

# Thomas P. Turner's Mastery of Flight™

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## FLYING LESSONS for October 10, 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:***

**All five persons aboard** a Beech Baron twin were killed this week, and the airplane was destroyed, when it "crashed under unknown circumstances" at Avalon, Catalina Island, California.

#### **From the [Aviation Safety Network](#):**

ADS-B data shows the airplane climbing to an altitude of about 75 ft agl before it entered a descent just off the departure end of the runway. The last ADS-B return showed an average rate of about -1700 fpm. The nearest weather station was reporting an overcast layer at 700-800 ft. Aircraft was on transponder code 1200 and there was no Instrument Flight plan filed with ATC.

#### **Local news adds:**

The plane is believed to have taken off from Santa Monica Municipal Airport and landed at the Catalina Airport about 30 miles off the Los Angeles County coast at around 6 p.m. Tuesday. The plane took off again at around 8 p.m., but it was unclear where it was headed. That's when authorities received the emergency alert.

#### **The FAA Chart Supplement for KAVX includes [this note](#):**

AIRPORT REMARKS: Attended 1600-0100Z;.... Ops prohibited at night or when [the airport] is [unattended].

See:

<https://asn.flightsafety.org/wikibase/450397>

<https://www.nbclosangeles.com/news/local/plane-crash-reported-on-catalina-island/3531185/>

[https://www.aopa.org/ustprocs/20241003/chart/avx\\_chart\\_supplement.pdf](https://www.aopa.org/ustprocs/20241003/chart/avx_chart_supplement.pdf)

**We don't yet know** if this was a loss of control after unexpectedly entering clouds, or pilot disorientation departing into a dark, clear night with no visual references, or if the mishap may have involved loss of engine power. **We don't yet know** the weather conditions at Avalon at the time of the crash. The nearest weather report comes from 45 kilometers away on the mainland. There, according to reports and internet chatter following the crash, a persistent "marine layer" had generated widespread low clouds along the southern California coast for days. But it's not certain that instrument meteorological conditions (IMC) existed when the Baron crashed.

**Regardless**, the Chart Supplement advises that airport operations are prohibited at night...and the accident occurred almost an hour and a half after official sunset. Further, an FAA Notice to Air Missions (NOTAM) for KAVX states:

Runway 04/22 Intens Runway Lights: Out of Service Indefinitely.

**This NOTAM** became effective July 26, 2021...**over four years** before the Baron pilot attempted a night takeoff. It is set to expire **December 31, 3000**...in other words, never.

**The NOTAMs process** is currently under review, the U.S. Congress mandating an overhaul to make it much more usable. I've seen recent mention that the ICAO NOTAM standard may be introduced to the United States, which looks even more cryptic. Regardless, for now pilots must sift through any number of NOTAMs including those for locations far remote from a planned route to glean the information that will help them make critical safety-of-flight decisions. **This is a problem that should have been solved decades ago.**

**Additional safety notes** for airports and airspace are contained in the Chart Supplement. **More chronologically experienced pilots** may remember the Airport Facility Directory (A/FD). This series of green-covered books, updated frequently, was very important for flight planning. But frankly most pilots did not keep a current copy in their airplane or pay to include the A/FD in their preflight planning library.



**Today**, the A/FD has been replaced with the very similar Chart Supplement. The Chart Supplement is readily available online and in popular app-based flight planning systems. It takes a few clicks, and a little unnecessary deciphering when they could just as easily be "plain language," but you don't have to order a new Green Book for every state you plan to fly every month to get the current information.

### Under U.S. rules:

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight.

**I imagine** the rules are similar under other nations' regulatory authorities.


**It's not likely** the Avalon Airport prohibition was created proactively. I suspect the prohibition was created in response to one or more accidents. The regulations, as they say, are written in blood. Decommissioning the runway lights was the logical next step, although they could still be useful for day IFR operations.

See <https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-91/subpart-B/subject-group-ECFR4c59b5f5506932/section-91.103>

**Nearly 40 years** of flight instruction has made me somewhat cynical. It may be the Baron pilot knew all about the prohibition against night operations at the Avalon Airport, and even the lack of runway lighting, before his flight to Catalina Island. He may have been intentionally violating the prohibition, figuring the rule didn't apply to him and confident that he could safely take off in the dark, featureless night. But for purposes of learning *LESSONS* let's give the unfortunate pilot the benefit of the doubt, and chalk this up to not seeing the warning.

**Check the Chart Supplement** as routinely as you look at runway length and check the weather as part of your preflight planning. It's far easier now that it used to be.

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## Debrief

Readers write about past *FLYING LESSONS*

Reader/instructor Brian Sagi writes about last week's *LESSONS* from an anonymous reader's experience that caused him to re-think his whole philosophy about Rejected Takeoffs. Brian writes:

I had a similar thing happen to me with a student a few years ago:

The student was somewhat large and the day was hot. Acceleration down the runway was more anemic than normal. **I stupidly let it continue rather than calling for an abort.** Only after rotation, when climb performance was well below what I expected, I further investigated and noticed (not easily visible from the right seat's instructor position) that the mag switch was on "R" and not "Both." Turned it to "both" at 100' and everything got sorted out. My "excuse" is that I have not flown that specific airplane and did not have a good reference for what "normal performance" would be for it.

**I insist on the takeoff brief including "prior to rotation, we will abort for any abnormality."** I also insist on briefing the length of the takeoff roll, so that we have a frame of reference against which to compare our actual performance. In reality, **we are all human and have a positive bias.** It is easy to rationalize that "it's not too bad and we should continue and figure it out later." This is especially true if it is late in the day, if we want to get home, or if we have been holding for a while and know that if we abort the takeoff we will have to go to the back of the line again.

Thank you for bringing this up!

Thanks for adding your experience and mitigations, Brian.

Reader and well-known Cirrus instructor Mike Radomsky writes about [last week's Debrief](#):

With regard to this Debrief item:

Frequent Debriefer Lorne Sheren addresses another aspect of last week's report:

*Interesting column. I was intrigued at the SR22 flat tire landing procedure. I would think it unusual to know you had a flat tire prior to landing. Can you discuss the procedure for handling a landing/roll out once the flat tire makes itself know?*

I wonder about that too. Unless you knew you blew a tire during takeoff just as you lifted off (so you didn't reject the takeoff), or less likely someone outside your airplane was close enough to see an obviously damaged tire (not just low on air, which wouldn't be noticeable), you probably wouldn't know you needed the Flat Tire checklist until it was too late. Thanks, Lorne."

I feel at least somewhat qualified to comment on this. As you know, I routinely instruct on Emergency Procedures for the SR series airplanes in a full motion flight simulator, and I present various blown/flat tire scenarios every time.

**When a tire blows (or is determined to be flat) early in the take-off roll, the correct response is clear: Reject the takeoff and come to a stop.** Naturally, the faster the airplane is moving - for

example, later in the takeoff - controllability in the Cirrus is more of a challenge, in part because if the airplane was on the centerline (where we all should be!), only half the width of the runway is available; and the Cirrus has a castering nose wheel, so all steering must be accomplished with the brakes when the rudder is no longer effective (one or two seconds into this emergency). **Not many pilots can keep the SR22 from exiting a 75 foot wide runway when a main tire blows out at 60 knots.**

However, when the airplane is going fast enough to be "persuaded" into the air - **typically around 65 knots - I recommend getting airborne and treating it like a soft-field takeoff** - accelerate in ground effect, get breathing and pulse-rate under control, and assess the situation. **This is the scenario** when you know which tire is blown. The bad tire has no effect while the airplane remains airborne, and perhaps best of all, when the pilot lands - perhaps on a different, wider runway - they do so with multiple advantages:

- 1 - It's not a surprise
- 2 - They have almost the entire width of the runway in which to come to a stop
- 3 - They can advise Tower or traffic that they will be fouling the runway for a while.

One interesting human factors observation: **Pilots often forget which tire failed!** I now instruct to say aloud "The RIGHT tire has failed," because of course, getting it wrong on landing is not good.

Adding this: The SR-series wheel pants are "tightly cowled" around the tire, so that if the tire bulges outward (sideways), it tries to split the wheel pant. Centrifugal force keeps the tire closer to its inflated shape at faster speeds, but any attempt to taxi slowly with a flat tire is likely to be expensive.

Great insights, Mike. It shows the value of type-specific instruction and simulation when a representative training device is available. It also goes to the reason I cited that checklist in [my September 26<sup>th</sup> report](#), which is an example of considerations for landing with less than full landing gear. Thank you.

See:

<https://thomaspturner.com/wp-content/uploads/2024/10/2024.1003-FLYING-LESSONS.pdf>  
<https://thomaspturner.com/wp-content/uploads/2024/09/2024.0926-FLYING-LESSONS-1.pdf>

Reader and well-known Twin Cessna instructor Dave Dewhirst adds:

Here is another thought on the September 17, C402 incident at BOS. First, **a discussion on the actions taken by the pilot during the hour he was airborne have not yet been reported.** In no way do I wish to second guess his actions. However, **three times we have experienced the problem of a single strut failing to retract** in a C421C.

The Cessna 401, 402, 414A, and 421C all have the same landing gear system. It is hydraulic and works well. It does have one quirk. The detail is that the landing gear locks, either up or down, are released by hydraulic pressure, not by an electrical solenoid. That feature is what allows the gear to be lowered by use of the nitrogen blow-down bottle in the event of a total electrical failure. Hydraulic fluid is circulating continuously. The system is not pressurized until the gear selector switch is moved. At that point the system is pressurized, releasing the gear locks (either up or down), and moving the landing gear. When the gear has reached the new position the locks engage and the system depressurizes. The pilot sees the HYD PRESS light extinguish. A sensor detects if the gear is other than down and locked, extinguishing the gear-down light.

Here is the problem. **The initiation of the gear cycle must produce hydraulic pressure sufficient to release the gear lock. That does not always happen.** The system will cycle through the gear movement and lock in the new position. The hydraulic system sees three closed gear locks in place. The system does know if the gear is up or down. It just sees three closed gear locks and depressurizes the system. The pilot will see gear position lights that correspond to the gear position.

**The fix is to recycle the gear.** That has always fixed the problem for us. The backup plan is to use the nitrogen blow-down bottle. That is supposed to work even in the event of total loss of electricity or hydraulic fluid.

Nice of you to discuss Brand-X issues. I learn something each time I read your report. Keep up the good work my friend.

I ran a poll long ago that revealed that, although I'm "type"-cast as a piston Beech guy, well over half of *FLYING LESSONS* readers fly something other than a Bonanza-derivative airplane. I try to draw LESSONS from as many types as possible in the hope we'll all find at least one thing that fits the aircraft we fly. I'm told the procedure Dave described is not addressed in the Twin Cessna manuals. Dave, have you documented this somewhere, or was my earlier C402 source incorrect?

Dave's Debrief is another example of why type-specific knowledge is so important. In using the Cape Air C402 video as an example I made an assumption—perhaps incorrect, perhaps not—that the pilot had done everything possible to rectify the situation and was forced to land with only one main gear leg extended. The *LESSON* was to encourage readers to **envision all sorts of unusual situations that are not covered in the flight manual, and wargame how you might respond now to better prepare you for identifying, evaluating and executing even more unforeseen scenarios if they occur.** Thanks for helping that effort, Dave.

In last week's Debrief "Captain" Bob Katz took issue with the ground evacuation caught on the Cape Air event video, and I speculated one reason the pilot might have done what he did. In response reader and retired airline captain Jeffrey Dill writes:

I forwarded your latest *LESSONS* to my nephew, who is a Cape Air captain, and maybe we can learn the company procedure for egress. **The assertion that airlines advise landing gear up in that scenario is incorrect,** at least for the carrier where I spent 36 years. They feel that the benefit of having whatever gear down possible outweighs the directional control problem. (Among those benefits is system logic from the "weight on wheels" switches.)

I'm hearing that is indeed the case when you get into air carrier equipment, Jeff. I look forward to hearing what your nephew has to say. Thanks for adding your insights. Here are more:

Reader, senior air carrier certification engineer and trumpet player in the back row of the late 1970s [Kailua High School Surfrider](#) band while I sat with the woodwinds Paul Sigmund adds:

Aloha, Tom. You've mentioned, in various forms, the "airline-preferred gear up landing" in a couple of recent columns about failure scenarios. I'll point out for you and your readers in the Part 23 market that that **airliners are different,** unique in this respect. That's a good thing, as seen in a fortunately-small set of media videos available in recent decades. There is a transport airplane regulation (25.721) which includes a couple of clauses **requiring Part 25 airplanes to be able to land with any or all landing gear components retracted without spilling enough fuel to constitute a fire hazard.** That matters. And it gives airline crews the option of retracting all, or landing asymmetrically on what they have, with confidence that either option should turn out well enough for at least a safe evacuation. Even in the \$100M+ per tail realm, **reusing the airplane is not a hard requirement.** (Obviously this is demonstrated analytically, not flight tested, but the small available sample has shown that it works.)

**Part 23 [light aircraft] has no such requirement,** and that will leave small-airplane pilots with less certainty or more arguability about dealing with a partial-gear scenario. **There is not a design requirement or an airmanship standard to validate your support for the Cape pilot's technique or Captain Bob's disagreement with it.** *The Cape Air pilot was on his own,* perhaps guided by an SOP, and that sequence thankfully worked out well enough for everyone. From an engineering & physics perspective, I lean—even in retrospect—of thinking that cheating toward the good leg, anticipating a skid toward the bad once that wing falls, seems like **the best bad plan available** to that pilot for remaining on a big piece of pavement until stopped when a big piece of it is available. But it's not certain, and the real answers are **"do what you think you need to do given all the information at hand,"** and **"be alive at the hearing."** My bottom line point is that small airplanes' partial- or no-gear landing techniques are not necessarily comparable to that of



transport airplanes of any size because Part 25 has a specific relevant requirement that Part 23 does not, and they could vary with airplane type and landing surface.

LESSON learned, Paul. In your comments you made the point I was trying to make using the well-circulated C402 video as **the beginning** of a discussion: “*The Cape Air pilot was on his own.*” That is precisely what I want readers to take away from the September 26<sup>th</sup> LESSONS and follow-on discussion, which is why the theme of that report was **wargaming unusual scenarios**. Mahalo, Paul.

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