

**RETURN BIDS TO:
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**Bid Receiving
PWGSC
33 City Centre Drive
Suite 480C
Mississauga
Ontario
L5B 2N5
Bid Fax: (905) 615-2095**

**SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires
THIS DOCUMENT CONTAINS SECURITY
REQUIRMENTS.

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

Issuing Office - Bureau de distribution
Public Works and Government Services Canada
Ontario Region
33 City Centre Drive
Suite 480
Mississauga
Ontario
L5B 2N5

| | |
|---|--|
| Title - Sujet Weather Radar Replacement Solution | |
| Solicitation No. - N° de l'invitation K3D33-141144/B | Amendment No. - N° modif. 008 |
| Client Reference No. - N° de référence du client K3D33-141144 | Date 2015-08-12 |
| GETS Reference No. - N° de référence de SEAG PW-\$TOR-018-6873 | |
| File No. - N° de dossier TOR-4-37044 (018) | CCC No./N° CCC - FMS No./N° VME |
| Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2015-09-30 | |
| Time Zone Fuseau horaire Eastern Daylight Saving Time EDT | |
| F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/> | |
| Address Enquiries to: - Adresser toutes questions à: Pan, Long | Buyer Id - Id de l'acheteur tor018 |
| Telephone No. - N° de téléphone (905) 615-2076 () | FAX No. - N° de FAX (905) 615-2023 |
| Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: | |

Instructions: See Herein

Instructions: Voir aux présentes

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

Solicitation No. - N° de l'invitation

K3D33-141144/B

Client Ref. No. - N° de réf. du client

K3D33-141144

Amd. No. - N° de la modif.

008

File No. - N° du dossier

TOR-4-37044

Buyer ID - Id de l'acheteur

tor018

CCC No./N° CCC - FMS No/ N° VME

Please see attached.

THE SOLICITATION AMENDMENT No. 008 IS RAISED TO CLARIFY THE TECHNICAL REQUIREMENTS, MODIFY THE BID SOLICITATION AND ANSWER QUESTIONS FROM THE INDUSTRY.

Clarification #001

Reference:

Technical Requirements including M12 and M13

As described in Section 1 of Annex A – Canada is looking for performance enhancements to its current operational weather radar network. To this end, there are both mandatory requirements and point-rated technical preferences noted throughout the RFP and the Evaluation Criteria. The mandatory criteria have been established to create a minimum set of performance requirements and to allow for technical innovation. We expect that bidders will have a greater functionality in some areas than is specified in Annex A.

Note that because this is an operational network (24/7) providing data in real-time to meteorologists, the assessment of technical performance characteristics will be done with that in mind. That means, for example, sensitivity requirements cannot be met by excessive dwell times which would prevent the timely collection of volume scan data.

Canada has not determined its final operational dual-polarization scan strategy because the details of the optimal strategy will depend on the technology acquired through the RFP and developed throughout the life-time of the project. However, the basic characteristics of the required scan strategy are defined throughout Annex A, particularly in section 1.2.1 Functionality Objectives. Given this, Canada expects to perform 10-12 distinct elevation angles in about a 5 to 6 minute period (hence the 2 rpm antenna rotation rate in M12).

There have been several questions from Bidders regarding Mandatory Evaluation Criteria M12 and M13. During the Industry Consultation and in the RFI materials, Canada made clear its requirement to acquire systems with approximately double the useful Doppler range of our current systems. Canada has nearly 30 years of experience working on extending the useful Doppler range of these types of systems, investigating single, dual and triple PRF/PRT techniques and second-trip recovery techniques. Canada requires better performance than has been possible to date with the current C Band network. With no new innovations identified during Industry Consultation, M12 and M13 were written based on known functional techniques and performance requirements.

M12 focuses on the minimum detectable signal (MDS) and specifies the range resolution, sampling and rotation rate for the purposes of evaluating the MDS performance. These are quite typical and reasonable operational range resolution, sampling and rotation rates and an adequate quality radar system would be able to meet the required MDS under those conditions.

M13 focuses on the Nyquist ranges of maximum useful range and maximum unambiguous velocity. Currently, Canada uses a 4:3 dual PRF unfolding (using 1200 and 900 pulse repetition frequencies) which provides a current useful Doppler range of approximately 120 km, and an extended Nyquist range of 48 m/s with an “error rate” of 4.6% (see the paper cited in the evaluation table for the explanation and calculation of this “error rate”). The requirement for the new systems is that they perform as well as or better than the current systems as far as “error rate” and maximum velocity are concerned and at a range of 240 km or more. As stated in Attachment 2 – Mandatory Evaluation Criteria, Section 1.2.2: “When moment estimate performance is specified, the radar must be configured as per item M12...” If there are other techniques available (besides dual PRF) that can meet all of the technical requirements in Annex A while also providing an extended Nyquist velocity range of 48 m/s out to a range of 240 km with error rates of 4.6% or less, they will be considered. However, given that Canada has been unable to develop or learn of such techniques to date, very thorough documentation and proof will be required for Canada to consider what would be an as yet unknown technique. Note also the requirement for the

proposed radar system, which includes data processing, to be at a Technical Readiness Level 7 at the time it is proposed.

Modification #005

Reference:

Attachment 2- Mandatory Evaluation Criteria; Modification #001 of Solicitation Amendment #002.

Modification #005:

The Mandatory Requirement description of M13 listed in Attachment 2- Mandatory Evaluation Criteria, which was revised in the Modification #001 of Solicitation Amendment #002, is hereby deleted in its entirety and replaced with the following:

The radar system must have an extended Nyquist velocity range of 48 m/s out to a range 240 km.

Error rates must be less than 4.6% (see Joe et al, 1998 or Joe and May, 2004 for an explanation of this calculation).

As stated in Clarification #001:

If there are other techniques available (besides dual PRF) that can meet all of the technical requirements in Annex A while also providing an extended Nyquist velocity range of 48 m/s out to a range of 240 km with error rates of 4.6% or less, they will be considered. However, given that Canada has been unable to develop or learn of such techniques to date, very thorough documentation and proof will be required for Canada to consider what would be an as yet unknown technique. Note also the requirement for the proposed radar system, which includes data processing, to be at a Technical Readiness Level 7 at the time it is proposed.

Modification #006

Reference:

Attachment 2 – Mandatory Evaluation Criteria

Modification #006:

Attachment 2, M25, column for "Requirement clarification and suggested substantiation documentation", delete the description in its entirety and replace with the following:

Sample of ZDR as a function of azimuth made at 50 km for a 1° elevation angle, a distance of between 10 and 20km for a 5° elevation angle, and a distance of between 5 and 10 km for a 10° elevation angle made in wide-spread uniform light rain.

Modification #007

Reference:

Point-Rated Evaluation Criteria

Modification #007:

The Minimum Group Passing Score for Group 7: R21 – R39 listed in the table under section 1.0 Overview of Point-Rated Evaluation Criteria in Attachment 3 is hereby deleted and replaced with the following:

| | | | | |
|-----------------------------|----------|-----|----|----|
| Group 7: R21-R39 | Features | 205 | 50 | 5% |
|-----------------------------|----------|-----|----|----|

Modification #008

Reference:

Annex A - SOW

Modification #008:

Section 2.1.1 System Operating Requirements, the Mandatory Requirements under table cell Number 8 is hereby deleted and replaced with the following:

The Radar system must have an extended Nyquist velocity range of 48 m/s out to a range of 240 km.

QUESTIONS AND ANSWERS

Question # 060

Reference:

Attachment 2 - Mandatory Evaluation Criteria, Amendment No.002 to RFP

Question #060:

Reference: Mandatory Requirement M13 & Amendment No. 002, Modification #001

Regarding a radar system with solid-state transmitter, can we interpret M13 as that appeared in the original text (before Amendment No.002), namely, "The radar system must have an extended Nyquist velocity range of 48 m/s (using a dual-PRF technique) out to a range 240 km. Dual-PRF error rates must be less than 4.6% "?

Answer #060:

Yes. Please refer to Modification # 005.

Question # 061

Reference:

Annex A – SOW

Question #061:

In Appendix A to Annex A, section 3.2.2 (Data model) item 20 and in attachment 3 section 2.2 (point rated requirements) item R39 it is requested that "data is available in OPERA ODIM H5 format with all mandatory data requirements". Does the word "mandatory" here refer to "mandatory" as defined in OPERA ODIM, or to the mandatory requirements of Canada? For example, in the latter case, all BITE information which has to be part of the metadata according to the requirements of Canada would also be needed to be converted into OPERA ODIM, but most (if not all) of this BITE information is not mandatory according to OPERA ODIM.

Answer #061:

Points will be given if the proposed system can make available in OPERA ODIM H5 format, all of the meteorological data and metadata allowed by the OPERA ODIM H5 format. Canada understands that the OPERA ODIM H5 format will continue to be developed. A system whose designers have considered this format and begun to move towards compliance will be offering an advantage to Canada. It is Canada's intent to freely exchange radar data with other meteorological services in future and the OPERA ODIM H5 format is intended to be used for that purpose.

Question # 062

Reference:

Annex A – Statement of Work; Attachment 1 – Mandatory Evaluation Criteria.

Question #062:

In consideration of the above references, please confirm that SOW requirement #8 and Evaluation Criteria M13 would be satisfied if the radar system were to provide an extended Nyquist velocity range of 48 m/s, using a 4:3 dual-PRF technique, with an error rate of less than 4.6%, out to a maximum range of 240 km, using a second-trip recovery technique.

Answer #062:

Please refer to Modification # 005. Note that technical specification 7 in section 2.1.1 of Annex A states that "The radar systems must collect and report radar data (reflectivity, Doppler and dual-polarized) from 0.5 to 240 km (first trip), at 250 m range bin resolution (at least 960 bins), at nominal 1° azimuthal resolution, with 1.0° and 0.5° dual-PRF data sampling or 1.0° staggered PRT sampling, and up to 20 km altitude above horn height with 0.1° resolution in elevation scanning. Reliance on second-trip recovery is not acceptable.

Question # 063

Reference:

Attachment 2 - Mandatory Technical and Performance Requirements

Question #063:

For item M25, a maximum azimuthal ZDR variation is required. The "requirement clarification" reads "Sample of ZDR as a function of azimuth made at 1°, 5°, and 10° elevation angles made in wide-spread uniform light rain at 50 km."

At 50 km distance from the radar and at elevation angles of 5 and 10 degree, the beam height is approximately 4.5 km and 9 km, respectively, above radar height, where it is impossible to obtain liquid precipitation. Since measurements in snow must be avoided, a lower height, i.e. a closer range, has to be used. We suggest to use ranges between 10 and 20 km for 5 degree elevation, and between 5 and 10 km for 10 degree elevation, and ask Canada to adjust the requirement clarification accordingly.

Answer #063:

Agreed. Please refer to Modification # 006.

Question # 064

Reference:

RFP

Question #064:

The reference Table requests bidders to provide a firm unit price for the supply, delivery and installation of up to 13 Optional Radar systems. However, no information is provided on the feed horn height for each of the optional locations. This information will determine the height of the radar tower which is a major cost driver. Could PWGSC/EC kindly provide the feed horn heights of the 13 optional sites?

Answer #064:

Canada cannot provide feed horn height details for the optional 13 radar as the information is not available. Please use a feed horn height of 22 meter for bidding purposes.

Question # 065

Reference:

Attachment 4 -Bidder's Pricing Table

Question #065:

In Attachment 4 (Bidder's Pricing Table), Table 4 provides a single lot price for all the required Training Deliverables (Appendix D of the SOW), i.e. 1 lot. However, for the training options, Table 10 (Optional Training Services) specifies a unit price per site. Please clarify the per-site scope for each unit-priced training option.

Answer #065:

It is Canada's intention to request the Firm lot price for the Training Deliverables during the Contract Period and Firm Unit Price for the Optional Training Deliverables. Bidders are requested to provide Firm Unit Price for each site for optional training deliverables as Canada may exercise 1 or multiple quantities at one time.

Question # 066

Reference:

Attachment 4 -Bidder's Pricing Table

Question #066:

In Attachment 4 (Bidder's Pricing Table), Table 5 provides a single lot price for all the required Document Deliverables (Appendix E of the SOW), i.e. 1 lot. However, for the document options, Table 11 (Optional Document Deliverables) specifies a unit price per site. Please clarify the per-site scope for each unit-priced document deliverables option.

Answer #066:

It is Canada's intention to request the Firm lot price for the Document Deliverables during the Contract Period and Firm Unit Price for the Optional Document Deliverables. Bidders are requested to provide Firm Unit Price for each site for optional document deliverables as Canada may exercise 1 or multiple quantities at one time.

Question # 067

Reference:

Attachment 4 -Bidder's Pricing Table

Question #067:

Administrative recommendations:

- a) Notwithstanding the questions above, we note that Tables 9 through 11 specify options independently priced from the Optional Radar Systems in Table 7, without specifying that they will be exercised together on a one-for-one basis. For simplicity and clarity, we recommend that Canada delete Tables 9 through 11, and merge their scope into the Radar system line item in Table 7 to the extent applicable.
- b) Please confirm that the Options identified in Tables 7 and 8 will be exercised together on a one-for-one basis.

Answer #067:

- a) The tables in Attachment 4 will remain unchanged as Canada, at its sole discretion, may exercise any optional deliverables described in Section 2.0 of Attachment 4 – Bidder's Pricing Table.
- b) The tables in Attachment 4 will remain unchanged as Canada, at its sole discretion, may exercise any optional deliverables described in Section 2.0 of Attachment 4 – Bidder's Pricing Table.

ALL OTHER TERMS AND CONDITIONS OF THE BID SOLICITATION REMAIN UNCHANGED