

# CALLBACK

From NASA's Aviation Safety Reporting System



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## Focus on Fuel Failures



In the 16 months since fuel related incidents were last discussed in Callback (#283 April, 2003), 47 reports have been submitted to ASRS regarding preventable, fuel related, forced landings. The NTSB database contains a similar number of forced landings caused by fuel problems for the same

period. The NTSB events were classified as accidents due to significant damage and/or injury and therefore were separate from the ones reported to ASRS.

Failure to monitor actual fuel usage, a factor cited in many fuel starvation incidents, was covered in Callback #283. Two additional factors that recur in both the ASRS and the NTSB reports are:

1. Failure to select the appropriate fuel tank
2. Failure to visually confirm the fuel on board during preflight

The following ASRS reports present some lessons learned regarding these two additional "fuel failures."

### Tip Tank Tip: Select the Full One

After selecting the wrong tank, this PA32 pilot found himself in a field with fuel to spare.

■ *My airplane has four fuel tanks. Three tanks were full and one was empty. I did not fill the right tip tank because of [a fuel transfer problem]. After takeoff, the airplane was heavy on the left side and required a lot of right aileron. I decided to burn some fuel from the left tip tank to balance the airplane. I moved the fuel selector valve to the empty tank instead of the full tank. The engine stopped and I started the emergency procedures. I checked the fuel pump and magnetos, called ATC, and looked for a place to land. We made a successful landing in a field. I made a pilot error by not checking the fuel selector valve and also by flying the aircraft with a known fuel problem in the right tip tank....*

### Another Selection Suggestion: Avoid the Empty Tank

This BE35 pilot also inadvertently made a wrong selection and then failed to check the fuel selector position. Luckily, a second pilot was available to land the aircraft while an attempt was being made to pump some life back into the engine.

■ *Prior to entering the traffic pattern for landing on Runway 17, I thought I had selected the fullest fuel tank. On the turn from base to final the engine lost power. I thought I selected the correct tank, but I was wrong. I continued to pump the wobble pump trying to get fuel to the engine to no avail. While I was pumping, the other aircraft occupant was flying the airplane and was able to land the aircraft safely in a field with the gear up. No major damage or injuries occurred.*

### Visual Verification

As this C150 pilot learned, relying on fuel gauge indications alone can lead to an unexpected arrival... down on the farm.

■ *...The plane had been flown previous to our flight, but the fuel gauges showed over 3/8 of a tank in the left tank and 1/2 tank on the right gauge. I flew to a couple of neighboring airports for touch and goes.... After maneuvering in the area of the second airport, I headed for home. At each airport, I noted the fuel level. I could have stopped at an airport that I flew right over, but the right gauge showed 3/8 of a tank and the left indicated slightly less than 1/8 of a tank. I was 30 minutes from home...and could see no problem, based on the gauges. 15 minutes later, at 2,500 feet AGL, the engine quit. I attempted a restart with no success.... I landed in a large farm field with no damage to the plane. Both tanks were found to be empty. The incident was caused by relying on the fuel gauges instead of checking fuel levels visually and not confirming the amount of flying done previous to my flight.*

Although the PA28 pilot who submitted the next report did check the time logged on the previous flight, the aircraft fuel log was not checked. The gauges and a visual estimate of fuel remaining proved inaccurate. If the tanks are not full, a visual estimate of the fuel remaining is just that, an estimate.

■ *...After visual inspection of the tanks, I estimated that there was more than three hours of fuel remaining. The logbook showed that the previous flight was 2.2 hours. With this in mind and useful fuel available of 5.5 hours for full tanks, I assumed that 3.3 hours of fuel remained. After start-up, the fuel gauges showed 1/2 full in both tanks. I was still thinking there was at least three hours of fuel available. Maximum time of the flight was figured at two hours. After 1.4 hours of flying, the engine quit and a successful landing was made in a farmer's field with no injuries or damage to the plane.... After reviewing the logbook on the fueling of the airplane, it showed that the plane had not been fueled the morning of the incident. Checking the fuel logbook with the plane's logbook, it was determined that the useful fuel on board the plane was only one hour....*

A C182 pilot filled the tanks himself and, therefore, did not see any need to bother with a visual check. This report to ASRS points out why a pilot should always confirm the fuel on board.

■ *A landing was made in a field due to engine failure. The day before this flight, I had filled the aircraft fuel tanks. When I arrived at the airport I did not visually check the tanks. I later learned that a local mechanic had done a weight and balance on the aircraft the previous evening. In doing so, he drained all fuel from the aircraft. He did not put the fuel back in the tanks when he was done. The aircraft fuel gauges were so far past empty that they appeared to show full.* ▲

#### ASRS Recently Issued Alerts On...

Lear 25D engine failure incidents
B737-800/900 headset aural alerts volume control
B757-200 overheated wire bundle emergency
Personal Breathing Equipment (PBE) explosion
Eastern U.S. airport taxiway lighting deficiency

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#### July 2004 Report Intake

Air Carrier / Air Taxi Pilots	2461
General Aviation Pilots	752
Controllers	208
Cabin/Mechanics/Military/Other	166
<b>TOTAL</b>	<b>3587</b>

# Preflight Hindsight

**The better prepared a pilot and his or her aircraft are before flight, the safer that flight will be. Since a thorough preflight is a vital step in that preparation, these recent ASRS reports are offered as valuable lessons on avoiding preflight pitfalls.**

## A Casual Cap Check

Loose fuel cap incidents are reported to ASRS on a fairly regular basis. Some aircraft, such as the C182 in this report, may require a ladder to enable a hands-on preflight of the fuel cap security.

■ *After reaching 1,300 feet, I noticed fuel leaking out of my left wing. I then glanced at the fuel gauge and saw that my fuel level was dropping rapidly. I notified Departure [Control] and they gave me priority back to [departure airport]. I landed without incident. When I checked to find what the problem was, I found that a fuel cap had come undone. I had failed to check the tightness of the fuel caps prior to departure. During preflight, I checked to see if the caps were on, but I didn't get on a ladder to check the tightness. This incident could have been prevented if I had done a complete preflight and checked the fuel caps.*

## Latest Flying Fashion: Accessoires pour l'empennage

With his wife's help, this pilot gave new meaning to the term "flight jacket."

■ *I preflighted the aircraft and all was well. Fuel and oil were full, chocks out, tie downs removed, and everything seemed ready. My wife and I then loaded several bags and other items and I seated myself in the cockpit while she departed for home. The taxi out and run-up were normal.... The takeoff roll seemed OK, but upon rotation, there seemed to be a slight vibration in the controls. Then as I was climbing through 1,100 feet, the vibration got slightly worse, which didn't seem normal to me, and I elected to return to [departure airport]. I informed Tower that I had some sort of control problem and needed to return. Landing clearance was granted at once. The landing was uneventful, but as I was taxiing in Tower informed me that there seemed to be something on my right horizontal stabilizer (not visible to the tower on taxi out and takeoff because it was on the opposite side). I taxied to the run-up area and someone from the airport staff removed my jacket from the stabilizer and handed it to me.*

*The jacket had been set down on the stabilizer by my wife and, in the loading process, simply forgotten. I boarded the aircraft from the side opposite the jacket, so I didn't see it either. The vibration in the controls was the jacket flapping in the wind, but I had no way of knowing that and assumed the worst. Had I elected to continue the flight, the jacket would most likely have blown off, but the possibility exists that something worse could have happened and I could have had a severe control problem. The decision to return upon sensing that something was not normal was probably a good one....*

*In the future I will load first and then perform the preflight.*

## From Bad to Worse

Haste is often cited as a factor when safety is compromised. In the following report, the result of a C172 pilot's hasty preflight was bad, but his solution was worse.

■ *An airshow was scheduled to begin in about a half-hour. I was told by Ground Control that I had two minutes to get into position and take off. In my hurry to comply with Ground Control I forgot to remove the tow bar from the front of the plane and began to taxi. The problem was pointed out to me by people [along the taxi route]. I compounded the problem by removing the tow bar without stopping the engine. I was lucky not to be injured!*

*Lesson learned: Do not let anyone or anything cause you to hurry. That is when mistakes happen that can lead to accidents.*

## Shed a Little Light and Avoid the Runaround

A B737 Captain submitted these observations on the proper equipment required for a proper preflight.

■ *The flight was running extremely late when my reserve First Officer arrived at the aircraft. I decided to do the walk-around so that he could get settled in the cockpit. I asked to borrow his flashlight and he handed me a penlight. He told me that it was the only flashlight he carried.... As a Captain I am very uncomfortable with the thought of a preflight or postflight check being accomplished in the dark with a penlight.... We are responsible for ensuring the airworthiness of the aircraft...and this responsibility requires that a proper preflight be accomplished....*

*On the subject of preflight and postflight [inspections], the weather is turning colder back east, but is still warm in the west. Pilots need to remember to bring appropriate clothing (i.e. a warm jacket) to ensure that a cold weather walk-around does not become a run-around.*

