

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
Bid Receiving - PWGSC / Réception des soumissions -
TPSGC
11 Laurier St. / 11, rue Laurier
Place du Portage , Phase III
Core 0A1 / Noyau 0A1
Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776

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
Defence Communications Division. (QD)
11 Laurier St./11, rue Laurier
Place du Portage, Phase III, 8C2
Gatineau, Québec K1A 0S5

Title - Sujet Medium Range Radar (MRR)		
Solicitation No. - N° de l'invitation W8476-133817/C		Amendment No. - N° modif. 001
Client Reference No. - N° de référence du client W8476-133817		Date 2013-07-11
GETS Reference No. - N° de référence de SEAG PW-\$\$QD-023-23867		
File No. - N° de dossier 023qd.W8476-133817	CCC No./N° CCC - FMS No./N° VME	
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2013-07-25		Time Zone Fuseau horaire Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input checked="" type="checkbox"/>		
Address Enquiries to: - Adresser toutes questions à: Summerfield, George		Buyer Id - Id de l'acheteur 023qd
Telephone No. - N° de téléphone (819) 956-1838 ()		FAX No. - N° de FAX (819) 956-0636
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:		

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

The following amendment 001 to the draft RFP is for changing the GSIN to N5840, and to provide a document checklist for ease of use with the documentation provided with the NPP for the draft RFP.

The documentation attached to the NPP for the draft RFP is in one Adobe file, but should be oriented as follows:

Request for Proposal (RFP) - Draft (Amendment 001)

Annex A, Statement of Work - Acquisition

Appendix 1 to Annex A, System Performance Specification (SPS)

Appendix 2 to Annex A, DND626 Task Authorization form

Appendix 3 to Annex A, Application for Spectrum Supportability

Appendix 4 to Annex A, Instructions for Completing DND Form 552

Annex B, Statement of Work - In-Service Support

Appendix 3 to Annex B, DND626 Task Authorization form

Annex C, Contract Data Requirements List (CDRL)

Appendix 1, Data Item Descriptions (DIDs)

Annex D, Applicable Documents

Annex E, Acronyms

Annex F, Industrial Regional Benefits (IRB), including:

IRB RFP for Acquisition contract

IRB Model Contract for Acquisition

IRB RFP for In-Service Support contract

IRB Model Contract for In Service Support

Annex G, Basis of Payment for Acquisition contract

Annex H, Basis of Payment for In-Service Support contract, including

Spreadsheet for pricing both Annex G and Annex H

Annex K, Technical Evaluation, including

Appendix 1, Not assigned

Appendix 2, Proof of Compliance

Appendix 3, Compliance and Technical Evaluation Matrix

Appendix 4, Compliance Evaluation Matrix - Acquisition

Appendix 5, Compliance Evaluation Matrix - In-Service Support

Appendix 6, Live Fire Evaluation Plan Overview

Solicitation No. - N° de l'invitation

W8476-133817/C

Amd. No. - N° de la modif.

001

Buyer ID - Id de l'acheteur

023qd

Client Ref. No. - N° de réf. du client

W8476-133817

File No. - N° du dossier

023qdW8476-133817

CCC No./N° CCC - FMS No/ N° VME

All attachments to the RFP remain unchanged.

Appendix 1 to Annex F

RESERVED

BID EVALUATION

Medium Range Radar (MRR)
For the Canadian Forces

APPENDIX 2 TO ANNEX K

CANADIAN ARMY

MEDIUM RANGE RADAR (MRR)

PROOF OF COMPLIANCE

INSTRUCTIONS TO BIDDERS

1. General

- 1.1 For the purposes of evaluation the bidder is required to provide documentation and/or statements of compliance in support of their claimed performance against each mandatory and rated desirable requirement. The type and level of documentation for each of the requirements is identified and outlined in this document.
- 1.2 For the purposes of evaluation, this document will supersede all others where there are discrepancies in term of acceptable documentation and proof of compliance for each of the requirements.
- 1.3 The paper evaluation, proof of compliance documentation and the system delivered for the purpose of live fire evaluations shall be of the same technical configuration specifically but not limited to the antenna, signal processing and power sub-systems.
- 1.4 For the purposes of evaluation and proof of compliance the power input for all bidding systems shall be limited to 60kW or below.

2. Mandatory Requirements

- 2.1 Mandatory Requirements are divided into two categories:
 - a. High level mandatory requirements are those that the bidder shall provide a Proof of Compliance Report. These requirements are outlined in section 2.3 of this document; and
 - b. Mandatory requirements are those that the bidder shall provide a statement of compliance. These include all other requirements which are not listed in section 2.3 of this document.
- 2.2 For the high level mandatory requirements listed in section 2.3 the bidder shall provide reference to the Proof of Compliance Report in Appendix K3 and Appendix K4.
- 2.3 High Level Mandatory Requirements
 - 2.3.1 The following is the list of high level mandatory requirements referenced from Appendix A1; System Performance Specification (SPS) document:
 - a. Weapon Locating, including:
 - i. 3.1.3.2 Location Range – 3.1.3.2.1, 3.1.3.2.5, 3.1.3.2.6;
 - ii. 3.1.3.3 Minimum Calibre;
 - iii. 3.1.3.5 False Location Rate;

- iv. 3.1.3.6 Location Accuracy (Mortars, Guns & Rockets); and
- v. 3.1.3.7 Probability of Location; and
- b. Air Surveillance, including:
 - i. 3.1.5.2 Range for 1 m² Targets;
 - ii. 3.1.5.4 Altitude;
 - iii. 3.1.5.5 Elevation; and
 - iv. 3.1.5.6 Accuracy.

3. Rated Requirements

- 3.1 The bidder is required to provide documentation supporting their claimed performance specifications.
- 3.2 The supporting documents can include but are not limited to test and/or validated simulator results validating the performance specification claimed.
- 3.3 Performance specifications for which no substantiation has been provided can be disregarded at Canada's discretion.

4. Live Fire Evaluation

- 4.1 Performance specifications both mandatory and rated are subject to confirmation during the live fire evaluation.
- 4.2 Persistent failure, as defined in Appendix K6, of the bidder's radar system in meeting any of the mandatory requirements during the live fire evaluation shall be deemed final and considered as a non-compliant bid.
- 4.3 Failure of the bidder's radar system in meeting a rated requirement during the live fire evaluation shall be deemed final and will result in setting of the rated score to zero for each instance.

5. Bidder's Proof of Compliance Report

- 5.1 There are two acceptable sources of bidder's Proof of Compliance Report for the High Level Mandatory requirements:
 - a. NATO or Allied Governmental institution or agency; and
 - b. Any independent organization recognized by a NATO or Allied Government.

- 5.2 Certified data includes, but is not limited to, results of live fire, validated simulation or exercises validating each specific performance requirement.
- 5.3 The Bidder's Proof of Compliance Report will be prepared in Bidder's format. The Bidder shall submit the report with the proposal. The report may include:
 - a. Blake Charts;
 - b. Live Fire Data;
 - c. Simulator Description;
 - d. Proof that the simulator is validated by the Live Fire Data;
 - e. Simulator Data where Live Fire Data is not available; and
- 5.4 The projectile mean Radar Cross Section (RCS) (which varies for wavelength and weapon size and type) and the target cross section fluctuation loss model shall be included for any performance related analysis (such as Blake charts) to specify the performance of the proposed system.

APPENDIX 3 TO ANNEX K

CANADIAN ARMY

MEDIUM RANGE RADAR

SYSTEM PERFORMANCE SPECIFICATION (MRR-SPS)

COMPLIANCE AND TECHNICAL EVALUATION MATRIX

General Instructions

1. The proposed radar system by the bidder for paper evaluation and the final delivered system shall remain of the same or better configuration without exceptions.
2. The proposed radar system by the bidder for paper evaluation and the system delivered for the purpose of live fire evaluations shall be of the same technical configuration specifically but not limited to the antenna, signal processing and power sub-systems.
3. For the purpose of evaluations the power input for all bidding system shall be limited to 60kW or below.

Proof of Compliance (POC) for Rated and Mandatory Requirements

1. For complete Proof of Compliance instructions refer to Appendix K2.

Mandatory Requirements

1. The Bidder is required to state whether or not their proposed system is compliant to each of the specified requirements.
2. For High Level Mandatory requirements a compliance statement and references to the POC will be required.
3. For all other Mandatory Requirements a compliance statement is required.

Rated Requirements Instructions

Bidder is shall provide a reference to the specific report or section of their bid proposal which supports the bidders claim.

Potential Score: The maximum potential score is the value that may be awarded for a non-mandatory performance specification item.

Bidder Self Score: Optional. The bidder may choose to include the score it deems appropriate for its bid proposal item.

Score: The Score is the value that the CF and PWGSC will assign during bid evaluation. For some items the score is subject to revision based on supporting documents provided as well as the conclusion of the Live Fire Evaluation.

Prorated: Prorate items will be scored based on a predetermined scoring scale. The formula can be found under the Rated Score column.

Note: All scores are rounded to nearest 2nd decimal number.

Bidder's Name:

System Performance Specification Rated Requirements Compliance Matrix					
Performance Specification Section (Refer to Appendix A1 (SPS) for the complete text)	Proof of Compliance and Compliance References (Bid section/para/sub-para etc)	Performance Specification or Statement	Max. Potential Score	Rated Score	Bidder Self Score
1. INTRODUCTION					
2. APPLICABLE DOCUMENTS					
3. REQUIREMENTS					
3.1.1.1 Radar Modes 3.1.1.1.2		NO	100	0.00	
3.1.3.2 Location Range 360 Degrees 3.1.3.2.5		15.00 Km	250	0.00	
3.1.3.2 Location Range 90 Degrees 3.1.3.2.6		15.00 Km	280	0.00	
3.1.3.6 Location Accuracy 3.1.3.6.3 (Artillery)		0.50 % of Range	190	0.00	
3.1.3.6 Location Accuracy 3.1.3.6.3 (Mortars)		0.50 % of Range	170	0.00	
3.1.3.6 Location Accuracy 3.1.3.6.4 (Rockets)		1.00 % of Range	140	0.00	
3.1.3.12 Hostile Impact Prediction Inside Scanned Area 3.1.3.12.3		500.0 m CEP(50%)	100	0.00	
3.1.5.2 Range for 1m2 Targets 3.1.5.2.2		75.00 Km	150	0.00	
3.1.5.3 Range for 0.1m2 Targets 3.1.5.3.2		25.00 Km	120	0.00	
3.1.5.10 Detection Rate 3.1.5.10.3		24 Det/Tgt/min	80	0.00	
3.1.5.12 New Track Latency 3.1.5.12.2		10.00 s	90	0.00	
3.2.6 Antenna Side-Lobe Levels 3.2.6.2		40.0 db below MB	100	0.00	
3.5.7 Reliability: Radar 3.5.7.2		500.0 Hrs MTBCF	150	0.00	
3.5.7 Reliability: Generator 3.5.7.4		600.0 Hrs MTBCF	80	0.00	
Totals			2000	0.00	0.00

Bidder's Name:			
System Performance Specification Mandatory Requirements Compliance Matrix			
	Reference to Appendix A1 (SPS)	Compliance Statement	Proof of Compliance References
1. INTRODUCTION			
1.1 Purpose			
1.1.1 This System Performance Specification describes the key performance requirements for a Medium Range Radar (MRR); referred to henceforth as the "MRR System", for the Intelligence Surveillance, Target Acquisition and Reconnaissance (ISTAR) support for the force generation and deployment of Canadian Forces (CF) units.			
1.2 Identification / Overview.			
1.2.1 The Medium Range Radar (MRR) System specified in this document includes the sensor system and the other ancillary equipment. A complete system consisting of all the equipment required such as Canadian communication equipment will be specifically referenced as applicable.			
2. APPLICABLE DOCUMENTS			
2.1 General. A complete list of documents that form part of this specification to the extent specified herein, and are supportive of the specification when referenced in section 3 and beyond can be found in Annex D (Applicable Documents) to the MRR System RFP.			
3. REQUIREMENTS			
3.1 System Performance.			
3.1.1 General System Capability.			
3.1.1.1 Radar Modes			
3.1.1.1.1	The MRR System shall have the necessary capacity to simultaneously host software for all modes. Simultaneous hosting shall enable the system to switch between weapon locating and air surveillance modes without rebooting the system.	CS: Yes	N/A
3.1.1.1.2	The MRR System should perform the weapon locating mission and the air surveillance mission concurrently.	CS: Yes	N/A
3.1.1.2 System Integration, Transmit and Record Data.			
3.1.1.2.1	The MRR System shall digitally record and transmit target data.	CS: Yes	N/A
3.1.1.3 Command Post Equipment.			
3.1.1.3.1	The ruggedized equipment/workstation that would be installed in a command post to operate the radar shall be provided in transit cases in accordance with IP 65, IEC 60529.	CS: Yes	N/A
3.1.1.4 Remote Operation.			
3.1.1.4.1	The MRR System shall have a remote operation capability allowing the operator to be a minimum distance of 100 meters from the MRR System.	CS: Yes	N/A
3.1.1.5 Into and Out of Action Time.			
3.1.1.5.1	The set-up time is defined as the amount of time required to have the MRR system deployed and in action from a road move configuration.	CS: Yes	N/A

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.1.1.5.2 Set-up times do not include set-up of communication masts / antennae, camouflage, additional grounding beyond the minimum safe grounding, cable payout due to a remote location for the power generator, manual survey in the case of INS failure, automatic terrain following initialization after the system start-up, manual levelling if the automatic levelling has failed, installation of the DTED files, installation of communication devices beyond the operators workstation.	CS: Yes	N/A	N/A
3.1.1.5.3 Set-up times make the assumption that the soil is suitable for the easy installation of safe grounding for the MRR System operation.	CS: Yes	N/A	N/A
3.1.1.5.4 The MRR System shall be set-up and operational in no more than 20 minutes in temperatures from 5° C to 40° C.	CS: Yes	N/A	N/A
3.1.1.5.5 The MRR System shall be set-up and operational in no more than 30 minutes in temperatures from 5° C to -40° C.	CS: Yes	N/A	N/A
3.1.1.5.6 The MRR System shall be packed up and out of action in no longer than 5 minutes.	CS: Yes	N/A	N/A
3.1.1.5.7 Setup and pack-up times of the MRR System shall be achievable with no more than four persons.	CS: Yes	N/A	N/A
3.1.2 General Weapon Locating Capability.			
3.1.2.1 Mode. The MRR System shall have stand-by (non-radiating but ready to radiate on command) and operating (radiating) modes.	CS: Yes	N/A	N/A
3.1.2.2 Extrapolation. The MRR System shall automatically extrapolate the trajectory of a projectile to the correct location of the weapon and to the correct altitude of the weapon within the accuracy limits of the Location Accuracy paragraph 3.1.3.6 as determined by Digital Terrain and Elevation Data (DTED).	CS: Yes	N/A	N/A
3.1.2.3 Automatic Altitude Correction. The MRR System shall automatically correct for differences in altitude between the MRR System and the location of the weapon using DTED data.	CS: Yes	N/A	N/A
3.1.2.4 Minimum Radial Velocity. The minimum radial velocity of a projectile, with respect to the position of the MRR System, from a weapon that can be located, shall be automatically adaptive to the clutter conditions.	CS: Yes	N/A	N/A
3.1.2.5 Target Location Capacity			
3.1.2.5.1 The MRR System shall acquire, process, record and transmit to an external destination a minimum of 40 targets per minute.	CS: Yes	N/A	N/A
3.1.2.5.2 The MRR System shall record and store target records to internal storage devices.	CS: Yes	N/A	N/A
3.1.2.5.3 The amount of internal recording capability shall be 24 hrs.	CS: Yes	N/A	N/A
3.1.2.5.4 All applicable recorded data shall be accessible through a USB interface.	CS: Yes	N/A	N/A
3.1.2.6 Site Reconnaissance Survey and Navigation			
3.1.2.6.1 The MRR System shall have an automated navigation system providing accurate pointing/orientation data.	CS: Yes	N/A	N/A

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.1.2.6.2 The navigation system of the MRR System shall operate with or without access to military GPS signals.	CS: Yes	N/A	N/A
3.1.2.6.3 The MRR System shall manually accept external position information in the absence of GPS signals.	CS: Yes		N/A
3.1.2.6.4 The MRR System shall manually accept orientation information.	CS: Yes		N/A
3.1.2.7 Weapon Locating Man Machine Interface			
3.1.2.7.1 As a minimum the MRR System shall display the following:			
a. Ground tracks of the projectile;	CS: Yes		N/A
b. Point of Origin (POO);	CS: Yes		N/A
c. Point of Impact (POI);	CS: Yes		N/A
d. Radar position;	CS: Yes		N/A
e. Table with projectile details;	CS: Yes		N/A
f. Individual detections of the projectile;	CS: Yes		N/A
g. BIT tests;	CS: Yes		N/A
h. Jamming strobe indicator;	CS: Yes		N/A
i. Ground tracks of other non-ballistic tracks (the detections of other objects/clutter is not suppressed);	CS: Yes		N/A
j. An error estimation in ellipse format of the POO;	CS: Yes		N/A
k. An error estimate in ellipse format of the POI; and	CS: Yes		N/A
l. A tool to show the view-shed information (shows terrain viewable by the radar in 3 dimensions).	CS: Yes		N/A
3.1.2.7.2 As a minimum the MRR System display shall have the following controls:			
a. Zone creation capability;	CS: Yes		N/A
b. Frequency selection;	CS: Yes		N/A
c. Map controls;	CS: Yes		N/A
d. Communication controls (to be refined with interface to Canadian C2)	CS: Yes		N/A
e. Radiation control;	CS: Yes		N/A
f. Mission planning controls;	CS: Yes		N/A
g. Sector radiation control; and	CS: Yes		N/A
h. Control of the applicable color codes on the display screen.	CS: Yes		N/A
3.1.3 Hostile Weapon Locating Capability.			
3.1.3.1 Search Sector Capability.			
3.1.3.1.1 The MRR System in the 360 degree weapon location mode shall continuously search and locate in a full 360 degree sector in azimuth.	CS: Yes		N/A
3.1.3.1.2 The MRR System should search and locate in a 90 degree sector in azimuth, to obtain better location accuracy and longer range capability.	CS: Yes		N/A
3.1.3.2 Location Range			
3.1.3.2.1 The MRR System shall locate mortar, gun, and rocket weapon systems positioned anywhere out to a mandatory range of 15 km from the MRR System's location, in a 360 degree sector in azimuth.	CS: Yes		Required:

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.1.3.2.2 In a 360 degree sector in azimuth, the minimum range for mortars and guns shall be 5 km or less.	CS: Yes	N/A	N/A
3.1.3.2.3 In a 360 degree sector in azimuth, the minimum range for rockets shall be 8 km or less.	CS: Yes	N/A	N/A
3.1.3.2.4 The MRR System shall determine the Point of Impact (POI) for projectiles which land within 15 km radius of the MRR System when the firing weapon is up to 15km from the MRR System.	CS: Yes	N/A	N/A
3.1.3.2.5 The MRR System should be able to locate guns and rockets to a range greater than 15 km in a 360 degree sector in azimuth.	CS: Yes		Required:
3.1.3.2.6 The MRR System should be able to locate guns and rockets to a range greater than 15 km in a 90 degree sector in azimuth.	CS: Yes		Required:
3.1.3.3 Minimum Calibre.			
3.1.3.3.1 The minimum calibre mortar weapon that the MRR System shall locate is 60mm.	CS: Yes		Required:
3.1.3.3.2 The minimum calibre gun weapon that the MRR System shall locate is 105 mm.	CS: Yes		Required:
3.1.3.3.3 The minimum calibre rocket weapon that the MRR System shall locate is 107 mm.	CS: Yes		Required:
3.1.3.4 Weapon Types.			
3.1.3.4.1 At a minimum, the weapon systems that shall be located by the MRR System are in the following table. See Para 3.1.3.4.1 in the System Performance Specifications at Appendix 1 to Annex A.	CS: Yes		N/A
3.1.3.5 False Location Rate (Weapon Locating).			
3.1.3.5.1 The MRR System shall have a maximum False Location Rate (FLR) of one (1) false location reported per six (6) hour period under nominal environmental conditions with terrain clutter and 4 mm/hour rainfall. The clutter model for terrain clutter and 4 mm/hour rainfall is specified at paragraph 3.5.12 of this document.	CS: Yes		Required:
3.1.3.6 Location Accuracy.			
3.1.3.6.1 The MRR System shall have an accuracy of location for mortars equal to or better than a Circular Error Probable of 50% CEP(50%) of 50 meters or 0.5% of range from the MRR System while locating in a 360-degree sector in azimuth.	CS: Yes		Required:
3.1.3.6.2 The MRR System shall have an accuracy of location for guns (105mm and larger) and rockets (107mm and 122mm) equal to or better than a CEP(50%) of 75 meters or 1.0% of range from the MRR System while locating in a 360-degree sector in azimuth.	CS: Yes		Required:
3.1.3.6.3 The MRR System should locate mortars and guns out to a range of 15 km or more in a pre-defined azimuth sector of 90 degrees with a minimum accuracy of CEP(50%) of 50 m or 0.5% of range. The minimum range for mortars in this predefined sector should be no more than 1 km. The minimum range for guns in this predefined sector should be no more than 3 km.	CS: Yes		Required:

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.1.3.6.4 The MRR System should locate rockets out to a range of 15 km or more in a pre-defined azimuth sector of 90 degrees or less with a minimum accuracy of CEP(50%) of 60m or 1.0% of range. The minimum range for rockets in this predefined sector should be no more than 5 km.	CS: Yes		Required:
3.1.3.7 Probability of Location			Required:
3.1.3.7.1 The probability of location for mortars, guns and rockets shall be a minimum of 80%.	CS: Yes		
3.1.3.8 Specific Location Accuracy of Guns. The MRR System while operating in a 360 degree mode shall locate a 105mm gun with 85% probability of location and 150m Circular Error Probable of 50% (CEP(50%)) when:	CS: Yes		N/A
a. firing at a 15 km range from the MRR System;	CS: Yes		N/A
b. the direction from the MRR System that the gun is firing from, is not known a priori;	CS: Yes		N/A
c. the weapon is fired towards the MRR System with aspect angles of: 0°, +40°, -40°;	CS: Yes		N/A
d. the gun is firing a minimum of 1,100 mils elevation;	CS: Yes		N/A
e. the gun round is not base bleed;	CS: Yes		N/A
f. the impact location is not known a priori and may be anywhere along the described ground path but at least 6 km from the gun and no further than 15 km from the MRR System; and	CS: Yes		N/A
g. the projectile is 30 mil above the terrain mask for at least 6 seconds.	CS: Yes		N/A
3.1.3.9 Specific Location Accuracy of Rockets. The MRR System while operating in a 360 degree mode shall locate a 107mm rocket launcher with 85% probability of location and 150m CEP(50%) when:	CS: Yes		N/A
a. firing at a 15 km range from the MRR System;	CS: Yes		N/A
b. the direction from the MRR System that the rocket is firing from, is not known a priori;	CS: Yes		N/A
c. the weapon is fired towards the MRR System with aspect angles of: 0°, +40°, -40°;	CS: Yes		N/A
d. the rocket is firing a minimum of 600 mils elevation;	CS: Yes		N/A
e. the impact location is not known a priori and may be anywhere along the described ground path but at least 6 km from the weapon and no further than 15 km from the MRR System; and	CS: Yes		N/A
f. the projectile is 30 mil above the terrain mask for at least 6 seconds.	CS: Yes		N/A
3.1.3.10 Specific Location Accuracy of Mortars. The MRR System while operating in a 360 degree mode shall locate an 81mm mortar with 85% probability of location and 75m CEP(50%) when:	CS: Yes		N/A
a. firing at a 15 km range from the MRR System;	CS: Yes		N/A
b. the direction from the MRR System that the mortar is firing from, is not known a priori;	CS: Yes		N/A

Bidder's Name:			
System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
c. the weapon is fired towards the MRR System with aspect angles of: 0°, +40°, -40°;	CS: Yes	N/A	N/A
d. the mortar is firing at 1,400 mils elevation and reaches a height of at least 800m;	CS: Yes		N/A
e. the impact location is not known a priori and may be anywhere along the described ground path inside the 15 km radius from the MRR System; and	CS: Yes		N/A
f. the projectile is 30 mil above the terrain mask for at least 6 seconds.	CS: Yes		N/A
3.1.3.11 Volley Fire.			
3.1.3.11.1 The MRR System shall locate volley fire from mortars and guns within the essential CEP limits in the Location Accuracy paragraph 3.1.3.6 of this document, from at least 5 or more different weapons, in a 360 degree sector in azimuth, at a maximum of 15 km from the MRR System.	CS: Yes		N/A
3.1.3.11.2 Reserved	N/A		N/A
3.1.3.12 Hostile Impact Prediction.			
3.1.3.12.1 The MRR System shall predict the impact point of a located hostile projectile to within 500m, CEP (50%) when the projectile impact point remains inside the 360°, 15 km distance from the MRR System.	CS: Yes		N/A
3.1.3.12.2 The MRR System shall predict the impact point of a located hostile projectile if it lands outside the 360°, 15 km distance from the MRR System.	CS: Yes		N/A
3.1.3.12.3 The MRR System should predict the impact point of a located hostile projectile to less than 500m, CEP(50%) when the projectile remains inside the 360°, 15 km distance from the MRR System.	CS: Yes		N/A
3.1.3.12.4 The point of impact or the point of origin for any detected and tracked hostile projectile which is outside the specified range shall be reported if there are a series of detections considered to be a non-ambiguous valid trajectory track for that projectile.	CS: Yes		N/A
3.1.3.13 Ballistic/Non-Ballistic Delivery System Classification.			
3.1.3.13.1 The MRR System shall be able to classify each located weapon, either as a mortar, gun or rocket.	CS: Yes		N/A
3.1.3.13.2 The MRR System shall be able to classify ballistic and non-ballistic projectiles.	CS: Yes		N/A
3.1.4 Friendly Fire Locating Capability.			
3.1.4.1 Friendly Fire Registration. The MRR System shall perform friendly fire registration missions with a CEP(50%) of 50 meters or 0.5% of range or better out to a range of 15 km and a desirable range of up to 30 km.	CS: Yes		N/A
3.1.5 Air Surveillance Capability			
3.1.5.1 General. The MRR System shall have an airspace surveillance mission, 360 degrees in azimuth. The clutter model at paragraph 3.5.12 of this document shall apply.	CS: Yes		N/A
3.1.5.2 Range for 1m² Targets.			

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.1.5.2.1 The MRR System shall detect and track a 1 meter ² RCS uncooperative target at a range from 1 km to 75 km. A one m ² target consists of either fixed wing high speed aircraft or low speed rotary wing aircraft in clutter.	CS: Yes		Required:
3.1.5.2.2 The MRR System should detect and track a 1 meter ² RCS uncooperative target at a range from 1 km to distances greater than 75 km.	CS: Yes		Required:
3.1.5.3 Range for 0.1m² Targets.			
3.1.5.3.1 The MRR System shall detect and track a 0.1 meter ² RCS uncooperative target at a minimum range from 1 km to 25 km. Aircraft with 0.1 m ² RCS may consist of high speed cruise missiles and low speed UAVs in ground clutter.	CS: Yes		N/A
3.1.5.3.2 The MRR System should detect and track a 0.1 meter ² RCS uncooperative target at a minimum range from 1 km to distances greater than 25 km.	CS: Yes		N/A
3.1.5.4 Altitude. The MRR System shall detect uncooperative targets at altitudes from 100 meters or less to 10,000 meters or more.	CS: Yes		Required:
3.1.5.5 Elevation.			
3.1.5.5.1 The MRR System shall detect uncooperative targets from -10 degrees to a minimum of 30 degrees in elevation in search.	CS: Yes		Required:
3.1.5.5.2 The MRR System shall track uncooperative targets from -10 degrees to a minimum of 45 degrees in elevation.	CS: Yes		Required:
3.1.5.6 Accuracy. The MRR System shall have an accuracy for 1 meter ² RCS targets of 20 meters in range, 0.6 degrees in azimuth and 600 meters in altitude at a range of 75 km.	CS: Yes		Required:
3.1.5.7 Target Characteristics. The fluctuation of the radar cross-section of airborne targets is expected to best be modeled by a Swerling I type target. See P.Swerling, Probability of Detection for Fluctuating Targets, Rand Research Memo RM-1217, 17 March 1954.	CS: Yes		N/A
3.1.5.7.1 The MRR System shall detect fixed wing high speed aircraft and cruise missiles to a maximum velocity of 825 m/sec or more.	CS: Yes		N/A
3.1.5.7.2 The MRR System shall detect UAV and rotary aircraft to a minimum velocity of 20 m/sec or less.	CS: Yes		N/A
3.1.5.8 Detection in Rainfall. The MRR System shall have a minimum probability of detection of 50% per scan in rain fall of 4mm per hour at the maximum range specified in Paragraph 3.1.5.2.1 and Paragraph 3.1.5.3.1. Refer to the clutter model at paragraph 3.5.12.	CS: Yes		N/A
3.1.5.9 Detection in Clear Weather. The MRR System shall have a minimum probability of detection of 80% per scan in clear weather at the maximum range (specified in Paragraph 3.1.5.2.1 and Paragraph 3.1.5.3.1) with a minimum of 24 detection opportunities per target per minute. In clear weather, the ground clutter model at paragraph 3.5.12 in this document still applies.	CS: Yes		N/A
3.1.5.10 Detection Rate.	CS: Yes		

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.1.5.10.1 The MRR System shall have a minimum possible detection rate of 24 detections per target per minute, which assumes one detection per target per antenna rotation.	CS: Yes	N/A	N/A
3.1.5.10.2 The probability of detection of 80% in clear conditions at maximum range results in 19.2 detections per target per minute. Similarly, the probability of detection of 50% in rain results in 12 detections per target per minute.	CS: Yes		N/A
3.1.5.10.3 The MRR System should have a detection rate of over 24 detections per target per minute.	CS: Yes		N/A
3.1.5.11 Air Surveillance False Alarm Rate. The MRR System shall have a maximum false alarm rate of 20 false alarms per hour or 20 false tracks per hour.	CS: Yes		N/A
3.1.5.12 New Track Latency.			
3.1.5.12.1 The MRR System shall have a 90% probability of new track latency of 10 seconds or less.	CS: Yes		N/A
3.1.5.12.2 The MRR System should have a 90% probability of new track latency of less than 10 seconds.	CS: Yes		N/A
3.1.5.13 Tracking.			
3.1.5.13.1 The MRR System shall be able to track a minimum of 200 tracks by the regularly scheduled search beams.	CS: Yes		N/A
3.1.5.13.2 The MRR System shall be able to track targets where tracking beams are scheduled for the airborne tracks that are interleaved between the regularly scheduled search beams.	CS: Yes		N/A
3.1.5.14 Classification of Targets. The MRR System shall be able to classify the following targets:			
a. Fixed wing aircraft;	CS: Yes		N/A
b. Hovering rotary wing aircraft when detected;	CS: Yes		N/A
c. Moving rotary wing aircraft;	CS: Yes		N/A
d. UAVs;	CS: Yes		N/A
e. Cruise missiles;	CS: Yes		N/A
f. Airborne jammers; and	CS: Yes		N/A
g. Ground based jammers.	CS: Yes		N/A
3.1.5.15 Identification Friend or Foe (IFF) / Secondary Surveillance Radar (SSR).			
3.1.5.15.1 The MRR System shall have an IFF interrogator that as a minimum has modes 1, 2, 3/A, 4, C, S and is "mode 5 ready" and contains all of the latest features of a modern IFF / secondary surveillance radar (SSR) suitable for use with the specified function of the air surveillance radar specified herein.	CS: Yes		N/A
3.1.5.15.2 The IFF interrogator in modes that require crypto shall be operable with at least one of the following crypto devices:			
a. KIV-77;	CS: Yes		N/A
b. KIV-78;	CS: Yes		N/A
c. Embedded crypto in accordance with US DoD AIMS 04-900A; or	CS: Yes		N/A

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
a. Other US NSA or NATO Security and Evaluation Agency (SECAN) approved mode 4/5 cryptographic device.	CS: Yes	N/A	N/A
3.1.5.15.3 The IFF/SSR shall have a minimum target report load of 200 airborne targets per scan.	CS: Yes		N/A
3.1.5.15.4 The primary surveillance radar (PSR) to IFF/SSR correlation percentage shall be a minimum of 98%.	CS: Yes		N/A
3.1.5.15.5 The IFF/SSR shall be compliant with US DOD AIMS 03-1000, ICAO Annex 10, and STANAG 4193.	CS: Yes		N/A
3.1.5.15.6 The IFF/SSR shall have a Selective Identification Feature (SIF).	CS: Yes		N/A
3.1.5.16 Air Surveillance Man Machine Interface / Display Presentation.			
3.1.5.16.1 Controls. The MRR System shall have a Primary Surveillance Radar (PSR) RF Inhibit function in all azimuth and selectable by specific sectors, and a Secondary Surveillance Radar (SSR) RF Inhibit function in all azimuth and selectable by specific sectors.	CS: Yes		N/A
3.1.5.16.2 Air Surveillance Display Presentation.			
3.1.5.16.2.1 The MRR System display shall show correlated returns from the Primary Surveillance Radar and the Secondary Surveillance Radar.	CS: Yes		N/A
3.1.5.16.2.2 The MRR System display shall show sources of active RF interference from a Jam Strobe function.	CS: Yes		N/A
3.1.5.16.2.3 The MRR System display shall have data blocks with the minimum data consisting of the transponder mode, the IFF/SSR altitude, the PSR altitude, the PSR range and the PSR bearing. The data block may also contain a target identification number that refers to a table with the same data.	CS: Yes		N/A
3.1.5.16.2.4 The MRR System display shall have a "hooked" capability that will follow an airborne target with a data block.	CS: Yes		N/A
3.1.5.16.2.5 The MRR System display shall have the capability of displaying the range and bearing between any two points chosen by the operator.	CS: Yes		N/A
3.1.5.16.2.6 The MRR System display shall have the capability to zoom in on a portion of the display or to offset/pan the display.	CS: Yes		N/A
3.1.5.16.2.7 The MRR System display shall have the capability to allow the operator to map points of interest and zones onto the background map.	CS: Yes		N/A
3.1.5.16.2.8 The MRR System display shall display emergency beacons, urgency modes, safety related alerts and warnings received from aircraft IFF transponders.	CS: Yes		N/A
3.1.5.16.2.9 The MRR System display shall have the capability to display aeronautical maps.	CS: Yes		N/A
3.1.5.16.2.10 Reserved	N/A		N/A
3.1.5.16.2.11 The MRR System display presentation shall be clear and concise, and continuously updated in a manner that precludes erroneous identification or confusion on the part of the operator.	CS: Yes		N/A
3.1.5.16.2.12 The MRR System display shall present to the operator the following additional information:			

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
a. Distinct symbols for unintentional duplicated SSR codes and aircraft identification;	CS: Yes		N/A
b. Predicted positions for non updated track;	CS: Yes		N/A
c. Display the reserved SSR codes including 7500, 7600 and 7700 operation of IDENT and ADS-B emergency;	CS: Yes		N/A
d. Bearing to the airborne target;	CS: Yes		N/A
e. Range to the airborne target;	CS: Yes		N/A
f. Absolute Altitude, height above terrain of the airborne target;	CS: Yes		N/A
g. True Altitude, height above mean sea level of the airborne target;	CS: Yes		N/A
h. The operator's choice of UTM or MGRS grid reference or Latitude and Longitude of the airborne target;	CS: Yes		N/A
i. Individual position blips such as PSR, SSR symbols and combined symbols;	CS: Yes		N/A
j. SSR responses which include SSR code of the aircraft, aircraft identity and pressure altitude derived level information;	CS: Yes		N/A
k. Plot and track data (historical); and	CS: Yes		N/A
l. The operator's choice of imperial or metric measurements where applicable.	CS: Yes		N/A
3.1.6 External Communication Interfaces			
3.1.6.1 The air surveillance part of the MRR System shall be integrated using the ASTERIX standard interface protocol by EUROCONTROL.	CS: Yes		N/A
3.1.6.2 The weapon locating part of the MRR System shall use a non-proprietary Application Programming Interface. The weapon locating part of the MRR shall transmit a comprehensive set of messages to the LCSS.	CS: Yes		N/A
3.1.6.3 The communication link between the MRR operator's station and the Canadian Forces Land Command Support System (LCSS) shall be based on Ethernet technology, capable of 100Base-T.	CS: Yes		N/A
3.2 Electronic Protection Measures.			
3.2.1 General.			
3.2.1.1 The MRR System shall have Emissions Control (EMCON) capabilities.	CS: Yes		N/A
3.2.1.2 In a non-interference environment, electronic protection (EP) features shall not degrade the MRR System performance.	CS: Yes		N/A
3.2.1.3 Reserved	N/A		N/A
3.2.1.4 All MRR system equipment shall incorporate all necessary Electronic Protection Measures (EPM) which allows it to operate in an interference environment.	CS: Yes		N/A
3.2.1.5 The MRR System shall use modes and techniques which allow the radar to operate in an environment with sources of both intentional and unintentional RF interference.	CS: Yes		N/A
3.2.1.6 The MRR System shall incorporate operating modes and techniques which allow the radar to minimize RF interference to other systems.	CS: Yes		N/A
3.2.2 Threat Environment. The expected MRR System electronic threat consists of friendly emissions, stand-off jammers, expendable jammers, and chaff.	CS: Yes		N/A

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.2.3 Degradation. In the presence of a broadband jammer covering the entire operational band of the MRR System with an effective radiated power (ERP) of 25 W/MHz, located at 15 km from the radar, performance of the radar in both range and accuracy shall not be degraded by more than 20% over the azimuth search sector except within \pm five (5) degrees of the jammer's azimuth or in the immediate proximity (range gates/Doppler cells) of a chaff cloud.	CS: Yes		N/A
3.2.4 False Track Rate. The MRR System's average per scan False Track Rate in the Air Surveillance Mode shall not be degraded by more than 20% in an interference environment as defined by the broad band jammer in paragraph 3.2.3.	CS: Yes		N/A
3.2.5 Frequency and Bandwidth.			
3.2.5.1 The MRR System shall have the ability to rapidly change its operating frequency (frequency agility) in an unconstrained pseudo-random fashion to maintain a narrow instantaneous bandwidth over its entire operating band.	CS: Yes		N/A
3.2.5.2 The MRR System shall incorporate a suitably wide operating bandwidth.	CS: Yes		N/A
3.2.5.3 The MRR System shall have more than 24 operating frequencies.	CS: Yes		N/A
3.2.6 Antenna Side-Lobe Levels.			
3.2.6.1 The peak side-lobe levels shall be 40 db below the main beam.	CS: Yes		N/A
3.2.6.2 The peak side-lobe levels should be more than 40 db below the main beam.	CS: Yes		N/A
3.2.7 Location of Jamming Signals. The MRR System shall detect the direction in azimuth of jamming signals, or noise.	CS: Yes		N/A
3.2.8 Jamming Frequency Avoidance. The MRR System shall incorporate an Automatic Jamming Frequency Avoidance capability. This may also be implemented as an automatic choice of a set of the least jammed frequencies capability.	CS: Yes		N/A
3.2.9 Constant False Alarm Rate (CFAR). The MRR System shall incorporate Constant False Alarm Rate (CFAR) measures to reduce the false alarm rate.	CS: Yes		N/A
3.2.10 Immediate Shutdown on Command. The MRR System shall provide the operator and all operator stations with the ability to stop all RF transmissions immediately with a single command.	CS: Yes		N/A
3.2.11 Multiple Pulse Repetition Frequencies. The MRR System shall use multiple pulse repetition frequencies.	CS: Yes		N/A
3.2.12 Pulse Compression. The MRR System shall use waveform coding and pulse compression.	CS: Yes		N/A
3.2.13 Cross-Polarization. Ratios of co-polarized main-beam peak gain to cross-polarized gain anywhere in the MRR System antenna pattern shall be greater than 25 db to provide protection against common cross-polarization jamming.	CS: Yes		N/A
3.2.14 Reserved	N/A		N/A
3.2.15 Reserved	N/A		N/A
3.2.16 Chaff. The MRR System shall incorporate electronic protection measures to minimize detection performance degradation when a target is in the vicinity of a chaff cloud.	CS: Yes		N/A

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.2.16.1 The nominal characteristics of the chaff cloud are:			
a. Chaff radar cross section within resolution cell of the radar: 10 m ²	CS: Yes		N/A
b. Wind speed (average speed of chaff cloud): 20 m/sec	CS: Yes		N/A
c. Velocity distribution of cloud: Gaussian	CS: Yes		N/A
d. Altitude distribution: 0 to 6,000 m	CS: Yes		N/A
e. Range distribution: 10 to 80 nm	CS: Yes		N/A
f. Single cloud diameter on release: 30 m	CS: Yes		N/A
3.3 Environmental.			
3.3.1 All MRR System components required to operate the system remotely shall be IP65 certified.	CS: Yes		N/A
3.3.2 Temperature.			
3.3.2.1 All MRR System external components shall operate in temperatures between -40 degrees C and +49 degrees C.	CS: Yes		N/A
3.3.2.2 Reserved.	N/A		N/A
3.3.2.3 All MRR System components shall survive storage in temperatures from -46 degrees C to + 63 degrees C.	CS: Yes		N/A
3.3.2.4 The low temperature operational test shall be in accordance with MIL-STD-810G, Method 502.5, Procedure II (operation) for -40 degrees C temperature or -25 degrees C temperature as applicable.	CS: Yes		N/A
3.3.2.5 The high temperature storage test shall be in accordance with MIL-STD-810G, Method 501.5, Procedure I (storage) using the cyclic temperatures in Table 501.5-II High Temperature Cycles, Climatic Category - Basic Hot, for a maximum temperature exposure of +63 degrees C and the MRR System is in a transport configuration.	CS: Yes		N/A
3.3.2.6 The low temperature storage test shall be in accordance with MIL-STD-810G, Method 502.5, Procedure I (storage) for a -46 degrees C temperature for 8 hours and the MRR System is in a transport configuration.	CS: Yes		N/A
3.3.3 Solar Radiation.			
3.3.3.1 The MRR System shall operate with solar radiation of 1120 W/square meter at the maximum required operation temperature.	CS: Yes		N/A
3.3.3.2 The solar radiation test shall be in accordance with MIL-STD-810G, Method 505.5, Procedure I (cycling - heating effects) using the cyclic temperatures in Figure 505.5-1 Procedure I - Cycling Test, for a maximum temperature of 49 degrees C and a maximum solar radiation of 1120 W/square meter.	CS: Yes		N/A
3.3.4 Humidity.			
3.3.4.1 The MRR System shall operate at humidity levels of 95% RH at a temperature of 27 degrees C.	CS: Yes		N/A
3.3.4.2 The humidity test shall be in accordance with MIL-STD-810G, Method 507.5, Procedure II using a minimum of five 48 hour humidity cycles as per Figure 507.5-7 Aggravated Temperature-Humidity Cycle.	CS: Yes		N/A
3.3.5 Fungus.			

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.3.5.1 There shall be no degradation in performance due to fungus growth in any of the MRR System components.	CS: Yes	N/A	N/A
3.3.5.2 The materials which make up the MRR System shall be fungus resistant and shall not support the growth of fungus.	CS: Yes	N/A	N/A
3.3.5.3 The fungus test shall be in accordance with MIL-STD-810G, Method 508.6.	CS: Yes	N/A	N/A
3.3.6 Precipitation.			
3.3.6.1 The MRR System shall be able to withstand rainfall of 45 mm/hr for extended periods without damage due to water penetration.	CS: Yes	N/A	N/A
3.3.6.2 The MRR System shall be able to withstand the effects of blowing rain without water penetration except where the design allows for water penetration without damage as part of normal operations as follows: 45mm/hr rainfall rate; 9 m/s wind speed.	CS: Yes	N/A	N/A
3.3.6.3 The operational, non-operational and transport configuration rain test shall be in accordance with MIL-STD-810G, Method 506.5, Procedure I, using 45 mm/hr as the rainfall rate and 9 m/s as the wind speed.	CS: Yes	N/A	N/A
3.3.7 Freezing Rain and Icing.			
3.3.7.1 The MRR System shall survive exposure to freezing rain conditions found in MIL HDBK 310. Manual removal of ice prior to operation is permitted.	CS: Yes	N/A	N/A
3.3.7.2 The MRR System shall be resistant to damage from reasonable and normal ice removal procedures.	CS: Yes	N/A	N/A
3.3.7.3 The MRR System shall be able to withstand build up of glaze ice, specific gravity of 0.9, up to 50 mm thick due to icing or freezing rain.	CS: Yes	N/A	N/A
3.3.7.4 The MRR System shall be able to withstand the build up of hard rime ice, specific gravity of 0.6, up to 75 mm thick due to icing or freezing rain.	CS: Yes	N/A	N/A
3.3.7.5 The MRR System shall be able to withstand the build up of soft rime ice, specific gravity of 0.2, up to 150 mm thick due to icing or freezing rain.	CS: Yes	N/A	N/A
3.3.8 Snow Loading.			
3.3.8.1 The MRR System shall be able to withstand the snow load of 100 kg/square meter.	CS: Yes	N/A	N/A
3.3.8.2 For the snow loading specification, verification is done by analysis.	CS: Yes	N/A	N/A
3.3.9 Altitude.			
3.3.9.1 The MRR System shall operate at altitudes of up to 10,000 feet above sea level.	CS: Yes	N/A	N/A
3.3.9.2 The MRR System shall be able to withstand storage at altitudes of 15,000 feet.	CS: Yes	N/A	N/A
3.3.9.3 The operational altitude test shall be in accordance with MIL-STD-810G, Method 500.5, Procedure II, using the equivalent air pressure found at 10,000 feet.	CS: Yes	N/A	N/A
3.3.9.4 The storage altitude test shall be in accordance with MIL-STD-810G, Method 500.5, Procedure I, using the equivalent air pressure found at 15,000 feet.	CS: Yes	N/A	N/A
3.3.10 Wind.			

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.3.10.1 The MRR System shall be able to operate in winds of 20m/s with the antenna deployed.	CS: Yes	N/A	N/A
3.3.10.2 The MRR System shall be able to withstand winds of 29m/s while in any non operating configuration including with the antenna in a deployed position.	CS: Yes	N/A	N/A
3.3.10.3 With antenna stowed the MRR System shall survive winds of 40 m/s.	CS: Yes	N/A	N/A
3.3.10.4 For the wind specification, verification is done by analysis.	CS: Yes	N/A	N/A
3.3.11 Sand and Dust.			
3.3.11.1 The MRR System shall operate during and survive exposure to blowing sand and dust.	CS: Yes	N/A	N/A
3.3.11.2 The MRR System shall use air filters or filtering systems or sand and dust removal systems for all air inlets into the system to combat the effects of sand and dust.	CS: Yes	N/A	N/A
3.3.11.3 Air filter systems or sand and dust removal systems shall withstand daily removal, cleaning or filter replacement without damage.	CS: Yes	N/A	N/A
3.3.11.4 The MRR System shall employ seals for all bearings and sliding surfaces.	CS: Yes	N/A	N/A
3.3.11.5 The MRR System shall deploy and operate as specified in a sand concentration of 1.0 g/m ³ with wind speeds of up to 18 m/s.	CS: Yes	N/A	N/A
3.3.11.6 The MRR System shall deploy and operate as specified in a dust concentration of 1.0 g/m ³ with wind speeds of up to 1.5 m/s.	CS: Yes	N/A	N/A
3.3.11.7 The dust test while in operation shall be in accordance with MIL-STD-810G, Method 510.5, Procedure I, using a wind speed of 1.5 m/s and a dust concentration of 1.0 g/cubic meter.	CS: Yes	N/A	N/A
3.3.11.8 For the sand specification, verification is done by analysis.	CS: Yes	N/A	N/A
3.3.12 Shock.			
3.3.12.1 The MRR System shall withstand shocks due to transportation by rail with a maximum impact speed of 12.9 km/hr.	CS: Yes	N/A	N/A
3.3.12.2 For the shock specification, the MRR System is in a transport configuration and the test specification is in accordance with MIL-STD-810G, Method 526, Rail Impact. Loaded cars may be used with prior approval of the Technical Authority. A test railcar, equipped with chain tie-downs and end-of-car cushioned draft gear are to be used unless other railcar types are approved by the Technical Authority. Substitute test items are not be used unless approved by the Technical Authority.	CS: Yes	N/A	N/A
3.3.13 Vibration.			
3.3.13.1 The MRR System shall withstand the vibration caused by highway and cross-country transportation, in accordance with MIL-STD-810G, Method 514.6, Procedure III; Category 6 of Annex C, in a transport configuration.	CS: Yes	N/A	N/A
3.3.13.2 The road test consists of 300 km cross country at a maximum speed of 64 km/hr, 80 km for paved surface driving at a maximum speed of 64 km/hr, 0.5 km of driving on Belgian block at a maximum speed of 24 km/hr and 0.5 km of driving on 6 inch washboard at a maximum speed of 10 km/hr.	CS: Yes	N/A	N/A
3.3.14 Salt Fog and Corrosion Resistance.			

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.3.14.1 The MRR System shall be resistant to the corrosive effects of exposure to road salt or salt fog while being transported either by road or sea.	CS: Yes		N/A
3.3.14.2 For the salt fog specification, the exterior of the MRR System is in a transport configuration and the test specification is in accordance with MIL-STD-810G, Method 509.5.	CS: Yes		N/A
3.3.15 Temperature Shock.			
3.3.15.1 The MRR System shall not be physically damaged or suffer a deterioration in performance after being exposed to temperature shock such as may be experienced when the MRR System is moved from a heated storage area when the outside temperature is at the minimum operating temperature.	CS: Yes		N/A
3.3.15.2 For the temperature shock test, the MRR System shall be in a transport configuration and the test specification shall be in accordance with MIL-STD-810G, Method 503.5. Procedure I-D from room temperature to minimum operating temperature.	CS: Yes		N/A
3.4 Mobility.			
3.4.1 General.			
3.4.1.1 The MRR System shall be mounted on one or two trailers.	CS: Yes		N/A
3.4.1.2 The trailers shall be supplied by the contractor and is part of the MRR System.	CS: Yes		N/A
3.4.1.3 The trailer(s) shall be towed by Canadian in-service vehicles. Canadian in-service vehicles are equipped with pintle hooks for towing. The lunette height shall be adjustable. The lunette shall measure 76.2 mm x 41.2 mm. The vehicle maximum vertical load of the pintle hook is 2250 kg.	CS: Yes		N/A
3.4.1.4 The gross vehicle weight of any trailer fully equipped shall not exceed 13,500kg.	CS: Yes		N/A
3.4.1.5 The trailer shall meet the required standards as set out by Transport Canada in the Motor Vehicle Safety Regulations at the transport Canada web site www.tc.gc.ca .	CS: Yes		N/A
3.4.1.6 The trailer brakes shall be power assisted.	CS: Yes		N/A
3.4.1.7 The trailer shall have an emergency brake.	CS: Yes		N/A
3.4.1.8 The receptacle for the trailer electrical connector shall be in accordance with STANAG 4007.	CS: Yes		N/A
3.4.1.9 Trailers shall be designed such that the MRR System meets the reliability specifications.	CS: Yes		N/A
3.4.1.10 The trailer shall be equipped with a suspension system of sufficient capacity to absorb the high impact loading experienced when traveling over rough terrain.	CS: Yes		N/A
3.4.1.11 High frequency vibrations and noise shall be attenuated by the suspension system to minimize the detrimental effects on the payload.	CS: Yes		N/A
3.4.1.12 Standard Military Pattern (SMP) blackout lights shall be provided in accordance with STANAG 4381.	CS: Yes		N/A

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.4.1.13 The MRR System shall operate when emplaced on slopes of up to 5 degrees without excavation.	CS: Yes		N/A
3.4.2 Transportability and Deployability.			
3.4.2.1 The location of the Centre of Gravity (CG) of the fully loaded trailer in all three axes will be determined and printed on the trailer nameplate.	CS: Yes		N/A
3.4.2.2 Reserved.	CS: Yes		N/A
3.4.2.3 The MRR System radar antenna shall have a stowed position for transport.	CS: Yes		N/A
3.4.2.4 The trailer shall have a landing gear with a pad or suitable device to prevent undue sinking of the front end in moderately soft soil. The pressure exerted on the soil shall be no greater than 28 pounds per square inch (psi).	CS: Yes		N/A
3.4.2.5 The trailer landing gear shall either be fully retractable or fold towards the trailer when the trailer is hooked to a prime mover.	CS: Yes		N/A
3.4.2.6 The trailer wheels and tires shall be interchangeable from one side to the other and front to rear, if applicable.	CS: Yes		N/A
3.4.2.7 The trailer shall have a spare wheel with tire. Changing tools shall be provided in a locked compartment. Tools in the locked compartment shall be required to remove the spare tire from its storage position.	CS: Yes		N/A
3.4.2.8 Glad hand air hose connectors shall be provided at the front of the trailer.	CS: Yes		N/A
3.4.2.9 Stowage for wheel chocks (4) and a single steel plate 40 cm by 40 cm by 6 mm shall be provided either in a securable container or space.	CS: Yes		N/A
3.4.2.10 Provision for mounting a rear license plate shall be provided.	CS: Yes		N/A
3.4.2.11 The trailer Mean Kilometres Between Mission Failures (MKBMF) shall not be less than 30,000 km.	CS: Yes		N/A
3.4.3 Strategic Mobility.			
3.4.3.1 The MRR System, on trailers, shall be transportable by a C-17 Globemaster III aircraft.	CS: Yes		N/A
3.4.3.2 The MRR System shall be lifted by crane or fork lift using standard lifting frames, straps, shackles, and spreaders bars. Any specialized equipment required shall be supplied by the contractor.	CS: Yes		N/A
3.4.3.3 All transport configurations or assemblies shall have sufficient slinging and tie-down points that meet the requirements of MIL-STD-209K.	CS: Yes		N/A
3.4.3.4 Suitable tie-down points shall be provided so that the trailer, with full payload (MRR System), may be lifted or tied down for transport by rail, air or sea.	CS: Yes		N/A
3.4.3.5 The lifting and tie-down points of the MRR System shall meet the strength requirements of STANAG 4062.	CS: Yes		N/A
3.4.4 Rail Transportability.			
3.4.4.1 The MRR System, on trailers, shall meet the requirement for unrestricted rail transportation using the Gabarit International de Chargement (GIC) loading gauge from MIL STD 1366	CS: Yes		N/A
3.4.5 Air Transportability.			

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.4.5.1 The MRR System shall survive pressures and pressure changes associated with air transportation.	CS: Yes		N/A
3.4.6 Sea Transportability. The MRR System shall be transportable by sea.	CS: Yes		N/A
3.4.7 Highway Operation.			
3.4.7.1 The MRR System shall be towed at a speed of up to 110 km/hr on highways in good condition under all climatic conditions.	CS: Yes		N/A
3.4.8 Tactical Mobility.			
3.4.8.1 The MRR System shall be towed up slopes of up to 40% on a hard surface.	CS: Yes		N/A
3.4.8.2 The MRR System shall be towed down slopes of up to 40% on a hard surface.	CS: Yes		N/A
3.4.8.3 The MRR System shall be towed while traversing slopes of up to 20% on a hard surface.	CS: Yes		N/A
3.4.8.4 The addition of the MRR System onto the contractor selected trailer shall not affect the centre of gravity of the trailer sufficiently to cause the trailer to become unstable. The trailer shall not sway at highway speeds. The stability of the trailer shall be tested using the steady state circular and double lane change tests per NATO Allied Vehicle Testing Publication AVTP-1, publication # 03-160W – Dynamic Stability.	CS: Yes		N/A
3.4.8.5 The primary trailer brake system shall be able to stop, hold, and control the trailer ascent and descent on a 20% grade.	CS: Yes		N/A
3.4.8.6 The emergency brake shall hold the trailer on a 20% grade facing up or down the grade.	CS: Yes		N/A
3.4.8.7 The trailer shall be driven through light vegetation and of being backed into wood lines of light vegetation without damaging any exterior component. Light vegetation is defined as small trees/brush with a stem diameter less than or equal to 25 mm in diameter at breast height.	CS: Yes		N/A
3.4.8.8 The ground clearance shall be the maximum possible but not less than 350 mm.	CS: Yes		N/A
3.4.8.9 The trailer angle of departure shall not be less than 35 degrees.	CS: Yes		N/A
3.4.8.10 The MRR System shall be able to ford a water obstacle up to 750mm deep.	CS: Yes		N/A
3.5 Miscellaneous Specifications.			
3.5.1 Electrical Power.			
3.5.1.1 The electrical power source shall be part of the MRR System.	CS: Yes		N/A
3.5.1.2 The electrical power source shall be a state of the art, mature technology, of conservative and proven design with a proven high reliability.	CS: Yes		N/A
3.5.1.3 The generator engine shall be a state of the art, mature technology, of conservative and proven design with a proven high reliability.	CS: Yes		N/A
3.5.1.4 The MRR System shall permit connection to an external independent power source of adequate power capacity that matches the generator voltage and frequency.	CS: Yes		N/A

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.5.1.5 The MRR System generator shall be a multi-fuel system that uses the fuel as required by STANAG 4362.	CS: Yes		N/A
3.5.1.6 The connector to the outside source shall allow the direct connection of an appropriate cable onto CSA approved connectors.	CS: Yes		N/A
3.5.1.7 The generator audio signature shall not exceed 70dBA at 7meters.	CS: Yes		N/A
3.5.1.8 The fuel tank on the generator shall be of sufficient size to run the generator for 8 hours at full power without refuelling.	CS: Yes		N/A
3.5.2 Cables. All portable cables that are part of the MRR System shall bend at the minimum temperature requirements without the insulation cracking.	CS: Yes		N/A
3.5.3 Electrical Standards. The electrical installation on the MRR System shall meet the requirements of the Canadian Electrical Code Part 1, C22.1-02.	CS: Yes		N/A
3.5.4 Marking. Caution, warning, danger and instructional markings on the MRR System shall be in a bilingual format in both the English and French languages.	CS: Yes		N/A
3.5.5 Nomenclature. Military nomenclature shall be assigned to the MRR System in accordance with Canadian Forces Standard D-01-000-200/SF-001 and MIL-STD 196.	CS: Yes		N/A
3.5.6 Identification			
3.5.6.1 Identification marking shall be applied to major assemblies and loose assemblies of the MRR System in accordance with Canadian Forces Standard D-02-002-001/SG-001.	CS: Yes		N/A
3.5.6.2 In addition to the mandatory marking information, the system weight and dimensions shall be included. Note: Weight and dimension information is for transportation.	CS: Yes		N/A
3.5.7 Reliability.			
3.5.7.1 The MRR System shall have a minimum Mean Time Between Critical Failure (MTBCF) of 500 hours not including any Government Supplied Material (GSM).	CS: Yes		N/A
3.5.7.2 The MRR System should have a MTBCF of greater than 500 hours not including any GSM.	CS: Yes		N/A
3.5.7.3 The electrical generator system including the engine shall have a minimum MTBCF of 600 hours.	CS: Yes		N/A
3.5.7.4 The electrical generator system including the engine should have a MTBCF of greater than 600 hours.	CS: Yes		N/A
3.5.8 Durability. The MRR System shall be able to perform at least 30 battle field days per year over the expected lifetime of the MRR System.	CS: Yes		N/A
3.5.9 Supportability. The MRR shall be supportable without major redevelopment associated with obsolescence for an initial period of 5 years. The contractor shall be responsible for the obsolescence management for the entire life cycle of MRR system. See ISS SOW Para 5.7.	CS: Yes		N/A
3.5.10 Battlefield Day.			

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.5.10.1 During a battlefield day of a medium intensity scenario, each MRR System shall be expected to perform the following:	CS: Yes	N/A	N/A
a. be 15 hours operational;	CS: Yes		N/A
b. be 7.5 hours mobile (four moves per day) including the time to deploy and tear down for a daily total of:	CS: Yes		N/A
i. 50 km on paved roads;	CS: Yes		N/A
ii. 14 km on rough tracks; and	CS: Yes		N/A
iii. 6 km cross-country; and	CS: Yes		N/A
c. be 1.5 hours non-operational (non-continuous, maintenance can be carried out during this time).	CS: Yes		N/A
3.5.10.2 During a battlefield day on Peace Support Operations each MRR System shall be expected to perform the following:	CS: Yes		N/A
a. be 18 hours operational	CS: Yes		N/A
b. be three hours mobile (four moves per day outside and back to camp)	CS: Yes		N/A
i. 20 km on paved roads	CS: Yes		N/A
ii. 5 km on trails	CS: Yes		N/A
c. be three hours non-operational (maintenance can be carried out during this time)	CS: Yes		N/A
3.5.11 Geospatial Data Requirements.			
3.5.11.1 The MRR System shall use Digital Terrain Elevation Data (DTED), MIL-PRF-89020, to compute locations automatically in accordance to the Performance Specification.	CS: Yes		N/A
3.5.11.2 The MRR System shall use all applicable levels of DTED data to achieve the accuracy requirements set herein.	CS: Yes		N/A
3.5.11.3 The MRR System shall have a digital graphical map display capability.	CS: Yes		N/A
3.5.11.4 The following are the mapping products that shall be used for the MRR System display:			
a. Compressed ARC Digitized Raster Graphics (CADRG);	CS: Yes		N/A
b. Digital Terrain Elevation Data (DTED);	CS: Yes		N/A
c. Controlled Image Base (CIB); and	CS: Yes		N/A
d. Shape Files (.shp).	CS: Yes		N/A
3.5.11.5 The graphical map display shall displaying grid lines identified by UTM, MGRS and Latitude and Longitude data.	CS: Yes		N/A
3.5.11.6 The graphical map display shall have the capability to display all graphical map data using the World Geodetic System 1984 (WGS 84) horizontal datum.	CS: Yes		N/A
3.5.12 Clutter Model.			

Bidder's Name:

System Performance Specification Mandatory Requirements Compliance Matrix			
Reference to Appendix A1 (SPS)	Compliance Statement	N/A	Proof of Compliance References
3.5.12.1 Rain Clutter Characteristics. The MRR System in all modes shall operate in accordance with all the specifications during rain fall at 4mm/ hr. The range extent for rain is 30 km cross range and 30 km down range with respect to the radar coverage and extends uniformly to a 4km height. Specified radar performance in 4mm/hr rain is required over the entire down range extent of the radar coverage. In addition, the rain clutter in the context of the Medium Range Radar has the characteristics as defined in the following paragraphs: See Para 3.5.12.1 in the System Performance Specifications at Appendix 1 to Annex A	CS: Yes		N/A
3.5.12.2 Land Terrain Clutter Characteristics. The MRR System in all modes shall operate in accordance with all the specification in the presence of land terrain surface clutter. The surface clutter model is defined in the book Low-Angle Radar Land Clutter: Measurements and Empirical Models by J. Barrie Billingsley. See chapter 4 for the Clutter Model. See Para 3.5.12.2 in the System Performance Specifications at Appendix 1 to Annex A	CS: Yes		N/A

APPENDIX 4_{TO} ANNEX K

CANADIAN ARMY

MEDIUM RANGE RADAR

STATEMENT OF WORK (MRR-SOW)

COMPLIANCE EVALUATION MATRIX

General Instructions

1. The proposed radar system by the bidder for paper evaluation and the final delivered system shall remain of the same or better configuration without exceptions.
2. The proposed radar system by the bidder for paper evaluation and the system delivered for the purpose of live fire evaluations shall be of the same technical configuration specifically but not limited to the antenna, signal processing and power sub-systems.
3. For the purposes of evaluations the power input for all bidding system shall be limited to 60kW or below.

Mandatory Requirements and Compliance Statement (CS)

1. The Bidder is required to state whether or not their proposed system is compliant with each of the specified requirements.
2. The Bidder is required to place a compliance statement in the table only where the input row indicates "CS".
3. For High Level Mandatory Requirements outlined in Appendix K2, references to bidder's document and proof of compliance are required.

Bidder's Name: _____

1. INTRODUCTION

1.1. Purpose

- 1.1.1. This Statement of Work (SOW) defines the work effort required for the acceptance testing, production, delivery and support of new Medium Range Radar (MRR) systems as defined herein and in the System Performance Specification at Appendix A1.

Information

- 1.1.2. The work for the MRR system includes delivery of Integrated Logistics Support (ILS) data to support the MRR system within the Canadian Forces (CF) in accordance with article 5 herein.

Information

1.2. Background

- 1.2.1. As part of the Land Force Intelligence Surveillance Target Acquisition and Reconnaissance (LF ISTAR) project the MRR sub component will provide the Land Force Commander with the means to locate indirect fire assets including mortars, guns and rockets as well as providing an air surveillance capability.

Information

- 1.2.2. The Medium Range Radar systems must be transportable, supportable and suited to operate in support of Land Forces in all deployed environments.

Information

1.3. Government Supplied Materiel

- 1.3.1. If required, the Government will provide the Contractor with Government Supplied Materiel (GSM).

Information

2. APPLICABLE DOCUMENTS

A complete list of documents that form part of this SOW to the extent specified herein, and are supportive of the SOW when referenced in section 3.0 and beyond can be found in Annex D (Applicable Documents) to the MRR RFP.

Information

3. PROJECT MANAGEMENT

3.1. General

- 3.1.1. In performing and managing this work, the Contractor shall apply accredited project management principles.

CS: YES

3.2. Project Management Plan

- 3.2.1. The Contractor shall establish and maintain a project management plan to coordinate all plans and activities required to meet the requirements of this SOW. The Contractor shall prepare and submit a Project Management Plan (PMP) in accordance with CDRL 1278-PMP-001 and DID 1278-PMP-001.

CS: YES

3.3. Contract Award Meeting

- 3.3.1. The Contractor shall conduct a meeting at the Contractor facilities within 30 days after contract award to discuss schedule and work, as well as milestones and deliverables.

CS: YES

- 3.3.2. The Contractor shall prepare and submit an agenda in accordance with (IAW) CDRL 1278-PMR-003 and DID 1278-PMR-003 and meeting minutes IAW CDRL 1278-PMR-004 and DID 1278-PMR-004 for this meeting.

CS: YES

3.4. Progress Review Meetings

- 3.4.1. The Contractor shall conduct a Progress Review Meeting (PRM) at the Contractor's facilities on a quarterly basis or on a schedule agreed to by Canada and the Contractor. Any design and technical review meetings required will be integrated with the progress review meetings.

CS: YES

- 3.4.2. The Contractor shall prepare and submit an agenda IAW CDRL 1278-PMR-003 and DID 1278-PMR-003 and meeting minutes IAW CDRL 1278-PMR-004 and DID 1278-PMR-004 for this meeting.

CS: YES

3.5. Unscheduled Meetings

- 3.5.1. Other meetings may be requested by the Contractor, Contracting Authority (CA) or the Technical Authority (TA) when issues arise that need to be solved. Upon agreement between all parties that such a meeting is required, the Contractor shall participate in the unscheduled meeting.

CS: YES

- 3.5.2. The Contractor shall prepare and submit an agenda IAW CDRL 1278-PMR-003 and DID 1278-PMR-003 and meeting minutes IAW CDRL 1278-PMR-004 and DID 1278-PMR-004 for this meeting.

CS: YES

3.6. Post Delivery and Equipment Support Services Meeting

- 3.6.1. The Contractor shall host a meeting after the last major equipment delivery is complete at a time mutually agreed to by Canada and the Contractor to discuss outstanding issues.

CS: YES

- 3.6.2. The Contractor shall prepare and submit an agenda IAW CDRL 1278-PMR-003 and DID 1278-PMR-003 and meeting minutes IAW CDRL 1278-PMR-004 and DID 1278-PMR-004 for this meeting.

CS: YES

3.7. Progress Reports

- 3.7.1. The Contractor shall prepare and submit progress reports IAW CDRL 1278-PMR-002 and DID 1278-PMR-002 for the duration of the contract.

CS: YES

3.8. Final Report

- 3.8.1. The Contractor shall prepare and submit a Final Report at the end of the contract in same format as the progress reports IAW CDRL 1278-PMR-002 and DID 1278-PMR-002.

CS: YES

4. SYSTEMS ENGINEERING

4.1. General

- 4.1.1. The Contractor shall maintain system engineering planning and management to ensure that all engineering requirements are met.

CS: YES

- 4.1.2. The Contractor shall develop the system design requirements to meet the technical, performance, functional and environmental requirements detailed in the System Performance Specification at Appendix A1.

CS: YES

- 4.1.3. Reserved

4.2. Product Specification

- 4.2.1. The Contractor shall prepare and submit a Product Specification in accordance with CRDL 1278-SES-001 and DID 1278-SES-001.

CS: YES

- 4.2.2. The Contractor shall prepare and submit a Software Description in accordance with CDRL 1278-SWS-001 and DID 1278-SWS-001.

CS: YES

4.3. Technical Investigation and Engineering Services

- 4.3.1. The Contractor shall provide Technical Investigations and Engineering Services (TIES) support, on an as required basis, as per the contract. Support for engineering, training, and repairs are general examples of TIES.

CS: YES

4.4. System Engineering Design Review Meetings Guidance

- 4.4.1. Design reviews shall be held when all the documentation leading to the review has been completed and delivered to the Technical Authority (TA) for review.

CS: YES

4.4.2. Preliminary Design Review

- a. The purpose of the Preliminary Design Review (PDR) is to review the conceptual design of any modifications, changes and enhancements to the specifications or any TIES tasks to ensure that the planned technical approach will meet the requirements.

CS: YES

- b. The risks will be identified and mitigation of these risks will be planned. If identified risks pose problems with the feasibility of the design the PDR will be delayed until sufficient design and testing is completed to prove feasibility.

CS: YES

- c. The PDR will be presented by the Contractor with the use of visual aids and conceptual design that has been implemented in an actual model or modelling software.

CS: YES

4.4.3. Critical Design Review

- a. The purpose of the Critical Design Review (CDR) is to review the detailed design of any modifications, changes and enhancements to the specifications or any TIES tasks to ensure that the design implementation has met the requirements.

CS: YES

- b. The risks will be identified and mitigation of these risks will be planned. If identified risks pose problems with the design implementation the CDR will be delayed until sufficient implementation and testing is completed to prove the path to final implementation.

CS: YES

4.5. First Article

- 4.5.1. The Contractor shall produce a first article of the MRR that meets the System Performance Specification at Appendix A1.

CS: YES

- 4.5.2. The first article shall be tested to ensure the design goals of the design task have been met and that the MRR as a whole meets the System Performance Specifications.

CS: YES

4.6. First Article Testing

- 4.6.1. The Contractor shall prepare and submit a First Article Test Procedures IAW CDRL 1278-SES-002 and DID 1278-SES-002.

CS: YES

- 4.6.2. When the test procedures are approved, the Contractor shall execute the required tests in accordance with the schedule.

CS: YES

- 4.6.3. A First Article Test Report shall be prepared and submitted IAW CDRL 1278-SES-003 and DID 1278-HWT-009.

CS: YES

4.7. Air Surveillance Integration with LCSS

- 4.7.1. Reserved.

- 4.7.2. Reserved

- 4.7.3. The Contractor shall prepare and submit an Interface Control Document (ICD) of the MRR System for the Air Surveillance communications interface including alarm messages in accordance with CDRL 1-SES-007 and DID 1278-SES-006.

CS: YES

- 4.7.4. Reserved

4.8. Weapon Locating Integration with LCSS

- 4.8.1. Reserved

- 4.8.2. Reserved

- 4.8.3. The Contractor shall prepare and submit an Interface Control Document (ICD) of the weapon locating part of the MRR System for the communications interface to the Canadian Forces LCSS including alarm messages in accordance with CDRL 1-SES-006 and DID 1278-SES-006.

CS: YES

- 4.9. Reserved

- 4.10. Reserved

4.11. Acceptance Test Procedures

- 4.11.1. The Contractor shall prepare and submit an acceptance test plan IAW CDRL 1278-HWT-008 and DID 1278-HWT-008. The acceptance test should be a subset of the first article test.

CS: YES

- 4.11.2. Upon approval of the test plan by the TA, the Contractor shall execute the approved acceptance tests.

CS: YES

- 4.11.3. The Contractor shall prepare and submit an Acceptance Test Report IAW CDRL 1278-HWT-009 with DID 1278-HWT-009.

CS: YES

4.12. Radio Frequency Safety

4.12.1. General

- a. Canadian Forces Technical Order (CFTO) C-55-040-001/TS-001 and Health Canada Safety Code 6 provide guidance on the safety procedures to be applied for all equipment used by the CF that radiates radio frequency energy.

Information

- b. Subject matter experts (SME) of Canada will perform RADHAZ Tests in accordance with these requirements.

Information

- c. The Contractor shall support the SME during all RADHAZ tests. Support will include operation and maintenance.

CS: YES

- d. The maximum time required for the RADHAZ test is expected to be 2 days or less.

CS: YES

- e. The Contractor will select and provide the site for testing.

CS: YES

4.12.2. Radio Frequency Survey

- a. The Contractor shall provide support to a Radiation Frequency Survey of the MRR system.

CS: YES

- b. This support shall include personnel to operate the equipment, a location to conduct the test where the equipment can radiate at full power over its full frequency range and the necessary authorizations and clearances to operate the system.

CS: YES

- c. This maximum time required for the Radio Frequency Survey is expected to be 2 days or less.

CS: YES

- d. The Contractor will select and provide the site for testing.

CS: YES

4.13. High Voltage Safety

- 4.13.1. For any components within the system that generate high voltages, warnings shall be prominently visible whenever personnel are or can be exposed to these voltages.

CS: YES

4.14. Hazardous Material

- 4.14.1. For any components in the MRR that contain hazardous materials, there shall be appropriate warnings on the component.

CS: YES

- 4.14.2. The Contractor shall provide Material Safety Data Sheets (MSDS) for any such materials as part of the proposal.

CS: YES

4.15. Radioactive Materials

- 4.15.1. If the MRR contains any radioactive materials the Contractor shall provide a Material Safety Data Sheet (MSDS) for such materials as part of the proposal.

CS: YES

4.16. Radio/Radar Frequency Management

- 4.16.1. All radio frequency (RF) equipment used in the MRR system will be certified (or be granted Spectrum Supportability by Industry Canada (IC)) and licensed for use in Canada.

Information

- 4.16.2. DND will apply for certification and licensing.

Information

- 4.16.3. The Contractor's shall ensure that all MRR System equipment is certifiable for use in Canada.

CS: YES

- 4.16.4. The Contractor shall allow for a change in channels within the designed frequency range of the equipment.

CS: YES

- 4.16.5. If the MRR System RF equipment does not have an Industry Canada Technical Acceptance Certificate (TAC), the Contractor is responsible to ensure that the equipment is compatible with existing systems in Canada, which conform to the applicable Industry Canada policies, plans, circulars, procedures and

specifications. These documents are available on the Industry Canada web site at http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf01841.html

CS: YES

4.17. Application for Spectrum Supportability

- 4.17.1. The Contractor shall properly complete DND 552 Forms “Application for Spectrum Supportability” (attached as Appendix A3) for each type of RF equipment, and submit them as a deliverable item with the proposal in order to support the live fire evaluation.

CS: YES

- 4.17.2. The values entered on the DND 552 form shall be measured values.

CS: YES

- 4.17.3. Where the values have not been measured, specified values may be substituted for measured values on the DND 552 form. However, before radio licences are issued, the Contractor shall conduct measurements to confirm that the actual equipment conforms to the specified values on the submitted DND 552 forms, and notify DND of any discrepancies.

CS: YES

- 4.17.4. If the MRR System equipment is in use by the US military it may already have a US DoD Form 1494. If available, a DoD 1494 form will be accepted in lieu of a DND 552 form.

Information

- 4.17.5. Industry Canada will assess each DND 552 form and grant or deny authorization to use the equipment in Canada. Industry Canada may stipulate conditions of use.

Information

4.18. Frequency Support - Additional Documentation

- 4.18.1. The Contractor shall prepare and submit any additional documentation to the TA that is required to support the licence application procedure, such as Letters of Intent and Engineering Briefs.

CS: YES

4.19. Frequency Support - Contractor's Responsibility

- 4.19.1. The Contractor's shall ensure that all MRR System equipment is certifiable by Industry Canada and can meet all requirements.

CS: YES

- 4.19.2. The Contractor shall ensure that any RF equipment that is substituted or modified remains certifiable throughout the project and during contracted operations.

CS: YES

4.20. Field Service Representatives (FSR)

- 4.20.1. The Contractor shall provide, when tasked, one (1) FSR to the primary MRR System unit, 4 AD Regt, located at Canadian Forces Base Gagetown, New Brunswick, for variable and optional periods as outlined in the ISS SOW at Annex B.

CS: YES

- 4.20.2. Options shall exist for an additional FSR in the event of any international operational deployment.

CS: YES

- 4.20.3. The FSR will be required to assist and provide additional operator training, first and second level maintenance of the MRR.

CS: YES

5. INTEGRATED LOGISTICS SUPPORT (ILS)

5.1. General

- 5.1.1. Integrated Logistics Support (ILS) shall be designed to provide for the required operational availability of the MRR Systems as defined in the In Service Support document (Annex B).

CS: YES

- 5.1.2. Canada's MRR System Operators will perform operator maintenance on the MRR Systems in accordance with Contractor direction, technical manuals and publications.

CS: YES

- 5.1.3. Canada's MRR System Technicians will perform preventative and corrective maintenance on the MRR Systems in accordance with Contractor direction, technical manuals and publications.

CS: YES

5.2. Supplementary Documents

- 5.2.1. In addition to the documents referenced in this section on Logistics Support, all other supplementary documents are listed at Annex D.

Information

5.3. ILS Plan

- 5.3.1. The Contractor shall prepare and submit a draft ILS Plan in accordance with CDRL 1278-ILS-001 and DID 1278-ILS-001 with their proposal.

CS: YES

- 5.3.2. The draft ILS Plan shall detail the general support concept and concept of operations of the MRR Systems.

CS: YES

- 5.3.3. The ILS Plan shall include detailed Contractor maintenance and support concepts, training and maintenance activities, and, if available, an explanation of the Logistics Support Analysis (LSA) methodology used to develop the support concept.

CS: YES

5.4. Maintenance Concept

- 5.4.1. Canada's maintenance concept consists of three levels of maintenance:
- a. First Level Maintenance (Operator). The level of maintenance will be performed by the MRR System Operator. It will consist of preventative maintenance, visual inspection and system self-diagnostics tests and any other task in accordance with Contractor approved maintenance procedures.
 - b. Second Level Maintenance (Technician). This level of maintenance will be performed by the MRR System Technician. It will consist of any preventative or corrective maintenance that is deemed to be beyond Operator Maintenance in the Contractor's maintenance plan and may require a protected workshop area to perform the maintenance. It will also include the loading of software, replacement and the testing of faulty Line Replaceable Units (LRU) before return to the Contractor for repair. Second Level Maintenance will be done in accordance with Contractor approved maintenance procedures.
 - c. Third Level Maintenance (Contractor). This level of maintenance will be performed by the Contractor and consist of any repairs, upgrades, modifications and LRU replacement that are beyond first and second levels of maintenance.

Information

5.5. Maintenance Plan

- 5.5.1. The Contractor shall prepare and submit a maintenance plan in accordance with Canada's maintenance concept and in accordance with CDRL 1278-ILS-002 and DID 1278-ILS-002.

CS: YES

- 5.5.2. The Contractor shall provide all appropriate technical publications required by the CF MRR System Operators and Technicians for the safe and effective performance of the maintenance procedures.

CS: YES

5.6. Recommended Spare Parts List

- 5.6.1. The Contractor shall prepare and submit the Recommended Spare Parts List (RSPL) in accordance with CDRL 1278-ILS-003 and DID 1278-ILS-003.

CS: YES

- 5.6.2. The RSPL shall be based on the mean time between failure (MTBF) data arising from engineering, design and actual operational usage data on component failure rates.

CS: YES

5.7. Initial Provisioning

- 5.7.1. The approved RSPL shall be the basis of options for the Contractor to provide the approved quantity of repair parts, spares and consumables under this and/or other contract(s) that are/may be associated with the MRR.

CS: YES

5.8. Tooling and Test Equipment

- 5.8.1. The Contractor shall identify all test equipment necessary to perform first and second level maintenance.

CS: YES

- 5.8.2. Test equipment includes General Purpose Test Equipment, Special Purpose Test Equipment, General Purpose Tools for Maintenance, and Special Purpose Tools

for Maintenance. Test equipment is used to inspect, repair, assemble, disassemble, test and otherwise maintain the system.

Information

- 5.8.3. Special Tools and Test Equipment (STTE) consists of Special Purpose Test Equipment and Special Purpose Tools for Maintenance.

Information

- 5.8.4. The Contractor shall provide any STTE necessary to perform first and second level maintenance.

CS: YES

- 5.8.5. The STTE shall be either part of the MRR System or part of a separate tool kit.

CS: YES

- 5.8.6. The Contractor shall prepare and submit a STTE List in accordance with CDRL 1278-ILS-004 and DID 1278-ILS-004.

CS: YES

- 5.8.7. The approved STTE List shall be the basis of options for the Contractor to provide the STTE under this and/or other contract(s). The STTE shall be delivered no later than the delivery of the first MRR System.

CS: YES

- 5.8.8. The Contractor shall be responsible to provide all test equipment throughout the training phase, as all test equipment delivered under the terms of the contract shall be delivered and deemed in-use and unavailable for training.

CS: YES

5.9. Operation and Technical Publications

- 5.9.1. The Contractor shall provide all technical publications and documentation required by CF technicians/operators in theatre and training locations to enable safe and effective performance of the applicable maintenance tasks and proper system training and operation.

CS: YES

- 5.9.2. Technical publications and documentation shall include, but not be limited to, the following:

- a. Detailed system setup and teardown procedures, and all MRR System Operating Instructions, System Operating Limitations, System Emergency Procedure documentation/checklists, System Maintenance Instructions manuals, etc;
- b. All Technical Publications, including System Maintenance Instructions and supporting manuals and documentation required for system maintenance and logistics support; and
- c. All Interface Control Documents (ICDs) required for Land Command Support System (LCSS).

CS: YES

- 5.9.3. The Contractor shall prepare and submit the operation and technical publications in indexed electronic format in accordance with CDRL 1278-ILS-005 and DID 1278-ILS-005.

CS: YES

- 5.9.4. Updates to the publications shall be provided by the Contractor when there are equipment or procedural changes.

CS: YES

5.10. Training

- a. The Contractor shall prepare and submit the Training Master Plan (TMP) IAW CDRL 1278-ILS-006 and DID 1278-ILS-006.

CS: YES

- b. The training delivered under this TMP will be sufficient enough to enable CF MRR System operators and technicians to operate, manage and maintain the MRR Systems (up to Level 2 maintenance) without Contractor assistance.

CS: YES

5.10.2. Task Analysis

- a. The Contractor shall identify the MRR operator, system management and maintenance tasks that are required to use, manage and maintain the MRR IAW CDRL 1278-ILS-007 and DID 1278-ILS-007.

CS: YES

- b. The Contractor shall define the minimum level of qualifications required of the individual performing the task for which the training was identified.

CS: YES

- c. Training shall be detailed enough to provide MRR personnel the ability to operate, manage and maintain (less Contractor maintenance) the MRR without Contractor assistance.

CS: YES

- d. The outcome of the analysis of training shall result in performance objectives and performance checks as described by A-P9-050-000/PT-003, Analysis of Instructional Requirements.

CS: YES

- e. The Contractor shall prepare and submit a list of the performance objectives (PO) and performance enabling/checks and rating criteria IAW CDRL 1278-ILS-008 and DID 1278-ILS-008.

CS: YES

5.10.3. Training Design and Development

- a. The Contractor shall analyze each performance objective to determine supporting skills, knowledge and aptitudes required to achieve it. The outcome shall be the specification of course content (enabling objectives), lesson plans, training resource list and a course timetable. This work is to be completed in accordance with A-P9-050-000/PT-004, Design of Instructional Programmes and A-P9-050-000/PT-005, Development of Instructional Programmes. This material shall be grouped together to form a Training Package and be prepared and submitted IAW CDRL 1278-ILS-009 and DID 1278-ILS-009.

CS: YES

5.10.4. Training Management

- a. An initial Training Working Group (TWG) meeting shall be convened as part of the Contract Award Meeting to provide a forum for the discussion and resolution of training development issues.

CS: YES

- b. The TWG shall include a briefing by the Contractor on the draft Training Master Plan. Subsequent meetings shall be convened as required.

CS: YES

5.10.5. Recommended Training Materials List (RTML)

- a. The Contractor shall prepare and submit an RTML in accordance with CDRL 1278-ILS-010 and DID 1278-ILS-010 to include training material, training aids, and any other equipment that is deemed necessary for the establishment of CF-conducted MRR System operator, maintenance and technical training.

CS: YES

- b. Any physical items on the RTML shall be delivered at least thirty (30) days prior to the start of the Contractor training.

CS: YES

5.10.6. Language

- a. The training and training material shall be provided in the English language.

CS: YES

5.10.7. Conduct of Training

- a. System Instructor Training. The Contractor shall provide one (1) serial of training IAW the approved Training Plan consisting of a course load of approximately ten (10) CF personnel for purpose of training MRR System instructors from the Royal Canadian Artillery School (RCAS), 4 Air Defence Regiment (4 AD Regt) and the Project Management Office (PMO).

CS: YES

- b. The training shall be conducted at a time mutually agreeable to the Contractor and DND but no later than 6 weeks after the date of the delivery of the first operational system.

CS: YES

- c. System Operator Training. Following the completion of Instructor Training, the Contractor shall conduct one (1) serial of operator training IAW the approved Training Plan consisting of a course load of approximately ten (10) CF personnel with the newly trained CF instructors involved as observers.

CS: YES

- d. The Contractor shall supervise an additional two (2) serials of system operator training conducted by the CF instructors.

CS: YES

- e. System operator training for these serials will be completed not later than four (4) months after delivery of the first operational System.

CS: YES

- f. Technical Training. If CF technicians perform maintenance actions as part of the Maintenance Plan, the Contractor shall provide one (1) serial of maintenance training consisting of a course load of approximately ten (10) CF personnel for the purpose of training technical instructors not later than six (6) months after the delivery of the first operational system.

CS: YES

5.10.8. Contractor Training Support

- a. The Contractor shall provide total system support as required to maintain equipment functionality during all training serials thereby minimizing any interruption to the conduct of training.

CS: YES

5.10.9. Location of Training

- a. The Contractor shall conduct training at Canadian Forces Base Gagetown, New Brunswick, Canada.

CS: YES

5.10.10. Monitoring Training

- a. The Contractor shall allow for a representative of the TA to monitor the training to ensure that the delivery of the training serials is compliant with this SOW.

CS: YES

5.11. Packaging and Handling, Storage and Transportation

- 5.11.1. Equipment delivery, including the spares, shall be in containers that meet the International Air Transport Association (IATA) dimension standards. Items shall be packaged to best commercial standard. The Contractor shall identify items that are dangerous air cargo as defined by the International Civil Aviation Organization (ICAO), "Technical Instructions for the Safe Transport of Dangerous Goods by Air", 2003-2004 Edition, published by the International Civil Aviation Organization (ICAO) http://www.tc.gc.ca/acts-regulations/GENERAL/T/tdg/regulations/tdg001/part_1.htm.

CS: YES

- 5.11.2. All packaging for spares shall meet with best commercial pack standard meeting environmental conditions and clearly identifying both quantity and part number on both inner pack and outer pack.

CS: YES

- 5.11.3. When multiple line items are packed in a single container, a listing of all line items shall be clearly affixed to the outer pack and a separate list provided inside the outer pack detailing the inventory of the larger outer pack.

CS: YES

- 5.11.4. No single outer pack of multiple spares shall be boxed larger than a one (1) meter cube box and weigh more than 30 kg.

CS: YES

5.12. Life Cycle Product Support

5.12.1. Software Life Cycle Support

- a. Support of software by the Contractor including upgrades and improvements to the software system stability shall be provided as part of the warranty for one (1) year.

CS: YES

- b. Major software upgrades that represent a significant increase in system capability shall be presented by the Contractor as an option to the TA when available.

CS: YES

5.13. Identification Markings of the MRR

- 5.13.1. The Contractor shall assign unique item identifiers (UII) to accountable hardware and software items.

CS: YES

- 5.13.2. The Contractor shall ensure that 'unique item identifiers' are marked on hardware, on software media, embedded in software code and electronically embedded in alterable firmware.

CS: YES

- 5.13.3. The Contractor shall identify serialized defense materiel with Unique Item Identifiers (UII) as mandated by: A-LM-505-702/JS-001 Materiel Management Instructions, Materiel Management Instruction (MMI 1702) – Unique Identification And Standardized Marking Of Materiel and as described in draft DAOD 3010-0. The implementation of the requirements identified in draft DAOD 3010-0 shall be in accordance with draft DAOD 3010-1 and NATO STANAG 2290. All accountable hardware and software shall be serialized.

CS: YES

- 5.13.4. The Contractor shall generate UIIs in accordance with DAOD 3010-0, DAOD 3010-1 and NATO STANAG 2290 for items selected by the TA.

CS: YES

- 5.13.5. The Contractor shall:

- a. affix the assigned UII to each respective item prior to the DND or the CF acceptance of materiel in accordance with DAOD 3010-0, DAOD 3010-1 and NATO STANAG 2290;

CS: YES

- b. apply and position markings in accordance with D-02-002-001/SG-001; and C-02-006-002/AG-000, Information Markings on Canadian Forces Equipment; and

CS: YES

- c. ensure markings in effect at the date of contract award are of such quality as to remain machine readable for the expected life of the item.

CS: YES

- 5.13.6. The Contractor shall make available electronically the following identification data set elements:

- a. EID;
- b. UID;
- c. original part number;
- d. original batch and lot number;
- e. serial number;
- f. current part number;
- g. current batch and lot number;
- h. item description;

- i. NATO Stock Number (NSN) or permanent stock control number PSCN) (when available);
- j. contract number;
- k. contract line number;
- l. ship-to location;
- m. ship date;
- n. unit of purchase;
- o. weight;
- p. volume;
- q. height;
- r. depth; and
- s. width.

CS: YES

5.13.7. The Contractor shall apply and position markings on interior containers and shipping containers per Paragraphs 3.7.1, 3.10.2, 3.11.1 and 3.11.9 of D-LM-008-002/SF-001 and as detailed below:

- a. On Shipping Containers:
 - i. apply the following markings in human readable format:
 - (1) Identification Markings:
 - NATO Stock Number;
 - Nomenclature;
 - Quantity / Unit of Issue;
 - Protection and date markings; and
 - Contract Serial Number (as shown on the Contract).
 - (2) Special Markings:
 - Manufacturer's Part Number; and

- Manufacturer's Batch / Lot Number.

CS: YES

- ii. apply the following markings using a GS1-128 linear barcode, with the data replicated in human readable form beneath the barcode:

- (1) NATO Stock Number;
- (2) Contract Serial Number;
- (3) Manufacturer's Part Number; and
- (4) Manufacturer's Batch / Lot Number.

CS: YES

- b. On Interior Containers, including unit packs:

- i. apply the following markings in human readable format:

- (1) Identification Markings:
 - NATO Stock Number;
 - Nomenclature;
 - Quantity / Unit of Issue;
 - Protection and date markings;
 - Contract Serial Number (as shown on the Contract); and
 - Serial Number(s).
- (2) Special Markings:
 - Manufacturer's Part Number; and
 - Manufacturer's Batch / Lot Number.

CS: YES

- ii. apply the following markings using a GS1-128 linear bar code, with the data replicated in human readable form beneath the barcode:

- (1) NATO Stock Number;
- (2) Contract Serial Number;
- (3) Manufacturer's Part Number;
- (4) Manufacturer's Batch / Lot Number; and
- (5) Serial Number(s).

CS: YES

- iii. apply the Unique Item Identifier marking(s) using a PDF 417 barcode in accordance with STANAG 2290.

CS: YES

- 5.13.8. Barcodes shall be applied to the outside of any packaging material through which the barcode is not easily machine readable.

CS: YES

5.14. Configuration Management

- 5.14.1. While the principles of configuration management apply to both hardware and software, there are differences in the implementation and thus a separate process will be necessary for software configuration management.

CS: YES

- 5.14.2. The Contractor shall prepare and submit a Configuration Management (CM) Plan in accordance with CDRL 1278-ILS-011 and DID 1278-ILS-011.

CS: YES

- 5.14.3. The Contractor shall perform configuration management in accordance with the approved CM plan throughout the acquisition and in-service phases of this contract.

CS: YES

- 5.14.4. Contractor-initiated changes to the configuration of the system as delivered (accepted baseline), including replacement of delivered repair parts, spares, and consumables, modifications to systems, and changes to publications are to the account of the Contractor for the period of the contract.

CS: YES

- 5.14.5. The Contractor shall recommend for DND approval which items be designated as configuration items, using criteria presented in the Contractor's CM Plan.

CS: YES

- 5.14.6. The Contractor shall identify the configuration baselines that will be used to manage the product configuration, and subsequently use these baselines to maintain configuration control.

CS: YES

- 5.14.7. The Contractor shall determine (and subsequently prepare) the configuration documentation needed to define each configuration baseline for each type of configuration item.

CS: YES

- 5.14.8. The configuration documentation will progressively define functional requirements, design constraints, interface characteristics, test requirements and other technical data required in the project.

CS: YES

- 5.14.9. The Contractor shall establish an engineering release system for configuration documentation, and use that system to issue the correct and current configuration documentation for use by functional activities (such as test and evaluation, maintenance planning and production).

CS: YES

- 5.14.10. The Contractor shall maintain traceability between product units and their respective manuals, warranties and life cycle support obligations.

CS: YES