

Best Practices

Helicopter Association of Canada Heliski Training

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1. Document Control Sheet

Contact for Enquires and Proposed Changes

If you have any questions regarding this document please contact the document controller:

Name: Helicopter Association of Canada Heliski Training Best Practices Chair

Designation: Chair for the Sub-Committee Heliski Training

If you have suggestions for improving this document forward your recommendations to Helicopter Association of Canada Chair of the Air Taxi Committee.

2. Record of Issues

Issue No	Issue Date	Nature of Amendment
1.0	January 2012	Compiled Draft
1.1	September 2013	Final DRAFT Original

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3. Introduction

3.1 Purpose

Since operational parameters vary considerably from one company to another, these guidelines do not purport to be complete nor are they universally applicable.

These best practices are meant to serve as guidance for helicopter operators when developing and maintaining their respective training programs for Heliskiing.

Individual operators remain responsible for tailoring their company policies to the experience and aptitude of individual pilots, the type of equipment operated, the prevailing geographic and climatic conditions of the local operational environment and other particulars, specific to each operator and/or operation.

3.2 Scope

These best practices are intended to be reviewed and understood by HAC Members, operators, and clients of operators involved with Heliski operations.

3.3 Document Layout

The HAC Heliski Training Best Practice document is divided into sections. Each section is divided into sub-sections. Each section and sub-section is numbered using incremental decimal numbering.

4.0 Definitions

Heli-skiing: the highly repetitive VFR transportation of professionally guided, recreational skiers, from the bottom to the top of downhill ski runs.

5.0 Qualifications

5.1 Heliski Training Pilot Qualifications

Training pilot selection for Heliski flying is the responsibility of the company Chief Pilot. Below are some recommended considerations when selecting a pilot for this type of training:

- Past experience in mountainous and Heliski operations
- Minimum 2000 hours helicopter Pilot-in-Command
- 100 hours of Heliski operations
- 1000 hours in mountainous terrain
- Prior instructing experience
- Total time on aircraft to be used
- Past experience in geographical region. e.g. Coastal vs. Interior

5.2 Candidate Qualifications

Although pilot selection for Heliski operations is the responsibility of the company Chief Pilot, below are some recommended considerations when selecting a pilot for this type of operation:

- Past experience in mountainous operations
- Total time on aircraft to be used
- Past experience in winter operations
- Past experience in geographical region. i.e. Coastal vs Interior
- Historical decision making process and CRM
- Ability to work with a team
- Trained in accordance with the HAC's Mountain Flying training syllabus

Pilots being introduced to Heliski operations should have been trained in accordance with HAC's Mountain Flying training syllabus, have achieved 500 hours flying in mountainous terrain and 4 years operating in winter conditions. In addition, they shall have demonstrated proficient operational knowledge in all aspects of mountain flight and winter operations.

6.0 Training

6.1 Training time allotted

Initial

Ground School:	Minimum 4 hours
Flight Training:	Minimum 2 hours (*or to competency) *competency must be demonstrated to a pilot with the requisite training pilot qualification who should not be the candidate's initial training pilot.

6.2 Recurrency

Ground School:	Minimum 1 hour
Flight Training:	must demonstrate proficiency to training pilot

6.3 Training records

Training records should be filled out in detail by the training pilot and signed by the candidate. Training records should contain a form of marking system similar to the company's existing system.

Debrief must take place after the flight to address any issues or concerns.

7.0 Syllabus

Training Syllabus should include the following;

7.1 Weather

- Weather briefings in the morning with guides
- Weather trends for the day/area
- Knowing your weather in the morning sets the tone for the rest of the day
- Low density snow or wet snow (not always the same from one drainage to the next)
- Poor weather routing
- Sometimes best to wait it out

7.2 Morning briefings

- Weather briefings
- Assign frequencies (multiple aircraft)
- Day logistics
- Icing forecast
- Client weights (can increase throughout day)
- 'Go-no-go' calls

7.3 Visibility

- TC weather limitations
- Visibility limits will increase when operating on overcast days, glaciers and snowfields

7.4 Reference Management

- Always maintain your reference
- Turn towards your reference
- 'No hover' landings to minimize white out

7.5 Pilot Decision Making

- How a chain of events can lead to an accident or incident
- Weather
- Client pressures
- Stress
- Peer pressures
- Personal pressure
- Cultural factors

7.6 CRM

- Communications with guide
- Communications with other pilots

7.7 Aircraft Performance

- Use the HOGE or WAT charts for the aircraft to be used
- Rarely do we have the opportunity to land on a flat level surface where the HIGE chart is effective
- Whichever performance chart is used, pilots should pay close attention to variations in density altitude due to temperature deviations associated with: time of day, altitude and the development of weather systems
- Temperature and altitude affect aircraft performance, aircraft payload will usually need to be adjusted as seasonal and daily values change
- It may be advisable to use the ICAO standard temperature lapse rate of 2 deg. /1000 ft. unless actual temperature can be determined
- Adjustment to the calculated performance may be required if the actual temperatures are significantly different
- Environmental conditions such as down-flowing air, turbulence and forced downwind takeoff may also affect power management.

7.8 Hazards (Avalanche, Cornice)

- Landing at pick-up areas
- Tree bombs, creeks, rotten snow, isothermic snow, etc.
- Use the guide as a resource to identify good and bad LZ's.
- Normally, large trees in an area are a good indicator of a safe LZ
 - Use Caution during periods of high load and poor stability
 - Sometime safer to stay on a top landing
- Pay attention to daily avalanche hazard
- If you don't like the area don't land there
- Cornice issues

7.9 Evolution of a typical ski day

- Typical to the operations in question

7.10 Staking/Flagging system

- Landing areas may need to be identified and staked prior to landing with skiers. Guidelines for flagging may need to be established by the operator as applicable.
- Flagging in a standard manner for each area may be advisable
- Flagging on bright and sunny days may be advisable in some areas
- Evaluation should include approach and departure path(s), proximity to hazards, prevailing wind, and cornices.
- Natural references may be advisable at some flagged sites, especially bowls
- Double flagging may be appropriate to indicate orientation critical to a site.
- Lead-in or lead-out flags may be distinguished from landing area flags by orientation, colour, or placement
- In a bowl, lead-in flags may be used to indicate wind and approach path
- Setting of 'traps' for different types of helicopters, ie. Blade clearance Astar v.s. 212
- Discuss staking with guides

7.11 Multiple Aircraft Operations

- A Job Manager should be assigned to speak on behalf of the crew
- Coordinate daily logistics so aircraft are not working in close proximity to each another

7.12 Weight and Balance

- In addition to the performance calculations aircraft weight and balance should be monitored.
- Using the most current C of G data, weight and balance calculations should require actual passenger weights. If so, passengers should be

weighed dressed to ski with all of the equipment they intend to carry including ski boots, skis, poles and packs.

7.13 Guest Management

- Guests must be reminded that following the expectations laid out in the morning safety briefings is imperative.
- Pilot and guide shall have a final say to “call” the day if guests are becoming a hazard.

7.14 Heliski Baskets

- Although basket locations may differ from company to company it is imperative the pilot gets confirmation from the guide that the basket is closed and the locking mechanism in place.
- ‘Basket closed’ and ‘shoulder’ checks prior to takeoff may be necessary in some cases.
- Guides should use extreme caution to ensure that snowboards are properly secured prior to the helicopter taking off.

7.15 Rescue Plans

- A rescue plan shall be established by the heliski company and reviewed annually by the operator.
- Rescue Plan shall be reviewed during initial and recurrent heliski training
- Medivac procedures.

7.16 Safety Briefings

- It is the Pilot-in-Command’s responsibility to ensure every skier receives the necessary briefing prior to initial flight. This briefing must, of course, include the standard passenger briefing, as defined in the CARS.
- In addition, operators may wish to include information specifically related to heli-skiing operations, such as:
 - Proper way to approach a running helicopter
 - Carrying skis and boards around helicopters
 - Hazards around helicopters
 - Main rotor
 - Tail rotor
 - Never ski past your guide
 - Never ski up to a helicopter
 - Remove skis at least 20’ away
 - Never grab hold of the pitot tube
 - Do not use aircraft to bang snow off boots
 - Huddle-style grouping when aircraft approaches
 - Proper way to disembark

- Huddle next to the guide's pack on top of the runs
- Hold onto loose items and do not follow if they blow away
- Proper use of doors
- Heliski-style hot loading and unloading
- Proper use of and storage of 'ABS' or similar packs around the aircraft
- Conduct and expectations in the event of an accident
 - Hazards of blades turning if exiting the aircraft in a panic
 - Exiting the aircraft if located in a precarious position
 - Cornice
 - Ledge etc..

7.17 Rescue Gear

- The aircraft shall have aboard the requisite safety gear for the operational area.

7.18 Airmanship

- Don't overfly guests and guides
- Familiarization with terrain layout and ski runs
- Snow and ice can fall from the bear paws
- Inform all other pilots if experiencing weather issues on the way or if icing is encountered
- Use of and removal of intake covers

7.19 Personal Protective Equipment

- Recommend that Pilot's should wear transceivers
- Carry snowshoes on board for self-rescue
- Warm clothing for self-rescue
- Avalanche bags for clients. Proper handling around helicopters.

7.20 Flight watch

- Ski operations typically have an established flight watch system and it is extremely important to follow radio protocol
- Frequent check-ins with company dispatcher
 - Every 30 min., or as established
- When changing operational areas
- Call dispatch when on your last run before lunch
 - Advise when next call in will be
- Radio procedures relative to the operation

7.21 Wind

- Never assume wind conditions at LZ (winds can do bizarre things in the mountains)

- Know the prevailing winds from the morning meeting

7.22 Recces

- Recces are not necessarily required for each landing. However, when performed, we are obtaining all relevant information for a safe landing.

7.23 Pilot Flight and Duty Times

- Given the inherent psychological demands involved with heliskiing, pilot duty days and flight hours should be monitored closely.
- Given the highly varied demands and parameters within specific heliski operations, it is advisable to manage flight duty days with the following considerations in mind:
 - Accumulated daily flight hours in order to gauge a rotation schedule
 - Typical weather patterns in a rotation
 - Personal fatigue limits
 - Average “no fly” days in a rotation
- An industry standard for pilot rotations in heliski operations is 2 weeks on and 2 weeks off.

7.24 Avalanche Control

- Whoever performs avalanche control should follow a separate and documented procedure for this work.

Appendix A Training Record Sample

PILOT TRAINING RECORD

Heliski Training Initial € Recurrent € (Check ✓)

E -	Exceeds
S -	Satisfactory
S/B -	Satisfactory W/Briefing
U -	Unsatisfactory

Name: _____ Date: _____
 Licence Number: _____ Training Pilot: _____
 Pre-flight _____ Flight: _____ Post-flight: _____ Type & Reg: _____

Check Details		E	S	S/B	U	Comments
1.Heli Ski Procedures	A. Exterior Snow and Ice Clearance					
	B. Breaking Ground					
	C. Blowing Snow Effect					
	D. Climb Track- Maintaining Visual Reference					
	E. Flagged - Approach and Landing					
	F. Un-Flagged – Approach and Landing					
	G. Snowball Avoidance at Touchdown					
	H. Flat light Visual Effects - Closure Rates					
	I. Steep Approach					
	J. Flat Approach					
	K. Reference management					
	L. Power Checks					
	M. Departures from Stake					
	N Terrain following					
O. Pilot Decision Making						
P. Flight Watch protocols						
2.Reduced Visibility	A. Climbing and Descending in Low Vis					
	B. Decision Points					
	C. Course Reversal- 180° turn					
	D. Whiteout Effect- Recognition and Effect					
	E. Closure Rates in poor Visibility					
	F. Refractive error on Windscreen					
	G. Failures in Reduced visibility					
3.Pre Flight	A. Aircraft Performance					
	B. W & B/Group Weights					
	C. Weather check					
	D. Safety Briefings					
5.Other	A. Flight reports					
	B. T4 issues in the 407					
	C. Avalanche/Cornice Hazards					
	D. Rescue Plans Review					
	E. Rescue Gear and PPE					
6. General Assessment						
7. Other						

Both Pilots must sign this document

Training Pilot Signature

Trainee Signature