crown profiles

The Cody Peak cirque, from 1/24/2012, just outside the southern boundary of the Jackson Hole Mountain Resort. Enticing sidecountry, just a bootpack away.

Photo by Bob Peters of North 40 Realty in Jackson

Perspective from a Humbled Skier

Lessons Learned from the Pucker Face Avalanche

Story by Alex Do

On Christmas night 2013, in a warm apartment down the road from the Jackson Hole Mountain Resort in Wyoming, a group of four skiers and snowboarders discussed their skiing plans for the next day. Most of the young men, 26 to 30 years old, had been staying away from backcountry avalanche paths while a recent snowstorm had exacerbated the avalanche hazard. The improving weather and avalanche danger since the storm cleared the previous morning made the group comfortable with the idea of skiing outside the resort boundary the next day. The group discussed the evening avalanche advisory issued by the Bridger-Teton National Forest Avalanche Center, which stated that the avalanche danger for December 26 in the Teton area would be Moderate. The next day was forecast to be calm and sunny. During the conversation one of the men mentioned that he would often cut cornices to help evaluate if a particular slope was safe to ski, and that they could perform the test the next day. The idea intrigued the other members of the group, as they had never seen that performed in person. The idea to hike to Cody Peak from a backcountry exit gate seemed reasonable, and everyone continued in their celebration at the holiday dinner party: good friends, close family, great weather, and fantastic snow. "We were stoked," one of the group members said to me.

I sent a text message to Mike Kazanjy when I arrived in town on Christmas night. I was excited to finally get the chance to ski with Mike and spend more time with him; I had never skied with him in the Lake Tahoe area where we both spent many of our weekends and vacation days, but when I learned that he was moving to Jackson I vowed to travel to a new mountain range and ski with my charismatic friend. He replied via text, "I think I'm going to get on the tram for a Cody lap tomorrow sometime." I didn't know anything about the location or terrain, but I packed my backcountry safety gear and figured that I would learn the relevant details the next day.

At the tram line, Mike introduced me to four friends who had been waiting for the two of us. The group had grown from four to six: Mike brought me on, a 33-year-old male, as a last-minute addition, while another friend to the group, a 31-year-old male, was also invited to come along. Though the party was growing larger, and the six of us had never before skied together as a group, everyone felt comfortable for the following reasons: 1) most of us had previously skied in the backcountry with some of the other members, 2) everyone was wearing avalanche transceivers and carrying a pack with a shovel and probe, 3) most were familiar with the Cody Peak ridgeline, and 4) most of the group considered Cody Peak a "normal" objective for Moderate-rated days. After a few quick introductions and light chatter everyone was eager to get on with the day as it was almost 11am.

There was a palpable excitement within our group – it was the day after Christmas, and we were getting the chance to ski untracked powder with new friends. The clear view of the mountains, energy and disposition of the other 94 skiers in the tram, and heavy metal music blasting from the speakers amplified the positive feelings during the tram ride. We carried this enthusiasm right out of the gate and onto the ridgeline hike without pausing for a full group discussion to review the plan, conditions, or safety. Along the way, some of us could see that ski tracks had just been put into our original terrain options for the day: two of the main couloirs on the peak known as Four Shadows and No Shadows. There were many parties along the ridgeline hike, including a guided group. One of our group members casually suggested that the group "have a look at Pucker."

Pucker Face is a steep, roughly 45-degree, east face with a convex rollover in the middle marked by a prominent cliff band. This line – technical, aesthetic, and featured in ski films – has a notoriety and allure to be skied in untracked powder conditions. Its location along the ridge hike, coming before the main couloirs, presents an easy opportunity to have a look down its face. Two of our group members who were in the front, Mike Kazanjy and Ian Tarbox, became excited by the idea of looking at Pucker, while the remaining three, myself included, were far enough behind that we weren't a part of the discussion.

When I arrived on the ridgeline I could see that Ian was already looking for a cornice to cut. I immediately went to help him without understanding where we were or discussing the reason we were dropping a cornice. The last two group members to arrive were surprised that we had stopped at this location, unaware of the change in plans, but soon everyone was helping with the cornice cut. After some difficulty releasing a complete cornice, we were able to send a partial block the size of a compact refrigerator tumbling down the skier's right side of the face.

Mike, spotting from further back on the ridgeline, was satisfied with the results, reporting that the block had tumbled and bounced without sliding through the surface or creating any cracks. I was less optimistic and said out loud, "That actually scares me even more – because if it's thin over there [on the main line] then we might have problems." We were physically spread out along the ridge, so only two of the group members could hear me, and one of them reassured me that the snow coverage wasn't thin. With the rollover, it's very difficult to gauge the level of coverage from the top unless you backtrack down the hike and sight the face from its side. I allowed my trust in the group of locals to take precedence, so I let it go. Another member of our party told Ian that we could draw no conclusions from that test, but not everyone could hear him. As we regrouped above the entrance to the line, the conversation immediately jumped to tactics: how we should ski the line, instead of focusing on strategy: why the line was an acceptable choice and what the consequences of an avalanche might be.

Mike volunteered to go first and test the slope with a ski cut. Before he committed to the slope, he asked if everyone was okay skiing the face. Two of the group members mentioned that they might choose to go a different way, but indicated that they would stay around and watch at the very least. I didn't say, "No." I was nervous about not being able to see below the blind rollover, and I ruminated on my skiing ability versus the terrain and snow quality, but I didn't activate the part of my brain that thinks about snow stability and avalanches. Mike and Ian were excited to ski the face. The view from the top looked alluring.

Mike started with a partial ski cut, then charged his first turn into the slope while we watched from the ridge above. When it became apparent that the snow was moving, between his second and third turns, fight or flight instinct kicked in. I extended my arm to point and spot Mike's location up until the growing powder cloud obscured the entire slope. Another person called ski patrol to report the avalanche. Ian was ready to jump onto the slope before the cloud settled.

The base of Pucker Face has both high visibility and easy access from the resort gates, leading to fast rescue. *Photo by Alex Do*

From the BTNF accident and rescue summary:

The avalanche was classified as HS-AS-R3-D3. The crown depth was estimated to be two feet in the upper portion of the avalanche starting zone and stepped down another two feet in the lower portion of the starting zone. The upper shallower portion of the slab involved new wind-drifted snow that was deposited during the period of December 20 to 24. The deeper lower section of the slab involved older, faceted snow.

The avalanche released in the area above the cliff band, where the average slope angle is 43 degrees. Beneath this upper section the slide path transitions to a much steeper cliff band. The starting zone faces east and has an average elevation of 10,250 feet. This avalanche was approximately 625 feet wide, dropped 550 vertical feet and ran an approximate linear distance of 1100 feet.

The avalanche had completely stripped the lower face of its snow, leaving behind a large bare cliff band, and we did our best to remain calm while making difficult snap decisions about how to approach the debris field – balancing our personal safety and the need to get down to the site quickly. Half our party made it to the debris field, joined by a guided party that was in the area. The transceiver search led to a positive probe strike six minutes after the avalanche, the shoveling was organized into a V-conveyor, and Mike's airway was cleared in less than 16 minutes despite the deep burial and his body positioned head first into the slope.

Although the outcome was fatal, I felt that we were mostly prepared to react once the snow started moving. Where we were unprepared was in dealing with the situation before the avalanche occurred.

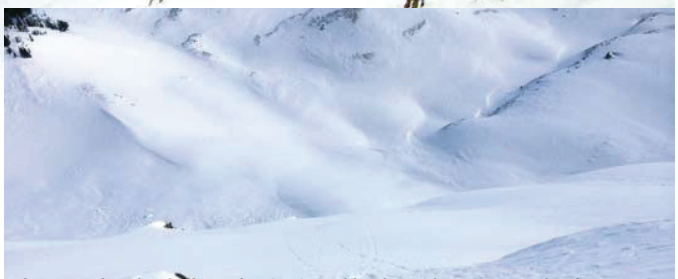
The avalanche advisory for December 26 stated: "Backcountry travelers could trigger recently developed wind slabs up to 30" deep in steep, wind-loaded terrain. Faceted snow persists throughout the snowpack, and failure could also occur on these deeper layers with slab depths up to four feet. If skies are mostly clear in the afternoon, these slides may become more susceptible to failure on sunlit aspects."

The Western Wyoming Avalanche Advisory from the previous evening also stated: "Avalanche observations continue to trickle in that occurred during the most recent storm cycle. One [natural avalanche]…occurred on an east face of Taylor Mountain north of the summit proper."

Pucker Face was wind loaded by the mostly northwest winds during the storm, and its steep east face, of a similar aspect and elevation to the east face of Taylor Mountain, was catching the low-angle sun on this clear day. Mike Kazanjy and one of the group had also seen a video from two winters prior that showed a snowboarder setting off a large avalanche on the very same face.

If I were presented all of this information in a classroom setting *(see reference in Mr Magoo's story, page 19)*, given my training I probably would not have agreed to ski this slope. But I wasn't in a classroom or with my regular partners. I was in a group of mostly new friends, in a new area, out on an exciting day with beautiful weather, staring down at an appealing untouched face, and I agreed to ski it rather than move on to another option. I failed to apply my training and skills to collect the information that was available and make an informed decision. What happened?

I like to think that I am a person who represents a typical backcountry recreationist, if not above average in studious obsession with the activity. I've taken AIARE Level 1 and 2 courses. I've read the classic bible, Bruce Tremper's *Staying Alive in Avalanche Terrain*. I've applied a lot of my learning during several years of frequent ski touring. I study incident reports from fatal avalanche accidents, and I discuss safety in the mountains with my backcountry partners. I also tried to learn from the February 2012 accident at Tunnel Creek, Stevens Pass, but on December 26 at Cody Peak, I was part of a group with similar group dynamics – a large group with appreciable levels of experience and training that fell into some of the same heuristic traps, made many of the same mistakes, and also paid the ultimate price.



The general avalanche hazard rating issued by the Bridger-Teton Avalanche Center for the upper elevations of the Teton Range on December 26 was moderate. The General Avalanche Advisory section of the forecast stated:

"At the mid and upper elevations, backcountry travelers could trigger recently developed wind slabs up to 30 inches deep in steep, wind loaded terrain. Faceted snow persists throughout the snowpack and failure could also occur on these deeper layers with slab depths up to four feet. If skies are mostly clear in the afternoon, these slides may become more susceptible to failure on sunlit aspects. Moderate hazard is not a green light. While the likelihood of triggering these slides is decreasing, the consequences remain high. Evaluate the snow and terrain carefully and identify features of concern."

Additional information was provided in the Avalanche Problem section of the forecast.

The view from the top. The blind rollover is both enticing and frightening. *Photo by Ian Tarbox*

The big questions I have been asking myself since the accident have been:

- How did this happen?
- What did I miss?
- What are the deeper, big picture takeaways?

Our group took the time after the accident to debrief the events leading up to it and to share our individual perspectives. We identified many mistakes, including:

- Not remembering or interpreting all the details in the avalanche advisory
- Using a cornice test and ski cut to try to manage a persistent-slab instability
- Not discussing the consequences of an avalanche on that face
- Not using a protocol or checklist
- Not having a trip leader/facilitator

We also discussed the contributing factors and themes to the accident:

- Going along with the group and deferring to others' experience
- A very high level of excitement and stoke within the group
- A large group with new members
- The Moderate rating created a false sense of security; it was "normal" to ski Cody on Moderate days (familiarity) due to typical "Teton risk tolerance."
- Poor communication – not articulating thoughts, side conversations that did not propagate to the entire group, not asking the right questions, not exploring doubts or concerns
- The validating effect of other parties being in the area (social proof)
- The pressure to get our own untracked line (tracks/scarcity)
- Proximity to the ski resort
- Task orientation (eg, cornice cut, ski cut) vs strategic focus (eg, reviewing terrain selection and management techniques against the known avalanche problems, discussing acceptable consequences for making mistakes)

Hindsight can be overwhelming, and it's easy to get attached to small details without understanding the higher-level lessons that they are a part of. In the months since the accident, this is what I have come up with in terms of high-level, personal lessons learned:

Continued on next page ➡

PUCKER FACE LESSONS

continued from previous page

1. It's not them, it's us.

As with any deep-seated issue requiring serious change, my first step was to get over the denial that kept me from admitting I had a problem in the first place. One of the deepest lessons I learned from our avalanche accident is that when I read about a close call or fatal accident in the backcountry, it is *us* who are involved. It's easy to think, "Those guys at Pucker Face were a bunch of risk takers and hard chargers, but I'm not like that, and I would never get into a situation like that." When reading accident reports, hindsight makes the critical mistakes so wildly glaring that we find strong rationale to differentiate "us" from "them." The first step was to embrace the idea that it isn't "other people" getting into accidents in the backcountry: it's us.

This idea is terrifying and challenging to accept because it implies that, as humans, we are capable of taking an unreasonably high amount of risk even when available information suggests that we're headed toward the danger zone. This reality forced me to first admit that I have weaknesses before I could strategize to build reinforcements around them, or, put another way, before I could truly learn other critical lessons.

2. Question comfort.

I spent a lot of time after the accident trying to understand why I was so comfortable standing on top of a suspect wind-loaded aspect, looking down a blind convex face with a likely number of thinly buried rocks for potential trigger zones (based on the visible rocks and cliffs), with a known persistent instability, in a large group of skiers I had never skied or toured with before.

A critical reader might deride this account, noting that it doesn't take an avalanche expert to see that we were not respecting a dangerous situation. But the critical reader has the benefit of a pedestal view, standing above the maze and pointing at us, the rats in the maze, saying, "You idiots!" Inside the backcountry decision-making maze, we're often not making completely conscious decisions but following a set of actions influenced by the walls of the maze – our human factors.

Over a hundred days of skiing backcountry mountains without a consequential accident was more than enough to make me comfortable. Experience on its own can be a great teacher, but it can also be a poor teacher for managing low-probability, high-risk, high-reward events. Years in the mountains taught me how to manage factors like time, weather, and energy – but experience also gave me the false impression that I could brush closely to danger without a problem. Even though I had studied the dangers of backcountry travel, complacency overtook my normal caution and lubricated my inhibitions. It allowed me to feel comfortable skirting closer and closer to the edge of disaster – and the truth about avalanches is that we never really know how close we are to that edge until the snow cracks, and it is clear that we are already on the other side.

3. Know the enemy, and respect it.

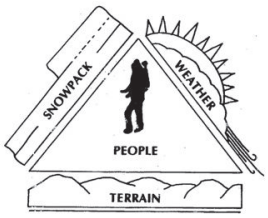
Of all the things my complacency blinded me to, the most troublesome may have been the level of disrespect our group gave to that particular snowpack on December 26. Our enemy lurking beneath the snow that day was not some generic avalanche, nor was it a "Moderate" avalanche (no such avalanche classification exists). We were flirting with a persistent slab that could avalanche to the ground with depths up to four feet. As Craig Gordon from the Utah Avalanche Center would say, the dog we were poking at wasn't a Chihuahua that would simply yip back and paw at our shins, but a much more serious beast, like a pit bull that could leap up, clamp down on an arm, and drag us down into the depths of the mountain. Beyond the unmanageable size of a potential avalanche, the character of the problem – a persistent slab – should have been even more concerning. Persistent slabs are classified as "persistent" because they do not always respond to tests such as ski cuts or cornice tests, making the instabilities difficult to observe without a detailed snowpack analysis. Our terrain choice, stability evaluation techniques, and mitigation plans on December 26 may have been appropriate for other types of avalanche problems, but not for a four-foot-deep persistent slab.

4. Institutionalize what I've learned.

Lessons can be learned by reviewing incidents, your own or others, but with an added caveat: the lessons can't be fully grasped until you institutionalize what you have learned. In the corporate world, this problem-solving technique is known as a *root-cause countermeasure* – which is a fancy way of saying that purely knowing about root causes is not worth much until you create a policy or process to deal with them. When I first read about the Tunnel Creek accident in 2012, I noted the large group size, poor communication, lack of group leader, disregard for the forecasted hazard, and complacency with the area. But I didn't feel the need to actively institutionalize countermeasures against those key factors; I never participated in large groups or toured lift-accessed sidecountry – until I changed the equation by traveling to a new area and skiing with new partners in a relatively large group.

One of the many results from our group's debrief after the accident was developing a list of "Disciplines to Live By," covering topics ranging from organizational structure (establishing a leader and a devil's advocate) to communication (discussing conditions, red flags, risk vs reward, and worst-case scenarios). There isn't anything on our checklist that isn't already covered by standard lists such those outlined in the AIARE Field Book, but the most important thing about our list is that we agree to use it in the first place.

HUMAN FACTOR RED FLAGS



Graphic courtesy Alaska Avalanche School

Proposed rough sketch to promote training of Human Factor Red Flags. These observable qualities may indicate unstable thinking and the possibility for poor decision-making. Observation of multiple red flags should trigger a group re-evaluation of the trip plan and terrain choices.

1. Group size >4
2. Growing group size
3. No leader/moderator
4. New member(s) to the group
5. Too much stoke / excitement
6. Radio silence: Not enough communication about snow, terrain, hazards, consequences
7. Sub-groups and decisions made without full consensus

5. My training alone did not prepare me for these situations.

I mentioned that, in a reactive sense, our group handled the search and rescue as smoothly as we could have, without hesitation, and I think that frequent practice prepared us for that. For example, I regularly practice transceiver search scenarios modeled after the exercises I learned in my AIARE Level 1 class. After this accident, I've discovered that practicing proactive activities that reinforce avalanche avoidance takes much more nuance. My Level 1 training provided exercises to develop proactive skills for making snow, weather, and terrain observations, but I think that there is an opportunity for our educational leadership to evaluate how we can improve training for two areas I think are critical to accident prevention.

Communication within the group, especially when new partners are involved, continues to be a strong theme in my post-accident analysis and from other accidents such as Rob Castillo's. After spending years in the backcountry with a partner, signaling intentions and understanding their concerns becomes easy and efficient; structured communication becomes more of a tertiary requirement when you've worked with someone for years. Developing the techniques to dig out concerns or communicate effective planning with new partners and larger, more complex groups is a much more difficult task, and it does require structure to be sure that everyone is on the same page.

I think we can learn from other industries such as corporate structure and medicine to develop standard practice exercises, such as role-play and question-and-answer techniques for communication, and teach these in our training classes. Students could then take home and practice communication exercises with both regular and new partners, just like practicing rescue skills. For example, the technique of questioning a partner's optimistic belief statement that "this looks good," can be followed with a response such as "please explain to me what you think the snowpack is on this slope," followed up with, "is that consistent with the avalanche report and our observations?" If we practice that 10 times in the classroom, then the 11th, 12th, and 100th times in the field with new partners will be more natural, less forced. This could also be part of an advanced training focused for trip facilitators or leaders, or for a level 1 or 2 refresher course.

The second proactive skill set I think we have an opportunity to develop is training for human observations. Our single biggest "a ha!" moment during our debriefing was the idea of "Human Factors Red Flags." The avalanche industry has standardized critical observable elements of snowpack, weather, and terrain that contribute to avalanches – but do we have standardization, training, and practice to develop skills in human observations? I go back to Tremper's example about the rats in the maze: one of my biggest realizations around human factors is that we usually only discuss them from the perspective of being above the maze – learning the concepts. Learning how to make observations while we are actually *in* the maze takes self-awareness and skill. So the idea is to list simple present/not-present human qualities that are easily measured or observed, with the intent that, like identifying unstable snow, this would help indicate unstable decision-making.

We haven't done any of the requisite research to validate correlation to accidents or potential for accident prevention, but the idea had so much power and presumed merit that we decided to propose this list as a strawman for debate and research as a standard part of the Red Flags instruction. Again, none of the information here is new, but the proposal is to adopt a standard format that can be worked into an observation routine and field book. I plan to adopt these initial proposals into my regular regimen as part of lesson 4: *Institutionalize what I have learned.*

CONCLUSION

So where do I go from here? I've been back in the backcountry since the accident, trying to create new habits and develop better tools for communication. I've still been processing these higher-level lessons learned, hoping that they are useful not only for me and my partners, but for others like me who may have become way too comfortable in the mountains, and who may one day suddenly find themselves much closer to the edge of danger than expected.

The full accident report can be found at www.avalanche.org/data.php?date=&sort=&id=594

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Alex Do is an energy efficiency and lighting industry professional from the San Francisco Bay Area in California. He was visiting the Tetons for his first time when the accident occurred. While not a snow-industry professional, he has a passion for outdoor education and safety, and he spends much of his unpaid time exploring the backcountry of the Sierra Nevada and southern Cascades.