

# WHERE PROFESSIONAL MISTAKES ARE MADE

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## OBJECTIVE:

This presentation is designed to educate students on common errors avalanche professionals have made during their careers and how to avoid them. Students will spend time reviewing Todd Guyn's ISSW 2016 paper "*10 Common Missteps of Avalanche Practitioners*." After which they will examine three case studies to determine which of the "missteps" are applicable and how they could have affected the outcomes.

## LECTURE OULINE:

- I. Review Todd Guyn's ISSW 2016 paper "*10 Common Missteps of Avalanche Practitioners*"
  - a. #10 – Misapplication of Terrain
  - b. #9 – Being Impatient with Conditions
  - c. #8 – Trying Too Hard To Outwit The Avalanche Hazard
  - d. #7 – Acting Too Much On Emotion
  - e. #6 – Information Overload
  - f. #5 – Not Being Vigilant To Changes In The Environment
  - g. #4 – Letting Familiarity Influence Your Mindset
  - h. #3 – Underestimating Consequence
  - i. #2 – Underplaying Of Uncertainty
  - j. #1 – Lack Of Communication
- II. Review three case studies involving fatalities of ski patrollers while performing avalanche hazard reduction at Jackson Hole Mountain Resort
  - a. Paul Discoll – Dec 2, 1985
    - i. Snowpack
      1. Early season backcountry conditions
      2. Faceted, upside down snowpack
    - ii. Weather
      1. 6" of new snow with 0.6" SWE the previous night
      2. Continued snowfall during the day with 10" of new snow containing 1" of SWE
    - iii. Terrain
      1. Trees on the right side of the slope act as a wind fence and load the starting zone
      2. Rocky slope underneath enhanced faceting
      3. Trees in the runout zone
    - iv. Other Factors
      1. First day of control work (backcountry snowpack)
      2. Multiple people on the slope
      3. Control work was performed in the morning with 2 shots being deployed
      4. Continued snowfall throughout the day
      5. Setup performed throughout the day
    - v. Outcome
      1. Skier triggered slide at 4:10 pm
      2. Hard slab
      3. Relative size Class 4
      4. 72" deep crown
      5. 6 patrollers caught
      6. Paul Driscoll was buried head down, 6' deep

- b. Tom Raymer – Feb 17, 1986
  - i. Snowpack
    - 1. No persistent weak layers
  - ii. Weather
    - 1. Beginning of the Raymer Storm, which lasted 12 days
    - 2. Snowfall
      - a. 13<sup>th</sup> – 10" with 1" SWE (10%)
      - b. 14<sup>th</sup> – 6" with .95 SWE (16%)
      - c. 15<sup>th</sup> – 8" with .98" SWE (12%)
      - d. 16<sup>th</sup> – 12" with 1.87" SWE (16%)
      - e. 17<sup>th</sup> – 12" with 1.5" SWE (12.5")
    - 3. Warm "Pineapple Express" storm system
  - iii. Terrain
    - 1. Entered mid slope, not top down
    - 2. Trees in runout zone
  - iv. Other Factors
    - 1. No protection shot
    - 2. Unusual weather conditions led to unusual events
  - v. Outcome
    - 1. Skier triggered slide
    - 2. Hard slab
    - 3. Relative size Class 5
    - 4. 60" deep crown
    - 5. Deep burial and tangled in trees
  - vi. Aftermath
    - 1. The storm continued for another 7 days which completely shut down the mountain the last 3 days
    - 2. Control work on Feb 24 resulted in a climax avalanche that started near 10,000 feet and came within 200 feet of houses at the base of the mountain
    - 3. The slide completely removed forested areas and destroyed 2 structures
- c. Mark Wolling – Jan 6, 2010
  - i. Snowpack
    - 1. Faceted, early season snowpack
    - 2. The terrain in the starting zone had not been opened to the public and had no skier compaction
  - ii. Weather
    - 1. Prior to Jan 5
      - a. Dec 11 – 20" faceted snow on the ground (50cm)
      - b. Dec 12-17 – 40" (102cm)
      - c. Dec 19-30 – Dry...9" (23cm)
      - d. Dec 31-Jan 2 – 24" (61cm)
    - 2. Jan 5-6
      - a. 10" new (25cm)
      - b. 1.5" SWE (3.8cm)
      - c. 725 miles of wind in 24 hours (30 mph averages)
  - iii. Terrain
    - 1. Large fetch windward of slide path
    - 2. Cliff band below slide path
    - 3. Transition to flatter terrain in the runout zone
  - iv. Other Factors
    - 1. First significant wind event of the season
    - 2. Crown broke out higher than normal
  - v. Outcome
    - 1. Explosive triggered slide
    - 2. Hard slab

3. Relative size Class 3
4. 32" deep crown
5. Swept over cliffs
6. Buried 5-6' deep

**REQUIRED READING:**

*"10 Common Missteps of Avalanche Practitioners"* by Todd Guyn. A copy of this paper is included in the full student materials. [http://arc.lib.montana.edu/snow-science/objects/ISSW16\\_O10.04.pdf](http://arc.lib.montana.edu/snow-science/objects/ISSW16_O10.04.pdf)