The National Institute for Occupational Safety and Health (NIOSH)

Assistant Mountaineering Guide Falls on Denali

Alaska FACE 98AK016
Release Date: June 22, 1999

SUMMARY

On June 6, 1998, a 21-year-old assistant mountaineering guide died when he fell from a ridge on Denali (Mt. McKinley). The guide was part of a five-man team that was descending from a 17,200-foot camp along the West Buttress. During their descent, the guide witnessed one of the climbers in the team slip while descending a particularly exposed and rocky section of the ridge route. The climber was having difficulty regaining his footing. The team was on a running belay with the guide at the end; the guide unclipped from the rope and walked past the climbers between himself and the fallen climber. The victim lost his footing as he moved toward the fallen climber's position and slid down the slope toward a glacier. He was unable to arrest his fall with his ice ax. His body was later recovered.

Based on the findings of the investigation, to prevent similar occurrences, employers should:

- Develop, implement, and enforce a comprehensive written safety program.
- Ensure that guides are trained in proper assist and rescue techniques.

INTRODUCTION

At 1:30 PM on June 6, 1998, a 21-year-old male assistant mountaineering guide (the victim) was killed while attempting to aid another climber. An investigation involving an Injury Prevention Specialist for the Alaska Department of Health and Social Services, Section of Epidemiology ensued on July 30, 1998. The incident was reviewed with OSHA and park service officials, and their respective reports were requested.

The company in this incident was a mountaineering guide service established in 1968 that began offering guiding services on Denali in 1975. It was one of six authorized Denali guide concessionaires. During the peak mountaineering season (May through July), the company employed 65 to 70 full-time, part-time, and seasonal employees. While the popularity of guided expeditions on Denali has increased, the company tried to maintain a ratio of one guide for every three climbers with a maximum of 9 clients per expedition. Guides were classified as either a trip leader/senior guide or an assistant guide.

The company had a structured application and hiring procedure for assistant guides. Prior to being employed by the company, applicants submitted a climbing resume and attended a 2-day tryout. The tryout was used to evaluate basic mountaineering skills and knowledge. From this group, 5-12 persons were invited back as assistant guides to work with clients at a Washington state site where they were observed by the senior guides. During this period, their technical knowledge and skills were re-evaluated as well as their instruction and interactive "people" skills. To become a trip leader, assistant guides must have had 3 years experience with the company.

The trip leader/senior guide in this incident had over 25 years experience as a mountaineering guide and had made more than 20 Denali ascents. He had worked with and observed the victim while in Washington. He found the victim to be a competent high altitude mountaineer who worked well with the clients and other guides. This was the victim's third season as an assistant mountaineering guide with the company. Although the victim had a broad climbing history that included three Denali ascents, he had not summitted the mountain.

The company had written standard operating procedures, which incorporated general mountaineering safety. In addition, employees met at least once a week to discuss guiding practices, policies, and related safety issues. Safety responsibilities were assigned to the senior and assistant guides, which included selection of clients in order to group climbers of comparable expertise.

INVESTIGATION

The incident occurred on an icy slope along the West Buttress of Denali. The West Buttress is a popular approach to the summit of Denali and is used frequently by both private and guided expeditions. The route is classified as Grade 2 based on the Alaska Grading System. ** The Alaska Grading System is unique to Alaska because of the extreme environment and weather conditions. Each climbing route within the Denali National Park and Preserve is given a rating from Grade 2 (moderate route with minimal technical difficulties) to Grade 6 (severe with the highest standards of sustained technical climbing for several thousand feet). There are no Grade 1 routes on Denali, which denote an "easy glacier route." The West Buttress route starts from a 7,200-foot base camp located at Kahiltna Glacier and consists of 17 climbing miles, with a vertical gain of 13,100 feet (Figure 1a). The most often encountered difficulties and dangers along the West Buttress route are steep slopes (40° to 50°), avalanches, and crevasses. However, cold and high altitudes are primary factors that contribute to many mountaineering incidents including falls.

Normally, expeditions using the West Buttress route are 2 weeks long but can be longer depending upon weather conditions. The team involved in this incident consisted of a senior guide, an assistant guide (the victim), and 3 (client) climbers. During the first few days of the expedition, a fourth climber dropped out of the team and was escorted back to the 7,200-foot base camp. The team was on their 15th day on the mountain when they returned to a 17,200-foot high altitude camp after the summit climb. The summit climb had gone well, requiring approximately 9 hours to attain the summit and return to camp. During their time at the high altitude camp, the team reported only slight headaches and no other symptoms of high altitude-related illnesses.

Figure 1a. West Buttress of Denali (Mt. McKinley)
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The following day, weather conditions deteriorated. The descent to the 14,200-foot camp was delayed. Winds had increased, accompanied by reduced visibility. By afternoon, conditions had improved. The team packed the camp and began descending. After a few hundred yards, it became "quite breezy," and the decision was made to return to the high altitude (17,200-foot) camp.

The next day, the day of the incident, the senior guide went down the buttress route alone. The wind had decreased; conditions had improved greatly. The guide returned to camp. After about 1 to 2 hours, the team was repacked and began to descend. Each team member was wearing full summit attire including a pack, a body harness, crampons, and overboots. The route between 17,000 and 16,000 feet followed a ridgeline that wound between granite rocks and over patches of intermittent ice (Figure 1b). Several sections along the route were steep, exposed, and slightly technical. Since it is company policy to be roped while climbing or descending, the senior and assistant guides chose to rope the group on a single running belay for their descent. (A running belay is a technique used where climbers (usually 2 or 3) are roped together. The lead climber clips the rope to a carabiner (or series of carabiners) attached to a fixed object, such as a rock (natural protection) or a manufactured device (artificial protection, such as an ice screw or snow picket) secured to the terrain. If a climber falls, the weight of the other climber(s) should arrest the fall. However, if a fall occurs and the running belay fails, then all climbers secured on the

Figure 1b. Detail of the West Buttress Route, 16,200 to 17,200 feet.
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The guides and climbers were roped together using 2 lengths (165 feet each) of rope for the rope could fall. A running belay is safer than climbing without a rope but less secure than a fixed belay where one climber in the roped team remains anchored and able to brake or arrest another climber's fall.) The senior guide and three climbers were on the first rope, and the victim was attached to the last climber using the second rope. The space between all members of the team was the about the same distance with the victim carrying the remnants of the second rope. The senior guide led the descent using natural (rock) protection for the running belay.

The route was primarily hard pack snow, and the team walked on one of the established trails on the lee side of the ridge. Several other groups were also descending the route during the break in the weather. (Deteriorating weather conditions had required climbers to stay longer at the high altitude camp than they otherwise would have.) As they descended, winds began to increase with estimated gusts of 35 MPH or greater. The stronger winds also made it hard for the climbers to hear each other. As the first climber behind the senior guide came around a large outcropping of rock on the ridge, he was hit by a strong wind gust that caused him to loose his footing. He yelled, "falling" to warn his team members. The fallen climber slid approximately 5 feet down the slope toward another trail. Although his fall was arrested by the running belay looped around a rock, he was unable to regain his footing. The senior guide then began to shout instructions to help him regain his footing. (It was necessary to shout the instructions due to the wind.)

The victim, witnessing the climber's fall and his difficulty in regaining his footing, began to move forward around the other climbers. At some point, probably while or just after he passed the second climber, he unclipped from the rope. The fallen climber, realizing that the victim was not aware of the stronger winds near the outcropping, tried to yell a warning to the victim. As he victim proceeded along the trail, he "pitched forward" and began to fall down the slope toward a glacier, approximately 1600-1800 feet below the ridge (Figure 2). The victim tried a self-arrest with his ice ax, lost the ax, and continued to slide down the slope. The senior guide was not aware that the victim had unclipped from the rope until his fall.

Unable to assist the victim, the team climbed back to the high altitude camp with another group. The senior guide climbed approximately 500 feet down the icy slope to try to locate the victim. He discontinued his efforts due to increasing winds and poor visibility. Weather conditions continued to deteriorate, stalling any further search and rescue attempts and interrupting two-way radio transmission and reception. On the fifth day after the fall, the weather improved enough to allow the senior guide to contact the park service. The victim's body was later recovered by the park service.

The final event that led to the victim's fall could not be determined. Possibly the victim lost his balance while trying to move around the rocks, lost his footing on the ice, or lost his balance due to the sudden increase of wind as he neared the edge of the outcropping.

Figure 2. Direction of descent and fall from the West Buttress route.
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Note: This is an enlargement (3x) of a topographic map with an original scale of 1:50,000.

CAUSE OF DEATH

The medical examiner's report listed the cause of death as multiple impact injuries due to a fall while mountain climbing.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should develop, implement, and enforce a comprehensive written safety program.

Discussion: In this incident, safety protocols were incorporated into the company's written operating procedures and disseminated and discussed verbally with employees. Regardless of the frequency of these discussions, a comprehensive written safety program would provide guidelines that better safeguard employee safety and health. The more structured format of a written program should outline standard safety practices and optimize information for employees who must use judgement as to whether to initiate and conduct specific activities. Employers should ensure that employees are aware of all standard practices and that these practices are to be strictly followed.

Recommendation #2: Employers should ensure that guides are trained in proper mountaineering assist and rescue techniques.

Discussion: In this incident, the senior guide was aiding a fallen climber by giving directions to assist his recovery. It was the senior guide's responsibility to evaluate the event and direct a response leading to an effective recovery; he did not request assistance from the victim. However, the victim unclipped from the running belay and moved forward to assist the fallen climber. The victim probably wanted to help the fallen climber so that the team could continue their descent to a lower camp. It is essential that communication between mountaineering team members be simple and effective in order to maintain a reasonable margin of safety. Employers need to provide training that will aid guides in communicating decisions and actions during an event response and rescue, as well as incident assessment and risk factors affecting an activity. In addition, this training should emphasize physiologic responses such as rescue fever, which can undermine the outcome of an emergency situation. While guiding attracts a higher caliber of mountaineers, their collective and individual knowledge should not obscure the need to plan and provide specific training for these activities. Difficulty switching from a climber to a responder modality can hamper or compound the hazards associated with mountaineering.

REFERENCES

Coombs C. Denali's West Buttress: A Climber's Guide to Mount McKinley's Classic Route. The Mountaineers, Seattle WA, 1997.

Graydon D and Hanson K, Eds. Mountaineering: The Freedom of the Hills, Sixth Edition. The Mountaineers, Seattle WA, 1997.

Lewis SG. The Practical Mountain Rescue Handbook, Second Edition. Two-Mile-High School of Alpinism, Juneau AK, 1991.

Mountaineering Rangers of Denali National Park. Mountaineering: Denali National Park and Preserve, Alaska. National Park Service, U.S. Department of the Interior, 1994.

National Safety Council. Accident Prevention Manual for Business & Industry: Administration & Programs. Tenth Edition. Chicago IL; 1992.

Waterman J. High Alaska: A Historical Guide to Denali, Foraker, and Hunter. The American Alpine Club, New York, 1989.

Waterman J. Surviving Denali: A Study of Accidents on Mount McKinley. Second Ed., Revised. The American Alpine Club, New York, 1991.

Fatality Assessment and Control Evaluation (FACE) Project

The Alaska Division of Public Health, Section of Epidemiology performs Fatality Assessment and Control Evaluation (FACE) investigations through a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR). The goal of these evaluations is to prevent fatal work injuries in the future by studying the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

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Back to Alaska FACE reports

Back to NIOSH FACE Web

Page last reviewed: November 18, 2015
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