

CALLBACK

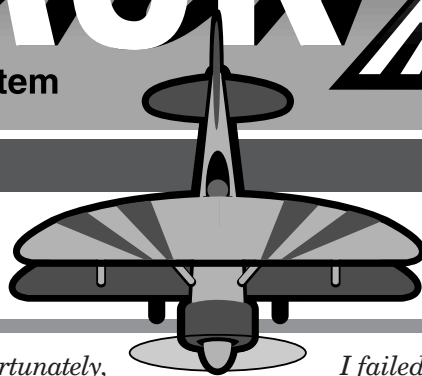
ASRS

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Incidents Involving Flight Towards Terrain



Analysis of a recent controlled flight into terrain (CFIT) accident revealed that the flight crew errors could be grouped into those that involved a failure of *group* interaction skills, and those that involved *individual* errors in thinking, planning, recognizing, preparing, or remembering (FSF *Flight Safety Digest*, May-June 1998). An air carrier Check Airman's report to ASRS provides examples of both error types—even though the aircraft involved was equipped with the latest terrain-avoidance technology:

■ *Late night training flight...We were going out [to] make a 180 degree turn and land. The aircraft is equipped with an Enhanced Ground Proximity Warning System [EGPWS]. It was on, and showed some terrain in the green band at the 12 o'clock position. I vectored the student on a modified procedure turn. I put my head down to get the VREF numbers and heard the ground proximity warning, "Caution, terrain." I took over the controls and performed our escape maneuver and gave the jet back to the student. The student allowed the jet to descend again while my head was down. Again the ground proximity [warning] went off. I did our escape maneuver again and flew the airplane to the final approach course and let the student land.*

There were only 3 of us on board. Another student was in the jump seat. I asked them if they saw the terrain on the enhanced display and they said yes. They thought I would tell them when to turn. I told them to fly the jet first regardless of who is in the left seat (I'm a Check Airman). I should not have looked away while in that phase of flight with new students unfamiliar with the area.

Enhanced GPWS is a second-generation terrain avoidance system that is much prized by pilots. But it's no substitute for proper training, clear communications among crew, and a primary focus on flying the airplane.

Rules One Through Ten

The flight crew of a Turbo Commander rediscovered a basic flying rule while trying to troubleshoot a problem on an IFR approach over mountainous terrain. The First Officer (the flying pilot) reports:

■ *After passing the VOR, we were descended to 10,000 feet and given a vector towards the final approach...We were traveling at approximately 230 knots. During this process the directional gyro on my side of the cockpit failed and the Captain was trying to diagnose the problem. At about this time, we were advised to descend and maintain 3,800 feet, which is the MVA [Minimum Vectoring Altitude] for that sector. Our descent was delayed somewhat so we were descending fairly rapidly while trying to diagnose the directional gyro problem and join the localizer.*

Unfortunately, I failed to arrest the descent at 3,800 feet, and we were called by the Tower upon reaching approximately 3,300 feet [and] advised that the Tower was receiving a low altitude alert. We were advised to climb immediately, which we did...

I am constantly preaching to everyone that rules 1 through 10 are "fly the airplane first," and I simply failed to follow my own rules. I should have...allowed the Captain to work out the problems. Fortunately, [this airport] is an excellent ATC facility. They quickly caught our altitude and gave us an immediate climb...Our rate of descent was greater than 2,500 feet per minute which allowed for very little deviation time.

Flight crew distraction is a factor in many accidents. Our reporter's analysis is accurate. In addition, pilots must be trained to recognize when they are rushed, distracted, and susceptible to error.

Spin City

A pilot practicing aerobatics over a private pasture learned why air show performers don't attempt some maneuvers:

■ *I was using a base of 1,500 feet AGL while I performed advanced aerobatic maneuvers. I had worked all night the night before and was somewhat tired. I had misjudged a couple of maneuvers...and realizing this, added 200 feet to my base...I entered a hovering maneuver at 1,700 feet AGL. I pulled the nose up to a 60 degree or so angle with full power and used the rudder to keep it straight...A popular air show performer performs this maneuver and then rudders the aircraft in a small turning circle to the right. I have done this maneuver many times. This time, I decided to do a left-hand turn. There is a reason the popular air show performer turns right. The aircraft suddenly broke into a left-hand flat spin. I pulled the power, put in full right rudder and released the stick...The rudder had no effectiveness. I pushed the stick all the way forward which only resulted in a cross-over spin to inverted. By this time, I was getting very low. It finally came out of the spin at about a 45 degree inverted nose-down angle. Due to my lack of altitude, I continued a delicate, buffeting 45 degree push to level inverted. I only had 100-200 feet before I became a statistic.*

I figure that I lost 1,500 feet in only 4 rotations. Some botched maneuvers require more than the 1,500 feet minimum mandated by the FAA. That altitude is the bottom, and I need at least double that for any new maneuvers. I am sure my lack of sleep affected my judgment, and I feel that I am lucky to have survived...

We're also glad that our reporter survived his ordeal and was willing to share this experience with others. ▲

ASRS Recently Issued Alerts On...

Runway visibility obstruction at a Minnesota airport
MU-2 cockpit smoke attributed to failed cockpit heat valve
Inadequate taxiway signage/markings at a Wisconsin airport
Three incidents of electrical smoke and fumes in BE-1900Ds
Confusing charting of a holding pattern for a Canadian airport

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January 1999 Report Intake

Air Carrier/Air Taxi Pilots	2035
General Aviation Pilots	523
Controllers	57
Cabin/Mechanics/Military/Other	178
TOTAL	2793

Expectant Pilots

The Pilot/Controller Glossary defines an “Expect” altitude as one to be used in the event of radio communications failure, and as information to assist a pilot in planning. But some pilots take the information past the planning stage, as a General Aviation reporter did:

■ *Our IFR clearance was, “As filed, maintain 3,000 feet, expect 5,000 feet within 10 minutes.” Sometime after our frequency change to Departure Control, we were cleared to climb to 5,000 feet. As we approached 5,000 feet, I asked the pilot-not-flying to request 7,000 feet. At that point, ATC said he had cleared us to 4,000 feet—not 5,000 feet. I had understood 5,000 feet, had written it down, and had set the altitude alerter to 5,000 feet. The Controller told us to “just stay at 5,000 feet and I’ll work on a higher [altitude].” Perhaps the fact that I had been expecting 5,000 feet within 10 minutes, per the clearance received prior to takeoff, lured me into the error.*

This report highlights the importance of pilot readbacks in maintaining good pilot/controller communication. It also points out how easily an “expect” instruction can be interpreted as an *actual* instruction in the mind of an expectant listener.

Another reporter, an air carrier Captain, provided the necessary readback, but did not wait for acknowledgment from the busy controller.

■ *At FL330, I decided to ask for FL370 for fuel economy purposes and requested such from Center. A clearance was received and read back, “Turn left 15 degrees...maintain FL370.” By then the Center Controller was talking to another aircraft and did not acknowledge my readback. Passing FL337, a TCAS II Traffic Advisory occurred. I reported this to Center. The reply was, “You are supposed to be at FL330.” A descent to FL330 was done.*

I called the Center [later] and listened to the tapes. The clearance issued by the Controller was, “Turn left 15 degrees...maintain FL330, expect FL370 when clear of traffic.” Both pilots misheard this, and my readback was made for a climb.

A pilot’s best defense against this sort of altitude deviation is to verify instructions before taking any action. In this case, there was no obvious rush to start the enroute climb. ▲

PEDs: A Continuing Saga

The new rules governing Passenger Electronic Devices (PEDs) seem to have lessened the frequency of PED-related reports to ASRS. But we still occasionally hear about PEDs, including this unusual incident experienced by an air carrier Captain:

■ *While at cruise, we experienced multiple spontaneous disconnects of the left, center, and right autopilots over several hours of flight. After due consideration of the sequence of disengagements, starting immediately after I had authorized the use of PEDs...I made an announcement asking that all PEDs be secured. All passengers complied. The anomaly continued. I asked the lead Flight Attendant [FA] to make a more rigorous check of the cabin. She reported that there was a passenger who had a significant hearing impairment requiring that he use a hearing aid with headphones. The microprocessor was carried in his shirt pocket. Without it, he could not hear at all. Recalling...that PED interference is normally very site-specific, I asked the FA to move the passenger forward...six rows. No further interference occurred for the balance of the trip.*

The only reason I did not have the passenger turn off his device was my concern with his being able to hear and follow instructions from the FAs in the event of an emergency. Also, since we had no further instance of disengagement, and retained the option of securing the device since we knew what the culprit was, I was very comfortable with this course of action.

The Captain adds that an extensive check of the autoflight system was performed later to confirm that there was no mechanical anomaly.

GPS-timate

In another incident, a First Officer reports that the suspected source of interference with his jet’s navigation system involved a passenger’s “guessing game.”

■ *Aircraft equipped with IRS and FMC. Once airborne, I confirmed IRS/FMC nav functions were working normally by using the fix page and raw data. [During] the climb, both the Captain and myself noted the FMC was not auto-updating itself. About this time we received a “verify position” message from the FMC. The left and right IRS claimed the actual position was 3.8 and 3.4 miles, respectively, 90 degrees to our left. We were going to complete a position shift exercise, when we noted we had auto-updating functions back and the FMC was correcting itself. Later in the flight, a Flight Attendant called and asked our ground speed. I told her it was 389 knots. She stated she had lost a bet because a passenger had guessed 388 knots. I asked her to ask the passenger if he had a GPS. The passenger said yes. I asked her to tell the passenger to turn it off and keep it turned off. The flight continued uneventfully. At deplaning, I found out that the passenger was employed by another airline. ▲*