

were at 17,000 feet. Three were at 19,000; of these three, two were injured and one was dead in the rocks near Archdeacon's Tower. The five at the 17,000 camp tried to radio back to the remaining three, but received no answer. Several groups at 17,000 feet helped the Taiwanese with their frostbite.

Chen Jung Chung and Shieh Tgu Ching were rescued from 17,000 feet by NPS Lama on June 15 at 1235, flown to the 7,200 foot base camp, where they were stabilized. A full medical survey was done, their frostbite was evaluated, and they were questioned about the accident. They were then transported to Alaska Regional Hospital via National Guard Pavehawk.

On the morning of June 15, an aircraft from Hudson Aviation and NPS ranger Joe Reichert searched the upper mountain. They spotted two of the three climbers near the 19,400 foot level. Doin Min Lin and Wu Min Chung were assisted by NPS patrol members Alex Lowe and Conrad Anker from 19,400 feet to 17,200 feet, where they were airlifted on June 15 at 1932 to Talkeetna by an Army Chinook, then transported to Alaska Regional Hospital by National Guard Pavehawk.

Doin Min Lin and Wu Min Chung were found to be suffering from hypothermia, frostbite, and dehydration. They had not been able to take in any liquids for two days, due to their prolonged bivouac. The more critical of the two patients was Wu Ming Chung, due to severely frostbitten fingers and toes.

Chiu Jui-Lin was found dead near Archdeacon's Tower by NPS patrol member Alex Lowe. Chiu was not wearing gloves or mittens, and had on only a light outer jacket and pants. After checking for pulses and determining that Chiu's body was rigid, frozen and pulseless, Lowe secured the body for later recovery (on June 17).

All remaining members were assisted down to the 14,000 foot camp by NPS and NPS patrol members, and climbing groups.

Analysis

This accident was caused by a number of factors. A lack of skill in accurately understanding weather patterns on Denali meant that the Taiwanese missed vital clues about when the weather would change. A lack of critical route finding tools such as a map, compass, and altimeter prevented the team from navigating accurately down from the summit. Splitting the group weakened an already struggling team. A lack of sleeping bags and other bivouac gear left the team vulnerable to sudden weather changes. It is clear that this team tragically underestimated the severity of conditions on Denali. (Source: Eric Martin, Mountaineering Ranger, Denali National Park)

AVALANCHE

Alaska, Mount McKinley, South Buttress

The "South Buttress 95" expedition members included leader Tom Fitzsimmons (45), Jim Fitzsimmons (38), Richard Rodgers (40), and David Hoffman (49). Their intended route was the 1954 ascent of the South Buttress from the Ruth Glacier.

On June 16, the group was flown to the Ruth Glacier to begin their approach. They had established a base camp at the 9,200 foot level of the West Fork near the head of the cirque. Two days were spent fixing 900 feet of line and advancing supplies to approximately the 10,800 foot level, positioned in the middle of a face. This face is the start of the difficulties, comprised of 2,000 feet of snow slopes and ice bulges, with angles from 30 to 60 degrees, and having a southeast aspect. While working this lower face section, they encountered two crevasses whose uphill lips were higher than the downhill lips, forming cliffs of 40 and 100 feet. The expedition weaved around an end of the first crevasse. They climbed 600 feet higher and located a cache under the awning of the 100 foot cliff.

On June 24 and 25, a storm moved in dumping nearly two feet of snow, combined with wind gusts up to 40 mph. The group was camped at 9,200 feet during the storm. They were aware that the face they had been working was now a leeward slope in the storm, and probably being loaded, with wind transported snow. On June 26 the weather cleared creating the hottest, clearest day the group had yet experienced on this trip. Instead of climbing during this break, the expedition waited 36 hours for the slope to settle. They did not observe any avalanche activity while they waited.

On June 27 at 0230 the group began climbing the face. It was more difficult than they had anticipated. This slowed their initial progress, and combined with a two day storm, made the group a little anxious about being able to finish their climb. They were cognizant of the potential for avalanches. There were sixteen days left in their schedule for climbing. These two factors offset their anxiety somewhat.

On the climb up the face, the conditions varied between ice and pockets of snow. They linked up the ice patches to minimize the trail breaking. When they reached their cache under the 100 foot ice cliffs, they were nearly two-thirds of the way up. The sun was now again heating the face, and they realized that they hadn't left early enough to complete the face. The group decided to wait until the slope hardened again before continuing to the top. During the wait, the snow formed a breakable crust.

On June 27 at 2100, they resumed climbing as two rope teams. David and Tom led out fixing two 300 foot ropes, with Jim and Richard following behind. The slope angle was approximately 50 degrees for the two rope span, then it appeared to lay back to 30 degrees in a small bowl above, before it reached the top. The fixed ropes were anchored with seven pickets. The pickets were hammered through the snow into the ice as far as possible, which mangled the heads of the pickets. The climbers were confident in their placement. About 2300, David was at the top of the fixed lines belaying Tom as he climbed, and Jim and Richard were below them when the avalanche occurred. Tom heard a loud Whumph! and felt the slope in a 600 foot by 200 foot section give way above, below, and beneath them. Everyone and everything began moving with the slide. They began swimming and struggling to stay on top of the moving snow. The slide path was in line with the ice cliffs, and the climbers were swept over the 100 foot cliff in a cascade of debris, ropes and bodies. They impacted the angled slope below and stopped for a moment. The snow continued to pour over the cliff and began burying them. The slide regained its momentum and again pulled the climbers downhill with it. They were tossed over the second ice cliff and impacted the slope below, except for Tom who fell another 40 feet into the crevasse after failing to clear the gap. The climbers and the avalanche debris lost momentum and stopped here below the 40 foot ice cliff at 10,700 feet.

Tom hung upside down in the crevasse tangled in ropes. His injuries were a gash above the knee (which later required thirteen stitches), contusions and abrasions. Tom pulled on the ropes he was tangled in and determined the best anchored rope, and clipped a jummar into it. He then freed himself by cutting the remaining lines with a knife.

Jim and David lay unconscious above for a brief moment as Richard tried to communicate with everyone. Richard was able to contact Tom in the crevasse and soon Jim and David were conscious. Richard stood first, but later would have to lie down because of his chest injuries. David cut himself free of the ropes and went to assist Jim, who was in considerable pain and unable to free his foot, which was buried below the knee and twisted badly. The debris had set up quickly and it was difficult for David to dig Jim's foot out. David then went to the crevasse lip, and assisted Tom out of the crevasse by tying a line to his pack and hauling. Tom went to Jim and put a down coat on him, while David helped Richard lie down in a position of comfort to ease his breathing. Tom be-

gan calling on a CB radio, blindly relaying their location and that there was an emergency. The message was received by Annie Duquette at Kahiltna base camp, and a bush resident near Bald Mountain outside of Talkeetna. Between making frequent broadcasts on the radio, Tom and David were able to set up the tent, bandage Richard's chest, and administer Demerol to Jim.

AT 0020 the Park Service received the call of an emergency on the Ruth Glacier. At 0459 both patients were loaded into a Pavehawk helicopter and transported to Alaska Regional Hospital.

Analysis

The weather in the Alaska Range this season was unstable. There were many storm days resulting in loaded slopes. The South Buttress expedition, although cognizant of avalanche hazard and having taken some definite precautions, were caught in an avalanche. It is difficult to say whether waiting several more hours would have allowed the snow to bond well enough to prevent what appeared to be a wet slide. The long Alaskan day oftentimes prevents sufficient freezing of the snow pack over night. The slope may have had a long term unstable characteristic, in which case waiting several hours would have been useless. (Source: Kevin Moore, Mountaineering Ranger, Denali National Park)

(Editor's Note: On May 25, with an accumulation of seven feet of new snow in five days, a Cessna 185 flipped over on takeoff from the Kahiltna base camp.)

FALL INTO CREVASSE—SNOW BRIDGE COLLAPSE, POOR POSITION, INADEQUATE PROTECTION—NO BELAY OR FIXED ROPE

Alaska, Mount McKinley, West Buttress

On June 28 at 1900, Dominic Marshall (25) and Reggie Perrin fell into a crevasse at 13,600 feet while ascending the West Buttress. Perrin is disabled and Marshall was assisting him to walk when the two broke through a bridged crevasse. Marshall held Perrin from the surface while Perrin went in about three feet. They were extricated very quickly by their party. Perrin was unhurt while Marshall experienced a lot of pain to walk. Marshall was sledged into the 14,200 foot ranger station at 2130. Marshall complained of pain in his pelvis and lower back. A thorough exam was conducted by Canadian Rescue Medic John Oaks of the NPS patrol with assistance from Dr. Dunken Gray and Dr. Anthony Osborne of the Unseen Steps party. It was determined that Marshall should be evacuated by helicopter. Marshall's continued pain left speculation of a potential fracture of the lower pelvis. Marshall was released on June 29 with a torn pelvic cartilage.

Analysis

John Barry stated the following: "I was part of a rope of six, moving from a camp at about 12,100 feet to the plateau at 14,200 feet. The visibility was good and the weather fair. One of our party, 'Reggie' Perrin is disabled—partially paralyzed in the left arm and leg and 75% blind. This means that when moving roped on glaciated terrain, we have to configure the rope so that, whilst everyone is joined in the normal way, Reggie—who needs a shoulder adjacent his arm on all but the easiest ground—has a fellow climber immediately alongside. This I achieve by means of a doubled rope and sling.

"We were rounding a corner about 13,600 feet near the end of a pleasant but uneventful day when the rope tightened. Looking back I saw that Reggie and his helper of the day, Dominic Marshall, had fallen through the path. Marshall was only waist deep;