non-compliance by HRSDC, or following their voluntary withdrawal from the FCP for a reason other than the reduction of their workforce to less than 100 employees. Any bids from ineligible contractors, including a bid from a joint venture that has a member who is an ineligible contractor, will be declared non-responsive.

2. If the Bidder does not fall within the exceptions enumerated in 3.(a) or (b) below, or does not have a valid certificate number confirming its adherence to the FCP, the Bidder must fax (819-953-8768) a copy of the signed form LAB 1168, Certificate of Commitment to Implement Employment Equity, to the Labour Branch of HRSDC.

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3. The Bidder, or, if the Bidder is a joint venture the member of the joint venture, certifies its status with the FCP, as follows:

The Bidder or the member of the joint venture

- (a)  is not subject to the FCP, having a workforce of less than 100 full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada;
- (b)  is not subject to the FCP, being a regulated employer under the Employment Equity Act, S.C. 1995, c. 44;
- (c)  is subject to the requirements of the FCP, having a workforce of 100 or more full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC (having not bid on requirements of \$200,000 or more), in which case a duly signed certificate of commitment is attached;
- (d)  is subject to the FCP, and has a valid certificate number as follows: \_\_\_\_\_ (e.g. has not been declared an ineligible contractor by HRSDC.)

Further information on the FCP is available on the HRSDC Web site.

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**Signature**

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**Date**

## PART 6 - RESULTING CONTRACT CLAUSES

### 1. Security Requirement

There is no security requirement associated with the requirement.

### 2. Statement of Work

The contractor will be required to provide the goods in accordance with the technical requirements stated herein at Annex "A".

#### 2.1 SACC Manual Clauses

SACC Reference	Section	Date
B1501C	Electrical Equipment	2006-06-16
B7500C	Excess Goods	2006-06-16

#### 2.2 Option Quantities

**Firm unit prices for optional production-grade components, as identified at Annex "B", for the construction of seven (7) additional TRAPS NG racks.**

The Contractor shall grant to Canada an irrevocable option to purchase additional quantities. This option is open for acceptance at the prices specified in this document during the period as follows:

**Option is valid for a period of up to one (1) year from contract award, hence from \_\_\_date\_\_\_ to \_\_\_date\_\_\_ inclusively.**

The option may be exercised in whole or in part, up to a maximum of the quantity as identified in Annex "B" only by a contract amendment issued by the Contracting Authority. Upon the exercise of the option by the Contracting Authority, the contract shall be amended to incorporate the item into the work to be performed by the Contractor under the Contract, and all of the obligations of the Contractor under the Contract will apply.

Nothing contained in this Contract shall require the Minister to exercise the option and the exercise of the option is at the sole discretion of the Minister.

### 3. Standard Clauses and Conditions

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

#### 3.1 General Conditions

2010A (2012-03-02), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

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#### **4. Term of Contract**

##### **4.1 Delivery Date(s)**

Delivery of initial quantity must be completed on or before \_\_\_date\_\_\_ (Delivery as offered and as accepted will be inserted at contract award).

Option (article 2.2 above) is valid for a period of up to one (1) year from contract award, hence from \_\_\_date\_\_\_ to \_\_\_date\_\_\_ inclusively.

#### **5. Authorities**

##### **5.1 Contracting Authority**

Steve Dumaresq  
Public Works and Government Services Canada  
Acquisitions Branch  
Logistics, Electrical, Fuel and Transportation Directorate  
"HN" Division  
7B3, Place du Portage, Phase III  
11 Laurier Street  
Gatineau, QC, K1A 0S5

Telephone: (819) 956-3487  
Facsimile: (819) 953-4944  
E-mail address: steve.dumaresq@pwgsc-tpsgc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

##### **5.2 Technical / Project Authority**

Name: will be inserted at contract  
Title: will be inserted at contract  
Telephone: (xxx) xxx-xxxx  
Facsimile: (xxx) xxx-xxxx  
E-mail: will be inserted at contract

The Project Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority, however the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

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## 5.3 Contractor's Representative

### General Enquiries

Name: will be inserted at contract  
Telephone: will be inserted at contract  
Facsimile: will be inserted at contract  
E-mail: will be inserted at contract

### Delivery Follow-up

Name: will be inserted at contract  
Telephone: will be inserted at contract  
Facsimile: will be inserted at contract  
E-mail: will be inserted at contract

## 6. Payment

### 6.1 Basis of Payment - Firm Price

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid the firm prices specified in the Contract (Annex 'B'). Customs duties are included and Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

### 6.2 Limitation of Price

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

### 6.3 SACC Manual Clauses

SACC Reference	Section	Date
G1005C	Insurance	2008-05-12
H1001C	Multiple Payments	2008-05-12

### 6.4 Exchange Rate/Payment on Delivery

1. The price in Canadian currency includes the foreign currency component in respect of goods, services or both originating outside Canada, as detailed in form PWGSC-TPSGC 9411, Claim for Exchange Rate Adjustments.
2. The price must be adjusted to reflect the exchange rate in effect and applied by Canada Border Services Agency (CBSA) on the date of importation, but only in respect of the foreign currency component detailed in the above form.
3. No price adjustment directly resulting from the application of the provisions contained in this clause will be applied for increases or decreases in the exchange rate within a variation of: plus or minus 2 percent of the exchange rate(s) mentioned above; or plus or minus \$100 of the total cumulative amount claimed for exchange rate adjustment under the Contract.

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4. On each invoice or claim for payment submitted under the Contract, the Contractor must indicate the exchange rate adjustment amount (either upward, downward or no change) as a separate item. In addition, the invoice must be accompanied by a copy of CBSA Form B3-3, Canada Customs Coding Form, for the imported goods, services or both.
5. Canada will have the right to audit any revision to costs and prices under this clause.

## **7. Invoicing Instructions**

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.
2. Invoices must be distributed as follows:
  - (a) The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.
  - (b) One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

Department of Public Works and Government Services  
"HN" Division  
7B3 Place du Portage, Phase III  
11 Laurier Street, Gatineau, QC K1A 0S5  
Attention: Steve Dumaresq

## **8. Certifications**

Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

## **9. Applicable Laws**

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

## **10. Priority of Documents**

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) 2010A (2012-03-02) General Conditions - Goods (Medium Complexity);
- (c) Annex "A", Statement of Work;
- (d) Annex "B", Pricing Schedule;
- (e) Annex "C", Claim for Exchange Rate Adjustments
- (f) the Contractor's bid dated \_\_\_date\_\_\_.

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## 11. SACC Manual Clauses (Delivery)

<b>SACC Reference</b>	<b>Section</b>	<b>Date</b>
D9002C	Incomplete Assemblies	2007-11-30

### 11.1 Shipping Instructions - Delivery at Destination

Goods must be consigned to the destination specified in the Contract and delivered:

Delivered Duty Paid (DDP) (destination) Incoterms 2000 for shipments from a commercial contractor.

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## ANNEX "A" - STATEMENT OF WORK

### 1.0 INTRODUCTION

The Thermal Qualification Facilities (TQF) of the Canadian Space Agency (CSA), David Florida Laboratory (DFL), are seeking to develop a next generation TRAPS rack (TRAPS NG). TRAPS is a Thermal Response and Power System that provides DC power to lamps and heaters used in a thermal-vacuum environment. These racks are strictly intended for terrestrial use and as such will not see space travel; therefore radiation requirements or testing shall not be needed.

The existing TRAPS consists of mobile racks that can be moved to a number of locations throughout the TQF laboratory. The TRAPS racks are controlled by a LabVIEW SCADA system developed in-house. TRAPS NG will be of similar configuration and used in the same manner.

### 2.0 SCOPE

The project is to be a joint effort between the TQF and the contractor. A TRAPS NG rack will consist of the following general components:

- 1) A mobile, standard 19" rack or cabinet of between 5 and 7 feet height
- 2) A 208 VAC 3-phase to 120 VDC power supply  
The 208 VAC 3-phase to 120 VDC power supply has already been purchased by the DFL.
- 3) Thirty-two (32) power converters
- 4) A controller to communicate with and operate the thirty-two power converters
- 5) A means of connecting the power converters with the power supply (#2) and controller (#4), (meaning provide whatever material is required for the internal rack wiring to connect power converters with the power supply and controller as a complete system.

The TQF will be responsible for supplying the rack or cabinet (#1) and the power supply (#2) noted above. The remaining items (#3 to #5) are the responsibility of the contractor and are subject to this Technical Specification. It is the TQF's intention to perform the integration of the contractor supplied items (#3 to #5) at the DFL, the delivery schedule of which will be established in conjunction with the contractor upon award of contract.

### 3.0 REQUIREMENTS

The contractor must provide thirty-two (32) power converters, a controller and a means of connecting the power converters with the power supply and controller as identified herein.

#### 3.1 Converters

##### 3.1.1 Ruggedised connectors

The converters must have ruggedised connectors and terminals for power converter interface.

### 3.1.2 Converter Details

#### 3.1.2.1 "Plug and Play" / "Hot Swappability"

The converters must have power converters "plug and play" and "hot swappable". It may be necessary to turn the affected converter(s) off for replacement, but the balance of the converters in the rack containing the affected converter must remain on and fully functional at all times during converter swapping.

#### 3.1.2.2 Fastening

The converters must be held securely in place using fasteners that do not require tools for the removal / reinsertion process.

#### 3.1.2.3 On/Off Switch

The converters must have a front-mounted on/off switch.

#### 3.1.2.4 Indicators

The converters must have front panel indicators for power on and fault.

Power indicator: preferably one green LED that is lit when unit is powered; dark when not powered.

Fault indicator: preferably one red LED that is lit when the unit is in fault condition; dark when status OK. The one fault indicator can act as a single warning for a variety of faults (e.g. over voltage, over temp), with the actual fault being returned to the LabVIEW SCADA.

#### 3.1.2.5 Diagnostics

##### At Startup

Converters must have automatic self-checks upon power-up to establish that converter is within operating norms. The status must be able to be reflected on the indicators located on the front of the converter and must be available for the LabVIEW SCADA to read.

##### While Running

For the following,  $a$ ,  $\beta$ ,  $x$ , and  $y$  represent variables in the LabVIEW SCADA that are capable of being updated. The controller must accept changes to these variables and pass them to the power converter's controller. See Section 3.1.3 for technical definition of  $V_{mon}$  and  $V_{control}$ .

- Monitored Volts ( $V_{mon}$ ) versus Set Volts ( $V_{control}$ )
  - If  $V_{mon} < V_{control}$  by  $a$ , the converter is to generate a warning to LabVIEW SCADA.
  - If  $V_{mon} > V_{control}$  by  $a$ , the converter is to generate a warning to LabVIEW SCADA.
  - If  $V_{mon} > V_{control}$  by  $\beta$ , the converter is to shut down automatically and alert LabVIEW SCADA (where  $\beta > a$ ).

- Noise / Ripple
  - If Noise / Ripple is  $> x$  (as measured over a given period of time), whether in an underdamped or overdamped situation, the converter is to generate a warning to LabVIEW SCADA.
  - If Noise / Ripple is  $> y$  (as measured over a given period of time), whether in an underdamped or overdamped situation, the converter is to shut down automatically and alert LabVIEW SCADA (where  $y > x$ ).
- Constant Current
  - When power converter is at its maximum current, if  $V_{mon}$  drops to 10% lower than  $V_{control}$ , the converter is to generate a warning to the LabVIEW SCADA, as this indicates the converter is entering constant current mode.
  - Maintain the warning condition as long as  $V_{mon} < V_{control}$  by between 10 and 20%.
  - When power converter is at its maximum current and  $V_{mon}$  is more than 20% lower than  $V_{control}$ , the converter is to shut down automatically and alert the LabVIEW SCADA, as this indicates the converter is in overload condition.
- Automatic Thermal Shutdown
  - a power converter must shut down automatically when an internal over-temperature condition is reached
  - this thermal shutdown must be reported programmatically to the LabVIEW SCADA
  - the power converter must automatically resume when the internal over-temperature condition has cleared

### 3.1.2.6 Soft Start

When a voltage is set to a power converter, the output voltage shall ramp constantly up to the set voltage with no more than 2% overshoot.

### 3.1.2.7 Front terminals

Must provide terminals (red +; black -) at front of the converters so that the output voltage may be measured directly using a DMM.

### 3.1.2.8 Paralleling Converter Output

- Provide ability to parallel the outputs of two or three converters to provide 10 or 15 A (respectively).
- When converters are paralleled, subsequent converters combined with the lead converter are to become slaves of the lead converter and are to act as per the lead converter.
- Use a shorting bar to achieve physical paralleling of converters.
- Ensure converters include an output "OR-ing diode" to ensure one paralleled converter does not affect the other(s).

### 3.1.2.9 Converter Physical Dimensions

- Due to packaging constraints, the converters must be 17.3 cm tall or less.
- The converters must be laid out in rows of eight (8) within the width of the standard 19" rack to better work with our field wiring.

### 3.1.3 Technical Specification - Individual Converters

#### 3.1.3.1 DC Input

- Accept 120 VDC  $\pm$  10% input.

#### 3.1.3.2 DC Output

- 0 to 110 VDC adjustable with 0 to 10 VDC control voltage.
- 5 A (550 W)
- ripple and noise 1% max
- output leads isolated from the ground
- current limit 5 A (+10%) on overload or short
- output terminals adequate for #12AWG wire.
- tolerance: output voltage must be within  $\pm$ 1% of  $V_{control}$ .

#### 3.1.3.3 Monitor and Control

- 0 to 10 V output from converter to monitor 0 to 110 VDC output voltage ( $V_{mon}$ )
- 0 to 10 V output from converter to monitor 0 to 5A current ( $I_{mon}$ )
- 0 to 10 V input to the converter to set the output from 0 to 110 VDC ( $V_{control}$ )
- Monitor output terminals/connectors (if retaining the existing PXI chassis) support 20 to 24 AWG wire

#### 3.1.3.4 Efficiency

90% or better. Due to thermal constraints, packaging constraints, power supply constraints, and supply current constraints, less efficiency is not acceptable.

### 3.2 Controllers

#### 3.2.1 External Communications

The controller must be equipped with an Ethernet port, which will be the communications link between the converters and the LabVIEW SCADA interface.

#### 3.2.2 Drivers

The controller that interfaces with the LabVIEW SCADA must either come with LabVIEW drivers (preferred) or OPC drivers. The drivers must be capable of fulfilling the technical requirements contained in this document. This must include, but not be limited to: the ability to set  $V_{control}$ , read  $V_{mon}$  and  $I_{mon}$ ; the ability to control converters that are paralleled (see Section 3.1.2.8); and the ability to read and report errors generated by the power converters.

#### 3.2.3 Ramping

The controller must be capable of ramping the output voltage of a given power converter to the defined setpoint at a constant rate of 1V / 1s, with the option of allowing for customisation of this ramp rate on a per-channel basis (as defined in the LabVIEW SCADA).

### **3.3 Update Rates**

#### **3.3.1 Controller**

- The controller must scan the inputs of its 32 power converters at a rate of 1 Hz.
- Once the controller receives a command from the LabVIEW SCADA, the output must be set within 0.1 seconds.

#### **3.3.2 LabVIEW Driver / OPC Server**

- The LabVIEW Driver / OPC Server must read the inputs of the 32 power converters from the controller at a rate of 1 Hz.
- Once the LabVIEW Driver / OPC Server receive a command from the LabVIEW SCADA, the output must be set on the controller within 0.1 seconds.

#### **3.3.3 Loss of Communication with LabVIEW SCADA**

In the event of loss of communication with the LabVIEW SCADA, the controller will maintain the last state of all the power converters.

### **4.0 SCHEDULING**

The TQF intends on:

- constructing one complete beta TRAPS NG rack using materials provided by the contractor (items #3 to #5);
- field-testing the beta rack for a period of up to 6 months ;
- providing feedback to the contractor for resultant modifications to the beta components (if any) to produce production-grade components; and,
- retrofitting the beta rack with the production-grade components.
- 'Beta components' (test components) will be used with the 'Beta rack' (testing rack). These components may or may not be changed out based on the TQF feedback, after field testing. These modified components if any, will then be referred to as production grade components and will be used to build seven additional TRAPS NG racks.

### **5.0 OPTIONS**

The Contractor must provide a firm unit prices for optional production-grade components, as identified at Annex "B", for the construction of seven (7) additional TRAPS NG racks.

### **6.0 CERTIFICATION**

- The converters, added chassis (backplane/power bus) and all related internal rack wiring and connectors must be CSA / ULc listed/certified.  
(The product may be certified to only one standard)
- The converters must comply with the current FCC regulations governing conducted and radiated noise.

### **7.0 REPAIRS / CALIBRATION**

The supplier must be able to perform repairs and/or calibration within 20 working days after receipt of the returned equipment, 95% of the time.

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## 8.0 WARRANTY

Warranty will begin on the day that the equipment is installed as fully tested and operational to the satisfaction of DFL.

As per Clause 2010A 09 (2010-01-11) Warranty

1. Despite inspection and acceptance of the Work by or on behalf of Canada and without restricting any provisions of the Contract or any condition, warranty or provision imposed by law, the Contractor, if requested by Canada to do so, must replace, repair or correct, at its own option and expense any work that becomes defective or fails to conform to the requirements of the Contract, where applicable. The warranty period will be twelve (12) months after delivery and acceptance of the Work or the length of the Contractor's or manufacturer's standard warranty period, whichever is longer.
2. Canada must pay the transportation cost associated with returning the Work or any part of the Work to the Contractor's plant for replacement, repair or making good, and the Contractor must pay the transportation cost associated with forwarding the replacement or returning the Work or part of the Work when rectified to the delivery point specified in the Contract or to another location as directed by Canada. If, in the opinion of Canada, it is not expedient to remove the Work from its location, the Contractor must carry out any necessary repair or making good of the Work at that location and will be reimbursed its reasonable travel and living expenses.
3. The warranty period is automatically extended by the duration of any period or periods where the Work is unavailable for use or cannot be used because of a defect or non-conformance during the original warranty period. The warranty applies to any part of the Work replaced, repaired or corrected pursuant to subsection 1, for the greater of:
  - a) the warranty period remaining, including the extension, or
  - b) ninety (90) days or such other period as may be specified for that purpose by agreement between the Parties.

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### ANNEX "B" - PRICING SCHEDULE

All prices must be firm in Canadian dollars, Delivered Duty Paid (Ottawa, Ontario), with Goods and Services Tax or the Harmonized Sales Tax extra, transportation costs to destination and all applicable Custom Duties and Excise Taxes included.

#### 1. EQUIPMENT

Firm Lot Price for the equipment as per SOW, para. 3. The bidder must submit firm unit prices for each part listed.

Description	Quantity	Unit Price	Extended Price
Power Converter	32	\$	\$
Controller	1	\$	\$
Equipment required for connecting the power converters with the power supply.			
		\$	\$
		\$	\$
<b>FIRM LOT PRICE</b>			\$ _____

#### 2. OPTIONAL QUANTITIES

The bidder must submit firm unit prices for each production-grade optional quantity.

Description	Quantity	Unit Price	Extended Price
Power Converter	234	\$	\$
Controller	8	\$	\$
Equipment required for connecting the power converters with the power supply.			
		\$	\$
		\$	\$
<b>FIRM LOT PRICE</b>			\$ _____

**TOTAL EVALUATED BID PRICE (i.e. Items 1 and 2 above):** \$ \_\_\_\_\_



## CLAIM FOR EXCHANGE RATE ADJUSTMENTS DEMANDE DE RAJUSTEMENT DU TAUX DE CHANGE

Contractor Name - Nom de l'entrepreneur	PWGSC File No. - N° du dossier de TPSGC
Contract No. - N° du contrat	Item/Invoice No. - N° d'article/de facture

Basis of payment for this exchange rate adjustment is detailed in Article \_\_\_\_\_ of the above-referenced contract.

La base de paiement visée par ce rajustement du taux de change est décrite en détail à l'article \_\_\_\_\_ du contrat susmentionné.

**Foreign Currency Component (FCC) and Exchange Rates used at time of Bid Solicitation and/or Contract Negotiation**

**Montant en monnaie étrangère et taux de change utilisés au moment de la demande de soumissions et(ou) de la négociation du contrat**

Date
------

Item Article	Unit FCC in Foreign Funds Prix unitaire en devises étrangères (1)	Quantity Quantité (2)	Conversion Factor (initial) Facteur de conversion (initial) (3)	FCC in Canadian Funds Montant en dollars canadiens (1 x 2 x 3) = (4)

**Calculation for Exchange Rate Adjustments**

**Demande de rajustement du taux de change**

Date
------

Item Article	Unit FCC in Foreign Funds Prix unitaire en devises étrangères (5)	Quantity Quantité (6)	Conversion Factor (claimed) Facteur de conversion (réclamé) (7)	Total Amount Claimed - in Canadian Funds Montant total demandé - en dollars canadiens (5 x 6 x 7) = (8)

Exchange Rate Adjustment Amount = (8) - (4)  
Montant du rajustement du taux de change