

CANADIAN GUIDELINES FOR OBSERVATIONS IN AVALANCHE
FORECASTING

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Introduction

Internationally, observations for snow stability evaluation and avalanche hazard forecasting have been developed over many years through research and practical experience. Details regarding these observations can be found in the literature.

In Canada, these observations have been used and further developed to suit local needs and operations. The early use and development of these observations was by the National Research Council and Parks Canada in Rogers Pass, British Columbia, beginning in 1956. The observations used and developed at this operation form the basis for most of the snow and avalanche standards used in Canada today.

During the early 1970's, a need developed for trained personnel capable of providing avalanche safety programs for mining operations, ski areas, highways, and railways. Training courses were developed and with these came increased standardization of observations of the snowpack, weather, and avalanches, to assist operational personnel in establishing programs of avalanche management.

Need for Standardized Observations

Standardized observations are desirable for several reasons:

1. to provide a minimum standard for personnel new to the avalanche field;
2. to provide a standard to assist hazard forecasters in complete and accurate observing;
3. to provide a basis for communication between different areas and operations, thus enabling personnel transferring to different areas to fit more easily into a new operation, and enabling observers for public

avalanche warning programs or weather forecast offices to report information in a standardized form. A weather reporting network has in fact been established in British Columbia where avalanche operations report mountain weather operations twice daily to the Pacific Weather Centre in Vancouver;

4. to provide a minimum standard in case of legal actions. Compliance with industry standards may provide a basis for refuting allegations of negligence should these arise.
5. to provide a standard data base for avalanche research, development of snow stability evaluation and hazard forecasting techniques, planning of protective measures, and evaluation of avalanche control effectiveness.

Guidelines for Standardized Observations in Canada

The guidelines for standard observations include:

1. Snow Profile Observation

The snow profile is a record of the stratigraphy of the snow cover and the characteristics of the individual snow layers.

2. Test Snow Profile

Test snow profiles, also known as hasty pits, are an abbreviated form of snow profile. The test profile concentrates on collecting the information that is most significant for snow stability at the time of observation. The excavation for the test profile need only be to the depth at which weak layers exist in the snowpack.

3. Shovel Shear Test

The shovel shear test is a subjective observation designed to show where the snow slab may fail in shear. A column of snow is isolated from the snowpack. Pressure is applied to the back side of the column with a shovel to force a failure in shear. The approximate effort required to produce this failure is noted.

4. Weather Observations

Regular, daily weather observations are essential to snow stability evaluation and avalanche hazard forecasting.

5. Observation of Avalanches

Information about avalanche activity is an essential input in avalanche forecasting. Different types of observations are required for ski areas and highways.

The guidelines described here have been reviewed during 1980 by the National Research Council and Parks Canada, with the co-operation of most avalanche operators in British Columbia and Alberta. They will be published in detail as a Technical Memorandum by the National Research Council of Canada in 1981. This memorandum will include details of equipment and field procedures as well as the format to be used for data presentation.