Lessons Learned from Cirrus Accident History

by Rick Beach

Accidents happen. Chute happens. But what can we learn from history?

Lesson #1: People die in a Cirrus.

Sad, but true. Flying involves risks. Some risks involve fatal accidents.

This second annual review poses a greater challenge than last year. Since publishing the last safety issue 12 months ago, we've seen 13 fatal Cirrus accidents involving 26 fatalities and three seriously injured passengers.

Yet, no CAPS parachute saves … zero, none, nada, zippo.

We fly an airplane designed with a lot of safety features, and it has a parachute for the whole plane that anyone inside can activate. Yet fatal accidents still happen. See article, "Why not pull the CAPS handle more often?" on page 27.

WHAT TO DO?: Commit to flying safely. Participate in COPA safety programs. Read *Cirrus Pilot* and learn.

Lesson #2: COPA members have fewer fatal accidents.

COPA members demonstrate an astoundingly better accident rate than non-members. Only 20% of Cirrus fatal accidents involve COPA members, yet about 60% of Cirrus pilots and 50% of Cirrus planes are owned or flown by COPA members. That's significant.

Cirrus fatal accidents by membership in COPA.

For sure, membership is not a causal factor, so don't join COPA and expect that alone will keep you safe. But lack of participation in COPA appears to correlate with an increased chance of being involved in a fatal accident. Membership does have its benefits!

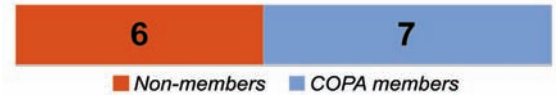
WHAT TO DO?: Participate in COPA safety events. Encourage other Cirrus pilots to participate in COPA safety programs. Help them understand the risks.

Lesson #3: COPA members use the CAPS parachute.

Looking at activations of the Cirrus Airframe Parachute System (CAPS), COPA members are represented at about the same proportion as in the Cirrus pilot population, a bit more than 50%.

Taken together, the fatal accident and parachute activation observations reveal that COPA members avoid fatal accidents and use the parachute to survive. Read on to better understand some of the reasons.

Cirrus parachute activations by membership in COPA.



WHAT TO DO?: Review emergency procedures and decide for yourself when you have lost control and need to activate CAPS. Practice in a simulator.

Lesson #4: Don't blame the airplane; it's us, the pilots.

Overwhelmingly, Cirrus fatal accidents involve pilot factors. All but one of the 28 probable causes determined by NTSB accident investigations lists pilot causes. The Greenland ferry accident was the only mechanical cause, when the engine failed due to loss of oil.

Cirrus fatal accidents by probable cause.

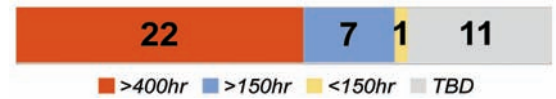
Cirrus fatal accidents are caused by pilot actions. Change those actions and we, the pilots, can reduce the fatal accident rate.

WHAT TO DO?: Commit to flying safely. Participate in COPA safety programs, especially the scenario-based, decision-making programs at CPPP and CDM seminars.

Lesson #5: Experience is not enough.

Surprisingly, high-time pilots are involved in more than half of the Cirrus fatal accidents. Critics of Cirrus Design often complain about the marketing to newbie pilots, so they expect a rash of accidents involving low-time pilots. Not so.

Cirrus fatal accidents by pilot total flying time.



Pilots with more than 400 hours total time were involved in 22 of 41 fatal accidents with 11 to be determined. That level of experience usually comes from several years of flying. Yet, that experience did not keep them out of trouble.

Interestingly, only one pilot in a Cirrus fatal accident had less than 150 hours total time, and that was Cory Lidle, who had an instructor in the right seat during the accident.

Unfortunately, we do not know the proportion of Cirrus pilots with high or low experience. Therefore, we cannot determine if pilots with low experience have a greater rate of accidents. However, with the addition of Cirrus airplanes to flight training schools for primary flight instruction, we know that the pool of new pilots is growing.

Furthermore, pilots with instrument, commercial and instructor certificates were involved in three-quarters of all Cirrus fatal accidents.

Cirrus fatal accidents by type of pilot certificate.

Additional ratings usually indicate higher levels of skill and judgment, but still, these pilots ended up in situations that they did not handle safely.

WHAT TO DO?: Cirrus pilots must recognize the challenge of transitioning to an SR2X airplane. Ensure that your training matches your missions, especially if your new missions do not match your experience.

Lesson #6: Respect your lack of experience in an SR2X.

Almost every pilot knows that low time-in-type represents a greater risk until you gain experience with the new airplane. Cirrus SR2X airplanes are no different.

About half of the fatal accident pilots had less than 150 hours of experience in an SR2X. Two fatal Cirrus accidents occurred during training, one during transition training and the other during primary training of an experienced helicopter pilot.

Cirrus fatal accidents by pilot time flying an SR2X.

WHAT TO DO?: Be cautious. Learn about personal minimums by attending a Critical Decision Making seminar. Adjust those minimums for your experience with flying your SR2X.

Lesson #7: Weather is a huge factor in Cirrus accidents.

Cirrus airplanes are great cross-country travelers and many Cirrus pilots make the most of those capabilities. Longer flights expose you to different weather systems as you fly longer distances, as well as an increase in variability from your preflight forecasts due to the longer times en route. Cirrus pilots, must therefore be prepared to handle the challenges of weather. They haven't!

Cirrus fatal accidents by weather conditions at the accident site.

Two-thirds of Cirrus fatal accidents involve bad weather (IMC), including low ceilings, fog, icing and thunderstorms. Failing to understand weather systems, failing to obtain updated weather briefings, lacking weather-in-the-cockpit, and especially poor in-flight decision-making are all factors implicated in these accident reports.

Furthermore, fully two-thirds of Cirrus fatal accidents are flown under visual flight rules (VFR), where the pilots are responsible for their own terrain clearance, their own navigation, and their own decisions. Only one-third were flown under instrument flight rules (IFR).

Cirrus fatal accidents by flight rules used by the accident pilot.

Combine the bad weather factor with the choice of flight rules factor and we see a recipe for disaster, especially visual flight into instrument meteorological conditions.

The large number of VFR-into-IMC accidents suggests that the increased situational awareness in a Cirrus SR2X was not sufficient to help those accident pilots escape bad weather encounters. And the IFR-in-IMC accidents suggest a lack of proficiency with flying in challenging weather.

Cirrus fatal accidents by combination of flight rules and weather conditions.

Weather is a huge factor for Cirrus pilots.

WHAT TO DO?: Learn about weather. Attend a CPPP ground session on weather. Take an aviation weather course. Learn about personal minimums from the COPA CDM seminar.

When you encounter IMC while flying VFR, get out! Practice avoidance maneuvers, such as use of the autopilot to make a 180-degree turn. Recognize get-there-itis and overcome the desire to persist in worsening weather conditions.

Lesson #8: Landing a Cirrus can be fatal.

Several recent accidents involved landing maneuvers. Without the NTSB probable cause reports, we don't know enough about the accident chains.

What we do know is that seven of 13 accidents in the last 12 months were on approach, executing a missed approach, or during landing. In addition, there have been several airplanes badly damaged while executing high-speed landings, balked landings, porpoising, and off-runway excursions.

WHAT TO DO?: Get proficient! Once you take off, you need to be prepared for weather that might challenge you. Gusty winds at your destination? Low ceilings? Missed approaches? Either practice with an instructor or go somewhere with better weather.

Lesson #9: Many Cirrus fatal accidents are similar to CAPS pulls.

When you compare the successful CAPS pulls to the 41 fatal accident scenarios, you find remarkable similarities.

My estimation is that 30% of the fatal accidents had a high probability of success if the pilot had pulled the CAPS handle; overall 23 of 41, or 56%, had a high-to-middle level probability of success:

- VFR-into-IMC (7)
- Pilot disorientation (5)
- Low altitude loss of control (5)
- High altitude upsets (4)
- Mechanical problems (2)

WHAT TO DO?: Prepare yourself to use CAPS. Practice, especially by using simulator training. Read the articles in this safety issue.

Lesson #10: CAPS – it works! It's yours! Plan Ahead! You are worth it! Your ego and your airplane are not!

Be prepared. That is the most important lesson from the Cirrus accident history. Know yourself as a pilot – your skills, your knowledge, your proficiency. Think through how you will use all of the safety features of your Cirrus airplane.

With preparation, personal minimums, and practiced aeronautical decision-making, you may never need to use the ultimate safety device: CAPS. COPA