Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

Part - Partie 1 of - de 2
See Part 2 for Clauses and Conditions
Voir Partie 2 pour Clauses et Conditions

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 0B2 / Noyau 0B2
Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776

LETTER OF INTEREST
LETTRE D'INTÉRÊT

Title - Sujet	
RFI V-Div Radio Renewal	
Solicitation No. - N° de l'invitation	**Date**
M7594-193400/A	2018-12-14
Client Reference No. - N° de référence du client	**GETS Ref. No. - N° de réf. de SEAG**
M7594-193400	PW-$$QD-042-27110
File No. - N° de dossier	**CCC No./N° CCC - FMS No./N° VME**
042qd.M7594-193400	

Solicitation Closes - L'invitation prend fin	**Time Zone**
at - à **02:00 PM**	**Fuseau horaire**
on - le 2019-01-30	Eastern Standard Time EST

F.O.B. - F.A.B.

Plant-Usine: ☐ **Destination:** ☐ **Other-Autre:** ☐

Address Enquiries to: - Adresser toutes questions à:	**Buyer Id - Id de l'acheteur**
Michalski, Adam	042qd
Telephone No. - N° de téléphone	**FAX No. - N° de FAX**
(819) 420-0730 ( )	( ) -

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:

Specified Herein
Précisé dans les présentes

Comments - Commentaires

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**
See Herein	

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Raison sociale et adresse du fournisseur/de l'entrepreneur

Telephone No. - N°de téléphone
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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

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**

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Destination Code - Code destinataire	Destination Address - Adresse de la destination	Invoice Code - Code bur.-comptable	Invoice Address - Adresse de facturation
D - 1	RCMP / GRC - NATIONAL RADIO SERVICES 1200 VANIER PARKWAY, CPIC BLDG. MAILSTOP # 16 OTTAWA, ONTARIO K1A 0R2 ATTN: JIAN ZHOU 949-7429	I - 1	RCMP / GRC - NATIONAL RADIO SERVICES 1200 VANIER PARKWAY, MAILSTOP # 16 OTTAWA, ONTARIO K1A 0R2 ATTN: PCS

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Public Works and Government Services Canada

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Document No.M7594-193400/A

Item Article	Description	Dest. Code Dest.	Inv. Code Fact.	Qty Qté	U. of I. U. de D.	Unit Price/Prix unitaire FOB/FAM			Delivery Req. Livraison Req.	Del. Offered Liv. offerte
						Destination	Plant/Usine			
1	RFI V-Div Radio Renewal	D - 1	I - 1	1	Each	$	$		See Herein	

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Request for Information (RFI)
M7594-193400

TITLE: Radio Modernization, RCMP V Division, Nunavut

1. Purpose and Nature of the Request for Information (RFI)

Public Services and Procurement Canada (PSPC) is requesting Industry feedback regarding RCMP V Division Land Mobile Radio modernization in Nunavut. (detailed in the attached Statement of Requirement (SOR) for the Royal Canadian Mounted Police.

The objectives of this RFI are to:

1) Collect information from Industry regarding ability to provide, maintain and repair the equipment as detailed in the SOR;
2) Use the information and feedback obtained to help develop a potential, future RFP;
3) Provide Industry information about the requirement and obtain suggestions and feedback.

This RFI is neither a call for tender nor a Request for Proposal (RFP). No agreement or contract will be entered into based on this RFI. The issuance of this RFI is not to be considered in any way a commitment by the Government of Canada, nor as authority to potential Respondents to undertake any work that could be charged to Canada. This RFI is not to be considered as a commitment to issue a subsequent solicitation or award contract(s) for the work described herein.

Although the information collected may be provided as commercial-in-confidence (and, if identified as such, will be treated accordingly by Canada), Canada may use the information to assist in drafting performance specifications (which are subject to change) and for budgetary purposes.

Respondents are encouraged to identify, in the information they share with Canada, any information that they feel is proprietary, third party or personal information. Please note that Canada may be obligated by law (e.g. in response to a request under the Access of Information and Privacy Act) to disclose proprietary or commercially-sensitive information concerning a respondent (for more information: http://laws-lois.justice.gc.ca/eng/acts/a-1/).

Respondents are asked to identify if their response, or any part of their response, is subject to the Controlled Goods Regulations.

Participation in this RFI is encouraged, but is not mandatory. There will be no short-listing of potential Suppliers for the purposes of undertaking any future work as a result of this RFI. Similarly, participation in this RFI is not a condition or prerequisite for the participation in any potential subsequent solicitation.

Respondents will not be reimbursed for any cost incurred by participating in this RFI.

The RFI closing date published herein is not the deadline for comments or input. Comments and input will be accepted any time up to the time when/if a follow-on solicitation is published.

2. Background Information:

The Territory of Nunavut is referred to as "V" Division by the Royal Canadian Mounted Police (RCMP). The RCMP V Division is responsible for two areas of law enforcement throughout V Division. These areas of responsibility include:

      a) Federal and contract policing by Parliamentary Act.
      b) Policing by federal Act.

Working in Nunavut is susceptible to logistic challenges such as high shipping costs, time, lack of sunlight, harsh environment, lack of accommodations in the remote communities, etc.

The RCMP currently operates radio systems in V Division which serves mission critical communication needs of 124 RCMP members in Iqaluit and other 24 remote communities (25 detachments, 2 Operational Communication Centres (OCCs)). The satellite network links are used to backhaul the radio sites to OCCs. The satellite network performance metrics are listed in section d).

    a)   The current VHF radio system is RCMP owned and it is based on Radio Over IP system-of-systems configuration. This includes conventional analog radio system with Daniels/Codan MT4E repeaters, RCMP/Shared Services Canada (SSC) IP backbone (satellite links), radio switches and Intertalk IP based consoles.
    b)   Currently, SSC has upgraded seven (7) sites (Baker Lake, Cambridge Bay, Cape Dorset, Igloolik, Kimmirut, Broughton Island and Rankin Inlet) to the new satellite network system.
    c)   The remaining 17 sites are using the existing satellite system. They will be upgraded to the new satellite network system by SSC.
    d)   The network performance metrics for the existing and the new satellite links are:

	Existing satellite network system	New satellite network system
Round trip latency	1600 ms	700 ms
QoS	Not offered	Yes
Packet Loss	2% packet loss per month	None
Jitter	100 ms	25 ms
Bandwidth	1.5 Mbps downstream 768 Kbps upstream	2.8 Mbps downstream 2 inbound up to 1.35Mbps carriers.

The radio switch and equipment associated with the primary divisional dispatch site is located at the Divisional Operation Communication Center (DOCC) in the Iqaluit detachment. This site hosts five (5) operator consoles.

The backup radio switch and all hardware associated with the redundant divisional dispatch site is located at a geographically diverse location within Iqaluit. This site serves two (2) operator consoles.

3. **Potential Work Scope and Constraints:**

The scope for the potential work would be met by delivering a Project 25 (P25) digitally communication encrypted network system for the purpose of modernizing the existing radio system that is currently in use in the Territory of Nunavut.

The new radio system may use the existing and or the new satellite network links to backhaul radio sites to OCCs. The new radio system performance will be subject to the satellite network link performance.

4. **Legislation, Trade Agreements, and Government Policies:**

The following is indicative of some of the legislation, trade agreements and government policies that could impact any follow-on solicitation(s):

a) Canadian Free Trade Agreement (CFTA)
b) Controlled Goods Program (CGP)
c) Federal Contractors Program for Employment Equity (FCP-EE)
d) Nunavut Land Claims Agreement (NLCA)

5. **Schedule:**

In providing responses, the following schedule should be utilized as a baseline:

Letter of Offer (LOI) Closing Date: Thursday, January 31, 2019
Industry Day and One-on-One sessions: Wednesday, January 16, 2019
Registration closing date: Friday, January 11, 2019

Canada may modify the above timeline anytime as necessary.

6. **Important Notes to Respondents:**

Interested Respondents may submit their responses to the PSPC Contracting Authority, identified below, preferably via email:

Name: Adam Michalski
Title: Supply Team Leader
Public Services and Procurement Canada
Acquisitions Branch
Electronics, Munitions and Tactical Systems Procurement Directorate
Address: 11 rue Laurier, Gatineau, QC K1A 0S2
Telephone: 819-420-0730
Facsimile: 819 – 956 - 0636

E-mail: Adam.Michalski@tpsgc-pwgsc.gc.ca

A point of contact for the Respondent should be included in the package.

Changes to this RFI may occur and will be advertised on the Government Electronic Tendering System. Canada asks Respondents to visit Buyandsell.gc.ca regularly to check for changes, if any.

Responses should also address:

- The estimated cost of providing the equipment and or services to meet this Statement of Requirement.

- The ability of the Respondent to meet this Statement of Requirement.

- Any constraints that could affect the ability of the Respondent to meet this Statement of Requirement

- Any additional information the RCMP should consider prior to proceeding with an RFP

Depending on the feedback received, PSPC may post a draft RFP.

7. **Closing date for the RFI:**

Responses to this LOI are to be submitted to the PSPC Contracting Authority identified above, on or before, Thursday, January 31, 2019.

In order to participate in the Industry Day and or one-on-one meetings all interested suppliers must register with the Contracting Authority via e-mail: adam.michalski@tpsgc-pwgsc.gc.ca.

Attachments: Statement of Requirement for Radio Modernization, RCMP V Division, Nunavut

Statement of Requirement

Radio Modernization, RCMP V Division, Nunavut

Land Mobile Radio

National Radio Services

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GENERAL

1.1   RESPONSE TO THIS REQUIREMENT

1.1.1   (I) The Respondent is requested to respond to the requirements listed in this specification in accordance to the following instructions:

a)   If a requirement is marked as "(M)" for mandatory, the Respondent must indicate whether their response is fully compliant, or non-compliant;

b)   If a requirement is marked as "(R)" for response, the Respondent should provide a detailed response to the information requested;

c)   Items marked with a "(I)" for information, the Respondent is asked to provide information pertinent to the development of a response to this technical specification. For items marked as "(I)", the Respondent should indicate at a minimum "Read and Understood"; and

d)   For any "(I)" item where the response has been left blank, it will be assumed that the Respondent has read and understood the item. It is the Respondent's responsibility to seek clarification of items that the Respondent does not understand or that are susceptible to more than one interpretation.

1.1.2   (R) Respondents may identify currently deployed systems or solutions that are similar to the one being sought by the RCMP. Respondents should identify if these systems may be visited by RCMP representatives.

1.1.3   (I) This RFI is issued solely for information purposes and may or may not be followed by any further procurement action.

1.1.4   (I) Respondents are solely responsible for their expenses in preparing a response to this RFI and any other related activities including presentations.

1.1.5   (I) All information and documents submitted by the Respondents will be treated in strict confidence.

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BACKGROUND

1.2   (I) The Territory of Nunavut is referred to as "V" Division by the Royal Canadian Mounted Police (RCMP). The RCMP is responsible for two areas of law enforcement throughout V Division. These areas of responsibility include:

      a)   Federal and contract policing by Parliamentary Act.

      b)   Policing by federal Act.

1.3   (I) Working in Nunavut is susceptible to logistic challenges such as high shipping costs, time, lack of sunlight, harsh environment, lack of accommodations in the remote communities, etc.

1.4   (I) The RCMP currently operates a radio system in V Division which serves mission critical communication needs of 124 RCMP members in Iqaluit and other 24 remote communities (25 detachments, 2 Operational Communication Centres (OCCs)). The satellite network links are used to backhaul the radio sites to OCCs. The satellite network performance metrics are listed in section d). The proposed new radio system solution options should use the existing and or the new satellite network links for radio site backhauling. For the list of sites please refer to Appendix A.

      a)   The current VHF radio system is RCMP owned and it is based on Radio Over IP system-of-systems configuration. This includes conventional analog radio system with Daniels/Codan MT4E repeaters, RCMP/Shared Services Canada (SSC) IP backbone (satellite links), radio switches and Intertalk IP based consoles.

      b)   Currently, SSC has upgraded seven (7) sites (Baker Lake, Cambridge Bay, Cape Dorset, Igloolik, Kimmirut, Broughton Island and Rankin Inlet) to the new satellite network system.

      c)   The remaining 17 sites are using the existing satellite system. They will be upgraded to the new satellite network system by SSC

      d)   The network performance metrics for the existing and the new satellite links are:

	Existing satellite network system	New satellite network system
Round trip latency	1600 ms	700 ms
QoS	Not offered	Yes
Packet Loss	2% packet loss per month	None
Jitter	100 ms	25 ms
Bandwidth	1.5 Mbps downstream 768 Kbps upstream	2.8 Mbps downstream 2 inbound up to 1.35Mbps carriers.

1.5   (I) The radio switch and equipment associated with the primary divisional dispatch site is located at the Divisional Operation Communication Center (DOCC) in the Iqaluit detachment. This site hosts five (5) operator consoles.

1.6   (I) The backup radio switch and all hardware associated with the redundant divisional dispatch site is located at a geographically diverse location within Iqaluit. This site serves two (2) operator consoles.

OBJECTIVE

1.7   (I) The Royal Canadian Mounted Police is requesting expressions of interest and related information for the purposes of designing and budgeting a replacement to their existing land mobile radio communication system in "V" Division through a phased approach.

1.8   (I) The objective of this exercise will be met by providing information on design, availability, and pricing of a digital Association of Public-Safety Communications Officials-International (APCO) P25 land mobile radio communication system in the Territory of Nunavut which will meet the communication requirements of its users as pre-determined by the RCMP.

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1.9   (I) The overall objective of the new system is to provide mission critical communications in support of the safe, effective and efficient delivery of public safety services within the Territory of Nunavut over a 15 to 20-year period commencing in 2019.

1.10   (I) The intent is to provide a smooth transition to a next generation system while minimizing disruption, transition time and cost. Service continuity will be maintained by approaching the upgrade in three phases of deployment.

1.11   (I) The primary responsibility of Respondents is to provide pricing and availability on delivery, installation, commissioning, and testing of fully configured operational hardware in addition to providing pricing on training, warranty, in-service maintenance support for the lifespan of the system, and delivery of documentation and software as required.

1.12   (I) The Respondent will not provide radio subscriber equipment details as part of this requirement since the scope is limited to the infrastructure portion of the system only. Having said that the RCMP will provide its own P25 radio subscriber equipment details and Respondent should confirm that the subscriber gear can fully operate on the proposed infrastructure. Subscriber equipment is defined as portable (handheld) radios and mobile (vehicle) radios. For the RCMP V Division subscriber equipment please refer to Appendix E.

1.13   (I) Respondents who can supply this class of system or service are invited to submit information as requested herein. The information will be used by the RCMP to assist in the preparation of capital and operating budgets, and to support the development of technical specifications for a possible competitive procurement process in the future.

DEPLOYMENT PHASES

1.14   PHASE 1

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1.14.1   (I) The existing analog radio system core in Iqaluit is to be replaced with digital
APCO P25 trunking radio system for the purposes of increasing capacity, functionality,
reliability and security. This includes full replacement of the primary and backup
OCCs, and upgrading of remote communities Cambridge Bay and Rankin Inlet to the
digital APCO P25 trunking radio system. Also this should include upgrading of remote
community Cape Dorset to the digital APCO P25 conventional radio system.

1.14.2   (M) Using the current list of existing sites in Appendix A as a baseline, the
Respondent must propose a trunking solution that supports a band that would
provide the best portable and mobile coverage (i.e VHF, UHF and 700MHz) for Iqaluit,
Cambridge Bay and Rankin Inlet, and a conventional solution (i.e VHF, UHF and
700MHz) for the remaining remote communities. Therefore, the Respondent must
propose a hybrid conventional/trunking solution.

1.14.3   (M) The Respondent must include proposed backhaul requirements including
bandwidth, jitter, latency and packet loss requirements for each radio site.

1.14.4   (M) The Respondent must explain how their proposed system architecture supports
quality of service (QoS) and 99.99% availability.

1.14.5   (M) The Respondent must submit detailed information on the proposed system
design, proposed equipment, and installation, where the RCMP will provide:
   a)   Tier 1 first line support
   b)   IP Network connectivity as specified by the Respondent
   c)   Sites listed in Appendix B List of Phase 1 Sites, complete with the following;

   i.   Site shelter
   ii.   Electrical
   iii.   Backup power
   iv.   Grounding
   v.   HVAC
   vi.   Antenna
   vii.   Feed lines
   viii. Multicouplers

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1.15 PHASE 2

1.15.1 (I) This phase will see the existing conventional systems in 11 remote communities be replaced and upgraded to digital APCO P25 conventional for the purposes of increasing functionality. For the list of sites please refer to Appendix B.

1.15.2 (M) The Respondent must include proposed backhaul requirements including bandwidth, jitter, latency and packet loss requirements for each radio site.

1.15.3 (M) The Respondent must explain how their proposed system architecture supports quality of service (QoS) and 99.99% availability.

1.15.4 (M) The Respondent must submit detailed information on proposed system design, proposed equipment, and installation, where the RCMP will provide:
   a) Tier 1 first line support.
   b) IP Network connectivity as specified by the Respondent
   c) Sites listed in Appendix B List of Phase 2 Sites, complete with the following:

      i. Site shelter
      ii. Electrical
      iii. Backup power
      iv. Grounding
      v. HVAC
      vi. Antenna
      vii. Feed lines
      viii. Multicouplers

1.16 PHASE 3

1.16.1 (I)) This phase will see the last existing conventional systems in 11 remote communities be replaced and upgraded to APCO P25 trunking for the purposes of increasing capacity and functionality. For the list of sites please refer to Appendix B.

1.16.2 (M) The Respondent must include proposed backhaul requirements including bandwidth, jitter, latency and packet loss requirements for each radio site.

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1.16.3   (M) The Respondent must explain how their proposed system architecture supports quality of service (QoS) and 99.99% availability.

1.16.4   (M) The Respondent must submit detailed information on proposed system design, proposed equipment, and installation, where the RCMP will provide;
   a)   Tier 1 first line support.
   b)   IP Network connectivity as specified by the Respondent
   c)   Sites listed in Appendix B List of Phase 3 sites, complete with the following;

        i.   Site shelter
       ii.   Electrical
      iii.   Backup power
      iv.   Grounding
       v.   HVAC
      vi.   Antenna
     vii.   Feed lines
    viii.   Multicouplers

REQUIREMENTS

1.17   (I) The Respondent will be responsible for identifying RF spectrum for this system but not be responsible for applying for RF spectrum. RCMP would be acquiring RF spectrum for the operation of this radio system. The P25 LMR system must be designed to operate in the spectrum that would provide the best mobile and portable coverage (VHF/UHF and 700MHz) in the City of Iqaluit and in the remote communities of Nunavut.

1.18   (M) The Respondent must propose a solution which includes tuned RF site filtration to connect transceiver equipment to radio antennas. RCMP will provide site RF frequencies to the Respondent if/when necessary.

1.19   (M) The Respondent must consider the satellite technical specifications as enumerated in paragraph 1.4 to propose a solution option for each of the following scenarios:

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i. Current situation: only seven (7) of 24 sites will be using the new satellite network links as the radio backhaul IP network with the remaining 17 sites using the existing satellite network links.

ii. Preferred situation: all 24 sites will be using the new satellite network links as the radio backhaul IP network.

1.20 (M) The Respondent is to propose a turn-key solution which requires the installation of all base station equipment within equipment shelters provided by the RCMP in the City of Iqaluit.

1.21 (M) The Respondent must propose a radio system that provides P25 Tier 2 GPS Mapping services and hardware integration to the land mobile radio communications system in order to allow for low frequency tracking of subscriber units.

1.22 (M) The Respondent is to describe training (both end-user and technical) and in-service maintenance support. The Respondent is expected to collaborate closely with the Technical Authority (TA) to ensure that the Respondent completely understands and complies with all the requirements of this RFI.

1.23 (I) The Respondent is to obtain Technical Authority's approval at each milestone and deliverable in order to move on to the next deliverable. Details will be discussed at a later date if RCMP decides to move forward with an RFP and project.

1.24 (M) The proposed system or solution must provide an Accessibility Service Level of not less than 99.99% throughout the entire system.

1.25 (M) All radio communications proposed for RCMP operations must utilize 12.5 kHz, Phase 1, encrypted Project 25 Common Air Interface (CAI) digital modulation.

1.26 (M) Voice communications must take precedence over data communications. A proper QoS, standard base must be implemented.

1.27 (M) There must be no voice truncation.

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1.28 (M) The Respondent must ensure the proposed system or solution allows all appropriately configured terminal products to seamlessly roam without user intervention between trunking sites.

1.29 (M) The Respondent must supply a P25 Network Administration System workstation that will be capable of creating/modifying the network database as part of any proposed solution.

1.30 (M) Any proposed system must support end-to-end 256-Advanced Encryption Standard (AES).

1.30.1 (M) The encryption and decryption processes must be solely at the origination and termination points of communications.

1.31 (M) The Respondent must describe how their proposed system or solution will integrate the Key Management Facility (KMF) and Over-The-Air Re-keying (OTAR) server.

1.32 (M) The Respondent's proposed system or solution must be flexible and open to facilitate:
   a) Future expansion to accommodate additional users, user groups and traffic
   b) Radio Site expansion
   c) Future upgrades to accommodate new features and services.

1.33 (R) The Respondent should provide a detailed explanation and overview on how, and the extent to which, their proposed system can be expanded including any dependencies.

1.34 (R) Respondents should identify any capacity considerations for the proposed system configuration - e.g., limitations on the numbers of repeaters per controller, number of sites, number of users, number of consoles and where expansion is possible, what are the expansion increments.

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1.35 (R) The Respondent should provide a diagram and architectural overview of the proposed equipment. The diagram must be sufficiently detailed to identify major subsystems and interfaces which conform to published industry standards.

1.36 (M) The Respondent is to work closely with Shared Services Canada (SSC) and the RCMP in a joint collaborative effort. SSC is also responsible for implementation of IT security regarding data networks. SSC manages, on behalf of the RCMP, firewalls located in the OCCs that protect radio gear/consoles/loggers/KMFs from the rest of the network.

1.37 (M) The Respondent is to work with SSC and RCMP in a joint collaborative effort and to provide all the necessary information on the traffic flow in the form of the traffic flow report up to the RCMPs' and SSC's satisfaction.

1.38 (M) The Respondent is to provide the traffic flow report in table format which should outline but not limited to : protocols, type of packets, IPs for the traffic sources and destinations, port numbers, direction of traffic, source and destination equipment type, source and destination firewall port, and application service. The traffic flow report and the proposed radio system level diagram should match to correlate IPs (i.e. source/destination and port number) with actual radio equipment.

1.39 (I) The traffic flow report/system level diagrams are to be reviewed and approved by SSC and RCMP.

1.40 RADIO SWITCH

1.40.1 (R) The Respondent should describe the architecture of their proposed Radio Switch.

1.40.2 (I) Note that either centralized or distributed Radio Switch architectures are acceptable. In the case where a distributed Radio Switch Architecture is proposed, the term Radio Switch can be interpreted as meaning the Radio Switch functions and the collection of hardware and devices on which the function resides.

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1.40.3   (R) The Respondent should describe the communications architecture between the primary Radio Switch and:

- a)   Redundant Radio Switch
- b)   External P25 Radio Networks (ISSI)
- c)   External Analog Radio Networks
- d)   Site Controllers
- e)   Consoles
- f)   Network Administration System
- g)   Key Management Facility
- h)   Authentication Facility
- i)   Data Hosts
- j)   OTAP Servers
- k)   Any other servers or systems which may be connected to the Radio Switch

1.40.4   (R) The Respondent should specify the following for the Radio Switch:

- a)   Model number
- b)   Software version number
- c)   Licensed capacities
- d)   Performance
- e)   Manufacturer specification sheet
- f)   Dimensions
- g)   Weight
- h)   Power requirements
- i)   Maximum power consumption
- j)   Thermal load under maximum power consumption conditions
- k)   MTBF

1.40.5 (M) The Respondent must propose a redundant Radio Switch located at a geographically separate location from the primary Radio Switch for the purpose of disaster recovery.

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1.40.6 (M) The proposed redundant site must be capable of providing full network management and administration over the P25 system.

1.40.7 (M) The proposed Primary Radio Switch must support automatic failover to the redundant Radio Switch.

1.40.8 (M) The proposed Primary Radio Switch must not contain any single points of failure.

1.40.9 (R) The Respondent should describe the conditions and events which would cause a switch-over to the redundant Radio Switch.

1.40.10   (M) The proposed system must resume normal operation within 1 minute of a Radio Switch failover commencing between the primary and redundant Radio Switches.

1.40.11   (M) Both the proposed primary and redundant Radio Switches must contain identical System state information.

1.40.12   (R) The Respondent should specify and describe communications requirements and architecture of the Radio Switch failover mechanism.

1.41   Network Administration System

1.41.1   (R) The Respondent should describe the architecture of their proposed Network Administration System.

1.41.2   (M) The proposed system or solution must make use of Simple Network Protocol (SNMP) Version 3 for management, configuration and alarm reporting purposes.

1.41.3   (R) The Respondent should describe the capabilities and security mechanisms to enable remote access to the proposed Network Administration System.

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1.41.4   (M) The proposed Network Administration System must be capable of providing management, configuration, and fault monitoring of all powered components and subsystems provided by the Respondent.

1.41.5   (M) At a minimum, the following alarms/conditions must be displayed on any proposed Administration system:

    a)   Primary Radio Switch status
    b)   Redundant Radio Switch status
    c)   Radio Site alarms
    d)   External Radio Site alarm contacts
    e)   External SNMP traps
    f)   Status of antenna system (VSWR)
    g)   Equipment major alarms (i.e. impacting site coverage or performance)
    h)   Equipment minor alarm (i.e. not impacting site coverage or performance)

1.41.6   (M) At a minimum, any proposed Network Administration System must control the configuration of the following System functions:

    a)   Radio Switch failover
    b)   Addition/modification/deactivation/deletion of users
    c)   Assignment of priority levels to subscriber units
    d)   Addition/modification/deactivation/deletion of talk groups
    e)   Addition/modification/deactivation/deletion of radio sites
    f)   Addition/modification/deactivation/deletion of fixed station parameters
    g)   Modification of simulcast parameters
    h)   Remotely enabling and disabling Subscriber Units
    i)   Assignment of priority levels to talk groups
    j)   Disabling/enabling fixed station channels

1.41.7   (R) The proposed Network Administration System should be capable of displaying all configuration settings of the equipment and subsystems.

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1.41.8   (R) It should be possible to modify all configuration settings of the equipment and sub-systems using only the Network Administration System.

1.41.9   (M) The proposed Network Administration System must incorporate a graphical user interface (GUI) and a proven system network manager/information management system software.

1.41.10   (M) Any proposed Network Administration System displays must provide a hierarchical system topology map, showing all managed devices and using color coding to represent device status. Through the system topology map it must be possible for the operator to determine the current detailed status of a managed object, by double clicking on the object.

1.41.11   (M) The proposed Network Administration System must be capable of providing a system status overview, or dashboard, to remote displays. The remote displays must be status only and there must be no system control or configuration possible from these displays.

1.41.12   (R) The Respondent should describe their proposed Network Administration System workstation display functions in detail.

1.41.13   (R) The proposed Network Administration System should be capable of producing performance and usage reports covering at least the previous six months of system operation.

1.41.14   (R) The proposed system should be able to produce reports outlining statistics of # dropped calls and # of Push To Talk (PTT)/Request To Talk (RTT)/Emergency Request To Talk (ERTT).

1.41.15   (R) The Respondent should provide details on the integration period(s) used for statistical summaries (e.g. 5 minutes, 15 minutes, 1 hour, 24 hours, and/or monthly).

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1.41.16   (M) The proposed Network Administration System must be capable of archiving performance and usage data covering at least the previous five years of System operation.

1.41.17   (M) The proposed system must support configurable, printable reports.

1.41.18   (R) The Respondent should provide a list of the performance, usage and system availability reports available, including information regarding report customization and printing capabilities.

1.41.19   (M) The proposed Network Administration System must store system traffic data in a database format using a defined database structure which can be exported and queried using industry standard SQL commands.

1.42   DISPATCH CONSOLES

1.42.1   (M) The Responder is to propose consoles which meet the requirements on the console specifications in APPENDIX C and RTT specifications in APPENDIX D.

1.42.2   (M) It is mandatory to have only one console located at each dispatch operator position capable of providing functionality over the entire, integrated, division-wide, radio network; during and after the system upgrade.

a)   Provide a quote for the replacement of 7 consoles as per the console specifications in APPENDIX C, and RTT specifications in APPENDIX D.

1.43   INTERFACE REQUIREMENTS

1.43.1   (R) The Respondent should specify if their proposed system or solution is fully conformant with Project 25 Console Sub-System Interface (CSSI) protocols. If not the Respondent must describe why not. The Respondent should specify interoperable third party consoles with the proposed solution through CSSI if any.

1.43.2   (M) The proposed system or solution must be fully conformant with Project 25 Inter RF Subsystem Interface (ISSI) protocols.

1.43.3   (I) The interoperability gateway will allow this project 25 system to interface to another project 25 system built by a different manufacturer via ISSI Gateways.

1.43.4   (R) The Respondent should specify the maximum interoperability talk groups and calls supported by their proposed system or solution.

1.43.5   (M) Respondents must identify proprietary variants from the current suite of P25 standards which will make it impractical for the RCMP to competitively purchase and integrate other manufacturer's subscriber equipment to the proposed system or solution.

1.43.6   (M) Only Internet Protocol (IP) connectivity will be utilized within all main system infrastructure, control equipment, recording equipment, dispatch console workstations, and remote site repeater equipment.

1.43.7   (M) The Respondent's proposed system or solution must provide an interface to synchronize the system time clock to an external standard such as a GPS time reference and Network Time Protocol (NTP)

1.43.8   (I) CIIDS is a Computer Aided Dispatch (CAD) application which supports member tracking and status keeping. A communications server is the gateway between CIIDS and the Radio Switch which provides automatic query and retrieval for the police member status keeping and reporting application on the RCMP CAD system.

   a)   (M) The Respondent's proposed system or solution must allow CIIDS to tie into the LMR system via a single access point for the purpose of extracting unit ID, GPS location and other available data transmitted from the user devices.

   b)   (M) The Unit ID of the transmitting device must be updated to the CAD for the purpose of displaying the Alias ID in conjunction with the AVL location.

   c)   (M) The Respondent must provide and describe their method of interfacing their proposed system or solution to CIIDS.

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OTAP SERVER

1.43.9   (M) The Respondent's proposed system or solution must support the use of third party OTAP Servers.

1.43.10 (R) The Respondent should provide a list of any third party OTAP servers that have been successfully used with their proposed system or solution.

EQUIPMENT REQUIREMENTS

1.44   (M) The proposed remote site radio system equipment must not be capable of decoding any of the encrypted voice or data communications.

1.45   (M) The portions of proposed system located at fixed station end must operate from either single voltage 12VDC or 24VDC power source.

1.46   (M) The proposed remote site repeaters must be capable to transmitting RF power adjustable from 30 to 100 Watts, adjustable in 1 watt increments.

1.47   (M) All proposed equipment utilizing volatile memory backhauls must have a method implemented to protect the memory contents during power interruptions.

1.48   (M) All proposed equipment installed in the control centre, the DOCCs, and all remote radio repeater sites must operate on a nominal input voltage of 120 V AC. The proposed equipment must tolerate a voltage range of +/- 10% of nominal voltage, in addition to a power line frequency variation of 60 Hz +/- 3 Hz.

1.49   (M) All proposed equipment requiring a connection to an AC outlet must be protected against AC supply transients and voltage surges.

1.50   (M) All proposed fixed system equipment must be designed and rated for continuous duty operation.

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2   RECORDING AND DATA STORAGE REQUIREMENTS

2.1   (M) All audio paths must be logged in unencrypted digital format using an integrated voice logging recorder.

2.2   (M)The proposed recorder must use RAID level 5 to store all audio path data on multiple hard drives simultaneously for redundancy purposes.

2.3   (R) The Respondent should describe how encryption is handled, how encryption keys are managed and how the proposed voice recorder receives keys form the KMF.

2.4   (M) The proposed recorder must support a minimum of 40 of P25 simultaneous trunking channels. The Respondent should provide channel licensing structure. i.e. one license every 30 channels.

2.5   (M) The proposed recorder must support a minimum of 25 of simultaneous PBX/PSTN channels. The Respondent should provide channel licensing structure, i.e. one license every 15 channels.

2.6   (M) The proposed recorder must replay any recorded conversations within five seconds of it taking place.

2.7   (M) The proposed recorder must be an IPV4 compliant network appliance that can operate on a Local Area Network.

2.8   (M) The proposed recorder must support Role Based Access Control.

2.9   (M) The proposed recorder must support multiple administrative user accounts that control access to recorder functions.

2.10 (M) The proposed recorder security functions must allow channel-specific security privileges.

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2.11   (M) The proposed recorder must be available on the network via IPv4 to any workstation client with proper security privileges for playing back audio or configuring the recorder.

2.12   (M) The proposed recorder must support remote access capability for audio playback and management purposes.

2.13   (M) The proposed remote access application must provide the ability to view and select recordings for playback according to the following metrics:

   a)   Date
   b)   Start time
   c)   Channel number and name
   d)   Talk group alias
   e)   Call type
   f)   Call duration
   g)   Call notations (capable of being edited)
   h)   Dual-Tone Multi-Frequency (DTMF) tones recorded with the call

2.14   (M) The proposed remote access application must allow the user to search for audio across all archiving devices on the network.

2.15   (M) The proposed remote access application must provide the ability to mix audio data from as many as eight channels during playback.

2.16   (M) The proposed remote access application must provide the following audio controls during voice playback:

   a)   Stop
   b)   Pause
   c)   Rewind
   d)   Fast Forward
   e)   Restart

2.17   (M) The proposed remote access workstation must support the creation of a repeatable loop inside a call segment by an operator.

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2.18 (M) The proposed remote access workstation must provide the ability to make a copy of the original recordings in wave format that can be played back or edited on standard, multi-media devices.

2.19 (M) It must be possible to configure each channel individually with any combination of the following record triggers:

    a)   DTMF detect
    b)   Ring detect
    c)   Off hook detect
    d)   Activity detect
    e)   VOX
    f)   Contact closure
    g)   Continuous record

2.20 (M) The proposed recorder must be capable of keeping records of the dates and times for silent periods for non-event verification.

2.21 The proposed recorder must represent silence in the original recordings in a form that does not consume space for silent audio.

2.22 (M) The proposed recorder must have a file naming convention for recordings that incorporates the date, time and channel number into the file name.

2.23 (M) Permanent or archive storage must be on a removable storage disk media.

2.24 (M) The proposed recorder must include methods to allow the data to be exported to an external database.

2.25 (M) The proposed recorder must automatically recover and resume at the last operating state after a power failure.

2.26 (M) Multiple users must be able to access calls simultaneously from a single recorder.

2.27 (M) Radio Talk group audio data must be stamped with all available P25 information pertinent to the transmission including but not limited to:

    a)   Radio talk group ID and Alias
    b)   Time stamp
    c)   Date stamp
    d)   Duration
    e)   Call Type
    f)   Unit ID and Alias
    g)   Console ID and Alias
    h)   GPS coordinate

2.28 (M) Telephone audio data must be stamped with all available information pertinent to the communication including but not limited to:

    a)   Time stamp
    b)   Date stamp
    c)   Duration
    d)   Call Type
    e)   Incoming ANI/Automatic Location Information (ALI) information
    f)   Outgoing DTMF information
    g)   Trunk ID
    h)   Console ID and Alias

2.29 (M) The proposed recorder must have hard disk capacity to store no less than 500 hours of voice and its associated data.

2.30 (M) The hard disk must be provided in a RAID configuration and allow for hot swappable exchange of defective hard drives.

2.31 (M) Software Call Check (SWCC): The Respondent must propose a call check recorder as part of each dispatch console for the purpose of playing back selected radio talk group and telephone audio at that console.

2.32 (M) The proposed call check recorder must be capable of recording the past 30 minutes of its associated console's select audio.

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2.33 (M) The proposed SWCC application must be able to commence audible playback within one second of a playback request.

3 AVAILABILITY AND LIMITATIONS

3.1   (M) The Respondent's proposed design must be based on available or in-service products.

3.2   (R) The Respondent should identify any items and capabilities that are under development and are expected to be available in the project time frame.

3.3   (R) The Respondent should provide typical lead times for system engineering, equipment manufacture, factory acceptance, and installation taking into the consideration that V Division logistics for shipping and travelling are different comparing to the "typical installation" in southern parts

3.4   (R) The Respondent should state how much of the recommended product line and version is currently in service and describe the largest scale deployments to date in terms of number of repeater sites, maximum repeater channels per site, features, location, and a reference who may be contacted or visited.

3.5   (R) The Respondent should outline the key support facility requirements for their proposed equipment and/or any assumptions made in this regard.

3.6   (R) The Respondent should provide the following detailed information for each type of proposed site (e.g., control center and repeater sites):

a)   overall physical equipment size (rack space required)
b)   electrical power requirements (voltage and typical loads)
c)   environmental requirements (temperature range)
d)   Bandwidth/throughput/latency requirements

e)   the IPv4 network traffic flows identified by TCP/UDP port and associated application.

f)   the number of repeater voice channels that can be carried in a 64 kb/s stream

g)   ability/inability to support NAT protocol

STANDARDS COMPLIANCY

3.7   (M) The equipment or solution proposed must meet applicable sections of the current issue of the following standards:

3.7.1 (M) ANSI/TIA102 Suite of the APCO Project 25 (P25) Specifications.

3.7.2 (M) National Institute of Standards and Technology (NIST) FIPS 197 AES: All radio equipment supplied to the RCMP must utilize the encryption standard known as the Advanced Encryption Standard (AES) using the Rijndael algorithm and registered by the Federal Information Processing Standard (FIPS) as FIPS 197. This degree of encryption is specified in the Government Security Policy for the protection of sensitive, unclassified information.

3.7.3 (M) NIST FIPS 140-2 LEVEL 1: All encryption devices and equipment supplied to the RCMP must be approved for use by Canadian Federal Government agencies, and must comply and be certified under USA NIST document entitled Security Requirements for Cryptographic Modules Standard, FIPS 140-2, level 1.

3.7.4 (M) NIST FIPS 140-2 LEVEL 2: All encryption devices and equipment must meet the requirements of physical security specified in FIPS 140-2, Level 2.

3.7.5 (M) Canadian Standards Association (CSA) approval for all Alternating Current (AC) line powered equipment.

3.7.6 (M) Industry Canada standards for all Radio Frequency (RF) equipment.

3.7.7 (M) Industry Canada Radio Standards Specification, RSS 119 for all land mobile and fixed radio transmitters and receivers.

3.7.8 (M) Applicable parts of Industry Canada CS-03 Telecommunication Apparatus Compliance Specification.

3.7.9 (I) Other applicable standards that may be required depending on equipment proposed by the supplier.

Factory Acceptance Testing (FAT)

3.7.10 (M) The Respondent must describe Factory Acceptance Test process.

3.7.11 (M) RCMP TA will provide the subscriber units for use during the FAT.

3.7.12 (M) The Respondent must describe how testing would demonstrate full system conformance with all technical documents.

3.7.13 (I) The Respondent must not ship any equipment until FAT approval has been granted by the TA. If the FAT reveals non-conformance to the performance specifications, the Respondent would carry out the necessary changes to achieve full conformance within fourteen (14) days.

3.7.14 (I) After successful completion of the FAT, the Respondent would submit a report to the TA within fourteen (14) days that must establish the conformance.

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Site Acceptance Testing (SAT)

3.7.15 (I) The Respondent must schedule and complete all Site Acceptance Tests.

3.7.16 (I) The Respondent must generate and submit a Site Acceptance Test Plan (SATP) for review and acceptance by the TA at least fourteen (14) days prior to the first SAT. The SATs shall not start until the TA has approved the SATP.

3.7.17 (I) RCMP TA reserves the right to modify Respondent's proposed test plan.
3.7.18 (I) RCMP TA will provide the subscriber units for use during the SAT.

3.7.19 (I) The Respondent must conduct testing and demonstrate full system conformance.

3.7.20 (I) The Respondent must supply all required test equipment to conduct the SAT. If any technical problems occur during the testing; the Respondent must resolve them in concert with the RCMP.

3.7.21 (I) The testing will be witnessed by the TA, or delegate. In some cases, the TA, or its delegate, may choose to conduct some, or all, of the Site Acceptance Testing independently once the Respondent has performed the SAT for the TA.

3.7.22 (I) The Respondent must record all of the SAT results in a Punch list Report and provide them to the TA, or their delegate within five working days after the SAT. If any failures occur during SAT, the Respondent must document them by using the Punch list. A Punch list deficiency must be assigned a severity level of major or minor deficiency, by mutual agreement between RCMP and the Respondent, and the required corrective action must be recorded in the Punch list Report.

3.7.23 (I) Punch list Report Major Deficiencies are defined as follows:

- System does not work. An error that prevents completion of an essential function.
- Adverse effect without a work-around. Problem not correctable with an alternate sequence.

3.7.24 (I) Punch list Report Minor Deficiencies are defined as follows: A work-around solution does exist:

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- An annoyance that does not affect essential functions.
- Any item not covered by the above categories, which is either non-urgent or of an investigative nature.

3.7.25   (I) If more than 20 Minor Deficiencies are found, this will become a Major Deficiency. A problem report will not be required for problems caused by any events not under the Respondent's control (i.e. AC power failures, telephone line failures, IT network failures, etc.).

3.7.26   (I) If the Punch list issue cannot be corrected during the course of testing, it must remain open until a corrective action has been taken. The Respondent must propose a corrective action that will be approved by the RCMP. Upon successful resolution of the issue, as verified by the RCMP, the Respondent must sign and date the Punch list Report, in order to formally close the issue. Minor corrective actions should not impact any previous test results.

3.7.27   (I) If, during the SAT, the TA, or its delegate, finds a minor deficiency that does not affect the operational effectiveness of the system, the SAT may continue in accordance with the approved SATP. However, if a number of unacceptable failed tests are encountered during the testing by the TA, or its delegate, the SAT will be halted until the Respondent has corrected the failures. If a major deficiency is found during the SAT that does affect the operational effectiveness of the logging system, the testing must cease until the deficiency has been corrected.

3.7.28   (I) The TA or its delegate will sign-off on the Punch list report upon the successful conclusion of the SAT. Any minor deficiencies noted during the testing will be recorded in the Punch list Report.

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BUDGETARY PRICING

3.8 (M) Total cost of ownership must be provided over 15 years including equipment, installation, operating costs, evergreening, and 10% site equipment sparing.

3.9 (M) Budgetary pricing must be provided for each of the three (3) phases of system upgrades. Any key assumptions that the pricing is based on must be clearly stated.

3.10 (I) Budgetary pricing information will be used to assist the project team to estimate the capital and operating expenses and secure the necessary financing. This is not a quotation.

APPENDIX A

List of V Division Sites

Division	Location Description
V	(ARCTIC BAY) ARCTIC BAY, Box 162
V	(ARVIAT) ARVIAT, BOX 149
V	(BAKER LAKE) BAKER LAKE (QAMANI'TUAQ), BOX 250
V	(CAMBRIDGE BAY) CAMBRIDGE BAY, BOX 500
V	(CAPE DORSET) CAPE DORSET (KINNIGAIT), BOX 120
V	(CHESTERFIELD INLET) CHESTERFIELD INLET, BOX 5
V	(CLYDE RIVER) CLYDE RIVER (KANGIQTUGAAPIK), BOX 10
V	(CORAL HARBOUR) CORAL HARBOUR (SALLIQ), BOX 60
V	(GJOA HAVEN) GJOA HAVEN (OQSUQTOOQ), BOX 7
V	(GRISE FIORD) GRISE FIORD (AUSUITTUQ), Box 82
V	(HALL BEACH) HALL BEACH (SANIRAJAK), BOX 31
V	(IGLOOLIK) IGLOOLIK (IGLULIK), BOX 119
V	(IQALUIT) IQALUIT AIR SERVICES, 1518 Mivvik Street
V	(IQALUIT) IQALUIT DETACHMENT, 960 FEDERAL ROAD
V	(IQALUIT) IQALUIT G.O.C. BUILDING, 969 Federal Road
V	(KIMMIRUT) KIMMIRUT DET (LAKE HARBOUR), Box 59
V	KUGAARUK (old name PELLY BAY) (AQVILIGJUAQ), BOX 119

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V	(KUGLUKTUK) KUGLUKTUK (COPPERMINE), BOX 10
V	(PANGNIRTUNG) PANGNIRTUNG (PANNIRTUUQ), BOX 103
V	(POND INLET) POND INLET (MITTIMATALIK), BOX 210
V	(QIKIQTARJUAQ)(old name BROUGHTON ISLAND), Box 5
V	(RANKIN INLET) RANKIN INLET (KANGIQSLINIQ), BOX 100
V	NAUJAAT (old name REPULSE BAY), LOT NUMBER 95 BOX 31
V	(RESOLUTE) RESOLUTE BAY (QAUSUITTUQ), BOX 230
V	(SANIKILUAQ) SANIKILUAQ, BOX 220, Box 220
V	(TALOYOAK) TALOYOAK (TALURQJUAK), BOX 3
V	(WHALE COVE) WHALE COVE, BOX 112

APPENDIX B

LIST OF PHASE 1 SITES

SITE	Current Number of Channels	Capacity REQUIRED
(IQALUIT) IQALUIT G.O.C. BUILDING, 969 Federal Road	0	0
(IQALUIT) IQALUIT DETACHMENT, 960 FEDERAL ROAD	0	5
(IQALUIT) IQALUIT HANGAR, 1518 MIVVIK STREET	0	5
(IQALUIT) IQALUIT LANDFILL SITE, WEST 40	4	5
(CAMBRIDGE BAY) CAMBRIDGE BAY, BOX 500	1	3
(RANKIN INLET) RANKIN INLET (KANGIQSLINIQ), BOX 100	1	3
(CAPE DORSET) CAPE DORSET (KINNGAIT), BOX 120	1	1

LIST OF PHASE 2 SITES

SITE	Current Number of Channels	Capacity REQUIRED
(ARCTIC BAY) ARCTIC BAY, Box 162	1	1

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(CLYDE RIVER) CLYDE RIVER (KANGIQTUGAAPIK), BOX 10	1	1
(CORAL HARBOUR) CORAL HARBOUR (SALLIQ), BOX 60	1	1
(GRISE FIORD) GRISE FIORD (AUSUITTUQ), Box 82	1	1
(HALL BEACH) HALL BEACH (SANIRAJAK), BOX 31	1	1
(IGLOOLIK) IGLOOLIK (IGLULIK), BOX 119	1	1
(KIMMIRUT) KIMMIRUT DET (LAKE HARBOUR), Box 59	1	1
(PANGNIRTUNG) PANGNIRTUNG (PANNIRTUUQ), BOX 103	1	1
(POND INLET) POND INLET (MITTIMATALIK), BOX 210	1	1
(QIKIQTARJUAQ)(old name BROUGHTON ISLAND), Box 5	1	1
(RESOLUTE) RESOLUTE BAY (QAUSUITTUQ), BOX 230	1	1

LIST OF PHASE 3 SITES

SITE	Current Number of Channels	Capacity REQUIRED
(ARCTIC BAY) ARCTIC BAY, Box 162	1	1
(BAKER LAKE) BAKER LAKE	1	1

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(QAMANI'TUAQ), BOX 250		
(CHESTERFIELD INLET) CHESTERFIELD INLET, BOX 5	1	1
(GJOA HAVEN) GJOA HAVEN (OQSUQTOOQ), BOX 7	1	1
KUGAARUK (old name PELLY BAY) (AQVILIGJUAQ), BOX 119	1	1
(KUGLUKTUK) KUGLUKTUK (COPPERMINE), BOX 10	1	1
NAUJAAT (old name REPULSE BAY), LOT NUMBER 95 BOX 31	1	1
(SANIKILUAQ) SANIKILUAQ, BOX 220, Box 220	1	1
(TALOYOAK) TALOYOAK (TALURQJUAK), BOX 3	1	1
(WHALE COVE) WHALE COVE, BOX 112	1	1

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APPENDIX C

1.   DISPATCH CONSOLE REQUIREMENTS

  1.1   General Requirements

    1.1.1   Consoles must be capable of radio dispatching functions.

    1.1.2   The basic operating mode of the Console System must be via Group Voice Call.

    1.1.3   Each console position must support, at minimum, 16 simultaneous, talk paths between the console position and the radio network.

    1.1.4   In total, the console equipment must be able to support 100 concurrent talk paths per Event Command Centre.

    1.1.5   Console equipment must be capable of monitoring and selecting for talk and   listen operation, any applicable Talk groups configured on the System that are necessary for the user group(s) that the Console equipment is authorized to access.

    1.1.6   Console equipment must be capable of monitoring a second priority Talk group on the select output. Note that a push to talk will only transmit on the select Talk group.

    1.1.7   There must be a simple method of allowing one console operator to acquire access to a Talk group that is not normally assigned to their console position for the purpose of load sharing of incoming calls during peak traffic periods.

    1.1.8   While maintaining an active PTT, the audio backhaul must maintain a full duplex audio path to all connected radio resources capable of full duplex operation.

1.2   Request to Talk (RTT)

1.2.1 Console equipment must support in full the Request to Talk and Emergency Request to Talk requirements as presented in the National Radio Services RBM Request To Talk Baseline Requirements Number: RT.06.00-1.1 specification document found in Appendix D.

1.3   Architecture

1.3.1   The dispatch console workstation must be PC based system connected to associated peripherals

1.3.2   Radio equipment must be capable of expansion to accommodate the maximum capacities specified in each Phase as per Appendix B.

1.3.3   Console equipment must support with zero impact to functionality and performance, network security devices (i.e. Firewall) on all IP based interfaces between it and any systems it needs to interface with. Delay caused by network security devices will not be considered as performance impacting.

1.3.4   Failure of any console must not have any effect on the operation of the Radio System or other consoles.

1.4   Security

1.4.1   Console equipment must protect unauthorized access to equipment configuration.

1.4.2   Console equipment must protect unauthorized access to encryption information.

1.4.3   Console equipment must protect system disruption through improper or unauthorized use, or equipment failure.

1.4.4   Console equipment must protect radio equipment configuration parameters from unauthorized modification and disclosure.

1.4.5   Console equipment must support role based access control.

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1.4.6   Console equipment must support local and remote user authentication.

1.4.7   Console equipment must support antivirus software installed on the console.

1.4.8   Respondent must provide a list of supported antivirus software for proposed radio equipment.

1.4.9   Console equipment must support manual OS patching methodology for radio equipment proposed.

1.4.10   Console equipment must support automatic OS patching via Windows Management Framework (WMF).

1.4.11   Respondent must provide step by step instructions on how to manually patch the console equipment OS.

1.4.12   It must be possible for an operator to lock the Console to prevent unauthorized access while the operator is absent.

1.5   Environmental Requirements

1.5.1   Console equipment must be designed to be located inside shelters or building must operate within tolerances across an ambient temperature range of at least +5°C to +40°C.

1.5.2   Console equipment must operate within defined tolerances when subjected to relative humidity of 45% to 85%, non-condensing.

1.6   Power

1.6.1   Console equipment must operate from on 120VAC, provided by the RCMP.

1.7   Physical

1.7.1   Respondent must specify the following for all unique proposed console equipment:

a.   Model numbers;

b.   Metric Dimensions;

c.   Manufacturer specification sheets;

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      d.   Nominal power requirements in Watts;

      e.   Maximum power consumption in Watts;

      f.   Thermal load, in British Thermal Units (BTU) under maximum power consumption conditions; and

      g.   Mean Time Between Failures for each component.

1.7.2   Not including the console client workstations, all other console equipment must be provided in a secured cabinet as per Secured Rack.

1.8   Design Life

1.8.1 Console equipment must have a minimum Useful Lifespan of five (5) years.

1.9   Quality

1.9.1   Console equipment must be actively used in a production environment in at least two other P25 public-safety systems of 1000+ users each, within North America at the time of this RFI closing date.

1.9.2   Respondent must provide a list of public safety customers, complete with contact information, within North America who have deployed proposed radio equipment in their operational live radio system(s).

1.10   Third Party Manufactured Equipment

1.10.1   Respondent must provide a list of any console equipment which is not directly manufactured and developed by the Respondent.

1.10.2   Respondent must describe the process, procedures and agreements in place to control quality, functionality, and support of any console equipment not manufactured and developed by the Respondent.

1.11   Licenses

1.11.1 Respondent must supply all appropriate network licenses required to support the required console equipment.

1.11.2 Software, product usage and/or capacity licenses must be transferrable, without cost to the RCMP, to replacement console equipment in the event of console equipment failure, replacement, or upgrade.

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1.11.3 Respondent must provide the duration, in months, for which proposed radio equipment is eligible for firmware/software upgrades at no cost to the RCMP.

1.12 Console Equipment and Accessories

1.12.1 Display Technology

a) Flat panel display technology must be used to preserve operator position furniture real estate; along with the reduction of weight and heat generation.

b) Each console position must include a single monitor with a minimum size of 22" viewable.

1.13 Foot Switch

1.13.1 Each console position must support a foot switch.

1.13.2 A console position is defined as having a single foot switch included.

User Interface

1.13.3 Console functionality must be accessible through:

a. Keyboard and;

b. Mouse

1.13.4 Consoles must present all resources at the operator's command in an easy to view and operate manner.

1.13.5 Console position main operational portion of the screen must have the capability to be divided into separate "pages" of Talk groups.

1.13.6 The Console must display all of the radio resources (including pre-set groups of Talk groups) and their associated functions in the main operational portion of the screen.

1.14 Audio Accessories

1.14.1 Consoles positions must be capable of both external speaker/microphone and headset earphone/microphone operation.

1.14.2 A console position is defined as having external operate and external monitor speakers, with individual volume controls, included.

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1.14.3   Console equipment must provide a means of interconnecting and controlling two operator's headsets at each console position using a Plantronics P10 Dual Prong Plug Adapters; one as the main and the other for occasional supervisory support or training purposes.

1.14.4   A console position is defined as having two Plantronics headsets (Model HW710D) included.

1.15   Inter-Connectivity

1.15.1   The physical interface to all Console Equipment must be IEEE 802.3 10/100/1000Base-T, RJ45 (Ethernet).

1.15.2   Internet Protocol (IP) connectivity must be utilized within all Console equipment.

1.16   Time Reference

1.16.1   Console equipment time clock must synchronize to the Radio System Time Reference.

1.16.2   All transactions and other data collected from the console equipment that include a timestamp must use the time reference.

1.17   Audio Logger Interface

1.17.1   All console equipment must provide all voice signals sent or received by all consoles positions to the logger.

1.17.2   In addition to the voice signals, console positions must provide the logger with the following data associated with each voice signal in a defined format:

    a. date and time stamp;

    b. source Talk group; and

    c. radio or console Id.

1.18   Key Management Facility (KMF) Interface

1.18.1   Console equipment must have an Over The Network Re-keying (OTNR) interface to the KMF for the purpose of automatically obtaining Radio system keys.

1.19   Encryption

1.19.1   Console equipment must support Advanced Encryption Standard (AES) as defined in Annex C of TIA-102.AAAD-A, Digital Land Mobile Radio Bloc Encryption Protocol.

1.19.2   Console equipment must utilize the encryption standard known as the Advanced Encryption Standard (AES 256 bits) and be registered by the Federal Information Processing Standard (FIPS) as FIPS 197.

1.19.3   Proof of console equipment registration as FIPS 197 must be provided with the Offer.

1.19.4   Keys must be stored within a cryptographic module in the radio equipment in a manner which conforms at a minimum to FIPS 140-2 Level 1 security.

1.19.5   Respondent must indicate to what level of FIPS 140-2 certification the Console equipment stores encryption keys.

1.19.6   The response must provide a copy of the FIPS 140-2 certification with the Offer.

1.19.7   Console equipment must contain data ports suitable for manual loading of encryption keys.

1.19.8   A minimum of 16 unique active and 16 unique inactive traffic encryption keys must be supported in radio equipment.

1.19.9   Respondent must state the number of unique active and inactive traffic encryption keys supported in radio equipment.

1.19.10   Console equipment must maintain its FIPS 140-2 certification level throughout its   useful Design Lifespan.

1.19.11   Hardware or Software changes that impact the FIPS 140-2 certification of Console equipment must undergo FIPS certification process prior to being made available for release to the RCMP.

1.20   Remote Management

1.20.1   All console equipment must support remote management capability, via IP network, for maintenance purposes.

1.21   Profiles

1.21.1   It must be possible to save, restore and transfer the screen layout and configuration of a console.

1.21.2   It must be possible to recall a prior saved profile on one console at another console position.

1.22   Intercom

1.22.1   Console to console communications must be provided.

1.22.2   Intercom voice traffic must be encrypted.

1.23   Individual Voice Call

1.23.1   The console must be capable of selected the radio resource ID for an individual call by entering that radio's ID through the console workstation's keyboard.

1.24   System All Call

1.24.1   Console equipment must support All Call.

1.25   Software Call Check (SWCC)

1.25.1   The consoles must support a digital Software Call Check (SWCC) feature which allows a console operator to recall telephone audio and 'select audio' from their radio system console.

1.25.2   The SWCC feature must record and provide access to the past 30 minutes of telephone and radio system audio associated with the console.

1.25.3   The SWCC audio must be assessable within two (2) seconds of it being recorded.

1.25.4   The SWCC application must be able to commence audible playback within one second of a playback request.

1.25.5   The SWCC's audio must be routed to the console operator's headset.

1.26   Patching

1.26.1   Patching is defined as a low level audio patch between radio resources. Voice transmissions out to each of the patched radio resources are treated as individual group calls. It is typically a function processed solely by the Console Equipment.

1.26.2   All inbound communications activity on a talkgroup associated to the patch must be re-transmitted outbound on all the other talkgroups within that patch.

1.26.3   Console patches must not cause any loss of RTT or PTT events on the Console equipment.

1.27   Announcement Group Call

1.27.1   The Console Equipment must support Announcement Group Calls.

1.27.2   The Voice Logger must be able and configured to record all Announcement Group Calls.

1.28   Alias Management

1.28.1   Respondent must provide a radio alias management function that enables the maintenance of a cross reference of aliases and radio IDs available to each console.

1.28.2   Console equipment must use the Radio Alias provided by the Radio Alias Management function in its presentation of a call to the console operator.

1.29   Audio Features

1.29.1   Console equipment must support Cross Mute.

1.29.2   Console equipment must support the ability to remotely open subscriber unit's microphone and monitor local audio.

1.29.3   Console positions must be capable of automatically adjusting the volume of received transmissions to a selected reference level (i.e. automatically increase volume of quiet transmissions and automatically decrease volume on loud transmissions.

1.29.4   Console positions must support a variety of unique tones and audio alerts, and warbles.

1.29.5   Association between events and alert tones must be configurable on a per Console position basis.

1.29.6   There must be an indicator on the console position display that shows when adequate dispatcher microphone audio is being transmitted.

1.29.7   The circuitry associated with microphone audio must provide headset microphone sensitivity level control to provide a steady transmit output level with microphone input variations that may range from nominal levels to 15 dB below nominal levels.

1.29.8   During headset operation, select speaker audio must be routed to the headset.

1.29.9   Console positions must provide audio level settings (including mute levels) with separate controls for individual console resources and for selected and unselected talk group audio.

1.29.10   Headset microphone audio must only be connected to a Console position radio resource when there is an active PTT.

1.29.11   Headset volume must be independent from the speaker volume and must include microphone side tone at a level of approximately 20dB below the receive audio for all microphone talk audio.

1.29.12   Headset audio must not be capable of exceeding damaging sound pressure levels of 90 dB (A) in compliance with Canada Labour Code section 2.

1.29.13   Console equipment must provide for monitoring of unselected (but assigned to Console position) Talk groups through a separate "unselect" or "monitor" speaker.

1.30   Warranty

1.30.1   The Respondent must provide a comprehensive warranty program for all console equipment offered in its Offer which provides, at a minimum, the following:

1.30.2   Product defect/malfunction correction and replacement;

1.30.3   Product security vulnerability (hardware/software) correction and replacement;

1.30.4   Product performance deficiencies correction from stated product specifications as of the time of this RFI closing date;

1.30.5   Product replacement, testing and restoration to factory specifications;

1.30.6   Product shipping expenses, to and from Respondent's facilities.

1.30.7   Respondent must describe what services other than the ones listed above, their comprehensive warranty entails for their console equipment.

1.30.8   Respondent must provide their product repair time lines for console equipment undergoing warranty repairs. The timeline must start when Respondent receives the console equipment at their facilities and ends when console equipment departs their facilities.

1.30.9 Respondent must provide their product replacement time lines for console equipment undergoing warranty replacements. The timeline must start when Respondent receives the console equipment at their facilities and ends when console equipment departs their facilities.

1.31 Respondent must indicate the duration in months of their standard comprehensive warranty for their console equipment.

APPENDIX D

1   REQUEST-TO-TALK (RTT) REQUIREMENTS

1.   Subscriber Unit

1.1.   Physical

1.1.1.   Each model of End User radio equipment (Subscriber Unit) for use by the RCMP shall have a separate, readily accessible, single press button for the purpose of initiating a RTT as per signaling requirements.

1.1.2.   The RTT button shall be functional while the keypad is locked (portable radio only).

1.1.3.   Speaker Mic accessories for portable Subscriber Unit (SU) for use by the RCMP should have a dedicated button for initiation of a RTT.

1.1.4.   Each model of End User radio equipment (SU) for use by the RCMP shall have a separate, readily accessible, single press button for the purpose of initiating a ERTT as per signaling requirements.

1.1.5.   The ERTT button shall be functional while the keypad is locked (portable radio only).

1.1.6.   The ERTT button shall have a color different from other buttons on the unit that is suggestive of an emergency (e.g. Red or Orange).

1.1.7.   The ERTT button shall be indented or otherwise positioned to help prevent inadvertent activation of the feature.

1.1.8.   The ERTT button shall be pressed for a configurable duration between 0.3 and 0.75 seconds prior to activation in order to prevent inadvertent activation.

1.1.9.   The duration referenced in (1.1.8) shall be a programmable value in the radio service software.

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1.1.10. Speaker Mic accessories for portable SU for use by the RCMP shall have a dedicated button for initiation of an ERTT.

1.2. RTT Signaling

1.2.1. The RTT function shall be implemented using the status control message (STS_UPDT_REQ) as defined in the most current version of Trunking Control Channel Messages, TIA-102.AABC-C.

1.3. ERTT Signaling

1.3.1. The Emergency RTT function shall be implemented using the status control message (EMRG_ALRM_REQ) as defined in the most current version of Trunking Control Channel Messages, TIA-102.AABC-C.

1.4. RTT Activation

1.4.1. Upon depression of the RTT button, the SU shall send a STS_UPDT_REQ according to TIA-102.AABD-A Random Access Procedures with the values as outlined below:
- Status value: $0100 (hex) – shall be allocated to represent the RTT function
- The 24-bit source address: the calling SU's Unit ID
- The 24-bit target address: $FF FFFC (hex), the Console Subsystem Address

1.4.2. Upon depression of the RTT button, the SU shall start timer T(ack) awaiting an ACK_RSP_FNE from the console sub-system.

1.5. ERTT Activation

1.5.1. Upon depression of the Emergency ERTT button, the SU shall send a status control message (EMRG_ALRM_REQ) as defined in the most current version of Trunking Control Channel Messages, TIA-102.AABC-C, with the values as outlined below:
- The 24-bit source address: the calling SU's Unit ID

1.5.2. Upon depression of the ERTT button, the SU shall start timer T_{ack} while awaiting an ACK_RSP_FNE from the console sub-system.

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1.5.3. Until the emergency state in the radio is cleared, all operations by the subscriber unit shall have the emergency bit set to 1

1.6. Emergency Audio Talk Path

1.6.1. An ERTT button press shall initiate a voice call and provide an inbound audio talk path to the Console Sub-System from the subscriber unit for a period of approximately 10 seconds. This shall allow the calling party to talk to the Console immediately after the System has established the ERTT.

1.7. Automatic Retries

1.7.1. The number of re-try attempts for RTT transmission should be set to four (4) through the radio service software, not to exceed the maximum value as specified in P25 specification (N_retry).

1.7.2. If the SU does not receive a system acknowledgement that the ERTT was received by the console sub-system equipment, it must continue to re-send the ERTT for a pre-determined length of time or pre-determined number of attempts, up to the maximum allowed under P25 specifications.

1.7.3. The length of time or predetermined number of attempts for ERTT re- transmission must be adjustable through the radio service software.

1.8. Retry Quieting

1.8.1. Upon receipt of a System Acknowledgement response from the System Default Address as defined below, the SU shall stop sending retries.
Message type: ACK_RSP_FNE with the values as outlined below:
    Service Type: %011000 (binary), the opcode for the STS_UPDT
    AIV: 1
    EX: 0
    Source Address: $FF FFFD (Hex), System Default as per TIA-102.AABD-A, Annex A. 5.2.2
    Target Address: the calling SU's Unit ID

1.9.   Positive Acknowledgement

1.9.1.   Upon receipt of a System Acknowledgement response from the console subsystem
address as defined below, the SU shall generate an audible tone indicating that the
RTT was successfully received by the console subsystem.
Message type: ACK_RSP_FNE with values set as outlined below:
Service Type: %011000 (binary), the opcode for the STS_UPDT
AIV: 1
EX: 0
Source Address: $FF FFFC (Hex), console subsystem address as per TIA-102.AABD-A,
Annex A 5.2.2
Target Address: the calling SU's Unit ID

1.9.2.   Upon receipt of a System Acknowledgement response from the console subsystem
address, the SU shall stop the T(ack) timer.

1.10.   Negative Acknowledgement

1.10.1. Upon receipt of a DENY_RSP response message from the system as defined below or
upon the expiration of the SU's T(ack) timer, the SU shall generate an audible tone
indicating that the RTT was unsuccessful.
Message type: DENY_RSP with values set as outlined below:
Service Type: %011000 (binary), the opcode for the STS_UPDT
AIV: 0
EX: 0
Target Address: the calling SU's Unit ID

1.10.2. The negative acknowledgement audible tone shall be different than the audible tone
used for a positive RTT acknowledgement.

1.11.   Return to Normal Operations

1.11.1. The SU shall revert back to normal operation after receiving either a positive or
negative acknowledgement.

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2.   Console

2.1.   General

2.1.1. The console subsystem shall provide a means of registering and queuing incoming Request-to-Talk (RTT) and Emergency Request-To-Talk (ERTT) signaling as initiated by the RTT and ERTT call status buttons on Subscriber Units (SU) and displaying this call appropriately by showing an associated "RCMP Identification" of the calling unit.

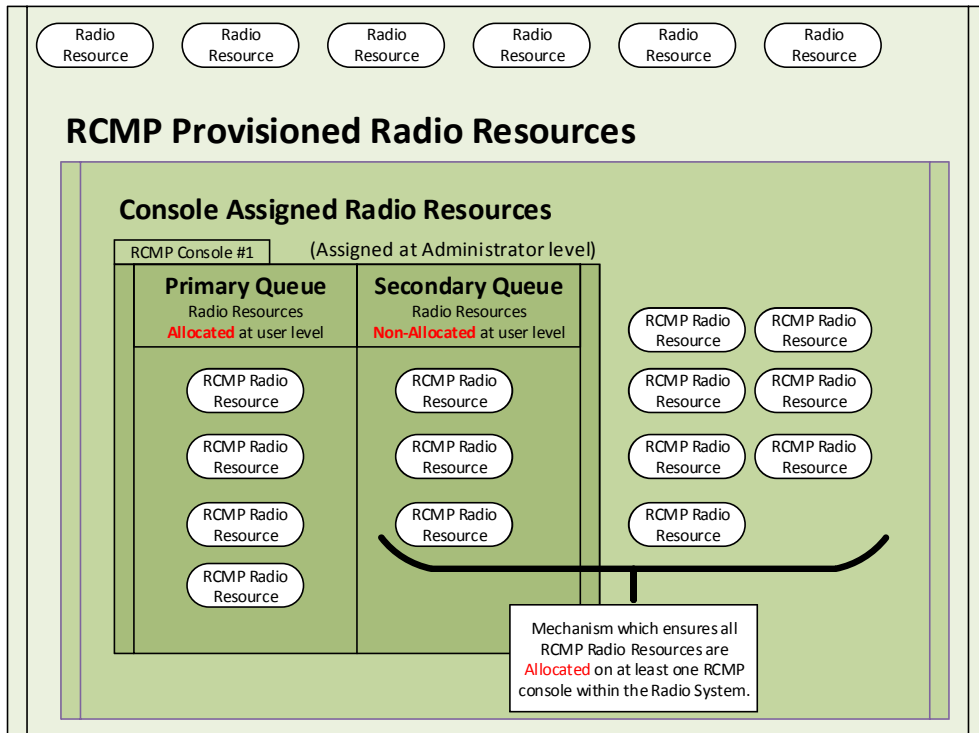2.2.   Radio Resource Allocation

2.2.1. Definitions

   2.2.1.1.   Provisioned Radio Resource – a Radio Resource created at the Radio System administrator level within a Radio system and is global to the system.
   2.2.1.2.   Assigned Radio Resource – a Provisioned Radio Resource that has been added as an available resource on a Radio System Console. This Radio Resource Assignment shall be performed at the Console administrator level.
   2.2.1.3.   Allocated Radio Resource – an Assigned Radio Resource that has been designated at the Console Operator level as a Radio Resources under his/her responsibility at their current Console position. All incoming RTT/ERTTS from 'Allocated' Radio Resources must be processed in the Primary Queue.

2.2.2.   RCMP Provisioned system radio resources shall be 'Assigned' at administrator system access level to RCMP Radio system consoles.

2.2.3. There shall be a mechanism to ensure that all RCMP Provisioned radio system resources are 'Allocated' on at least one RCMP radio system console.

2.2.4. Each RCMP Radio console operator shall be able to 'Allocate' radio resources, using a GUI on his/her radio system console, up to the maximum number of radio resources 'Assigned' to his Radio system console in 2.2.1.

2.2.5. If any of the RCMP Provisioned system radio resources are not 'Allocated' on at least one RCMP Radio System console, a console feature shall be offered that once enabled, would automatically and dynamically ensure that any 'un-Allocated' RCMP Provisioned radio resource(s) are temporarily Allocated on that console.

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Radio Resource to RTT Queues Allocation process

System Provisioned Radio Resources

RCMP Provisioned Radio Resources

Console Assigned Radio Resources

RCMP Console #1   (Assigned at Administrator level)

Primary Queue
Radio Resources
Allocated at user level

Secondary Queue
Radio Resources
Non-Allocated at user level

Mechanism which ensures all RCMP Radio Resources are **Allocated** on at least one RCMP console within the Radio System.

2.2.6. There shall be separate Primary and Secondary queues to enhance dispatch traffic handling.

2.2.7. The Primary Queue shall only display RTTs/ERTTs from radio resources currently 'Assigned' and 'Allocated', by the console operator (user), on that console, as per (2.2.3).

2.2.8. The Secondary Queue shall only display RTTs/ERTTs from radio resources currently 'Assigned' but 'Non-Allocated' on that console. By default, when a radio resource is first 'Assigned' to a console, it is considered 'Non-Allocated' on that console.

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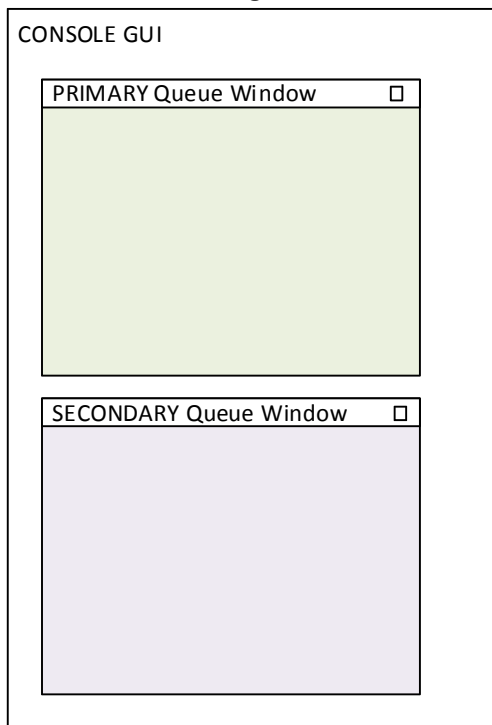Mounted Police du Canada

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2.2.9. Radio Resources 'Assigned' to the Supervisory console must indicate on which console(s) they are presently 'Allocated'.
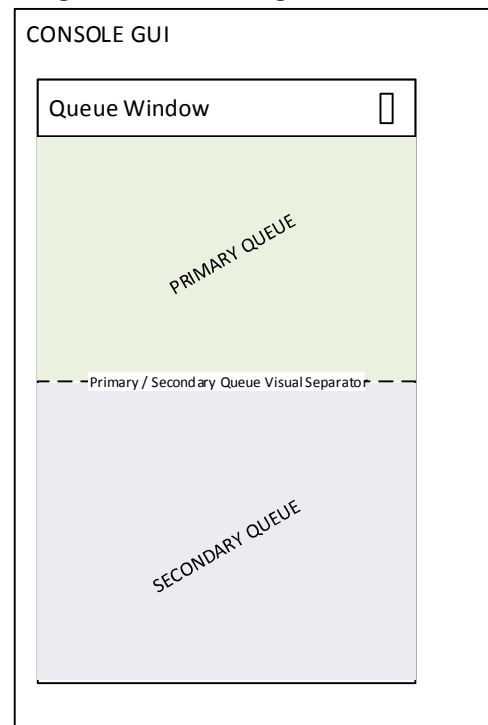
2.3. Queue GUI

2.3.1. There shall be a separate area defined on the console screen for the Primary and Secondary queues.

2.3.2. The appearance of the queues can be a single or dual window configuration.

Dual window Configuration   Single window Configuration

CONSOLE GUI

PRIMARY Queue Window   ☐

SECONDARY Queue Window   ☐

CONSOLE GUI

Queue Window   ☐

PRIMARY QUEUE

- - - Primary / Secondary Queue Visual Separator - - -

SECONDARY QUEUE

2.3.3. In a single window configuration there shall be an additional visual indicator identifying which queue, Primary or Secondary, an RTT/ERTT is from.

2.3.4. In a single window queue configuration all Primary queue display and behavior requirements must be met.

2.3.5. The primary queue shall remain continuously open at each console.

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2.3.6. The primary queue shall remain continuously visible, except if a configuration screen (e.g. patching setup) or similar is open at the dispatch console.

2.3.7. In a dual window queue GUI environment, the currently selected active queue window shall be visually distinct from the 'non-active' queue window to allow the operator to distinguish between currently selected and non-selected queue windows. A different border outline highlight of currently selected queue window is acceptable.

2.4. Audible and Visual Indications

2.4.1. An audible tone on the unselect audio channel and visual indication shall accompany every new RTT when it is received in the primary queue.

2.4.2. An RTT received only in the secondary queue shall not produce an audible tone or visual indication other than being displayed in the secondary queue.

2.4.3. The visual indication shall include unique identification information from the SU that generated the RTT.

2.4.4. The RTT audible tone shall repeat at regular intervals of 5 to 10 seconds while the top most RTT remains unanswered and in the primary queue.

2.4.5. The audio level and repeat interval of the audible tone in 2.4. 1 shall be configurable by the console administrator and shall have on/off capability.

2.5. Emergency Indication

2.5.1. An Emergency RTT (ERTT) is a special type of RTT which adds additional information to the RTT indication at the console to indicate the urgent nature of the request. The emergency request shall similarly register at the console as an RTT but must display uniquely with prominent emergency attributes.

2.5.2. An ERTT shall produce an audible tone and a visual indication if received in any queue.

2.5.3. Audible and visual indications for Emergency RTTs shall be distinct from regular RTTs.

2.5.4. The ERTT visual indication shall include the radio resource ID alias of the initiating Subscriber Unit on the Console in conjunction with the ERTT notification.

2.5.5. The ERTT emergency tone shall be either continuous or repeated at regular intervals on the unselect audio channel for as long as the ERTT remains unanswered.

2.5.6. A visual indicator shall identify the radio resource currently receiving an emergency call.

2.5.7. If a radio resource receiving an emergency call is not on the console screen due to the use of TABs (or equivalent), the console shall indicate the appropriate TAB that the radio resource can be found on.

2.6.   Emergency Audio Talk Path

2.6.1. All Emergency RTTs shall provide an inbound audio talk path to the Console that shall automatically be established by the System for a period of approximately 10 seconds. This shall allow the calling party to talk to the console immediately after the System has established the ERTT, prior to the console operator selecting the call from the queue.

2.6.2. The emergency tone shall continue, and the call shall have to be selected by the console operator to provide a permanent connection beyond the initial 10 second open communication.

2.7.   Selection Means

2.7.1. RTTs and ERTTs in the queue shall be selectable with a single mouse button press and touch screen interface (if available).

2.7.2. The console operator shall be able to select the top RTT/ERTT entry of the currently selected queue by pressing a configurable shortcut key. This shall perform the same function as selecting the action button 'Answer Top' as per**Error! Reference source not found.**-**Error! Reference source not found.**.

2.7.3. Selected RTT/ERTT shall change color or change icon in the queue of the console to indicate that it has been selected.

2.7.4. Only one RTT/ERTT can be selected at any given time.

2.7.5. A double mouse button click of a RTT/ERTT shall result in the 'Answer' action (2.10.1-b) being applied to the selected RTT/ERTT.

2.8.   Queue Display Priority

2.8.1. Each queue shall sequentially display all unanswered RTTs/ERTTs with the highest priority at the top and the lowest priority at the bottom.

2.8.2. The queue priority from highest to lowest shall be arranged as follows:

a.   Oldest ERTT;
b.   Newest ERTT;
c.   Oldest ERTT On Hold;
d.   Newest ERTT On Hold;
e.   Oldest RTT On Hold;
f.   Newest RTT On Hold;
g.   Oldest RTT;
h.   Newest RTT.

2.9.   Queue Window Information

2.9.1. The queue window shall display the following information:

a.   A numeric sequence number, indicating the position of the particular call in the list. Number 1 shall be the top of the queue;
b.   Subscriber Unit ID (SUID) or associated Alias;

c. Radio Resource Identifier (ID) or associated Alias;

d. Special characters to indicate type and status of call. These characters may indicate Emergency calls, calls which are 'Allocated' or 'Not Allocated' to this console and calls which have been responded to but placed on hold.ial characters to indicate type and status of call. These characters may indicate Emergency calls, calls which are intended for other dispatchers and calls which have been responded to but placed on hold.

2.9.2. The queue window should display the following information:
   a. Elapsed Time Since Initial RTT/ERTT;
   b. Elapsed Time Since Last Update from console or SU;
   c. Console (ID) or associated console Alias;

2.9.3. Preferably, the time that a call is received in a queue shall be displayed.

2.9.4. Preferably, Information field 'Elapsed Time Since Last Update from console or SU' (2.9.2-b) shall display the length of time since the RTT/ERTT was last updated.

2.9.5. Information field 'Console ID or associated console Alias' (2.9.2-c) should display information regarding the console that last updated the call. A new RTT/ERTT that has had no console act on it, shall display nothing in this field.

2.9.6. The information fields displayed in the queues should be configurable at the console administrator user level.

2.9.7. Active "In call" window shall display the Radio Resource of the calling unit.

2.10. Queue Actions

2.10.1. The following actions shall be included for the interaction with the RTT/ERTTs in the queue:
   a. Mute
   b. Answer
   c. Answer Top
   d. Hold
   e. End Call

2.10.2. The action listed in (2.10.1) shall operate either on the selected RTT/ERTT or the active queue window, where applicable.

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2.10.3. The action buttons listed in (**Error! Reference source not found.**) shall not change any 'Allocated' Radio Resources on that console as defined in **Error! Reference source not found.**.

2.10.4. Text or icons displayed on the action buttons listed in (2.10.1) should only be editable by a console user with administrator level privileges.

2.10.5. Action 'Mute' (2.10.1-a) shall:

a. Silence all active audible indications generated from existing RTT/ERTT in the queue; and
b. Not silence any subsequent RTT/ERTT arriving in the queue thereafter.

2.10.6. Action 'Answer' (2.10.1.-b) shall:

a. Perform the 'Hold' 2.10.8 action on currently active call (RTT/ERTT) if applicable;
b. Act on the currently selected RTT/ERTT or the highest priority unanswered RTT/ERTT of the currently selected or active window queue if no RTT/ERTT is selected; and
c. Set the consoles radio communication path to that of the calling SU's Radio Resource.

2.10.7. Action 'Answer Top' (2.10.1-c) shall:

a. Perform all actions of 'Answer' (**Error! Reference source not found.**-b) on the highest priority unanswered RTT/ERTT of the selected queue.

2.10.8. Action 'Hold' (2.10.1-d) shall:

a. Not be available if the RTT/ERTT has not previously been 'Answered';
b. Change the priority level of the RTT/ERTT to 'On Hold' and adjust its location in the appropriate queue;
c. Change the visual appearance of the selected RTT/ERTT (e.g.: change color to black); and
d. Remove the console's radio communication path from that of the calling SU's Radio Resource.

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2.10.9. Action 'End Call' (2.10.1-e) shall:

    a.   Not be available if the RTT/ERTT has not previously been 'Answered';
    b.   Remove the console's radio communication path from that of the calling SU's Radio Resource; and
    c.   Remove call from all queues on all consoles.

2.11.   Queue Capacity

2.11.1. The primary and secondary queues shall be capable of displaying a minimum of 10 unanswered RTTs/ERTTs each simultaneously.

2.11.2. The primary and secondary queues shall be capable of displaying up to 30 unanswered RTTs/ERTTs each via scrolling or paging capabilities.

2.12.   Queue Operations

2.12.1. Only one RTT/ERTT shall be allowed per unit ID. If a calling party generates a second RTT/ERTT, it shall replace the first RTT/ERTT, assuming the queue position of the first RTT/ERTT. The site, radio resource and elapsed time since last update of the new RTT/ERTT will replace that of the first. The "Elapsed time since Initial RTT/ERTT" shall not be updated.

2.12.2. If an unanswered regular RTT is followed by an Emergency RTT from the same radio resource ID number, the call shall be updated and treated as an ERTT call, cancelling or overwriting the first original RTT.

2.12.3. Any update or action preformed on a RTT/ERTT call by a console shall propagate to all other consoles displaying that RTT/ERTT.

2.13.   Logging

2.13.1. The console shall keep a log of all incoming RTTs/ERTTs containing all of the information available for display in the queue.

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2.13.2. The log entry shall record all actions (refer to section 2.10 Queue Actions) performed by the console operator respective to the RTT/ERTT.

2.13.3. A new log file shall be created daily and titled with the date and a console unique identifier.

2.13.4. There shall be an option of automatic purging of records from the console hard drive and transferring them to a file server on the radio network for archiving.

2.13.5. All log entries shall include the date and time (to the second) of the event.

2.13.6. The past 24 hours of logs shall be easily accessible from the console workstation.

2.14.   RTT Acknowledgement

2.14.1. An acknowledgement message to the received subscriber unit's STS_UPDT_REQ message must be send by the console subsystem. As per TIA-102.AABD-A Section 3.7, this acknowledgement message must be an ACK_RSP_FNE with values set as outlined below:
Service Type: %011000 (binary), the opcode for STS_UPDT
AIV: 1
EX: 0
Source Address: $FF FFFC (Hex), Console Subsystem Address as per TIA-102.AABD-A, Annex A

2.14.2. Target Address: the calling SU's Unit ID

2.14.3. Emergency RTT Acknowledgement

2.14.4. Emergency RTT will follow the process for Emergency Alarm Procedure. The P25 specifications outline how the Emergency Alarm Procedure must work within a P25 system and radio. The Alarm procedures are detailed within TIA-102.CAEC Section 19.

The below phases will be mandatory

19.2.4 (2)

Royal Canadian   Gendarmerie royale
Mounted Police   du Canada

Canada

19.2.4 (3)

19.3.4 (2)

19.3.4 (3)

2.14.5. Until the emergency state in the radio is cleared, all operations by the subscriber unit will have the emergency bit set to 1.

3. Infrastructure

3.1. General

3.1.1. The RTT and ERTT function shall operate on all RCMP Talk paths, all P25 trunked radio system, all P25 conventional radio system and all legacy analogue radio system that will be associated with this specification.

3.1.2. Since RTT is not currently a defined feature within the P25 standards, the RCMP has designed the implementation of the RTT using existing, non- proprietary P25 features. This provides compatibility between multiple vendors' radio equipment and enables RTT calls on a radio system with End User Radio equipment from different manufacturers.

3.2. Status Control Message

3.2.1. The RTT function shall be implemented using the status control message (STS_UPDT_REQ) as defined in the most current version of Trunking Control Channel Messages, TIA-102.AABC-C.

3.3. RTT Quieting

3.3.1. A quieting message to the received subscriber unit's STS_UPDT_REQ message shall be send by the Radio system Infrastructure. As per TIA-102.AABD-A Section 3.7, this acknowledgement message shall be an ACK_RSP_FNE with values set as outlined below:
Service Type: %011000 (binary), the opcode for STS_UPDT
AIV: 1
EX: 0

Source Address: $FF FFFD (Hex), System Default as per TIA-102.AABD-A, Annex A.
5.2.2
Target Address: the calling SU's Unit ID

3.4.   RTT Deny

3.4.1. If the system is unable to process the RTT request, a deny response message to the received subscriber unit's STS_UPDT_REQ message shall be send. This Deny response message shall be send within a configurable timeout window. As per TIA-102.AABD-A Section 10.3, this Deny response message must be a DENY_RSP with values set as outlined below:
Service Type: %011000 (binary)
AIV: 0
EX: 0
Target Address: the calling SU's Unit ID

3.5.   Emergency Acknowledgement

3.5.1. Emergency RTT will follow the process for Emergency Alarm Procedure. The P25 specifications outline how the Emergency Alarm Procedure must work within a P25 system and radio. The Alarm procedures are detailed within TIA-102.CAEC Section 19.

The below phases will be mandatory

 19.2.4 (2)
19.2.4 (3)
19.3.4 (2)
19.3.4 (3)

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APPENDIX E

V Division subscriber unit details

1.1. The proposed system must be able to operate with the following end user subscriber equipment:

Motorola XTS 5000
Motorola XTL 5000
Motorola APX 6500
Motorola APX 7000
Motorola APX 7500
Motorola APX 8000
Motorola APX 8500

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