

Yute Air Taxi, Inc.

Will Johnson, Pilot & Reporter

Engine Failure & Forced Landing

Date and Time of Engine Failure: August 23, 2013, 3:42 PM ADT

Report Date: August 25, 2013

Location: 5.6 nm WNW of Takotna, 63° 03.338'N, 156° 13.507'W

N35952 Cessna U206F, Amphibious Floats.

On August 22, Yute Air Taxi (YAT) was asked to move six student intern workers from the USF&W Innoko Field Camp to McGrath. It had been hoped that the YAT floatplane could be repositioned to McGrath that evening to get an early start on moving the personnel into McGrath on the 23rd, but due to bad weather and darkness just a few hours away, the flight was postponed until the following morning. It was hoped to leave Chena Marina Airport at 8:00 AM, but the actual lift off didn't occur until 9:30 AM when VFR conditions were finally reported at Fairbanks International. The aircraft was flown from the Fairbanks Chena Marina Airport to the camp with no stop in McGrath in order to start moving the first half of the passengers.

The repositioning and first trip back to McGrath, with three passengers and light baggage, was uneventful. Due marginal but improving VFR conditions, the routing to and from the field station for the first load was via Folger Creek, which is north of McGrath and has the lowest terrain. That did add some flight time as compared the direct route to the northwest of McGrath, which goes near Ophir and Gaines Creek airports, and initially has higher terrain.

After dropping off the first three passengers in McGrath, the aircraft was refueled with 25 gallons of 100LL furnished from the USF&W portable tank, and pumped into the right main tank of the aircraft. Again, the planned routing was north from McGrath through Folgers Creek, but as the weather then looked much improved to be able to fly a direct route, the aircraft was turned towards the northwest not long after take-off. The right tank was used for takeoff and the initial part of the flight up until the engine failed, but there is no reason to believe that sufficient fuel, the fuel grade, contamination, or fuel management could have been a problem.

After approximately 15 minutes of flight, being beyond the highest terrain on the direct route northwest of Takotna, and approaching the Gaines Creek Airport, the engine suddenly stopped producing any power. This came as a complete surprise, as there wasn't

the slightest warning, vibration, engine miss, or unusual sound preceding the power loss, and up until then the engine had been performing flawlessly. After the power loss, there was still no vibration, but a loud, very rapid "clicking" sound was heard that corresponded to the propeller RPM. The propeller felt like it was spinning easily with minimal drag and no vibration. It is possible based only on limited information thus far, that a catastrophic internal engine failure occurred, perhaps crank breakage.

A quick observation of the surrounding terrain did not reveal any satisfactory landing area, as the hills and valleys are mostly covered with Black Spruce, many quite stunted. So, it was at first hoped that some partial power might be restored to make it to the Gaines Creek or Ophir airport, but it was very soon obvious that nothing would restore power or even change the unusual sound of the engine, including trying the left fuel tank, turning on the electric fuel boost, adjusting the mixture, or switching mags. It was then determined that a landing in the trees would be necessary, and that all remaining time and resources needed to be concentrated on making that objective successful. While at that point there should have been no thoughts of saving the aircraft, it was a frustrating thought that kept coming back to know the it couldn't be saved. However, it immediately became clear that it was a matter of survival to concentrate on making the best possible landing under the circumstances, and to forget saving the plane.

The landing was soft, however the aircraft stopped quickly but smoothly due to the trees impacting the floats and wings, particularly the right wing. There was little vertical deceleration, and no pilot injury, however the pilot seat was jammed in its normal position, and wouldn't slide fore or aft. It was not immediately obvious, but it was subsequently determined that the seat frame was distorted. During a later strong attempt to push the seat back, the right front seat roller assembly was forced from the seat rail. Also, it was determined that the aircraft had turned slightly to the right in the last moments of its deceleration, and that it was somewhat nose down. Full flaps were used for landing, and retracted after landing. Aircraft power was immediately shut off, but the fuel was not (as it should have been). The landing gear was up.

After landing, both the satellite phone and DeLorme inReach SE message feature were used to notify USF&W biologist, Jerry Hill, of the engine failure, the location, and that there were no injuries. After a few conversations with Mr. Hill, it was decided to accept an option for the State Trooper to fly over before dispatching a helicopter.

Wind in the area was calm at the time of the forced landing, but did pick up to approximately 5 knots out of the west later in the evening. Ceilings in the immediate area were approximately 1000' with good visibility, however shortly after landing, the ceiling and visibility briefly lowered quite significantly in light rain. This happened again when the State Trooper, Bret Gibbons, arrived overhead in a Super Cub approximately 1 hour after the forced landing, but then shortly after that, the weather improved greatly, with bright sunshine good visibility and blue skies.

There was not a good location to land a helicopter anywhere near the aircraft due to trees, so it was decided walking out to the Ophir Road near Ready Bullion Creek was the best

option. While it is common knowledge that it is important to stay with the aircraft in most cases, walking would have been required regardless in order to have any kind of rescue that night, unless a helicopter capable of a sling operation was available.

Trooper Gibbons was outstanding in knowing the challenges of hiking out to the road, and was exceptionally helpful in plotting the easiest walking course, and going over the obstacles to walking, including difficult surface conditions and creeks. The pilot was well dressed with good quality, high-top boots, had no injuries, was in relatively good physical condition, and had adequate food and drink, with plenty of daylight remaining. Part of the survival equipment and personal pilot equipment carried out was the DeLorme Locator, which continued to report position, as well as the satellite phone. The walking track is shown on the same DeLorme tracking page as the flight tracking.

Walking distance was approximately 1.9 statute miles, and was accomplished between 6PM and 9PM ADT. The biggest challenge for survival away from the plane was in not having the sleeping bag from the plane or shelter in the event the walk couldn't have been completed to the Ophir Road. Being wet from crossing the creeks could have possibly resulted in hyperthermia, although fire-starting materials were carried. From the pick-up point on the Ophir Road, travel was by truck to the new Takotna Airport, then Super Cub to the McGrath Airport. Lodging and dinner was obtained at the Hotel McGrath.

Aircraft Damage:

1. One propeller blade is slightly bent at the tip, which will necessitate a propeller overhaul.
2. The propeller spinner has some dents, probably due to impacting with trees.
3. The left wing has localized damage to the leading edge, but the Flint tip tank appears to be undamaged. There appears to be no wrinkles on the top and bottom surfaces of the wing, including the fuel bay.
4. The right wing has more general leading edge damage, but again the Flint tip tank appears to be undamaged. The wing top and bottom surfaces, including the fuel bay appears to have no wrinkles. Other than the recovery, this will probably be the most expensive part of the airframe to repair. The right flap appears to have some slight damage due to impact with a tree when down for landing.
5. The horizontal stabilizer has some fairly minor leading edge damage; somewhat similar to that often encountered in normal service on gravel runways. The elevators, tail cone, and rudder appear to be in good condition.
6. The fuselage appears to be relatively undamaged, however there is damage to the lower left cowl cheek and left cowl flap area. There is no apparent distortion of the cabin roof, tail cone, or around the float attach points.
7. There may be some slight aileron damage such as might be encountered with "hangar rash", but it doesn't show on the photos that were taken.

8. Although it was not possible to check the bottom of the floats for damage, they and the struts and flying wires appear to be in good condition. The covers under the nose landing gear appear to have sustained some damage, but they are easily to unscrew and straighten or replace.
9. The pilot seat is distorted and won't slide on its seat rails.
10. Obviously, the engine will need to be replaced.

Additional notes:

1. No attempt was made, as should have been, to turn the propeller to feel for compression resistance after landing.
2. Aircraft electrical power was turned back on later to talk to the State Trooper, and may not have been turned back off.
3. There were no fuel or oil leaks.
4. The dipstick shows the presence of engine oil, which is dark, but no sign of metal contamination. The oil level is difficult to determine, due to the plane not being level.
5. A limited look at the engine through the front of the cowl shows no obvious engine damage. The cowl was not removed.
6. There were a small number of miscellaneous items secured by the cargo net in the rear baggage area, and they stayed in place.
7. Life jackets are the Stern's "belly pack", approved for use in Yute Air Taxi Aircraft, and were worn by the passengers during the flight and before boarding. They are a manually activated design.
8. The ELT did not activate upon landing, and there was no need for it to do so, as notifications had already been made.
9. The passengers received a thorough safety briefing before boarding the aircraft, including how to operate the rear cargo doors if the flaps are down.
10. The technology that is being required for these type of flights definitely proved its worth in this instance, especially the tracking, messaging, and satellite telephone phone communications.