



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

**Bid Receiving Public Works and Government
Services Canada/Réception des soumissions
Travaux publics et Services gouvernementaux
Canada**

Pacific Region

401 - 1230 Government Street

Victoria, B.C.

V8W 3X4

Bid Fax: (250) 363-3344

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

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 -
Pacific Region**

401 - 1230 Government Street

Victoria, B. C.

V8W 3X4

Title - Sujet MULTIBEAM BATHYMETRIC SONAR SYSTEM	
Solicitation No. - N° de l'invitation EZ801-161760/A	Amendment No. - N° modif. 003
Client Reference No. - N° de référence du client EZ801-161760	Date 2016-01-29
GETS Reference No. - N° de référence de SEAG PW-\$XLV-211-6884	
File No. - N° de dossier XLV-5-38169 (211)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2016-02-03	Time Zone Fuseau horaire Pacific Standard Time PST
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Buchan, Torrey	Buyer Id - Id de l'acheteur xlv211
Telephone No. - N° de téléphone (250) 216-2092 ()	FAX No. - N° de FAX (250) 363-3960
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Public Works and Government Services Canada #2 Annacis Parkway, Delta, B.C. V3M 6A2 Canada	

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

This solicitation amendment has been issued to address a question posed by a bidder.

Question 1:

The need for a dual-head system is well-justified for the type and depth of work (<20 meters depth, river environment) that is undertaken in the Fraser River. However, in Annex A, Requirement, Paragraph 1, the "near shore" definition is "1 – 200 m". If we accept this definition then the Point-Rated Criteria listed below do not apply as they are for operating a single head sonar (typically) in depths up to and even exceeding 400 meters.

- "2.1 The system is roll & pitch compensated or upgradeable for pitch compensation"

Pitch compensation is not normally required in shallow water due to the high ping rate at small ranges. In deep water the inherently slow ping rate due to the two-way-travel-time of each could justify pitch compensation in high seas where pitching is extreme.
- "2.2 The system is roll, pitch & yaw compensated or upgradeable for yaw compensation"

Yaw compensation is not normally required in shallow water due to the high ping rate at small ranges. In deep water the inherently slow ping rate due to the two-way-travel-time of each could justify yaw compensation in high seas where ship's head deviation between swells is extreme.
- "2.3 The system capable of FM mode operation (frequency modulation)"

FM Modulation is used by shallow water sonars (200-400 kHz) in order to extend the maximum range of the sonar to depths beyond 400 m up to 500 m++. This capability does not seem to apply here.

Answer 1:

PWGSC Pacific's main operational zone is the Fraser River conducting monitor surveys for the navigation channel which is maintained by dredging to approximately 10m nominal grade. The area of Roberts Bank from Point Roberts to the mouth of the Fraser River is another zone of operations (monitoring for slope stability and deep sea shipping berths) where depths of 5m to 150m are encountered. PWGSC Pacific is increasingly being required to conduct surveys in Vancouver Harbour and eastern Vancouver Island where depths of 200m and greater are encountered.

The requirement of a dual-head multi-beam echo sounder (MBES), with greater swath width than a single-head MBES, is to increase efficiency of our core survey operations monitoring navigation channels and deep sea shipping berths on the Fraser River, within Vancouver Harbour, and Roberts Bank.

The Point-Related Criteria apply to this submission as a result of PWGSC Pacific's testing and observation of the data derived from our existing MBES system. Typical products required by our clients and derived from bathymetry data are high resolution CUBE surfaces of 0.50m or 0.25m node spacing. These surface

resolutions benefit from motion compensated bathymetry when surveys are conducted in the typical sea states encountered during PWGSC Pacific's operations.

- “2.1 The system is roll & pitch compensated or upgradeable for pitch compensation”

PWGSC Pacific has observed the need for pitch compensation while operating our existing MBES system (not pitch compensated). Standing waves encountered (created by tidal flows and wind) during survey operations in the Fraser River have resulted in noticeable degradation of survey data related to the survey vessel pitching.

- “2.2 The system is roll, pitch & yaw compensated or upgradeable for yaw compensation”

PWGSC Pacific has observed the need for yaw compensation while operating our existing MBES system (not yaw compensated). Sea states are encountered where following waves slew the survey vessel by impacting on the aft quarters or trap the vessel in a wave troughs. The resulting momentary slewing of the survey vessel has created minor noticeable degradation of the survey data. The observed effects of no yaw compensation is less pronounced than the observed effects of no pitch compensation but, is expected to become more significant with data derived from the wide swath of a dual-head MBES system.

- “2.3 The system capable of FM mode operation (frequency modulation)”

PWGSC Pacific has tested and proven the improvements to survey data when FM mode is used in select critical areas of the Fraser River navigation channel. Our existing MBES system's performance improved in zones where there is a pronounced salt/fresh water interface and the sea-floor undergoes large, steep variances in depths (Sand Heads and Steveston Bend). Enabling FM mode in these zones improves bottom tracking and allows for better returns from beams at the edges of the swath which increases the available swath.

All other terms and conditions remain the same.