

CALLBACK

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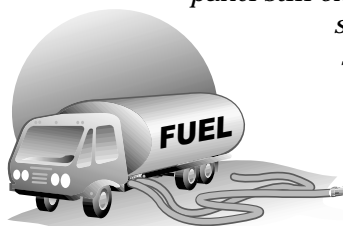
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Gotta Refuel? Follow the Rules

An incident reported to ASRS by an air carrier First Officer describes what can happen when fuel load and balance problems are not detected before takeoff.

■ *Flight was preparing to depart. Gave fueler the fuel load of 1,400 pounds a side, or 2,800 pounds total. Aircraft had 700 pounds a side prior to fueling. Fuel was received and confirmed by 'before start checklist' as 1,400 pounds a side as requested. Walkaround after fueling verified that there were no fuel leaks or abnormalities, and fuel service panel was shut properly. Engine start was normal and we taxied for approximately 15 minutes to Runway 26L. I performed the takeoff and noted a large right wing down tendency upon liftoff. When scanning the instruments, I noted that all of the fuel from the left wing had somehow transferred into the right wing tank, resulting in a 2,500-2,600 pound imbalance. When we realized this, we decided to return to the field asap. About 1 minute later, passing about 2,000 feet, the left engine flamed out due to no fuel in the left tank. The fuel crossfeed was not open, and there is no way to transfer fuel from wing-to-wing by pilot action. We performed the engine failure checklist and declared an emergency. We were vectored for a visual approach to Runway 26R and landed without incident...*



Upon shutdown at the gate, maintenance personnel opened the fueling panel and found several switches on the fueling panel still on, including a defuel switch, which is never supposed to be used in normal fueling and should have been safety-wired closed.

Training manuals state these switches are to be used by maintenance only and can cause fuel to transfer from tank-to-tank if left open with the electric boost pumps on.

Contributing cause was also a broken device on the fuel door which contacts the switch covers, closing the switch when the panel is closed to prevent the switches from being left open.

No one knew why the defuel switch was open to begin with. We were questioned as to whether the fuel imbalance existed after fueling and we failed to notice it, but the Captain and I were positive fuel was balanced after fueling. This was later confirmed by a test fueling with the defuel switch open, which resulted in proper fuel balance.

After the 'before start checklist,' there is no other checklist prior to takeoff which calls for rechecking fuel quantity or balance. The company is investigating the problem.

Many air carriers include 'Fuel Balance/Crossfeed' not only on the Before-Start and Before-Takeoff checklists, but also on the Climb, Cruise, and Descent checklists.

Plane Makes Hay, But Not Airport

A flight instructor learned that use of a checklist by a student during preflight is no guarantee that fuel quantity has been properly verified.

■ *Returning from training flight with student. Approximately 5-7 nm northeast of downtown [airport], the engine lost power and then surged several times. The fuel gauges appeared to be at or near empty. The plane was headed into a 20+ knot headwind. Making it to [the airport] seemed doubtful at best. [I] decided to look for a safe landing area. The nearest and only one was a farmer's hay field. I notified the Tower of my intention and landed safely. I taxied to the highest spot in the center of the field, notified the Tower and remained in radio contact until another aircraft reported us to the Tower. The engine did not stop running until shut down on the ground...*

Before the flight, I observed the student using the checklist to conduct the pre-flight. He said everything was "ok" and ready to go. On run-up before takeoff, I

casually observed the fuel gauges as below one-half full. The procedure followed by the company is to not completely fill the tanks due to the danger of overgross weight problems. The student who conducted the preflight told the Chief Pilot that he felt fuel in the tanks when he stuck his finger in the fill tube. The lack of definite measurement, strong headwinds, and not adding some fuel made this incident take the course it did.

As everyone learns in Aviation 101, any attempt to stretch fuel is guaranteed to increase headwinds. This student and instructor demonstrated lack of safety teamwork. The fuel quantity was not double-checked on preflight by the instructor. Both pilots ignored the low fuel reading on run-up and failed to consider the fuel implications of flying into strong headwinds. Finally, the fuel burn during flight was not adequately monitored. Ultimately, the instructor must take responsibility for the aircraft's off-field landing. ▲

ASRS Recently Issued Alerts On...

A-319 emergency slide event
BE-55 partial gear extension failure
Recurring false GPWS and EPWS terrain alerts
Incidents of runway obstruction by seagoing vessels
Recurring A-319/A-320 brake flange access problems

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Air Carrier / Air Taxi Pilots	2261
General Aviation Pilots	880
Controllers	54
Cabin/Mechanics/Military/Other	140
TOTAL	3335

Braving “The Wave”

Mountain wave conditions occur when air blowing across the upwind side of a mountain range (generally the western side) creates an updraft that is transformed into a turbulent downdraft as the air passes the crest of the ridge. The downdrafts encountered during “wave” conditions can easily exceed the climb capability of aircraft, and are often accompanied by severe turbulence. In the Western U.S., wave conditions often extend hundreds of miles downwind of a mountain range.



Mountain waves can affect *any* aircraft and create a situation where aircraft and pilots are “along for the ride.” More from this A320 Captain’s report to ASRS:

■ *Cruising at FL390, Mach .78, [we] encountered a severe mountain wave that resulted in an overspeed [warning]. Autopilot disconnected, the aircraft pitched up and climbed to FL394. The First Officer retarded the throttles to idle. As the aircraft continued to climb, I extended speed brakes and applied forward stick pressure. The aircraft then pitched down and descended at a very rapid rate. I used the aft stick to recover from the descent, TOGA lock engaged and recovered at about FL375. [We] notified ATC, checked with the Flight Attendants regarding the condition of the cabin, consulted with Dispatch, and continued to destination. No passenger injuries were reported.*

Advising ATC of mountain wave strength and altitude deviations that result, as this crew did, helps controllers manage traffic and alert other pilots to the dangerous conditions.

A “flatlander” pilot from the Midwest discovered that being caught in a mountain wave downdraft at night leaves little margin for error.

■ *I was cruising at 9,000 feet MSL. My destination was [airport in Southwestern U.S.] and I was on an IFR flight plan. While conducting my scan, I noticed that my altitude had dropped about 150 feet. I pitched up to correct this and noticed a continuing drop. I added power and pitched for best rate [of climb], then best angle, attempting to arrest the descent. Finally, I began to climb again after a loss of approximately 700 feet.*

As the MEA northeast bound on this airway is 9,000 feet, I knew that I did not have a large margin for error, so my main concern was in trying to correct the problem. The controller asked about my altitude, and I replied that I...had been caught in a downdraft.

I am from the Midwest and have had no prior experience in mountain flying.

A pilot’s first experience of flying over mountainous terrain can be unforgettably harrowing if sufficient planning has not taken place, and the hazards of mountain flying are not understood. The *Aeronautical Information Manual* (Ch. 7, Sec. 5, Para. 7-5-5) is an excellent starting point for this background. Additional education on mountain flying is available through the FAA Pilot Proficiency Awards (WINGS) Program, and videotapes on mountain flying from local FAA Flight Standard District Office lending libraries. ▲

“Unable to Comply”

Even when aircraft are equipped with the latest terrain avoidance technology, pilots’ exercise of good judgment is vital to how effective the equipment is. The Captain of a B737 described for ASRS how a night approach to an airport in the South Pacific challenged both flight crew and ATC situational awareness.

■ *Flight [was] a B737-800. First Officer (Flying Captain) obtained ATIS, which stated in remarks, “ATC training in effect.” ATC cleared us from 10,000 feet to 2,500 feet on a heading to intercept the localizer for Runway 24, ILS/DME Runway 24 approach. We leveled off at 2,500 feet, which is also the altitude the Captain read back to ATC, to which ATC replied “Affirmative.” We were not given clearance to intercept the localizer and crossed localizer at approximately 20 DME, approximate heading 270 degrees.*

After crossing the localizer, ATC gave instructions to turn right heading 080 degrees. This heading would have us heading toward rising terrain (mountainous) of 7,500 feet

tops approximately 2 miles [away]. We did not turn and asked if it would be a tight turn-around to intercept the localizer. ATC replied again, “Right turn 080 degrees.” We replied “unable to comply due to rising terrain to our right and in front of us.”

We started to initiate a left turn to clear the terrain (we did not receive any terrain warning, but were indicating yellow for rising terrain). ATC asked if we were level at 3,500 feet. We replied level at 2,500 feet assigned. ATC seemed confused at the altitude and asked if we had the airport in sight. In the left turn we obtained visual [sighting] of airport and were cleared for a visual [approach] to Runway 24. There was no further occurrence.

This flight crew showed excellent judgment and commendable resolve in first questioning, then refusing to accept, the doubtful vector from ATC toward rising terrain. ▲