



# M · A · R · I · T · I · M · E I · N · T · E · R · O · P · E · R · A · B · I · L · I · T · Y

Three Canadian provinces join forces to procure a regional Project 25 (P25) public-safety network.

By Terry Canning

In 1976, Nova Scotia, Canada, experienced a major forest fire lasting several days and destroying more than 33,000 acres of woodland and untold numbers of wildlife. There was no communications operability in this rural woodland area let alone interoperability; however, this event was the catalyst to push the province to develop and implement a provincewide, multiagency radio system.

The Nova Scotia Integrated Mobile Radio System (NSIMRS) was a conventional VHF network with six agency-discreet repeaters on each of 24 primary sites with microwave backhaul to a central switch where an operator could patch any two of the networks

together — although it was rarely done. Users were able to use dual tone multifrequency (DTMF) keypads to dial from one repeater to any other within the network and to the central operator for a cross-agency patch.

Agency repeaters were allocated to police services, ambulance services, fire services, the province's departments of natural resources and transportation, and a general public-service network that included the Office of Emergency Management, public works, ground search and rescue, and school buses. Several agencies, notably the Royal Canadian Mounted Police (RCMP), added spur sites to improve coverage in specific areas of interest, and these repeaters were linked to the

closest primary site for backhaul purposes. Aspects of the legacy NSIMRS continue to support volunteer fire services and ground search-and-rescue teams particularly for VHF tone-voice paging purposes.

By the mid-1990s, issues with the NSIMRS microwave backhaul hops were surfacing, and the six discreet networks provided insufficient capacity for the higher-use agencies, particularly police and ambulance services. The 1998 Swiss Air 111 crash off the coast of Nova Scotia was a motivator to implement the next-generation provincial radio system — an 800 MHz Motorola SmartZone trunked system on 68 sites with backhaul on the Bell Aliant fiber-optic network.



Nova Scotia plans to encourage the full migration of operations to 700 MHz.

This system is owned and operated by the telephone company — the province is the anchor tenant — and includes numerous municipal and federal agencies that contracted directly with Bell Aliant for service. System capacity varies from site to site with a minimum of three voice paths and a maximum of 13 based on anticipated traffic and adjusted for actual system loading.

### Upgrade Decision

The contract between the province and Bell Aliant is scheduled to expire in May. So in 2006, the province had to decide whether to sign a contract extension or go to the market for a next-generation system. The latter choice was made. To give the province time to procure a new system, the contract was extended with better terms and conditions for two to five years as required with a six-month termination notice. Almost concurrently with Nova Scotia's decision to upgrade, the neighboring province of New Brunswick issued a request for proposals (RFP) for a trunking replacement of its conventional mixed VHF/UHF networks. The single proposal in response to New Brunswick's request wasn't accepted, forcing the province to return to the drawing board. Simultaneously, the province of Prince Edward Island recognized that its public-safety communications network was inadequate for the demands of the 21st century and needed improved coverage and capability.

The RCMP holds provincial policing contracts in all three provinces with members frequently crossing provincial boundaries. The RCMP's regional administrative arm helped orchestrate a meeting of officials where the possibility of a single regionwide public-safety

radio system was discussed. There was sufficient interest in this approach; the responsible deputy ministers agreed to strike a working group of director-level personnel from each province to flesh out the concept to a memorandum of understanding (MoU).

The Maritime Radio Communications Initiative (MRCI) was officially launched in August 2008 and work began in earnest to develop a joint RFP for a Maritimewide public-safety/public-service radio network using the recently designated 700 MHz public-safety spectrum and the Project 25 (P25) standard for public-safety radio systems. An early consultation with the vendor community suggested that rather than a single three-province radio system, there were advantages to three identical radio systems with the controllers linked by the successful system vendor to provide seamless roaming for selected radios across the entire region or as much of it as required.

The province of Nova Scotia had staff and a procurement consultant already employed developing its RFP, while New Brunswick and Prince Edward Island had project leads designated. The MRCI working group agreed to contract with an expert procurement firm to pull together the stated objectives of each province and develop a single RFP that would result in the acquisition of the desired compatible radio systems. Through an opportunity presented by the Canadian Interoperability Technology Interest Group (CITIG), financial assistance was sought and provided by the Canadian Police Research Centre (CPRC) to offset some consultant costs. It's anticipated that the joint procurement will result in volume purchasing discounts, as well as the full regional interoperability desired. The rest of the networks will be funded with a public/private partnership with the selected vendor consortium to finance, build and maintain for 15 years, moving the capital cost off the provincial books and leaving the provinces with an annual operating cost.

The MRCI is making final adjustments to the RFP in response to a pre-release vendor consultation period held

in February. The vendors were provided with a draft version of the RFP and a proposed schedule for final version release, response development, response evaluation and contract negotiation. The vendor community response provided substantial insight into the concerns of the various likely proponents. One of the biggest concerns expressed was related to the terms and conditions of the contract to which the successful proponent would be expected to agree. The MRCI had suggested that the pro-forma contract draft be released just prior to the closing of the RFP because it hasn't been fully developed. Almost universally, however, the vendors said that knowing the terms and conditions of the anticipated contract were as important to their official responses as the technical aspects.

Another major concern from the vendors was the uncertainty around the official agent(s) with whom they were expected to contract and work. An idea being considered is development of a special purpose vehicle or crown agency that would be constituted by delegates of the three provinces to act as the contracting party. This agency would be empowered to represent the interests of the provinces in any negotiations and provide a single point of contact for the successful vendor.

The ultimate governance model of the MRCS has yet to be developed; however, it is anticipated that there will be an administrative branch and an operational branch. The administrative branch would focus on contractual and financial issues and service level agreements (SLAs), while the operational branch would deal more with interoperability, site capacity, and roaming opportunities and limitations.

### Beyond the RFP

The Nova Scotia team anticipates a major piece of work will be the effort required to develop user-friendly, intuitive and effective radio fleet maps and appropriate access to the various provincial, municipal and federal agency consoles. This work will be required regardless of which vendor is successful and is expected to begin in

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the near future. The biggest challenge will be ensuring the essential intra-agency communications, recognizing the geographic size of the three provinces and the nonaligned regional structure of their respective user departments. Another challenge is concurrently recognizing and accommodating the necessity of interoperability across agencies and between jurisdictions, when and where required and as authorized.

For example, there will be about 84 tower sites in Nova Scotia, approximately 12 in Prince Edward Island and more than 100 in New Brunswick. Along the Northumberland Strait and the Bay of Fundy it's expected that radios will be able to see repeater sites on the opposite side of the separating water body in the neighboring province. The arrangements for permitting or disallowing roaming between the home and neighboring systems across the water have to be carefully planned to take advantage of the coverage offered while not unreasonably overloading the neighboring system repeaters. Another critical piece of work, yet to be fully explored, is the initial and ongoing user training required to make the MRCS successful. Nova Scotia has had a full-time user trainer since late 2002, and province officials anticipate there will be a continuing need for this resource and several more during the system implementation.

All three provinces rely heavily on volunteer fire services, and they rely on VHF tone-voice paging for notification of a need for their services. Each

province has legacy VHF infrastructure in place, and all of the volunteer fire services have a significant investment in tone-voice pagers that can't be replaced without substantial injection of capital funds. Each province is working with its own fire service representative body — New Brunswick Association of Fire Chiefs, Prince Edward Island Firefighters Association and Fire Service Association of Nova Scotia — to determine how best to leverage the capabilities of the next-generation radio system to ensure ongoing reliable and thorough VHF paging coverage, recognizing that the pagers are analog and CTCSS tone activated.

The Nova Scotia volunteer fire service is operating primarily using analog VHF radios with two- or three-seeded trunked radios loaned to each volunteer department to enable interoperability with other response agencies. The future plan is to encourage full migration of operations to 700 MHz with the rest of the province, but this will be determined by the ability to find funds to replace VHF radios rather than by any other driver. Fire services in Prince Edward Island are being encouraged to fully migrate to 700 MHz, while New Brunswick fire services are planning to remain fully on VHF with interoperability with other agencies accomplished through console patches.

While the ultimate MRCS will be a model of interoperability and cooperation that may well be the envy of the country, there are also interoperability relationships yet to be consid-

ered and developed with jurisdictions outside the three Canadian Maritime provinces. The province of New Brunswick shares significant length borders with the U.S. state of Maine and the province of Quebec, and cross-border communications with these neighbors will be desirable for some agencies, probably using the Inter Subsystem Interface (ISSI) feature of the P25 standard. The upcoming three to four years will witness a Herculean effort on the part of the implementation teams; however, the successful rollout will serve the user community effectively for many years going forward with periodic refreshment of user equipment and ongoing maintenance of system software and firmware, along with continuous training and multiagency user exercises. ■

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