

# Thomas P. Turner's Mastery of Flight™

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## FLYING LESSONS for November 7, 2024

FLYING LESSONS uses recent mishap reports to consider what *might* have contributed to accidents, so you can make better decisions if you face similar circumstances. In most cases design characteristics of a specific airplane have little direct bearing on the possible causes of aircraft accidents—but knowing how your airplane's systems respond can make the difference in your success as the scenario unfolds. So apply these *FLYING LESSONS* to the specific airplane you fly. Verify all technical information before applying it to your aircraft or operation, with manufacturers' data and recommendations taking precedence. **You are pilot in command and are ultimately responsible for the decisions you make.**

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### ***This week's LESSONS:***

[From the Australian Transport Safety Bureau \(ATSB\):](#)

On 11 April 2024, a twin-engine Cessna 404 Titan was being used for aerial surveying, with a pilot and two task specialists onboard.

After taking off from Emerald Airport [in central Queensland], the aircraft was flown to a survey area north of Moranbah. "About 20 minutes into the survey, **all three crew detected fumes** – to varying degrees – inside the cabin," Director Transport Safety Stuart Macleod said. "As the flight progressed, **the pilot began having difficulty setting the aircraft up and aligning it correctly** on each survey run." The pilot cancelled the survey, and opted to return to Emerald.

"During the return, **the crew opened the windows, vents and cabin doors**, disconnected the survey equipment, and checked several aircraft systems – **however their symptoms worsened.**" At one point during the return, the pilot advised Brisbane Centre air traffic control **they planned to conduct a precautionary landing in a field, and descended at a maximum rate of over 2,600 ft/minute.** After levelling off at around 2,200 ft, **the pilot assessed they were feeling better, and opted to proceed to Emerald.**

**The aircraft landed safely at Emerald Airport** about 90 minutes after the fumes were initially noticed. All three crew members were transferred to hospital for treatment.

The ATSB's final report notes **the crew did not use the supplemental oxygen** available, and **nor did the pilot divert to any of a number of alternate airports** between the survey area and Emerald. "The decision to cancel the survey was prudent, but flying back to Emerald, rather than diverting to closer suitable airports exposed the crew to the fumes for longer than necessary and may have worsened the impact," Mr. Macleod said.

Despite extensive ground and in-flight examination of the aircraft after the occurrence **the source of the fumes could not be established.**

Since the occurrence the operator has issued a mandatory requirement for pilots on all flights to secure the onboard oxygen equipment within seated reach of the pilot, and issued **guidance to all pilots to use supplementary oxygen in conditions such as those encountered during this incident.**

**“When encountering a fumes event, don’t hesitate to use supplemental oxygen, use all available means to ventilate the cabin, and consider diverting to reduce the airborne exposure time,”** Mr .Macleod urged pilots.

“In addition, communicate the presence of fumes, and any symptoms, to air traffic control at the first available opportunity, this can maximise the assistance available to you both in the air and on the ground.”

See [https://www.atsb.gov.au/publications/investigation\\_reports/2024/report/ao-2024-029](https://www.atsb.gov.au/publications/investigation_reports/2024/report/ao-2024-029)

**I’ve only had one** time when I’ve had a similar experience. I was flying a Cessna 152 that was on the rental line at the small flying service where I first instructed. I took N46123 (“flying is easy as 1-2-3”, I said in my sales pitch) up for a few minutes to warm the oil for an oil change.

**Even then** I didn’t just zoom around in circles on a maintenance flight. I was flying [Lazy Eights](#) about two miles from the airport. On one downhill side of the maneuver, I heard a loud “pop” and immediately smelled a caustic, electrical-fire scent. I shut off the battery and alternator, pulled the throttle to idle and dove for the airport. The smell subsided long before I landed.

See <https://pilotinstitute.com/how-to-fly-perfect-lazy-eights/>

**The 152’s single VOR** head had been temporarily removed from the airplane and its wires had been tied off behind the panel. A small amount of wiring had not been taped over, however, and in my maneuver the exposed wire hit metal, popping off a single spark.

**Fumes and fire smell** in the cockpit could signal several things, including:

- **Engine fire.** The checklist response usually includes closing any air pathways between the engine compartment and the cabin (firewall/heater shutoff in singles, pressurization control in pressurized twins), shutting off fuel and electrical flow to the engine, opening doors and windows to ventilate the cabin, and gliding to a landing (in singles) or landing as soon as practical (in a twin now on one engine).
- **Electrical fire.** The standard response is to shut off all battery and alternator/generator switches, individually turn off electrical equipment, turn on the battery and alternator/generator, then power up only essential equipment but turning off anything that causes the smell to resume.
- **Carbon monoxide.** CO is odorless, but it may be carried on exhaust fumes you can smell. Carbon monoxide alarms are highly recommended and are becoming much less costly that they used to be. Opt for an aviation-related alarm, because nonaviation home alarms don’t usually trigger until far above the threshold of danger at reduced oxygen pressure at altitude. If one of the old colored-disc style detectors turns dark the CO saturation has already reached danger levels. Pulse oximeters don’t warn about CO poisoning; carbon monoxide is dense, giving a falsely high saturation reading.

**In any of these three cases** the ATSB’s recommendations and these extrapolations make sense:

1. Execute the appropriate emergency procedures checklist.
2. Ventilate the cabin.
3. Use supplemental oxygen if it’s available.
4. Make an immediate landing at the closest suitable airport.
5. If smoke, fire or personal symptoms persist, consider an immediate off-airport landing.

**Have you ever** smelled fumes in flight? What did you do? Would you do anything different if it happened to you again?

Questions? Comments? Supportable opinions? Let us know at [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net).

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## Debrief

Readers write about past *FLYING LESSONS*

Reader/instructor Brian Sagi adds to [last week's LESSONS](#) about ramp safety and the horrible accident that prompted the discussion:

A tragic event indeed.

I frequently fly tailwheel airplanes. In those, forward visibility (especially from the rear cockpit in tandem seat aircraft) is very limited and sometimes non-existent. Nearly always when marshalled onto the ramp, **I encounter marshallers who position themselves directly ahead of the airplane.** They are unaware that a tailwheel pilot is not able to see them in that position. In those cases, **I shut down immediately, exit the aircraft, and tow it by hand the remaining way** and while enduring the marshaller's look, as if saying "what is this guy doing and why didn't he follow my directions?" **I then explain to the marshallers why standing directly in front of a propeller – especially of a tailwheel airplane – is hazardous.**

Unfortunately, line service is a trade with high turnover. It seems like standard training for the position includes the instruction to stand in front of the aircraft, and does not include any caution with respect to propeller airplanes and tailwheel airplanes. **Your *FLYING LESSONS* prompted me to reach out to the common training providers for line service workers (there are a number of companies who provide online training modules) so they can be educated about the issue.**

Thank you, Brian, for turning my talk into action!

See <https://thomaspturner.com/flying-lessons-weekly/flying-lessons-for-october-31-2024/>

Reader Mark Peterson reminds me of his Debrief comment from past *LESSONS*:

I think I mentioned it before, but in a crisis situation I would teach that the only proper response is to **turn the ignition key off.** Goes for hand propping with someone in the cockpit or ramp dangers. The **added five seconds or so** for the engine to quit might be the difference between life and death. I shut my Aeronca off with the fuel shut off and it still takes 20 seconds for the bowl to empty. Mixture is quicker than fuel shut off, but the stopping the ignition is immediate.

I've not seen a time difference shutting down with ignition versus mixture in the fuel injected airplanes I fly, but you have an extremely important point for carbureted engines and any that might residual fuel available after cutoff (a fuel diaphragm shuts all cylinders off immediately with a drop in fuel pressure in most fuel injected airplanes). Your method works in everything. Thanks for the reminder, Mark.

Reader/instructor Tom Black continues:

My local EAA chapter provides Young Eagles flights monthly May-September (sometimes October) at KGDK [near Dayton, Ohio]. We take ramp safety of the Young Eagles and their families VERY seriously. In addition to the pilots we have an equally large contingent of **ground crew (most of whom are also pilots) whose primary responsibility is ramp safety.**

**Pilots and ground crew brief together** at the start of each Young Eagle rally. Much of the briefing discusses ramp safety. **Ramp access is tightly controlled.** Direct access to the ramp from the lounge is blocked by a temporary barrier tape and anyone going to the ramp (and airplanes) from the lounge must pass through an area where the ground crew in safety vests are standing by.

Pilots are allowed to escort Young Eagles without family or friends to and from their airplane, but **if family or friends want to go out to the airplane** with the pilot and Young Eagle **they have to pick up an escort** while proceeding through the escort area. **The escort has ONE PRIMARY JOB: ramp safety, particularly keeping people away from propellers.** Escorts are briefed that when the pilot and Young Eagle put on their seat belts it is time to escort family and friends back to the waiting area under the canopies or to the lounge. If the parent and friends want to go out to the airplane at the end of their Young Eagle's flight, an escort must accompany them out and back (but only after the propeller has stopped). The escorts watch for other ramp traffic.

The point is that when dealing with people who are distracted or are unfamiliar with airplanes and ramp operations **controlled ramp access and trained escorts can be a tremendous asset.** This is particularly true for special events (like Young Eagle rallies) or special operations (like the skydiving operation in your original story). Take it from us: it works.

That's outstanding, and it reflects professionalism in a planned event. I agree that a jump operation or similar activity needs to create and follow a mitigation plan that includes ramp escorts as well. What aspects of the Dayton-area Young Eagles plan can be adapted to ramp safety outside of organized events? Thank you, Tom.

Reader/instructor Charles Lloyd wraps it up for this week:

Tom, you are correct in your analysis of ramps. They are a hazardous place. You cannot be too careful. You are in a dangerous environment. I was in a situation at Burbank Airport with one marshal directing me into a tight spot with no wing walkers. I stopped and, looking at the marshal, shook my head. He kept urging me forward. **My only option was to shut down my aircraft in a taxi lane on the ramp.** It was a situation that had too many hazards for our crew and aircraft.

The propeller incident with the photographer is truly tragic. It a case of situational awareness. I am a pilot and very serious photographer. When I analyze this incident from a photographer's perspective, I can see how this could have happened. A good photographer is focusing on framing what they see through the camera view finder. A good photograph is more about composition than the price of the camera. You zone out of your surroundings creating the photograph, moving around to create a better composition.

Anytime you are around machinery with exposed rotating parts either on a ramp or in a manufacturing area. **Take time to think before you move** without looking.

The photographer in this tragic case was experienced working around airplanes, and had exited the airplane the propeller of which killed her immediately before backing into it. **The hazards of distraction and complacency are not limited to pilots** and we need to employ [mitigations such as I listed last week](#) for anyone and any situation that puts pedestrians on an active aircraft operation surface. Thank you, Charles.

See <https://thomaspturner.com/flying-lessons-weekly/flying-lessons-for-october-31-2024/>

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