AIRBORNE PUBLIC SAFETY ASSOCIATION

The Safety Wire

November 2019

WHAT IS YOUR RED LINE TODAY? Just like the machines we maintain and fly, we have a limited amount of power available to deal with tasks that we are subjected to. And just like our aircraft, the amount of power available varies based on the environment and the condition of the various components that make up the machine. We know that differences in temperature and humidity can influence aircraft performance. Also, age, wear and tear and maintenance practices change how well various mechanical components perform. If we ask the machine to do something that it does not have the power to do, the mechanism will simply fail to accomplish the task and may even break.

As aircrew members or maintainers, we are given various tasks throughout the day. The successful completion of each task requires a different level of performance. If we do not have the requisite human horsepower, we will fail to complete the task satisfactorily. This equation translates into the all-too common 'human error' we hear about constantly. Exceeding human performance available is a contributing factor in many Loss of Control (LOC) accidents.

Far too often, we respond to this problem by suggesting we simply be careful, mindful, or more professional. None of those solutions work because they do not address the cause for the lack of power available. Wanting to be careful, or professional, or dedicated does not influence performance. So, what does?

There are long term performance influencers, similar to the long-term maintenance program we use for our aircraft. The training we receive, safety culture we choose to nurture and operational infrastructure we create can build skillsets and create an environment that allows us to perform at our best. Our age, experience, diet and attitude towards our job can increase or decrease our personal horsepower over time.

As the weather can impact aircraft capabilities, short-term factors have a huge impact on human performance. Just a few of these elements are fatigue, medication, illness, stress, noise and temperature.

Trying to self-monitor most of these human performance influencers is like trying to determine aircraft performance by looking at how the air moves around it while it's sitting on the ramp. The impact in both cases is nearly impossible to see, and that impact doesn't become apparent until it causes a failure. For the aircraft, we have detailed maintenance records, performance charts in the aircraft handbook or instrumentation with green, yellow and red markings to depict limits. For people, we generally do not have a chart or gauge we can use to determine power available. One tool available to us is a Flight Risk Assessment Tool, or FRAT. If we choose to use the FRAT as it was intended, we can determine the power available for the entire crew before any difficult tasking is placed on them. We can also look for ways to increase power available before those difficult moments arise. Think of the FRAT as a performance chart for you and your crew. Know where you all are at before going out to fly or perform maintenance. Once you start being honest with each other, you will realize how often you were operating with a false assumption of what you and your coworkers were bringing to the job each day. You will know where the red line is before you cross it.

"The only excuse for aviation in any service is its usefulness in assisting the troops on the ground to successfully carry out their operations.

~Alfred Cunningham
Marine Corps Gazette, 1920

APSA Maintenance Staffing Survey

APSA invites all members to participate in our third Maintenance Staffing Survey. Please take a few minutes to answer our short survey so we can better understand the present status, and future needs, of public safety aircraft maintenance. All entries are kept strictly confidential and a summary of the results will be presented in a future newsletter. Thank you for your time and assistance. Don't delay; survey closes on December 2nd.

TAKE SURVEY

ONLINE MEETINGS

APSA conducts regularly scheduled online meetings for safety officers, maintenance technicians, SAR personnel, and UAS operators via a conference call you can join using your computer, mobile device or phone. Online meetings are open to any APSA member. Contract maintenance providers to APSA members are welcome to participate in the maintenance meeting as well.

The schedule for upcoming APSA online meetings is as follows.
If you would like to join, send an email to: bsmith@publicsafetyaviation.org

UAS:
Wednesday, Dec 18, 2019
1:00 PM - 2:00 PM EST (1700 UTC)

SAR:
Tuesday, Jan 7, 2020
1:00 PM – 2:00 PM EST (1700 UTC)

Safety Officers:
Friday, January 10, 2020
1:00 PM - 2:00 PM EST (1700 UTC)

Maintenance:
Wednesday, January 22, 2020
12:00 PM - 1:00 PM EST (1600 UTC)

"Not all readers are leaders,
But all leaders are readers."

~Harry S Truman

RESOURCES

Transport Canada Aviation Safety Newsletter:
https://www.tc.gc.ca/en/services/aviation/publications/aviation-safety-letter/issue-3-2019.html

NASA Newsletter – ADS-B:
https://asrs.arc.nasa.gov/publications/callback/cb_478.html

Medications and Flight:
https://www.faa.gov/licenses_certificates/medical_certification/media/OTCMedicationsforPilots.pdf?sfns=mo

EMERGENCY PROCEDURE OF THE MONTH

In each monthly emergency situation, discuss what you would do, as a crew, to respond to the following emergency. If the EP does not apply to your specific aircraft, think of something similar.

Compressor Stalls or Cylinder Detonation in flight

Reality Check…

***Note:** The following reports are taken directly from the reporting source and edited for length. The grammatical format and writing style of the reporting source has been retained. My comments are added in red where appropriate. The goal of publishing these reports is to learn from these tragic events and not to pass judgment on the persons involved.*

Aircraft: Cessna 208 Caravan
Injuries: 2 Fatal
TSB#: A00W0177

http://www.bst-tsb.gc.ca/eng/rapports-reports/aviation/2000/a00w0177/a00w0177.html

A Cessna 208 Caravan I on amphibious floats was ferrying members of the Royal Canadian Mounted Police (RCMP) Emergency Response Team. At about 1645 Pacific daylight time, three team members, two dogs, and gear were unloaded on a gravel bar across from the mouth of the Jennings River. The aircraft departed for the Teslin airport at about 2355 with the pilot and one RCMP engineer on board. Shortly after take-off, the aircraft was seen to pitch up into a steep climb, stall, then descend at a steep angle into the water. The aircraft was destroyed, and the pilot and the passenger were fatally injured.

After unloading the passengers and their equipment, the aircraft was pushed off the gravel bar, and the pilot proceeded with the engine start at approximately 1705. The aircraft was still pointed toward the beach, and the pilot used a considerable amount of power to turn left to taxi out toward the proposed take-off area. In doing so, the aircraft became beached past the location on the gravel bar where the passengers had been dropped off. Over the next six hours, the pilot tried to dislodge the aircraft and was in and out of the cold water with a small shovel and a paddle trying to dig out the gravel from under the back part of the floats. The pilot also used reverse thrust from the engine to try to move the aircraft. ERT members assisted as they set up their camp. The aircraft was dislodged at about 2320.

There were discussions among the pilot, the engineer, and the other RCMP members about the advisability of flying back to Teslin at night. The pilot was offered shelter, hot food, and drink, but decided to depart for Teslin, with the engineer agreeing to accompany the pilot. At 2350, after the engineer had pumped the floats, the pilot started the aircraft and taxied down the lake for a short distance before returning to start the take-off run. The pilot took off downwind in the same northerly direction as the RCMP boat. When the members on the boat saw the approaching aircraft, they flashed their lights. The aircraft altered course and passed over the boat at about 100 feet, then entered a steep climb. At the top of the climb, it stalled and yawed to the left. The aircraft descended and struck the water in a near-vertical attitude, at approximately 2357, during the hours of darkness.

The aircraft struck the water about 200 metres from the RCMP boat, which responded immediately. They observed the aft fuselage and empennage descending below the surface, and the emergency life raft deploying and inflating. Due to the nature of the impact forces, the accident was not survivable. The pilot was wearing his seat belt but not his shoulder harness, and the passenger was wearing his seat belt and his right shoulder harness. The emergency locator transmitter did not activate and was not recovered during the salvage operation.

Findings as to causes and contributing factors

1. The pilot's decision to depart from the unlit location was likely the result of the many psychological and physiological stressors encountered during the day.
2. The pilot most likely experienced spatial disorientation—precipitated by local geographic and environmental conditions—and lost control of the aircraft.

Findings as to risk

1. Without a safety management program that routinely disseminates safety information, pilots may be inadequately sensitized to the limitations of decision making and judgement.
2. Without useable SOPs, the pilots in some instances operate without clearly established limits and outside of acceptable tolerances.

Aircraft: **Bell 206B**
Injuries: **None**
TSB#: **A11C0152**

http://www.bst-tsb.gc.ca/eng/rapports-reports/aviation/2011/a11c0152/a11c0152.html

A Bell 206B, was on a local training flight with a student pilot and instructor on board. The student pilot entered a practice 180° autorotation to a planned power recovery. When the student initiated the power recovery, the rotor rpm decreased. The instructor took control and completed an autorotation. The low-rotor-warning horn activated and remained on during the autorotation. The helicopter landed firmly yet not hard enough to activate the emergency locator transmitter. The rotor then struck the tail boom and the mast separated just below the rotor head. The helicopter was then shut down and the crew exited without injuries.

The accident flight was the second local training flight of the day for the student pilot upgrading to the Bell 206 helicopter. The flight consisted of 180° autorotations both to touchdown and to power recovery. The accident sequence was the sixth 180° autorotation and was flown to a planned power recovery. The instructor rolled the throttle to idle to simulate engine failure and the student pilot, who was the pilot flying (PF), immediately lowered the collective and flew a coordinated turn in autorotation towards the planned landing spot on the runway threshold. At about 200 feet above ground level (agl), the PF began the power recovery and rolled the throttle to full power. The engine began to spool up. As the PF began to level the helicopter with cyclic in the power recovery, the instructor checked whether the rotor rpm was at the required 100%. The instructor noted that the rotor rpm was decaying through 94% and immediately confirmed that the throttle was full on and collective lever was full down. The instructor took control of the helicopter and began an autorotational flare at about 50 feet agl. The low-rotor-rpm horn sounded, indicating that the rotor rpm was decreasing through 90%. The instructor flared aggressively to maintain rotor rpm and to ensure the helicopter did not overshoot the intended landing area. The low-rotor-rpm horn remained on, as the instructor leveled the helicopter and used collective to cushion the landing as much as possible. As the instructor was raising the collective, the crew heard a loud noise coming from the housing above them. The touchdown was firm and the helicopter slid about 5 feet, but remained on the runway surface. A series of loud clattering noises

came from the upper deck. The blades swept by abnormally low finally clipping the tail boom as the helicopter stopped. The crew shut down the engine and exited from the helicopter.

Findings as to causes and contributing factors:

1. At some point, moisture had entered the transmission oil causing contamination and corrosion of the internal components of the freewheel assembly and oil system.

2. Blockage of the restrictor fitting in the oil-supply line by corrosion products resulted in reduced oil flow.

3. Operation of the freewheel assembly without adequate lubrication resulted in damage and overheating which impaired its proper functioning.

4. When the damaged-freewheel assembly did not engage, engine power was not transmitted to the rotor drive train during an attempted power recovery autorotation.

5. After touchdown, the freewheel engaged and the resultant torque spike severed the main rotor mast and caused torsional damage to the entire drive train.