Rotor vs Rock
A Main Rotor Strike During a Live Slinging Operation
Presentation Goals

• Share the story & the outcomes

• Work with peers to find solutions to operational limitations

• An opportunity for other agencies to be “ahead of the learning curve”
Public Safety Specialists

• Work within Kananaskis Country, Alberta, Canada
• 5-7 calls annually involving close proximity flying
  – Pilots have more exposure to these calls
• PS Specialists are certified, professional guides who have additional training in:
  – High angle rope rescue
  – Helicopter use for mountain rescue
    • Including Class D or “Human External Cargo”
    • Technical slinging capabilities
Alpine Helicopters Inc. provides all rescue flights for Kananaskis Public Safety & Parks Canada.

Alpine Helicopters Provides:
• 6 Rescue Pilots between Canmore, Alberta and Golden, British Columbia
• A single engine Bell 407 helicopter for Day VFR missions utilizing the Boost Rescue System
• Aircraft is on standby 365 days a year from Canmore base
• Annual re-current training & check flights
• Since January 1st, 2017 Alpine has responded to 221 calls, 121 of which were HEC/Class D
Helicopters & Rescue Pilots

• Alpine Rescue Pilots are certified by Parks Canada
• The 6 Pilots average
  • 9,825 hours total time
  • 7,480 hours mountain
  • 2,850 hours longline
• Parks Canada flight test requirements;
  • 2,500 hours total time
  • 1,000 hours mountain
  • 500 hours longline
• Parks Canada’s 5-7 hour flight test contains 4 phases
  • Vertical reference / barrel test
  • Mountain flying
  • Advanced and high altitude mountain flying
  • Simulated HEC/Class D live load flying
• Since the inception of the Parks Canada rescue program in 1972 there had not been a HEC/Class D accident within either agency
Experience with close proximity flying

Public Safety staff
- 5-7 rescues annually where rotor clearance is a consideration
- Avalanche control work-
  - Class D is NOT involved, however many start zones are near cliffs

Pilots
- Significantly higher due to working with Parks Canada, the heli ski industry & industrial work
Mount Yamnuska

- Over 150 technical rock climbing routes on the face
- Routes are long and technically challenging
- Most routes tend to be vertical to overhanging with a “wandering” nature
- The rock quality is poor!!
- Often a windy area due to its Eastern slope location
The Call

- A party of 2, mid way up Direttissima, 5.8(5B), 325m, 9 pitches
- One of the climbers was hit by a large rock
- Neck injuries are the main concern
The Initial Response

- A Bell 407 launches from the town of Canmore, an 8 minute flight
- 3 Public Safety Specialists on board, plus the pilot
- Extensively trained Conservation Officers arrive to support
- All crew members agreed a direct sling was appropriate for this situation
The Incident

- 200ft (61m) rope was used
- Pilot flew direct with live load
- Rescuer was within inches of the ledge
- Staff described hearing a “gun shot” or “thunder”
- Conservation Officer on top declared a rotor strike over the radio
- The pilot declared an emergency landing
- The landing flight took 1.5 minutes
The Secondary Response

- Pilot and rescuer voluntarily removed from operations
- A second rescue team was brought in to climb to the subjects
  - Additional Kananaskis Public Safety
  - 2 members of Parks Canada Visitor Safety
- A second helicopter and rescue pilot was brought in to finish the rescue
- The subject was lowered using an organized rope rescue and another heli-sling
Aircraft Damage

• Extensive maintenance required to repair, overhaul or replace the following
  • Turbine-Compressor-Engine Gearbox-Drive Shaft-Free Wheel-Transmission-Mast-Main Rotor Head-Blades
  • Cost was significant
• Aircraft was disassembled and trailered back to hangar before rescue was completed
• Aircraft returned to service 11 days later
Post Incident Investigations

• Transport Canada
  – National Transportation Safety Board (NTSB)

• Alpine Helicopters internal investigation
  – Began immediately after the accident by local managers and Chief pilot
  – Rescue Pilot placed on temporary hiatus from rescue program pending ongoing evaluation

• Alberta Government commissioned an independent report to identify deficiencies within the program and offer recommendations
Lessons Learned

Alpine
• A trial run using an empty line to check for rotor clearance and hazards should be performed prior to insertion of rescuer
• Removal of the door & basket to increase visibility for pilot
• More training
  • With 200ft and longer longlines
  • In vertical terrain
  • With extendable poles for reaching accident scenes with limited clearance
  • For emergency situations

Rescuer/Agency
• KCPS self implemented:
  • Documentation of decision making
  • More frequent & enhanced Class D training
  • Internal procedures for dealing with the outcome of incidents
  • Possible placement of permanent and safe rescue insertion points

• An independent report recommended:
  • A modification of staff training that would see more climbing time
  • Staffing levels that maintain capacity & resiliency
  • A documented risk assessment for each rescue
Thanks for listening.

Questions?