



Interagency Aviation Lessons Learned



No. IALL 07-01

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**From: Director, Fire and Aviation Management, USDA – Forest Service
Associate Director, Aviation Management Directorate**

To: All Aviation Users

Subject: Interagency Aviation Lessons Learned

A highly successful safety culture understands that every person in the organization accepts that safety is a conscious and ongoing mindset. Part of this conscious and ongoing effort is to continuously seek out and eliminate latent defects within our systems and cultures. A cornerstone of our ability to accomplish this is the development and dissemination of key lessons learned from actual aviation mishaps. Lessons Learned are used in numerous forums throughout the government and industry to identify information that has the potential to contribute in a positive manner to each organization's knowledge base. In a similar manner, Interagency Aviation Lessons Learned are intended to identify information related to existing USDA - Forest Service and Department of the Interior (DOI) policies, procedures, processes, techniques, training, systems or equipment that can add value to the Interagency Aviation community. Interagency Aviation Lessons Learned should:

1. Identify problems or known requirements and recommend potential solutions.
2. Provide value added information for the planning and execution of aviation operations.
3. Provide recommendations to modify or update policy in an effort to increase operational efficiency.
4. If necessary, identify a specific organization that should be responsible for taking action on a specific recommendation.

This first issue of Interagency Aviation Lessons Learned has been designed to share knowledge gained from recent aviation mishaps in an effort to prevent future mishaps and to share aviation best practices and observations with the Interagency Aviation Community. However, Lessons Learned should also include information obtained from aviation program evaluations, inspections, site visits or other related activities. Note that Lessons Learned are not intended to replace formal mishap reporting and investigation processes, but to provide those in the field and in management with more timely communication of information that can be applied to improve the operational effectiveness and efficiency of aviation operations through increased safety.

In an effort to maintain focus on the teaching points contained in each lesson learned, emphasis will be placed on the *What Happened* and the associated *Lessons Learned*. Identification of the individual or agency involved will not be included, nor will reference to a specific location. Lessons Learned concentrate on the important part – what you learn from this actual aircraft mishap that might prevent you from being involved in a similar one in the future.

These Lessons Learned will be disseminated electronically in a timely manner and will also be added to the USDA-Forest Service Fire & Aviation Management home page located at: <http://www.fs.fed.us/fire/>, and the AMD home page located at: <http://amd.nbc.gov/>.

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Interagency Aviation Lessons Learned



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Subject: Interagency Aviation Lessons Learned

Area of Concern: Aviation Operations

Distribution: To all aviation users

FY 06 Accident #1

Aviat Husky

What Happened.

This accident occurred during an authorized training clinic when the mentor pilot of an Aviat Husky A-1B allowed the non-carded pilot that he was instructing to conduct a landing to a gravel bar without having first conducted a proper briefing and preflight while utilizing the principles of Operational Risk Management (ORM) and risk analysis.

The mentor pilot's situational awareness was degraded because of a pressing personal issue that resulted in distraction and poor intra-cockpit communications. As a result, the mentor pilot was literally "along for the ride" believing that the trainee was planning to perform a low approach when in fact he was planning to make a full-stop landing.

After touching down (which was a surprise to the mentor pilot), the confusion and lack of communication that started in the preflight briefing, continued as the aircraft, under the control of the pilot receiving training began to head toward a tree line on the left side of the landing strip. As the aircraft slowed to a speed where a go-around was not possible, the mentor pilot finally recognized what was happening and came on the controls in an attempt to try and stop the aircraft by retracting the flaps and applying aft stick. Unfortunately, the trainee was forcefully applying the brakes at the same time, which **resulted in the aircraft flipping inverted** and finally stopping. Fortunately, no one was injured in this accident and the aircraft was repairable.

1. **Operational Risk Management (ORM)** – ORM allows those associated with or participating in an aviation operation to identify the hazards, assess the risks, and develop mitigating actions & strategies in support of flight related activities. The proper place for applying ORM is **BEFORE** the flight. In this event, the evolution of having the trainee execute an off-airport landing was not discussed during the preflight briefing. As evidenced by the outcome of this accident, their attempts to apply ORM during this maneuver once the aircraft touched down and was headed for the trees, were not fully successful. Landing to an unmaintained gravel bar without identifying the hazards in the approach, landing, and departure zones, then trying to mitigate those risks by adjusting the variables available to the pilot (i.e. touchdown point, flaps, airspeed, brakes, etc.) as the aircraft is rolling toward the trees is a Risk Management failure.

Lessons Learned.

2. **Mental Focus** – The mentor pilot was clearly not focused on his piloting responsibilities, as a result of distractions associated with non-flight related issues. Aviation is an unforgiving endeavor, requiring pilots to compartmentalize their personal issues to fully concentrate on critical flight tasks. Sometimes however, the weight of personal issues can prevent even the best pilots from being able to compartmentalize them. In these cases, it is far better to forego the flight than end up with the wheels in the air.

3. **Communication** – account for a majority of aviation accidents. As such, takeoffs and landings demand the full attention of every crewmember. Ways to avoid this type of accident include:

- **“Planning the flight, and flying the plan.”** Manage risks through thorough planning and resist the temptation to act impulsively. Here, the mentor pilot felt he had communicated one thing (low approach) while the trainee understood the communication as something entirely different (landing). Once on the ground and in extremis, the lack of clear communication continued with both pilots on the controls at the same time, resulting in a bad situation becoming worse. Things in aviation happen fast, even in “slow” aircraft. Good communication, like good ORM, is established in a thorough preflight briefing. The lack of communication between the two pilots is evidence of a breakdown in **Crew Resource Management.**

Statistics show that takeoffs and landings

- **Ensuring that every member of the crew is briefed and can back-brief their portion of the mission.** Additionally, keep in mind that although everyone in the aircraft may not necessarily be crewmembers, everyone in the aircraft has a responsibility to know what’s going on. Remember, communication(s) consists of not just what you say, but more importantly what the person on the receiving end of the conversation hears and understands.

- **Using the aircraft’s Before Takeoff and Before Landing checklists.** As required by FAR Parts 91.9 and 135.83. Had the pilot trainee used the checklist the mentor pilot probably would have recognized the trainee’s intent

FY 06 Accident #2

Cessna 206

What Happened.

A Cessna TU206G, experienced a hard landing at a remote airstrip in Idaho. The aircraft encountered a sinker (dead air) while on final approach to the airstrip at an approximately altitude of 50 feet above the runway and as a result the aircraft instantly lost lift.

The aircraft **hit the ground hard enough to bounce the aircraft into the air**, and then contacted the surface about 20 yards down the airstrip and to the right of the centerline. The **right main gear went into a ditch about 2 feet deep.** The main gear came out of the ditch, but the **tail impacted the edge of the ditch, damaging the tail section of the fuselage.** There were no injuries to the pilot or the employee on board the aircraft.

Lessons Learned.

According to Dr. James Reason, there are two categories of “Unsafe Acts”, Errors and Violations (see page 121 of his book *Managing the Risks of Organizational Accidents*).

- **Errors:** “..are essentially information-processing problems and require the provision of better information, either in the person’s head or in the workplace.” In essence, errors represent the mental or physical activities of individuals that fail to achieve their intended outcome.
- **Violations:** “...on the other hand, have their origins in motivational, attitudinal, group and cultural factors, and need to be tackled by countermeasures aimed more at the heart than the head.” Basically, violations are a willful disregard for the rules and regulations that govern the safety of flight.

The decision to land at the remote airstrip for lunch was made because; (1) The pilot was carded for back country landing missions, and this particular airstrip was the nearest airport (the next closest locations was less than 15 minutes away by air) and because the employee had flown into this location before. No risk analysis was employed to assess the hazards associated with flying into this backcountry, which would include weather, communications, physical features of the airstrip (level of difficulty to land and takeoff), or the distance to the next nearest airstrip in the vicinity.

The **violations** that occurred were related to the pilot’s decision to subsequently fly the damaged aircraft back to home base. The pilot based his decision on his maintenance experience (FAA licensed Airframe and Powerplant mechanic), However, his actions were in violation of FAR 135.25(a)(2), 91.7(a)(b), 91.13(a) and FSM 5703.3, 5704.7.4 5720.3.2, and 5720.46.2

- **Good planning and risk assessment may have prevented this accident.** The decision to save the added expense of 30 minutes of flying time to return from the mission flight route to a safe environment for landing to take a lunch break placed the employee in a high risk situation. In addition, although not required by current policy, this pilot had not been given a proficiency check ride for back country airstrips in many years.
- **We should never count on the need for all environmental factors to be perfect in order to achieve a successful outcome.** In this case, there was an expectation that exceptional pilot skill would overcome the hazards posed by a short/uphill runway, confined runway overrun area, and unpredictable weather conditions.
- **We need to carefully consider the possible consequences of flying an aircraft with known damage or maintenance problems.** Once the accident occurred the decision was made to fly the damaged aircraft back to its home base. The pilot should have advised the passenger to wait at the remote airport for transport by another aircraft. Again, cost and convenience were factors that became decisive when the passenger elected to return to base in the damaged airplane.

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