PART 1: DEFINITIONS

1.1 In this Occupational Health and Safety Regulation:

"professional geoscientist"	**means a professional geoscientist or licensee under the *Engineers and Geoscientists Act*;**
"qualified registered professional"	**means** **(a) a professional engineer or professional geoscientist, and** **(b) in relation to a forestry operation, a person referred to in paragraph (a) or a professional forester or holder of a special permit under the *Foresters Act;***

Explanatory Note:

These new definitions are added to Part 1 as the terms will be used in amendments proposed for several Parts of the Occupational Health and Safety Regulation.

The proposals for regulatory change in 2007 included adding a definition of "professional forester" in order for the Occupational Health and Safety Regulation ("OHSR") to properly recognize the right of a professional forester to practice professional forestry which includes practicing forest engineering. After consideration of a joint submission from the Association of BC Forest Professionals and the Association of Professional Engineers and Geoscientists of BC, the definition now uses the broader term "qualified registered professional". This recognizes the right of appropriately qualified professional foresters to practice forest engineering under the authority of the *Foresters Act*. This term is used in joint practice documentation developed by these two Associations and has been incorporated into other legislation on the recommendation of the two Associations. For the purposes of the definition in the OHSR a qualified registered professional will be a professional engineer, professional geoscientist or licensee registered or authorized to practice under the *Engineers and Geoscientists Act* or a professional forester registered or holding a special permit to practice under the *Foresters Act*.

PART 4: GENERAL CONDITIONS

	~~**BUILDINGS, STRUCTURES AND EQUIPMENT**~~ **BUILDINGS, STRUCTURES, EQUIPMENT AND SITE CONDITIONS**	
~~**Safe premises**~~ **Safe workplace**	**4.1**	~~Buildings, structures, excavations, machinery, equipment, tools and workplaces must be maintained in such a condition that workers will not be endangered.~~ **A workplace must be planned, constructed, used and maintained to protect from danger any person working at the workplace.**

Explanatory Note:

The amendment to section 4.1 simplifies the provision and retains its intended broad scope of application. The proposed wording taken to public consultation in 2006 contained a list of things or features of workplaces that had to be maintained. All aspects of the workplace, including such things as buildings, structures, stockpiles, fills, excavations, machines, tools and equipment are part of the workplace and the employer, and where applicable the prime contractor, must plan, arrange or construct, use and maintain the workplace to be as safe as practicable. The scope of section 4.1 is intended to include consideration of the planning, design, supply, construction, use, and maintenance to the process of ensuring a safe and healthy workplace.

PART 4: GENERAL CONDITIONS

BUILDINGS, STRUCTURES, EQUIPMENT AND SITE CONDITIONS

Snow avalanche assessment

4.1.1 (1) In this section:

"*active avalanche safety program*"	**means a program for monitoring daily, or more frequently if conditions warrant, the weather, snow and avalanche conditions, determining temporal fluctuations of avalanche hazards and implementing safety measures, closures or other methods specified in the program to reduce avalanche risk that has not been mitigated through use of passive measures;**
"*avalanche*"	**means snow avalanche;**
"*avalanche risk assessment*"	**means an assessment, done in accordance with CAA guidelines, of the terrain in and surrounding a workplace to determine if any person working at the workplace is at risk from a snow avalanche;**
"*avalanche risk zone*"	**means a workplace or part of a workplace where an avalanche risk assessment determines that avalanches pose a risk to any person working at the workplace and risk control measures are required to make the area safe for work to be conducted;**
"*avalanche safety plan*"	**means a documented plan meeting CAA guidelines, specifying passive measures to mitigate or reduce the avalanche risk to any person working at the workplace and any active avalanche safety program necessary to monitor and manage any avalanche risk that has not been mitigated through use of passive measures;**
"*CAA guidelines*"	**means the Canadian Avalanche Association guidelines for risk determination, mapping and mitigation for snow avalanche risks as specified in the Guidelines for Snow Avalanche Risk Determination and Mapping in Canada and the Land Managers Guide to Snow Avalanche Hazards in Canada, published by the Canadian Avalanche Association in 2002;**
"*passive measures*"	**means the application of CAA guidelines and other relevant standards and practices in engineering, geoscience and forestry to worksite and facility planning, location, design and use to mitigate or reduce the risk from avalanches without reliance on an active avalanche safety program, and may include the design and construction of physical defenses against avalanches;**
"*qualified avalanche planner*"	**means a person**

(a) who has training and experience in the development and implementation of active avalanche safety programs and is

(i) a professional member of the Canadian Avalanche Association,

(ii) a certified guide and a member of the Association of Canadian Mountain Guides,

(iii) a certified guide and a member of the Canadian Ski Guide Association, or

(iv) a qualified registered professional, and

(b) who, on and after September 1, 2011, meets the requirements of the CAA Recommended Minimum Training and Experience for Qualified Avalanche Planners published by the Canadian Avalanche Association in August 2008.

(2) Before work commences in a workplace where there is or may be a risk from an avalanche to a person working in the workplace, an avalanche risk assessment must be prepared as follows:

(a) for workplaces involving buildings, construction, logging, transportation corridors or other work areas that will be occupied by any person working in the workplace on a permanent, seasonal or scheduled basis, by a qualified registered professional and a qualified avalanche planner;

(b) for wilderness operations where any person working in the workplace undertakes short-duration activities in undeveloped terrain, by a qualified avalanche planner.

(3) If an avalanche risk assessment conducted under subsection (2) identifies an avalanche risk zone, no work may be conducted in the avalanche risk zone at any time when snow conditions have the potential to create an avalanche unless an avalanche safety plan has been developed and implemented.

(4) If any part of an avalanche safety plan

(a) requires passive measures, that part must be prepared by a qualified registered professional, and

(b) requires an active avalanche safety program, that part must be prepared by a qualified avalanche planner.

(5) If the avalanche safety plan required by subsection (3) includes an active avalanche safety program, a copy of that active avalanche safety program must be readily available to each person who administers or implements the avalanche safety program for the workplace.

(6) An avalanche safety plan must be reviewed to ensure that the plan is appropriate and relevant to the conditions and activities for the workplace as follows:

(a) whenever there is a significant change to the workplace activities contemplated by the plan;

(b) whenever there is a significant change to the surface terrain or forest cover in or surrounding the workplace.

(7) An active avalanche safety program must be reviewed to ensure that the program is appropriate and relevant to the conditions and activities for the workplace at least once every 60 months.

(8) The review required under subsection (6) or (7) must have any passive measures reviewed by a qualified registered professional and any active avalanche safety program reviewed by a qualified avalanche planner, and following the review the avalanche safety plan must be amended as necessary by the person or persons who conducted the review.

(9) On and after September 1, 2011, every active avalanche safety program approved before September 1, 2011 must have been prepared by, or reviewed and approved by, a qualified avalanche planner who meets the requirements of the CAA Recommended Minimum Training and Experience for Qualified Avalanche Planners published by the Canadian Avalanche Association in August 2008.

(10) If an avalanche safety plan specifies procedures to be followed by persons working in an avalanche risk zone, each person working in the risk zone must be trained in, and comply with, any procedures applicable to that person's work.

Explanatory Note:

New section 4.1.1 represents the relocation of the avalanche part of section 26.18 from Part 26, as the need for an avalanche assessment may arise in workplaces that are not part of a forestry operation.

WorkSafeBC took proposals for change to section 26.18 forward as part of the 2007 regulatory review process. This process involved an initial proposal going to a consultation process in December 2006 and January 2007, as well as a revised proposal taken to public hearing in June 2007. The proposed wording brought to the June 2007 public hearing separated the topics of landslides (terrain stability) and avalanches into separate sections, in response to stakeholder submissions at the consultation stage. Submissions to the June 2007 public hearing indicated stakeholders generally supported the spirit of the WorkSafeBC proposals regarding avalanches, but were concerned with some aspect of the proposals. Stakeholders wanted further discussion and to work with WorkSafeBC to improve the proposal. For example, some of the terminology used was not consistent with the terminology used in the avalanche community, standards for avalanche work were still not clearly stated, there was concern some current successful avalanche control programs may not meet the proposals, and the qualifications of avalanche workers were not recognized or utilized.

Following the June 2007 public hearing, WorkSafeBC had discussions with some stakeholders, and organized a meeting on January 15, 2008 of stakeholders who made submissions to the June 2007 public hearing on avalanches. (A list of the people, and their affiliations, attending the January 15 meeting is attached as Appendix1.)

The above amendment incorporates the following principles:

(a) Recognition of Canadian Avalanche Association (CAA) published guidelines as the standards for assessing avalanche risk and developing avalanche safety plans,
(b) Establishing the roles of qualified registered professionals (engineers, foresters, and geoscientists) and "qualified avalanche planners" in the process of assessing avalanche risk and development of avalanche safety plans,
(c) Adoption of the CAA recommended minimum training, experience and other criteria, established by CAA in May 2008 and published by them in August 2008, for a "qualified avalanche planner",

(d) Recognition that an avalanche control plan may consist of passive measures to mitigate or reduce risk in an avalanche risk zone, such as structural avalanche defenses for work areas that must by necessity be in a risk zone, an active avalanche safety program where passive measures (structural defenses) are not practicable or where they do not fully control the avalanche risk, or a combination of these approaches, and
(e) Require that an avalanche safety plan must be reviewed by appropriately qualified people if there is a significant change to the workplace terrain or the activity contemplated by the plan, and that active avalanche safety programs are reviewed at least once every 60 months.

The following breakdown of responsibilities is intended and incorporated into the above proposal.

For fixed facilities such as roads, buildings and other structures and for locations where people will congregate or work for extended periods of time

1. assessment of avalanche risk,
2. the development of passive measures to mitigate or reduce the risk as much as is practicable, and
3. the establishment of any required active avalanche safety program to manage any remaining risk once any practicable passive measures are in place

will be incorporated into the design for the facility or operation by the qualified registered professional responsible for such work, working in conjunction with a qualified avalanche planner. If a qualified registered professional is also qualified as a “qualified avalanche planner”, the assessment process and the development of the avalanche safety plan could be prepared and approved under the direction of that person. The skill sets required to carry out snow avalanche risk assessments in these circumstances is contained in the Technical Bulletin (attached as Appendix 2) issued by the Joint Practices Board of the Association of Professional Engineers and Geoscientists of British Columbia and the Association of British Columbia Forest Professionals.

For activities that are of short duration (transitory and low impact) in back country or wilderness areas (undeveloped terrain), daily or more frequent active avalanche risk monitoring and management will be the prime approach for avalanche safety and the active avalanche safety program will be prepared by a qualified avalanche planner. Note in these circumstances it is generally not considered practicable to use passive measures (such as structural avalanche defenses) to control avalanche risk.

Low impact means pedestrian, ski or snowshoe activity or light vehicle traffic, which are activities that are not likely to generate significant air or ground vibration. Transitory means the activity generally moves through or about the undeveloped terrain including potential avalanche risk zones with the travel routes and activity locations determined by the qualified person in charge of the operation after due consideration of the conditions prevailing in the area at that time. Wilderness skiing and backcountry recreational activity, guiding, timber cruising or surveying are occupational activities that would typically fall into this category. Longer duration activities which will result in people being exposed to avalanche potential in an avalanche risk zone regularly over a number of days, or high impact activities, warrant consideration of whether passive measures, such as structural avalanche defenses, would be required by the CAA guidelines. In such cases a risk assessment involving a qualified registered professional working with the qualified avalanche planner would be appropriate in developing the avalanche safety plan. For example, a logging operation on a side hill generally takes place over many days and involves activities that generate significant ground vibrations (such as falling trees or yarding logs). Since logging operations are part of a forest development plan done by a qualified registered professional, assessment of terrain stability and avalanche hazard are expected to be incorporated into the forest development plan. Any passive measures, such as structural avalanche defenses, would be

executed before logging starts and any required active avalanche safety program incorporated into the operational plan for the logging operation. At the most basic level, an avalanche safety plan in a forestry operation may simply designate operations will cease in some areas once snow starts to accumulate on slopes above work areas, and not resume in the area until the snow season has past and the area is free of avalanche potential. A more likely situation is some portions of the access/haul road will cross slide paths but logging areas will be in locations free of avalanche risk. In these cases the active avalanche safety program might specify the employer's avalanche workers monitor the regional avalanche forecast and supplement the regional forecast with site specific observations in the slide path areas. Decisions on continued use of the road or undertaking control measures would then be made according to the protocols set out in the active avalanche safety program. The program could provide that the avalanche forecasting function and any specialized services for control work, such as the use of explosives, be done by people who are not workers of the employer, but who have the necessary local knowledge and qualifications to do these functions.

An avalanche safety plan for a commercial snowmobile operation could also be relatively simple. The industry advises most of their activity takes place in flat or simple terrain free of avalanche risk. Travel routes occasionally cross slide paths, but no ongoing activity takes place in an avalanche risk zone. In these cases the active avalanche safety program needs to identify the slide paths on the travel routes, and specify the employer have a qualified avalanche worker monitor the regional avalanche forecast and supplement the regional forecast with site specific observations in the slide path areas. Decisions on use of a particular route would then be made according to the protocols set out in the active avalanche safety program. In these circumstances, not every group would need to have a qualified avalanche worker in attendance. Each group leader would work in concert with the qualified avalanche worker administering the program each day. The program could provide that the avalanche forecasting function and any specialized services for control work, such as the use of explosives, be done by people who are not workers of the employer, but who have the necessary local knowledge and qualifications to do these functions. Some snowmobile operators advise a small number of their customers have more experience on snowmobiles and want to go into steeper terrain. In these cases, the activity will likely be in an avalanche risk zone, and a more sophisticated avalanche safety plan will need to be implemented to manage the risk.

The definition for a "qualified avalanche planner" references the CAA criteria for a "planner", which is in their document "CAA Recommended Minimum Training and Experience for Qualified Avalanche Planners". This document was ratified by CAA in May 2008 at the CAA's Annual General Meeting, and published by CAA in August 2008. The document is attached as Appendix 3.

Where an active avalanche safety program is required and established, it is not expected that a qualified registered professional or a qualified avalanche planner will be involved in the implementation and operation of that plan on a "day-by-day" basis. The avalanche safety plan will specify the qualifications for the people necessary to implement the program in the workplace. Typically CAA-qualified avalanche workers or certified guides will be the people implementing the active avalanche safety program through monitoring climate and snow conditions and making decisions each day, or more frequently throughout the day if conditions are changing rapidly, on avalanche risk for activities planned for that day.

Ski and other resort operations on tenured Crown land operate under a contract (Master Development Agreement or MDA) between the government and the operator, with the MDA setting out all development and activity in the covered "Controlled Recreation Area". The Ministry of Tourism, Sport and the Arts (MTSA) requires the operator to develop a master plan for the overall operation, and the master plan is reviewed by many government ministries and local government before ski or other resort operations can start. Identifying avalanche risk zones and the development of any necessary passive measures and the active avalanche safety program

are part of the MTSA approval process and part of the ongoing operation. WorkSafeBC expects that location, design and construction of facilities and the avalanche safety plan approved through the MTSA process should meet the proposed OHSR requirements.

The avalanche community has indicated there needs to be some time provided to fully implement the new provisions. However, the hazards of avalanches must be addressed immediately. The enhanced requirements for avalanche assessments and avalanche safety plans will come into effect on September 1, 2009, rather than a January or February 2009 date. This avoids regulatory changes coming into effect in the middle of the "avalanche season." Initially, avalanche safety plans requiring involvement of an avalanche planner will be able to utilize a planner who has training and experience in developing and implementing active avalanche safety programs and

1. holds professional member status with CAA,
2. is a certified guide and member of either the Association of Canadian Mountain Guides or the Canadian Ski Guide Association, or
3. is a qualified registered professional.

After September 1, 2011, every active avalanche safety program will need to have been prepared by, or reviewed and approved by, a qualified avalanche planner meeting the CAA recommended minimum training, experience and other criteria published by CAA in August 2008.

Appendix 1

WorkSafeBC Consultation on Proposed Changes to the Occupational Health and Safety Regulation relating to Avalanches

List of Attendees
January 15, 2008
Capri Hotel, Kelowna, BC

Association	Name
Association of BC Forest Professionals	Michael Larock
Association of Canadian Mountain Guides	Scott Davis
	Peter Tucker
Association of Professional Engineers and Geoscientists of BC	Peter Mitchell
	Frank Baumann
	Brian Gould
Backcountry Lodges of BC Association	Brad Harrison
BC Commercial Snowmobile Operators Association - representing 15 snowmobile tour operators	Amber Wood
BC Commercial Snowmobile Operators Association - private consultant	Doug Washer
BC Government and Service Employees' Union	Mona Sykes
BC Snowmobile Federation	Les Auston
	Roger Frost
Canadian Avalanche Association	Clair Israelson
	Steve Blake
Association of Canadian Mountain Guides	Cornelius Amelunxen
Canada West Ski Areas Association (Whistler Blackcomb)	Jimmie Spencer
	Brian Leighton
Council of Forest Industries	Gord Mozell
Fernie Alpine Resort	Andy Cohen
HeliCat Canada	Rob Rohn
Ministry of Forests Councillor – APEGBC	Kevin Turner
Ministry of Transportation Avalanche and Weather Program	Mike Boissonneault
Ministry of Tourism, Sport and Arts, Resort Development Branch	Bill Hunter
Parks Canada	Grant Statham
Resorts of the Canadian Rockies	Robin Siggers
Thomson Rivers University (represent Post-Second Adventure Programs and Professional Mountain Guide Training)	Iain Stewart-Patterson
	Dwayne Congdon

TECHNICAL BULLETIN

Snow Avalanche Assessments in the Forest Sector: Skill Sets for QRPs

ABCPF/APEGBC Joint Practice Board

The Association of BC Professional Foresters and the Association of Professional Engineers and Geoscientists of BC work together through a Joint Practice Board to address issues of mutual concern in the forest sector. This article is the sixth in a series produced by the Board to address the roles of professionals in the forest sector and areas of interdisciplinary practice.

The Need for Snow Avalanche Assessments

Avalanche-prone terrain in BC is characterized by slopes of greater than 60% in areas of moderate to high snow supply. These areas broadly include the steep mid to higher elevations of the coastal mountains, where the mean annual maximum snow accumulation exceeds 1,000 mm water equivalent, as well as the interior mountain ranges, where mean annual maximum snow accumulation exceeds 700 mm water equivalent.

The following defines the skill set required by qualified registered professionals (QRPs) who undertake snow avalanche assessments or terrain stability field assessments in avalanche-prone terrain, and gives guidance to RPFs responsible for winter operations in such terrain.

Above: **A snow avalanche initiating in a clearcut above Nagle Creek, BC caused significant damage to both mature and regenerating forest (photo: Roger Laurilla).** ***Below:*** **A snow avalanche destroyed the Bull River Bridge in southeastern BC (photo: Doug Nicol PEng).**

Current Requirements

Currently, several BC Ministry of Forests districts require that snow avalanche initiation and runout assessments be undertaken to estimate the risk associated with proposed forest harvesting. Additionally, a protocol agreement between the BC Ministry of Transportation and the Ministry of Forests requires that avalanche assessments be undertaken when harvesting is proposed on Crown land above provincial highways. Forest managers must ensure that harvesting does not lead to catastrophic avalanche damage to forest resources or other significant damage downslope.

Recent Advances in Knowledge

Researchers at the University of BC have documented 500 destructive avalanches affecting clearcuts in coastal BC and 500 in the interior. It is estimated that a substantially larger number of cutblocks have been affected across the province.

The majority of the affected cutblocks have sustained damage from large snow avalanches that run down into the block from above. In approximately 10% of the cases, large snow avalanches have initiated in clearcuts, causing significant resource loss and/or environmental damage within or below these blocks.

Forest roads may be blocked and bridges occasionally damaged by snow avalanches. The effects of small avalanches are less apparent, but frequent small events may delay or inhibit successful regeneration in plantations.

The Ministry of Forests has prepared a draft handbook for managing snow avalanche-prone forested terrain. The *Snow Avalanche Land Management Handbook* addresses issues relating to the potential loss or damage to resources as well as threats to public and worker safety from snow avalanches that initiate within and upslope of cutblocks and logging roads. The *Handbook* gives land managers a range of options that can be implemented, provided that the risk associated with snow avalanches is recognized before undertaking road building or harvesting. Research outputs include a set of decision trees to assist managers of avalanche-prone areas.

Recommended Training and Experience

A QRP who works in avalanche-prone terrain needs to be qualified by both formal training **and** experience, and be registered with a regulatory body in BC that has the legislated authority to regulate its members performing the activity. To meet these criteria, practitioners must be registered with either APEGBC or ABCPF. Certification with the Canadian Avalanche Association (CAA) is not sufficient.

The QRP should be familiar with the winter climate and snowpack characteristics in the region or district of interest. The QRP should have studied the effects of different types and sizes of snow avalanches on forest cover, and understand the different runout characteristics of wet and dry snow avalanches.

Specific competencies include the ability to assess avalanche magnitude (destructive effects) and frequency (return period). Competence in statistical methods should include extreme value distributions and their application to runout modeling, calculation of likely impact pressures and estimation of uncertainty.

The QRP should have a working knowledge of the related disciplines of land use planning, zoning and forest harvesting, and be experienced in risk-based decision making. The QRP needs practical

Appendix 2

experience with avalanches and snow science gained through fieldwork in avalanche control operations over several winters.

Essential Courses, Skills and Experience

Avalanche work is a field that overlaps the geosciences, atmospheric sciences and engineering. Within BC universities the relevant subject matter is taught principally in physical geography, while in Alberta the University of Calgary offers avalanche courses through civil engineering.

QRPs who undertake avalanche work in BC should have completed the following elective courses from APEGBC's Environmental Geoscience syllabus, and preferably have relevant graduate level courses or a master's degree:

Essential Subject Areas (UBC courses; 2001 calendar)

- Advanced Geomorphology (Geog 406)
- Aerial Photo Interpretation (Soil 442 or For 442)
- Natural Hazards Analysis (Geog 404)
- Probability and Statistics (Stat 241)
- Quaternary Geology (Geog 308)
- Snow and Ice Processes (Geog 408)
- Weather and Climate (Geog 300)

Recommended Subject Areas

- Dendrology (For 111)
- Hydrology and Open Channel Flow (Civil 316)

Coverage of most of these topics is available through courses at Simon Fraser University, the University of Victoria and the University of Northern BC.

In addition to university level courses, the following field oriented extension courses are considered essential for QRPs who undertake assessments in terrain that is prone to snow avalanches:

- Introductory Transport and Resource Industry Technical course (Level 1), and preferably a Level 2 avalanche course, offered by the CAA
- Advanced Avalanche Risk and Hazard Mapping course offered by the CAA and Forestry Continuing Studies Network

QRPs involved in avalanche work should also keep themselves informed of relevant articles in key technical and scientific journals. QRPs are encouraged to hold affiliate membership in the CAA and to attend the biannual International Snow Science Workshops.

The Role of Avalanche Technicians

A clear distinction needs to be drawn between the role of QRPs, who assess the potential of forested terrain to generate snow avalanches following harvest, and the role of skilled and experienced avalanche technicians (typically members of the CAA), who deal with winter avalanche safety issues in forest operations.

The Board recognizes that non-licensed avalanche technicians have an important role in winter operations by evaluating day-to-day weather-related snow stability. Appropriately qualified and experienced avalanche technicians who hold an advanced winter operations avalanche qualification should be retained to establish weather and snow monitoring programs, undertake rescue training, and assess the avalanche danger posed to forest workers and forest road users in winter.

An earlier Board article advocated teamwork as a strategy to maximize the effectiveness of terrain stability assessments. When issues of worker safety arise, snow stability assessments provide an ideal opportunity for a QRP and an experienced avalanche technician to combine their expertise.

Experienced avalanche technicians who may contemplate undertaking assessments of snow avalanche runout and identification of avalanche-prone terrain for the forest sector should obtain a limited license to practice. RPFs who rely on snow avalanche risk assessment information from others are accountable for ensuring that these individuals meet the appropriate skill sets and are appropriately registered. Any land management decisions made by a forester based on this information are the responsibility of the forester.

Conclusion

QRPs must adhere to guidelines established by professionals who specialize in avalanche work; a national standard for avalanche risk assessment has been developed. Risk matrices from this standard are incorporated in the Ministry of Forests *Snow Avalanche Land Management Handbook*. Non-licensed persons cannot undertake risk assessments, or provide estimates of maximum avalanche runout distance or impact pressures, unless a QRP with appropriate avalanche experience reviews this work.

An RPF involved in winter operations may need to address a potentially hazardous situation where an unstable snowpack has developed in a recently harvested cutblock located above a forest road. The RPF should ask the QRP to estimate the destructive potential of avalanches that may be released, before explosives are employed, to provide safe access for workers. The RPF should not approve the artificial release of a snow avalanche if it is judged that the release will be large enough to damage forest resources downslope. ◘

Previous articles in the JPB series are available on APEGBC's web site at www.apeg.bc.ca/innovation/bulletins archives.html.

Appendix 3

CAA Recommended Minimum Training and Experience for Qualified Avalanche Planners

Role: Planner (Consultant) for active avalanche safety programs. See companion DRAFT Scope of Practice document

Credentials, Training & Experience	**Sector Specific Recommended Minimum Qualifications**					
Criteria listed below in bold font are core criteria to be met by the "planner of record". Criteria in regular font may be provided by supporting members on the planning team.	**Downhill Ski Resorts**	**Mechanized Wilderness Guiding**	**Non-mechanized Wilderness Guiding**	**Highways, Railways, Buildings, Forestry & Construction Ops**	**Govt. & NGO "Public Service" Programs**	**Snowmobile Wilderness Guiding**
"Qualified Avalanche Planner" as defined in Part 4.1.2 (1) of proposed WSBC regulation	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
CAA Ops L2 course graduate, c/w Module 1	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Annual filing, CAA CPD program compliance	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Seasons experience, avalanche operations	**15**	**15**	**15**	**15**	**15**	**15**
Seasons experience, avalanche program management / quality assurance, this sector	**3**	**3**	**3**	**3**	**3**	**3***
Professional liability insurance coverage	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Introductory avalanche mapping course	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Meteorology or avalanche weather course	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avalanche forecasting course* **	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Advanced avalanche rescue course**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Guide certification (as per sector standard)		Yes	Yes	Desirable		Yes**
Advanced avalanche mapping course			Desirable		Desirable	
Avalanche blasting course		Yes	Yes	Yes		Desirable
Avalanche blasting ticket (valid)		Desirable	Desirable	Desirable		Desirable
Safety in winter operations course***	Desirable	Desirable	Desirable	Desirable	Desirable	Desirable
Avalanche accident investigation experience	Yes	Yes	Yes	Yes	Yes	Yes
Relevant post-secondary degree					Desirable	
University level statistics course	Desirable	Desirable	Desirable	Desirable	Desirable	Desirable

* For BC Commercial Snowmobile Operators Association (BCCSOA) members this sector experience requirement may be filled by a supporting member of the planning team due to limited capacity within existing operators. ** BCCSOA guide standards and certification process to be implemented by 2010.

*** These training programs are currently under development by the CAA, and will be available by fall, 2008.

NOTE 1: For all categories of workers described in this document, specified formal training requirements may be met through an "or equivalent" training determination under the Prior Learning Assessment Review (PLAR) process conducted by the CAA Education Committee.

Ratified by unanimous vote of the membership at the CAA AGM in May, 2008 Version date 5/14/2008 Page 1 of 2

Appendix 3

CAA Recommended Minimum Training and Experience for Qualified Avalanche Planners

Role: Planner (Employee) for active avalanche safety programs. See companion DRAFT Scope of Practice document

Credentials, Training & Experience	**Sector Specific Recommended Minimum Qualifications**					
Criteria listed below in bold font are core criteria to be met by the "planner of record". Criteria in regular font may be provided by supporting members on the planning team.	**Downhill Ski Resorts**	**Mechanized Wilderness Guiding**	**Non-mechanized Wilderness Guiding**	**Highways, Railways, Buildings, Forestry & Construction Ops**	**Govt. & NGO "Public Service" Programs**	**Snowmobile Wilderness Guiding**
"Qualified Avalanche Planner" as defined in Part 4.1.2 (1) of proposed WSBC regulation	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
CAA Ops L2 course graduate, c/w Module 1	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Annual filing, CAA CPD program compliance	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Seasons experience, avalanche operations	**10**	**10**	**10**	**10**	**10**	**8***
Seasons experience, avalanche program management / quality assurance, this sector	**5**	**5**	**5**	**5**	**5**	**3***
Introductory avalanche mapping course	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Meteorology or avalanche weather course	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avalanche forecasting course* **	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Advanced avalanche rescue course* **	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Guide certification (as per sector standard)	Yes	Yes	Desirable			Yes**
Advanced avalanche mapping course		Desirable			Desirable	
Avalanche blasting course	Yes	Yes	Yes			Desirable
Avalanche blasting ticket (valid)	Desirable	Desirable	Desirable			Desirable
Safety in winter operations course**	Desirable	Desirable	Desirable	Desirable	Desirable	Desirable
Avalanche accident investigation experience	Yes	Yes	Yes	Yes	Yes	Yes
Relevant post-secondary degree					Desirable	
University level statistics course	Desirable	Desirable	Desirable	Desirable	Desirable	Desirable

* For BC Commercial Snowmobile Operators Association (BCCSOA) members this sector experience requirement may be filled by a supporting member of the planning team due to limited capacity within existing operators. ** BCCSOA guide standards and certification process to be implemented by 2010.

*** These training programs are currently under development by the CAA, and will be available by fall, 2008.

NOTE 2: Plans prepared by a planner (employee) should be peer reviewed by a commensurately qualified individual from another organization in the same Sector prior to being accepted and implemented by the employer.