OAS-35A
(4/18)

Interagency Aviation Lessons Learned

Subject: Aeronautical Decision Making – Make the Precautionary Landing

Area of Focus: Flight Safety

Distribution: All Aviation Operations

Discussion: Recently**,** a Type 1 helicopter conducting water drops in support of fire suppression experienced a mechanical failure in flight. As the flight crew was finishing their fourth dip, the transmission oil "HOT" light on the caution panel illuminated simultaneously with the temperature gauge climbing to an unacceptable range. These are indications of an imminent transmission failure requiring a "land as soon as possible" response. The crew immediately jettisoned the load of water, contacted aerial supervision with their intentions and made the decision to execute a precautionary landing on a nearby lake shore. During the landing, the pilots detected the smell of hot transmission oil. Once the aircraft was safely on the ground and secured, the pilots exited to check for fire. Although there was no visible fire, the pilots saw smoke coming from the left side main gear input which also had noticeable discoloration. The transmission was replaced and the aircraft was returned to contract availability. This flight crew made the correct decision to land, as continuing flight could have had catastrophic results. This incident is documented in SAFECOM #25-0854.

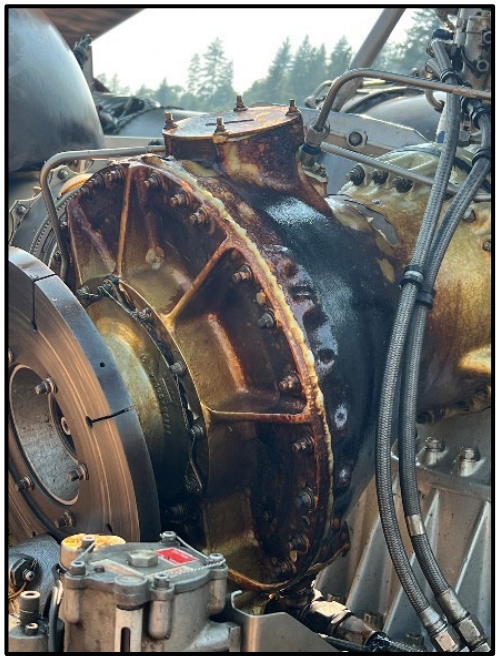

Figure 1: Significant Thermal Damage

Aeronautical decision making is a foundation of aviation safety that requires the ability to assess risks, use sound judgment, and to make sound decisions in unexpected situations. A precautionary landing is a proactive decision allowing pilots more time and options to select the best possible landing site before issues develop into an emergency.

In 2006, Safety Alert (IA 06-02) "Flights Conducted with Maintenance Deficiences" was published that highlighted an alarming trend of events where decisions were being made to continue flight on aircraft with known or emerging maintenance issues. Continuation of the mission was driven by many factors including operational pressure, excessive motivation to return to home base, overconfidence, etc. This year, a trend has emerged indicating a similar tendency to perform one last drop, fly an aircraft back to base where it is closer to the mechanic, and/or civilization instead of performing a precautionary landing.

Planning for a precautionary landing:

- Allows more time to choose a suitable site and make the best possible decision(s). The longer a landing is put off, the less options are available.
- As part of mission planning, identify and evaluate potential emergency landing sites along your route or within your operational area. Always know where you will go if a precautionary landing becomes necessary.

If for any reason pilots find themselves in a situation where a mechanical issue is developing, accept what is happening and land as soon as possible. Don't make the situation worse by trying to continue the flight when it's not necessary or appropriate.

Figure 2: Successful Precautionary Landing

/s/ Keith C. Raley
Keith C. Raley
Chief, Aviation Safety, Training, Program Evaluation, and Quality Management
DOI, Office of Aviation Services

/s/ Lori Clark
Lori Clark
Branch Chief - Aviation Safety Management Systems
USDA, Forest Service