

“Roswell Departure, this is Twinstar niner four three echo sierra, checking in out of two point five for eight...and I am having a little trouble with the landing gear.” And so began my flight back from Roswell, New Mexico (KROW) on September 18th. I had flown down to pick up my son, Daniel, a second-year cadet at New Mexico Military Institute, and was bringing him back to our home in Denver for a weekend furlough.

All had gone well on the trip down to KROW from Centennial (KAPA) earlier in the day. The preflight was unremarkable on both ends of the two-leg trip that day. Nothing seemed out of place, nor did I see anything that looked unusual. Particularly, there was no leaking hydraulic fluid evident.

After assuring Roswell TRACON that I was not declaring an emergency, I began to assess the situation. I could see in the little spot mirror on the left engine nacelle that the nose gear was hung-up at about half to two-thirds retracted. I could see almost all of the tire below the open gear doors. I continued climbing to assigned altitude on the assigned heading, and began the trouble-shooting process. After cycling the gear a couple of times, seeing the nose gear move a little, but never either fully extend nor retract, I was sure I was in for a long ride home. The green “down and locked” lights for the main gear did not go out, so I expected that the gear was down. The lower airspeed confirmed this fact. I decided to leave it there. If it’s working... don’t fix it.

After reaching the assigned altitude, and began the enroute phase of the flight, I took the opportunity to call Aspen on the cell phone. I dialed the number and crammed the phone under one of the headset earcups. Soon, I was on the phone with Kevin Shaw, and he was working with me on some ideas. The good news is that I had already had the same ideas, but it was good to hear them from him. Some confirmation in these circumstances is comforting. Then I lost service. I would not have reliable service again until near Pueblo. I looked at my battery and saw I had only half strength left. I thought I had better save the power for when I really needed it. I told Daniel to please turn off his phone. We might need it later if mine died.

The plane had been refueled at Roswell, and had full wing tanks. I had not filled the auxiliary tanks, and has assumed that they were pretty close to empty (no gauges in those tanks, and you can’t see the fuel level from the filler openings). I knew that the performance (especially the fuel burn) would be degraded by the current configuration, so I decided to take advantage of one of the great features of the G-1000, the fuel endurance rings. The solid green ring represents the absolute calculated endurance at the current fuel burn, and the dashed ring (slightly closer in) represents the endurance with VFR daytime reserves. I turned the range knob clockwise until I could see the endurance rings, and KAPA. All it took was a glance to see that the solid green ring was sitting right over KAPA. I knew that I would need to do something different in order to make it safely home.

I quickly checked my kneeboard for the V_{LE} speed. I have a series of “quick reference” pages which I put before the airport diagrams in the plastic-covered flip pages in the rings. I could see that any reasonable cruise would be under that critical speed. The next step

was to find a cruising speed which would get me to KAPA with adequate fuel to do some last-chance work to get the nose gear freed up.

Since the Twinstar's engine control system is a series of computers, there is not the normal "six pack" of redundant throttle, propeller and mixture knobs normally prominent between the front seats in most twins. In fact, you don't really *control* the engines with the two power levers in the center console. Rather, they allow you to be a voting member of the engine control committee. Your input tells the electronic committee what you want done, and the computers decide if they agree, given all the other variables in the mix.

I began to pull back the power levers, and the committee agreed. I watched the speed come down, and the green dashed ring move past KAPA. When the distance between the solid endurance ring and the dashed endurance ring was duplicated by the distance between the dashed ring and KAPA, I stopped moving the levers. This was my "rule of thumb" calculation to give me about an hour of endurance past my destination. I really hate to fly into the last hour of fuel. Time, airspeed, and altitude are the three best friends a pilot can have. Right now I needed all the friends I could get.

I was handed-off to Albuquerque Center, and informed my controller of my landing gear issues. She said that she would put a note in my flight plan, and every successive controller would automatically be informed. I told her that my airspeed for the trip would not be as filed, but more close to 130 kts true. She said, "That makes sense". The airplane was flying safely, and no more systems were failing. I was paying very close attention to the engine gauges. I would be flying over mountains back to Centennial, and didn't need another issue with which to deal. I knew if nothing else failed, I would make it to Centennial just fine. I knew that wherever the plane landed – there it would remain for a very long time. I wanted that landing to be at our home base, Centennial. I really didn't want to land anywhere else. Centennial has the mechanic that can work on the problem. Centennial is the home base for the plane. My truck is parked under the shelter there, as well.

As I crossed over the last row of mountains near Raton, New Mexico, I tried some vigorous yawing control inputs. I was hoping that maybe there was some sort of physical blockage that might be shaken loose by a little wind-induced torque on the nose gear which was still hanging out in the wind. I had already pulled the emergency gear extension handle, but that had done no good. After all this, the little mirror confirmed that the nose gear remained firmly stuck.

As I was handed off from Denver Center to Denver Approach, I was on a routing toward Falcon VOR. But I had flown this route enough to know that very soon Denver TRACON would give me a direct routing to Centennial. I keyed the mike, "Denver Approach, this is Twinstar three echo sierra, can you please vector me east of town so I can try a couple more maneuvers to see if I can get this gear down?" The response was a vector well east of the city. My next communication was to ask for a block altitude, so I could pull some higher-G maneuvers to see if that might help. My request was granted.

I told Daniel that we were going to have a roller-coaster ride like at the carnival, but I will be in control of the ride this time. I told him I would enter a shallow dive, but would pull up pretty quickly to try to get the gear to come down. I throttled-back a little and pushed the stick forward. Near the bottom of the block altitude, I pulled up hard. I have done some aerobatics in an AT-6, and knew what two Gs fell like. I replicated that feeling in two good attempts in the Twinstar. A glance in the mirror again confirmed my efforts were to no avail.

I informed Denver Approach that I was unsuccessful in getting the gear down, and I might as well just go over to Centennial and get the plane on the ground. It was going to be dark soon. The controller asked me how many souls on board, and how much fuel. I told him there were two of us, and gave him the amount of fuel remaining in the tanks. I followed his instructions, and turned toward Centennial.

After a fly-by of the tower at Centennial, so that they could confirm for me that the two mains were fully extended, I made a left turn for the downwind for 17L. I told the tower that I preferred to extend my downwind somewhat because I would need to set-up this landing very carefully. I also told the controller that I would prefer to land on 17R, so as not to mess up the best runway. Those requests were approved. I told Daniel that I was going to run out of hands when the landing occurred, and asked him to please shut off the fuel when he saw the engines stop. I showed him where the fuel levers were, how to operate the detents which prevent accidental shut-off. I told Daniel to please tighten his seat belt as tightly as he could stand it, and I did the same. I made certain that all heavy items were in the floor behind us, and not on the seats. Daniel was ready, and so was I.

At about a mile out on final, I cautiously flipped the flaps lever to the "Approach" position. A look over my left shoulder confirmed that the flaps were moving. Thank goodness for electric flaps. If I have this much, I will have the rest when I need them. A check of the wind sock at the end of the runway showed me that there was very little wind. Good.

Just before the threshold, I flipped the flaps to the full-down "Landing" position and then reached over to flip off both "Engine Master" switches at once. The Thielert engines chugged to a stop quickly, with feathered props. I watched the airspeed, and maintained alignment with the centerline as I saw Daniel work the fuel levers.

I gently put the main gear down on the runway and cautiously applied some of the plane's weight to them. They held. Good. I danced on the rudder pedals to keep the plane lined up, and eased back on the stick as we began to slow. Eventually, there was insufficient air across the elevator to keep the nose up, and it fell to the ground. I hated the sound that followed, and really hated this particular view of the runway. The only thing that made me happy was that I saw the white centerline stripes running right under the nose. The plane began to veer to the left, but full rudder and a little tap on the right brake brought it back to the center.

The plane stopped, and I popped open the canopy. Daniel released his restraints and got out and left the plane to the rear – just like I had told him to do. I shut off all the electrical

switches, and was aggravated that I had not done so earlier. Oh well, I guess you can't do everything perfectly.

The fire trucks rolled up, and the firemen were far more excited than either Daniel or I. I guess I had time to get used to the inevitability of a noisy, ugly landing, but they were new to the situation. There was no smoke, and no fire. Good. Hydraulic fluid covered the belly of the aircraft from the front wheel well opening, backward. A small puddle of the plane's red blood was forming just behind the front gear doors. There could have been no fluid left in the system.

The next day I went over to Arapahoe Aero to see what they found out. They told me that part of the main hydraulic cylinder for the nose gear had come loose. When it rotated, it carried one of the hydraulic lines (and its fitting) into the path of the locking pin in the hinge of the front landing gear scissor mechanism. That locking pin had grabbed the hydraulic line and the cylinder, rupturing the line. Then the mechanism it was captured by the line and cylinder – and became securely stuck in that position. Good. I was relieved that the gear didn't just fall into the down position once a mechanic jerked around on it a little. It is little comfort, but Larry tells me that my experience with this particular failure seems to be the first for the Twinstar, worldwide. Good.

I have friends who fly thousands of hours a year for airlines and charter services. They haven't had anything like this happen to them. As pilots, we trust our airplanes, and the mechanics that work on them. But I think we should always trust with some caution. To quote Ronald Reagan, "Trust, but verify".

After flying with maybe a half-dozen instructors over the last forty years to gain the various certificates and ratings I hold, I never once had an instructor ever talk to me about what I should do if faced with a partial deployment of the landing gear. In the end, what made difference, was a couple of news stories about planes experiencing nose gear failures of one type or another. I remembered one in particular, watching live news footage of a stricken Beechcraft King Air which had to land with deployed mains, and no nose gear. I thought-through what that pilot must be doing, step by step, never dreaming that I would be doing precisely the same thing in a couple of years. But thinking-through his emergency helped me immensely with mine.

At the end of the day, both Daniel and I were fine, and neither of us had any unseemly stains in our trousers. Daniel has been telling his friends that he was along with me when we "crash landed". That description seems to me to be hyperbole, but I know that he will glean more attention from the girls with that particular phrase, so I don't give him any trouble over it.

That day I became the "other guy". My advice to you? Prepare yourself for a variety of emergencies and think them through in calm circumstances, well before you are faced with them. Rehearse them in your mind. Question your instructor on how to handle them. That's why they are there. Don't be complacent. You can be the "other guy" someday, too.