

ACCIDENT REVIEW

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The end of each year is always a good time to take stock of many things, including the safety of our flying during the past year. Our records show that there were 3 fatal RV accidents in 1999, claiming 4 lives. This is fewer than for some recent years, and statistically better, considering the increasing number of RVs in regular operation. However, statistics are very cold and impersonal, and it is by no means our intent to minimize the loss of life involved, or to sit in judgement of the involved pilots. We are all human and subject to error. Perhaps the most significant respect that we can pay to those who were lost is to soberly review the accident scenarios and then assesses our own flying practices and vows to improve them.

- Arlington, WA. An RV-6A crashed on take-off: Many people observed a steep climb, stall, severe impact and fire immediately following take-off. A knowledgeable witness observed the right side stick secured by the seat belt, evidently as a gust lock, before the pilot began his taxi. The pilot had only a few hours experience in his recently purchased aircraft and was in a hurry to depart before the start of the daily airshow. The seat belt/locked control stick scenario cannot be confirmed or refuted because the postcrash fire destroyed all evidence.
- Independence, OR. RV-8: In-flight fire related to a catastrophic engine failure. (broken rod, hole in crankcase) It is not known whether an oil leak caused the fire and engine damage, or whether the engine breakage happened first, spilled oil, and caused the fire.
- Colorado. RV-4: The unofficial information at this time points toward pilot incapacitation. It is possible the pilot had a coronary or stroke, but this could be neither verified nor refuted by the autopsy. Eyewitness reports described an uncontrolled flight final flight path.

Regardless of reasons or causes, we are all saddened by the loss of lives this year, and we offer our sympathy to the families and friends of those lost. I have a goal, a goal which I would encourage you to actively share, which is achieving a verifiable safety record comparable to or better than that of single engine production aircraft. I sincerely believe this to be attainable—I believe that we are closing the gap every year. Please join me in dedicating yourselves to this goal.

To all who have had a safe and successful flying year, we offer our congratulations and with you a happy and safe new flying year. Despite the unfortunate incidents noted above, this year's record represents an improvement over most of the past years. RV pilots should be congratulated for safe flying, especially those who have:

- contributed to or taken advantage of the EAA Technical Counselor and Flight Advisor programs.
- made the (often considerable) effort to take transition training from Mike Seager.
- offered new builders some degree of flight exposure in your RVs.
- devoted flight time specifically to the advancement of your own flight skills.
- conscientiously read these, and other, safety articles.
- Shared their experiences, however embarrassing, so others might learn

In the spirit of that last, here's a little non-injury accident report that could be titled "How Changing the Oil Produced a Poor W(h)ine" by California RV-4 pilot Steve Barnes:

I had 99.8 hours on the tach of my new RV-4 and couldn't stay out of it. One Sunday evening in July, a friend asked if I could fly him over to Sacramento, about an eighty mile trip from our home in Santa Rosa. Eager to show him how much fun a half hour flight could be, compared to an hour or more on a crowded freeway, I agreed. But since I was religiously changing oil at 25 hour intervals, I'd have to do a quick oil change before we made the flight.

After draining the old oil out, I reached up on the hangar shelf for the new filter....and found nothing but empty space. It was Sunday evening. My friend would be at the airport in an hour. The FBO was closed. The solution turned out to be simple. Grand Auto Supply had an automotive filter that looked and measured exactly like the one on my Lycoming. I bought it, installed it and even drilled a small hole on the lip so I could safety wire it. A safe aviator doesn't take chances.

It was 8:15 when I finally got the cowl on, the passenger in and the engine going. Later than I wanted but still light at the end of a long summer day. We climbed out normally, reaching 4000' in a little less than four minutes. The engine sounded fine, but the climb rate seemed to drop off faster than it should as we reached higher altitudes. I reached for the throttle to add power.

There was no more power.

The engine was struggling to turn 2300 rpm. I checked the instruments... the CHT and EGTs looked right, manifold pressure was ok, oil pressure was...zero.

I knew the area well and we were close to a 1400' paved strip. I pulled the power to idle, and headed directly for it. As I came into the pattern and slowed to 85 mph the prop stopped cold. I tried a quick restart, and the prop didn't budge. I was committed to land.

As I turned left onto what was going to be a short base leg, the airplane dropped like a rock. Losing altitude fast, I turned final. I realized that I was now below a row of trees that separated me from the threshold of the runway. Directly beneath me were rows of grapes, running at right angles to my path. Even though the vines were all held up by stout stakes, I knew I had to land. The vines were small, the trees were big...it wasn't a tough choice.

I checked my speed and flared into the vineyard. The next thing I felt was the pressure on my chest as we decelerated. The plane stopped in about 30'... I now know what an arrested landing on a carrier deck must feel like. I turned off the master, opened the canopy and my passenger and I departed the airplane smartly. There was no noise, no fire, just silence and the smell of crushed grapes.

After the emergency vehicles and newspaper photographers had left, we returned home in car lent by a sympathetic winemaker. I'll spare you the thoughts and feelings going through my mind the next day as I retrieved my virtually destroyed RV-4 and took it home.

Investigation and introspection over the next few days revealed the causes of this incident:

- When I was installing the engine, I found my accessory case did not have a provision for an oil filter, but it did have a lot of holes. I decided on a remote oil filter, but looking at the case, I couldn't decide which were the "oil out" or the "oil in" holes. I asked several well-meaning builders and A&Ps what they thought. That was a mistake. They all agreed that I had an unusual accessory case (should have been an alarm right there) and came to a loose consensus that "in" was here and "out" was there. On that understanding, I installed the plumbing to the remote filter. I now know that aircraft filters have a bypass that allows oil

to pass through even if the flow is reversed. And my flow was reversed....but the bypasses in the first four filters worked perfectly and the engine stayed happy, even though the oil wasn't being filtered. Automotive filters, even those that look identical, may not have bypasses. When they encounter reversed flow, pressure simply builds inside the filter to the extent that the oil pump can develop it. I had a good strong oil pump, and it blew the filter apart. When I retrieved the airplane and looked at the engine, the filter looked like a soda can that had been left in the freezer.

- I was in a hurry. (Do you ever wonder just what percentage of accident reports start with those words?) I didn't let the engine run for a few minutes and check for leaks before I re-installed the cowl. It would have made all the difference. The filter blew right after I started the engine. I know that, because when I returned the wrecked airplane to the hanger, I found a trail of oil from the spot I started up, running right down the ramp to the runway.
- I had not practiced power-off approaches, nor had I really checked to see how much altitude is lost in two ninety degree turns at low speed. If I had had this picture in my head, I could have landed on a runway and saved myself vast expense and anguish.
- I had not gotten around to obtaining insurance. Damage to the vineyard cost me \$13,000. Damage to the airframe cost me over \$10,000 dollars, not counting my time to rebuild it. The seized engine didn't help my wallet either. My \$22,000 RV-4 became, in a very few minutes, a \$45,000 RV-4. And at that, I was lucky.

It could have cost a whole lot more.

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