

Off the Radar Screen

The dangers of distractions

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The process of safely operating an aircraft is one that encompasses a great many tasks. Although the flow of these tasks may become routine as we gain experience, the potential for distraction should be considered carefully. Especially during critical phases of flight, pilots can suffer from a loss of situational awareness. Even a moment's distraction can cause critical factors to fall off our personal radar screens, and when that happens, we run the risk of a serious omission or oversight.

Consider the pilot of a Cessna 172S parked with the engine running on the ramp. He was preparing to taxi for departure and thought the parking brake was set when he dropped something on the floor. The pilot slid the seat back so he could retrieve the lost item, and as he did, he sensed the motion of the aircraft. Unable to reach the brake pedals, the pilot struggled to release his seat belt and turn off the engine. Before he could take corrective action, the aircraft tore into two other parked aircraft, damaging the rudder, elevator, and horizontal stabilizer of one of the airplanes.

It is unclear whether or not the parking brake had actually been set, but regardless of the details, the dropped item distracted the pilot from his primary responsibility of maintaining control of the aircraft. Whenever the engine is operating, we must be at the controls and in command.

The use of cell phones is noted as a cause in many traffic accidents, and apparently radio communications can cause similar distractions in an aircraft. Case in point is the student pilot of a Cessna 172M who was taxiing for departure from San Antonio on a solo cross-country flight. A call from ground control distracted him, and he failed to see a 2,000-gallon avgas truck in front of him. The right wing of the aircraft struck the truck, damaging the wing and causing the aircraft to spin to the right. The airplane's propeller then sliced into the truck, damaging the truck's rear bumper and main avgas storage tank. Thankfully, the pilot shut down the engine before the propeller ruptured the truck's avgas storage tank, and a post-crash fire was averted.

Safety experts recommend that drivers stop their cars when talking on the cell phone. Pilots, however, are often required to use radio communication during flight (and ground operations), but the old saying—aviate, navigate,

communicate—is a good rule to follow. Pilots must learn to divide their attention and maintain focus by following a hierarchy of task importance.

No Gear Here

The pre-landing phase of flight is particularly prone to distraction. As aircraft converge on a common destination, pilots find themselves confronted with rapidly changing conditions. As a result, they often find themselves “behind” the aircraft, unable to complete all required tasks as the workload increases and the flight comes to a conclusion.

Such was the case for the pilot of a Cessna 172RG (retractable landing gear). The pilot, who was flying solo to gain the experience needed to earn his commercial pilot certificate, had made three uneventful touch-and-go landings when the traffic in the pattern increased from two to five aircraft. The pilot managed to sequence himself in with the other aircraft, but failed to complete the necessary pre-landing checklist. As a result, he made a gear-up landing, causing substantial damage to the aircraft.

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Pilots use a variety of strategies to ensure all critical tasks are completed before landing. Many perform the critical pre-landing items early in the approach sequence, configuring the aircraft during the initial approach phase of the flight, perhaps several miles from the airport. While this can help lessen the workload in the pattern, such a strategy would do little for a pilot flying a closed pattern.

Checklists offer another safe landing strategy and redundancy. For example, some pilots, in addition to the standard written checklist, use the mnemonic “MPG” to double-check “mixture, prop, and green (landing gear) lights” or “GUMP” for “gas, undercarriage, mixture, and prop” on final. Should the pilot become distracted during the normal sequence of tasks, this simple reminder can help catch the most critical items in the pre-landing checklist.

Pilots should never rely solely on memory. Consider the pilot of a Cessna T210M making an approach to landing at Hanford, California. While on a right downwind for Runway 32, the pilot completed the pre-landing checklist "from memory." Unfortunately, the pilot's memory was less than perfect, and as he wrote in his report, he "forgot to say 'three green.'" The resulting gear-up landing stranded the aircraft about mid-field on the runway. When asked if he had heard the gear warning horn, the pilot reported that he did not, as he had a headset on.

Departure from standard procedures is often a prelude to distraction and missed checklist items. The pilot of a Beech K35 learned that lesson when he decided to make a straight-in visual approach to Jefferson County International Airport (0S9)—a nontowered airport—only 10 minutes from the point of departure. Traffic was departing the airport, and the pilot stated that he became distracted while discussing the traffic with his passenger. He decided to make a straight-in approach to the runway—a decision that may have been his undoing. Normally the pilot would check gear down while on downwind, but on this flight, he didn't fly the standard pattern. Unfortunately he didn't use a checklist either and failed to lower the gear. The gear-up landing resulted in damage to a fuselage bulkhead, but both the pilot and his passenger escaped the ordeal unscathed.

Even when pilots establish good flying procedures and routines, distraction and failure to follow checklists can result in a gear-up touchdown. The pilot of a Mooney M20K learned this lesson when making an approach to New Philadelphia, Ohio. During the approach, he became distracted by radio frequency changes and as a result failed to complete his normal pre-landing checks. According to the National Transportation Safety Board report, "The pilot thought he had lowered the landing gear at the final approach fix, but 'did not check it down and locked.'" According to the report, the aircraft was "faster than normal" as it crossed the runway threshold, and it ballooned during the landing flare. An audible gear warning

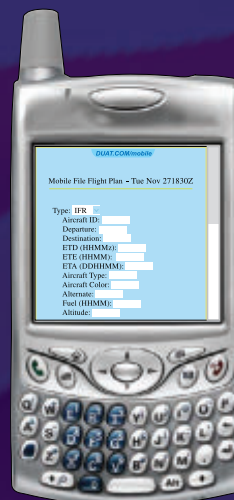
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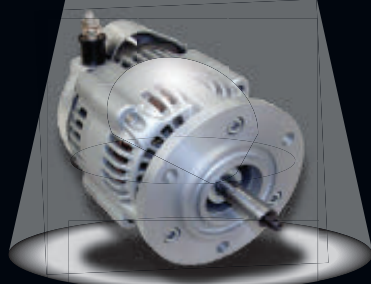
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sounded, and the pilot attempted a go-around, but he was too late. The aircraft skidded some 850 feet down the runway and then came to rest, suffering damage to the lower fuselage skin and substructure. As the pilot noted, the accident could have been prevented had he verified the position of the landing gear prior to landing. He also said that he was distracted during the approach with changing radio frequencies and correcting for being high and fast on the approach.

Fuel Mismanagement

Forgetting to lower one's landing gear may be a common malady in the land of distraction, but it certainly isn't the only one. The pilot of a Ryan Navion carrying three passengers became distracted while on approach to Three Forks, Montana. The pilot had begun his flight with the fuel selector set on the right tip tank and later had switched to the left tip tank. His plan was to switch to one of the main (inboard) tanks for the approach and landing, but that plan was derailed. While on the approach to Three Forks, the pilot became distracted talking to his passenger, and failed to complete all items on the pre-landing check.

About 2.5 miles from touchdown, the Navion suffered an engine failure due to fuel starvation. The pilot scrambled to reposition the fuel selector to draw from the main tank, but it was too late. The aircraft touched down off airport on rough terrain, sustaining a broken wing in the process. Fortunately, neither the pilot nor any of his passengers were injured in the ensuing crash.

One strategy to overcome the problems of distraction is to move some critical checklist items earlier in the sequence of the flight. Some pilots, for example, reconfigure the fuel system for landing when initiating the descent from cruise flight. By completing this item earlier in the sequence, the potential for missing this item during a busier phase of flight is minimized.


In commercial operations, such distractions are eliminated through the observance of a "sterile cockpit" procedure. Such a procedure requires that all unessential communication be eliminated at altitudes below 10,000 feet or when not in "cruise" flight.

Tips for Avoiding Distraction

Distraction can be a problem in any phase of flight. Consider the following procedures to minimize the potential for distraction:

- Never rely solely on memory. Use a checklist!
- Back up your normal checklists with mnemonic reminders or sayings that can help recall of critical checklist items. The GUMP and MPG checks are excellent examples.
- Structure your flying to spread the workload out over the course of the flight, rather than allowing it to build up at critical phases.
- Consider implementing a "sterile cockpit" procedure and avoid unnecessary conversation in anything but cruise flight.
- Avoid shortcuts, as deviations from standard procedures often distract pilots from their normal procedures and routines.

Although the sterile cockpit procedure is generally applied to operations that require two pilots, it still has application in single-pilot operations. Had the pilot of the Navion incorporated the sterile cockpit procedure in his flying routine, he may not have missed the critical checklist item.

Distraction is a problem that all pilots must deal with at one time or another. By developing safety strategies and following standard procedures, we can minimize the potential downside of distraction. 

Robert N. Rossier has been flying for more than 30 years. A former aerospace engineer and flight school manager in Colorado, he spent 12 years flying for a small airline/charter service in the Northeast, serving as chief pilot and check airman. He has been writing for the aviation industry for nearly 20 years and was the recipient of a 2001 Aerospace Journalist of the Year Award.