



AAC Publications

SKIER-TRIGGERED AVALANCHE

New Hampshire, Mt. Washington, Tuckerman Ravine

On the morning of March 4, around 11:30 a.m., a skier triggered an avalanche while descending Sluice in Tuckerman Ravine. They were caught, carried about 300 feet, and came to rest on top of the debris pile above Lunch Rocks, but were not buried and had no injuries.

The skier accessed the top of Sluice by climbing Right Gully and traversing to the top of the ski line. The skier wrote, "I skied ten slow, smooth, short-radius turns which felt firm and stable. On the eighth turn, propagation took place 40 feet behind me, and I soon felt the steep slope give way underneath. I proceeded to point my skis straight to ride it out, but by now was fully engulfed by the avalanche."

The hard slab avalanche was triggered at a thin spot in the slab near the Sluice icefall, partway down the line. The fracture propagated roughly 40 feet above the skier and 75 feet laterally in each direction. This avalanche was D2, R3 in size, with a maximum crown depth of three or four feet. In the track, areas of frozen bed surface were exposed, indicating the avalanche stepped down to a rain crust from February 22 and entrained slabs that had formed earlier in the week.

ANALYSIS

The setup for this incident began on February 22 when the summit of Mt. Washington (6,288') reported 0.78 inches of rain, with an additional 0.32 inches of rain the following day. A subsequent drop in temperatures refroze the snow surface into a very hard crust layer. Over the next 10 days, leading up to March 4, a total of 25 inches of snow were reported on the summit. Prevailing west and northwest winds drove wind-slab formation, and many natural avalanches were observed during this 10-day period.

A break in snowfall on February 28 allowed wind and sun to slightly stiffen the snow surface, creating the future bed surface for avalanches. On the first three days of March, a total of 10.3 inches of snow fell, with northwest winds and continued slab formation. As wind speed and snowfall gradually increased during this period, a subtle strong-over-weak character was created in this slab.

Visibility and sun returned on March 4, and large recent avalanches on Center Headwall and The Lip in Tuckerman Ravine became visible. Slab failure and propagation were consistently being seen on the aforementioned thin mid-slab interface, where there was a slight change in density within the greater wind slab.

Generally, this was found 30cm to 50cm below the snow surface, but was buried deeper in wind-sheltered pockets of terrain, as in Sluice. On March 4, the avalanche danger was rated Considerable at middle elevations and Moderate at upper elevations for the Presidential Range. Sluice sits within the middle and upper elevation bands.

The skier wrote, "My decision-making failed. The forecast stated clearly to 'not rule out the possibility of triggering a large, firm slab—all it takes is finding a weak spot over a rock to get it sliding.' I underestimated the weaknesses of this slab in correlation to current conditions and features."

This accident highlights the high degree of spatial variability associated with the Presidential Range

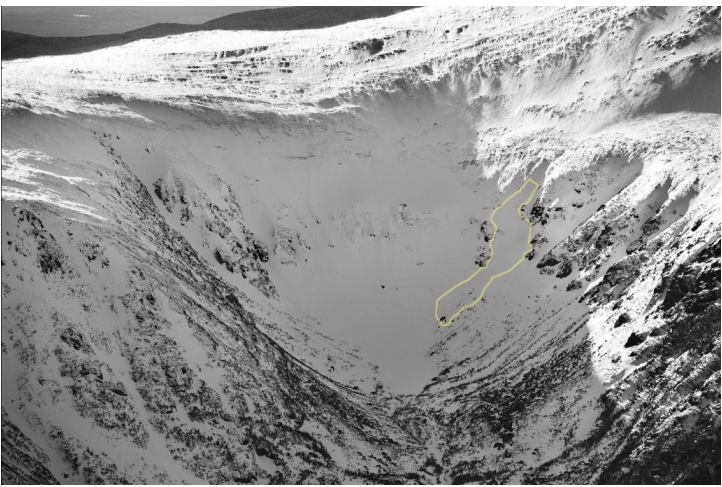
forecast area. Our avalanche cycles offer heightened danger shortly after snow and wind events, but continuous high winds after the initial storm often lead to stubborn slabs that are hard to trigger. This seems to have been what the skier was expecting. However, in this case, slight nuances of loading patterns and layering subtleties, as described above, meant that higher slab sensitivity persisted longer than longtime local skiers might be used to.

The decision to ski solo meant the skier had no partner that could extract them in case of a full burial, provide care in case of injury, or act as another voice in the decision-making process. At face value, skiing solo should not be considered a mistake, but rather a choice that can compound the consequences of an accident. (Source: Mount Washington Avalanche Center.)

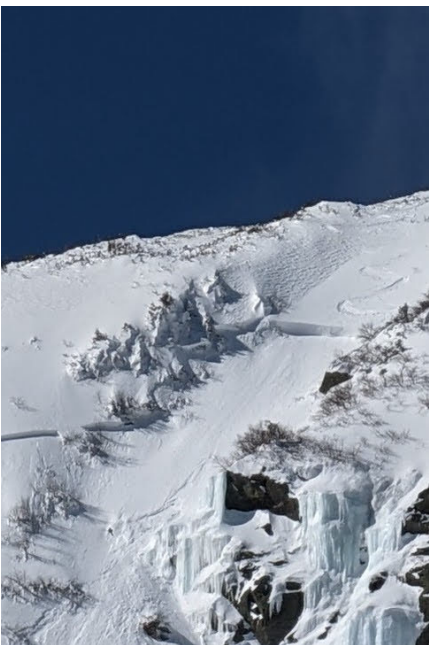
Images



Avalanche scene in Tuckerman Ravine. The avalanche started in the Sluice run and propagated across the hillside.



The slide path on Sluice in Tuckerman Ravine, shown in an aerial photo from a prior year. The avalanche ran about 450 feet.



The crown line of an avalanche in the Sluice run in Tuckerman Ravine, with skier tracks.

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