

County Sheriff's SAR somewhat later. Nathan was lowered down the scree in a belayed stokes litter, carried to the trailhead and transported to hospital.

Analysis

Nathan suggests that lead climbers set protection as high as possible before attempting a difficult move. His equalized #1 Camalot and medium hex held his fall, but the stretch of the long rope and a dynamic belay turned a seeming seven footer into a 12 to 15 foot fall. The belayer, standing back from the wall, was pulled forward into the wall, contributing to the length of the fall. Nathan, about 200 pounds, states that in the future, he will make sure that his belayer is anchored.

Low-angled climbs can be more deceiving than vertical rock. (Source: Robert Speik)

FALL ON ROCK—LOWERING ERROR, NO HARD HAT

Oregon, Smith Rock State Park, Left Slab Crack.

On November 29, Kathy Lee and her friend Becky Hsu (both 27) were meeting some new friends at The Dihedrals at Smith Rock. The friends were late, so Kathy and Becky decided to warm up with Left Slab Crack rated 5.4 two stars by Alan Watts in his *Climber's Guide to Smith Rock*. Kathy topped out and asked her friend to lower her. She realized the rope was short for this climb but expected Becky to hold her so she could finish the descent with a fourth-class scramble to the ground. The end of the rope whipped through Becky's belay device and Kathy fell about 30 vertical feet down the route to the ground. Without a helmet, she was bleeding profusely from a head wound.

EMS professionals were summoned by a nearby cell phone. She was stabilized and carried by the waiting ambulance to St. Charles Medical Center, kept overnight, and released with a bruised kidney and lung and scalp lacerations. She is "lucky and well" and climbing "more carefully" again.

Analysis

Typically, the belayer is concentrating on the climber being lowered, failing to mind the remaining belay rope. Sport climbers typically do not tie into the bottom end of the top belay rope. Tying a stopper knot or tying the rope into the sport rope bag can prevent this kind of incident. (Source: Robert Speik)

RAPPEL FAILURE—INADEQUATE KNOT

Utah, Zion National Park, Spaceshot

On May 21, Roeslain Tamin (35) fell 180 feet to his death while rappelling from the popular climbing route Spaceshot in Zion National Park. Evidence and interviews lead to the following sequence of events.

Tamin and his climbing partner Richard Connors (29) had climbed the first four pitches of Spaceshot on May 20, then descended, fixing lines on the way. On May 21, they returned and ascended their fixed lines to the top of the fourth pitch. Due to approaching weather, they decided to re-

treat and take their ropes down with them. Tamin rappelled to the ledge on top of the second pitch followed by Connors. The two then prepared for the final 60 meter rappel to the ground. Tamin walked a short distance over to their fixed rope at the anchor, out of view of Connors. Tamin took the weight off the end of the fixed rope by clove-hitching it to a carabiner clipped to the anchor webbing. Connors pulled down a rope from the just-completed rappel, then threw the end of it to Tamin. Tamin then presumably tied the two rope ends together. Connors then fed the rest of the rope to Tamin, who in turn put it over the edge. Tamin began his rappel while Connors was coiling rope approximately ten feet away. They were separated by a boulder large enough to partially obstruct Connors' view of Tamin. Tamin probably fell shortly after going on rappel. He was found with both ropes running properly through his rappel device, with approximately ten feet of each rope above the device. But there was no evidence that the ropes had been tied together.

Analysis

Tamin and Connors had been climbing partners for eight years and tended to tie similar knots. Connors stated that they both commonly tied a figure eight knot with the tails on the same side and with an overhand backup as their primary rappel knot. Both trusted this knot but had not tested its limitations. This knot was used because of its tendency not to get stuck when pulled from below, as happens with many other knots. In this instance Tamin *may* have tied the knot with tails shorter than usual. But a backup knot was *probably* not used. These are plausible speculations due to the length of this rappel being the same as their ropes—60 meters. The lower you exit the rappel the easier the terrain becomes, and a notation made on their route description by Tamin to the effect that, “Ropes barely reach, go left of stance.”

It would seem unlikely that Tamin neglected to tie the two ropes together given that the ropes were found threaded properly through his rappel device. Non-scientific tests performed on the knot in question showed several important things. When weighted, this knot will invert; if the knot is not dressed properly, it comes untied significantly more easily than will a properly dressed knot. When tied with short tails and cycled (repeated weighting and unweighting), the tails can be brought into the knot body, causing the knot to unravel.

The ropes used during this accident were sent to Black Diamond's lab in Salt Lake City, where this knot (as well as a standard overhand rappel knot) was tested using their Satec Universal Testing Machine. Tests showed that the figure eight knot inverted at loads two-thirds that of the overhand, an untightened figure eight inverted at about a 30 percent lower load than one well tightened. Conclusions of Paul Tusting, BD Quality Assurance Manager, were that, “...either the knot was tied incorrectly or it was extremely loose. The testing also demonstrates that if a well dressed figure eight with long tails were used with these ropes, a field failure of the knot

is extremely unlikely. Lastly, this testing indicates that the overhand (tails on same side) is superior in strength to the figure eight (tails on same side) when well dressed and tightened.” (Source: Kevin Killian, SAR Coordinator, Zion National Park)

(Editor’s Note: Fewer rappelling accidents have been reported in the last decade or so. On the other hand, lowering accidents are on the increase. The common reason for both is inattentiveness to the familiar and obvious, even among experienced climbers.)

LIGHTNING

Utah, Lone Peak

On July 26, Trent (28) and Alexis Pabst (23) were killed by a lightning strike on the summit of Lone Peak. Together with Trent’s younger brother Tyler (18), the couple had climbed The Open Book, a five-pitch 5.7 route that leads straight to the 11,253-foot summit. Tyler led the final pitch. After belaying Trent up, he went to scout out a spot to shelter from the approaching storm while Trent belayed Alexis. Tyler also had time to make an eerie entry in the summit log, in which he noted the oncoming storm clouds.

At the time of the strike, Alexis had just completed the climb and untied. She and Trent were together in a small alcove at the top of the route just below the summit, while Tyler was about ten feet away. Tyler was knocked down by the blast but uninjured. Panicked, he looked at the two unresponsive climbers without touching them, then raced out for help. Five hours later, he arrived at the Bell’s Canyon trailhead, having taken a longer and more difficult descent-route than he intended.

The two victims were evacuated by highline from the summit to a point lower on the summit ridge, then lowered to a meadow at about 10,800 feet, where they were loaded on board a helicopter and flown to Salt Lake City.

Analysis

The summit of Lone Peak is a room-sized pinnacle in the middle of a completely exposed ridge line. There aren’t any good spots to wait out a thunderstorm on the ridge, but anywhere would have been better than the summit itself. Once the three climbers had committed to starting the last pitch, they didn’t have much choice but to try to finish it and get off the peak before the storm arrived.

The Pabsts had suffered extensive burns and blast injuries and probably would not have survived. However, lightning strike victims who appear dead may in fact be in ventricular fibrillation or simply have stopped breathing. CPR can restore cardiac rhythm if it is started right away, and AR has frequently worked on victims who have just stopped breathing. An added note: With multiple lightning strike victims, triage should be the opposite of normal; that is, treat apparent fatalities first and deal with wounded victims later. (Source: Tom Moyer—Salt Lake County Sheriff’s SAR)