



Interagency Aviation Lessons Learned



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Subject: Changing of the Seasons

Area of Focus: Aeronautical Decision Making

Distribution: All Aviation Operations

Discussion: On March 20, 2021 at 9:32 pm GMT, the Spring Equinox occurred in the Northern Hemisphere marking the transition from winter into spring. Operating in an environment where the season changes from winter to spring can be challenging. The following event occurred during this transition last year and provides us all with a few lessons learned.

A Piper Super Cub performing a DOI mission decided to check if an airstrip possessed adequate snow conditions for a much needed “rest break.” The gravel airstrip, 4100 feet long and 150 feet wide, is only maintained during the summer months and was covered with snow.

Due to the recent warm temperatures, the pilot stated that he was expecting the snow conditions to be soft but, considering the solid underlying gravel airstrip, thought the snow depth would be manageable on skis. During the initial ski-drag, the pilot stated that he found the snow surface harder than he expected, so he decided to land.

After landing, the pilot noted that the snow was wetter than what the ski-drag indicated. Concerned that the snow conditions would continue to deteriorate, the pilot decided to depart as soon as possible. On takeoff, the pilot stated that the aircraft started to accelerate as expected, but then started to slow as the skis began to penetrate deeper into the wet snowpack. The aircraft came to a stop without incident in the previously laid ski-tracks after approximately 800 feet.

The pilot contacted dispatch to report that he was stuck and would not be able to depart until snow conditions changed. The pilot then began to pack the airstrip to harden the snowpack departure area for the possibility of departing later in the day.



The snow-crust on the snow surface (unpacked areas) rapidly deteriorated throughout the day due to the sun's radiant heat. The pilot stated that it wasn't until approximately 7:00 pm that the foot-packed areas were finally starting to harden.

At approximately 8:30 pm, the pilot stated that he evaluated the potential for a departure or at least a ground slide to see if the snowpack had hardened enough for departure. The pilot also stated that the snowpack was the best it had been since he arrived. His plan was to start a take-off slide, but abort the takeoff if the aircraft failed to adequately accelerate or if the skis started to penetrate beyond what was already foot packed.

During the ground slide, the pilot stated that the aircraft skis penetrated a few more inches than what had been packed and that the aircraft did not accelerate to an acceptable speed (only slightly better than earlier that day).

Prior to the pilot aborting the run, the aircraft skis slid off the packed area and penetrated deeper into the snowpack. As the pilot started to reduce power, the aircraft came abruptly to a stop and started to slowly pitch forward. The propeller swung through the snow but did not lose considerable speed (RPMs). While still under some power, the pilot stopped the aircraft's forward pitching motion by applying full aft stick. The pilot shutdown the aircraft and contacted dispatch to inform them that he would not be able to depart and that he would need to be picked up the following day.

Lessons Learned

Pre-mission Planning:

The pilot departed that morning with no intention of landing at the airstrip. He had not planned or gathered any additional information that would have assisted with landing in that area. A lack of pre-flight planning that would include deviations to the mission, resulted in those hazards and associated risks to remain unmitigated.

Overly Optimistic:

Since there was never any intent to land at the airstrip, the pilot stated that he had not examined previous temperatures, precipitation, and wind that would have assisted him with assessing the strength and the type of snow conditions under the surface crust. This particular geographic area experienced an unseasonably cold, windy, and snowy early April. By mid-April, the temperatures reversed causing a rapidly changing and somewhat unpredictable snowpack. The pilot stated that he evaluated the airstrip with that in mind, but made the mistake of being a little overconfident in the crusts firmness experienced during the drag, which ultimately influenced his decision to land on the airstrip.

Snow Condition Analysis

According to the pilot, his knowledge of the airstrip and its prevailing wind patterns suggested that the southwest portion of the airstrip would contain less snow than the northeast end. There were man-made indicators on the southwest portion of the airstrip that provided relatively accurate snow depth. The snow depth in the airstrip's northeastern portion was unknown due to the absence of snow indicators in that area.

The pilot stated that his knowledge suggested that it was deeper and should have given this more weight in his decision-making.

The pilot stated that even without penetrating the crust during his drag that nearly covered the entire length of the airstrip, he could have done a better job of evaluating the potential for entering deeper snow at some point.

Attributes of a professional pilot:

Exhibit good communication, maintain situational awareness, and act decisively. During his time at the airstrip, the pilot was in constant contact with dispatch, advising them of his situation. The pilot never considered trying to take-off once the propeller went through the snow because he knew it would need to be inspected even though the contact with the snow was minimal. The aircraft was later transported to a repair station via helicopter. The propeller was sent to a certified repair station for evaluation and was found to be serviceable. As a precaution, the engine was also inspected and found to be serviceable.

Survival:

Each aircraft in Alaska has a survival pack with several items required by DOI, the State of Alaska, and Canada. The pilot in this situation was well prepared. Preflight planning should cover these items as well. When was the last time you checked your survival gear?

Bottom line:

Know before you go! Play the “what if” game as it will help prepare you to manage contingencies. Comprehensive preflight planning is an essential element of ensuring flight safety.

We thank the pilot for sharing these lessons learned. Sharing stories like these are an integral part of improving safety by allowing others to benefit from your experiences.

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