

**RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:**

**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. 005
Client Reference No. - N° de référence du client K3D33-141144	Date 2015-07-15
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 2015-08-31	
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.

005

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 document.

THE SOLICITATION AMENDMENT No. 005 IS RAISED TO ANSWER QUESTIONS FROM THE INDUSTRY.

QUESTIONS AND ANSWERS

Question # 036

Reference:

Attachment 2 – Mandatory Evaluation Criteria

Question #036:

In Attachment 2 Mandatory Evaluation Criteria, for item M12 (MDS), the substantiation requirement says we must provide “documented evidence by a probability distribution of reflectivity analysis of radar data as a function of range and reflectivity” and “evaluation will be done by normalizing the data to single shot (pulse) performance and will be reduced by $10 \log(MI)$ from sampled data. Where M is the number of independent samples. Time to independence is determined by $1 / \text{Band Width}$.” “Doppler Radar and Weather Observations” by Doviak and Zrnicek state that “it is accepted practice to define MDS as that signal which equals noise power”. The data from the PDF will be the minimum dBZ value displayed at a range of 50 km. It is not clear how to normalize the data to single shot (pulse) performance and then reduce the data by $10 \log(MI)$ to arrive at a signal power which equals noise power. Therefore please provide an example calculation to help understand how to make the corrections to the data.

Answer #036:

A more succinct explanation to provide substantiation of meeting this requirement is:

Analysis of the technical description of radar system, sampling strategies, scan strategy, data acquisition capabilities, and formula for computing reflectivity for capability to deliver the required sensitivity.

and,

The provision of documented evidence by a probability distribution (PDF) of reflectivity as a function of range and reflectivity with light echo/precipitation (<20 dBZ). The radar must be calibrated.

The radar should be configured to meet the radar configuration conditions of M6 – hardware and data sampling. At least ten sweeps or more should be used compute the PDF.

Data from an “equivalent radar” may be used but it must be adjusted to the proposed hardware and data sampling configurations.

The adjustment shall be made using the radar equation and sampling considerations. Sufficient evidence (including data) must be provided to be able to verify the results.

Question # 037

Reference:

RFP

Question #037:

The RFP states that offered solution must be at TRL 7 at the time of the verification process. Specifically, “All major components are fully integrated and most are identical or easily scalable to the system being proposed” and “The antenna control, transmitter, receiver, and data processor are all in place in their final or near-final form.” How does one company determine whether its “near-final” form is consistent with EC’s interpretation? It is our request that judicious relaxation

and/or clarification of TRL 7 requirement be provided.

Answer #037:

Relaxation of TRL 7 will not be granted as these systems must replace existing operational systems in a government-wide mission critical network. There will be professional judgment used when interpreting "near-final form". This judgment will be guided by certain principles, such as: scalability, conversion through known and accepted equations (the radar equation for example), industry-accepted calculations and practices, and operational risk. All professional judgment will be subjected to review by PWGSC and the Fairness Monitor.

Question # 038

Reference:

RFP

Question #038:

We submit that the prescribed Verification Process shortly after technical review limits competition to existing systems rather than meeting EC's desires, which are evident in the weighting given to key specifications in the Point-Rated Evaluation. The RFP states (Attachment 1, 4.4 D) "Once the Verification process has begun, it must be completed within 5 working days" and "The proposed CWRRS must run 24/7." In order to achieve this, the supplier is required to have a completely functioning and operational radar best aligned with EC's maximum technical score; installed, licensed, and under their control. This is a prohibitively costly requirement that is inconsistent with the allotted timeframe. If a Bidder wants to offer a system solution existing of just a few commercially available major sub-systems of weather radar, lead times of the majority of the key components take up to one year to manufacture. The Verification Process, as stated, does not allow for such an offer. And, should EC relax the 24/7 requirement, but still wish to verify the key subsystems, the verification process may have to be performed at multiple locations where the bidders' respective suppliers conduct business; requiring more than 5 days.

In applying a literal interpretation to the Verification Process in paragraph 4.4 (d), "The Bidder assumes all responsibility for recreating the technical environment described in the bid solicitation" This suggests Bidders are required to create Outdoor Environmental temperatures of -40 to +40 degrees C; RH 15-100%, etc. This is not practical. We advocate that the verification process, as written, is exceedingly difficult if not impossible to meet. We respectfully request that Verification Process be reviewed and clarified so as to not unintentionally eliminate viable radar solutions.

Answer #038:

As described in section 4.2 b of Attachment 1, The verification criteria will focus on the Radar System deliverables, major assemblies, subassemblies and overall performance requirements. The environmental performance can be verified based on evidence including component part OEM specifications and the design execution. While it's certainly not practical to put the entire Radar system in an environmental chamber – components like receivers could be tested alone in a chamber to confirm its operating range. At TRL7 this would have been completed for at least critical components and vulnerable components, if not actually all major components.

Question # 039

Reference:

RFP

Question #039:

Once a winning bidder is determined, what is the anticipated timeframe between when the winning bidder is notified and the start of the Verification Process?

Answer #039:

Please refer to Attachment 1 – Evaluation Methodology and Basis of Selection, section 4.4. Canada anticipates 15 working days between the Contracting Authority notifying the top ranked Bidder and the commencement of the Verification Process.

Question # 040

Reference:

Attachment 3 -Point-Rated Evaluation Criteria

Question #040:

Attachment 3. Point-Rated Evaluation Criteria, R4. *The Scoring Scheme provides 2.5 points for each 0.01 degrees of improvement beyond 1.0 degrees beam width. 2.5 points for each 0.01° of improvement. (example:0.99° = 2.5 pts; 0.98 = 5 pts)*

Specifying a point-rated system for antenna beam widths down to the 0.01 degrees level is beyond beamwidth measurement accuracy of stated performance. There is likely to be differences larger than the prescribed value between individual antennas from the same manufacturer and of the same type. We recommend EC consider point-rated criteria based upon industry accepted levels of accuracy.

Answer #040:

Environment Canada will consider a fully documented, calculated beam width for this criterion.

Question # 041

Reference:

Attachment 3 - Point-Rated Evaluation Criteria

Question #041:

Attachment 3. Point-Rated Evaluation Criteria, R6-R7 relating to phase noise and cross-polar correlation. As in paragraph (4) above, the point rated criteria are awarded for stated performance beyond measurement accuracies. We recommend EC consider point-rated criteria based upon industry accepted levels of accuracy.

Answer #041:

Environment Canada expects fully documented calculations and measurements for all measures. R6 refers to M14, which recommends using an average of 10 measurements or more. Appropriate and thoroughly documented statistical methods can be used to produce the required accuracy.

Question # 042

Reference:

Appendix A to Annex A - SOW

Question #042:

Reference: Appendix A – Item 2.4.6 (Data Model) – Number 136:

For all range bins in a ray the dual PRF Nyquist velocity is constant and must be encoded only once per ray. The measured single PRF velocity and the unfolded dual PRF velocity differ from range bin to range bin, also the fold number used for dual PRF unfolding.

Is it correct that the three quantities (measured single PRF velocity, unfolded dual PRF velocity and the fold number) must be delivered for all range bins individually?

Answer #042:

It is correct.

Question # 043

Reference:

Attachment 2 – Mandatory Evaluation Criteria

Question #043:

With Modification #001 the requirement for the Nyquist velocity range is now: " The radar system must have an extended Nyquist velocity range of 48 m/s (using a 4:3 dual-PRF technique) out to a range 240 km."

The question #003 (b) has asked: "Do we understand correctly that the radar system must have an extended Nyquist velocity range of 48 m/s using a dual-PRF technique with an error rate of less than 4.6% out to a maximum range of the first trip of 240 km?" Or in other words: trip recovery techniques shall not be considered in order to extend the range up to 240km?" The question was answered "Yes. The understanding of the requirement is correct".

The first-trip range requirement is also expressed in Appendix A - 2.1.1 System Operating Requirements No. 7a: "The Radar systems must collect and report radar data (Reflectivity, Doppler and dual-polarized): from 0.5 km to 240 km (first trip)"

C-Band radars are capable to sample a range of 240 km with an Nyquist velocity range of 48m/s, but not in the first trip by applying a 4:3 dual-PRF stagger. A 4:3 dual-PRF stagger requires 1200 Hz and 900 Hz stagger batch PRFs in order to achieve a staggered Nyquist velocity interval of 48m/s. The unambiguous range is determined by the highest batch PRF and is 125 km.

Since this requirement explicitly excludes any other unfolding techniques C-Band radars are excluded from the tender. Is EC aware of this fact?

Answer #043:

Canada has considered the comments and decided that the requirements mentioned in this question remain unchanged.

Question # 044

Reference:

Appendix A – Radar System Deliverables

Question #044:

Reference Appendix A – Item 2 – Number 14

What is meant with “power variance”? The transmitter power? The radar constant? What is the time scale of the variance? Days, weeks, month? From maintenance interval to maintenance interval?

Answer #044:

This is a variance of actual transmit power and it is an absolute variance. That is, a radar system maintained to the Contractor’s specifications and instructions will have a variance of actual transmit power of 2 dB or less.

Question # 045

Reference:

Appendix A – Radar System Deliverables

Question #045:

Reference Appendix A – Item 2 – Number 23

What is the time scale of this variance? Days, weeks, month? From maintenance interval to maintenance interval?

Answer #045:

This measure is amongst radars (from radar to radar), it is not a temporal variance.

Question # 046

Reference:

Appendix A – Radar System Deliverables

Question #046:

Reference Appendix A – Item 2 – Number 50

Lightning protection is only required for the tower but not for the radome. We assume that the lightning protection system shall also include the radome. However the lightning protection class according to IEC 62305 should be provided.

Answer #046:

Please refer to Appendix A, Section 2.3.1, item 91 and Appendix B, Section 1.0, item 9. After Contract award, the Contractor must provide to the Project Authority for approval, a risk analysis breakdown and lightning protection system plan that meets the technical requirements. However, for the bidding purpose, bidders should demonstrate the proposed lightning protection system compliant with Lightning Protection Level of 3 (LPL III, corresponding to a LPS class 3).

ALL OTHER TERMS AND CONDITIONS OF THE BID SOLICITATION REMAIN UNCHANGED