

BOMB-TRAMS AND AERIAL DETONATION OF AVALANCHE CONTROL EXPLOSIVES

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Aerial detonation of avalanche control explosives, optimally between 2 and 10 feet above the snow surface has proved to be an efficient method of artificial avalanche release. This can be satisfying news to any avalanche control practitioner who is being pressured to: increase cost efficiency, minimize the hazard exposure of his crew and seek alternatives to military ordinance for remote shots. At Bridger Bowl ski-area, Bozeman, Montana, there are three installations for aerial transport and detonation of avalanche control explosives. The oldest, a fixed wire in the Refrigerator Chutes below a M.S.U. snow and avalanches research site was installed two winters ago. Operated from above, the bomb is carried by its own weight down the wire prior to detonation. The comparative effectiveness of these aerial detonations to in-pack detonations in an adjacent chute gave us the confidence in the method to build the Finger's Bomb-tram in the South Bowl. The Finger's Bomb-tram is a 500 foot long manually operated closed loop cable circuit similar to a miniature aerial tramway capable of delivering 2 to 8 pounds of explosive uphill (320' vertical rise) to the starting zones. Material costs (-\$2000.00) were minimized by liberal use of salvaged lift parts from the Bridger Bowl boneyard. A double blasting cap, spool system was devised, eliminating the need to drag the bomb over low points in the circuit. The third installation at Bridger Bowl is a very inexpensive fixed polypropylene line in Madman's Chute of the North Bowl. The avalanche control bomb is allowed, under its own weight, to cross Madman's Chute and hang against the opposite cliff face. The increasing use of and speculation on future bombwire and bomb-tram installations at Bridger Bowl supports the effectiveness of aerial detonation as an efficient avalanche control method.