

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

**REQUEST FOR PROPOSAL  
DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government  
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services  
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

There is a security requirement with this procurement.

<b>Title - Sujet</b> P25 RADIO CONSOLE	
<b>Solicitation No. - N° de l'invitation</b> M7594-125049/A	<b>Date</b> 2012-08-01
<b>Client Reference No. - N° de référence du client</b> M7594-125049	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$QD-008-23034	
<b>File No. - N° de dossier</b> 008qd.M7594-125049	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2012-08-29</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Daylight Saving Time EDT	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Van Dusen, Eric	<b>Buyer Id - Id de l'acheteur</b> 008qd
<b>Telephone No. - N° de téléphone</b> (819) 956-5816 ( )	<b>FAX No. - N° de FAX</b> (819) 956-0636
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>  Specified Herein Précisé dans les présentes	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

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

**Issuing Office - Bureau de distribution**  
Defence Communications Division. (QD)  
11 Laurier St./11, rue Laurier  
Place du Portage, Phase III, 8C2  
Gatineau, Québec K1A 0S5

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

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## **PART 1 - GENERAL INFORMATION**

### **1. SECURITY REQUIREMENT**

There is a security requirement associated with the requirement. For additional information, consult Part 4 - Evaluation Procedures and Basis of Selection, and Part 6 - Resulting Contract Clauses.

### **2. STATEMENT OF WORK**

The Work to be performed is detailed under Article 2 of the resulting contract clauses.

### **3. DEBRIEFINGS**

After contract award, bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

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## PART 2 - BIDDER INSTRUCTIONS

### 1. STANDARD INSTRUCTIONS, CLAUSES AND CONDITIONS

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions* Manual (<http://sacc.pwgsc.gc.ca/sacc/index-e.jsp>) issued by Public Works and Government Services Canada (PWGSC).

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2012-07-11) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

#### 1.1 SACC Manual Clauses

B1000T (2007-11-30) Condition of Material

### 2. SUBMISSION OF BIDS

Bids must be submitted only to Public Works and Government Services (PWGSC) Canada Bid Receiving Unit by the date, time and place indicated on page one (1) of the bid solicitation.

### 3. ENQUIRIES - BID SOLICITATION

All enquiries must be submitted in writing to the Contracting Authority no later than five (5) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

### 4. APPLICABLE LAWS

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

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### **PART 3 - BID PREPARATION INSTRUCTIONS**

#### **1. BID PREPARATION INSTRUCTIONS**

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (6 hard copies)

Section II: Financial Bid and Certifications (1 hard copy)

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement

(<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders are encouraged to:

- 1) use paper containing fibre certified as originating from a sustainably-managed forest and/or containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

#### **Section I: Technical Bid**

In their technical bid, bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work, as detailed in the Statement of Work at Annex B.

The technical bid document should include the following:

- (1.) A description of the proposed system and equipment, complete with necessary information (e.g. technical brochures, drawings, specifications, test reports) to demonstrate compliance with the requirements. References to Web sites are not acceptable; and
- (2.) The information requested in Annex D - Technical Evaluation Plan.

#### **Section II: Financial Bid**

Bidders must submit their financial bid in accordance with the Basis of Payment. The total amount of Goods and Services Tax (GST) or Harmonized Sales Tax (HST) must be shown separately, if applicable.

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The Bidder should complete Annex C - Pricing and Delivery Table.

The firm unit price must be provided as follows:

Incoterms 2000:	Delivered Duty Paid (DDP).
Transportation/Shipping charges:	Included.
Canadian Customs/Duties:	Included.
GST/HST:	Extra.

Proposed deliveries must be stated for all items listed in Annex C - Pricing and Delivery Table, in calendar days after contract award (ACA).

The Bidder should fill in the blanks in Part 6 "Resulting Contract Clauses", and provide a copy of those pages in the bid.

### **1.1 Exchange Rate Fluctuation**

C3011T (2010-01-11) Exchange Rate Fluctuation

### **Section III: Certifications**

Bidders must submit the certifications required under Part 5.

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## **PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION**

### **1. EVALUATION PROCEDURES**

(a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.

(b) An evaluation team composed of representatives of Canada will evaluate the bids.

(c) After the proposal closing date, no amendment to the proposal will be accepted. However, during the evaluation, Public Works and Government Services Canada may, at its discretion, request clarification in writing.

(d) For the purpose of the bid solicitation, bidders with an address in Canada are considered Canadian-based bidders and bidders with an address outside of Canada are considered foreign-based bidders.

#### **1.1 Technical Evaluation**

Compliance with all mandatory requirements of the bid solicitation, including all Annexes and applicable terms and conditions will be verified. In the case where a mandatory requirement is not complied with, the proposal will receive no further consideration.

#### **1.2 Financial Evaluation**

1. The price of the bid will be evaluated as follows:

(a.) Bidders must submit firm prices, Incoterm 2000 DDP, and Goods and Services Tax (GST) and Harmonized Sales Tax (HST) excluded.

2. Unless the bid solicitation specifically requires bids to be submitted in Canadian currency, bids submitted in foreign currency will be converted to Canadian currency for evaluation purposes. The rate given by the Bank of Canada in effect on the bid solicitation closing date, or on another date specified in the bid solicitation, will be applied as a conversion factor to the bids submitted in foreign currency.

### **2. BASIS OF SELECTION**

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

### **3. SECURITY REQUIREMENT**

1. Before award of a contract, the following conditions must be met:

(a) the Bidder must hold a valid organization security clearance as indicated in Part 6 - Resulting Contract Clauses;

(b) the Bidder's proposed individuals requiring access to classified or protected information, assets or sensitive work site(s) must meet the security requirement as indicated in Part 6 - Resulting Contract Clauses;

(c) the Bidder must provide the name of all individuals who will require access to classified or protected information, assets or sensitive work sites.

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2. Bidders are reminded to obtain the required security clearance promptly. Any delay in the award of a contract to allow the successful bidder to obtain the required clearance will be at the entire discretion of the Contracting Authority.

3. For additional information on security requirements, bidders should consult the "Security Requirements for PWGSC Bid Solicitations - Instructions for Bidders" (<http://www.tpsgc-pwgsc.gc.ca/app-acq/lc-pl/lc-pl-eng.html#a31>) document on the Departmental Standard Procurement Documents Website.

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## PART 5 - CERTIFICATIONS

Bidders must provide the required certifications to be awarded a contract. Canada will declare a bid non-responsive if the required certifications are not completed and submitted as requested.

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after award of a contract. The Contracting Authority will have the right to ask for additional information to verify bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications or to comply with the request of the Contracting Authority for additional information will also render the bid non-responsive.

### 1. CERTIFICATIONS PRECEDENT TO CONTRACT AWARD

The certifications listed below should be completed and submitted with the bid, but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

#### 1.1 Federal Contractors Program for Employment Equity - \$200,000 or more

1. The Federal Contractors Program (FCP) requires that some suppliers, including a supplier who is a member of a joint venture, bidding for federal government contracts, valued at \$200,000 or more (including all applicable taxes), make a formal commitment to implement employment equity. This is a condition precedent to contract award. If the Bidder, or, if the Bidder is a joint venture and if any member of the joint venture, is subject to the FCP, evidence of its commitment must be provided before the award of the Contract.

Suppliers who have been declared ineligible contractors by Human Resources and Skills Development Canada (HRSDC) are no longer eligible to receive government contracts over the threshold for solicitation of bids as set out in the Government Contracts Regulations. Suppliers may be declared ineligible contractors either as a result of a finding of non-compliance by HRSDC, or following their voluntary withdrawal from the FCP for a reason other than the reduction of their workforce to less than 100 employees. Any bids from ineligible contractors, including a bid from a joint venture that has a member who is an ineligible contractor, will be declared non-responsive.

2. If the Bidder does not fall within the exceptions enumerated in 3.(a) or (b) below, or does not have a valid certificate number confirming its adherence to the FCP, the Bidder must fax (819-953-8768) a copy of the signed form LAB 1168, Certificate of Commitment to Implement Employment Equity, to the Labour Branch of HRSDC.

3. The Bidder, or, if the Bidder is a joint venture the member of the joint venture, certifies its status with the FCP, as follows:

The Bidder or the member of the joint venture

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(a) ( ) is not subject to the FCP, having a workforce of less than 100 full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada;

(b) ( ) is not subject to the FCP, being a regulated employer under the Employment Equity Act, S.C. 1995, c. 44;

(c) ( ) is subject to the requirements of the FCP, having a workforce of 100 or more full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC (having not bid on requirements of \$200,000 or more), in which case a duly signed certificate of commitment is attached;

(d) ( ) is subject to the FCP, and has a valid certificate number as follows: \_\_\_\_\_  
(e.g. has not been declared an ineligible contractor by HRSDC.)

Further information on the FCP is available on the HRSDC Web site.

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## PART 6 - RESULTING CONTRACT CLAUSES

### 1. SECURITY REQUIREMENT

1.1. The Contractor must, at all times during the performance of the Contract, hold a valid Designated Organization Screening (DOS), issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).

1.2. The Contractor/Offeror personnel requiring access to PROTECTED information, assets, or sensitive work site(s) must EACH hold an appropriate RCMP clearance, granted or approved by RCMP. (NOTE: All security screenings undertaken by the RCMP on behalf of PWGSC for this contract will also be duplicated to CISD.)

In addition, Contractor personnel must submit to a local verification of identity / information by RCMP, prior to admittance to the facility / site. The RCMP reserves the right to deny access to any facility / site or part thereof to any Contractor personnel, at any time.

1.3. The Contractor MUST NOT remove any PROTECTED information or assets from the identified work site(s), and the Contractor must ensure that its personnel are made aware of and comply with this restriction

1.4. Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of CISD/PWGSC.

1.5. The Contractor must comply with the provisions of the:

(a) Security Requirements Check List and security guide (if applicable), attached at Annex A;

(b) Industrial Security Manual (Latest Edition).

### 2. STATEMENT OF WORK

The Royal Canadian Mounted Police (RCMP) has a requirement for the procurement of a P25 Radio Console Sub-System, software licenses, training, documentation, and support services for the North West Territories. The Work must be performed in accordance with the Statement of Work at Annex B.

#### 2.1 Optional Goods and/or Services

The Contractor grants to Canada the irrevocable option to acquire the goods, services or both described at Annex B of the Contract under the same conditions and at the prices and/or rates stated in the Contract. The option may only be exercised by the Contracting Authority and will be evidenced, for administrative purposes only, through a contract amendment.

The Contracting Authority may exercise the option within 12 months after contract award by sending a written notice to the Contractor.

#### 2.2 For Deliverable 9, Support Services and Help Desk - Option to Extend the Contract

The Contractor grants to Canada the irrevocable option to extend the term of the Contract by up to five (5) additional one-year period(s) under the same conditions. The Contractor

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agrees that, during the extended period of the Contract, it will be paid in accordance with the applicable provisions as set out in the Basis of Payment.

Canada may exercise this option at any time by sending a written notice to the Contractor at least fifteen (15) calendar days before the expiry date of the Contract. The option may only be exercised by the Contracting Authority, and will be evidenced for administrative purposes only, through a contract amendment.

### **3. STANDARD CLAUSES AND CONDITIONS**

All clauses and conditions identified in the Contract by number, date and title are set out in the *Standard Acquisition Clauses and Conditions* Manual (<http://sacc.pwgsc.gc.ca/sacc/index-e.jsp>) issued by Public Works and Government Services Canada.

#### **3.1 General Conditions**

2030 (2012-07-16) General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

2035 (2012-07-16) General Conditions - Higher Complexity - Services, apply to and form part of the Contract.

#### **3.2 Supplemental General Conditions**

4001 (2010-08-16) Hardware Purchase, Lease and Maintenance

4002 (2010-08-16) Software Development or Modification Services

4003 (2010-08-16) Licensed Software

4004 (2010-08-16) Maintenance and Support Services for Licensed Software

4006 (2010-08-16) Contractor to Own Intellectual Property Rights in Foreground Information

### **4. TERM OF CONTRACT**

#### **4.1 Delivery Date**

All the deliverables must be received in accordance with Annex B Statement of Work.

### **5. AUTHORITIES**

#### **5.1 Contracting Authority**

The Contracting Authority for the Contract is:

Eric Van Dusen  
Public Works and Government Services Canada  
Acquisitions Branch  
Defence and Major Projects Sector  
Defence Communications Division (QD)  
11 Laurier Street  
Place du Portage, Phase III, 8C2  
Gatineau, Quebec, Canada K1A 0S5

Telephone: (819) 956-5816 Facsimile: (819) 956-0636

E-mail: [eric.vandusen@tpsgc-pwgsc.gc.ca](mailto:eric.vandusen@tpsgc-pwgsc.gc.ca)

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The

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Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

## 5.2 Technical Authority

The Technical Authority (TA) for the Contract will be identified at Contract award.

The Technical Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

## 5.3 Contractor's Representative

Name and telephone number of the person responsible for:

### Technical enquiries:

Name: \_\_\_\_\_

Telephone: \_\_\_\_\_

Facsimile: \_\_\_\_\_

E-mail address: \_\_\_\_\_

### Delivery and Invoicing follow-up:

Name: \_\_\_\_\_

Telephone: \_\_\_\_\_

Facsimile: \_\_\_\_\_

E-mail address: \_\_\_\_\_

## 6. PAYMENT

### 6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price of \$ \_\_\_\_\_ in \_\_\_\_\_ funds, Delivered Duty Paid (DDP), excluding Travel and Living Expenses. The Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

### 6.2 Limitation of Price

SACC Manual clause C6000C (2011-05-16) Limitation of Price.

### 6.3 Method of Payment

H1001C (2008-05-12) Multiple Payments, as per Annex C -Pricing and Delivery Table.

### 6.4 SACC Manual Clauses

C2000C (2007-11-30)

Taxes - Foreign-based Contractor

C2604C (2010-01-11)

Customs Duties, Excise Taxes and GST/HST - Non-resident

C2611C (2007-11-30)

Customs Duties - Contractor Importer

## 7. INVOICING INSTRUCTIONS

1.The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

Each invoice must be supported by:

- a.a copy of time sheets to support the time claimed;
- b.a copy of the release document and any other documents as specified in the Contract;
- c.a copy of the invoices, receipts, vouchers for all direct expenses, and all travel and living expenses;
- d.a copy of the monthly progress report.

2.Invoices must be distributed as follows:

- a.The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.
- b.One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.
- c.one (1) copy must be forwarded to the consignee.

### **8. CERTIFICATIONS**

Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the entire contract period. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

### **9. APPLICABLE LAWS**

The contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in \_\_\_\_\_.

### **10. PRIORITY OF DOCUMENTS**

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) Annex A, Security Requirements Checklist;
- (c) Annex C, Pricing and Delivery Table;
- (d) Annex B, Statement of Work;
- (e) 2030 (2012-07-11) General Conditions - Higher Complexity - Goods;
- (f) 2035 (2012-07-11) General Conditions - Higher Complexity - Services;
- (g) 4001 (2010-08-16) Hardware Purchase, Lease and Maintenance;
- (h) 4002 (2010-08-16) Software Development or Modification Services;
- (i) 4003 (2010-08-16) Licensed Software;
- (j) 4004 (2010-08-16) Maintenance and Support Services for Licensed Software;
- (k) 4006 (2010-08-16) Contractor to Own Intellectual Property Rights in Foreground Information;
- (l) the Contractor's bid dated \_\_\_\_\_.

### **11. SACC MANUAL CLAUSES**

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A9051C (2008-05-12)	Existing Technical Publications - Translation
B7500C (2006-06-16)	Excess Goods
D2000C (2007-11-30)	Marking
D2001C (2007-11-30)	Labelling
D2025C (2008-12-12)	Wood Packaging Materials
D6010C (2007-11-30)	Palletization
D9002C (2007-11-30)	Incomplete Assemblies
G1005C (2008-05-12)	Insurance

## **12. CONSIGNEE**

Royal Canadian Mounted Police

G-Division HQ

Bag 5000 - 49th Ave

Yellowknife, NWT

X1A 2R3

## **13. PREPARATION FOR DELIVERY**

### **13.1 Packaging**

All equipment shall be packaged to ensure that the equipment will not be damaged during shipment and/or delivery to the consignee, as well as any associated handling on site.

Fragile components must be clearly identified and labelled.

## **14. SHIPPING INSTRUCTIONS - DELIVERY AT DESTINATION**

Goods must be consigned to the destination specified in the Contract and delivered:

Delivered Duty Paid (DDP) Incoterms 2000 for shipments from a commercial contractor.

## **15. QUALITY ASSURANCE REQUIREMENTS**

The contractor must provide objective evidence that the system and any major component therein have been designed, manufactured, inspected and tested under the umbrella of a quality assurance program capable of meeting the requirements of the applicable ISO Standard 9001: 2000.

Solicitation No. - N° de l'invitation

M7594-125049/A

Amd. No. - N° de la modif.

File No. - N° du dossier

008qdM7594-125049

Buyer ID - Id de l'acheteur

008qd

CCC No./N° CCC - FMS No./N° VME

M7594-125049

---

## **ANNEX A**

# **SECURITY REQUIREMENTS CHECKLIST (SRCL)**

FEB 16 2012



Contract Number / N<sup>o</sup> : SRCLM7594-125409  
Security Classification / Classification de sécurité :

SECURITY REQUIREMENTS CHECK LIST (SRCL)  
LISTE DE VÉRIFICATION DES EXIGENCES RELATIVES À LA SÉCURITÉ (LVERS)

1. Originating Government Department or Organization / Ministère ou organisme gouvernemental d'origine		2. Branch or Directorate / Direction générale ou Direction	
RCMP		Mobile Communications Services	
3. a) Subcontract Number / Numéro du contrat de sous-traitance		3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant	
4. Brief Description of Work / Brève description du travail Supply and in stall a P25 Radio Communications console in the RCMP Yorkville Operational Communications Centre (OCC)			
5. a) Will the supplier require access to Controlled Goods? Le fournisseur aura-t-il accès à des marchandises contrôlées?		<input checked="" type="checkbox"/> No Non	<input type="checkbox"/> Yes Oui
5. b) Will the supplier require access to unclassified military technical data subject to the provisions of the Technical Data Control Regulations? Le fournisseur aura-t-il accès à des données techniques militaires non classifiées qui sont assujetties aux dispositions du Règlement sur le contrôle des données techniques?		<input checked="" type="checkbox"/> No Non	<input type="checkbox"/> Yes Oui
6. Indicate the type of access required / Indiquer le type d'accès requis			
6. a) Will the supplier and its employees require access to PROTECTED and/or CLASSIFIED information or assets? Le fournisseur ainsi que les employés auront-ils accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS? (Specify the level of access using this chart in Question 7. c) (Préciser le niveau d'accès en utilisant le tableau qui se trouve à la question 7. c)		<input checked="" type="checkbox"/> No Non	<input type="checkbox"/> Yes Oui
6. b) Will the supplier and its employees (e.g. cleaners, maintenance personnel) require access to restricted access areas? No access to PROTECTED and/or CLASSIFIED information or assets is permitted. Le fournisseur et ses employés (p. ex. nettoyeurs, personnel d'entretien) auront-ils accès à des zones d'accès restreintes? L'accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS n'est pas autorisé.		<input type="checkbox"/> No Non	<input checked="" type="checkbox"/> Yes Oui
6. c) Is this a commercial courier or delivery requirement with no overnight storage? S'agit-il d'un contrat de messagerie ou de livraison commerciale sans entreposage de nuit?		<input checked="" type="checkbox"/> No Non	<input type="checkbox"/> Yes Oui
7. a) Indicate the type of information that the supplier will be required to access / Indiquer le type d'information auquel le fournisseur devra avoir accès			
Canada <input checked="" type="checkbox"/>		NATO / OTAN <input type="checkbox"/>	
Foreign / Étranger <input type="checkbox"/>			
7. b) Release restrictions / Restrictions relatives à la diffusion			
No release restrictions / Aucune restriction relative à la diffusion <input checked="" type="checkbox"/>		All NATO countries / Tous les pays de l'OTAN <input type="checkbox"/>	
Not releasable / À ne pas diffuser <input type="checkbox"/>		Restricted to / Limité à : <input type="checkbox"/>	
Restricted to / Limité à : <input type="checkbox"/>		Specify country(ies) / Préciser le(s) pays : <input type="checkbox"/>	
7. c) Level of Information / Niveau d'information			
PROTECTED A / PROTÉGÉ A <input type="checkbox"/>	NATO UNCLASSIFIED / NATO NON CLASSIFIÉ <input type="checkbox"/>	PROTECTED A / PROTÉGÉ A <input type="checkbox"/>	
PROTECTED B / PROTÉGÉ B <input type="checkbox"/>	NATO RESTRICTED / NATO DIFFUSION RESTREINTE <input type="checkbox"/>	PROTECTED B / PROTÉGÉ B <input type="checkbox"/>	
PROTECTED C / PROTÉGÉ C <input type="checkbox"/>	NATO CONFIDENTIAL / NATO CONFIDENTIEL <input type="checkbox"/>	PROTECTED C / PROTÉGÉ C <input type="checkbox"/>	
CONFIDENTIAL / CONFIDENTIEL <input type="checkbox"/>	NATO SECRET <input type="checkbox"/>	CONFIDENTIAL / CONFIDENTIEL <input type="checkbox"/>	
SECRET <input type="checkbox"/>	COSMIC TOP SECRET <input type="checkbox"/>	SECRET <input type="checkbox"/>	
TOP SECRET / TRÈS SECRET <input type="checkbox"/>	COSMIC TRÈS SECRET <input type="checkbox"/>	TOP SECRET / TRÈS SECRET <input type="checkbox"/>	
TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) <input type="checkbox"/>		TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) <input type="checkbox"/>	

TBS/SCT 350-103(2004/12)

Security Classification / Classification de sécurité





**PART 2 - PARTIE 2**

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets?  
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS?  
If Yes, indicate the level of sensitivity:  
Dans l'affirmative, indiquer le niveau de sensibilité:  No  Yes  
Non  Oui

9. Will the supplier require access to extremely sensitive INFOSEC information or assets?  
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate?  
Short Title(s) of material / Titre(s) abrégé(s) du matériel:  
Document Number / Numéro du document:  No  Yes  
Non  Oui

**PART 3 - PARTIE 3**

10. a) Personnel security screening level required / Niveau de contrôle de la sécurité du personnel requis

<input checked="" type="checkbox"/> RELIABILITY STATUS COTE DE FIABILITÉ	<input type="checkbox"/> CONFIDENTIAL CONFIDENTIEL	<input type="checkbox"/> SECRET SECRET	<input type="checkbox"/> TOP SECRET TRÈS SECRET
<input type="checkbox"/> TOP SECRET - SIGINT TRÈS SECRET - SIGINT	<input type="checkbox"/> NATO CONFIDENTIAL NATO CONFIDENTIEL	<input type="checkbox"/> NATO SECRET NATO SECRET	<input type="checkbox"/> COSMIC TOP SECRET COSMIC TRÈS SECRET
<input type="checkbox"/> SITE ACCESS ACCÈS AUX EMPLACEMENTS			

Special comment:  
Commentaires spéciaux: RCMP Reliability Status - Supervised site access to the OCC and several radio sites.

NOTE: If multiple levels of screening are identified, a Security Classification Guide must be provided.  
REMARQUE: Si plusieurs niveaux de contrôle de sécurité sont requis, un guide de classification de la sécurité doit être fourni.

10. b) May unscreened personnel be used for portions of the work?  
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?  
If Yes, will unscreened personnel be escorted?  
Dans l'affirmative, le personnel en question sera-t-il escorté?  No  Yes  
Non  Oui

**PART 4 - PARTIE 4**

**INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS**

11. a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED information or assets on its site or premises?  
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?  No  Yes  
Non  Oui

11. b) Will the supplier be required to safeguard COMSEC information or assets?  
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC?  No  Yes  
Non  Oui

**PRODUCTION**

11. c) Will the production (manufacture, and/or repair and/or modification) of PROTECTED and/or CLASSIFIED material or equipment occur at the supplier's site or premises?  
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ?  No  Yes  
Non  Oui

**INFORMATION TECHNOLOGY (IT) MEDIA / SUPPORT RELATIF À LA TECHNOLOGIE DE L'INFORMATION (TI)**

11. d) Will the supplier be required to use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data?  
Le fournisseur sera-t-il tenu d'utiliser ses propres systèmes informatiques pour traiter, produire ou stocker électroniquement des renseignements ou des données PROTÉGÉS et/ou CLASSIFIÉS?  No  Yes  
Non  Oui

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency?  
Déposera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale?  No  Yes  
Non  Oui



For users completing the form manually use the summary chart below to indicate the category(ies) and level(s) of safeguarding required at the supplier's site(s) or premises.  
 Les utilisateurs qui remplissent le formulaire manuellement doivent utiliser le tableau récapitulatif ci-dessous pour indiquer, pour chaque catégorie, les niveaux de sauvegarde requis aux installations du fournisseur.

For users completing the form online (via the Internet), the summary chart is automatically populated by your responses to previous questions.  
 Dans le cas des utilisateurs qui remplissent le formulaire en ligne (par Internet), les réponses aux questions précédentes sont automatiquement saisies dans le tableau récapitulatif.

SUMMARY CHART / TABLEAU RÉCAPITULATIF

Category / Catégorie	PROTECTED / PROTÉGÉ			CLASSIFIED / CLASSIFIÉ			NATO				COMSEC					
	A	B	C	CONFIDENTIAL	Secret	TOP SECRET / TRÈS SECRET	NATO PROTECTED / NATO DIFFUSION RESTRICTED	NATO CONFIDENTIAL	NATO Secret	COMSEC TOP SECRET / COMSEC TRÈS SECRET	PROTECTED / PROTÉGÉ			CONFIDENTIAL	Secret	TOP SECRET / TRÈS SECRET
											A	B	C			
Information / Assets / renseignements / biens																
Production																
IT / Media / Support IT / IT / Média / Support IT																
IT Link / Lien électronique																

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED?  
 La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉE et/ou CLASSIFIÉE?  No / Non  Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification".  
 Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire.

12. b) Will the documentation attached to this SRCL be PROTECTED and/or CLASSIFIED?  
 La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE?  No / Non  Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification" and indicate with attachments (e.g. SECRET with Attachments).  
 Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquez qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).



Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
Security Classification / Classification de sécurité

<b>PART 13. AUTHORITY / PARTIE 13. AUTORISATION</b>			
13. Organization Project Authority / Chargé de projet de l'organisme			
Name (print) - Nom (en lettres moulées)		Title - Titre	Signature
Ken Henry		Senior Radio System Project Manager	
Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
613-998-7502	613-998-7528	ken.henry@rcmp-grc.gc.ca	2012-02-08
14. Organization Security Authority / Responsable de la sécurité de l'organisme			
Name (print) - Nom (en lettres moulées)		Title - Titre	Signature
Judi M Chester Personnel Security Analyst		Security Officer	
Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
780 412-5719	780 412-5844		FEB 16 2012
15. Are there additional instructions (e.g. Security Guide, Security Classification Guide) attached? Des instructions supplémentaires (p. ex. Guide de sécurité, Guide de classification de la sécurité) sont-elles jointes?			<input type="checkbox"/> No / <input type="checkbox"/> Oui
16. Procurement Officer / Agente d'approvisionnement			
Name (print) - Nom (en lettres moulées)		Title - Titre	Signature
Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
17. Contracting Security Authority / Autorité contractante en matière de sécurité			
Name (print) - Nom (en lettres moulées)		Title - Titre	Signature
Judi M Chester Personnel Security Analyst		Security Officer	
Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
780 412-5719	780 412-5844	judi.chester@rcmp-grc.gc.ca	FEB 16 2012

TBS/SCT 350-103(2004/12)

Security Classification / Classification de sécurité
--

Canada

# Annex B

## STATEMENT OF WORK

For

*“G” Division P25 Radio-over-IP Replacement Radio Console*

Version 3.0

Prepared for: RCMP Mobile Communications Services

**Issue date: 20-01-2012**

All changes or revisions will be approved by the Project Authority.

**APPROVAL RECORD**

Recommended  
by:

\_\_\_\_\_  
\_\_\_\_\_  
Ken Henry  
Project Authority

\_\_\_\_\_  
\_\_\_\_\_  
Date (dd Month yyyy)

Reviewed by:

\_\_\_\_\_  
\_\_\_\_\_  
Alex Beckstead  
System Reviewer MCS

\_\_\_\_\_  
\_\_\_\_\_  
Date (dd Month yyyy)

Approved by:

\_\_\_\_\_  
\_\_\_\_\_  
Yvon Lecompte  
Director MCS

\_\_\_\_\_  
\_\_\_\_\_  
Date (dd Month yyyy)

## REVISION HISTORY

<b>Revision Level</b>	<b>Description of Change</b>	<b>Paragraphs Affected</b>	<b>Issue Date</b>
Revision1.0	Original Submission	N/A	2010-11-10
Revision 1.1	Rework to tailor to G Division Requirements	multiple	2011-09-07
Revision 2.0	G-Div SOW review	Multiple	2011-11-01
Revision 2.1	General 'clean-up'	Multiple	2011-11-22
Revision 2.2	Final Edit	Multiple	2012-01-19
Revision 2.3	Updated CIIDS Reference (Annex G)	None	2012-03-09
Revision 3.0	PWGSC Review Edit	Multiple	2012-06-21

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# 1. SCOPE

## 1.1. Identification

---

- 1.1. This Statement of Work (SOW) identifies the work to be performed to provide a radio console sub-system to the RCMP in the North West Territories to upgrade their land mobile system to a reliable and secure P25 radio system. The work captured in this document outlines the integration of a new P25 Console Sub-System to the existing P25 capable repeaters and user gear. In addition, as the current console system is in need of urgent replacement, the console sub-system must integrate with the existing analogue, Radio Telephone Interconnect (RTI) system that is currently deployed throughout the Division. This integration will use the existing infrastructure in the Northwest Territories.

## 1.2 Requirement

---

- 1.2.1. The purpose of this requirement is the delivery and installation of a fully functional console sub-system. The console sub-system will be compliant with P25 FSI and CSSI conventional standards.
- 1.2.2. The console sub-system will integrate the existing Analogue RTI based infrastructure.

## 1.3. Security

---

- 1.3.1. Contractors and trainers will require security clearances to access RCMP facilities and RCMP sensitive information. Note: this process can take months and needs to be actioned as soon as possible in order to meet the vendor's project management timelines.
- 1.3.2. The contractor must outline in writing how he/she will handle and share sensitive documents (minimum Protected "A") such as reference to site configurations, frequencies, IP addresses, code plug, etc. Note: Anyone handling RCMP Protected information (including information that is shared with sub-contractors) must have RCMP Reliability security clearance.

- 
- 1.3.3. The contractor must get permission from the RCMP prior to releasing any sensitive information to a third party.
- 1.3.4. The handling, processing, and/or storage of sensitive documents by the contractor at a facility other than the RCMP must comply with physical security recommendations made by the RCMP.
- 1.3.5. The contractor must outline in writing how sensitive information will be passed on from the contractor to the RCMP.
- 1.3.6. All IP-based equipment will be subject to Port Scans. Justification must be submitted from the contractor for all used ports. All unused ports must be closed prior to Site Acceptance Test.
- 1.3.7. The RCMP-supplied console workstations will be loaded with the RCMP's latest Antivirus standard (McAfee 8.7i R4). The McAfee updates must be able to be administrated by the RCMP on a daily basis without adversely affecting the console operation. The vendor must outline in writing any conditions on this item.
- 1.3.8. The contractor must fully test his/her console application with the RCMP-supplied console workstations and image (see 1.6.8.2.). The contractor must document the process for testing the console application with subsequent Operating System patches and security updates. The vendor must outline in writing any conditions on this item.
- 1.3.9. The console software application must be password protected and provide role-based access. Each user must have a unique username and password in addition to the role based access.
- 1.3.10. The contractor must provide:
1. Audit/review and or independent audits including penetration testing;
  2. Procedures regarding re-certification after 3 years; and
  3. How the contractor will be reporting security incidents to the RCMP as they arise.
- 1.3.10. PWGSC has an industrial security manual that is supported by RCMP. The industrial security manual can be found at:
- English: <http://www.tbs-sct.gc.ca/atip-airpr/tpa-pcp/tpa-pcp00-eng.asp>
- French: <http://www.tbs-sct.gc.ca/atip-airpr/tpa-pcp/tpa-pcp00-fra.asp>

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## 1.4. Deliverables

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The following items must be delivered as part of the main Contract to be awarded:

- 1.4.1. Deliverable #1: Preliminary Design Review Meeting due within 15 business days of the awarding of the contract (in accordance with Section 2.1).
- 1.4.2. Deliverable #2: Critical Design Review Meeting due within 30 business days of the awarding of the contract (in accordance with Section 2.2).
- 1.4.3. Deliverable #3: Monthly Progress Meeting due monthly starting one month following the PDR (in accordance with section 2.6).
- 1.4.4. Deliverable #4: Factory Acceptance Test due at a mutually agreed upon date due no later 50 days after the awarding of the contract (in accordance with section 2.3).
- 1.4.5. Deliverable #5: Delivery, installation, and Site Acceptance Test (SAT) of one complete console sub-system in Yellowknife, Northwest Territories (in accordance with section 2.4). This is to be completed 70 days after awarding of the contract. As part of the SAT, the contractor must (as a minimum) deliver the following equipment, as well as the Operating Manuals and the Technical Manuals:
  - 1.4.5.1. Seven Dispatch Console Software licences (RCMP to supply work stations, 1.6.8.2): four to be installed in the "G" Division DOCC, one in the Division Emergency Operations Centre (DEOC) and two test/spare consoles in the Radio Shop. All these will be located in the G Division Headquarters building located in Yellowknife, NWT;
  - 1.4.5.2. The contractor must provide a primary console sub-system that will be located in the Divisional Operational Communication Centre (DOCC). Within this primary console sub-system, any components that pose a critical single point of failure must be configured in a redundant format so as not to produce any noticeable down time to the end user in the event of a failure. The primary sub-system must include full administrative and system functionality;
  - 1.4.5.3. The contractor must integrate a secondary/redundant RCMP provided work-station at the designated DOCC backup site. The redundant work-station must include full administrative and system functionality. This backup site will be located in Yellowknife, NWT; and
  - 1.4.5.4. The contractor must provide a console sub-system administrative workstation/console client used to setup/configure console system-related parameters and databases.
- 1.4.6. Deliverable #6: The contractor must provide the following training to RCMP personnel prior to and after installation of the equipment:
  - 1.4.6.1. Administrator and technical training to be held in Yellowknife, NWT for approximately six individuals. This training will be completed prior to 70 days after awarding of the contract; and

- 
- 1.4.6.2. Three separate operator training sessions to be held in Yellowknife, NWT for a total of approximately 21 individuals. Two of these sessions will take place prior to 70 days after contract award (prior to the console being operational). One session will be held up to six months later at a mutually agreed upon time for operators who missed the first two sessions.
- 1.4.7. Deliverable #7: Support Services before and on-site during the console sub-system installation and integration with the FSI, CSSI and RTI radio sub-systems.
- 1.4.7.1. On-site support must also be provided for the initial operational period of 14 days from the first live operational use. This will include an 8 hour regular shift followed by 16 hours of “on call” with a 30 minute response time.
- 1.4.8. Deliverable #8: A one year support service agreement, commencing the 15<sup>th</sup> day after the SAT has been satisfactorily completed, with the option to extend the agreement on an annual basis, up to five years.
- 1.4.8.1. This must include:
- unlimited 24/7 telephone support with a maximum response time of 8 hours.
  - up to 80 hours, excluding travel time, of on-site support with a maximum response time of 14 days. This is to be invoked when telephone support with RCMP technicians cannot resolve the issue.

## **1.5. Government Furnished Equipment**

---

All work described in this Statement Of Work (SOW) is to be performed in a “turn key” manner with the contractor functioning both as a supplier and as a system integrator. RCMP assistance will be provided at various points where appropriate, but this must not be assumed by the contractor unless the assistance is explicitly provided for in the contract. The RCMP will be responsible for providing:

- 1.5.1. User gear for acceptance testing, installation testing and approval;
- 1.5.2. All Daniels radio equipment with the appropriate FSI, CSSI and RTI interfaces as and where required;
- 1.5.3. Facilities for installation in Yellowknife that meets RCMP physical security requirements;
- 1.5.4. Antennas and feed-lines for RF equipment;
- 1.5.5. Facilities for training for up to twelve students at a time;
- 1.5.6. Existing digital logging recorder (Eventide VR725 Digital Audio Logger); and
- 1.5.7. Required IP connectivity to remote sites.

---

1.5.8. All encryption key material including Motorola KVL.

---

## 1.6. Specifications

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These paragraphs describe the technical specifications for the RCMP radio system in Yellowknife, NWT. These requirements must be strictly adhered to. The radio console must support these specifications.

### 1.6.1. General

- 1.6.1.1. The Yellowknife and Hay River radio sub-systems will be implemented as 12.5 kHz Encrypted Project 25 Common Air Interface (CAI) digital modulation. The 23 legacy RTI radio sub-systems are conventional analogue Frequency Modulation (FM). Refer to ANNEX B: RF Sub-System Site/Cluster List for further details.
- 1.6.1.2. Voice communications must take precedence over data communications.
- 1.6.1.3. There must be no voice truncation in either analogue Frequency Modulation (FM) or P25 digital mode over the RF network.
- 1.6.1.4. The contractor must ensure that the encrypted voice communication as it relates to the console sub-system is maintained from end-to-end. The encryption and decryption process and key loading are solely at the origination and termination points of communication paths which are physically under the control of and physically secured by the RCMP. The communications console equipment must have FIPS 140 Level 1 certified encryption and decryption apparatus for this purpose.
- 1.6.1.5. The contractor must ensure full compliance of the console system with the P25 standard for Over-The-Air Re-keying (OTAR) via a network connected Key Management Facility (KMF) and with the use of Key Fill Device (KFD). The P25 KMF-OTAR system referred to in this document adheres to the current ANSI/TIA 102 suite of documents.
- 1.6.1.6. The contractor is to confirm compatibility with the existing Motorola KVL3000+ KFD for the purpose of manual key-loading (see 1.6.1.17).
- 1.6.1.7. The console sub-system must provide functionality to inhibit and uninhibit functionality for P25 subscriber radio equipment from operating in the event of loss or theft via the radio system.
- 1.6.1.8. The console FSI/CSSI and RTI interfaces must be fully functional under round-trip latency (1.2 sec. maximum), conditions typically associated with satellite connectivity.
- 1.6.1.9. There must be no voice truncation while patching channels and/or conventional sites at the console. This must include cases where there is a change in the format of the audio (analog, digital encrypted, digital unencrypted)
- 1.6.1.10. The console sub-system must support the P25 Emergency Alarm Cancellation from each end point of the radio system.
- 1.6.1.11. The console sub-system must support the P25 Unit ID from each end point of the radio system. This is defined as from the subscriber unit to the console sub-system.

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- 1.6.1.12. The console sub-system must support the P25 Short Message/Pre-programmed Data Messaging from each end point of the radio system. This is defined as from the user gear to the console sub-system. Please see RTT specification below.
- 1.6.1.13. The console sub-system must support the P25 acknowledge Radio Inhibit message from each end point of the radio system. This is defined as from the user gear to the console sub-system.
- 1.6.1.14. The console sub-system must support the P25 acknowledge Radio Uninhibit message from each end point of the radio system. This is defined as from the user gear to the console sub-system.
- 1.6.1.15. The contractor must ensure that all radio system functionality detailed in the technical requirement is compatible with the following existing RCMP subscriber equipment when integrated with the console sub-system:
- Motorola XTS 5000/2500 System Portable radio.
  - Motorola XTL 5000 System Mobile radio.
- 1.6.1.16. The contractor must ensure that all radio system functionality detailed in the technical requirement is compatible with the following existing RCMP audio recording equipment when integrated with the console sub-system:
- Eventide VR725 Digital Audio Logger
- 1.6.1.17. The Contractor must ensure that the console system can be key loaded with the following Key Fill Device:
- Motorola KVL 3000+

## 1.6.2. Legacy RTI

The contractor must ensure that the console sub-system be backward compatible to the existing RTI infrastructure and operation as described below.

- 1.6.2.1. Each RTI is programmed with two speed dial numbers. One number is designated emergency RTT and the second number represents an RTT. A third telephone number is assigned to the RTI for incoming calls from the OCC.
- 1.6.2.2. The subscriber unit initiates the RTI with DTMF tones, prompting the RTI to dial one of the pre-programmed phone numbers back into the DOCC console system.
- 1.6.2.3. The Console Sub-System translates incoming calls with Dial In Direct (DID) numbers as to the type of call (RTT or ERTT) and which RTI is calling.
- 1.6.2.4. The Console Sub-System initiates outgoing calls through the phone directory listing. The console sub-system then seizes one of the outbound trunks from the phone interface and calls the phone number of the RTI associated with the desired site.

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## 1.6.3. Request-To-Talk (RTT) Requirements

### 1.6.3.1. Introduction

The section describes the RTT functionality that the RCMP requires in support of our operational mobile radio systems. RTT allows for efficient use of OCC operator resources by queuing calls, both analogue and P25, to the OCC in an organized manner. This section details the RTT specifications of Radio Subscriber Units, Consoles and radio system signalling requirements. In addition, it describes the Emergency Request To Talk (ERTT) feature.

### 1.6.3.2. General Description

The Request to Talk (RTT) function is used to permit RCMP field personnel to contact the RCMP Operational Communication Centres (OCC's) via the radio system. The RTT is initiated in the field by a user and indicates to the dispatcher that a member in the field wishes to communicate with dispatch for routine duties such as, but not limited to, status update and request for information.

Normal operations are not continuously 'live-monitored' by RCMP dispatchers. Once a member initiates an RTT, the console will alert the dispatcher via audible and visual means of an incoming call allowing the dispatcher to respond. The RTT request is sent by Subscriber Units (SU) and is received and displayed on consoles by the use of a queue.

An Emergency Request to Talk (ERTT) call indicates to dispatch that a member requires an immediate response and/or assistance due to an unsafe and or life-threatening situation. The ERTT sends a message to the Fixed Network Equipment informing it of the emergency and sets the emergency state of the radio equipment to 1. After an emergency is declared on the subscriber unit, the console sub-system will automatically initiate an inbound talk path to the dispatch consoles for approximately 10 seconds to allow the radio user to communicate with dispatch immediately.

### 1.6.3.3. General Functionality

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

### 1.6.3.4. Signalling Details

#### 1.6.3.4.1. RTT Analogue Signalling (RTI)

The RTT function is implemented using a predefined set of DTMF tones (4) to represent the site or RF channel that has initiated the RTT function. The following, which describes the current implementation, has been included to aid in the understanding of the required console sub-system functionality:

1. The RTT button on the portable or mobile transmits a 2\* DTMF sequence through the Daniels repeater to the RTI.
2. The RTI recognizes the 2\* request and immediately goes off hook and dials the DID number programmed into location 2 (speed dial mode).
3. The PSTN in Yellowknife seizes one of the 12 T1 DID trunks and sends the last 4 digits of the DID number called via DTMF.

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4. These digits are used for routing the call to the correct console displaying the name of the calling radio resource in the appropriate queues.
  5. Once the call has ended, the operator in the DOCC can dissolve the call. This is accomplished by sending a pre-programmed three pound (###) digits followed by a disconnect.

#### 1.6.3.4.2. ERTT Analogue Signalling (RTI)

The ERTT function is implemented in the same manner. The following, which describes the current implementation, has been included to aid in the understanding of the required console sub-system functionality:

1. The ERTT button on the portable or mobile transmits a 1\* (asterisk) DTMF sequence through the Daniels repeater to the RTI.
2. The RTI recognizes the 1\* request and immediately goes off hook and dials the Direct Inward Dialling (DID) number programmed into location 1.
3. The PSTN in Yellowknife seizes one of the 12 T1 DID trunks and sends the last 4 digits of the DID number called via DTMF.
4. These digits are used for routing the call to the correct console displaying the name of the calling radio resource in the appropriate queues.
5. The emergency function sets off an audible alarm.

#### 1.6.3.5. RTT P25 Signalling

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.

1.6.3.5.1. The RTT function must 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, with the following specifications:

- Status value 1 – \$0001 (hex) – will be allocated to represent the RTT function
- The 24-bit source address must be the calling SU's unit ID
- The 24-bit target address must be \$FF FFFC (hex)

1.6.3.5.2. The console sub-system must provide an acknowledgement (ACK\_RSP\_FNE) to the subscriber unit indicating that the RTT was received by the console equipment.

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### 1.6.3.6. ERTT P25 Signalling

- 1.6.3.6.1. The ERTT function will 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, with the following specifications:
- 1.6.3.6.2. The 24-bit source address of the RTT short data message sent will be the calling radio's P25 unit ID;
- 1.6.3.6.3. If the radio does not receive a acknowledgement that the ERTT was received by the console sub-system equipment, it will continue to re-send the ERTT for a pre-determined length of time;
- 1.6.3.6.4. The console sub-system must provide an acknowledgement (ACK\_RSP\_FNE) to the SU indicating that the EMRG\_ALRM\_REQ was received by the console equipment; and
- 1.6.3.6.5. Until the emergency state in the radio is cleared, all operations by the subscriber unit will have the emergency bit set to 1.

### 1.6.3.7. Console Sub-System

#### 1.6.3.7.1. Dispatcher Operations

1. The dispatch console must include functionality to support the Request to Talk (RTT) function.
2. The operator workstation application must include visible ERTT & RTT [(E)RTT] queues.
3. The (E)RTT queue must be continuously visible, except if a configuration screen (e.g. patching setup) or similar is open at each dispatch console.
4. The (E)RTT queue must support and display both telephone, analog and P25 calls.

#### 1.6.3.7.2. RTT, ERTT and Phone Queue

1. Incoming phone calls must be treated as an RTT.
2. If supported with a direct analog line to an analog RF system, the console will treat the direct analog line DTMF signal as a RTT.
3. Each visible (E)RTT in a queue must be selectable with a single mouse button press (or equivalent).
4. Selected (E)RTTs must have some visual indication that they have been selected (e.g. highlighted).
5. Only one (E)RTT can be selected at any given time.
6. Each queue will display all unanswered (E)RTT with the highest priority at the top and the lowest priority at the bottom.
7. The priority of the queues from highest to lowest must be:
  1. Oldest ERTT
  2. Newest ERTT

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3. Oldest (E)RTT On Hold
  4. Newest (E)RTT On Hold
  5. Oldest RTT
  6. Newest RTT
  8. The queue windows must contain the following information:
    1. Elapsed Time Since Initial RTT
    2. Elapsed Time Since Last Update
    3. Unit identifier (ID) or associated alias where applicable
    4. Talkgroup/channel/radio site/phone line (radio resource) identifier (ID) or associated alias that the SU is logged to/calling in on.
  5. Console (ID) or associated alias9. Information field 'Elapsed Time Since Last Update' will display the length of time since the call was last updated.
  10. Information field 'Console ID' will display information regarding the console that last updated the call. A new (E)RTT that has had no console act on it will display nothing in this field.
  11. The information fields displayed in the (E)RTT queues must be configurable by a console administrator.
  12. Multiple unanswered RTTs from the same radio resource ID number must not stack up in the RTT queues. The first RTT will be logged in the queue and displayed. All additional RTTs from the same ID number will update its displayed radio resource information and 'Elapsed Time Since Last Update'. The 'Elapsed Time since Initial RTT' will not be updated.
  13. If a RTT currently in the queue is followed by an ERTT call from the same radio resource ID number, the RTT call will be updated and treated as an ERTT call, cancelling or overwriting the first original RTT.
  14. Any update or action performed on a (E)RTT call by a console must be propagated to all other consoles displaying that (E)RTT.
  15. Each Queue window must be capable of simultaneously displaying a minimum of 10 (E)RTTs. Additional (E)RTTs must be accessible using window scrolling.
  16. Each queue window will have a configurable maximum number of (E)RTTs that will be displayed within.
  17. The text size of the (E)RTT within the queue must be configurable by the console admin.

### **1.6.3.7.3. Console Interaction with (E)RTT Queue**

1.6.3.7.3.1. The following functions must be included for the interaction with the (E)RTT Queue.

- Mute

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- Answer
  - Answer Top
  - Hold
  - Monitor
  - End Call
1. The action listed above in 1.6.3.7.3.1 must operate either on the selected (E)RTT or the active queue, where applicable.
  2. The actions buttons listed above in 1.6.3.7.3.1 must not change any allocated radio resource list as defined in *Allocated Radio Resources (0)*.
  3. Text displayed on the action buttons listed above in 1.6.3.7.3.1 must be editable by a console administrator.
  4. Action 'Mute' must Silence any current alarm generated from a new (E)RTT arriving in the queue
  5. Action 'Answer' must:
    1. act on the currently selected (E)RTT or the highest priority unanswered (E)RTT of the selected queue if no (E)RTT is selected,
    2. set the consoles radio communication path to that of the calling SU's radio resource (talkgroup/channel/radio site/phone line), and
    3. perform the 'End Call' action if an 'answered' (E)RTT is still active.
  6. Action 'Answer Top' must:
    1. perform all actions of 'Answer' on the highest priority unanswered (E)RTT of the selected queue, and
    2. have one or more keyboard shortcut(s).
  7. Action 'Hold' must:
    1. not be available if the (E)RTT has not previously been 'answered,'
    2. move the (E)RTT to the 'On Hold' location in Primary Queue and the Secondary Queue,
    3. change the visual appearance of the selected (E)RTT (e.g. change colour to black), and
    4. remove the console's radio communication path from that of the calling radio resource.
  8. Action 'Monitor' must:
    1. not be available if the (E)RTT has not previously been 'answered,'
    2. move the (E)RTT to the 'Monitor' location in Primary Queue and the Secondary Queue, and

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3. change the visual appearance of the selected (E)RTT (e.g. change colour),
  4. Transfers from operate to monitor speaker the console's radio communication path from that of the calling radio resource.
9. Action 'End Call' must:
1. not be available if the (E)RTT has not previously been 'answered,'
  2. remove the console's radio communication path from that of the calling radio resource, and
  3. mark the (E)RTT as completed to the console sub-system for update on all other consoles.
  4. Double-clicking of a (E)RTT will result in the 'Answer' action being applied to the selected (E)RTT.

#### **1.6.3.7.4. Allocated Radio Resources**

- 1.6.3.7.4.1. The console operator must be able to specify, using a GUI, up to the maximum number of the console's defined radio resources (talkgroup/channel/radio site/phone line) as 'Allocated' resources for that console.
- 1.6.3.7.4.2. There must be a method to ensure that all console radio resources are completely allocated:
  1. If any of the consoles radio resources are not 'allocated' on at least one other console, a console feature must be offered that, once enabled, would automatically and dynamically ensure that any 'un-allocated' radio resource(s) are temporarily allocated to that console (Designated Primary).
  2. The Primary (E)RTT Queue will display all (E)RTTs from radio resources currently selected by the console operator as an 'Allocated' resource on that console, as per 1.6.3.7.4.1.
  3. The allocated radio resource on the designated primary console will be automatically updated upon changes in the 'allocated' radio resource on all other consoles.
  4. The Secondary (E)RTT Queue must display all (E)RTTs from radio resources currently defined on the console or all (E)RTTs from radio resources currently defined on the console with the exception of those present in the Primary Queue.

#### **1.6.3.7.5. Visual Appearance**

1. Each console must have a separate area defined on the dispatch console screen for one or more (E)RTT queues that are continuously visible.
2. The appearance of the (E)RTT queue can be a single or dual window configuration.
  - 2.1. If a single window configuration is used, all entries from the Primary Queue will be of a higher priority than those of the Secondary Queue.
3. There must be a visual indicator identifying which queue (Primary or Secondary) an (E)RTT is from.

#### **1.6.3.7.6. Audible and Visual Indications**

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1. An audible tone on the unselect audio channel and visual indication must accompany every new RTT when it is received in the Primary Queue.
  2. A RTT received only in the secondary queue must not produce an audible tone or visual indication other than being displayed in the secondary RTT queue.
  3. An ERTT must produce an audible tone on the unselect audio channel and a visual indication if received in any (E)RTT Queue.
  4. The audible tone described in 1 and 3 above must be continuous or repeat at regular intervals until a dispatcher has acted on the (E)RTT.
  5. The audio level of the audible tone described in 1 and 3 above must be configurable by the console administrator.
  6. The audible tone for the ERTT must be distinct from that for the RTT.
  7. The visual indication for the ERTT must be distinct from that for a RTT (e.g. colour, background flashing) to draw the dispatcher's attention.
  8. There must be a visual indicator (e.g. flashing) identifying a radio resource currently receiving an emergency call.
  9. If a radio resource receiving an emergency call is not on the consoles screen due to the use of folders (or equivalent), the console must indicate a folder on which the radio resource can be found.

#### **1.6.3.7.7. (E)RTT Log**

1. The console must keep a log of all incoming (E)RTTs containing all of the information available for display in the queue.
2. A new log file will be created daily and titled with the date and a console unique identifier.
3. There must 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.
4. The log entry must record all actions (see 1.6.3.7.3.1) performed by the console operator respective to the (E)RTT.
5. All log entries must include the date and time (to the second) of the event.
6. The previous 24 hours of logs must be accessible through the console GUI.

#### **1.6.3.7.8. ERTT Audio Path**

1. All emergency RTTs must provide an inbound audio talk path to the dispatch console that must automatically be established by the radio system for a period of approximately 10 seconds. This must allow the calling party to talk to the dispatch console via the monitor speaker immediately after the radio system has established the ERTT, prior to a dispatcher selecting the call from the queue.

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### **1.6.3.8. When an OCC operator wants to call an RTI site**

The Console Sub-System must include the following call functionalities for sites that use the RTI. The following is a description of how the current console system handles it:

- 1.6.3.8.1. For the OCC operator to call any particular RTI site, they must be able to dial in the three-digit number associated with that site (actual implementation may be automated to a single keystroke/screen touch).
- 1.6.3.8.2. This action is cross-referenced to the telephone number of the RTI.
- 1.6.3.8.3. The console sub-system dials a "9" followed by the ten-digit phone number.
- 1.6.3.8.4. The RTI's are set to auto-answer so the operator gets control of the repeater as soon as the RTI answers.
- 1.6.3.8.5. When they have finished talking, the operator simply clicks on the call in the operate window and the console sub-system drops the call. Prior to the disconnect, the console system sends 3 pound signs (###) to hang up the RTI.

### **1.6.3.9. OCC operator initiated PSTN phone call**

- 1.6.3.9.1. When an operator wants to make a call to a PSTN phone number, he/she dials on the number pad of their keyboard or accesses the number via a speed-dial list. The speed-dial list must support telephone numbers preceded by a "9" (to seize an external PBX trunk) followed by up to 15 digits. There will be at least 50 allocations for speed-dial numbers.
- 1.6.3.9.2. This phone operation must support last-number redial functionality.
- 1.6.3.9.3. The console must bring up the dial window and place the call in the "Operate" window. When completed, the operator right-clicks to hang up.

### **1.6.3.10. Incoming calls to the OCC**

- 1.6.3.10.1. Incoming PSTN calls are to be treated as an RTT.

## **1.6.4. Required Paths of Communication**

The following paths of voice communication must be supported by the console system:

- 1.6.4.1. Dispatch communications initiated by a selected channel call signalling/RTI dialling sequence followed by voice call from the DOCC to any radio system user device on that channel within radio network coverage. Audio to be directed to the operator's speaker/headset and, if active monitoring is desired, redirected to the monitor speaker.
- 1.6.4.2. Inter-talk (cross-patch) channel communications with any user device within the radio/telephone network coverage via DOCC initiated channel patches. This would include telephone to two-way radio resources, telephone-to-telephone, and radio-to-radio.

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- 1.6.4.3. Dispatch communications initiated by individual call signalling followed by a voice call from the DOCC to any radio system user device within radio network coverage.
  - 1.6.4.4. Dispatch communications initiated by (P25 only) ALL CALL signalling followed by voice call from the DOCC to all radio system user devices within radio network coverage. Upon successful initiation of ALL CALLS, the console system must generate an alert tone to notify users that an ALL CALL has been initiated by the DOCC.
  - 1.6.4.5. User-device-initiated phone calls, RTI, ERTT and RTT, within radio network coverage, to the DOCC.
  - 1.6.4.6. User-device-initiated ERTT establishes a 10 second inbound audio talk path to the DOCC.

### **1.6.5. Interface Mandatory Requirements**

- 1.6.5.1. The contractor must ensure the console system allows fully functional operation with existing radio infrastructure and user equipment. The contractor must ensure there are no proprietary variants from the current suite of P25 standards which will make it impractical for the RCMP to competitively purchase subscriber equipment.
- 1.6.5.2. The contractor must provide an interface to synchronize the console system time clock to a RCMP's standard network clock/reference.
- 1.6.5.3. The contractor must provide a method of interfacing their Console Sub-System to the RCMP Computerized Integrated Information and Dispatch System (CIIDS) using IP-based, socket port, streaming text protocol. 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. See ANNEX F: Console Sub-System Interfaces and ANNEX G CAD Radio Interface Exchange Package Document.
- 1.6.5.4. CIIDS ties into the Console sub-system via a single access point in the DOCC control room for the purpose of extracting unit ID, GPS location and other available data transmitted from the user devices.
- 1.6.5.5. Functionality must be provided to automatically update information to the CAD system, based on a programmable timed interval.
- 1.6.5.6. With the co-transmission of Automatic Vehicle Location (AVL) information with every RTT (as well as normal PTT transmissions), the associated GPS information must be updated to the CAD for the purpose of registering and displaying on a map window of the territory of the calling unit. This can be accomplished via the low-speed data portion of the P25 voice frame, or standard P25 data packets.
- 1.6.5.7. The Unit ID of the calling or transmitting device must be updated to the CAD for the purpose of displaying the Alias ID in conjunction with the AVL location.

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## 1.6.6. Radio Repeater Infrastructure

- 1.6.6.1. The existing RCMP Radio Sub-System in "G" Division is made up of both Daniels MT-3 and MT-4E repeaters. See Annex A and B for the radio system overview and a list of the sites/clusters.
- 1.6.6.2. The FSI interface will leverage the existing MT-4E repeaters and replace the current audio cards (AC-3 card or BC-4E cards) with the Daniels P25 FSI Universal Interface Card (UIC). This is all to be performed and supplied by the RCMP prior to contract award.
- 1.6.6.3. The following Radio Frequency Repeater configurations must be supported as part of the G-division's legacy and future RF architecture. The following is a brief description of the three basic configurations that must be supported:
  1. **Configuration 1 - RTI Interface:** Consists of one standalone or a cluster of two to three remote repeaters at separate locations slaved together via dedicated VHF radio link paths. The standalone or the "end-point" site of a cluster is controlled via an RTI interface over a telephone connection. This is the legacy radio system configuration that needs to be supported under the business continuity planning. See Annex C .
  2. **Configuration 2 - FSI Interface:** Consists of one master and up to two additional sites slaved together via dedicated VHF radio link paths. The master is designated the end point FSI-controlled repeater which is connected via the UIC to RCMP-provided IP terrestrial/satellite connection. See Annex D.
  3. **Configuration 3 - CSSI Voting System Interface:** The Daniels P25 single channel digital voting system which is based on the MT-4E radio platform. The voter supports the P25 CSSI interface to the console sub-system via the RCMP-provided IP connection. Two to three voting receivers will be installed at strategic locations and IP-linked back to the voting selector. All IP connectivity will be provided by the RCMP. See Annex E.

## 1.6.7. Equipment Requirements

- 1.6.7.1. All equipment to be installed at the DOCC, less the workstations, must be supplied mounted on properly grounded standard Electronic Industries Alliance (EIA) 19 inch equipment racks. The maximum height must not exceed 86 inches. Blank panels are not required to fill unused space on the racks.
- 1.6.7.2. Hard wire connections between equipment on the racks are not acceptable. Wiring interconnection between the chassis and the accessories and between the racks and the peripherals must utilize multi-conductor cable and connector arrangements and must be labeled appropriately.
- 1.6.7.3. All connectors must employ a means of locking to prevent accidental separation.
- 1.6.7.4. All equipment utilizing volatile memory circuits must have a method implemented to protect the memory contents during power interruptions.
- 1.6.7.5. All Console Sub-System equipment must operate on a nominal input voltage of 120 V AC.
- 1.6.7.6. The equipment must tolerate a voltage range of  $\pm 10\%$  of nominal voltage, in addition to a power line frequency variation of 60 Hz  $\pm 3$  Hz.

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- 1.6.7.7. All fixed console system equipment must be designed and rated for continuous duty operation.
  - 1.6.7.8. All critical components (i.e. servers, radio switch) must be specified at 99.999% reliability excluding scheduled down-time required for routine maintenance.

## 1.6.8. Dispatch Console Requirements

- 1.6.8.1. The dispatch console workstation must be capable of radio dispatching and telephone interconnect functions via
  - RCMP-provided IP connectivity,
  - the Public Switched Telephone Network (PSTN) 12 DID trunks derived through a T1 interface,
  - 10 analog (POTS) interfaces to the local Private Branch Exchange (PBX),VOIP interface for telephone services must be available for future consideration. Interface requirements are depicted in Annex F.
- 1.6.8.2. The dispatch console workstation must be a current PC-based system. The RCMP will supply an approved workstation with a Windows XP or Windows 7 standard image that meets the vendor specifications. If the delivered console sub-system is Windows XP-based the contractor must provide a timeline for eventual migration to Windows 7.
- 1.6.8.3. The dispatch console workstation must display all resources at the operator's command in a configurable layout.
- 1.6.8.4. The contractor must ensure that the failure of one dispatch console workstation has no effect on the operation of other dispatch console workstations or the radio system at large.
- 1.6.8.5. The dispatch console workstation must include interfaces and functionality for both external speaker/microphone operation and headset earphone/microphone operation.
- 1.6.8.6. 25 Plantronics headsets (Model PLNHW251N or current equivalent) that are compatible with the supplied console headset interface must be supplied (see also 1.6.8.7).
- 1.6.8.7. Two headset jacks (operator and supervisor) must be supplied with each dispatch workstation.
- 1.6.8.8. Separate "operate" and "monitor" external speakers with individual volume controls must be supplied with each dispatch console workstation.
- 1.6.8.9. During headset operation, "operate" speaker audio must be routed to the headset earphone when plugged in. In addition, an 'operate' light must be provided as an indication that the operator is engaged.
- 1.6.8.10. There must be a visual indicator (vu meter) on the display showing adequate microphone audio is being transmitted by the dispatcher.
- 1.6.8.11. 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.

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- 1.6.8.12. Headset volume must be controlled independently from the speaker volume and include microphone side tone at a level of approximately 20dB below the receive audio for all microphone talk audio.
  - 1.6.8.13. The headset audio must not be permitted to exceed damaging sound pressure levels of 90 dBA in compliance with Canada Labour Code section 2.
  - 1.6.8.14. Provision must be made to connect an external push-to-talk foot switch (Clipper Model/Cat: 642-S or equivalent) in addition to a hand-operated PTT switch to the dispatch console workstation. The contractor must supply a foot and hand-operated PTT switch with each console.
  - 1.6.8.15. The console workstation must allow for touch screen operation.
  - 1.6.8.17. The headset transmit microphone audio must only be routed to a dispatch console workstation radio resource when there is an active PTT. During telephone operation, the audio is to be live full duplex mode. While maintaining an active push-to-talk, the audio circuitry must maintain a full duplex audio path to all connected radio resources.
  - 1.6.8.18. The headset microphone and earphone audio must be connected to an active dispatch console workstation telephone resource in a full duplex manner without requiring an active PTT.
  - 1.6.8.19. During an active telephone conversation, PTT activation must cause a transmission on the selected radio resource channel without transmission of that same microphone audio over the PSTN/PBX connection.
  - 1.6.8.20. The basic operating mode of the radio system must be via radio resources. The dispatch console workstation must display all of the radio resources and their associated functions in the main operational portion of the screen.
  - 1.6.8.21. Where space prohibits, the main operational portion of the screen may be divided into separate *Apages@* of radio resources on the workstation with the capability of scrolling to other *Apages.@*
  - 1.6.8.22. The dispatch console workstation must be able to selectively monitor any or all radio resources assigned to the workstation through the monitor speaker.
  - 1.6.8.23. The dispatcher must be able to acquire access to a radio resource that is not normally assigned to that workstation by selecting it from a queue for the purpose of load-sharing of incoming calls during peak traffic periods.
  - 1.6.8.24. The dispatch console workstation must include the functionality to preempt an ongoing call on the selected radio resource with an immediate group-call or all-call transmission on the selected radio resource. This is only a requirement for P25 operations.
  - 1.6.8.25. The dispatch console workstation must include functionality to patch multiple radio resources together and operate the new patched resources as a single channel. The newly formed virtual channel will remain until manually ungrouped by the operator.
  - 1.6.8.26. All inbound communications activity on a radio resource associated to the patch must be re-transmitted outbound on all the other radio resources within the patch.
  - 1.6.8.27. The dispatch console workstation must include functionality to group multiple radio resources together and operate the new grouping as a single channel allowing the dispatcher to send outbound voice calls on multiple resources simultaneously. The temporary grouping will be manually dissolved upon termination of the voice call. This is only a requirement for P25 operations.

- 
- 1.6.8.28. The contractor must provide a process for implementing operating system patches and security updates that meet the approval of the client.

## 1.6.9. Recording and Data Storage Requirements

- 1.6.9.1. A Digital Logging Recorder, which logs all audio paths in unencrypted digital format on multiple hard drives simultaneously for the purpose of redundancy, will be provided by the RCMP.
- 1.6.9.2. The console must interface to the existing Eventide VR725 Digital Audio Logger.
- 1.6.9.3. The interface must be to the existing 48 Analog Eventide Channel Record card inputs.

## 1.7. Standards

---

The equipment proposed for this requirement must meet applicable sections of the current issue of the following standards:

- 1.7.1. ANSI/TIA102 Suite of the Association of Public-Safety Communications Officials-International (APCO) Project 25 (P25) Specifications.
- 1.7.2. 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.
- 1.7.3. 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.
- 1.7.4. 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.
- 1.7.5. Canadian Standards Association (CSA) approval for all Alternating Current (AC) line powered equipment.
- 1.7.6. Applicable parts of Industry Canada CS-03 Telecommunication Apparatus Compliance Specification.
- 1.7.7. Other applicable standards that may be required depending on equipment proposed by the supplier.
- 1.7.8. Canada Labour Code.
- 1.7.9. ISO 9001: Quality Management Standard

---

## 2. TASKS

This SOW identifies a requirement for completion of the following tasks:

1. Complete preliminary design review meeting.
2. Complete critical design review meeting.
3. Complete integration work on the contractor's site.
4. Deliver Technical and Operating Manuals to RCMP in Yellowknife, Northwest Territories.
5. Deliver and install console sub-system in Yellowknife, Northwest Territories.
6. Complete site acceptance testing in Yellowknife, Northwest Territories.
7. Complete technical and administrator training in Yellowknife, Northwest Territories.
8. Complete operator training in Yellowknife, Northwest Territories.

### 2.1. Complete Preliminary Design Review Meeting

---

2.1.1. The contractor must schedule and host a PDR meeting for the purpose of introducing team members and providing the RCMP with a comprehensive review of the console sub-system design. The deliverables for this meeting will include:

- 2.1.1.1. detailed system drawings of the proposed solution for both P25 FSI/CSSI compliance and backward compatibility to the existing radio system.
- 2.1.1.2. detailed project management plan and deliverable timelines, and
- 2.1.1.3. the introduction of project team members.
- 2.1.1.4. At this time, the contractor must select a project manager within their organization to act as a single point of contact for reporting purposes throughout the duration of the contract. This project manager must be onsite during major installations.
- 2.1.1.5. The PDR must be held in Ottawa, Ontario within two weeks of the contract being awarded.

---

## **2.2. Complete Critical Design Review Meeting.**

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- 2.2.1. The contractor must schedule and host a CDR meeting for the purpose of providing the RCMP with final console sub-system design details and project scheduling.
- 2.2.2 As part of the CDR, the contractor must provide time scheduling charts for deliverables and installations, displaying the critical path throughout the life of the contract.
- 2.2.3. The contractor must also submit the following proposed documentation in draft form:
- Technical Manuals (as per 2.5.2)
  - Operating Manuals (as per 2.5.3)
- 2.2.4. The contractor must provide physical size, power requirements, and environmental requirements for all fixed equipment.
- 2.2.5. The contractor must provide required specifications including minimum bandwidth requirements for all IP back-haul links.
- 2.2.6. The Contractor must identify space requirements for Main and Backup console sub-system common equipment.

## **2.3. Complete Integration Work on the Contractor's Site**

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- 2.3.1. The contractor must be prepared to demonstrate, to the satisfaction of the RCMP, at any time during the contract period, that the console sub-system integration is on schedule and meets the technical requirements as detailed in the Statement of Work.
- 2.3.2. The contractor must schedule and host a Factory Acceptance Test (FAT) by setting up a scale model of the radio system to be implemented in the field. The contractor must provide a test acceptance procedure for review and acceptance by the RCMP at least two weeks prior to commencement of testing. This procedure must be followed by the contractor to demonstrate full compliance to all aspects of the technical requirements. The contractor must also demonstrate full integration compliance with following existing P25 and legacy field equipment. If required, the RCMP will provide the necessary equipment, including but not limited to:
- Motorola XTS 5000 System Portable radio.
  - Motorola XTL 5000 System Mobile radio.
  - Daniels MT-4E Repeater complete with UIC card and RTI module.
- 2.3.3. The contractor must prove the integration of all of the defined RF configurations as part of the Factory Acceptance Test (FAT), to be tested in unencrypted and encrypted mode where applicable.

---

## **2.4. Deliver, install and integrate - Console sub-system in RCMP Facilities in Yellowknife, NWT**

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- 2.4.1. The contractor must supply and install seven dispatch consoles software licences on RCMP-supplied workstations. 5 of which are to be installed in the RCMP DOCC, 1 at the DEOC and 1 in the Radio Shop in Yellowknife, NWT as detailed in section 1.4.5.1. The console sub-system must be expandable for a minimum twelve (12) work stations.
- 2.4.2. The contractor must supply and install one primary console sub-system as detailed in section 1.4.5.2.
- 2.4.3. The contractor must supply and install a backup console sub-system as detailed in section 1.4.5.3.
- 2.4.4. The contractor must supply and install a Console Sub-System administrative workstation as detailed in section 1.4.5.4 (this is to be one of the 5 workstations installed in the RCMP DOCC).

---

## **2.5. Documentation**

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### **2.5.1. General**

- 2.5.1.1. The contractor must provide a complete and comprehensive documentation package to describe separately the technical and operational aspects of all console systems and console system components.
- 2.5.1.2. Documentation must be supplied in electronic soft-copy PDF format, in addition to printed format, quantity 3.
- 2.5.1.3. Numerous illustrations and diagrams are to be used in order to support narrative descriptions.
- 2.5.1.4. All manuals must be delivered in English only.
- 2.5.1.5. The contractor must maintain file copies of each manual at the company's documentation office and the nearest authorized warranty service outlet specified by the contractor.
- 2.5.1.6. Contractor documentation retention must be for a period of at least five years from initial system acceptance or two years from latest equipment purchase, whichever is latest.
- 2.5.1.7. Updates or corrections to the manuals must be supplied to the RCMP in the same quantities as originally provided. These updated manuals must be provided to the RCMP within two months of their publish date.

---

## 2.5.2. Technical Manuals

- 2.5.2.1. The Console Sub-System Manuals must contain all of the information noted in the Technical Maintenance manuals specific to the equipment supplied and installed at the DOCC and central equipment room.
- 2.5.2.2. The technical manuals must contain, as a minimum, the following:
  - 1. Performance specifications,
  - 2. Mechanical and physical details,
  - 3. General description and theory of operation,
  - 4. Installation instructions where applicable,
  - 5. Level adjustment procedures,
  - 6. Wiring diagram and inter-cabling diagrams,
  - 7. Circuit schematic diagrams,
  - 8. Detailed exploded parts diagrams with corresponding parts list,
  - 9. Individual circuit board layout diagrams,
  - 10. Complete diagnostic procedures and flow charts for fault isolation procedures,
  - 11. Precautions and methods of replacing special components, if applicable, and
  - 12. Details of all console system parameters and their initial settings.

## 2.5.3. Operating Manuals

- 2.5.3.1. The operating manuals must be written in a format designed to be used as a primary reference on how to functionally use the console system facilities and equipment.
- 2.5.3.2. The operating manuals must not deal directly with the procedural use of the console system and facilities by the RCMP.
- 2.5.3.3. The operating manuals must contain, as a minimum, the following:
  - 1. Console system overview,
  - 2. Basic dispatch and admin console operation,
  - 3. Detailed description of each command sequence, and
  - 4. Operation of ancillary console equipment.

---

## 2.5.4. Software Manuals

- 2.5.4.1. The documentation included with the software for the console system must outline its function and identify the various revisions of the software.

---

## 2.6. Meetings

### 2.6.1. Monthly Progress Meetings

- 2.6.1.1. The contractor must schedule and host monthly progress meetings between the RCMP, the Contracting Authority, and the contractor's project management team for the purpose of keeping a formal and continuous liaison on all aspects of the project.
- 2.6.1.2. As part of each progress meeting, the contractor must update the time scheduling charts for deliverables and installations including any changes to the critical path for the remaining life of the contract.
- 2.6.1.3. Upon mutual agreement, these meetings may be conducted via teleconference in the interest of minimizing cost.
- 2.6.1.4. The contractor must provide Progress Review Meeting minutes to the RCMP and the Contracting Authority within 3 business days of each progress review meeting. These minutes must contain an updated time scheduling chart and may be sent in soft copy format by e-mail.

---

## 2.7. Verification and Acceptance

- 2.7.1. The contractor must be prepared to demonstrate, to the satisfaction of the RCMP and at anytime during the contract period, that the console system deployment is on schedule and meets the requirements as detailed in the statement of work.
- 2.7.2. The contractor must schedule and host a Factory Acceptance Test (FAT) as detailed in section 2.3.2.
- 2.7.3. The Site Acceptance Testing (SAT) is similar to the Factory Acceptance Testing except that it must be located at RCMP facilities in Yellowknife, North West Territories. The contractor must provide a test acceptance procedure for review and acceptance by the RCMP at least two weeks prior to commencement of testing. The contractor must use this procedure to demonstrate successful operation of all radio system functionality utilizing the existing fleet of user equipment.

---

2.7.4 Support Services, as mentioned in 1.4.7 entail a console expert who is capable of interfacing the console with the radio system as detailed in this SOW.

---

## 3. ACRONYMS

**A - Amps.** Unit of electrical current

**AC - Alternating Current**

**AES** - Advanced Encryption Standard. Adherence to an approved encryption standard as per CSE policy.

The Advanced Encryption Standard with 256 bit key length and using the Rijndael algorithm as registered by the Federal Information Processing Standard as FIPS 197 is the encryption standard for all P25 systems and approved by CSE.

**Analog radio** - A radio where the RF transmitted frequency is the carrier which is directly modulated by the human voice.

**APCO P25** - Association of Public Safety Communications Officials. The P25 mode of operation is defined as adhering to the Project 25 ANSI/TIA/EIA 102-series standards documents for the functionality of P25 radio systems.

**CAI** - Common Air Interface. Part of the APCO 25 suite of standards that allows P25 compliant radio to inter-operate.

**CDR** - Critical Design Review meeting

**Conventional** - Single channel assignment that radio users must share and manage manually.

**CPIC** - Canadian Police Information Centre.

**ComSec** - Communications Security Section, an RCMP unit responsible for information security.

**Codeplug** - Simple computer program loaded into a digital based radio for the programming of channel assignments.

**CSSI** - Console sub-system Interface

**dB** - Decibel.

**DEOC** - Divisional Emergency Operational Comcenter.

**DES-OFB** - Digital Encryption Standard - Output Feedback Mode. An encryption algorithm that was once approved by CSE.

**DES-XL** - A proprietary Motorola encryption standard based on DES and modified to improve RF transmission.

**DID** - Dial in Direct

**Digital radio** - A radio where the RF transmitted frequency (VHF) is the carrier which is digitally modulated with data converted from the human voice with the use of a vocoder.

**DOCC** - Divisional Operational Communication Centre.

---

**DSO** - Departmental Security Officer.

**DTMF** - Dual-tone multi-frequency signaling.

**EIA** - Electronic Industries Alliance

**FAT** - Factory Acceptance Test

**FIPS** - Federal Information Processing Standards.

**FM** - Frequency modulation.

**FSI** - Fixed Station Interface. This is standard from the APCO P25 standards body for fixed station interfaces.

**G-Div** - Northwest Territories, also know as RCMP G-Division

**GPS** - Global Positioning System

**GUI** - Graphic User Interface.

**Hz** - Hertz.

**IBET** - Integrated Border Enforcement Teams.

**IMET** - Integrated Market Enforcement Team.

**IMBE** - Improved Multi-Band Excitation digital vocoder used in P25 radios to convert human voice to digitized bits know as data.

**IP** - Internet Protocol.

**JFO** - Joint Force Operation.

**KFD** - Key Fill Device. Hand held device used to store and distribute encryption key material manually.

**KVL** - Key Variable Loader

**LDAP** - Lightweight Directory Access Protocol.

**LMR** - Land Mobile Radio.

**MAD** - Maximum allowed downtime.

**Master site** - A radio site directly linked to an OCC which transmits locally and to other major radio sites to relay information.

**MCS** - Mobile Communications Services.

**MOSCAD** - A telemetry system offered by Motorola. Known as Motorola Supervisory Control and Data Acquisition

**Narrowband** - A more efficient use of RF spectrum while transmitting human voice and data. UHF re-farming has the goal to **Reduce bandwidth**- requirements from 25 khz to 12.5 khz for one transmitting channel.

**NSIS** - National Security Intelligence Section.

---

NWT - Northwest Territories

OCC - Operational Command Center

OIC - Officer in Charge.

**OTAR** - Over The Air Re-keying. The transmission of encryption keys over the air in a secure manner.

PBX - Private Branch Exchange

PDR - Preliminary Design Review meeting **PIRS** - Police Information Retrieval System.

POTS - Plain old telephone service

PSTN - Public Switch Telephone Network

PTT - Push-to-Talk

**P25**- Project 25 or APCO refer to a suite of standards for digital communications for use by federal, state/province and local public safety agencies in North America to enable them to communicate with other agencies and mutual aid response teams in emergencies. [/wiki/Digital\\_radio/wiki/Professional\\_Mobile\\_Radio/wiki/North\\_America](#)

PWGSC - Public Works and Government Services Canada

**Re-farming** - an Industry Canada term for the Redeployment Plan for Spectrum Efficient Land Mobile Equipment in the **Frequency Range** of 100-500 MHz. Also known as RDP 100-500 MHz.

**Roaming** - the ability of a radio user to travel great distances without having to change the channel selection on the radio.

**RINCO** - Regional Informatics Non-Commissioned Officer.

RF - Radio Frequency

**RF radio** - A two way wireless communication device used for voice transmission.

**RF repeaters** - A radio installed at a high altitude location enable radio transmissions between users.

**RoIP** - Radio over Internet Protocol.

**RTI** - Radio Telephone Interconnect. This is the device which takes DTMF tones from the radio infrastructure and call back to the OCC via dedicated phones lines.

**RTT and ERTT** - Request To Talk and Emergency Request To Talk - a control data burst to manage radio transmissions on an operational channel.

**S4T4** - Schedule four type 4 analog wireline link to hook up a remote radio site to an OCC or base station user.

SAT - Site Acceptance Test

**Satellite receiver** - a radio receiver that works with a transmitter site on the talk-in band to increase radio range of a small radio.

**Simplex operation** - line of sight communication between two radios without the use of a radio network.

---

**Slave site** - A radio site linked to a master site that can also relay information to local users and to other slave sites.

**SOW** - Statement of Work.

**SU** - Subscriber Units. Portable or mobile radios on the RCMP radio system.

**T1** - High capacity digital transmission link enabling the transmission of many voice communications simultaneously.

**TDES** - Triple digital encryption standard used to strengthen the robustness of an encrypted transmission.

**Telemetry** - diagnostic system capable of relaying data information on the state of a remote site.

**Trunking network** - Dynamically assigned resource sharing radio optimized for the efficient use of an RF channel.

**UHF** - Ultra High Frequency band between 300 MHZ and 3 GHZ.

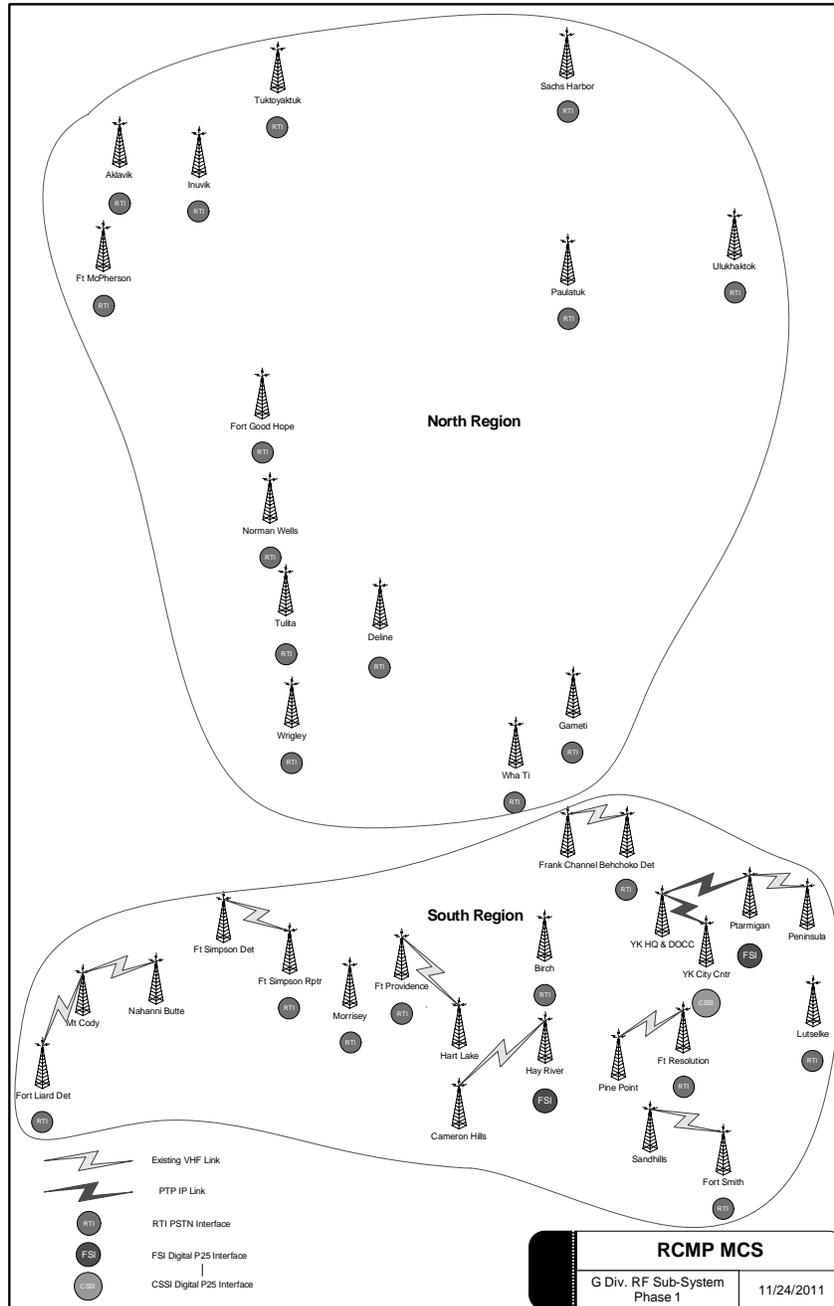
**UIC** - Universal Interface Card. Manufactured by Daniels.

**V** - Volts. Unit of electrical charge.

**Voting comparator** - used with transmitting sites and satellite receivers to select the best signal source coming from a transmitting radio.

**W** - Watts.

# ANNEX A: RF Sub-System Design/Overview



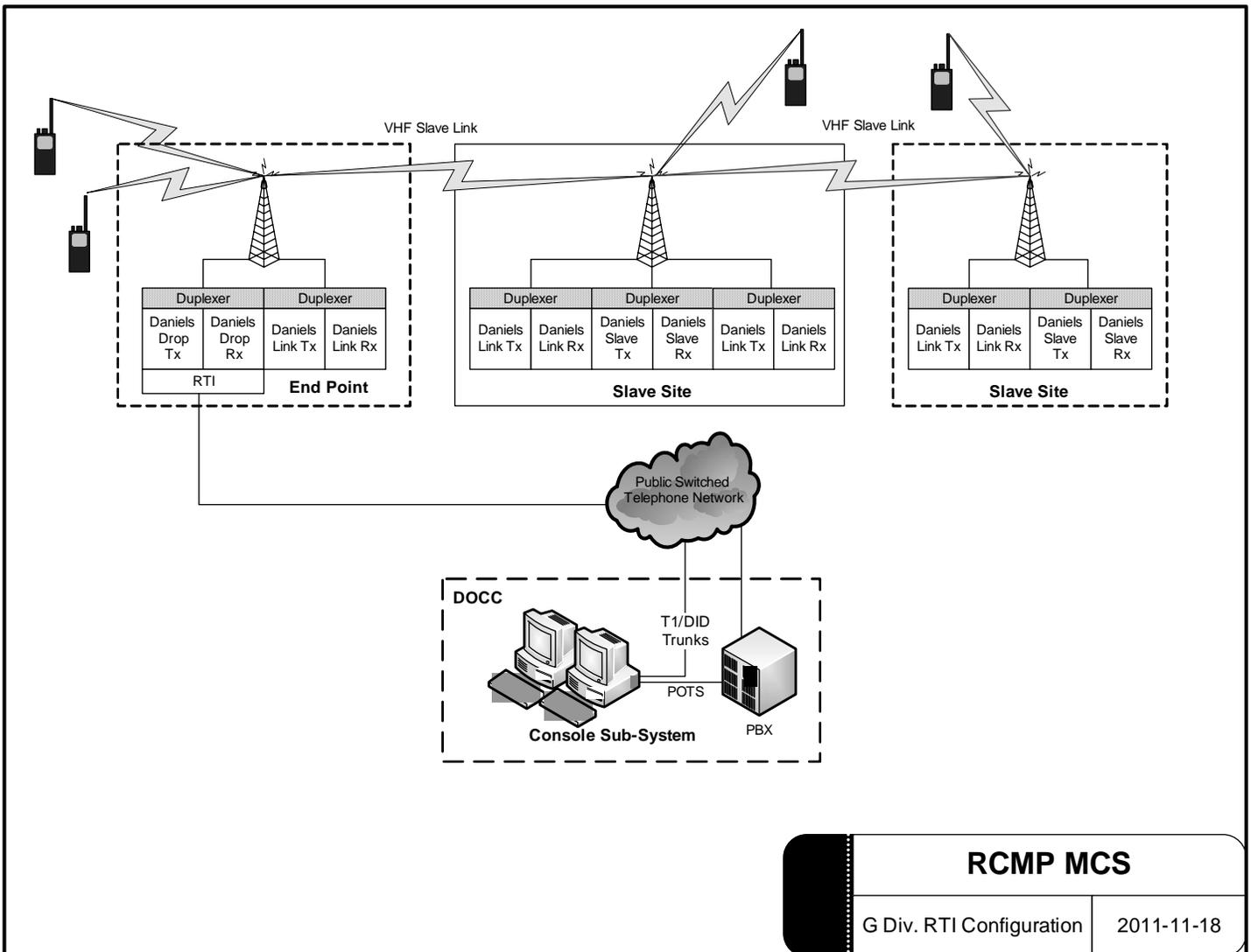
# ANNEX B: RF Sub-System Site/Cluster List

## G Division Console Sub-System Replacement

### Radio Sub-System Site/Cluster List

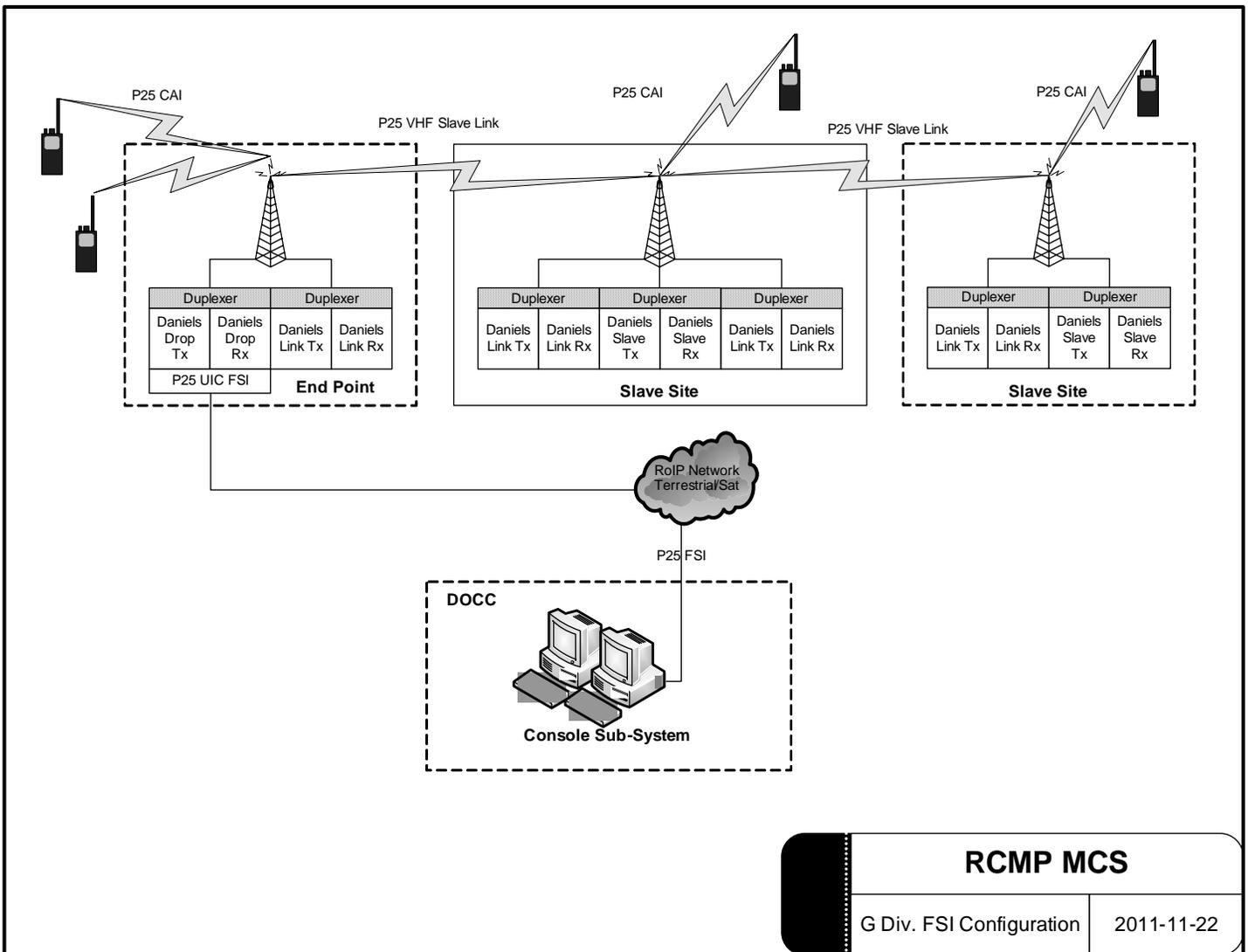
	Cluster/Site	Site #	Sites	Designation	Interface
1	Fort Liard	1	Fort Liard Det.	End-point	RTI
		2	Mt. Cody	Slave	
		3	Nahanni Butte	Slave	
2	Ft. Simpson	4	Ft. Simpson Det.	Slave	RTI
		5	Ft. Simpson Hwy	End-point	
3	Morrisey	6	Morrisey	End-point	RTI
4	Ft. Providence	7	Ft. Providence	End-point	RTI
		8	Hart Lake	Slave	
5	Birch	9	Birch	End-point	RTI
6	Hay River	10	Hay River	End-point	FSI
		11	Cameron Hills	Slave	
7	Ft. Resolution	12	Pine Point	Slave	RTI
		13	Ft. Resolution	End-point	
8	Ft. Smith	14	Sandhills	Slave	RTI
		15	Ft. Smith	End-point	
9	Lutsel K'e	16	Lutsel K'e	End-point	RTI
10	Yellowknife	17	Yellowknife HQ & DOCC	Dispatch	Control
11	Yellowknife Cntr.	18	Yellowknife Centre	End-point	CSSI
12	Ptarmigan	19	Ptarmigan	End-point	FSI
		20	Peninsula	Slave	
13	Behchoko	21	Behchoko Det.	End-point	RTI
		22	Frank Channel	Slave	
14	Wha' Ti	23	Wha' Ti Det.	End-point	RTI
15	Gameti	24	Gameti Det.	End Serial - point	RTI
16	Wrigley	25	Wrigley Det.	End-point	RTI
17	Tulita	26	Tulita Det.	End-point	RTI
18	Deline	27	Deline Det.	End-point	RTI
19	Norman Wells	28	Norman Wells Det.	End-point	RTI
20	Ft. Good Hope	29	Ft. Good Hope Det.	End-point	RTI
21	Paulatuk	30	Paulatuk Det.	End-point	RTI
22	Ulukhatok	31	Ulukhatok Det.	End-point	RTI
23	Ft. McPherson	32	Ft. McPherson Det.	End-point	RTI
24	Aklavik	33	Aklavik Det.	End-point	RTI
25	Inuvik	34	Inuvik Det.	End-point	RTI
26	Tuktoyaktuk	35	Tuktoyaktuk Det.	End-point	RTI
27	Sachs Harbor	36	Sachs Harbor Det.	End-point	RTI
28	Iqaluit	37	Iqaluit FSI Test Sat Link	End-Point	FSI

# ANNEX C: Configuration 1 – RTI Interface



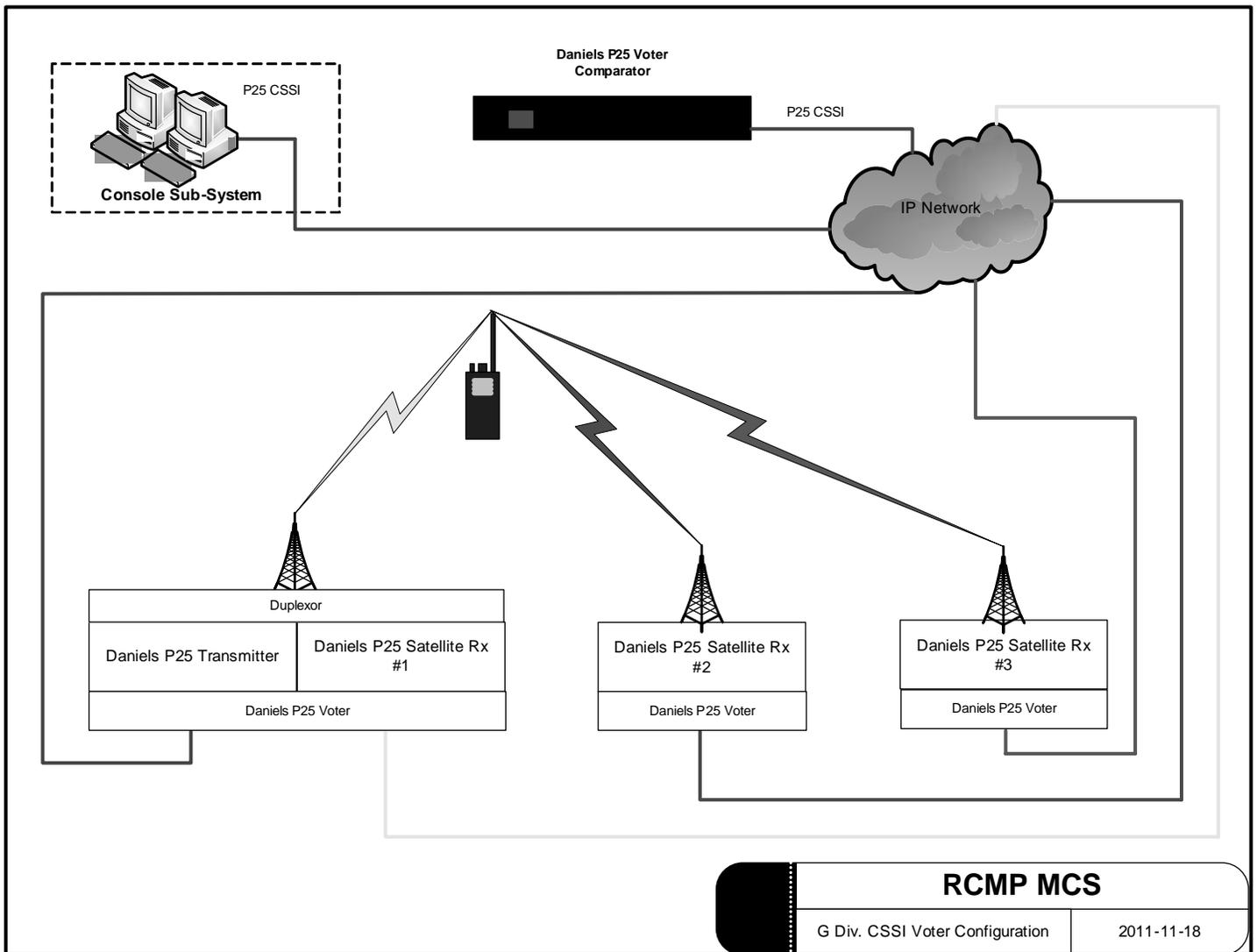
<b>RCMP MCS</b>	
G Div. RTI Configuration	2011-11-18

# ANNEX D: Configuration 2 – FSI Interface

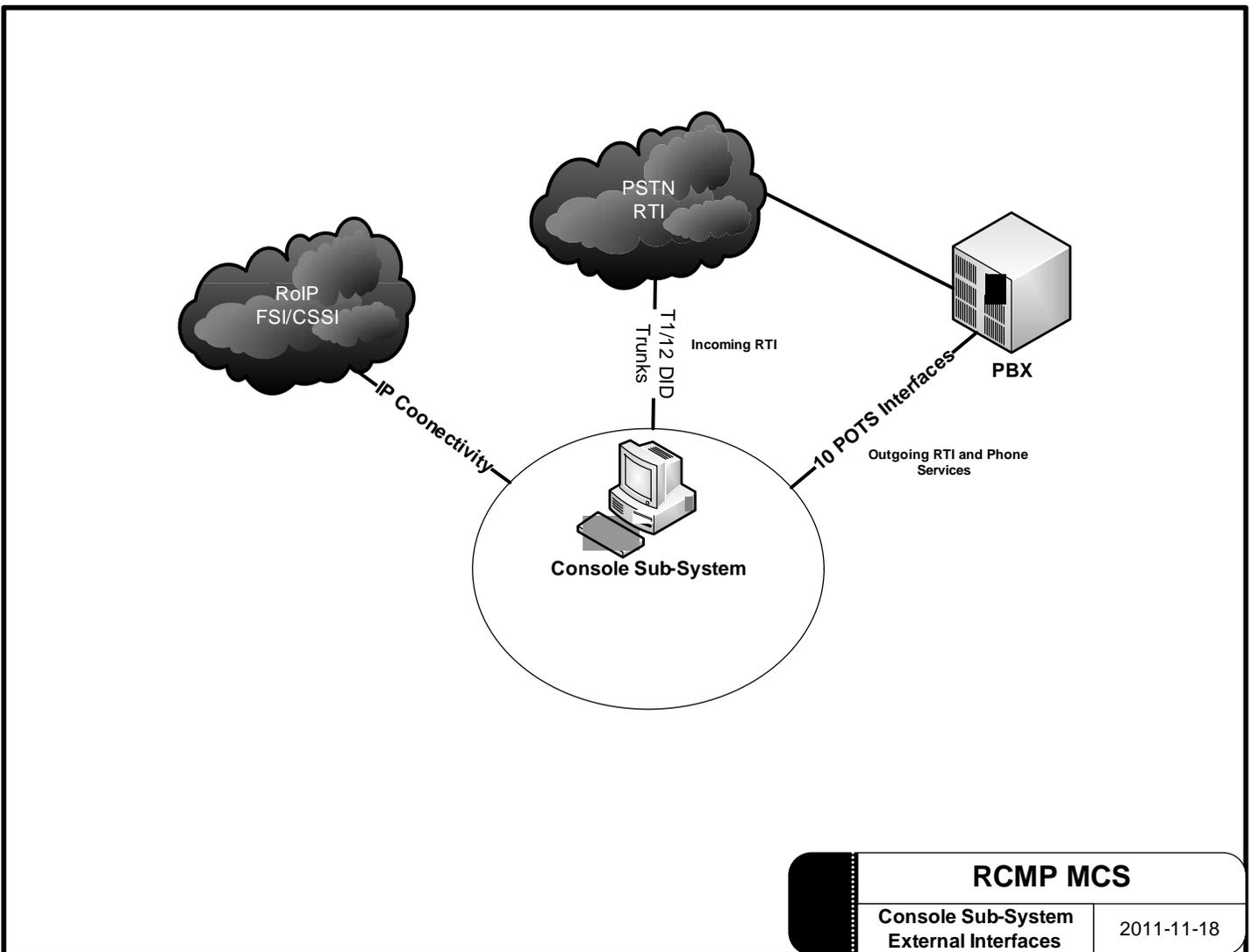


<b>RCMP MCS</b>	
G Div. FSI Configuration	2011-11-22

# ANNEX E: Configuration 3 – CSSI Voting System Interface



## ANNEX F: Console Sub-System Interfaces





**ANNEX G**

**CAD RADIO INTERFACE**

**INFORMATION EXCHANGE PACKAGE DOCUMENT**

06 December 2010

**ROYAL CANADIAN MOUNTED POLICE**

Royal Canadian Mounted Police  
Mobile Communications Service  
1200 Vanier Parkway  
Ottawa, Ontario K1A 0R2

## DOCUMENT REVISION HISTORY

<b><u>Revision</u></b>	<b><u>Reason for Change</u></b>	<b><u>Origin Date</u></b>
A	Proposed Document Outline	29 October 2010
01	Original Document Issued.	29 October 2010
02	Updated Document.	16 November 2010
03	Updated Document.	23 November 2010
04	Revised copyright notice.	06 December 2010

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## **1 PURPOSE**

This document provides a description of an information exchange package document (IEPD) for the purposes of expressing information obtained from radio systems including radio transmissions and radio position information.

### **1.1 Scope**

This document describes the information exchange package for a generic Computer Aided Dispatch (CAD) radio interface to support the exchange of radio transmission and radio GPS information between a CAD solution and a digital radio solution. In addition a method for exchanging this IEPD information is discussed.

### **1.2 Background**

The RCMP has acquired and managed two way radio systems and Computer Aided Dispatch (CAD) systems with their associated mobile workstation (MWS) units. About twelve years ago, the RCMP determined that there would be a benefit to the operators of their Operational Communications Centres (OCC) to provide some level of integration between the radio controller/console and the CAD. The first radio system to be integrated was the EDACS network in the British Columbia Lower Mainland. Once this was deployed, this capability was extended to the Motorola Centracom Elite Radio Controller used in other regions/divisions.

The ability to integrate with CAD systems is not one that is consistently represented by all radio manufacturers. In an attempt to clarify this interface issue, this generic interface definition has been developed. This document will detail the content of the interface and possible methods of communication between the CAD and the radio controller.

### **1.3 IEPD Development Background**

There are currently no standards for the communication of radio information from a digital radio solution to a computer aided dispatch system. A review of information exchange between CAD solutions and digital radio systems was performed and included interviews with interested parties at the RCMP. The review revealed that the key information desired at the CAD includes the following:

1. Radio device user opens a channel for communications. Press to talk (PTT)
2. Radio device user issues a request to talk (RTT) command on device.
3. Radio device user issues an emergency request to talk (ERTT) command on device.
4. Radio device user issues a configured status change request on the device (value 0 – 9).
5. Radio device transmits current GPS position.

Although these requirements are not particularly complicated they are, however, very specific to radio data transmission making existing open standards such as the National Information Exchange Model (NIEM) inadequate to support the exchange as only the values of GPS position, date and time are supported in that model. The bulk of the information would be an extension. Thus using the NIEM model would create extremely complicated XML Schema Definition (XSD) documents with little gain.

It was decided to approach this IEPD by developing a simple standard for radio information. This standard has been expressed to cover most of the information described above, and can be readily extended to include other radio actions as desired.

When looking for a way to properly express the position of the radio devices an existing standard for the provision of GPS location was found (GPS XML or GPX). This standard is used by industry in conjunction with many existing GPS devices to exchange information about GPS locations, routes and tracks. It was determined that this standard is a viable approach; the weakness of this standard was its lack of speed and direction components.

The speed and direction are important components to an exchange of location information that in this case, have similarities to an automatic vehicle location (AVL) solution. To overcome this issue, the use of the GPX standard's ability to be extended has been exploited. An extension schema was developed to handle speed and direction values.

The IEPD actually describes two data exchanges. Radio activity such as "press to talk" or "status change" is handled by digital radio solutions differently than GPS information. These messages are not managed in a single information package in the radio solution. To accommodate this, two exchanges were developed and are described based on the single radio interface standard:

- The first is the radio transmission standard that handles the information about user interaction with a radio device including items 1 through 4 above.
- The second is the radio GPS standard that handles the position information that is sent asynchronously from the radio solution.

## 1.4 Definitions, Acronyms, Abbreviations

The following is a list of commonly used definitions used throughout this document.

### 1.4.1 Definitions

TERM	DEFINITION
<b>Automatic Vehicle Location</b>	The location of a vehicle provided by a Global Positioning System (GPS) or other technologies. The definition of the acronym is extended to include not only vehicles but any device that can report its location

---

<b>TERM</b>	<b>DEFINITION</b>
<b>CAD Operator</b>	A Royal Canadian Mounted Police employee who uses the CIIDS dispatching software in the OCC or elsewhere in the organization
<b>CIIDS</b>	The computerized system used for dispatching and messaging
<b>CIIDS Workstation</b>	The desktop software application used by a CAD operator
<b>Emergency Request to Talk</b>	An action performed by a member using a subscriber set to indicate an emergency is in progress and the member requires an immediate conversation with a CAD operator
<b>IEPD</b>	Information exchange package document for the exchange of xml data between two systems.
<b>Member</b>	A Royal Canadian Mounted Police officer who provides policing services
<b>OnPatrol</b>	Registered name for a police application on the BlackBerry smartphones that provides similar capabilities as the RCMP Status and Messaging module installed in police vehicles.
<b>PU Status Marquee</b>	A scrolling area of the CIIDS workstation that displays unit status changes
<b>Request to Talk</b>	An action performed by a member using a subscriber set to ask a CAD operator to initiate a conversation
<b>Status Change</b>	An action performed by a member to describe his/her current status, such as “en route to a location” or “at scene”
<b>Ten-Code</b>	Numeric representation of a unit status, e.g. 10-08 generally means “available”.

#### **1.4.2 Acronyms**

<b>ACRONYM</b>	<b>DEFINITION</b>
ANI	Automated Number Index
AVL	Automatic Vehicle Location
CAD	Computer Aided Dispatch
CIIDS	Computerized Integrated Information and Dispatch System
CL	CAD Link (a.k.a. CAD to radio controller interface)
CPIC	Canadian Police Information Centre
EDACS	Enhanced Digital Access Communication System
ERTT	Emergency Request to Talk

<b>ACRONYM</b>	<b>DEFINITION</b>
GPS	Global Positioning System
GPX	GPS eXchange Format
HPN	High Priority Notification
IEPD	Information Exchange Package Document
LK	Last Known in Last Known Channel
LPN	Low Priority Notification
MWS	Mobile Workstation (Computer)
NIEM	National Information Exchange Model
OCC	Operations Communications Centre
PROS	Police Reporting and Occurrence System
PTT	Push-to-Talk or Press-to-Transmit
PU	Patrol Unit
RCMP	Royal Canadian Mounted Police
RTT	Request to Talk
SAMM	Status and Messaging Mobile
SOAP	Simple Object Access Protocol
TCP/IP	Transport Control Protocol/ Internetworking Protocol
XML	Extensible Markup Language
XSL	Extensible Style Sheet

## 1.5 Document Overview

The document will address the CIIDS generic CAD/radio interface in the following sections:

<b>Section</b>	<b>Description</b>
2	Describes the interface exchange objects used in the CAD / Radio Interface.
3	Description of a possible implementation of the CAD/Radio interface.
Appendix A	Documentation of the referenced schemas and sample XML

## 2 INTERFACE EXCHANGE PROTOCOL DOCUMENT

### 2.1 List of Artifacts

The artifacts listed in Table 2-1 are included by reference in this IEPD.

**Table 2-1 - IEPD Artifacts**

File Name	Purpose
GenericRadioIFSpecification/ 1015713-003	Master IEPD Document. (This document in Adobe Acrobat PDF form)
GenericRadioIFSpecification/ Samples/RadioGPSSample.xml	Sample XML for the Radio GPS data transfer schema
GenericRadioIFSpecification/ Samples/RadioTransSample.xml	Sample XML for the Radio transmission data transfer schema
GenericRadioIFSpecification/ SchemaReference/default.html  (and supporting files)	The start page for a complete reference for all the schemas discussed in this document.
GenericRadioIFSpecification/ Schema/gpx.xsd	The open standard GIS information XML Schema.
GenericRadioIFSpecification/ Schema/gpxExtendCSpeed.xsd	The extension to the GIS information XML schema to support calculated speed and direction.
GenericRadioIFSpecification/ Schema/radioIF1-0.xsd	The generic radio schema specification.
GenericRadioIFSpecification/ Schema/radioGPS1-0.xsd	The exchange XML schema for radio GIS information.
GenericRadioIFSpecification/ Schema/radioTrans1-0.xsd	The exchange XML schema for radio transmission information.

## 2.2 XML Schemas

The following schemas, which are presented in Appendix A, are referenced in the Radio Transmission IEPD:

- Radio Transmission Exchange XML Schema
- Radio Interface XML Schema

The following schemas, which are presented in Appendix A, are referenced in the Radio GPS IEPD:

- Radio Transmission Exchange XML Schema
- Radio Interface XML Schema
- GPX (GIS XML) XML Schema
- GPX Extension Schema for calculated speed and direction.

The primary purpose of an XML Schema is to define the contents and the constant structure of a message used for information exchange. The XML Schemas can optionally be used by a sending or receiving system for other purposes, such as to validate sent and or received XML, XML properties, to automatically de-serialize the XML instance into a structure, or to automatically serialize the XML instance from a structure.

The two exchange schemas are provided to disambiguate the object required to be defined for use in an exchange. These two schemas are used for different purposes. The Radio Transmission exchange schema is used to exchange radio transmissions from a radio system to a computer aided dispatch solution. The Radio GPS Exchange schema is used to exchange GPS position information of a radio device (e.g. mobile in-car radio, portable radio) from a radio solution to a computer aided dispatch solution.

The radio interface XML schema describes the detailed types used in both of the above exchange schemas.

The GPX Schema is an industry standard schema for the exchange of GPS information. It has been selected with the intent of using only a small subset of the schema for GPS exchange between a radio solution and a computer aided dispatch solution.

The GPX schema does not support values for unit speed or direction as calculated by a GPS device. However, the schema allows for the addition of specific extensions to support additional fields. The GPX Extension schema has been generated to compensate for the lack of speed and direction modifiers.

## **2.3 Additional Provisions**

The GPX open standard for the exchange of GPS information supports the exchange of a single waypoint, a Track with a collection of waypoints and a route with a collection of waypoints. It is possible for the radio solution to use any one of these models when exchanging GPS data. It is expected that the use of waypoints offered in GPX will be the primary method of GPS exchange.

## **2.4 Samples**

### **2.4.1 Sample XML Instances**

A sample XML instance for each exchange has been provided in Appendix A.

### **2.4.2 Sample XSL Style Sheets**

No sample XSL style sheets are required for this exchange.

### 3 POSSIBLE IMPLEMENTATION

#### 3.1 Overview

This section describes a possible implementation of the exchange of radio transmission data and radio GPS data from a radio system to a computer aided dispatch solution. There are a number of possible ways to set up an interface between these two solutions, XML file exchange, dedicated socket interface, and service oriented architecture (SOA) to name a few. It is important to differentiate the data payloads described in associated XDT files with the minutia of a particular protocol. Each approach requires some additional information either explicitly stated in any transferred message or through the agreement and understanding of the parties involved with the exchange.

The method of exchange expected is through the use of SOA using Simple Object Access Protocol (SOAP) transactions with three possible transactions; radio transmission (e.g. PTT, ERTT, etc...), GPS location of a radio device, and a connection health message. It is important to understand that the details of the SOAP transactions are dependent on the particular implementation details.

In each case, the radio solution acts as the client issuing transactions to the CAD SOAP interface. In addition each transaction is of a very simple request and status response format, making the interface fast and easy to implement for radio providers. Figure 3-1 depicts this exchange.

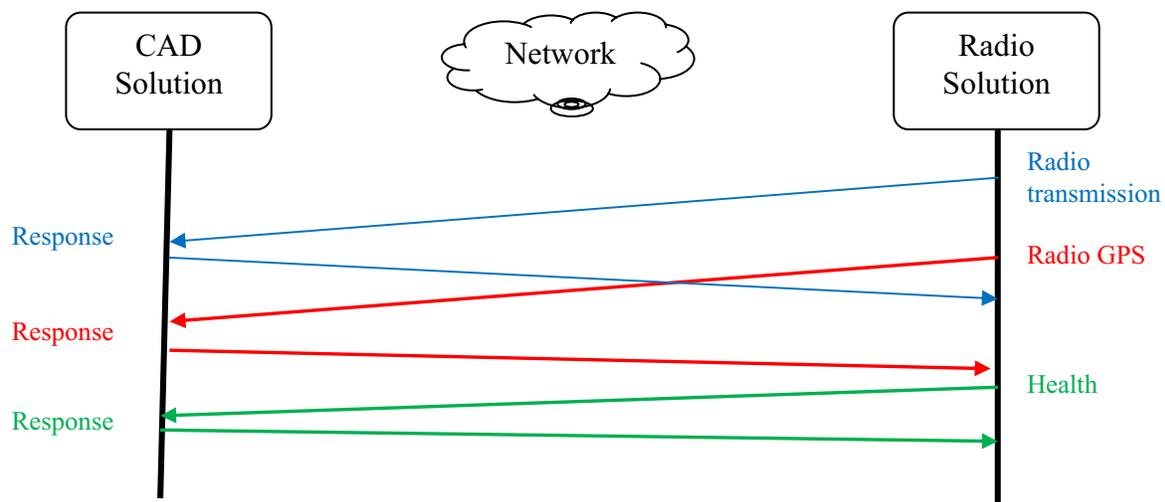


Figure 3-1: Interaction between CAD and Radio Solutions

### **3.2 Data Flow of Radio Transmission Message**

The Radio Transmission Message is a simple request acknowledgement SOAP interface. The request payload is described by the radio transmission IEPD. The CAD acts as a host solution, the radio system client connects to the CAD host and issues a Radio Transmission message. The CAD will reply with an acknowledgement message indicating success if the payload data is valid and an error if the payload is not understood.

### **3.3 Data Flow of Radio GPS Message**

The Radio GPS Message is a simple request acknowledgement SOAP interface. The request payload is described by the Radio GPS IEPD. The CAD acts as a host solution, the radio client connects to the CAD host and issues a Radio GPS message. The CAD will reply with an acknowledgement message indicating success if the payload data is valid and an error if the payload is not understood.

### **3.4 Data Flow of Health Message**

The CAD expects to determine whether the Radio solution is no longer reporting radio transmissions or radio GPS positions. If after a configurable (agreed between vendors) period of time a message has not been received by the CAD from the radio solution, the CAD will consider the radio solution to not be functioning correctly and will alert the CAD users accordingly.

The radio solution can avoid issues by always sending a health message every configurable interval of time to reset the CAD failure timer during radio solution non-use.

The health message is a simple SOAP interface. The request has no payload. The CAD replies with success to indicate that the timer was reset. If the CAD does not receive any health transactions, while the connection and/or session might still be active, the interface will be marked as inactive or failed (red light). Failure to receive the CAD responses will indicate to the radio controller that there is an issue with the interface and that the controller should dismantle the connections and try to re-establish it.

## APPENDIX A INTERFACE SCHEMAS & SAMPLE XML

### A.1 GPX XML Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xsd:schema
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns="http://www.topografix.com/GPX/1/1"
  targetNamespace="http://www.topografix.com/GPX/1/1"
  elementFormDefault="qualified">
```

```
<xsd:annotation>
<xsd:documentation>
  GPX schema version 1.1 - For more information on GPX and this schema, visit
  http://www.topografix.com/gpx.asp
```

GPX uses the following conventions: all coordinates are relative to the WGS84 datum. All measurements are in metric units.

```
</xsd:documentation>
</xsd:annotation>
```

```
<xsd:element name="gpx" type="gpxType">
  <xsd:annotation>
    <xsd:documentation>
      GPX is the root element in the XML file.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
```

```
<xsd:complexType name="gpxType">
  <xsd:annotation>
    <xsd:documentation>
      GPX documents contain a metadata header, followed by waypoints, routes, and tracks.
      You can add your own elements
      to the extensions section of the GPX document.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:element name="metadata" type="metadataType" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Metadata about the file.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
```

```
<xsd:element name="wpt" type="wptType" minOccurs="0"
maxOccurs="unbounded">
  <xsd:annotation>
    <xsd:documentation>
      A list of waypoints.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="rte" type="rteType" minOccurs="0"
maxOccurs="unbounded">
  <xsd:annotation>
    <xsd:documentation>
      A list of routes.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="trk" type="trkType" minOccurs="0"
maxOccurs="unbounded">
  <xsd:annotation>
    <xsd:documentation>
      A list of tracks.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="extensions" type="extensionsType" minOccurs="0">
<xsd:annotation>
<xsd:documentation>
  You can add extend GPX by adding your own elements from another schema here.
  </xsd:documentation>
</xsd:annotation>
</xsd:element>
</xsd:sequence>

  <xsd:attribute name="version" type="xsd:string" use="required" fixed="1.1">
<xsd:annotation>
<xsd:documentation>
  You must include the version number in your GPX document.
  </xsd:documentation>
</xsd:annotation>
</xsd:attribute>
  <xsd:attribute name="creator" type="xsd:string" use="required">
<xsd:annotation>
<xsd:documentation>
  You must include the name or URL of the software that created your GPX document.
  This allows others to
```

```
        inform the creator of a GPX instance document that fails to validate.
    </xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
</xsd:complexType>

<xsd:complexType name="metadataType">
  <xsd:annotation>
    <xsd:documentation>
      Information about the GPX file, author, and copyright restrictions goes in the metadata
      section. Providing rich,
      meaningful information about your GPX files allows others to search for and use your
      GPS data.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence    <!-- elements must appear in this order -->
    <xsd:element name="name"          type="xsd:string"          minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          The name of the GPX file.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="desc"          type="xsd:string"          minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          A description of the contents of the GPX file.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="author"        type="personType"        minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          The person or organization who created the GPX file.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="copyright"     type="copyrightType"   minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Copyright and license information governing use of the file.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

```
<xsd:element name="link"          type="linkType"          minOccurs="0"
  maxOccurs="unbounded">
  <xsd:annotation>
  <xsd:documentation>
    URLs associated with the location described in the file.
  </xsd:documentation>
  </xsd:annotation>
  </xsd:element>
<xsd:element name="time"          type="xsd:dateTime"        minOccurs="0">
  <xsd:annotation>
  <xsd:documentation>
    The creation date of the file.
  </xsd:documentation>
  </xsd:annotation>
  </xsd:element>
<xsd:element name="keywords"      type="xsd:string"          minOccurs="0">
  <xsd:annotation>
  <xsd:documentation>
    Keywords associated with the file. Search engines or databases can use this information
    to classify the data.
  </xsd:documentation>
  </xsd:annotation>
  </xsd:element>
<xsd:element name="bounds"        type="boundsType"         minOccurs="0">
  <xsd:annotation>
  <xsd:documentation>
    Minimum and maximum coordinates which describe the extent of the coordinates in
    the file.
  </xsd:documentation>
  </xsd:annotation>
  </xsd:element>

  <xsd:element name="extensions"   type="extensionsType"    minOccurs="0">
  <xsd:annotation>
  <xsd:documentation>
    You can add extend GPX by adding your own elements from another schema here.
  </xsd:documentation>
  </xsd:annotation>
  </xsd:element>
</xsd:sequence>
</xsd:complexType>

<xsd:complexType name="wptType">
  <xsd:annotation>
  <xsd:documentation>
```

wpt represents a waypoint, point of interest, or named feature on a map.

```
</xsd:documentation>
</xsd:annotation>
<xsd:sequence>    <!-- elements must appear in this order -->
  <!-- Position info -->
  <xsd:element name="ele"                type="xsd:decimal"          minOccurs="0">
    <xsd:annotation>
      <xsd:documentation>
        Elevation (in meters) of the point.
      </xsd:documentation>
    </xsd:annotation>
  </xsd:element>
  <xsd:element name="time"              type="xsd:dateTime"        minOccurs="0">
    <xsd:annotation>
      <xsd:documentation>
        Creation/modification timestamp for element. Date and time in are in Universal
        Coordinated Time (UTC), not local time! Conforms to ISO 8601 specification for date/time
        representation. Fractional seconds are allowed for millisecond timing in tracklogs.
      </xsd:documentation>
    </xsd:annotation>
  </xsd:element>
  <xsd:element name="magvar"           type="degreesType"        minOccurs="0">
    <xsd:annotation>
      <xsd:documentation>
        Magnetic variation (in degrees) at the point
      </xsd:documentation>
    </xsd:annotation>
  </xsd:element>
  <xsd:element name="geoidheight"      type="xsd:decimal"        minOccurs="0">
    <xsd:annotation>
      <xsd:documentation>
        Height (in meters) of geoid (mean sea level) above WGS84 earth ellipsoid. As
        defined in NMEA GGA message.
      </xsd:documentation>
    </xsd:annotation>
  </xsd:element>

  <!-- Description info -->
  <xsd:element name="name"            type="xsd:string"
    minOccurs="0">
    <xsd:annotation>
      <xsd:documentation>
        The GPS name of the waypoint. This field will be transferred to and from the
        GPS. GPX does not place restrictions on the length of this field or the characters contained in it.
        It is up to the receiving application to validate the field before sending it to the GPS.
      </xsd:documentation>
    </xsd:annotation>
  </xsd:element>
</xsd:sequence>
</xsd:element>
</xsd:annotation>
</xsd:documentation>
```

```
</xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="cmt"                type="xsd:string"
  minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      GPS waypoint comment. Sent to GPS as comment.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="desc"              type="xsd:string"
  minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      A text description of the element. Holds additional information about the
      element intended for the user, not the GPS.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="src"              type="xsd:string"
  minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Source of data. Included to give user some idea of reliability and accuracy of
      data. "Garmin eTrex", "USGS quad Boston North", e.g.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="link"              type="linkType"                minOccurs="0"
  maxOccurs="unbounded">
  <xsd:annotation>
    <xsd:documentation>
      Link to additional information about the waypoint.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="sym"              type="xsd:string"
  minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Text of GPS symbol name. For interchange with other programs, use the exact
      spelling of the symbol as displayed on the GPS. If the GPS abbreviates words, spell them out.
    </xsd:documentation>
  </xsd:annotation>
```

```
</xsd:element>
<xsd:element name="type"                type="xsd:string"
  minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Type (classification) of the waypoint.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>

<!-- Accuracy info -->
<xsd:element name="fix"                  type="fixType"
  minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Type of GPX fix.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="sat"                  type="xsd:nonNegativeInteger"
  minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Number of satellites used to calculate the GPX fix.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="hdop"                  type="xsd:decimal"
  minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Horizontal dilution of precision.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="vdop"                  type="xsd:decimal"
  minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Vertical dilution of precision.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="pdop"                  type="xsd:decimal"
  minOccurs="0">
```

```
<xsd:annotation>
  <xsd:documentation>
    Position dilution of precision.
  </xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="ageofdgpsdata" type="xsd:decimal" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Number of seconds since last DGPS update.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="dgpsid" type="dgpsStationType" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      ID of DGPS station used in differential correction.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>

  <xsd:element name="extensions" type="extensionsType" minOccurs="0">
<xsd:annotation>
<xsd:documentation>
  You can add extend GPX by adding your own elements from another schema here.
</xsd:documentation>
</xsd:annotation>
</xsd:element>
</xsd:sequence>

<xsd:attribute name="lat" type="latitudeType" use="required">
  <xsd:annotation>
    <xsd:documentation>
      The latitude of the point. Decimal degrees, WGS84 datum.
    </xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
<xsd:attribute name="lon" type="longitudeType" use="required">
  <xsd:annotation>
    <xsd:documentation>
      The latitude of the point. Decimal degrees, WGS84 datum.
    </xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
</xsd:complexType>
```

```
<xsd:complexType name="rteType">
  <xsd:annotation>
    <xsd:documentation>
      rte represents route - an ordered list of waypoints representing a series of turn points
      leading to a destination.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:element name="name" type="xsd:string" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          GPS name of route.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="cmt" type="xsd:string" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          GPS comment for route.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="desc" type="xsd:string" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Text description of route for user. Not sent to GPS.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="src" type="xsd:string" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Source of data. Included to give user some idea of reliability and accuracy of
          data.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="link" type="linkType" minOccurs="0"
      maxOccurs="unbounded">
      <xsd:annotation>
        <xsd:documentation>
          Links to external information about the route.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

```
</xsd:element>
<xsd:element name="number"          type="xsd:nonNegativeInteger" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      GPS route number.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="type"            type="xsd:string"          minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Type (classification) of route.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>

  <xsd:element name="extensions"      type="extensionsType" minOccurs="0">
<xsd:annotation>
<xsd:documentation>
  You can add extend GPX by adding your own elements from another schema here.
</xsd:documentation>
</xsd:annotation>
</xsd:element>

<xsd:element name="rtept" type="wptType" minOccurs="0" maxOccurs="unbounded">
  <xsd:annotation>
    <xsd:documentation>
      A list of route points.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:sequence>
</xsd:complexType>

<xsd:complexType name="trkType">
  <xsd:annotation>
    <xsd:documentation>
      trk represents a track - an ordered list of points describing a path.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:element name="name"          type="xsd:string"          minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          GPS name of track.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

```
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="cmt"                type="xsd:string"
      minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          GPS comment for track.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="desc"                type="xsd:string"          minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          User description of track.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="src"                type="xsd:string"
      minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Source of data. Included to give user some idea of reliability and accuracy of
data.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="link"                type="linkType"          minOccurs="0"
      maxOccurs="unbounded">
      <xsd:annotation>
        <xsd:documentation>
          Links to external information about track.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="number"            type="xsd:nonNegativeInteger" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          GPS track number.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="type"              type="xsd:string"
      minOccurs="0">
      <xsd:annotation>
```

```
<xsd:documentation>
    Type (classification) of track.
</xsd:documentation>
</xsd:annotation>
</xsd:element>

<xsd:element name="extensions"      type="extensionsType" minOccurs="0">
<xsd:annotation>
<xsd:documentation>
    You can add extend GPX by adding your own elements from another schema here.
</xsd:documentation>
</xsd:annotation>
</xsd:element>

<xsd:element name="trkseg"          type="trksegType"          minOccurs="0"
    maxOccurs="unbounded">
<xsd:annotation>
<xsd:documentation>
    A Track Segment holds a list of Track Points which are logically connected in order. To
    represent a single GPS track where GPS reception was lost, or the GPS receiver was turned off,
    start a new Track Segment for each continuous span of track data.
</xsd:documentation>
</xsd:annotation>
</xsd:element>
</xsd:sequence>
</xsd:complexType>

<xsd:complexType name="extensionsType">
<xsd:annotation>
<xsd:documentation>
    You can add extend GPX by adding your own elements from another schema here.
</xsd:documentation>
</xsd:annotation>
<xsd:sequence>
    <xsd:any namespace="##other" processContents="lax" minOccurs="0"
    maxOccurs="unbounded">
    <xsd:annotation>
    <xsd:documentation>
    You can add extend GPX by adding your own elements from another schema here.
    </xsd:documentation>
    </xsd:annotation>
    </xsd:any>
    </xsd:sequence>
</xsd:complexType>
```

```
<xsd:complexType name="trksegType">
  <xsd:annotation>
    <xsd:documentation>
      A Track Segment holds a list of Track Points which are logically connected in order. To represent
      a single GPS track where GPS reception was lost, or the GPS receiver was turned off, start a new
      Track Segment for each continuous span of track data.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence <!-- elements must appear in this order -->
    <xsd:element name="trkpt" type="wptType" minOccurs="0" maxOccurs="unbounded">
      <xsd:annotation>
        <xsd:documentation>
          A Track Point holds the coordinates, elevation, timestamp, and metadata for a single
          point in a track.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>

    <xsd:element name="extensions" type="extensionsType" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          You can add extend GPX by adding your own elements from another schema here.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>

<xsd:complexType name="copyrightType">
  <xsd:annotation>
    <xsd:documentation>
      Information about the copyright holder and any license governing use of this file. By linking to
      an appropriate license,
      you may place your data into the public domain or grant additional usage rights.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence <!-- elements must appear in this order -->
    <xsd:element name="year" type="xsd:gYear" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Year of copyright.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="license" type="xsd:anyURI" minOccurs="0">
```

```
<xsd:annotation>
  <xsd:documentation>
    Link to external file containing license text.
  </xsd:documentation>
</xsd:annotation>
</xsd:element>
</xsd:sequence>
<xsd:attribute name="author" type="xsd:string" use="required">
  <xsd:annotation>
    <xsd:documentation>
      Copyright holder (TopoSoft, Inc.)
    </xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
</xsd:complexType>

<xsd:complexType name="linkType">
  <xsd:annotation>
    <xsd:documentation>
      A link to an external resource (Web page, digital photo, video clip, etc) with additional
      information.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>    <!-- elements must appear in this order -->
    <xsd:element name="text"          type="xsd:string"          minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Text of hyperlink.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="type"          type="xsd:string"          minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Mime type of content (image/jpeg)
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
  </xsd:sequence>
  <xsd:attribute name="href" type="xsd:anyURI" use="required">
    <xsd:annotation>
      <xsd:documentation>
        URL of hyperlink.
      </xsd:documentation>
    </xsd:annotation>
```

```
</xsd:attribute>
</xsd:complexType>

<xsd:complexType name="emailType">
  <xsd:annotation>
    <xsd:documentation>
      An email address. Broken into two parts (id and domain) to help prevent email harvesting.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:attribute name="id" type="xsd:string" use="required">
    <xsd:annotation>
      <xsd:documentation>
        id half of email address (billgates2004)
      </xsd:documentation>
    </xsd:annotation>
  </xsd:attribute>
  <xsd:attribute name="domain" type="xsd:string" use="required">
    <xsd:annotation>
      <xsd:documentation>
        domain half of email address (hotmail.com)
      </xsd:documentation>
    </xsd:annotation>
  </xsd:attribute>
</xsd:complexType>

<xsd:complexType name="personType">
  <xsd:annotation>
    <xsd:documentation>
      A person or organization.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence <!-- elements must appear in this order -->
    <xsd:element name="name" type="xsd:string" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Name of person or organization.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="email" type="emailType" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Email address.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

```
</xsd:element>
<xsd:element name="link"          type="linkType"          minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Link to Web site or other external information about person.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:sequence>
</xsd:complexType>

<xsd:complexType name="ptType">
<xsd:annotation>
<xsd:documentation>
  A geographic point with optional elevation and time. Available for use by other schemas.
</xsd:documentation>
</xsd:annotation>
<xsd:sequence>  <!-- elements must appear in this order -->
<xsd:element name="ele"          type="xsd:decimal"          minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      The elevation (in meters) of the point.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="time"        type="xsd:dateTime"        minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      The time that the point was recorded.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:sequence>
<xsd:attribute name="lat"       type="latitudeType"       use="required">
  <xsd:annotation>
    <xsd:documentation>
      The latitude of the point. Decimal degrees, WGS84 datum.
    </xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
<xsd:attribute name="lon"       type="longitudeType"       use="required">
  <xsd:annotation>
    <xsd:documentation>
      The latitude of the point. Decimal degrees, WGS84 datum.
    </xsd:documentation>
  </xsd:documentation>
</xsd:documentation>
```

```
</xsd:annotation>
</xsd:attribute>
</xsd:complexType>

<xsd:complexType name="ptsegType">
<xsd:annotation>
<xsd:documentation>
    An ordered sequence of points. (for polygons or polylines, e.g.)
</xsd:documentation>
</xsd:annotation>
<xsd:sequence>    <!-- elements must appear in this order -->
    <xsd:element name="pt"        type="ptType"  minOccurs="0" maxOccurs="unbounded">
    <xsd:annotation>
        <xsd:documentation>
            Ordered list of geographic points.
        </xsd:documentation>
    </xsd:annotation>
    </xsd:element>
</xsd:sequence>
</xsd:complexType>

<xsd:complexType name="boundsType">
<xsd:annotation>
<xsd:documentation>
    Two lat/lon pairs defining the extent of an element.
</xsd:documentation>
</xsd:annotation>
<xsd:attribute name="minlat"    type="latitudeType"    use="required">
    <xsd:annotation>
    <xsd:documentation>
        The minimum latitude.
    </xsd:documentation>
    </xsd:annotation>
    </xsd:attribute>
<xsd:attribute name="minlon"    type="longitudeType"    use="required">
    <xsd:annotation>
    <xsd:documentation>
        The minimum longitude.
    </xsd:documentation>
    </xsd:annotation>
    </xsd:attribute>
<xsd:attribute name="maxlat"    type="latitudeType"    use="required">
    <xsd:annotation>
    <xsd:documentation>
        The maximum latitude.
```

```
</xsd:documentation>
</xsd:annotation>
</xsd:attribute>
<xsd:attribute name="maxlon" type="longitudeType" use="required">
  <xsd:annotation>
    <xsd:documentation>
      The maximum longitude.
    </xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
</xsd:complexType>

<xsd:simpleType name="latitudeType">
  <xsd:annotation>
    <xsd:documentation>
      The latitude of the point. Decimal degrees, WGS84 datum.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:decimal">
    <xsd:minInclusive value="-90.0"/>
    <xsd:maxInclusive value="90.0"/>
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="longitudeType">
  <xsd:annotation>
    <xsd:documentation>
      The longitude of the point. Decimal degrees, WGS84 datum.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:decimal">
    <xsd:minInclusive value="-180.0"/>
    <xsd:maxExclusive value="180.0"/>
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="degreesType">
  <xsd:annotation>
    <xsd:documentation>
      Used for bearing, heading, course. Units are decimal degrees, true (not magnetic).
    </xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:decimal">
    <xsd:minInclusive value="0.0"/>

```

```
<xsd:maxExclusive value="360.0"/>
</xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="fixType">
  <xsd:annotation>
    <xsd:documentation>
      Type of GPS fix. none means GPS had no fix. To signify "the fix info is unknown, leave
      out fixType entirely. pps = military signal used
    </xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="none"/>
    <xsd:enumeration value="2d"/>
    <xsd:enumeration value="3d"/>
    <xsd:enumeration value="dgps"/>
    <xsd:enumeration value="pps"/>
  </xsd:restriction>
</xsd:simpleType>

<xsd:simpleType name="dgpsStationType">
  <xsd:annotation>
    <xsd:documentation>
      Represents a differential GPS station.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:integer">
    <xsd:minInclusive value="0"/>
    <xsd:maxInclusive value="1023"/>
  </xsd:restriction>
</xsd:simpleType>

</xsd:schema>
```

## A.2 GPX Extension for Speed & Direction XML Schema

```
<?xml version="1.0" encoding="utf-8" ?>
<!--Created with Liquid XML Studio Developer Edition (Trial) 8.1.7.2743 (http://www.liquid-
technologies.com)-->
<xs:schema xmlns:gfxe="http://www.bellaliant.ca/publicsafety/gpxextend/cspeed/1/0"
  elementFormDefault="qualified"
  targetNamespace="http://www.bellaliant.ca/publicsafety/gpxextend/cspeed/1/0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:annotation>
    <xs:documentation xml:lang="EN">
      GPX schema version 1.1 Extension - This Schema is an extension of the standard GPX 1.1 schema
      to include Calculated travel speed and Direction
      GPX uses the following conventions: all coordinates are relative to the WGS84 datum. All
      measurements are in metric units unless otherwise specified.
    </xs:documentation>
  </xs:annotation>
  <xs:element name="gpxCSpeedExt" type="gfxe:gpxCSpeedExtentionType" />
  <xs:complexType name="gpxCSpeedExtentionType">
    <xs:annotation>
      <xs:documentation xml:lang="EN">gpxCSpeedExtensionType: Provides for the generation of
      elements to extend the GPX standard to support the addition of calculated Speed and direction
      of the GPS object.</xs:documentation>
    </xs:annotation>
    <xs:sequence minOccurs="0">
      <xs:element name="cSpeed" type="gfxe:cSpeedType">
        <xs:annotation>
          <xs:documentation xml:lang="EN">cSpeed: Provides a calculated speed of the GPS object.
          Default is in kilometers per hour unless modified by CSpeedDesc.</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="cSpeedDesc" type="gfxe:cSpeedDescType" minOccurs="0">
        <xs:annotation>
          <xs:documentation xml:lang="EN">CSpeedDesc: Is used to specify unit of measure of CSpeed
          element.
          One of:
            kh - Kilometers / Hour
            ms - Meters / Second
            mm - Meters / Minute
            mh = Miles / Hour
            fs = Feet / Second
            fm = Feet / Minute
        </xs:documentation>
        </xs:annotation>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

```
<xs:element name="cDirection" type="gfixe:degreesType">
  <xs:annotation>
    <xs:documentation xml:lang="EN">cDirection = Provides the direction of travel in decimal
    degrees.</xs:documentation>
  </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="cSpeedType">
  <xs:annotation>
    <xs:documentation xml:lang="EN">Calculated Speed type. Elements of this type indicate the
    speed of the GPS object. Default is KM/H unless otherwise specified.</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:double" />
</xs:simpleType>
<xs:simpleType name="cSpeedDescType">
  <xs:annotation>
    <xs:documentation>Calculated Speed Description Type:
    Can be used to create an element to specify unit of measure of CSpeedType elements.
    One of:
      kh - Kilometers / Hour
      ms - Meters / Second
      mm - Meters / Minute
      mh = Miles / Hour
      fs = Feet / Second
      fm = Feet / Minute
    </xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:token">
    <xs:enumeration value="kh" />
    <xs:enumeration value="ms" />
    <xs:enumeration value="mm" />
    <xs:enumeration value="mh" />
    <xs:enumeration value="fs" />
    <xs:enumeration value="fm" />
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="degreesType">
  <xs:annotation>
    <xs:documentation xml:lang="EN">degreesType: Elements of this type can express a direction or
    bearing in decimal degrees.</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:decimal">
    <xs:minInclusive value="0.0" />
    <xs:maxExclusive value="360.0" />
  </xs:restriction>
</xs:simpleType>
```

```
</xs:restriction>  
</xs:simpleType>  
</xs:schema>
```

### A.3 Radio GPS XML Schema

```
<?xml version="1.0" encoding="utf-8" ?>
<!--Created with Liquid XML Studio Developer Edition (Trial) 8.1.7.2743 (http://www.liquid-
technologies.com)-->
<xs:schema xmlns:rif="http://www.bellaliant.ca/publicsafety/radioIF/RadioTrans/1/0"
  xmlns:rgps="http://www.bellaliant.ca/publicsafety/radioIF/RadioGPS/1/0"
  elementFormDefault="qualified"
  targetNamespace="http://www.bellaliant.ca/publicsafety/radioIF/RadioGPS/1/0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import schemaLocation="radioIF1-0.xsd"
    namespace="http://www.bellaliant.ca/publicsafety/radioIF/1/0">
    <xs:annotation>
      <xs:documentation xml:lang="EN">Import Radio Interface XSD for use in Radio GPS
        Element.</xs:documentation>
    </xs:annotation>
  </xs:import>
  <!-- Created with Liquid XML Studio Developer Edition (Trial) 8.1.7.2743 (http://www.liquid-
    technologies.com) -->
  <xs:annotation>
    <xs:documentation xml:lang="EN">Radio Interface Schema 1.0: Developed for the RCMP October
      2010 by xwave a Bell Aliant Company, as a generic means for Radio Systems to update the CAD
      with Radio signal information and GPS updates from radio devices.</xs:documentation>
  </xs:annotation>
  <xs:element xmlns:q1="http://www.bellaliant.ca/publicsafety/radioIF/1/0" name="RadioGPS"
    type="q1:RadioGPSType">
    <xs:annotation>
      <xs:documentation xml:lang="EN">RadioGPS payload element for use in sending GPS information
        to the generic Radio Interface.</xs:documentation>
    </xs:annotation>
  </xs:element>
</xs:schema>
```

## A.4 Radio Interface XMLSchema

```
<?xml version="1.0" encoding="utf-8" ?>
<!--Created with Liquid XML Studio Developer Edition (Trial) 8.1.7.2743 (http://www.liquid-
technologies.com)-->
<xs:schema xmlns:gfxe="http://www.bellaliant.ca/publicsafety/gpxextend/cspeed/1/0"
  xmlns:rif="http://www.bellaliant.ca/publicsafety/radioIF/1/0"
  xmlns:gpx="http://www.topografix.com/GPX/1/1" elementFormDefault="qualified"
  targetNamespace="http://www.bellaliant.ca/publicsafety/radioIF/1/0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import schemaLocation="gpx.xsd" namespace="http://www.topografix.com/GPX/1/1">
    <xs:annotation>
      <xs:documentation xml:lang="EN">Import GPX XSD for use in managing GPS
      Signals.</xs:documentation>
    </xs:annotation>
  </xs:import>
  <xs:import schemaLocation="gpxExtendCSpeed.xsd"
    namespace="http://www.bellaliant.ca/publicsafety/gpxextend/cspeed/1/0">
    <xs:annotation>
      <xs:documentation xml:lang="EN">Import GPX XSD extension to supprt calculated speed and
      direction.</xs:documentation>
    </xs:annotation>
  </xs:import>
  <xs:annotation>
    <xs:documentation xml:lang="EN">Radio Interface Schema 1.0: Developed for the RCMP October
    2010 by xwave a Bell Aliant Company, as a generic means for Radio Systems to update the CAD
    with Radio signal information and GPS updates from radio devices.</xs:documentation>
  </xs:annotation>
  <xs:complexType name="RadioTransType">
    <xs:annotation>
      <xs:documentation xml:lang="EN">RRadio Transmistion Type, provides a description of a
      particular radio transmission to the CAD.</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="Radioid" type="rif:RadioIDType">
        <xs:annotation>
          <xs:documentation>Device Id of the transmitting radio</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="RadioChannel" type="rif:RadioChannelType">
        <xs:annotation>
          <xs:documentation>Channel of the transmitting device.</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="TransInd" type="rif:TransIndicatorType">
```

```
<xs:annotation>
  <xs:documentation xml:lang="EN">Indicator of type of transmission, one of:
ptt = Press to talk request
rtt = Request to talk request
ertt= Emergency request to talk
0 = Status change value generated by radio device.
1 = Status change value generated by radio device.
2 = Status change value generated by radio device.
3 = Status change value generated by radio device.
4 = Status change value generated by radio device.
5 = Status change value generated by radio device.
6 = Status change value generated by radio device.
7 = Status change value generated by radio device.
8 = Status change value generated by radio device.
9 = Status change value generated by radio device.
  </xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="TransDate" type="rif:TransDateType" minOccurs="0">
  <xs:annotation>
    <xs:documentation>Date transmission was issued.</xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="TransTime" type="rif:TransTimeType" minOccurs="0">
  <xs:annotation>
    <xs:documentation>Time transmission was issued.</xs:documentation>
  </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="RadioGPSType">
  <xs:annotation>
    <xs:documentation xml:lang="EN">Radio GPS Type supports the generation of a GPS signal from
      a radio device.</xs:documentation>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="Radioid" type="rif:RadioIDType">
      <xs:annotation>
        <xs:documentation xml:lang="EN">Device ID of transmitting radio.</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="RadioGPSPosition" type="gpx:gpxType">
      <xs:annotation>
        <xs:documentation xml:lang="EN">GPS position of Radio Transmission. See GPS XML
          Standard.
        </xs:documentation>
      </xs:annotation>
    </xs:element>
  </xs:sequence>
</xs:complexType>
</xs:sequence>
</xs:element>
</xs:complexType>
```

```
http://www.topografix.com/gpx.asp</xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="TransDate" type="rif:TransDateType" minOccurs="0">
  <xs:annotation>
    <xs:documentation xml:lang="EN">Date transmission was issued.</xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="TransTime" type="rif:TransTimeType" minOccurs="0">
  <xs:annotation>
    <xs:documentation xml:lang="EN">Time transmission was issued.</xs:documentation>
  </xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
<xs:simpleType name="RadioIDType">
  <xs:annotation>
    <xs:documentation xml:lang="EN">An encoded alphanumeric value uniquely describing the radio
      device that is reporting.</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string" />
</xs:simpleType>
<xs:simpleType name="RadioChannelType">
  <xs:annotation>
    <xs:documentation xml:lang="EN">The radio channel used by the reporting radio
      device.</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string" />
</xs:simpleType>
<xs:simpleType name="TransIndicatorType">
  <xs:annotation>
    <xs:documentation xml:lang="EN">Describes type of transmission from radio device. One of
```

ptt = Press to talk

rtt = Request to talk

ertt = Emergency Request to talk

0 = Status change value generated by radio device.

1 = Status change value generated by radio device.

2 = Status change value generated by radio device.

3 = Status change value generated by radio device.

4 = Status change value generated by radio device.

5 = Status change value generated by radio device.

6 = Status change value generated by radio device.

7 = Status change value generated by radio device.

8 = Status change value generated by radio device.

9 = Status change value generated by radio device.

```
</xs:documentation>
</xs:annotation>
<xs:restriction base="xs:string">
  <xs:enumeration value="ptt" />
  <xs:enumeration value="ertt" />
  <xs:enumeration value="rtt" />
  <xs:enumeration value="0" />
  <xs:enumeration value="1" />
  <xs:enumeration value="2" />
  <xs:enumeration value="3" />
  <xs:enumeration value="4" />
  <xs:enumeration value="5" />
  <xs:enumeration value="6" />
  <xs:enumeration value="7" />
  <xs:enumeration value="8" />
  <xs:enumeration value="9" />
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="TransDateType">
  <xs:annotation>
    <xs:documentation>Date the device transmitted.</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:date" />
</xs:simpleType>
<xs:simpleType name="TransTimeType">
  <xs:annotation>
    <xs:documentation xml:lang="EN">Time of day the device issued the
      transaction.</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:time" />
</xs:simpleType>
</xs:schema>
```

## A.5 Radio Transmission Exchange XML Schema

```
<?xml version="1.0" encoding="utf-8" ?>
<!--Created with Liquid XML Studio Developer Edition (Trial) 8.1.7.2743 (http://www.liquid-
technologies.com)-->
<xs:schema xmlns:rif="http://www.bellaliant.ca/publicsafety/radioIF/RadioTrans/1/0"
  xmlns:radio="http://www.bellaliant.ca/publicsafety/radioIF/RadioTrans/1/0"
  elementFormDefault="qualified"
  targetNamespace="http://www.bellaliant.ca/publicsafety/radioIF/RadioTrans/1/0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:annotation>
    <xs:documentation xml:lang="EN">Radio Interface Schema 1.0: Developed for the RCMP October
      2010 by xwave a Bell Aliant Company, as a generic means for Radio Systems to update the CAD
      with Radio signal information and GPS updates from radio devices.</xs:documentation>
  </xs:annotation>
  <xs:import schemaLocation="radioIF1-0.xsd"
    namespace="http://www.bellaliant.ca/publicsafety/radioIF/1/0">
    <xs:annotation>
      <xs:documentation xml:lang="EN">Import RadioIF XSD 1.0 to instantiate Radio Transmission
        element.</xs:documentation>
    </xs:annotation>
  </xs:import>
  <xs:element name="RadioTransmission"
    xmlns:q1="http://www.bellaliant.ca/publicsafety/radioIF/1/0" type="q1:RadioTransType">
    <xs:annotation>
      <xs:documentation xml:lang="EN">Data load for a Radio Transmission. To be used by Generic
        Radio Interface for Radio Transactions.</xs:documentation>
    </xs:annotation>
  </xs:element>
</xs:schema>
```

## A.6 Sample Radio GPS XML

```
<?xml version="1.0" encoding="utf-8"?>
<!-- RadioGPS Sample XML File with Calculated Speed and direction extension.
-->
<rgps:RadioGPS
  xmlns:rgps="http://www.bellaliant.ca/publicsafety/radioIF/RadioGPS/1/0"
  xmlns:rif="http://www.bellaliant.ca/publicsafety/radioIF/RadioTrans/1/0"
  xmlns="http://www.topografix.com/GPX/1/1"
  xmlns:gfxe="http://www.bellaliant.ca/publicsafety/gpxextend/cspeed/1/0"
  xmlns:rifA="http://www.bellaliant.ca/publicsafety/radioIF/1/0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.bellaliant.ca/publicsafety/radioIF/RadioG
PS/1/0
file:///C:/Documents%20and%20Settings/pa08143/My%20Documents/Downloads/R
adioGPS1-0.xsd">
  <rifA:RadioId>rad1</rifA:RadioId>
  <rifA:RadioGPSPosition version="1.1">
    <wpt lat="-73.679214" lon="31.527909">
      <extensions>
        <gfxe:gpxCSpeedExt
          xmlns:rgps="http://www.bellaliant.ca/publicsafety/radioIF/RadioGPS/1/0"
          xmlns:rif="http://www.bellaliant.ca/publicsafety/radioIF/RadioTrans/1/0"
          xmlns="http://www.topografix.com/GPX/1/1"
          xmlns:gfxe="http://www.bellaliant.ca/publicsafety/gpxextend/cspeed/1/0"
          xmlns:rifA="http://www.bellaliant.ca/publicsafety/radioIF/1/0"
          xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.bellaliant.ca/publicsafety/radioIF/RadioG
PS/1/0
file:///C:/Documents%20and%20Settings/pa08143/My%20Documents/Downloads/R
adioGPS1-0.xsd">
            <gfxe:cSpeed>58.5</gfxe:cSpeed>
            <gfxe:cSpeedDesc>mh</gfxe:cSpeedDesc>
            <gfxe:cDirection>125.836</gfxe:cDirection>
          </gfxe:gpxCSpeedExt>
        </extensions>
      </wpt>
    </rifA:RadioGPSPosition>
  <rifA:TransDate>2013-01-13</rifA:TransDate>
  <rifA:TransTime>23:41:47.71</rifA:TransTime>
</rgps:RadioGPS>
```

## A.7 Sample Radio Transmission XML

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Example Radio Transmission data payload -->
<rif:RadioTransmission
  xmlns:rif="http://www.bellaliant.ca/publicsafety/radioIF/RadioTrans/1/0"
  xmlns="http://www.topografix.com/GPX/1/1"
  xmlns:gfxe="http://www.bellaliant.ca/publicsafety/gpxextend/cspeer/1/0"
  xmlns:rifA="http://www.bellaliant.ca/publicsafety/radioIF/1/0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.bellaliant.ca/publicsafety/radioIF/RadioT
rans/1/0
  file:///C:/Documents%20and%20Settings/pa08143/My%20Documents/Downloads/R
adioTrans1-0.xsd">
  <rifA:RadioId>rad1</rifA:RadioId>
  <rifA:RadioChannel>178</rifA:RadioChannel>
  <rifA:TransInd>ptt</rifA:TransInd>
  <rifA:TransDate>2011-05-18</rifA:TransDate>
  <rifA:TransTime>16:10:09.44</rifA:TransTime>
</rif:RadioTransmission>
```

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Buyer ID - Id de l'acheteur

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File No. - N° du dossier  
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CCC No./N° CCC - FMS No./N° VME

## Annex C Pricing and Delivery Table

Item No.	Deliverable	Firm Price	Delivery Date Offered
1	Preliminary Design Review		
2	Critical Design Review		
3	Monthly Progress Meetings		
4	Factory Acceptance Test of Console Sub-system.		
5	Delivery, Installation, SAT of Console Sub-systems		
6	Training		
7	Support Services for initial operational period of 14 days.		
8	Support Services and Help Desk (One year).		
	Total		

## Annex D Technical Evaluation Plan

The Bidder should provide the following with the bid:

Item No.	Requirement	Proof of Compliance	Compliant (Y/N)
1.0	The Bidder must demonstrate it has the appropriate experience and capability to carry out the Statement of Work.	The Bidder should provide references for at least three current radio console systems that they have manufactured and are presently in operations for emergency responders in North America. If the previous contract is with PWGSC, the Bidder may provide a cover page of the contract. If not with Canada, then provide a Letter of Reference from the organisation stating the Bidder's level of performance and contract details to include a description of the work, and the date and duration of contract.	
2.	The equipment proposed for this requirement must meet applicable sections of the current issue of the following standards:		
2.01		The Bidder should provide a copy of certification of ANSI/TIA102 Suite of the Association of Public-Safety Communications Officials-International (APCO) Project 25 (P25) Specifications.	
2.02	:	The Bidder should provide a copy of certification of 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	

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 008qd  
 File No. - N° du dossier  
 008qdM7594-125049

Buyer ID - Id de l'acheteur  
 008qd  
 CCC No./N° CCC - FMS No./N° VME

		<p>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.</p>	
2.03		<p>The Bidder should provide a copy of certification of 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.</p>	
2.04		<p>The Bidder should provide a copy of certification of 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.</p>	
2.05		<p>The Bidder should provide a copy of certification of Canadian Standards Association (CSA) approval for all Alternating Current (AC) line powered equipment.</p>	
2.06		<p>The Bidder should provide a copy of certification of Applicable parts of Industry Canada CS-03 Telecommunication Apparatus Compliance Specification.</p>	
2.07		<p>The Bidder should provide a copy of certification of ISO 9001: Quality Management Standard.</p>	