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**Request for Supply Arrangement (RFSA)
 Demande d'arrangements en matière
 d'approvisionnement (DAMA)**

**SOLICITATION AMENDMENT
 AMENDEMENT DE SOLLICITATION**

This bid solicitation is issued in accordance with the conditions of Supply Arrangement No. EN578-170432. Only suppliers who are pre-qualified and have been issued a supply arrangement at the time this bid solicitation is issued are eligible to bid.

Cette demande de soumissions est émise conformément aux conditions de l'arrangement en matière d'approvisionnement numéro EN578-170432. Seuls les fournisseurs qui sont pré-qualifiés et auxquels un arrangement en matière d'approvisionnement a été émis au moment où cette demande de soumissions est émise peuvent présenter une soumission.

Comments – Commentaires

Issuing Office – Bureau de distribution

Finance and Procurement Management Branch
 Natural Resources Canada
 580 Booth Street
 Ottawa, ON K1A 0E4

Title – Sujet Airborne Geophysical Surveys Levés géophysiques aéroportés	
Solicitation No. – No de l'invitation NRCan- 5000041796	Date 01/08/2019
SOLICITATION AMENDMENT AMENDEMENT DE SOLLICITATION	
Solicitation Closes – L'invitation prend fin at – à 02:00 PM (Eastern Standard Time (EST)) on – le August 20, 2019	
Address Enquiries to: - Adresse toutes questions à: <u>danielle.gudbranson@canada.ca</u>	
Telephone No. – No de telephone (343) 292-8327	
Destination – of Goods and Services: Destination – des biens et services: <i>Natural Resources Canada</i> <i>580 Booth Street</i> <i>Ottawa, ON K1A 0E4</i>	
Security – Sécurité There are security requirements associated with this requirement	
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur 	
Telephone No.:- No. de téléphone: Facsimile No.: - No. 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) 	
<hr/> Signature	Date



REQUEST FOR SUPPLY ARRANGEMENT (RFSA) | DEMANDE D'ARRANGEMENTS EN MATIÈRE D'APPROVISIONNEMENT (DAMA)

AIRBORNE GEOPHYSICAL SURVEYS | LEVÉS GÉOPHISIQUES AÉROPORTÉS

This solicitation amendment is issued to:

- Update the Technical Evaluation Grid to facilitate a timely RFSA process.

Please refer to Solicitation Amendment 001 (Question and Answer 001) uploaded as an attachment to BuyandSell.gc.ca on July 31, 2019 for Questions and Answers 1 through 4

Please note a Solicitation Amendment 002 was issued on Wednesday July 31, 2019 to extend the closing date of the bid solicitation to August 20, 2019 at 14:00

Question 5:

Producing the requested data sets is extremely time consuming for us due to:

- 1) requiring magnetic data to be included with every data set
- 2) requiring raw latitude, longitude channels
- 3) requiring calibration data for all survey types

Previously we could resubmit data we had already delivered, but these three changes mean we need to reprocess our deliveries. We will also not be able to use the same surveys as last time. We would like to request that these changes be removed.

Answer 1:

Some calibration requirements have been removed. Raw Latitude Longitude channels are no longer required. The requirement for magnetic data in workstreams 2 to 4 has been removed. In workstream 5 we require a minimum of one sample flight line that includes a magnetic data channel integrated with TDEM data. Please refer to the evaluation grid for details

Therefore at Part 4 - Evaluation Procedures and Basis of Selection

~~DELTE IN ITS ENTIRETY~~

INSERT:

PART 4 – EVALUATION PROCEDURES AND BASIS OF SELECTION

The following are the Evaluation Criterion that the Bidders must comply with to be awarded a Supply Arrangement.

1. Evaluation Procedures

- a) Arrangements will be assessed in accordance with the entire requirement of the Request for Supply Arrangements including the technical evaluation criteria.
- b) An evaluation team composed of representatives of Canada will evaluate the arrangements.
 - 1.1 Technical Evaluation



The evaluation process of this procurement will be conducted in three (3) phases:

Phase 1: The Offer(s) will be evaluated against the Mandatory Requirements below. Should a Bidder be fully compliant with **ALL** Mandatory Requirements for any Workstream(s) they are bidding on they will be awarded a Supply Arrangement for that (those) Workstream(s).

Phase 2: If an Offer(s) does not comply with **ALL** of the Mandatory Requirements, for any particular Workstream they are bidding on, the Bidder notified in writing of the inadequacy in their proposal related to any such “unmet” mandatory criteria. They will then be provided an additional fifteen (15) calendar days, after this evaluation to correct the problem and resubmit their revised data. If the revised data are acceptable, in accordance with the aforementioned mandatory requirements, the Bidder will be awarded a Supply Arrangement upon acceptance of the revised data for that (those) particular Workstreams.

Phase 3: If, after the fifteen (15) calendar days the revised data is still not acceptable, the Offer(s) will be considered non-compliant and no further consideration will be given for that (or those) Workstream(s). However, this does not preclude the disqualified Bidder from responding to the RFSA refresh, which will occur once per year.

Proposals must clearly detailed the following elements in their proposal to be considered compliant:

Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
M1	<p>The Bidder MUST be able to provide the following for each Workstream they are bidding on:</p> <p>Drape flying capability is mandatory for the following Workstreams:</p> <p>Fixed Wing:</p> <ul style="list-style-type: none"> a) Workstream 1: Aeromagnetic Survey b) Workstream 2: Radiometric (Gamma-ray Spectrometric) Survey c) Workstream 3: Airborne Gravity Survey d) Workstream 4: Time Domain Electromagnetic (TDEM) Survey e) Workstream 5: Airborne Gravity Gradiometry <p>Rotary Wing:</p> <ul style="list-style-type: none"> a) Workstream 3: Airborne Gravity Survey b) Workstream 5: Airborne Gravity Gradiometry Survey <p>Drape flying capability is optional for the following Workstreams:</p> <p>Rotary Wing:</p> <ul style="list-style-type: none"> a) Workstream 1: Aeromagnetic Survey b) Workstream 2: Radiometric (Gamma-ray Spectrometric) Survey c) Workstream 4: Time Domain Electromagnetic (TDEM) Survey 	<input type="checkbox"/> Yes <input type="checkbox"/> No	



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
<p>M2</p>	<p>Note: The Bidder must submit a digital dataset for evaluation. Data must be submitted for each Workstream that the bidder is bidding on.</p> <p>For aeromagnetic and radiometric surveys the dataset must be no less than 10,000 line kilometers for fixed-wing surveys and no less than 2,500 line kilometers for helicopter-borne surveys. A fixed-wing time-domain electromagnetic, airborne gravity or airborne gravity gradient dataset must be at least 2,500 line kilometers. Data must be submitted for each Workstream being bid on to be considered compliant.</p> <p>This dataset must include:</p> <ul style="list-style-type: none"> • gamma-ray spectrometry for Workstream 2 • electromagnetic for Workstream 4, • gravity, or gravity gradient data for Workstream 3 and 5 respectively. <p>For Fixed Wing: Workstream 1: Aeromagnetic Survey and Workstream 2: Radiometric (Gamma Ray Spectrometric) Survey:</p> <ul style="list-style-type: none"> • the dataset must be no less than 10,000 lkms <p>Workstream 3: Airborne Gravity Survey Workstream 4: Time-Domain Electromagnetic Survey Workstream 5: Airborne Gravity Gradiometry Survey</p> <ul style="list-style-type: none"> • dataset must be at less 2,500 lkms <p>For Rotary Wing: Workstream 1: Aeromagnetic Survey and Workstream 2: Radiometric (Gamma Ray Spectrometric) Survey:</p> <ul style="list-style-type: none"> • the dataset must be no less than 2,500 lkms <p>Datasets must include the following:</p> <p>a) Calibration Data (as required per workstream)</p> <p>b) Line data</p> <p>c) Gridded data</p> <p>d) Supporting maps and documentation to portray and demonstrate compilation.</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	
Workstream 1: Aeromagnetic Data			
<p>M3</p>	<p>The Bidder must provide the following information for their magnetic data:</p> <p>a) Line Data: Line data must be sampled at 10 Hz or more and in Geosoft (.gdb) format. The following data channels must be provided:</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	<ul style="list-style-type: none"> • Line channel (integer number) • Time (fiducial) channel • Differentially corrected latitude, longitude channels (in decimal degrees, six (6) decimal place accuracy) or equivalent easting, northing (m) • Flight number channel (integer number) • Orthometrically corrected GPS height (m) • Drape surface (m) used to fly survey (where applicable) • Radar Altimeter (m) • Uncompensated and compensated raw magnetic data (where applicable) • Fluxgate magnetometer (XYZ) data • Raw edited and lagged magnetic data • All intermediate adjustments to the magnetic channel (nT), (filters, additional adjustments applied in leveling steps to achieve the final leveled magnetic channel) • Levelled magnetic channel • Magnetic base station diurnal channel(s) <p>b) Gridded Data: Gridded data must be supplied with a grid interval of approximately ¼ of the traverse line spacing and in Geosoft (.gdb) file format. The following grid types must be provided:</p> <ul style="list-style-type: none"> • Grid of the magnetic field produced from the leveled magnetic channel • Grid of the first vertical derivative of the magnetic field <p>c) Maps and support documentation: the following maps and support documentation must be provided:</p> <ul style="list-style-type: none"> • Map of gridded magnetic total field data • Map of gridded first vertical derivative of the magnetic field • Profile map of magnetic leveling adjustments (i.e. compensated raw magnetic channel minus leveled magnetic channel, each line zeroed to its average) plotted on the flight plan. The map of the first vertical derivative of the magnetic field grid and the profile of the magnetic level adjustment may be combined on one map. • Support documentation describing complete details on the leveling steps used to achieve the final leveled magnetic channel. <p>d) Specific Equipment Requirements:</p> <p><u>Aircraft:</u></p>		



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	<p>The Bidder must provide the appropriate aircraft (as per M1) capable of following the drupe surface of the digital elevation model at a sustained rate of climb/descent of 5% for fixed-wing aircraft and 15% for rotary wing aircraft.</p> <p><u>Magnetometer:</u> The sensor(s) must be mounted in a stinger attached to the aircraft.</p> <p><u>Compensator:</u> An on-board compensator system is required (active or post-processing)</p> <p><u>Radar Altimeter:</u> Minimum range: 0 – 800 m Accuracy (minimal) 5%</p> <p><u>GNSS:</u> Complete GNSS coverage must be obtained. A GNSS ground base station is required. Raw dual-frequency positional GPS data must be supplied* *Post flight differential correction of the raw GPS data is mandatory using ground GPS base station data for all flights.</p> <p><u>Video Camera:</u> The video image overlay must show, at the minimum, GPS time to a precision of tenths of seconds and image centre cross-hair. GPS positional information is optional.</p> <p><u>Ground Magnetometer Stations:</u> At least one (1) base station is required in proximity to each survey area. The base station must record data at a rate of 1 sample per second and record GPS time with each magnetic base station reading. Bidder must identify which base station is used.</p>		
<p>Workstream 2: Radiometric (Gamma-Ray Spectrometric) Data (qualification for this stream must include qualification under Workstream 1: Aeromagnetic):</p>			
<p>M4</p>	<p>The Bidder must provide the following information:</p> <p>a) Calibration Data: Gamma-ray spectrometer data recorded for calibration tests must be provided in Geosoft (.gdb) format with the same channels as listed below for Line Data. The calibration data must include data recorded using spectrometry</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	<p>calibration pads available in Ottawa or Toronto, data recorded for cosmic calibration flights at altitudes greater than 3000m above the ground and data recorded during a sensitivity / attenuation calibration test flight, for example at Breckinridge, Quebec.</p> <p>The bidder is to provide all correction constants used to achieve the conversion of raw gamma-ray spectrometry data to the final corrected data, including cosmic corrections, radon corrections, stripping correction, attenuation constants and factors used to do the conversion to concentration or dose rate.</p> <p>a) Line Data: Line data must be sampled at 1 Hz or more and in Geosoft (.gdb) format. The following data channels must be provided:</p> <ul style="list-style-type: none"> • Line channel (integer number) • Time (fiducial) channel • Differentially corrected latitude, longitude channels (in decimal degrees, six (6) decimal place accuracy) or equivalent easting, northing (m) • Flight number channel (integer number) • Orthometrically corrected GPS height (m) • Drape surface (m) used to fly survey (where applicable) • Radar Altimeter (m) • Temperature (°C) • Barometric pressure (kPa) • Effective altitude (m) • Live time (ms) • Cosmic count (cps) • Upward detector spectrum (1024 channels) • Main detector spectrum (1024 channels) • Upward crystal count (cps) • Raw total count (cps) • Raw potassium count (cps) • Raw uranium count (cps) • Raw thorium count (cps) • Total air absorbed dose rate (nGy/h) • Corrected potassium (pct) • Corrected equivalent uranium (ppm) • Corrected equivalent thorium (ppm) • Ratio: equivalent uranium/equivalent thorium (ppm/ppm) • Ratio: equivalent uranium/potassium (ppm/pct) • Ratio: equivalent thorium/potassium (ppm/pct) <p>b) Gridded Data: Gridded data must be supplied with grid interval of approximately ¼ of the</p>		



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	<p>traverse line spacing and in Geosoft (.gdb) file format. The following grid types must be provide:</p> <ul style="list-style-type: none"> • Grids of the total air absorbed dose rate, corrected potassium, equivalent uranium, equivalent thorium, and of the three (3) ratios. • Maps of previous gridded data. <p>c) The bidder is to provide sample gamma-ray spectrometer data recorded for calibration tests</p> <p>This includes data recorded using spectrometry calibration pads available in Ottawa or Toronto, data recorded for cosmic calibration flights at altitudes greater than 3000 m above the ground and data recorded during a sensitivity/attenuation calibration test flight, for example at Breckinridge, Quebec.</p> <p>d) The bidder is to provide all correction constants used to achieve the conversion of raw gamma-ray spectrometry data to the final corrected data, including cosmic corrections, radon corrections, stripping correction, attenuation constants and factors used to do the conversion to concentration or dose rate.</p> <p>e) Maps and support documentation: The following maps and support documentation must be provided:</p> <ul style="list-style-type: none"> • Map of previous gridded data • Support documentation describing all correction constants used to achieve the conversion of raw gamma-ray spectrometry data to the final corrected data, including cosmic corrections, radon corrections, stripping correction, attenuation constants and factors used to do the conversion to concentration or dose rate. <p>f) Specific Equipment Requirements:</p> <p><u>Aircraft:</u> The Bidder must provide the appropriate aircraft (as per M1) of flying at 30 m intervals for 100 to 200 seconds each between 60 m and 300 m above the surface and capable of flying at 500 m intervals for 600 seconds each between 1500 and 3500 m ASL.</p> <p>The Bidder must provide suitable aircraft capable of following the drape surface of the digital elevation model at a sustained rate of climb/descent of 5% for fixed-wing aircraft and 15% for rotary wing aircraft.</p>		



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	<p><u>Gamma-ray Spectrometer:</u> The gamma-ray detectors must be positioned in the aircraft such that shielding of the detectors by the fuel tanks is minimal.</p> <p>Systems must use multiple detectors (minimum 36L) independently digitized and combined to a single output spectrum and preserve the Poisson distribution in all output spectrum channels.</p> <p><u>Radar Altimeter:</u> Minimum range: 0 – 800 m Accuracy (minimal) 5%</p> <p><u>Barometer:</u> Absolute air pressure to 0.1 kPa</p> <p><u>Thermometer:</u> External ambient temperature to: 1°C</p>		

Workstream 3: Gravity Data
(qualification for this stream must include qualification under Workstream 1: Aeromagnetic with magnetic data of (2,500 km)):

<p>M5</p>	<p>The Bidder must provide the following information for this workstream:</p> <p>a) Calibration Data:</p> <p>All calibration data must be provided in Geosoft (.gdb) format with the same channels as listed below for Line Data.</p> <p>The calibration data must include airborne gravity comparison measurements with suitable upward continued ground gravity measurements.</p> <p>The bidder is to provide all correction constants used to achieve the conversion of raw gravity data to the final corrected data.</p> <p>a) Line data: Line data must be sampled at 4 Hz or more and in Geosoft (.gdb) file format. The following data channels must be provided:</p> <ul style="list-style-type: none"> • Line channel (integer number) • Time (fiducial) channel • Differentially corrected latitude, longitude channels (in decimal degrees, six (6) decimal place accuracy) or equivalent easting, northing (m) • Flight number channel (integer number) • Orthometrically corrected GPS height (m) • Drape surface (m) used to fly survey (where applicable) • Radar Altimeter (m) 	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	
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Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	<ul style="list-style-type: none"> • Raw accelerometer channels of X, Y and Z • Eotvos correction • Raw gravity • Free air gravity (unleveled and leveled filtered gravity) • Bouguer correction (2.67 g/cc) • Earth curvature correction • Terrain correction • Bouguer gravity anomaly, unleveled • Levelling correction • Bouguer gravity anomaly <p>b) Gridded Data: Gridded data must be supplied with a grid interval of approximately ¼ of the traverse line spacing and in Geosoft (.gdb) file format. The following grid types must be provided:</p> <ul style="list-style-type: none"> • Grids of the free air and Bouguer gravity anomalies <p>c) Maps and support documentation: The following maps and support documentation must be provided:</p> <ul style="list-style-type: none"> • Maps of the previous gridded data <p>d) Specific Equipment Requirements:</p> <p><u>Aircraft:</u> The Bidder must provide suitable aircraft capable of following the drape surface of the digital elevation model at a sustained rate of climb/descent of 5% for fixed-wing aircraft and 15% for rotary wing aircraft.</p> <p><u>Gravimeter:</u> The gravimeter must have an accuracy of at least 0.5 mGal measuring the vertical component of gravity. The final data must have a half-sine wave resolution of at least 3.0 km.</p> <p><u>Radar Altimeter:</u> Minimum range: 0 – 800 m Accuracy (minimal) 5%</p> <p><u>Laser Altimeter:</u> Minimum range: 0 – 300 m Accuracy (minimal) 10 cm</p> <p><u>GNSS:</u> Complete GNSS coverage must be obtained. A GNSS ground base station is required.</p>		



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	Raw dual-frequency positional GNSS data must be supplied. Post flight differential correction of the raw GNSS data is mandatory using ground GNSS base station data for all flights.		
Workstream 4: Time Domain Electromagnetic Data (TDEM)			
M6	<p>The Bidder must provide the following information for this Workstream:</p> <p>a) Calibration Data:</p> <p>A pre-flight and post-flight measurement of the TDEM background response and assessment of noise level.</p> <p>All calibration data must be provided in Geosoft (.gdb) format with the same channels as listed below for Line Data.</p> <p>a) Line Data: Line data must be sampled at 5 Hz or more and in Geosoft (.gdb) format. The following data channels must be provided:</p> <ul style="list-style-type: none"> • Line channel (integer number) • Time (fiducial) channel • Differentially corrected latitude, longitude channels (in decimal degrees, six (6) decimal place accuracy) or equivalent easting, northing (m) • Flight number channel (integer number) • Orthometrically corrected GPS height (m) • Drape surface (m) used to fly survey (where applicable) • Radar Altimeter (m) • Digital Elevation model (m) • Transmitter height (m) • Receiver height (m) • Raw channels of X, Y and Z components of dB/dt* and calculated or measured B* field • Power line monitor • All intermediate adjustments to the magnetic channels (filters, additional adjustments applied in leveling steps to achieve the final leveled magnetic channel) • Leveled channels of the X, Y and Z components of dB/dt* and B* field • Decay time constant from dB/dt* (X component) • Calculated apparent conductivity • EM anomalies and calculated conductance <p>The Bidder must provide the stream data at full resolution of all measured components and primary field for a production flight having a minimum duration of one (1) hour.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	<p><i>Note: * Units of dB/dt and B must be in physical units (SI) or in ppm relative to the primary field.</i></p> <p>b) Gridded Data: Gridded data must be supplied with a grid interval of approximately ¼ of the traverse line spacing and in Geosoft (.gdb) file format. The following grid types must be provided:</p> <ul style="list-style-type: none"> • Grid of the apparent conductivity, grids of the decay time constraints: x and z components. <p>c) Maps and Support documentation: The following maps and support documentation must be provided:</p> <ul style="list-style-type: none"> • Maps of previous gridded data • EM anomaly map including anomaly conductance. <p>d) Results from the EM system flown over the Reid-Mahaffy test site. A complete description of the test site and the test survey is provided in:</p> <p>Ontario Geological Survey, 2000; Airborne magnetic and electromagnetic surveys. Reid-Mahaffy Airborne Geophysical Test Site Survey; Ontario Geological Survey, Miscellaneous Release – Data (MRD)-55.</p> <p>f) Provide a sample flight line that includes magnetic and EM data or include magnetic data in the TDEM database demonstrating the magnetic sensor integration with the TDEM system.</p> <p>g) Specific Equipment Requirements:</p> <p><u>EM System – Helicopter:</u> The electromagnetic system can either be a rigid system (loop-loop configuration) or have its EM receiver above the transmitter loop. The system must have a proven depth of penetration of 250 m. The electromagnetic receiver is comprised of a multi-channel computer for data processing and reduction, and sensors in a towed-bird. The electromagnetic system is capable of providing the dB/dt (the horizontal X, Y and vertical Z components). The maximum operating waveform frequency will be 90 Hz.</p> <p><u>EM System – Fixed Wing:</u> The electromagnetic system must have a primary minimum dipole moment of $14.85 \times 10^5 \text{ Am}^2$. The electromagnetic receiver is comprised of a multi-channel computer for data processing and reduction, and sensors in a towed-bird. The electromagnetic</p>		



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	<p>system is capable of providing the dB/dt and B-field responses in three (3) orthogonal directions (the horizontal X, the transverse Y and vertical Z components). The operating waveform frequency will be 90 Hz and the pulse width 2 ms.</p> <p><u>Aircraft:</u> The Bidder must provide an aircraft capable of following the drape surface of the digital elevation model at a sustained rate of climb/descent of 5% for fixed-wing and 15% for rotary wing aircraft.</p> <p><u>Radar Altimeter:</u> Minimum range: 0 – 800 m Accuracy (minimal) 2%</p> <p><u>GNSS:</u> Complete GNSS coverage must be obtained. A GNSS ground base station is required. Raw dual-frequency positional GPS data must be supplied* *Post flight differential correction of the raw GPS data is mandatory using ground GPS base station data for all flights.</p> <p><u>Video Camera:</u> Images must be clear and each frame must overlap. Image overlay must show time in seconds.</p> <p>Note to Bidders: For EM helicopter:</p> <p>Please provide the following for each of your EM time domain systems and also include a description of a typical utilization in different environment such as a capability to acquire data in moderate to extreme topography versus capability to detect deep structures:</p> <ul style="list-style-type: none"> • For each EM system with a transmitter Tx flying at 35 m above the ground, please provide a nomogram for a homogeneous half space varying from 0.01 mS/m to 10000 mS/m and showing a log-log representation of dB/dt in nT/s versus the conductivity in mS/m (Name of the system, base frequency, pulse width, Tx and Rx heights, and dipole moment are indicated in the title of the nomogram). Noise level will be plotted on this nomogram • A table for each EM system specification available containing the following information: <ul style="list-style-type: none"> ○ Name of the system, ○ Tx-Rx configuration, 		



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	<ul style="list-style-type: none"> ○ Tx coil surface (m²), ○ Base frequency range (Hz), ○ Pulse shape, ○ Transmitter pulse width range (ms), ○ Transmitter off-time range (ms), ○ Peak dipole moment range (NIA), ○ Transmitter turns, ○ Peak current (A), ○ Components (X,Y,Z), ○ System (rigid or flexible), ○ Noise level estimation (nT/s), ○ Maximum depth of investigation in a resistive environment (m) <p>For EM fixed wing:</p> <p>Please provide the following for each of your EM time domain systems and also include a description of a typical utilization in different environment such as a capability to acquire data in moderate to extreme topography versus capability to detect deep structures:</p> <ul style="list-style-type: none"> • For each EM system with a transmitter Tx flying at 120 m above the ground, please provide a nomogram for a homogeneous half space varying from 0.01 mS/m to 10000 mS/m and showing a log-log representation of dB/dt in nT/s versus the conductivity in mS/m (Name of the system, base frequency, pulse width, Tx and Rx heights, and dipole moment are indicated in the title of the nomogram). Noise level will be plotted on this nomogram • A table for each EM system specification available containing the following information: <ul style="list-style-type: none"> ○ Name of the system, ○ Tx-Rx configuration, ○ Tx coil surface (m²), ○ Base frequency range (Hz), ○ Pulse shape, ○ Transmitter pulse width range (ms), ○ Transmitter off-time range (ms), ○ Peak dipole moment range (NIA), ○ Transmitter turns, ○ Peak current (A), ○ Components (X,Y,Z), ○ System (rigid or flexible), ○ Noise level estimation (nT/s), ○ Maximum depth of investigation in a resistive environment (m) 		
Workstream 5: Gravity Gradiometry Gradiometric Data			
M7	The Bidder must provide the following information for this Workstream:	<input type="checkbox"/> Yes <input type="checkbox"/> No	



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	<p>a) Line Data: Line data must be sampled at 1 Hz or better and in Geosoft (.gdb) file format. The following data channels or similar, depending on features of the gravity gradiometer system, should be provided :</p> <ul style="list-style-type: none"> • Line Channel (integer number) • Time (Fiducial) channel • Differentially corrected latitude, longitude channels (in decimal degrees, six (6) decimal place accuracy) or equivalent easting, northing (m) • Flight number channel (integer number) • Orthometrically corrected GPS height (m) • Drape surface (m) used to fly survey (where applicable) • Radar Altimeter (m) • Raw gravity gradients (Gij) • Levelled gravity gradients (Gij) • Eötvös correction • Free air gravity Bouguer correction (2.67 g/cc) • Terrain correction • Bouguer gravity anomaly <p>c) Gridded Data: Gridded data must be supplied with a grid interval of approximately ¼ of the traverse line spacing and in Geosoft (.gdb) file format. The following grid types must be provided:</p> <ul style="list-style-type: none"> • Grids of the vertical gravity gradient and Bouguer gravity anomalies <p>d) Maps and Support Documentation: The following maps and support documentation must be provided:</p> <ul style="list-style-type: none"> • Maps of the previous gridded data <p>e) Specific Equipment Requirements:</p> <p><u>Aircraft:</u> The Bidder must provide suitable aircraft capable of following the drape surface of the digital elevation model at a sustained rate of climb/descent of 5% for fixed-wing aircraft and 15% for rotary wing aircraft.</p> <p><u>Gravity Gradiometer:</u> The gradiometer must have an accuracy of 5 Eötvös, or better, measuring the gravity gradient. The final data must have an along line full wave resolution of 500 m, or better.</p> <p><u>Radar Altimeter:</u> Minimum Range: 0 – 800 m Accuracy (Minimal) 5%</p>		



Item	Mandatory Criteria	Compliant/Non-Compliant	Cross Reference to Proposal, including Page Number
	<p><u>Laser Altimeter:</u> Minimum Range: 0 – 300 m Accuracy (Minimal) 10 cm</p> <p><u>GNSS:</u> Complete GNSS coverage must be obtained. A GNSS ground base station is required. Raw dual-frequency positional GPS data must be supplied*</p> <p>*Post flight differential correction of the raw GPS data is mandatory using ground GPS base station data for all flights.</p>		

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME