

Cause of the failure has not been determined. Two climbers independently inspected the remaining slings in the leader's pack and found all solid water knots. The sling had carried the rappel load, but then failed with approximately 80% more weight. Tensile tests were carried out on slings with knots that were intentionally not dressed (twisted or folded), but these performed surprisingly near to perfectly tied knots.

One possibility was that the knot did not take a set, and slipped through to the melted end on rappel, and continued slipping on the victim. Regardless of reason for failure, it is strongly recommended that setting a single sling, equalized or not, should only be done after careful deliberation as to the risk. It is recommended that any anchor system with bolts or gear be set with two independent, bombproof anchors, or at least three good independent anchors by traditional gear placement. Bombproof means two modern solid anchor bolts with hangers, solid horns or trees.

Independent slings or quickdraws should be clipped to each anchor point to provide sufficient back-up for an individual sling or anchor point failure. If one judges the need for an equalized sling, it should be backed up with the rope or slings slightly longer to allow equalized movement) to each anchor point. (Source: Michael Dianich)

## **FALL ON HARD SNOW—CRAMPONS ICED UP, UNABLE TO SELF-ARREST**

### **Oregon, Mount Hood, Palmer Glacier**

On June 11, Andy March (32) was descending from the summit of Mount Hood about noon when his crampons became "iced up," and he was unable to clear them by tapping them with his ice ax. He slipped and fell 300 feet before he was able to stop his fall.

His partner summoned help at Timberline Lodge, and a rescue team proceeded to help March down the mountain. They returned to the lodge by 7:30 p.m. March was transported to Mount Hood Medical Center for an evaluation of his chief complaint—lower back pain. (Source: Clackamas County Sheriff's Office)

*(Editor's Note: The term "iced up" most likely means consolidated snow that did not dislodge using the usual method of tapping—or giving a good whack—with one's ice ax. Experienced climbers like these fellows would not use an anchored belay in this kind of situation, but those with moderate or less experience should.)*

## **FALL ON SNOW, CLIMBING UNROPE, SNOW CONDITIONS—NÉVÉ**

### **Oregon, Mount Hood, Cooper Spur**

On September 6, Mark Fraas (40) fell 1500 feet down the Cooper Spur after losing his footing.

### **Analysis**

There have been at least 13 fatalities on the Cooper Spur. All follow a similar scenario: loss of footing, inability to self-arrest, and a long fall over rock cliffs above the Eliot Glacier. Because of the hazardous fall line, this route should only be attempted when snow conditions give firm footing and the party is prepared for immediate self-arrest. These conditions are usually present in the very early hours of spring mornings.

Friends of Mark Fraas indicated that he had climbed Mount Adams and Mount