

# Old Fred Cashes In

By: Larry A. Ball

The following story is fiction. It bears no resemblance to anyone or any aircraft I know. The facts behind the story and the possibility of this really happening are very real.

Old Fred Fazook is a nice guy. He has owned his 414 for almost 15 years now and he got it when Cessna twins were at an all-time low. He is pleasantly surprised at how much the 414 has gained in value in the 15 years he has owned, flown and cared for it.

Fred would help out a friend in a minute. He would do almost anything you asked if he thought you really needed help. The only time Fred growls is when he has to part with his hard-earned dollars. Fred is tight!

Because Fred saves all the money he can, he has asked for and allowed some short cuts to take place when maintaining his 414. When the exhaust system needed attention, Fred took the pipes down to his buddy who had a TIG welder and his buddy made the necessary repairs for a fraction of the cost for new parts and even far less than if the work had been done by a Certified Repair Station. He got away with this procedure because he had another buddy that signed off his annual inspections. Fred always helped all he could and cut all of the corners that he felt wouldn't hinder the safety while flying his twin Cessna. Fred said, "Welding patches on the exhaust system didn't hurt a thing. It was just as good as the 'big guys' could do and he saved all that money."

Fred decided to load up his 414 and go south for a weekend of golf. He filled the fuel tanks to the top. He checked the oil in both engines. The pre-flight inspection was actually an excellent example of how it should be done. He even shined a flash light up inside the overboard stacks on both engines. He noticed that there was some ragged metal inside the right stack at the weld repairs but that was the way they had looked ever since the repairs were made. Nothing there to concern him in any way.

Fred called for a clearance, received the clearance and the read-back was correct. There were some patches of light rain and low ceilings for the first 250 miles of the intended flight and then the weather was going to be CAVU.

Fred taxied out and took off. He tuned the transponder to his assigned "squawk" and contacted departure control. They told him to climb and maintain his asked for altitude of 23,000 feet. The winds were going to be great up there and he wasted no time in making it to flight level 230.

Fred decided to check the main fuel tanks, just in

Fred set the aircraft up for cruise, leaned out the engines, and looked over at the new GPS and was pleasantly surprised to see his ground speed was staying around 225 knots. Not bad for a 25 year old twin - what an airplane!

Fred had only been in the air shortly over an hour when he began to see the ground. In less than another 30 minutes, there wasn't a cloud in sight. He was still making really good time.

Fred thought he smelled something. Was it smoke? Naw, it was probably just the bleed air from the turbochargers that kept the cabin pressurized.

Little did Fred realize that during the initial climb, the tailpipe on the right engine had cracked in the weld and by the time he got to altitude, a piece about one inch wide by 4 inches long had broken out of the pipe. This allowed the fire from the turbo exhaust to pour out of the hole.

About one inch behind the tailpipe was the firewall. It was made from .023 stainless steel. If you think about it, it would take 11 tiers of this material to make a layer 1/4 inch thick. The fire from the hole in the tailpipe was blasting right on the firewall.

Just over 1/2 inch behind the firewall, right behind where the fire from the tailpipe was its hottest, there are two 1/2 inch aluminum crossfeed fuel lines that carry fuel from either tip tank to the opposite fuel selector valve. As the temperature began to rise, the fuel began to boil. When there was only fuel vapor left in the lines they became hot enough to crack. Eventually they broke open and the fuel pressure that was developed by the heat escaped and fuel from both tip tanks began to pour out of the ruptured lines.

When the fuel/air mixture became right for combustion, a small fire started between the firewall and the main spar. This fire was fueled by the fuel as it ran out of both mains. The fire became larger and hotter.

Fred thought he was using a little more fuel than normal when he switched the selectors to the auxiliary tanks. He looked at all the engine instruments and they all seemed to be normal. Fred though he still could smell a little odor like smoke. He looked out at the left engine and all was normal. He looked out at the right engine and it too looked normal.

Fred couldn't see what was happening beneath the right nacelle. It took several yards behind the speeding aircraft for smoke of any significance to show and he couldn't see any evidence of fire at all. case. He pushed the switch below the fuel gages to the

main so he could read the fuel level in the tips. He was surprised! In the 15 minutes since he had switched over to the aux tanks, he had lost over 20 gallons of fuel from each tip tank!

Fred called ATC and advised them he had a fuel problem and he would like lower and vectors to an airport. ATC told him to descend to and maintain 10,000, they would have lower in 10 minutes, and would he like to declare an emergency? Fred still had no idea there was a fire so he said that he didn't at this time.

Fred reduced power and slowly pushed the nose over on the 414. Everything still seemed normal in the cockpit as he slowly lost altitude.

At 15,000 feet, ATC told Fred they would vector him to Podunk Metro Airport. They advised him that the airport was 25 miles ahead at his 12 o'clock position. He cross checked this with the GPS and sure enough it was there too.

As Fred continued to descend the fire had slowly eroded the bottom skin below the nacelle area and now there was a big hole at the base of the fire. This allowed the fire to become even hotter still and as Fred passed through 13,000 feet, the right wing main spar failed aft of the nacelle. The wing bent up at about a 45 degree angle, the aircraft banked hard to the right, and Fred swore he could hear the metal rip as the wing departed the aircraft. The aircraft continued to bank to the right until it was slightly past 90 degrees of bank, the top wing stalled and the aircraft started a nose down spiral.

Fred grabbed the mike and hollered his call sign and Mayday! Before ATC could answer him and get a return transmission, the aircraft continued the non-controlled spiral all the way to the ground.

Fred had cashed in. The 414 was destroyed in the crash and the following fire.

ATC contacted the FAA and the FAA and the NTSB were on the crash site that same afternoon. The local fire department had extinguished the fire and the county coroner had extracted Fred's remains from the wreckage and moved them to a local morgue where an autopsy could be performed.

The wing had come down about a mile from the crash site. The NTSB found the main spar melted completely in half just aft of where the crossfeed fuel lines used to be. There was evidence of fire inside the wing structure and on the back of the nacelle.

One of the FAA people found the right tailpipe in the wreckage. It had broken off of the turbo-charger at the point of impact and was badly damaged. However, the portion of the pipe that had been seam and patch welded showed clearly that the pipe had a hole burned in it prior to the crash.

As much exhaust as possible was extracted from the

debris and was sent to Washington for lab analysis by the NTSB. The NTSB determined that there were several patches on different components and at the actual point of failure of the right tailpipe, there was even a patch welded on top of an earlier patch.

Remember at the beginning of this story when I mentioned this was fiction? The airplane, a 414, and Fred Fazook, the pilot, used as an example in this article, are definitely made up. The theory behind the story is absolutely true and proven from investigations into several fatal accidents involving turbo-charged twin Cessna models. Failed exhaust components on the above models have been directly or indirectly listed as the cause of at least 10 accidents in the last three years.

Some of you may remember recently that a wing failed on a T-34 during an airshow. For a short period of time following this accident, the whole T-34 fleet was grounded while the wings could be inspected. Just one accident in the public eye caused the whole fleet to be grounded. If the FAA and NTSB had used the same rules for turbo twin Cessnas, the whole fleet would have been grounded several years back when the NTSB and the FAA first knew there was a problem. We have either been lucky or a few that are no longer with us were very unlucky.

The turbo exhaust Airworthiness Directive that has been long in coming and promised for over two years is going to be a reality, possibly by the time you are reading this.

What happens now? We have come up with a few simple rules that could keep you flying with a minimum of hassle.

1. Do nothing until the AD is printed, mailed, and has a firm effective date. Doing anything before the effective date of the AD will probably mean you have to do it over again as outlined in the body of the AD.
2. Over the next two years, start stock piling any exhaust parts you feel you may need. If you wait until 24 calendar months from the effective date of the AD, you may wait for an extended period of time for parts.
3. At the next scheduled inspection after the effective date of the AD, do a pressure test and visual inspection of the complete exhaust system. Replace any part that fails the test. Keep meticulous records in the airframe logs!
4. Remove any seam welded or weld patched exhaust components, before further flight would be best, but, no later than the first 50 hour inspection.
5. Talk to your mechanic. He signs the logs!

Fred saved money, but not his life.