

THE LAST FLIGHT OF 5376 XRAY

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West Coast Operations

It was one of those rare clear, blue-sky days in Oregon. We had been operating in the Pacific Northwest for a week on business and the weather had cooperated fully, giving us day after day of perfect weather to enjoy this magnificent part of America. It was time to leave for Minneapolis and home. The aircraft was a Cessna 421B- N5376X.

Upon departure from Eugene, Oregon we had just leveled off at FL230 when the right engine powered down and started billowing smoke. A quick call to Center got us down to 17,000 feet and a bearing to the closest airport- Redmond, Oregon. During descent I went through the checklists trying to find out what was wrong with the recalcitrant engine.

Obviously there had been an internal failure and the engine controls that I had available to me in the cockpit would have little effect, outside of shutting the engine down altogether. The smoke was emanating from the exhaust and not from the engine cowling so I felt confident that there was not an engine fire in progress. I have always subscribed to the theory that if an engine is at least pulling its own weight I will not shut it down. My main responsibility is to get my passengers safely on the ground. If the engine is destroyed in the process, so be it- they can be replaced.

After touchdown at Redmond the right engine was shut down and we taxied into the only operation on the field- a place where time had seemingly been warped, for the ramp was loaded with PBY Catalinas and B-17 bombers. It was a forest fire-fighting base. I found the man in charge and he told me that he currently had his own problems. One of the B-17's engines was in his hangar being feverously worked on by his crew. If they were unable to bring the "17" to operational status, the Forest Service would impose financial penalties. They had one more hour to get the engine hung and checked out. Watching these pros accomplish the seemingly impossible was a thing of beauty- they did it in 55 minutes.

Now they turned their attention to us. The cowling was removed and the oil filter opened for examination. The filter was full of aluminum, an internal part on the turbo system had failed, pumping oil into the intake system and drowning it in black lubricant. Taking time for our problems, they flushed the engine with solvent, bypassed the turbo, and got the aircraft into a ferry-able condition. Given their commitments to the Forrest Service it was more than I could have asked for and I was deeply appreciative.

My passengers rented a car from a local agency and drove to Portland for a commercial flight home. I flew 76Xray solo to Portland using partial power on the right engine and left it with a Continental Engine Distributor for repair. A week after returning home on a commercial flight they called to say the aircraft was ready. I returned to Portland to ferry 76Xray home, this time taking my wife along so that she could have a break in her life.

We picked 76 Xray up at the repair facility. They had replaced the bad turbo, the cause of our earlier problem. Taking advantage of a lack of scheduled operations, we flew down to Bend, Oregon and spent a

few days there relaxing. This is one of the advantages of being a corporate pilot working for a first-class company. They paid for everything, including my wife's airfare from Minneapolis. After leaving Bend we stopped at Redmond and gave the crew that had been so generous and helpful a couple of bottles of the best wine I could find at a Portland liquor store. Then, after a circle around the magnificent Crater Lake, we headed East. The return trip to Minneapolis was uneventful.

Mid-West Operations

The day after my return I left with several passengers for Omaha, Nebraska. It was like a milk run, drop off two and pick up one. With my lone passenger we lifted off from Omaha's Eppley Field destined for an airport in the Midwest.

At the time I had no idea that this flight was to result in an aberration in my log book- I would end up with one more takeoff than landings.

N5376X would end this trip as a total loss.

Level at FL230 and about 50 miles from Tell City, our destination, Center calls with our first step-down altitude. "November 5376 Xray descend to 17 thousand, Tell City altimeter is 30.12." "Out of 230 for 17 thousand, three zero one two, 76 Xray." One seven thousand is dialed into the altitude alert system along with the altimeter setting- the "down arrow" illuminates and the chime sounds to inform us that 17,000 is indeed "that way", and not "up". The cabin pressurization controller is adjusted for the Tell City elevation. The pressurization gauges indicate that all is proper, and your ears tell you that the cabin is descending.

I was a little edgy about the right engine on my return trip from Portland the previous day, waiting for the "other shoe to drop" so to speak. The Continental people had replaced the turbo and thoroughly flushed all metal contaminants from the engine. Still, I wondered about its reliability. So far all temps. and pressures had been normal and the engine had responded properly throughout all power ranges. Just being a Nervous Nellie I told myself, relax.

Comm. three is tuned to the ATIS for Tell City during the descent. "This is Tell City information Delta. Tell City weather is clear, visibility 15. Wind is 260 degrees at 5 knots, altimeter 30.14. Landing and departing runway 27. Inform Tell City on initial contact that you have information Delta." I look again at the approach plate that is on the wheel. We are Northwest of the field descending. Approach Control will most likely vector us to Halon, the Outer Marker, even though it is a clear day.

Nav. one is set up in the RNAV (Area Navigation) mode to display bearing and distance to the Marker. Nav. two is set up for the ILS. The ADF (Automatic Direction Finder) is set to the LOM (Locator, Outer Marker) frequency and the ADF needle on the RMI (Radio Magnetic Indicator) slews around to point at the LOM, about 20 degrees off to our right. The approach plate shows no unusual obstructions around Tell City, no tall towers, no antenna farms. This is my first visit to the field, I want all of the information I can get off of the Jeppesen plate.

"Cessna 76 Xray contact Center 124 point 55, good day." "124 point 55, good day to you Sir, 76 Xray." "Good morning Center, Cessna 76 Xray is with you out of 17 point seven for 17 thousand." "Good morning 76 Xray, continue your descent Sir to 10 thousand, information Delta is current at Tell City." "We're out of 17 thousand for ten, and we have Delta. Requesting direct to Halon (the Outer Marker)." "Roger 76 Xray, you're cleared direct to Halon. Continue your descent to 3 thousand. Contact Approach on 122. 35." "On down to three, contact Approach- good day Sir."

Final Approach

"Good morning Tell City, Cessna 5376 Xray is with you out of 13 thousand for three, direct Halon, Delta." "Good morning 76 Xray, Tell City. Would you like to proceed direct to the Field, or continue toward the Marker?" "We're a little late in our descent this morning, hustling on down. I think we'll continue on to the Marker and then in from there if it's no problem." "No problem at all Sir, fly heading 090, descend and maintain two thousand, one hundred." "090 on the heading, we're out of eight point nine for two point one, thank you, 76 Xray."

Since leaving 17,000 feet I have been slowly bringing the Manifold Pressures back from the cruise setting of 32 inches, two inches at a time. Wait 2 minutes, another two inch decrease, wait, and so on. The target for the approach is initially 26 inches of Manifold Pressure and 1,725 RPM. Leveling at two thousand one hundred feet (1,400 feet above the airport) all power settings are at the target. The RNAV display shows the Halon Outer Marker three miles abeam to our right. The mixtures are brought up to full rich. Fuel pumps are switched to the "ON / ARMED" position from their cruise setting of "LOW". Cabin pressurization is at the airport elevation. The landing checklist is complete except for gear and flaps.

"Cessna 76 Xray, turn right heading 230. Intercept the Localizer for runway 27. You're cleared the approach, contact the Tower now. Good day." "230, cleared the approach, contact the Tower. Good day." "Good morning Tell City. Cessna 76 Xray is with you, just outside of Halon." "Cessna 5376 Xray, cleared to land runway 27. Report Halon inbound." "Cleared to land, we'll call Halon. 76 Xray." About one mile from Halon we intercept the Localizer and track it inbound. The flaps are lowered 15 degrees. Gear to go. With the flaps down, I advance the power to 27 inches.

A giant hand reaches out from space and starts to shake 76 Xray violently. The gauges show dropping Manifold Pressure and RPM on the right engine. "What the hell?" "Not again!" I pull the right throttle back to verify- no change. I reach over and bring the right propeller control down, past the gate and into the "Feathered" position. The right engine throttle is brought back to full idle, and mixture is brought back to the "idle cut-off" position.

The right engine seizes before the propeller can get into the feathered mode.

I am gazing at a prop. that is "flat into the wind". An incredible creator of drag. At least the vibration has stopped. "Tell City, 76 Xray, be advised that we have lost our right engine." "Roger 76 Xray, will you need any emergency equipment?" "No Sir, thank you. Just wanted to let you know." "Roger 76 Xray, keep me advised. Will you be able to make the Field?" "No problem Sir, 76 Xray." Now I'll need to bring up the power on the left engine considerably to compensate for the failed right engine with its flat prop.

I run the left engine prop. control up to the forward stop for maximum rpm and advance the left throttle.

The left engine quits.

Landing

My first reaction was that of a real pro. "Well, isn't this just great?"

I'm dealing with a very small window here. We are 1,400 feet above the terrain. Both engines have quit.

God, it's quiet in here!

The aircraft is slowing down. Airspeed is decaying rapidly. The flaps are at the first notch, and they're not helping matters. If I retract them we will settle several hundred feet as the aircraft strives to maintain equilibrium. Right now I don't want to give that altitude away. Thank God they are only partially extended, full flaps would really exacerbate the situation.

I leave the flaps alone.

I've got to find a place to set down. I've got to get the left engine back to power. What the hell is going on here? The left engine, that is my salvation. Forget the right one- it's already seized. Fly the airplane! Left engine fuel pump- it's "ON". Left engine mixture- it's "rich". Fuel selector- on the "Main" tank. Everything is as it should be. What am I missing here?

The airspeed! It is down to 110 knots! The minimum single-engine control speed for the 421B is 87 knots. The recommended safe single-engine speed is 106 knots. Now the airspeed is down to 100 knots. I have to increase that. I have to get the airspeed up to 106 knots. I'll find whatever has made the left engine decide to go off-line. When I do, there will be a surge of power as it comes back to life. If the aircraft is below 87 knots when the left engine powers up there will not be enough air flow past the rudder to maintain directional

control. The aircraft will enter a roll and strike the ground inverted. I don't want to do a Vmc (Velocity, minimum control) roll at less than a thousand feet.

What the hell is going on here? The right engine has seized, and the left one is wind milling. What is the correlation between the two? The only time they share anything is when the fuel crossfeed is on. I check to verify. The fuel crossfeed is "off".

I push the nose down to get more airspeed. The windshield is filled with a view of the ground, but this time there is no runway in the picture. I have to find a place to set down! Watch that airspeed! More nose down. There's a road! My God, we're losing altitude fast! Quick, I have to decide- go for the road? No, there are cars on it- can't do that. I have to figure out what is going on "inside", but I also have to look "outside". This is no time to fixate. What's ahead? Oh great! Woods! Check the mags. No change, the left engine is still wind milling and producing no power. Fuel flow? Have I got fuel flow? No, the fuel flow needle is resting at "zero". What the hell is happening? Fuel pumps are "on", mixture is "rich", mags. are both "on". The ground is rushing up towards us. Fly the airplane! Nose down! Maintain minimum 110 knots airspeed. Fuel selector is on "Main"- what am I missing here? You don't lose both engines on a twin-engine aircraft. It just doesn't happen.

But it has.

Ahead there is a clearing. I can make that! I give up on trying to get the left engine restarted. Fly the airplane! My God, with no engines you really need a steep angle of descent to keep the airspeed up. Tell City Tower calls- "Cessna 76 Xray say your status?" "Cessna 76 Xray is unable to make the airport. We're landing off-field". We clear the trees by 10 feet. There is the clearing. I can make this! The ground is rushing up. Hey, the gear! An unknown reaction makes me reach over and drop the gear- it's electric and doesn't care if the engines are running or not.

I can make this field!

What's this? A hill? A lousy hill in my landing zone? Thank God I have some airspeed left for elevator authority. The stall warning start screaming. With no engines running it seems incredibly loud. We strike the hill just below the crest and rip off the landing gear, becoming airborne again for fifty feet. We come down again. Hard. With the landing gear ripped off, I am sitting about three feet above the ground.

The aircraft slides across the field into a stand of corn. Won't this ride ever stop? It's loud. The corn is beating on the nose, the wings, the windshield. On we go. Finally, after picking and shelling God knows how much of the crop, we come to a stop.



Once again my professionalism comes through- I sit there in stunned silence.

Aftermath

I turn the Master "Off" and the Mags. "Off". I look over at my lone passenger who has been occupying the right seat for the entire trip. He has the same dazed look that I know is also on my face. The cabin is littered with stuff. At the time I thought we would never stop, but in fact we decelerated quite rapidly. My sunglasses and radio headset had been pulled off of my face. A 3 foot by 1 foot by 1 foot cooler full of ice, pop and beer that was behind a chair 4 rows back had crashed into the cabin divider behind my seat. The cabin divider saved me a good head cracking. I start picking up loose objects. Look how messy my airplane is! Slowly it dawns on me. The main fuel tanks were about 75% full.

Full of highly volatile 100 octane avgas. This thing could be a bomb, we gotta get out of here!

We maneuver through the cabin to the door and release the latch mechanism. The top half moves up and the lower half drops to the ground- horizontal. With 76 Xray resting on the ground it's no longer an "air stair" door. We "evacuate" the aircraft, and move about fifty feet away in case there is a fire and possible explosion. There is no smell of avgas. No smoke, no fires. I walk around the aircraft. My beautiful airplane! Looking back there is a swath cut through the corn, littered with small pieces of aluminum. I walk back to the hill. The main landing gear is there. The nose gear is still attached to the airframe, folded up inside the nose well- sideways.

Slowly I become more rational. A figure appears, walking across the swath we had cut through the corn. It's a State Trooper that had witnessed our "landing". He had apparently been alerted by the Tell City Tower. He wants me to come back to his patrol car to "fill out some forms". What, you have forms for airplane crashes? This is insane. I refuse to go. He is adamant. I am even more so. He walks back to his car and gets "the forms". I fill them out to his satisfaction. I ask him if he could please drive my passenger to the airport terminal. I ask my passenger to call our company and report the incident so that they don't hear some second-hand "horror story".

They leave and I am alone with 76 Xray. What the hell happened? I walk over to the aircraft to check the main fuel tanks. The task is easier now that they are resting on the ground. The tanks are almost full and smell like avgas- not kerosene, not water. I walk around the aircraft making a closer examination. Considering the force of the initial impact I am amazed that the pressure vessel shows no signs of damage. The radome is scarred from the corn but intact. The leading edges of the wings and tail are beat up pretty badly. I stand there taking it all in, confused and angry. Confused as to what had made this happen and angry at myself for not preventing this result. I thought I was a professional pilot. A professional pilot would not have let this happen.

I am in a very dark mood.

Another figure comes walking down down the corn swath. It is a reporter for a local newspaper. "What happened here?... who own's the plane?... what's your name?... how do you feel?..."

I feel like reaching over and strangling the little Cretin.

I finally realize that he is not going to go away and that my inner hostilities towards him will not help the situation. I answer his questions as vaguely as I can. Satisfied, he takes some photographs and leaves.

My passenger returns. He has called the company and informed them of the situation. At my request he has located a "security agency" and arranged for a 24 hour guard to keep the curious and the vandals away from 76 Xray. In addition he has gotten us a rental car. He stays to guard the remains of 76 Xray while I trudge off to the rental car and a visit with the FAA.

The fellows in the control tower are glad to hear that we are not hurt and the necessary reports are filled out. They give me a lengthy form that has to be completed and sent to the FAA in Washington. They let me listen to the audio tapes from our initial contact with Approach to the "....we're landing off-field." final transmission. I am pleased that at least I sounded calm. They advise me that representatives from the nearest FAA GADO (General Aviation District Office) are enroute to examine the scene of the accident.

I called my wife and told her that we were in Tell City, but that the airplane wasn't. She takes it better than I thought she would- married to a travelín man too long I guess.

Back in the cornfield the FAA arrives, three of them. They measure distances from the first contact to the final resting point, take fuel samples from the tanks, and write down the position of all of the controls. They give me more forms to fill out and leave. Barney Fife shows up to guard the airplane. I open up the nose baggage compartment and get our baggage. Realizing that it will be the last time I see 76 Xray for awhile, I decide that I should get my Jeppesen books and personal effects from inside. The cabin door falls into its horizontal position and hits me on the foot. It is the only injury of the day.

We had intended to over-night in Tell City from the beginning, so we already had rooms reserved at a local Ramada Inn. After check-in and putting our bags in the rooms we head directly to the bar. I have drank copious amounts of booze in my day, but seldom have two people drank as much as we did that night- and not gotten drunk.

The next day I boarded a commercial flight for home. I wanted to see my wife, and I had to make a personal report to my company.

It was time to start finding out what had brought N5376 Xray down.

Revelations

The time has come to "fess up". There never was a Cessna 421B, "N5376X". Nor was there ever an accident such as I have described at "Tell City".

Oh, the accident happened alright, just as I have described it, that part is all true. Its just that the city name, like the "N number", is a creation for this narrative.

(Although there is indeed a Tell City, Indiana. It was the scene of a horrific airliner accident. Years ago, on a clear day, a Lockheed Electra "opened up" at 25,000 feet over Tell City. It rained down parts, baggage and bodies over the area. A small stone monument was erected at the site in their memory. I have visited it. It is a very poignant place.)

Enter, the lawyers. The legal profession. I quickly found out that what had happened to "76X" had happened before. People had died. At my home base, Minneapolis, it happened to a 421B on departure. They did a Vmc roll and went into a housing area inverted, killing everyone on board. In fact, according to our insurance representative, we were the first to survive the scenario.

Over time I began to think that they wished we hadn't.

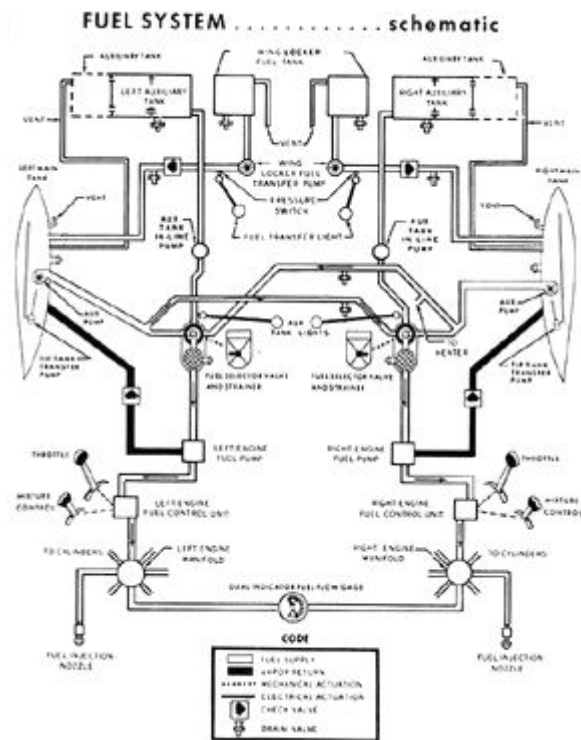
I ask the reader to be patient with me here, and understand. I'm not trying to be cute and evasive. I'm trying to protect myself. Product Liability cases are expensive and ugly. As recently as a year ago I was subpoenaed as an "expert witness" (the Courts term, not mine) to testify in a wrongful death suit. The 421B in question had experienced the same situation as we had, except that he to had done a Vmc roll and gone inverted into a lake. There were no survivors.

There was a design "anomaly" in the 421B fuel system. The fuel pump switches were labeled "Low", "Off", and "On". "On" was really "Armed", although the switches were not labeled that way. The pumps were in-line with the fuel system and controlled by a pressure switch. The pump motors were "center-tapped". This meant that in normal operation the pumps were driven by one-half of the ships electrical voltage- 12 volts. In this mode they acted in a fuel vapor purging capacity. Normally the engine-driven fuel pumps would supply adequate fuel to the engines.

In the event of an engine-driven fuel pump failure, and if the electric pumps were in the "On" (armed) position, the pressure switch would sense this, and activate the pumps in the "full power" mode. In this mode the electric motor was no longer run off of the center tap but the full winding- 24 volts, normal ships power. At this setting these pumps could put out an incredible amount of fuel- enough fuel to flood out and stop an otherwise fully functioning engine.

Conclusions

We performed tests with another 421B at Minneapolis. At any setting, other than full power, if the pumps were engaged with functioning engine pumps, the engines would flood out and die. Interestingly, if the fuel selectors were placed in the "cross feed mode" (where both engines are supplied by the same fuel tank), activating the electric pump would kill both engines.



This was one very powerful pump.

If the aircraft was operating at less than full engine power, and if the electric fuel pump activated, the associated engine would power down from the excess fuel. If the aircraft was at full takeoff power and the pump became engaged, there would be no difference. However, as soon as power was reduced from full, the engine would power down.

And that, is what happened to "5376 Xray". As we approached the Outer Marker the right engine went into violent convulsions and seized. I never did find out why, but one has to suspect that it was tied into the prior incident in Oregon. These vibrations activated the fuel pressure sensor on the left engine, and it in turn activated the fuel pump into the "full power" mode, and flooded out the remaining left engine. A subsequent examination of the spark plugs revealed them to be black and sooty- confirmation of the fuel flooding.

The only thing that could have saved us that day in "Tell City" was to act exactly the opposite of the Emergency Procedures Manual. As per "the book", I had the pump "On" (armed), mixture "Rich" and fuel selector on the main tank. To alleviate our situation I would have had to turned the pump "Off" and leaned the mixture back to near idle cut-off to clear out the excess fuel.

Oh, remember the observation that the fuel flow needle for the left engine was "resting on zero"? It wasn't. With the incredible fuel flow from the electric pump, it had wrapped itself all the way around the gauge and was reading off-scale maximum fuel flow- right next to the "zero". I just wasn't looking at the gauge the instant this happened.

I caution the reader to not throw the baby out with the bath water. The Cessna 421B is an outstanding aircraft. It carries a massive load of passengers, baggage and fuel. It has a large, comfortable and quiet cabin. It is able to operate higher, and faster, than many much more expensive turboprop aircraft. In fact, astronaut, and former moon-walker Eugene Cernan owns and operates a 421B as his personal aircraft.

However, it is a very complex aircraft. To this day it remains the most complex piston-powered aircraft that Cessna ever built. In truth, almost every twin engine turboprop is, in many ways, less complex and easier to "system manage" than the 421B.

In fact, knowing what we knew about these problems, my company did not hesitate to purchase a replacement for "N5376X"- a new Cessna 421B. N1557 Golf.

I modified my operational procedures when we placed 57 Golf into service. Prior to takeoff the pumps were placed into the "On" (Armed) position. At this critical phase of aircraft operation the sensors and pumps could automatically do what they were designed to do- quickly return fuel flow to the engine(s) in the event of engine pump(s) failure during takeoff. After departure, and before any power reduction, the pumps were placed into the "Low" position. Only then was power reduced. Enroute, and during approaches and landing they were left in that mode. If the need arose I could always turn them on manually. In the fifteen years that I operated N1557G I never had a problem.

Epilogue

I knew that someday I would come across "5376X". Even though the insurance company had totaled it out (and paid us off in full in four days) someone would rebuild the aircraft and put it back into service. Just like in the automotive world, aviation has people that do those things.

I found her in Denver, four years later.

I had dropped some passengers off and was walking down the flight line to 57Golf when I spotted her. She had been repainted and looked a little dowdy. After walking around her I returned to the lounge and asked the receptionist if she would please page the flight crew for "5376X". Two pilots in their early 20's walked up. I introduced myself and asked if they owned "76 Xray". They replied that they didn't, but that they worked for the charter company that did. Feeling a little easier knowing that I wasn't talking to the owners, I told them that my company had previously owned the aircraft, and how was the old gal doing?

They stated that the aircraft had constant system problems, was out of rig and couldn't be trimmed for coordinated flight, and had numerous "working rivets" (rivets that have become loose). At this point I "came clean" and told them "76X" had been in a major accident and had been totaled out by the insurance company. They replied that they had looked at the aircraft log books and that there were entries to the effect "repaired airframe, as necessary". I gave them my card and told them that if they needed any further information to please get in contact with me.

They never did.

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