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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.

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Electronics, Simulators and Defence Systems Div.
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simulation et de défense
11 Laurier St. / 11, rue Laurier
8C2, Place du Portage
Gatineau
Québec
K1A 0S5

Title - Sujet Polar Over-the-Horizon Radar Phase4 Radar Polaire Transhorizon RPT	
Solicitation No. - N° de l'invitation W7714-228152/B	Amendment No. - N° modif. 002
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Amendment Two

The purpose of the Polar Over The Horizon Radar (POTHR), Amendment Two is to extend the solicitation closing date, make corrective wording changes to the documents, respond to the questions received from industry and to updated documents as a result of these questions.

Terms and Conditions

Solicitation closing Date is changed to 30 April 2024

ANNEX A

There is a number of changes to the Statement of Work (SOW) and Statement of Requirements (SOR) in the responses to the questions below.

ANNEX B

Annex B - Part One, Table 1-1 Mandatory Technical Criteria, M1:

Add text: c) Potential shelter layouts for the delivered transmit and receive shelters.

Questions & Answers:

Q-1: *Annex A – SOW 5.7.4. The target date for the completion of both Transmit and Receive sites is Contract Award (CA) +20 months. If CA is July 2024 as planned, then construction time is limited to summer 2025. Is this correct? SOW 12.1. The ground will be frozen and covered with deep snow in the winter, so there may be seasonal limitations to when the antenna arrays can be installed.*

Annex A – SOW 5.7.4. Will the timelines be adjusted to allow for the site installations to occur in the summer months? If 20 months after contract award falls in winter months, will it be acceptable to delay installation activities until the climate allows?

ANS: Canada has considered seasonal site accessibility in its scheduling. If delays occur due to unforeseen circumstances that are unavoidable, contract amendments may be issued to address the delays.

Q-2: *Annex A – SOW 6.3.1. Please confirm that all permits and any oppositions (possible environmental) to the clearance of site vegetation and obstacles has been satisfied? If so, can site clearance start in 2024? SOW 6.3.3. The ground will be frozen and covered with deep snow in the winter, so there are seasonal limitations to when the site preparation work may be performed.*

Annex A – SOW 6.3 Site Preparation. Will Canada secure all Land Rights Claims, Provincial/Municipal construction permits, environment assessments, and RF transmission licenses for the selected sites?

ANS: Canada is responsible for securing all Land Rights Claims, permits, assessments (environmental or otherwise), and licenses, including Radio Frequency (RF) transmission licenses, required for the Transmit and Receive site locations. Canada plans to complete the site preparation and obtain all permits. If Canada is unable to complete this requirement, the Contractor may be requested to complete site preparation using the Task Authorization process (Annex G – DND 626 Task Authorization Form). Site clearance is limited to clearing the exact locations of the antenna elements and gravel pad(s) and is not meant to be clearcutting and leveling of the entire site.

Q-3: *Annex A – SOW 12.2. The main power is from local utilities. Would there be any restrictions/opposition regarding installing power to the site at the start of the project?*

Annex A – SOW 12.2. When will the Government-Furnished Equipment (GFE) generators be available?

ANS: Canada will not be providing main power and GFE generators to the site locations until the final installation and commissioning of the sites.

Q-4: *Appendix A to Annex A – SOR 3.4.1. General information states "The Government-furnished transformer output will be 120/208 volts wye". This transformer is not listed in the Government-Furnished Equipment (GFE) in SOW 11.1. Will this transformer be provided, and if so, who will transport it to the Transmit site?*

Appendix A to Annex A – SOR 6.4.2. General information states "The Government-furnished transformer output will be 120/208 volts wye". This transformer is not listed in the GFE in SOW 11.1. Will this transformer be provided, and if so, who will transport it to the Receive site?

ANS: Yes, the Transmit and Receive transformers are considered part of the Government-Furnished Equipment (GFE) electrical power supplies.

Q-5: *Annex A – SOW 12.2. What is the capacity of the diesel generator fuel tank?*

ANS: The diesel generator provided by Canada is expected to have a fuel tank capacity of 660 gal (US).

Q-6: *Annex A – SOW 5.7.4. Does the Government-Furnished Equipment (GFE) need to be transported to site or will this be done by the Tasking Authority (TA)?*

ANS: The transportation of GFE items to the site locations can be done either by Canada or by the Contractor using the Task Authorization process (Annex G – DND 626 Task Authorization Form).

Q-7: *RFP Part 6 – Security. Not covered in the RFP, however, can the Technical Authority (TA) confirm that there is no requirement for security at either site including physical and/or remote passive?*

Does Canada require any sites' perimeter security to protect against vandalism and wildlife?

Please advise whether there is a requirement for any site perimeter security, such as to protect against vandalism and wildlife?

ANS: No, there are no additional security requirements at either site locations including physical and/or remote passive. See Appendix A to Annex A – SOR 3.3.8 Entry Resistance under the Transmitter Physical Requirement and SOR 6.3.8 Entry Resistance under the Receiver Physical Requirements.

Q-8: *Is DRDC open to having a larger Transmit shelter, which is comprised of modular shelter segments assembled at site, each of which is within the size of a 20' ISO shipping container envelope (ISO 668 1CC), and has its own lifting points?*

ANS: Yes, however, the proposed shelter(s) must meet the requirements in Appendix A to Annex A – SOR 3.1 Shelter.

Q-9: *SOR 3.5.4 Operator Area. The requirement calls for two operator areas (each with a laptop). However, the list of equipment (Annex A – SOW 5.9.3) requires one operator console with one spare. Please clarify that the two operator areas include the spare operator console. While the requirement calls for two physical operator areas, please confirm that the actual control is from one operator console.*

Annex A – SOW 5.9.3 b). The total number of operator consoles required in the table is two. However, for the Transmit site SOR 3.5.4 states "The operator area must have two operator console positions, each with a portable computer that can be removed between operational periods." and for the Receive site SOR 6.5.4 states "The operator area must have two operator console positions, each with a portable computer that can be removed between operational periods.". How many consoles are required?

ANS: A total of two operator consoles are required. A single console is required to operate the system, and a second console serves as a spare. The operator area must have two console positions, each capable of supporting the operator console consisting of a portable computer that can be removed between operational periods.

Q-10: *SOR 2.1.4 – Shading. The shading is defined for 256 channels. However, there is a statement that says when multiple channels are combined and fed to a common antenna (presumably the Power Amplifier (PA) strategy specified later), the system must ensure that a common amplitude and phase is applied. This suggests that it is a user input to specify 4:1 combining. Is it acceptable to require that the Government still specifies a 256-channel shading table, however the system applies Ch 1 values to Ch 1 to 4, Ch 5 to Ch 5 – 8, etc.?*

ANS: Canada will provide a shading file with entries for each of the 256 channels. The system must include a utility that ensures the same amplitude and phase weighting is applied to every set of four channels that will be combined.

Q-11: *SOR 2.2.3 & 2.2.4. Frequency cadence is defined to be 200 ms (or 500 ms when the Power Amplifiers (PAs) are switching bands) with a frequency change time of 50 ms (or 500 ms when the harmonic filters are changed). There is an example provided (for the non-harmonic band switch case) that says that the signal stays on 150 ms and off for the last 50 ms and then again regain transmission at the 200 ms mark. However, for the harmonic band case this causes no transmission as the cadence is 500 ms and the switch time is also 500 ms. Please clarify.*

ANS: Canada acknowledges the possibility of an edge case. For the harmonic band case, a no transmission conditions can occur if the frequency switch time of the systems is 500 ms and the user-defined cadence is set to 500 ms.

Q-12: *SOR 2.4.4 Reverse power. The reverse power is specified as 1 kW (Poynting vector from antenna array to the Power Amplifier (PA)). The wording in the subsequent sentences suggest that the reverse power is measured at each of the 256 power amplifier devices. The wording of the description of the reference plane is confusing. We suspect that the intention of the Government is to specify a return loss of 0 dB and each PA module to see a reflected power of 1 kW (with a forward power of 1 kW). Suggest that the section be clarified. Also, it would be helpful to provide some guidance on individual unit level testing (and results) that would constitute acceptance. The actual coupling will be hard to predict (will depend on waveform, shading, actual antenna coupling, etc.) during the local field trials and Site Acceptance Test (SAT) and there may be infinite combination of loads.*

SOR 2.4.4 Reverse Power. For greater clarity the reverse power of 1 kW is while the Power Amplifier (PA) is driving a forward power of 1 kW into potentially a fully reflective load. Also, please confirm that shutdown of the forward power is not an acceptable mechanism for handling the reverse power. Since the initial testing and Factory Acceptance Test (FAT) will be performed without any radiation (no antenna), it would be beneficial to understand DRDC's expectation of the testing. This has a material impact on the pricing.

ANS: The Contractor is responsible to ensure that the High-Power Amplifiers (HPAs) will continue to operate with reverse power up to 1 kW, this includes cases of full reflection of forward power (0 dB return loss) under all phase angles. During FAT, dissipative antenna emulators can be used as loads to the HPAs.

Q-13: *SOR 2.4.12 Group Delay (GD) variation across channels. This specification appears to be explicitly for the Power Amplifier (PA) system. Is the assumption that the testing of this is done with the PAs being driven by the Arbitrary Waveform Generator (AWG)? Would the Government consider a solution where this is achieved by GD compensation done in the AWG to meet the specification?*

ANS: Canada will not accept a solution where this is achieved by GD compensation done in the AWG.

Q-14: *SOR 2.3.3 Inter-channel time skew. Is this requirement only for the Arbitrary Waveform Generator (AWG)? There appears to be a Power Amplifier (PA) system Group Delay (GD) specification of 10 ns (SOR 2.4.12). Is the combined time-skew 11 ns? Also, is it +/- 1 ns (SOR 2.3.3) or is it +/- 0.5 ns?*

ANS: Yes, the SOR 2.3.3 Inter-Channel Time Skew requirement is for the AWG only.

Q-15: *SOR 3.1.1 Number of shelters. Does the Government have any preference how the equipment in the shelters are distributed? For example, could the Arbitrary Waveform Generator (AWG) and the control be in one shelter and the Power Amplifiers (PAs) be in other (multiple) shelters?*

Appendix A to Annex A – SOR 3.5.7. Can the equipment area be split up between multiple locations and shelters? We would like to keep some spare equipment inside each Transmit shelter to be able to access replacements quickly in case of failures.

ANS: Canada does not have any preference how the equipment in the shelters are distributed. Canada expects a logical and efficient equipment layout, and the Bidders are evaluated on the rationale behind their shelter layout plan. See Annex B Part 1 – Point Rated Technical Criteria P1-3 Shelter Layout.

Q-16: *Annex B – Part 1 M3 & M5. Can the same individual be included in M3 and M5 as long as they meet the requirements?*

Please confirm that the requirement for the Project Manager, System Engineering lead and System Engineer (detailed in M3 Corporate Organizational Structure) can be applied and meet the requirements of M5 Task Authorization. We noticed slight differences that could potentially result in two different project teams.

Criteria for M3 refers to a Systems Engineering Lead while Table 1-1 refers to a Senior Systems Engineer. Does Canada intend for this position to be one in the same, or is the slight variance in title by design? If Canada decides that the two positions are one in the same, does Canada have a preferred title?

ANS: Yes, the same individual identified in Annex B Part 1 – Mandatory Criteria M3 can be applied to meet the Task Authorization requirements of Mandatory Criteria M5. The Systems Engineering Lead could qualify as a Senior Systems Engineer.

Q-17: *SOR 3.2.4 & 6.2.3 Transmission Lines. Usually Radio Frequency (RF) cables are specified to operate to -40°C (examples: see LMR-400 specification and LMR-1200 specification). These cables are representative and commonly used in such applications. The outside operating temperature is specified to be -50°C. SOR 3.3.1 mentions that Transmit shelters and antenna array must operate between -50°C and +30°C. The same holds for the receiver (SOR 6.3.1 – does not mention receiver transmission lines). It does not include the transmission lines. Please confirm that it is acceptable for the transmission lines (both for the receiver and the transmitter) to operate down to -40°C (and not -50°C).*

ANS: Yes, it is acceptable for the transmission lines (both for the receiver and the transmitter) to operate down to -40°C only.

Q-18: *Can Canada confirm that every Contractor's personnel, including its Suppliers' personnel, travelling to Annex D sites to perform site installation, Site Acceptance Test (SAT), and Operations Tasks must hold a valid Facility Security Clearance at the level of SECRET, issued by the Contract Security Program (CSP), Public Works and Government Services Canada (PWGSC)?*

Will Canada allow sufficient time after contract award for Indigenous companies and small business enterprises to obtain a valid Facility Security Clearance (FSC) issued by the Contract Security Program (CSP), Public Works and Government Services Canada (PWGSC)?

ANS: Annex C – Security Requirements Check List has been amended to include a Supplemental Security Classification Guide (see attachment). Only Contractor personnel required to access classified information must hold a valid personnel security screening at the level of Secret. There are multiple levels of personnel security screenings associated with this Contract.

Q-19: *Do all the POTH4 electronic components need to be CSA certified?*

Please advise whether there is any requirement that all the Polar Over-the-Horizon Radar Phase 4 electronic components are required to be CSA certified?

ANS: Yes, all equipment must be certified by the Canadian Standards Association (CSA) group.

Q-20: *Is power distribution required or just installation of appropriate breaker panels as specified in Appendix A to Annex A – SOR 3.4.2 & 6.4.3?*

Appendix A to Annex A – SOR 3.4.2 & 6.4.3. Please advise whether there is any requirement for power distribution or is the Contractor only required to supply and install appropriate breaker panels?

ANS: Yes, power distribution is required.

Q-21: *Annex A – SOW 5.5. How many output channels will be expected to be demonstrated at Factory Acceptance Test (FAT)? Due to the quantity of subsystems, will it be acceptable to demonstrate a subset of the total output channels for FAT? If all units are required to pass FAT, then there will be more time required in order to ship the units to the local field test in the National Capital Region (NCR) than is currently available in the RFP schedule.*

ANS: Yes, a subset of the total output channels can be demonstrated at FAT.

Q-22: *Annex A – SOW 5.6.1. Will the scaled down local field test array be upgraded from the previous POTH project in order to handle 4 kW of forward power? Is the Technical Authority (TA) looking to test all 64 channels of output at the scaled down array? Is it required that the contractor provides the antenna elements, transmit cabling and matching transformers for the scaled down array at the local field test site?*

ANS: Yes, the local field test antenna array will handle 4 kW of forward power and all 64 channels will be tested. The Contractor is not required to provide the antenna elements, transmit cabling, and matching transformers during local field tests.

Q-23: *Appendix A to Annex A – SOR 3.1.3. Are racks able to be mounted and secured inside the shelters before shipping to site?*

ANS: Yes, equipment racks can be mounted inside the shelters before shipping to site.

Q-24: *Appendix A to Annex A – SOR 3.5.7. Is the 12.5% requirement based on boxed or unboxed equipment? If we have 100U of equipment, do we need to provide an empty 12.5U, or room for boxes of packaged equipment that if unboxed would fill 12.5U?*

ANS: The storage space must be for unboxed equipment.

Q-25: *Appendix A to Annex A – SOR 3.7.1. Please define if this is a Controlled Environment as in H129-48/2015E-PDF Safety Code 6. Is there a requirement for the protection of public during operation outside the equipment shelter? Is there a requirement to notify the public of operation of the site?*

ANS: No.

Q-26: *Can DRDC provide their expected Voltage Standing Wave Ratio (VSWR) performance from 3 to 30 MHz for the Transmit antennas as outlined in the RFP?*

ANS: Yes, the nominal inductor and capacitor (LC) values of the equivalent circuit of the antenna can be provided. In addition, the exact dimensions of the Transmit antenna are provided. Electromagnetic (EM) simulation tools can be used to generate the characteristics of the antenna.

Q-27: *Annex A – SOW 6.4.2. Pre-operational inspections of the antenna arrays, functionality testing hardware, refitting hardware if removed, and checking the operation of and supplying generator fuel (7 days). Operational technical staff will likely have to travel to the sites to conduct the inspections. How much notice (days) will be given before the inspections are required?*

ANS: Annex A – SOW 6.4 System Operation has been amended as follows:

Insert paragraph

6.4.2.1. The Contractor will be provided two (2) months notice prior to system operation allowing for travel to site locations, cycle up of the system, and perform pre-operational inspections.

Q-28: *Appendix A to Annex A – SOR 3.2.2. Must the 9 m transmit antennas/monopoles be standalone, or can they be secured in place using tethers/guy straps?*

Appendix A to Annex A – SOR 3.2.2. Must the 9 m transmit antennas/monopoles be solid 3 inches in diameter or can they be tubes?

Appendix A to Annex A – SOR 3.2.3 Input Transformer. Please confirm if the ground radial wires will be connected at the feed height or the base of the monopoles?

ANS: Appendix A to Annex A – SOR 3.2.2 Dimensions and Spacing of Antenna Elements has been amended as follows:

Delete paragraph

The transmit antenna array must consist of an 8-by-8 square grid array of monopole antennas. Each monopole must be 9 meters tall and have a feed height of one meter measured from the ground. The monopole must be constructed from two separate metal pieces, one is 1 meter tall and the second is 8 meters tall. The two metal pieces must be connected by inserting a short section of non-brittle dielectric material. The monopole must have a diameter of 3 inches and must be positioned to have a spacing of 8 meters, measured between the center point of the bases, from the other monopoles in the surrounding rows and columns of the grid with a tolerance of +/- 1 centimeter. Each monopole must be vertically level (plumb) and have 32 ground radial wires of 18 American Wire Gauge and 9 meters length. The ends of the radials must be secured to the ground with metal ground staples.

Insert paragraph

The transmit antenna array must consist of an 8-by-8 square grid array of monopole antennas. Each monopole must be 9 meters tall and have a feed height of one meter measured from the ground. The monopole must be constructed from two separate metal pieces, one is 1 meter tall and the second is 8 meters tall. The two metal pieces must be connected by inserting a short section of non-brittle dielectric material. The monopole can be a tube having an outer diameter of 3 inches and must be positioned to have a spacing of 8 meters, measured between the center point of the bases, from the other monopoles in the surrounding rows and columns of the grid with a tolerance of +/- 1 centimeter. The monopoles can be secured in place using non-metallic tethers/guy straps. Each monopole must be vertically level (plumb) and have 32 ground radial wires of 18 American Wire Gauge and 9 meters length connected at the base of the antenna. The ends of the radials must be secured to the ground with metal ground staples.

Appendix A to Annex A – SOR 3.2.3 Input transformer has been amended as follows:

Delete paragraph

Each transmit antenna element must have at its input an impedance transformer. The transformer must have an impedance transformation ratio of 50-ohm to 200-ohm. The 200-ohm port is connected between the monopole and the ground radials at the feed height. The transformer must be able to handle an input power of no less than 4 kilowatts continuous wave.

Insert paragraph

Each transmit antenna element must have at its input an impedance transformer. The transformer must have an impedance transformation ratio of 50-ohm to 200-ohm. The 200-ohm port terminals are connected to the bottom of the 8-meter tall metal piece and to the top of the 1-meter tall metal piece of the monopole at the feed height. The transformer must be able to handle an input power of no less than 4 kilowatts continuous wave.

Q-29: *Appendix A to Annex A – SOR 6.2.2. Must the 6 m receive antennas/monopoles be standalone, or can they be secured in place using tethers/guy straps?*

Appendix A to Annex A – SOR 6.2.2. Must the 6 m receive antennas/monopoles be solid 3 inches in diameter or can they be tubes?

ANS: Appendix A to Annex A – SOR 6.2.2 Dimensions and Spacing of Antenna Elements has been amended as follows:

Delete paragraph

The receive antenna array must consist of a 32-by-32 square grid array of monopole antennas. Each monopole must be 6 meters tall and have a feed height of 60 centimeters measured from the ground. The monopole must be constructed from two separate metal pieces, one is 60 centimeters tall and the second is 5.4 meters tall. The two metal pieces must be connected by inserting a short section of non-brittle dielectric material. The monopole must have a diameter of 3 inches and must be positioned to have a spacing of 16 meters, measured between the center point of the bases, from the other monopoles in the surrounding rows and columns of the grid with a tolerance of +/- 1 centimeter. Each monopole must be vertically level (plumb) and have 8 ground radial wires of 18 American Wire Gauge and 6 meters length. The ends of the radials must be secured to the ground with metal ground staples. The monopole must have a 50-ohm port connected between the taller metal piece and the ground wires and must be placed at the feed height.

Insert paragraph

The receive antenna array must consist of a 32-by-32 square grid array of monopole antennas. Each monopole must be 6 meters tall and have a feed height of 60 centimeters measured from the ground. The monopole must be constructed from two separate metal pieces, one is 60 centimeters tall and the second is 5.4 meters tall. The two metal pieces must be connected by inserting a short section of non-brittle dielectric material. The monopole can be a tube having an outer diameter of 3 inches and must be positioned to have a spacing of 16 meters, measured between the center point of the bases, from the other monopoles in the surrounding rows and columns of the grid with a tolerance of +/- 1 centimeter. The monopoles can be secured in place using non-metallic tethers/guy straps. Each monopole must be vertically level (plumb) and have 8 ground radial wires of 18 American Wire Gauge and 6 meters length connected at the base of the antenna. The ends of the radials must be secured to the ground with metal ground staples. The monopole must have a 50-ohm port, the port terminals are connected to the bottom of the 5.4-meter tall metal piece and the top of the 60 centimeters tall metal piece of the monopole at the feed height.

Q-30: *Appendix A to Annex A – SOR 3.1.5. How many furnished gravel pads will be available for shelters at the Transmit site? SOW 3.1.1 General information states that multiple shelters may be needed.*

Annex A – SOW 11 Government-Furnished Equipment (GFE) gravel shelter pad at site. What is the maximum load allowable on the gravel shelter pads?

Annex A – SOW 11 GFE. Please provide the maximum load allowable on the gravel shelter pads.

ANS: Canada will provide sufficient space on the GFE gravel pad(s), which are suitable for handling the weight of all transmit equipment shelters proposed in the Bidder's site layout plan.

Annex A – SOW 11 Government-Furnished Equipment has been amended as follows:

Insert paragraph

11.3. In the event that Canada is unable to supply GFE items, the Contractor may be required to provide equipment using the Task Authorization (TA) process described in section 6.

Appendix A of Annex A – SOR 3.1 Shelter has been amended as follows:

Insert paragraph

3.1.6. Storage Shelter

An additional shelter for storage of non-electronic spare items must be provided. The storage shelter does not have the environmental requirements described in section 3.3, with the exception of the entry resistance, and is not suitable for the storage of electronics.

Q-31: *Appendix A to Annex A – SOR 6.1.5. How many furnished gravel pads will be available for shelters at the Receive site? There is the possibility that an additional storage shelter may be required.*

Annex A – SOW 11 Government-Furnished Equipment (GFE) gravel shelter pad at site. What is the maximum load allowable on the gravel shelter pads?

Appendix A to Annex A – SOR 6.5.2. States that receive equipment must be contained within a single shelter. This includes equipment area, operating area, storage area, and sleeping space. Depending on the size of the Government-Furnished Equipment (GFE) equipment, is DRDC open to having one additional shelter here?

ANS: Canada will provide sufficient space on the GFE gravel pad, which is suitable for handling the weight of the receive equipment shelter proposed in the site layout plan.

Appendix A of Annex A – SOR 6.1 Shelter has been amended as follows:

Insert paragraph

6.1.6. Storage Shelter

An additional shelter for storage of non-electronic spare items must be provided. The storage shelter does not have the environmental requirements described in section 6.3, with the exception of the entry resistance, and is not suitable for the storage of electronics.

Q-32: *There is no channel-to-channel cross-coupling specification for the Arbitrary Waveform Generator (AWG) (AWG is used to denote the whole system – waveform generator, Digital Up-Converter (DUC), and Digital-to-Analog Converter (DAC)) in the SOR. Does this imply that the Government will accept an AWG that has significant cross-coupling between DUC/DAC channels? Is a specification of say -50 dBc acceptable? Is this covered as part of the Power Amplifier (PA) Spurious-Free Dynamic Range (SFDR) specification (SOR 2.4.11)?*

SOR 2.4.11 Spurious Free Dynamic Range (SFDR). This specification appears to be explicitly for the Power Amplifier (PA) system. Is the assumption that the testing of this is done with the PAs being driven by the Arbitrary Waveform Generator (AWG)?

ANS: Appendix A to Annex A – SOR 2.3 Digital-to-Analog Conversion under the Transmit Signal Requirements has been amended as follows:

Insert paragraph

2.3.7. Spurious-free dynamic range

Each channel output must have a full scale single-tone spurious-free dynamic range of at least 90 decibels within the 100 kilohertz-wide frequency band centered at the user-selected carrier-frequency, and at least 70 decibels at all frequencies outside this 100 kilohertz-wide band and within the frequency range of 3 megahertz to 30 megahertz, as measured at the output of the arbitrary waveform generator with adjacent channels simultaneously transmitting to confirm that channel-to-channel cross-coupling is not degrading the spurious-free dynamic range above the specified levels.

General information: It is preferable that the spurious emissions do not combine coherently across channels, so that the spurious-free dynamic range will improve when channels are combined by a phased antenna array.

Q-33: *SOR 2.2.3 Frequency cadence. The frequency cadence is specified to be 200 ms. There is no specification on what the granularity of the duration is. Is it okay to assume that the granularity is also 200 ms? As an example, the following sequence is permitted: 200 ms, 400 ms, 1 sec, 5 min, etc. However, the following sequence is not permitted: 200 ms, 300 ms, 1 sec, 750 ms, etc.*

ANS: Appendix A to Annex A – SOR 2.2.3 Frequency Cadence has been amended as follows:

Delete paragraph

When transmitting a sequence, the system must be able to transmit new carrier frequencies at a cadence of no less than one transmit carrier frequency every 200 milliseconds, except when a new carrier frequency involves a change of high-power amplifier harmonic filter bands, in which case the cadence must be no less than one transmit carrier frequency every 500 milliseconds.

Insert paragraph

When transmitting a sequence, the system must be able to transmit new carrier frequencies at a cadence of no less than one transmit carrier frequency every 200 milliseconds, except when a new carrier frequency involves a change of high-power amplifier harmonic filter bands, in which case the cadence must be no less than one transmit carrier frequency every 500 milliseconds. The frequency cadence granularity must be no more than 200 milliseconds.

Q-34: *SOR 2.4.1 Minimum output power. The reference plane is defined to be before the 4:1 combiner and cable runs. However, there is no specification on the loss through the combiner. The General information comment for this section seems to suggest a loss-less combiner.*

ANS: See Appendix A to Annex A – SOR 2.5.1 Output Power.

Also, Appendix A to Annex A – SOR 2.4.1 Minimum Output Power has been amended as follows:

Delete paragraph

General information: The forward power of the system is therefore no less than 256 kilowatts.

Insert paragraph

General information: The forward power of the system is therefore no less than 256 kilowatts at the measurement reference plane.

Q-35: *SOR 2.4.10 Phase Noise. This specification appears to be explicitly for the Power Amplifier (PA) system. Is the assumption that the testing of this is done with the PAs being driven by the Arbitrary Waveform Generator (AWG)? In this case the phase noise specification also includes the phase noise of the AWG.*

ANS: Appendix A to Annex A – SOR 2.3 Digital-to-Analog Conversion under the Transmit Signal Requirements has been amended as follows:

Insert paragraph

2.3.6. Phase noise

The single-sideband phase noise in the analog output signal of each channel must be below -90 decibels-carries per hertz at all frequencies offset by more than 1 hertz from the user-selected carrier-frequency, as measured at the output of the Arbitrary Waveform Generator (AWG).

Q-36: *SOR 3.7.2 Emergency stop button. If there are multiple Transmit shelters, must each shelter have an emergency stop button? Would this requirement be met if the emergency stop button shut down the power to all the Power Amplifiers (PAs) in that shelter? Is the intent that the emergency stop button shut down all the 256 channels or only the channels in that shelter?*

ANS: Appendix A to Annex A – SOR 3.7.2 Emergency Stop Button under the Radiation Safety Requirements has been amended as follows:

Delete paragraph

The transmit shelter must have an emergency “Stop Radiating” push button, that must stop radiation within 1 second of being pressed.

Insert paragraph

The transmit shelter must have a single emergency “Stop Radiating” push button at the operator console that must stop all 256 high-power amplifiers from radiating within one (1) second of being pressed. Canada will not accept a solution that shuts down the power to any transmit shelter equipment.

Q-37: *Regarding “Bullet Resistance” (SOR 3.3.7 & 6.3.7), will this requirement apply only to exterior walls of the shelters? i.e. not joining walls and not the roof.*

Regarding “bullet resistance” at Appendix A to Annex A - SOR 3.3.7 & 6.3.7, will this requirement only apply to exterior walls of the shelters, or also the joining walls and the roof?

Appendix A to Annex A - SOR 3.3.7 & 6.3.7. Regarding “bullet resistance” at Appendix A to Annex A – SOR 3.3.7 and 6.3.7, will this requirement only apply to exterior walls of the shelters, or also the patch panels and/or the roof?

ANS: The "Bullet Resistance" requirement only applies to exterior walls of the shelters and not to internal joining walls, not to the roof, and not to the patch panels.

Appendix A to Annex A – SOR 3.3.7 Bullet Resistance has been amended as follows:

Delete paragraph

General information: Bullet holes have been observed in previous experience.

Insert paragraph

General information: The "Bullet Resistance" requirement only applies to exterior walls of the shelters and not to internal joining walls, the roof, and to the patch panel. Bullet holes have been observed in previous experiences.

Also, Appendix A to Annex A – SOR 6.3.7 Bullet Resistance has been amended as follows:

Delete paragraph

General information: Bullet holes have been observed in previous experience.

Insert paragraph

General information: The "Bullet Resistance" requirement only applies to exterior walls of the shelters and not to internal joining walls, the roof, or to the patch panel. Bullet holes have been observed in previous experiences.

Q-38: *Appendix A to Annex A – SOR 3.3.7 & 6.3.7. Is the specified 800 meters per second velocity requirement the projectile muzzle velocity or the velocity upon contact with the armor protection system?*

Is the 800 meters per second velocity requirement at Appendix A to Annex A – SOR 3.3.7 & 6.3.7, the projectile muzzle velocity or the velocity upon contact with the armor plates?

Could Canada provide the nomenclature of the specific rounds that the shelters must withstand in accordance with Appendix A to Annex A – SOR 3.3.7 & 6.3.7?

Appendix A to Annex A articles 3.3.7 and 6.3.7: Please provide the nomenclature of the specific rounds that the shelter ballistic protection must withstand?

Appendix A to Annex A – SOR 3.3.7. Can you confirm that the 800 m/s is intended to specify a 15 ft target range as in UL752? Can you confirm that UL752 Level 8 is required?

ANS: Appendix A to Annex A – SOR 3.3.7 Bullet Resistance has been amended as follows:

Delete paragraph

The transmit shelters must be able to withstand entry of bullets from a 7.62 millimeter caliber rifle with a bullet velocity of 800 meters per second.

Insert paragraph

The transmit shelters must have a Level 4 bullet resistance rating defined in the UL 752 standard for ballistic protection. It must be able to withstand entry of bullets from a .30 caliber rifle with a bullet muzzle velocity of 800 meters per second.

Appendix A to Annex A – SOR 6.3.7 Bullet Resistance has been amended as follows:

Delete paragraph

The receive shelters must be able to withstand entry of bullets from a 7.62 millimeter caliber rifle with a bullet velocity of 800 meters per second.

Insert paragraph

The receive shelters must have a Level 4 bullet resistance rating defined in the UL 752 standard for ballistic protection. It must be able to withstand entry of bullets from a .30 caliber rifle with a bullet muzzle velocity of 800 meters per second.

Q-39: *SOR 2.5.1 Combiner. Is there any restriction on the type of combiner? Could it be quadrature combiner (with appropriate phasing done in the Arbitrary Waveform Generator (AWG))? In that case, the balance specification (SOR 2.5.2) could be interpreted as variation from the nominal quadrature phase shift.*

ANS: No, a quadrature combiner with AWG phase compensation cannot be used. Also, reactive non-isolated combiners cannot be used.

Appendix A to Annex A – SOR 2.5 Four-way high-power combiner has been amended as follows:

Insert paragraph

2.5.3 Port-to-Port isolation

Each four-way high-power combiner must have isolation between any two input ports of no less than 20 decibels.

Q-40: *Annex A – SOW 6.4.4. With respect to spare parts replacement, can you specify a timeframe that corresponds with your use of the word "immediately"? For example, some larger parts may require up to 30 minutes to swap with a spare.*

ANS: Annex A – SOW 6.4.4 under the System Operation has been amended as follows:

Delete paragraph

6.4.4. The Contractor must use spare parts to immediately replace failed system components and prepare the failed components for transportation to a Contractor facility for repair when covered under warranty.

Insert paragraph

6.4.4. The Contractor must use spare parts available in onsite storage to replace failed system components on location and prepare the failed components for transportation to a Contractor facility for repair when covered under warranty.

Q-41: *Annex B – Part 2 Financial Bid Evaluation 1.1.2 Table 2-3 Task Authorization (Hardware cost). Requests unit price costs for "Antenna" and "Transmission Line". Is the requirement to provide costs for 4 x 9 m Antennas (complete lower and upper), 4 x 6 m Antennas (complete lower and upper), 4 x transmission lines 600 m and 4 x transmission lines 300 m?*

ANS: Annex B – Part 2 Financial Bid Evaluation 1.1.2 Table 2-3 Task Authorization (Hardware cost) has been amended as follows:

Delete table entries

A Functional Component	Unit Price			E Average (B+C+D) ÷3	F Estimated Annual Quantity (channels)	G Total Price by Functional Component (E x F)
	B Option Year 1	C Option Year 2	D Option Year 3			
Antenna					4	
Transmission line					4	

Insert table entries

A Functional Component	Unit Price			E Average (B+C+D) ÷3	F Estimated Annual Quantity (channels)	G Total Price by Functional Component (E x F)
	B Option Year 1	C Option Year 2	D Option Year 3			
Transmit antenna (including input transformer, base, ground radials, and tethers/guy straps)					4	
Transmit transmission line					4	
Receive antenna (including base, ground radials, and tethers/guy straps)					4	
Receive transmission line					4	

Q-42: *Reference SACC 2040 26 Liability. We note that a separate limitation of liability clause has not been included in the proposed Articles of Agreement. The liability clause currently proposed states there will be no limitation of liability or indemnity provision in the contract unless it is incorporated in the fully text of the Articles of Agreement. We recommend the addition of a limitation of liability clause, such as SACC N0001C. Industry will not be able to accept this clause as currently written.*

ANS: It is not the current intent that any additional liability clauses be added.

Q-43: *The Rating Scale provided by Canada to evaluate bidders' Indigenous Participation Evaluation commitments is a significant deviation from other PSPC contracts' targets for Indigenous content levels. We recommend that Canada adjusts the Rating Scale from its current target of twenty five percent (25%) of total contract value to fifteen percent (15%) of total contract value to be sourced from Canadian Indigenous firms and delivered to Canada under this contract. A commitment target of 25% of total contract value provides an unfair advantage to some bidders.*

PSPC has identified 25% of total contract value as being able to be directed towards Indigenous businesses. PSPC provides examples of site-specific installation and support work as being the main driver for a sizeable portion of the work being able to be directed towards Indigenous businesses. PSPC's provided Security Requirements Checklist (SRCL) limits site support and installation work to companies with a valid Facility Security Clearance (FSC) at the level of Secret. This is a limiting factor as many of the Indigenous-owned companies operating in the locales do not have a valid FSC at the necessary level and therefore cannot complete the work. Because of this, we recommend PSPC reduce the Indigenous Participation Evaluation rating scale from a maximum target of twenty-five percent (25%) to fifteen percent (15%) and adjust the points awarded accordingly.

ANS: The evaluation criteria for the Indigenous Business percentage was already reduced and will not be reduced further.

Q-44: *In accordance with the POTHR RFI dated 2023-08-29 Attachment 2, Canada indicated that the price for the Core component must not exceed the maximum funding specified in Part 2. Would it be possible to obtain this maximum funding amount?*

ANS: Canada is not providing a must not exceed value.

Q-45: *SACC 2040 Inconsistencies. It is noted that there are some inconsistencies with the SACC clauses followed:*

- a) *SACC 2040 states that Foreground IP is owned by the contractor, however SACC 4007 was also followed that contradicts SACC 2040 language. Please confirm which clause is applicable.*
- b) *SACC 4010 Services High Complexity recommends not being followed when using SACC 2040. Industry recommends removal of SACC 4010.*
- c) *SAC 4013 Compliance with On Site Measures, standing orders, policies, rules should not follow if following SACC 2040 and Industry should suggest removal.*

ANS: In the Standard Instructions, Clauses and Conditions section of the RFP.

Section 2.1.1 SACC Manual Clauses has been amended as follows:

Delete line

4010 (2022-12-01), Services - Higher Complexity

Also, section 7.2.2 Supplemental General Conditions has been amended as follows:

Delete lines

4007 (2022-12-01) Canada to own intellectual property rights in Foreground Information

4010 (2022-12-01) Services: Higher complexity

Q-46: *Contractor suggests that the bid evaluation weightings are changed to: Technical 60%, Price 25%, IPP 15%.*

ANS: Bid Evaluation weightings have already been adjusted and will not be adjusted further.

Q-47: *The 10% holdback should be removed or reduced to 5%. If it remains, administration of the holdback should be explained in the RFP:*

- a) *how will the holdback be applied?*
- b) *what is required from the Contractor for holdback release?*
- c) *when will the holdback be applied and when will the Contractor be eligible for its release?*

ANS: *The 10% holdback is to ensure the contractor meets all the requirements of the contract including the Indigenous Participation Plan. The holdback milestone is the last milestone associated with the Core Requirements and will be paid out when all the requirements reference the core contract are received and accepted by Canada.*

Q-48: *Bidders have been asking for an extension to the solicitation Closing date.*

ANS: Closing date for the solicitation will be changed from the 28th March 2024 to the 30th April 2024.

ALL OTHER TERMS AND CONDITIONS IN THE SOLICITATION REMAIN THE SAME.

Security Requirement Checklist (SRCL)

Supplemental Security Classification Guide

This form must be completed in addition to SRCL question 7.b) when multiple release restrictions are therein identified and/or in addition to SRCL question 10.a) when multiple levels of personnel screening are therein identified.

Part A - Multiple Release Restrictions: Security Classification Guide							
To be completed in addition to SRCL question 7.b) when release restrictions are therein identified. Indicate to which levels of information release restrictions apply. Make note in the chart if a level of information bears multiple restrictions (e.g. a portion of the SECRET information bears the caveat Canadian Eyes Only while the remainder of the SECRET information has no release restrictions.)							
Canadian Information							
Citizenship Restriction	PROTECTED			CLASSIFIED			
	A	B	C	CONFIDENTIAL	SECRET	TOP SECRET	TOP SECRET (SIGINT)
No Release Restrictions	X	X			X		
Not Releasable							
Restricted to: AS, CA, UK, US, NZ and permanent residents of Canada	X	X			X		
Permanent Residents Included*							
NATO Information							
Citizenship Restriction	NATO UNCLASSIFIED		NATO RESTRICTED	NATO CONFIDENTIAL	NATO SECRET	COSMIC TOP SECRET	
All NATO Countries							
Restricted to:							
Permanent Residents Included*							
Foreign Information							
Citizenship Restriction	PROTECTED			CLASSIFIED			
	A	B	C	CONFIDENTIAL	SECRET	TOP SECRET	TOP SECRET (SIGINT)
No Release Restrictions							
Restricted to :							
Permanent Residents Included*							
COMSEC Information							
Citizenship Restriction	PROTECTED			CLASSIFIED			
	A	B	C	CONFIDENTIAL	SECRET	TOP SECRET	TOP SECRET (SIGINT)
Not Releasable							
Restricted to:							
DND ONLY Embedded Contractor (Access to Controlled Goods)							
Restriction							
SECRET clearance with CEO applies							

*When release restrictions are indicated, specify if permanent residents are allowed to be included.

Security Requirement Checklist (SRCL) Supplemental Security Classification Guide

Part B - Multiple Levels of Personnel Screening: Security Classification Guide			
To be completed in addition to SRCL question 10.a) when multiple levels of personnel screening are therein identified. Indicate which personnel screening levels are required for which portions of the work/access involved in the contract.			
Level of Personnel Clearance (e.g. Reliability, Secret)	Position / Description/Task	Access to sites and/or information. Levels of Information to be accessed.	Citizenship Restriction (if any)
None	Positions/tasks that do not require knowledge of the site location(s) and of the radar existence. Positions/tasks that require knowledge of the site location(s) but no knowledge of the radar existence.	No access to Protected or Classified sites and/or information.	No
Reliability Status	Positions/tasks that require knowledge of the radar existence but no knowledge of the site locations(s).	Access to sites and/or information, up to Protected B.	No
Secret	Positions/tasks that require knowledge of both the site location(s) and the radar existence.	Access to sites and/or information, up to Secret level.	AS, CA, UK, US, NZ and permanent residents of Canada

Part C – Safeguards / Information Technology (IT) Media – 11d = yes
IT security requirements must be specified in a separate technical document and submitted with the SRCL

Security Requirement Checklist (SRCL)
Supplemental Security Classification Guide

OTHER SECURITY INTRUCTIONS

None.