Understanding the G7+
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Here is a terse version of a G7+ passenger briefing:

“If the airplane is broken, pull the CAPS handle.”

“If the pilot is broken, push the red Safe Return button.”

“If the Safe Return system is not functional, return to step one.”

Your passengers might ask in response – is this like ‘Press to Test, Release to Detonate’?

Answer = not exactly!

There has been much written and discussed in the Cirrus pilot community about the unveiling of the G7+ SR editions, with the usual strong opinions on all sides. There is no doubt that introducing Garmin’s Emergency Autoland system (rebranded Safe Return™ Emergency Autoland) is a win for Cirrus and its customers and a significant innovation as the first piston aircraft implementation of this technology.

What is Safe Return?

When activated by an occupant or pilot, Safe Return algorithmically locates the best airport for landing based on distance, runways available, and weather, and notifies ATC of its plan to land at the intended airport. The system will be automatically activated in the following conditions:

- Automatic Level mode (Blue Button) engaged for one minute.
- No pilot interaction with the avionics for 30 minutes.
- Emergency Descent Mode is active and the aircraft descends through 15,000 ft pressure altitude. This feature should be particularly valuable in the SR22T when loss of consciousness at high altitude presents a risk.
- Safe Return Autoland activation push button is pressed.

The system integrates a servo-driven emergency autothrottle—note that it's not a full autothrottle linked to the FMS—and an automatic mixture control. During activation, the servos manage airspeed and engine parameters, while the system handles automatic braking to bring the aircraft to a complete stop before performing engine shutdown. Throughout the process, passengers receive clear, automated instructions via the cockpit displays and audio alerts.

In addition to the servos controlling throttle and mixture, the system adds a radar altimeter to complete the automated landing capability.

In the most recent G7+ SRs shipped, there is also an enhancement to the nearest airport feature that you can use to identify and track to the nearest suitable Autoland airport.

Safe Return Rationale

Thinking about Safe Return carefully, one immediate and obvious rationale for the technology is in response to pilot incapacitation. But how frequently does incapacitation occur, and how often does it result in an accident?

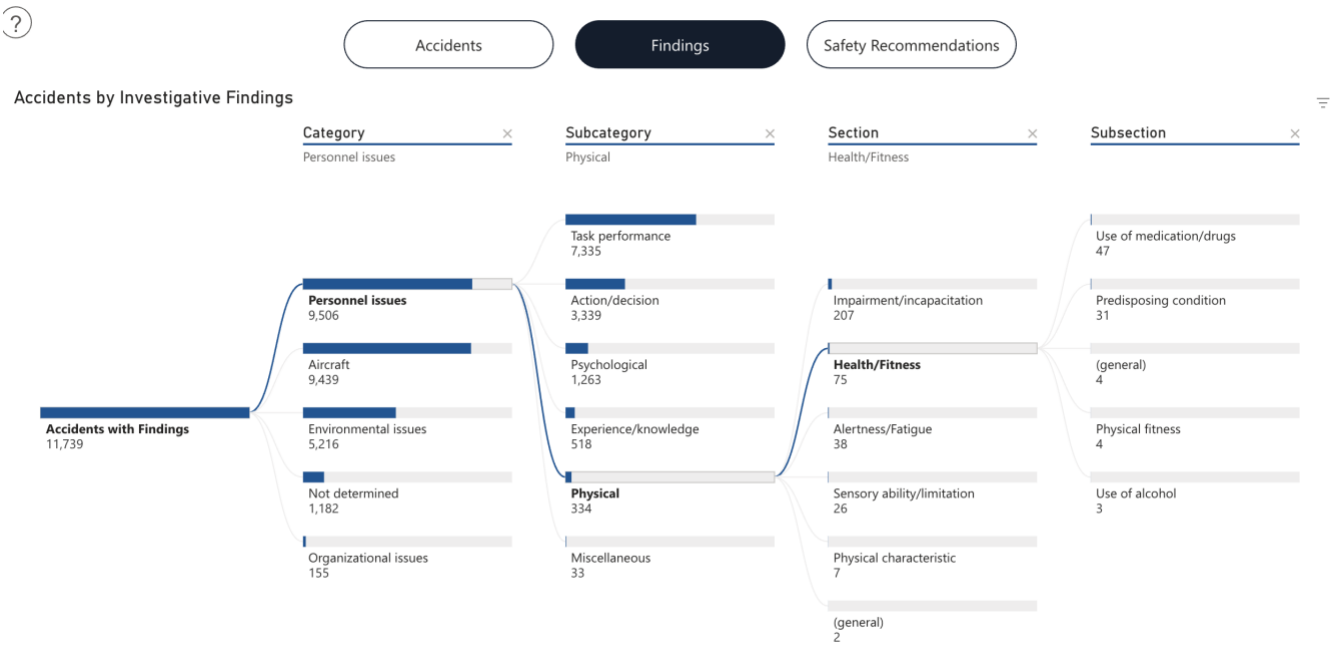
Locating exact statistics on pilot incapacitation in general aviation is difficult.

Older studies (1993–1998, airline operations) found an in-flight medical incapacitation rate of about 0.058 per 100,000 flight hours, with a small chance (~4%) of resulting in an accident. While the data is for airlines, it establishes a baseline for medical incapacitation risks in a multi-crew environment.

The FAA's own regulatory risk guidance for its medical certification activity is to keep the incapacitation rate below 1% per year. That is, an airline pilot should be denied a medical certificate if their risk of a medical incapacitation (e.g. heart attack, convulsion, stroke, fainting, etc.) was determined to be greater than 1% during the year.

A 1987 FAA technical report focused on GA estimated that incapacitation contributes to approximately 3 per 1,000 GA accidents (or 15 per 1,000 fatal GA accidents), using NTSB data dating back to 1975.

Looking at the NTSB's **General Aviation Accident Dashboard 2012-2021**, out of 11,739 accidents, 334 had pilot physical causes, including 207 caused by impairment or incapacitation. Using the larger number, almost 3% of accidents involved such a cause.



Safe Return Comparison to CAPS Adoption

When the CAPS system was first introduced, quite a few pilots died trying to land their disabled airplanes off airport to avoid pulling the parachute. Cirrus worked hard to provide additional CAPS education and training and launched the Embark program to train new owners of used airplanes. This training outreach drove behavior and usage of the system, with many lives saved as a result.

Two of the CAPS deployment scenarios overlap with the recommended use of Safe Return:

- Loss of control in flight (incipient, not in a fully developed spin for example)
- Pilot incapacitation

Safe Return provides a real alternative to CAPS in these scenarios. The Cirrus training community will need to work hard to emphasize the use of Safe Return whenever a pilot is unable to continue safely flying the airplane.

Real World Partner Endorsement

As a CSIP, I often work with pilots who have the resources to buy a Cirrus or have been owners of older Cirrus models. I recently flew with an older pilot who had sold his G3 about

a year ago in response to concerns from his spouse about incapacitation. His spouse had taken partner-in-command training but still did not feel comfortable with age-related risks in the cockpit. After hearing the G7+ announcement, she was ready to get back in a Cirrus and encouraged her husband to learn to fly and then buy a G7+ SR. The previous alternative of pulling CAPS was simply not enough to overcome her concern.

As many others have said, this sentiment will contribute to the sale of quite a few airplanes to the aging population of buyers who fly with cautious friends and family members. Are there any downsides other than cost? It's hard to find a reason to do anything but celebrate this innovation.

Other G7+ Features of Note

Three more valuable features are being delivered with the G7+ SRs.

1. **Runway Occupancy Awareness** is a situational awareness tool that uses ADS-B traffic data to monitor aircraft on or approaching the runway. If a potential runway incursion is detected—such as an aircraft entering the runway while another is landing or departing—the system provides both visual and audio alerts. These alerts appear on the primary flight display and the 3D SafeTaxi™ map, helping you maintain awareness and make timely decisions, particularly at busy airports.
2. **Smart Pitot Heat** is integrated with the Perspective Touch+™ system to automate pitot heat operation and reduce pilot workload. The system conducts a self-test prior to each flight and automatically activates or deactivates in flight based on outside air temperature. This automation eliminates the need for manual pitot heat management and adds to previous bolster panel simplification with the G7 Edition (removal of the avionics and nav light switches).
3. **Automatic Database Updates** with the paid version of Cirrus IQ PRO, which will update the aircraft databases via cell or Wi-Fi connections automatically.

Summary

When you review the G7 and G7+ features individually, and while setting aside Safe Return, some features seem simple and inconsequential. When you add these many small features together, however, there is a significant and considerable safety benefit. From not overspeeding the flaps on extension (or retracting them at too low a speed), to not forgetting to switch on the pitot heat in icing conditions, to avoiding rolling out on an occupied runway, the G7/G7+ system can help you avoid making many stupid pilot mistakes.

We should all look forward to reading about Safe Return activations and safe autonomous landings in the same manner that we have learned to respect and admire CAPS deployments and saves.