

**Radio Communications
on Forest Roads**

Stakeholder Discussion Paper

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Introduction

This discussion paper – **Radio Communications on Forest Roads** – presents an overview of key considerations related to a provincial standardized radio communications protocol pilot on Forest Service Roads (FSR), with potential for application to all forest and resource roads in British Columbia. A provincial standard is viewed as central to an integrated road communications system that would improve safety for all users of forest and resource roads on Crown lands in the province. The BC Radio Communications Working Group¹ provided guidance to the pilot projects and assisted in preparation of this discussion paper. The working group is chaired by the BC Forest Safety Council.

This initiative builds upon significant collaboration on forest safety over the past four years involving industry, the provincial government, the BC Forest Safety Council and other stakeholders.

The purpose of the discussion paper is:

1. To provide an overview of the radio communications protocol that was implemented and tested during the radio pilot projects and to make available the results of the pilots.
2. To generate discussion and seek feedback from affected stakeholders on the components of the pilot test results of a forest roads radio communications protocol for consideration within the context of provincial standardization. More specifically, to seek feedback on signage and radio channel standardization and rationalization.

The radio communications pilot project focused on an array of factors considered to be components of a provincial standardized radio communications protocol, including:

- Radio channel standardization and rationalization
- Radio equipment
- Call procedures
- Signage
- Cost and Funding Considerations
- Education and Communication
- Providing Feedback

The desired outcome is to improve safety on forest roads through:

1. Ensuring radio calling procedures are consistent, well-understood and practiced by all radio users on all forest roads.
2. Ensuring radio frequencies/channels are consistent and well-understood by all radio users on forest roads.
3. Consideration for consistent standardized signage across forest roads to enhance safety for all users.

¹ The BC Radio Communications Working Group is comprised of representatives from the BC Forest Safety Council, the Council of Forest Industries, Industry Canada, FPInnovations, BC Timber Sales and the Ministry of Forests and Range.

Background

To facilitate the movement of motor vehicles for industrial operations on forest roads, radios are normally used by drivers to announce their location when travelling on these roads. This type of radio use is recognized as “radio assist” not “radio controlled”, as it is not mandatory for any motor vehicle to have a radio on forest roads unless specified by the Ministry of Forests and Range (MFR) district manager. There are few roads in the province that are designated as “radio controlled.”

Many forest roads have a broad range of users beyond the forest sector – industrial users include the oil, gas and mining sectors, and others include commercial operators, emergency services, recreational users and the general public. In recent years, many forest roads have increasingly been used by the public and for purposes other than active logging. The inconsistent radio communications systems that have evolved across forest roads create safety issues.

Stakeholders have identified inconsistencies with radio channel management, radio calling protocols, “rules of the road” and road signage throughout the Province as being problematic and creating unsafe conditions. These issues are exacerbated by the increased movement of workers from area to area in B.C. and having to learn and adapt to differing local procedures. These and related issues have been cited by several official sources, including the Forest Safety Ombudsman and the Chief Coroner, as being factors that contribute to deaths and injuries on forest roads.

The Forestry TruckSafe Summits held in 2005 and subsequent stakeholder meetings clearly identified inconsistent signage and radio protocols as issues adversely affecting forest and resource road safety. Participants in these meetings included representatives from industry (forestry, oil and gas, mining and general trucking), regulatory agencies, enforcement agencies and the provincial government. Recommendations from the summits called for the standardization of radio frequencies (a responsibility of Industry Canada), calling procedures, “rules of the road” and signage for resource roads in B.C. WorkSafeBC has also increased due diligence requirements for forest and resource roads, requiring implementation of traffic control systems and maintenance by road’s owner(s) or permit holder(s).

A standardized provincial radio communications protocol on forest roads would help fulfill recommendation # 18 of the final report of “The Task Force on Forest Safety (January 2004)” calling for better coordination of road use and planning.

Industry Canada has been in the process of reviewing all existing radio frequencies assigned to resource roads and assembling appropriate spectrum to address issues related to radio frequency challenges. This work augments implementation of a radio communications protocol on forest roads and more broadly on resource roads.

The radio communications pilot projects on Forest Service Roads (FSRs) were undertaken with the goal of improving road user safety through testing a concept for a standardized provincial radio communication protocol system. A companion report by FPInnovations provides technical details on the pilot projects and their results.

Discussion

Radio communications pilot projects were initiated on FSRs in two areas of the Province: 1) on selected FSRs on Vancouver Island and on the Sunshine Coast in the Coast Forest Region; and 2) on the Ojay FSR in the Northern Interior Forest Region. The pilot projects incorporated the Industry Canada initiative on radio frequency rationalization as well as proposed radio call procedures and signage. Extensive local communication, collaboration and coordination among stakeholders in the pilot areas were required for implementation of the project.

FPIInnovations (FERIC Division) was responsible for monitoring the pilot project through field reviews and interviews with road radio users in the pilot areas. A companion report prepared by FPIInnovations documents the pilot project elements, monitoring and results.

The pilot projects indicated that a move to standardized call procedures and signage, and a dedicated bank of radio channels were strongly supported by FSR users in the pilot areas despite requiring users to adapt to a new protocol. Road user groups in the pilot areas support the initiative and played a key role in communicating and implementing the revised procedures and protocol.

Standardized call procedures are considered important for improving safety on forest roads and the Minister of Forests and Range supports moving to a provincial standard. To that end, steps are being taken to establish consistent provincial call procedures. The Minister has asked MFR staff and the forest industry to work together in moving forward with standardization of radio settings and “up-down” calling. The goal is to have standardized radio calling procedures in place by May 1, 2010.

Observations from the pilot projects suggest that any hesitancy to adopt a provincial protocol and signage generally is a matter of people becoming comfortable with new procedures and changing their radio use habits. It must also be noted that the cost for radio re-programming or purchasing new equipment, in order to conform to Industry Canada requirements, may be a concern for some users. Nevertheless, many road users have already made the shift to either re-program their radios or to replace obsolete, non-standard radios. The Industry Canada requirements have been a legal federal obligation since 2004.²

While moving to standard call procedures will occur through the early part of 2010, other elements of a provincial protocol (e.g. standardized signage) have not been determined or finalized for implementation. However, this discussion paper is intended to generate discussion and feedback on other elements of a provincial protocol.

The Industry Canada initiative to clear 42 designated narrow band radio channels for exclusive use on resource roads most likely will be completed within five years. This initiative arose as there is a requirement to consolidate available radio frequencies (see relevant section below).

² In British Columbia, VHF wideband frequencies became “non-standard” on January 1, 2004, and are subject to displacement or modification upon 90 days notice.

Effective implementation of a provincial radio communications protocol will require a comprehensive education/communications strategy with a substantial communication effort being required to support the launch of the new call procedures.

Moving to provincial call procedures and an overall protocol on forest roads will require the active engagement, support and collaboration of all affected parties. It will be necessary for this undertaking to be managed and coordinated provincially to ensure consistency, to realize efficiencies and to ensure the sharing of best practices. The BC Forest Safety Council is playing a critical leadership and management role with this initiative.

Pilot Project Overview

The pilot project on radio communications encompassed:

- radio equipment standards;
- specific radio channel and frequency assignments for roads and segments of roads;
- a call protocol – including procedures for “up-down”, “must-call”, convoy calling, call intervals and sequence, and emergency situations and vehicles; and
- standardized signage.

The pilot project on radio communications was based upon using a block of dedicated radio channels (provided by Industry Canada), and standardized call procedures and road signage as a system. The pilot radio communications protocol was developed by the BC Radio Communications Working Group and the radio communications protocol system was tested in two pilot areas:

- 1) BC Timber Sales Strait of Georgia Business Area (Campbell River, South Island and Sunshine Coast Forest Districts); and
- 2) Peace Forest District (Tumbler Ridge/Ojay road network).

The pilot projects were local collaborative initiatives of forest licensees, the oil and gas sector (Tumbler Ridge/Ojay), the logging and trucking industries, the BC Forest Safety Council, FPInnovations, Industry Canada and the Ministry of Forests and Range (including BC Timber Sales).

The FPInnovations assessment of the pilot radio communications protocol and other technical details of the project are detailed in a separate companion report. Among the recommendations from the FPInnovations assessment are the following:

- Implementation of standard procedures for:
 - radio calls using “up-down” for radio communication;
 - road naming rationalization and assignment of resource road radio channels;
 - “must-call” signs;
 - communicating with road managers in adjacent areas; and
 - advertising locally and informing road users of the new protocol.
- Implementation of new signage standards considered essential to improve safety through standardization.
- Implementation of the standardized radio communications protocol in a staged process, starting with those areas where improvements to radio communication are most needed and on FSRs identified for high priority implementation.
- Communication/education with all road users/affected parties.

Industry Canada Radio Channel Rationalization and Radio Equipment

Industry Canada has authority for issuing radio channel licences. There has been a legal requirement for conversion to narrow band channels since 2004. Due to recent demand and the need to provide greater radio spectrum efficiency, Industry Canada has designated 42 narrow band channels (33 for roads and nine for loading areas) for use on resource roads in B.C. The Industry Canada project to clear the 42 narrow band channels for exclusive use on resource roads is underway, with many channels already having been cleared. This means that forest road systems using radios will be required to make the transition to these designated 42 channels irrespective of any other requirements for standardization. The conversion process requires collaboration and coordination to maximize the efficiency of channel assignments and to minimize the potential for conflicts between adjacent area channels. Industry Canada is committed to finding suitable replacement frequency assignments for all licences that are displaced in order to designate a dedicated block of resource road channels across the Province.

The bank of 42 dedicated narrow band channels means that radios must have the capacity to hold a large number of channels. Road users in the Interior of the Province generally have radios with the capacity for a large number of channels, while many radios used on the Coast have limited channel capacity. Re-programming of all radios used for communications on B.C. forest roads will be required under this strategy at an estimated cost of about \$50 per radio, with the cost being the responsibility of the radio owner. In some cases, it may be necessary to replace older non-standard radios with narrow band multi-channel radios at an estimated cost of \$500 per unit. Radios purchased since 1998 will likely be narrow band channel capable, which may not be the case with older radios. Users unsure about their radio equipment are advised to check with a radio equipment supplier for more information.

Using channel number and frequency standardization will reduce the chance of error from road users being on the wrong channel and also will eliminate the need for re-programming radios when users move from one forest road system to another. Standardization of the channel number with the associated frequency will result in known provincial standards, reduced radio replacement cost over the long term and enhanced safety.

While some users have expressed concern about the cost for re-programming or purchasing radios, many road users have voluntarily made the equipment changes and participants in the pilot projects strongly support standardization. Industry Canada is proceeding cooperatively with displaced users.

The pilot projects also included a review of radio hardware requirements. Guidelines were developed – documented in the FPInnovations report – to minimize the problems with improper equipment or use of the equipment such as inappropriate antenna mounting practices.

The Ministry of Forests and Range (MFR) holds the province-wide authorizations for the 42 narrow band channels, which provide efficiencies in provincial administration of the individual road assignments. Companies and private users will be able to continue using existing radio communication systems, including repeaters, for non-resource road communications. The MFR

will incur some indirect costs (staff time) for re-programming internal radios, but there will be no impacts on radio repeater systems. There will be no additional cost for company/private radio repeater systems for company operations and there will be minimal, if any, impact on MFR/provincial government radio repeater systems.

A suggested methodology for rationalizing radio channels in a given geographic area was developed in the pilot projects and is provided in the report by FPIInnovations. The methodology includes stakeholder consultation and the direct involvement of Industry Canada.

There are some radio frequency coordination issues in areas along provincial and international borders that will require additional time to resolve the channel changes. In areas within 120 kilometres of the Canada-US border, international coordination of replacement radio frequencies can take five months or longer. The frequency clearing process outside the Canada-US border zone could most likely proceed more quickly.

With current allocated funding, Industry Canada estimates that it will take up to five years to complete implementation. However, Industry Canada also indicates that acceleration of the channel clearing effort for completion within a two-year timeframe is possible. Accelerated channel clearing would require additional funding to support frequency change costs for radio licences that are displaced in order to designate the 42 narrow band channels across the Province.

Call Procedures

Provincial standardization of radio call procedures is considered an effective way to improve safety for all users on forest roads. In some instances, road users currently have to deal with a variety of non-standard call procedures in the same day as they move from one road system to another. Obviously, this increases the opportunities for error, especially for those unfamiliar with a specific area. A common default standard across the Province will help ensure road users are able to move from area to area without having to learn new radio call procedures where traffic control systems have been implemented.

Standard default call procedures will include “up-down”, “must call”, convoy calling and call intervals and sequence. A standardized call protocol was developed for implementation in the pilot projects and is presented in the FPIInnovations report.

The Minister of Forests and Range supports the move to a provincial standard for call procedures and has directed that this be incorporated into local procedures at the Forest District level. It is expected that provincial consistency will be achieved by May 1, 2010.

Signage

Provincial standardization of radio communications signage would support standard call procedures and thereby contribute to increased safety on forest roads. Signs of standard size, colour, font and layout would provide safety improvements through enhanced sign recognition, reduced reaction time and increased rate of comprehension by road users. Standard sign content would be limited to required information and be appropriate for local, site-specific conditions. Signs for the purpose of traffic control would provide information at the point of commencement, the start of branch roads, “must-call” locations, “up-down” calling locations and caution areas. Standardized signage was developed for implementation in the pilot project and is described in the FPInnovations report.

It is estimated that most signs have a service life of about ten years, which means there are normal ongoing costs for sign replacement even without implementation of a provincial standard. Full implementation of standardized signs and posts would result in cost efficiencies over time due to large volume production and purchase. A ten-year timeframe for implementation of a provincial sign standard would be the lowest cost option.

A two-year sign replacement scenario assumes that costs for new signage would be incurred for kilometre marking, “up-down” and “must-call” signs. A five-year sign replacement scenario assumes that signs would be replaced according to a priority sequence with signs more than five years old being replaced first through the normal attrition process.

The range of costs for signs and their placement are outlined in the FPInnovations report. While there are various components of a consistent radio communications protocol, moving to standardized signs represents the greatest costs. Feedback on the signage issues outlined in this discussion paper and the FPInnovations report will help determine the best cost-benefit scenario.

Cost and Funding Considerations

Moving to a provincial radio communications protocol has cost implications for affected parties that are directly linked to the implementation timeframe. Depending upon the specific area of implementation, the overall costs associated with the channel rationalization initiative of Industry Canada could be spread over five years. In the case of signage, for example, it is expected that most of the cost over a ten-year implementation period would be categorized as normal sign maintenance and replacement. In some situations, signage replacement outside the normal service life period could increase costs for a period of less than ten years.

It is recognized that financial challenges are being faced by both the forest industry and government. In light of those challenges, it will be critical to pursue funding from other sources.

It is expected that much of the on-the-ground implementation effort will be undertaken by permit holders currently administering the forest road system, with their contributions being “in-kind” through the work of their employees and the resources required for sign installation. The contribution by the MFR also will be principally through the time and efforts of staff, not direct funding. Effort will be made to derive consistency in a radio communications protocol with minimal expenditures.

Education and Communication

Successful implementation of a standardized provincial radio communications protocol for forest roads would require a substantial and sustained effort to educate road users and to communicate with all affected stakeholders. With implementation of standard call procedure, a notable front-end communications effort will be required within a matter of a few months. For the components of a provincial protocol being implemented over a period of up to ten years, an effective long-term education/communications strategy will be required.

A comprehensive strategy for education and communications would include an array of activities in order to reach all affected parties. The mix of activities would encompass advertising, media relations, stakeholder meetings and outreach, posters and information pieces, a website, community meetings, a “hot line” and regular updates.

Education and communication materials developed to support the pilot project are included in the FPIInnovations report.

Providing Feedback

The BC Forest Safety Council is soliciting feedback on all aspects of the discussion paper related to a provincial radio communications protocol on forest roads.

People are encouraged to provide feedback on the various topics in the discussion paper, including perspectives on the challenges and opportunities associated with implementation. Specific themes for feedback include but are not limited to the following:

- If road signage were standardized, what do you think the minimal standards should be?
- If road signage were standardized, what do you think the implementation timeframe should be?
- The technical report on the pilot project prepared by FPInnovations recommends specific formats for road signage. Are the recommended formats acceptable? Do you have other suggestions for road signage format?
- If road signage were standardized, there would be costs for implementation. Costs would vary according to the timeframe for implementation. Do you have any suggestions on how to best manage these costs?
- When assigning the narrow band radio channels, what are the most important considerations?
- What needs to be done to ensure the narrow band radio frequencies/channels are consistent and well understood by all radio users?
- What best practices for safety should apply to radio use on forest roads?
- What do you think needs to be done to appropriately educate road users about standardized radio call procedures and other aspects of a provincial radio communications protocol?
- Beyond what was covered in the pilot project, are there other things that you think should be considered for a standardized radio communications protocol?

Technical details and other background information on the pilot project are available in a companion report prepared by FPInnovations. The discussion paper and FPInnovations report are available on the BC Forest Safety Council website:

[Provincial Radio Communications Project | BC Forest Safety Council](#)

Feedback can be provided in the following ways:

1. **Via e-mail** to carter@bcforestsafe.org
2. **Fax** (250) 562-9237
3. **Via Canada Post or courier:**
BC Forest Safety Council
#207 - 850 River Road
Prince George, B.C.
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The deadline for submission of feedback is March 15, 2010.

All feedback will be reviewed in determining the next steps related to a provincial standardized radio communications protocol.