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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
Ontario Region
33 City Centre Drive
Suite 480
Mississauga
Ontario
L5B 2N5

Title - Sujet Geonor Precipitation Gauge	
Solicitation No. - N° de l'invitation K3D33-131124/A	**Amendment No. - N° modif.** 001
Client Reference No. - N° de référence du client K3D33-131124	**Date** 2013-11-05
GETS Reference No. - N° de référence de SEAG PW-$TOR-224-6405	
File No. - N° de dossier TOR-3-36055 (224)	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2013-12-11**	**Time Zone** **Fuseau horaire** Eastern Standard Time EST
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☑ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Juan, Peggy	**Buyer Id - Id de l'acheteur** tor224
Telephone No. - N° de téléphone (905) 615-2467 ( )	**FAX No. - N° de FAX** (905) 615-2060
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**

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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**

Canada

Amendment No.001 is being raised to include Annex A and Appendix A as attachments to the Request for Proposal.

ANNEX A
REQUIREMENT

Please see attached.

Appendix A
Specification for All Weather Precipitation Sensor

Please see attached.

All other terms and conditions remain unchanged.

Annex A
Requirement
Geonor T-200B3 600 mm Capacity Weighing Gauge

1. Background:

The Meteorological Service of Canada (MSC) is a branch of Environment Canada (EC) which provides meteorological information and weather forecasts and warnings of severe weather and other environmental hazards. Environment Canada and partner agencies collects data from a network of approximately 1300 surface weather and climate observing sites. The majority of these sites are automated observing platforms which report 24/7, year round. About 400 sites from the Surface Weather (SWX) and Reference Climate Station (RCS) networks are deemed essential to the severe weather forecast and warning program. Long-term, high-quality records collected from the RCS network provide the foundation for Canada's ability to detect, quantify and adapt to climate change.

MSC plans to procure up to 100 Geonor T-200B3 sensors (65 firm units, up to 35 optional) within the contract period.

2. SCOPE OF WORK:

New Geonors T-200B3 600 mm Capacity Weighing Gauge must meet the Original Equipment Manufacturer design specifications described in Appendix A.

3. DELIVERABLES:

1. The contractor must deliver fourty (40) Geonor T-200B3 gauges with a 600mm capacity to be delivered to Environment Canada-MSC Surface Weather Climate Network 4905 Dufferin St. Toronto ON, M3H 5T4, Attn: Life Cycle Manager on or before March 31, 2014. Canada reserves the right to purchase an additional 10 Geonor T-200B3 gauge with 600mm capacity between the date of contract award to March 31, 2014 which must be delivered by March 31, 2014.

2. The contractor must deliver twenty-five (25) Geonor T-200B3 gauges with a 600 mm capacity to be delivered to Environment Canada-MSC Surface Weather Climate Network at 4905 Dufferin St. Toronto ON, M3H 5T4, Attn: Life Cycle Manager on or before September 30, 2014. Canada reserves the right to purchase an additional 25 Geonor T-200B3 gauge with 600mm capacity between April 1, 2014 to March 31, 2015 which must be delivered by March 31st 2015.

3. Each shipment must include the following components & documentation:
    a. T-200B3 Precipitation Sensor, including the following:
        i. 3 Transducers p/n 470800, with current and valid individual calibration certificates;
        ii. 3 Excitation Unit (signal adapter), rail-mountable, p/n 455060 (replaces p/n 455055); and
        iii. 3 Overvoltage Protection, p/n 455020;
    b. Pedestal (1 m Height Galvanized Steel) p/n 470400;
    c. Single Alter wind shield with Stainless Steel Blades p/n 740250;
    d. Instruction manuals (softcopy) in both English and French; and
    e. mounting hardware.

Appendix A

Specifications for All Weather Precipitation Sensors

1.0 REQUIREMENTS AND SPECIFICATIONS

1.1 Specification Terms

The following defines the terms used in the precipitation sensor specifications:

Unit:	the SI unit in which the climatological element is archived. Note: The automatic station must have the capability to convert sensor outputs into this unit prior to reporting. transmitting and recording the climatological element.
True Value:	the value which is assumed to characterize a quantity in the conditions which exist at the moment when a measurement is made. It is the ideal value which could be known only if all causes of error were eliminated.
Accuracy:	the extent to which a measurement (assuming all known corrections have been applied) agrees with the "true value".
Lab Accuracy:	the "accuracy" under controlled laboratory conditions of the measuring mechanism.
Catch Efficiency:	for a catchment precipitation sensor -- the ratio of the precipitation sensor (and shield system) catchment amount to the accepted standard precipitation sensor catchment amount.
Catchment Capacity:	for a catchment precipitation sensor -- the precipitation capacity of the system between requirements for manual emptying.
Resolution:	the smallest change in a physical variable which will cause a variation in the response of a measuring system.
Range:	the interval between upper and lower value limits for which a climatological element is reported.
Reporting Frequency:	the number of times the value of a climatological element is reported and/or recorded for a specific period.

1.1 .1 Accumulated Precipitation

	Total Precipitation
Units:	water equivalent -- mm
Lab Accuracy:	≤ 50 mm: ± 0.8 mm > 50mm: ± 3% of value
Catch Efficiency:	see Target Criteria Section 1.4
Resolution:	0.8 mm or less
Catchment Capacity:	= 600 mm
Reporting Frequency:	1 per hour or higher Clock synchronous
Maximum Frequency	1 per minute

1.2 Catch Efficiency

Studies have shown that the catch efficiency of catchment type gauge varies inversely with wind speed over the gauge orifice. The WMO Solid Precipitation Intercomparison Study has developed catch ratio versus wind speed relationships for various National Gauges (Figure 1). The Tretyakov gauge was chosen to establish the target criteria for this specification. Figure 2 and Table 1 give the catch efficiency requirements for rain and snow/mixed precipitation for varying wind speeds that must be met or exceeded by all weather precipitation sensors.

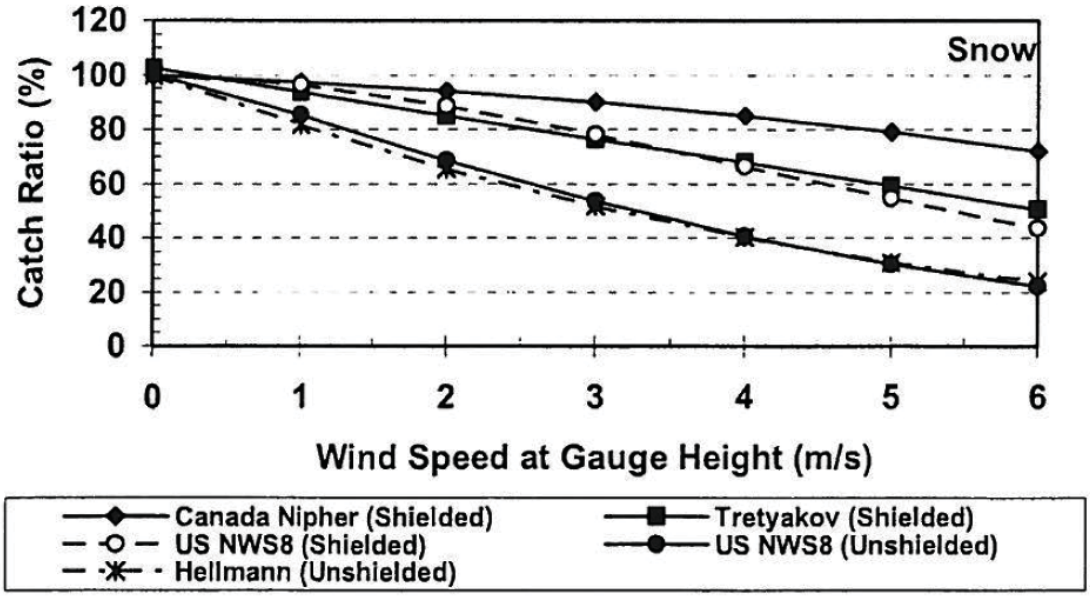

Figure 1: Catch Ratio vs Wind Speed for various National Gauges

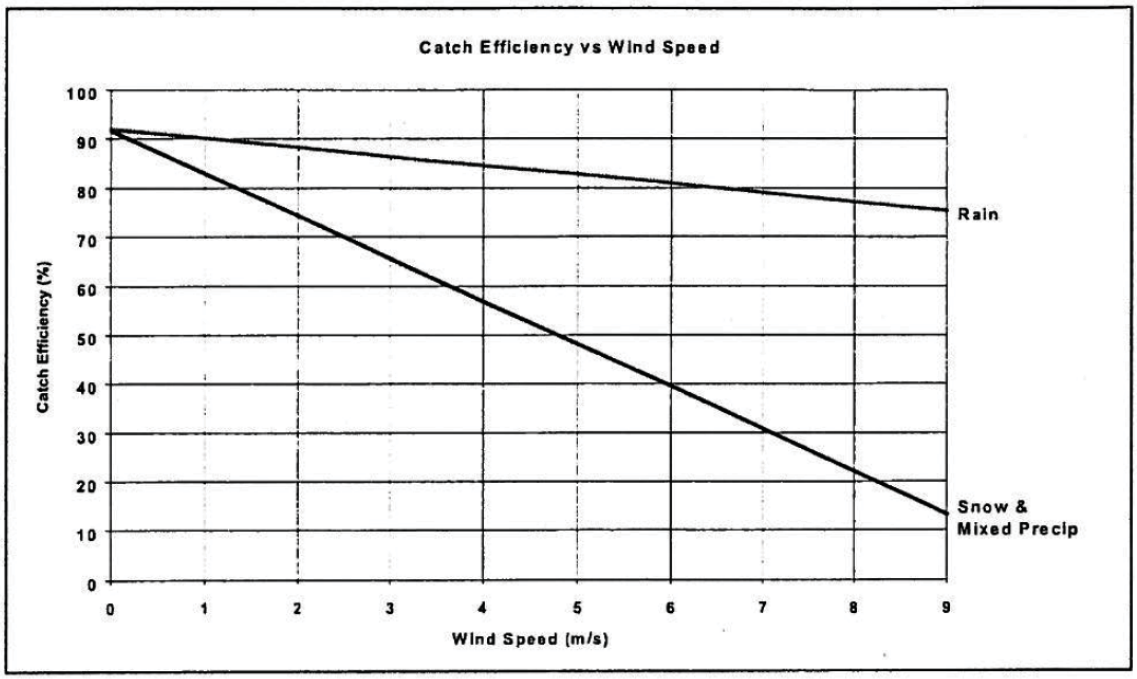

Figure 2: Catch Efficiency versus Wind Speed at Gauge Height

Wind Speed at Gauge Height *(m/s)*	Rain (%)	Snow & Mixed Precip (%)
0	92.0	91.7
1	90.2	83.0
2	88.3	74.3
3	86.5	65.6
4	84.6	56.9
5	82.8	48.2
6	80.9	39.5
7	79.1	30.8
8	77.3	22.1
9	75.4	13.4

Table 1: *Catch Efficiency versus Wind Speed* at *Gauge Height*

1.3 Environmental Factors

The precipitation sensors must operate and survive under the conditions specified below. Under the heading CONDITION, various environmental factors are listed. For each of these factors, the OPERATE column indicates the required range over which the sensors must perform. The SURVIVE column includes the extreme conditions that the sensors must be able to withstand and then resume normal operation when conditions return to the normal operating range.

CONDITION	OPERATE	SURVIVE
Temperature	-40°C to +50°C	-65°C to +55°C
Humidity	10% to 100%	5% to 100%
Wind	0 to 50 km/h	0 to 180 km/h
Precipitation	Heavy rain, hail, or snow driven by strong winds	Accumulation of up to 15 mm of freezing precipitation accompanied by wind gusts of 100 km-h^{-1}
Corrosion	normal salt levels in coastal environments and normal chemical and pollution levels in airport and urban environments.	the occasional high levels of contaminants that can occur in these environments.

Electromagnetic Interference/Radio Frequency Interference.

Transient	All inputs and outputs must have transient protection - IEEE std. 472-1974 or an equivalent standard. (See 2.0 Glossary – Transient)
Emissions	Radiated and conducted emissions must be measured in accordance with CSA standard C108.8-M1983 (R1989) or an equivalent standard, and must not exceed the limits stated for Class A equipment. (See 2.0 Glossary – Emissions)
Susceptibility	Equipment/sensor shall function normally in the presence of RF as defined by MIL, STD-461 B, Part 7, requirements CS01, CS02 and RS03, or an equivalent standard. (See 2.0 Glossary – Susceptibility)

MECHANICAL STRESS

Shock	The equipment must, when appropriately packaged, be able to withstand the normal shocks that will occur during transportation by land, sea or air. The equipment must be able to withstand the normal shocks that will occur when being handled during installation, maintenance, etc.
Vibration	The equipment must, when appropriately packaged, be able to withstand the normal vibrations that will occur during transportation by land, sea or air. The equipment must be able to withstand the normal vibrations that will occur during operation due to winds up to 180 km/h. (See 1.3 Environmental Factors - wind – survive)

Corrosion	The equipment must be constructed of such materials and coatings that make it resistant to salts, acids, alkalis, solvents and sunlight, including UV.

1.4 General Catchment Sensor Requirements

If the sensor is a catchment type gauge, it must meet the following requirements:

1. Heated catchment surfaces are not acceptable.
2. When precipitation accumulation (liquid, solid and/or mixed) is less than or equal to 3.0 mm as measured by the Reference, the absolute value of the difference in the accumulated amount reported by the sensor and the Reference must not exceed 0.8 mm.
3. When the precipitation accumulation (liquid, solid and/or mixed) is greater than 3.0 mm as measured by the Reference, the test sensor catch efficiency must not be less than the appropriate Catch Efficiency curve shown in Figure 2.
4. When liquid precipitation only is reported, the absolute value of the difference in the accumulated amount reported by a pair of identical sensors must not exceed 0.8 mm when the Reference measurement is less than 8 mm or exceed 10% of their mean value when the Reference measurement is greater or equal to 8 mm.

1.5 Power Requirement

Precipitation sensor input voltages for all electronics must be nominally 12 volts DC. Contractor must provide detailed documentation of all AC or DC power requirements.

AC powered sensors will be considered only for principal climate stations if they offer significant performance advantages.

1.6 Sensor Signal Output

The precipitation sensor output signal must be one or more of the following:

i) Analogue voltage output (maximum 5 volts full-scale),
ii) RS232 or RS485 serial ASCII output
iii) SDI-12 (1200 Baud, 3-wire: Data, +12v and Ground).
iv) Pulse or contact closure.
v) Inverted current loop

2.0 GLOSSARY

Transient:

The first standard document to specify a Surge Withstand Capability (SWC) test was ANSI/IEEE Std C37.90a -1974/IEEE Std 472—1974 (redesignated ANSI/IEEE Std C37.90.1-1974), IEEE Guide for Surge Withstand Capability (SWC) Tests.

Emissions:

Electromagnetic Compatibility (EMC) requirements in Canada are regulated by the Radio-communication Regulations (1996). Digital Apparatus (ICES-003) are found in a list governing the Interference-Causing Equipment Standards (ICES's) that must be met in Canada. For Digital Apparatus (ICES-003), either CSA C108.8-M1983 or CAN/CSA-CISPR22-96 is to be used.

Susceptibility:

MIL-STD-461B, MILITARY STANDARD: ELECTROMAGNETIC EMISSION AND SUSCEPTIBILITY REQUIREMENTS FOR THE CONTROL OF ELECTROMAGNETIC INTERFERENCE (01 APR 1980). This standard covers the requirements and test limits for the measurement and determination of the electromagnetic interference characteristics (emission and susceptibility) of electronic, electrical and electromechanical equipment.