Dr. Bob McCaugherm:

Canada Gazette, Part 1, Notice No. SMSE-005-06 Consultation Paper on Public Safety Radio Interoperability Guidelines

The attached document provides the views and concerns of the RCMP with regard to the above noted Gazette Notice. Comments are also provided, as requested, on alternative options which should be considered by Industry Canada in fulfilling its mandate.

In summary, the RCMP supports the initiative of Industry Canada in producing this consultation paper. The discussions and recommended options are of benefit to the public safety community at large and should be further explored by Industry Canada.

The RCMP, under its mandate to supply public safety and security services across Canada, fully supports this initiative by Industry Canada. The RCMP will be pleased to provide assistance to the Department in developing the technical and licensing criteria to further the development of these Radio Interoperability Guidelines.

Sincerely,

[Signature]

Paul Teeple
Director General

Attach.
Royal Canadian Mounted Police Response to:

Canada Gazette, Part 1, Notice No. SMSE-005-06 — Consultation Paper on Public Safety Radio Interoperability Guidelines

Department of Industry - Radio Communication Act

The following response addresses the views and concerns of the RCMP with regards to the above Gazette Notice.

General

The need for interoperability with respect to public safety radio communications has been well documented and promoted over the past several years. This consultation paper produced by Industry Canada is an excellent beginning to one aspect of the multi-faceted interoperability equation. This paper summarizes the main technical issues with respect to radio interoperability, and proposes methods to ensure public safety agencies include interoperability capabilities as a condition of licencing.

Radio communications interoperability, as has been noted, is not comprised of only one problem, with a single solution. There are many aspects of interoperability which inhibit a single solution being applicable across the board. The triangle showing the five levels of interoperability is strong evidence that there are multiple methods of meeting interoperability criteria for different situations. As the consultation paper has noted, the issues surrounding radio interoperability are broad and encompass several aspects outside of the technical provisioning of radio communications. Besides the issues of governance, standard operating procedures, training, etc., funding has a major role to play in what levels of interoperability can be reasonably implemented in any given jurisdiction.
While these other aspects of interoperability are no less important, they are outside of the mandate of Industry Canada. Additional efforts are required outside the scope of this consultation paper to produce similar guidance with respect to operational aspects of radio interoperability. Particularly, it is hoped that the Radio Communications Interoperability Project at the Public Safety Interoperability Directorate of Public Safety and Emergency Preparedness Canada will be able to work in conjunction with these guidelines produced by Industry Canada.

This response paper from the RCMP will answer the questions as posed in the three sections of the Industry Consultation Paper. Additional comments/proposals will also be provided.

**Radio Interoperability Definitions**  
(SMSE-005-06 #3.)

*Industry Canada:* Do the above definitions accurately reflect the concept of radio interoperability? Are the ways of classifying radio interoperability correctly stated? Are there other operating environments for radio interoperability that are not correctly captured by the three identified here?

*RCMP Comments:* The definitions, as presented in the consultation paper, accurately reflect the concept of radio interoperability, as it pertains to public safety in Canada. Although there are many ways of stating and classifying radio interoperability, those presented in the consultation paper are correct and the examples describe some of the multitude of possible scenarios. The three operating environments presented in the consultation paper comprise the main roles for which radio interoperability is being pursued.

**Levels of Radio Interoperability**  
(SMSE-005-06 #4.)

*Industry Canada:* Does the above hierarchy adequately describe the various levels of radio interoperability that are achievable between public safety users? Are there other levels of radio interoperability which should be included?

*RCMP Comments:* The hierarchy of radio interoperability, as presented in the consultation paper, is based on the similar levels discussed within public safety arenas and within industry. While there are several varying models in use by different agencies, the one presented here satisfies most of the possibilities for public safety interoperability. There is no significant need to add more levels to this model.
The hierarchy of the levels, as presented, indicate that some levels are better than others. This is based on a series of assumptions and criteria which may not be correct in all situations. While the options are correct, they should be presented as equally valid without ranking. There should be no notion that any particular solution is inferior based on its ranking within the levels.

**Proposed Radio Interoperability Guidelines**

(ESME-005-06 #5.)

**Industry Canada:** The Department seeks comment on the proposal to establish the guidelines outlined in option 3 above, requiring public safety users to meet a minimum level of radio interoperability in frequency bands made available for public safety use. This would be applied as a condition of authorization. Are there other approaches to advance the issue of radio interoperability between public safety users that the Department should consider within its mandate?

**RCMP Comments (Option 3):** The option 3, as proposed in the consultation paper by Industry Canada is worth pursuing further. Making the consideration and consultation of radio interoperability mandatory for new public safety spectrum licencing certainly has merit. The applicability and effectiveness of this option will be dependent upon the details as to how it will be implemented and enforced. The rules and guidelines surrounding the implementation of this option will need to be both flexible and stringent. As there is not one solution which will meet all needs, the rules will need to be flexible to accommodate the myriad of local operational differences and the resulting system designs used to meet the requirements. However, to achieve a minimum (to be defined) level of interoperability, Industry Canada may need stringent rules to ensure that the applicant has conducted a thorough investigation and that the plans are appropriate.

Due to the sheer number, differing scopes and differing jurisdictions of the public safety agencies in any given area, it may be difficult, or even impossible, for a single agency to meet these new rules. For any number of reasons, one or more agencies may be unable or unwilling to cooperate in establishing the necessary interoperability criteria for the proposed spectrum usage. Industry Canada must then have options available to allow the applicant to proceed with their application without a complete interoperability plan.
Alternative Options

The consultation paper discusses interoperability options related to new implementations requiring spectrum licencing. This is definitely a valid approach, and should be pursued. However, the vast majority of public safety radio communications across Canada do not fit into these new system requirements. Most current public safety radio communications systems have been implemented over the past twenty, or more, years using a variety of open and proprietary standards. For various reasons (chiefly financial), many of these systems will need to remain operational in their current form for many years. Achieving the level of interoperability possible with the “new system” guidelines, will not be possible for 10-20 years until all of these older systems are replaced. Even then, there will likely be limiting factors which prohibit a commonality of technologies amongst radio systems, thus limiting interoperability to something less than ideal.

As per the consultation paper, one of the best methods of achieving interoperability, is a single common standards based system. Achieving this would be a very difficult process, and would require the common resolution to several issues. These include the setting of rigid technical standards, common spectrum for all public safety agencies, the recognition and support by government agencies, and major capital funding. These are outside the scope of Industry Canada’s current mandate to effect in a viable manner. There are, however, other alternatives which Industry Canada can pursue.

Expanded Mutual Aid

Within the current situation regarding the myriad of operations and radio systems across the country, Industry Canada has one shorter term option available to improve interoperability. As noted in the triangle, Level 3 interoperability involves the implementation of mutual aid channels. Other than the limited use of mutual aid channels in the 800 MHz band, and the proposals for 700 MHz, Canada has minimal national implementation of mutual aid channels. Expansion of mutual aid channels to other bands would provide the opportunity to dramatically improve interoperability solutions in a short time frame, and at a low user cost. Although achieving an expanded suite of mutual aid channels is not trivial, the benefit to public safety interoperability would be considerable.
Expanding the role of mutual aid channels across the country will require considerable effort, and cost for Industry Canada. As a minimum, additional mutual aid channels at VHF and UHF will be required. Although many urban area public safety agency agencies use 800 MHz spectrum, the majority of rural and small agencies use either VHF or UHF frequencies. The 800 MHz systems tend to be more modern, and generally include a certain degree of interoperability amongst various included agencies. The rural/small agency systems tend not to be as modern, and are generally basic analogue systems without sophisticated control systems. Subject to further study by Industry Canada, additional channels (ideally duplex pairs with talk around capability) at VHF and UHF should be cleared country-wide to provide multi-agency free access for mutual aid purposes. Although simplex channels would be the minimal requirement, duplex channels would allow for more flexibility and improved possibilities in adapting the mutual aid channels in various locales. These channels may be divided to provide both basic analogue FM and digital P25 modes to provide access to both existing legacy systems, and new digital communications systems.

Most current public safety agencies would be able to access these mutual aid channels utilizing their current user equipment, at minimal cost. The main cost would be in the effort to clear an appropriate suite of channels country-wide. If appropriate spectrum can be freed, and existing users moved to other assignments in-band, the costs should be minimal. However, these costs would increase if it involved moving existing licensees to alternate channels in another frequency band. Sources of funding within the federal government should be sought to offset these costs to minimize impact on Industry Canada budgets. When fully analyzed, the cost-benefit to provide “Infrastructure independent”, “Multi-jurisdictional”, “Multi-disciplinary” communications at a Level 3 Interoperability should justify this solution.

Conclusions and Recommendations

The RCMP applauds Industry Canada in their efforts to further public safety interoperability. The Option 3, as proposed in the consultation document, is worthy of further study and effort towards implementation. Other options, such as the proposed expansion of Mutual Aid channels, are also worthy of further effort by Industry Canada.

Public Safety Interoperability is a multi-faceted challenge which can benefit from Industry Canada’s efforts to ensure agencies are given the tools to use, and the mandate to consider them, when developing radio communications solutions.