

**Audit of Timber Harvesting and
Road Construction, Maintenance
and Deactivation**

**Forest Licence A18979
Slocan Group - Radium Division**



August 1998
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A. Report from the Board

This is the Board's report on a compliance audit¹ of Forest Licence A18979² held by Slocan Group - Radium Division (Slocan) in the Invermere Forest District (see map on p. C-5).

The audit examined Slocan's timber harvesting and road practices, and related operational plans, for the period August 1, 1996 to August 31, 1997 to assess compliance with the *Forest Practices Code of British Columbia Act* and related regulations (the Code).

Conclusions

The Board's conclusions are based on an audit of the following practices:

- harvesting of 74 cutblocks, with a total area of 2 392 hectares
- construction of approximately 63.8 kilometres of road
- maintenance on approximately 1 065 kilometres of road
- deactivation of approximately 93 kilometres of road
- operational plans related to the harvesting and roads practices

The Board is impressed with the ongoing cooperation and communication between Slocan and the Invermere Forest District which allowed Slocan to appropriately adapt practices to meet field conditions. The Board is also impressed with the Invermere District's use of Total Resource Plans to help manage forest resources over the long term.

side-casting: moving excavated material onto the downslope side of a road during its construction

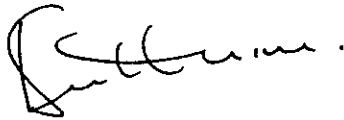
Slocan's timber harvesting and road construction, maintenance and deactivation practices generally complied with Code requirements. Road construction on four short sections of two roads in steep terrain did not comply with the Code because of excessive side-casting. The Code restricts this practice on steep terrain to avoid potential environmental impacts, such as landslides and loss of the buried land area for growing trees.

¹ Part B of this document provides background information on the Board's audit program and the process followed by the Board in preparing its report.

² The report from the auditor (Part C of this document) provides specifics about the operating areas of Forest Licence A18979 and the forest planning and field activities of Slocan Group - Radium Division that were the subject of this audit, and the audit results.

Construction on steep terrain involved only two roads with a total length of 4.4 kilometres and was a small part of Slocan's road construction activities. Excessive side-casting occurred on sections of both of these roads. The roads were generally constructed according to the approved plans and, in some cases, additional efforts were taken to ensure the stability of the roads on steep terrain. The Board concluded that the roads are stable and the risk to forest resources from the excessive side-casting is low to moderate in these cases. However, there is potential for greater environmental impacts in the future should the practice of excessive side-casting continue on roads built in steep terrain.

Slocan has advised the Board that, in response to the audit, they are updating their operating procedures for road construction in steep terrain and will submit a copy of the revised procedures to the Board and the Ministry of Forests when the work is completed.



Keith Moore
Chair

August 10, 1998

B. Forest Practices Board Compliance Audit Process

Audit standards and criteria

Audits by the Forest Practices Board are conducted in accordance with the auditing standards developed by the Board. These standards are consistent with generally accepted auditing standards.

The audits determine compliance with the Code based on audit criteria derived from the *Forest Practices Code of British Columbia Act* and the related regulations. The audit criteria were established for the evaluation or measurement of each practice required by the Code. These reflect judgments about the level of performance that constitutes compliance with each requirement.

The Board's audit reference manual, "Reference Manual - Compliance Audits, Version 2, May, 1997," sets out the standards and procedures for its 1997 compliance audits.

Audit methodology

At the outset of an audit, an analysis of each forestry activity, such as the cutting and removal of trees from a specified forested area (harvesting of a cutblock), is used to identify the items, e.g. cutblocks harvested or roads constructed, that comprise the activity during the period subject to audit. The items comprising each forest activity are referred to as a "population."

The most efficient means of obtaining information, to conclude whether there is compliance with the Code, are chosen for each population. Because of limited resources, sampling is usually relied upon to obtain audit evidence, rather than inspecting all activities.

As individual sites and forest practices within each population have different characteristics, such as the type of terrain or the type of yarding, each population is divided into distinct sub-populations ("strata") on the basis of common characteristics (e.g., steep terrain versus flat ground). A separate sample is selected for each population, such as the cutblocks selected for auditing timber harvesting. Within each population, more audit effort (i.e., higher sampling) is allocated to the strata where the risk of non-compliance is greater.

The audit work in the field includes assessments from helicopters and intensive ground procedures such as the measurement of specific features, e.g. road width.

Audit conclusions

The Board recognizes that compliance with many Code requirements is a function of degree, rather than of absolute compliance, and requires the exercise of professional judgment within the direction provided by the Board.

In performing the audit, auditors collect, analyze, interpret and document information to support the audit results. This requires the audit team, comprising of professionals and technical experts, to first determine whether forest practices are in compliance with Code requirements, and then to evaluate those practices judged not to be in compliance to assess the degree of severity of non-compliance - that is, its significance. Significance is assessed relative to the actual or potential harm to persons or the environment.

As part of the assessment process, auditors categorize their audit findings into the following levels of compliance:

Compliance - where the auditor assesses that practices meet Code requirements.

Not significant non-compliance - where the auditor, upon reaching a non-compliance conclusion, assesses that the non-compliance event or condition, or the accumulation of a number of non-compliance events or conditions and the consequences of the non-compliance, are not significant.

Significant non-compliance - where the auditor, upon reaching a non-compliance conclusion, assesses that the event or condition, or the accumulation of a number of non-compliance events or conditions, is significant.

Included in this category are situations where non-compliance has resulted in harm to persons or the environment, even if remedial action has already mitigated the consequences of the non-compliance to a minor level.

Significant non-compliance also includes situations where potential for harm is probable, that is, harm has not yet occurred as a result of non-compliance, but there is a strong likelihood that it will. "Harm," in Board audits is defined as an adverse change from existing conditions that affects person(s) or the environment, and is brought about as a result of non-compliance.

Significant breach - where the auditor, upon reaching a non-compliance conclusion, assesses that significant harm has occurred or is beginning to occur to persons or the environment as a result of the non-compliance event or condition. A significant breach can also result from the cumulative effect of a number of non-compliance events or conditions.

Identification of a possible significant breach requires the auditor to conduct tests to determine the extent of the breach. If it is determined, after conducting tests, that a significant breach has occurred, the auditor is required by the *Forest Practices Board Regulation* to immediately advise the Board, the person being audited, and the three ministers.

Audit opinion

To reach an overall opinion, assessments are made at various levels. In all cases, an assessment is made of a forest practice or group of forest practices, followed by assessments at each forestry activity level (e.g. roads constructed).

If all of the forestry activities subject to audit are in compliance with the Code, in all significant respects, the overall opinion reflects this conclusion and is referred to as a “**clean opinion**”. The use of the words “in all significant respects” recognizes that there may be minor instances of non-compliance that either may not be detected by the audit, or that are detected by the audit but not worthy of inclusion in the report from the auditor.

In situations where significant non-compliance is identified, the type of overall opinion is dependent upon the magnitude and pervasiveness of the non-compliance.

A “**qualified opinion**” is appropriate when the significant non-compliance is neither pervasive nor of a sufficient magnitude to warrant an overall negative conclusion. The words “except for” are used to draw attention to the details of the significant non-compliance to “qualify” an overall opinion of compliance, in all significant respects, with Code requirements. The words “in all significant respects” recognizes that there may be instances of not significant non-compliance that either may not be detected by the audit, or that are detected by the audit but not worthy of inclusion in the report from the auditor.

An “**adverse opinion**” is an overall negative conclusion and appropriate when significant non-compliance is sufficiently pervasive or of a sufficient magnitude to warrant an overall negative conclusion. An adverse opinion would either indicate that, overall, the forest activities subject to audit were not in compliance with Code requirements or a particular forest activity subject to audit was not in compliance with Code requirements.

Representation process

Following the audit, the Board reviews the Report from the Auditor and reaches preliminary conclusions and recommendations concerning the audit. These conclusions and recommendations form the basis for the Report from the Board.

Under section 182 of the *Forest Practices Code of B.C. Act*, if the Board makes a report or recommendation that may adversely affect a party or person, it must inform the party or the person of the grounds and give them an opportunity to make representations before the Board decides the matter and issues a final report to the public and the government. The representations allow the potentially adversely affected parties to present their case to the Board to ensure that the information on which the Board bases its decision is complete.

Representations may be written or oral at the discretion of the Board. Oral representations, which may also include supporting written representation, are generally provided for the potentially adversely affected party if there are significant non-compliance issues involved.

After fully considering the information provided in the representation, the Board will decide whether or not it needs to amend its report. If the Board amends the report, it must then consider if there are any newly adversely affected parties, in which case, additional representations will be required.

Once the representations have been completed, the report is finalized and released: first to the auditee and then to the public and government.

C. Report From the Auditor

1. Introduction

As part of the Forest Practices Board's 1997 compliance audit program, Forest Licence A18979 was selected for audit from the population of major forest licences within the Nelson Forest Region. The licence, held by Slocan Group - Radium Division, was selected randomly and not on the basis of location or level of past performance.

Forest Licence A18979 is within the Invermere Timber Supply Area. It comprises several operating areas located in the Invermere Forest District, as shown on the attached map and as described below.

- north of Radium Hot Springs in the Cartwright Lake, Frances Creek and Forester Creek areas
- east of Invermere and close to the Alberta border in the White River and Cross River areas
- adjacent to the Kootenay River in the Jack Creek, Tegart Pass and South Ravenshead areas

The Licence has an allowable annual cut of 254,496 cubic metres, with the harvesting of selected trees comprising up to 40 percent of the cut. The aim of selective harvesting is to protect both wildlife and visual aesthetics.

2. Audit Scope

The audit examined the planning and field activities related to timber harvesting and road construction, maintenance and deactivation. These activities were assessed for compliance with the *Forest Practices Code of British Columbia Act* and related regulations (the Code), including the transitional provisions of the Code.

All timber harvesting and road construction, maintenance, and deactivation activities for the period August 1, 1996, to August 31, 1997, were included in the scope of the audit. This involved examining all aspects of operational planning - such as forest development plans, silviculture prescriptions and logging plans - that supported the activities examined during the audit period and included:

- operational plans *approved* in the period; and
- operational plans that were *developed and/or approved before* the audit period.

The audit also examined operational plans that were *developed and approved during the audit period* and which had not yet been implemented.

Operational plans that were approved during the audit period include 40 silviculture prescriptions and 57 logging plans, of which 13 silviculture prescriptions and 29 logging plans were part of the harvesting field activities carried out during the audit period.

The field activities that were carried out during the audit period and were therefore subject to audit are described below:

- the harvesting of 74 cutblocks
- the construction of 70 road sections totaling 63.8 kilometres, including four bridges;
- the maintenance of approximately 1,065 kilometres of road, involving activities such as surfacing and the cleaning of culverts and ditches; and
- the deactivation of 31 road sections totaling 93 kilometres.

Section 3 describes our audit of these activities, and the results. The Board's audit reference manual, "*Reference Manual - Compliance Audits, Version 2.0, May 1997*", sets out the standards and procedures that were used to carry out this audit.

3. Audit Findings

Planning and practices examined

The audit included a review of 16 silviculture prescriptions and 31 logging plans approved during the audit period, of which 4 silviculture prescriptions and 11 logging plans were examined as part of the timber harvesting practices audited below.

The audit work on selected roads and cutblocks included assessments from the air using helicopters and ground-based procedures. The audit examined:

- timber harvesting practices on 42 cutblocks;
- the construction of 21 road sections totaling 20.2 kilometres, including four bridges;
- the maintenance of 224 kilometres of road; and
- the permanent deactivation of 7 road sections totaling 16 kilometres and an undetermined length of temporary and semi-permanent deactivation reviewed by helicopter.

Findings

The audit found that the forest planning and practices of Slocan Group - Radium Division were generally in compliance with Code requirements in regard to timber harvesting activities, road maintenance and deactivation, and construction of roads not involving steep terrain.

Two roads were constructed in steep terrain during the audit period. The audit found that, with the exception of excessive side-casting that occurred on four sections, the building of roads in steep terrain was generally in conformance with the approved road layout and design. In some cases, additional efforts were taken to ensure the stability of roads on the steep terrain.

Excessive side-casting

Under the Code, certain restrictions can apply when roads are constructed in steep terrain. This includes limitations on the excavated material that can be placed on the down-slope side of the road (side-casting). The requirement is designed to minimize any potential environmental impacts, such as landslides, that could result from material side-cast on steep terrain.

On the two roads constructed in steep terrain, the audit identified excessive side-casting on four road sections. These areas are described below.

- Two locations of excessive side-casting were identified on a road built in the Tegart Pass area. At one location, approximately 2500 cubic metres of material was side-cast into an avalanche chute. At the other, approximately 600 cubic metres of material was side-cast. The side-casting occurred on approximately 120 metres of the total two kilometres of road constructed in steep terrain in this area.
- Two locations of excessive side-casting were identified on a road built in the Jack Creek area. This involved the side-casting of approximately 6000 cubic metres of material at the first location and material scattered at the second location. The side-casting occurred on approximately 358 metres of the total 2.4 kilometres of road constructed in steep terrain in this area.

The audit concluded that the risk to forest resources from the excessive side-casting is not high. The excessive side-casting was determined to be a significant non-compliance with Code requirements. There is potential for greater environmental impacts should the practice continue in steep terrain.

The main area of the Code to which the above non-compliance relates is section 11(1)(b) of the Forest Road Regulation which requires that "construction is carried out in general conformance with requirements of the road layout and design."

4. Audit Opinion

In my opinion, except for the significant non-compliance described in the following paragraph, the timber harvesting and road construction, maintenance and deactivation activities carried out by Slocan Group - Radium Division on Forest Licence A18979 from August 1, 1996, to August 31, 1997, were in compliance, in all significant respects, with the road and harvesting requirements of the Code as of August 1997.

As described in section 3, the audit identified excessive side-casting on four sections of two roads built in steep terrain. The excessive side-casting was determined to be a significant non-compliance with Code requirements. There is potential for greater environmental impacts should the practice continue in steep terrain

In reference to compliance, the term "in all significant respects" recognizes that there may be minor instances of non-compliance that either may not be detected by the audit, or that were detected but not considered worthy of inclusion in the audit report.

Section 2 and 3 of this report from the auditor describes the audit work that formed the basis for reaching this qualified opinion. The audit was conducted in accordance with the auditing standards of the Forest Practices Board. Such an audit includes examining sufficient road and timber harvesting practices to support an overall evaluation of compliance with the Code.



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Victoria, British Columbia
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