CALLBACK ASRS

From NASA's Aviation Safety Reporting System

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Altimeter Settings Revisited

FL180 is the altitude at or above which all aircraft altimeters should be set at 29.92, and below which they should be set to the current barometric pressure of the nearest reporting station. A frequently reported cause for altimeter mis-setting incidents that occur during a climb or descent through this altitude is distraction by other cockpit tasks. In a report to ASRS from an air carrier Captain, distractions inside and outside the cockpit, including a mechanical malfunction, led to an altitude deviation:

■ *While descending through approximately 23,000 feet and navigating an area of precipitation and thunderstorms, both air conditioning packs failed...As we worked on the pressurization problem...we were assigned 11,000 feet. As we leveled, ATC asked our altitude because he saw us at approximately 10,500 feet. Then we noticed that two of our altimeters were still set at 29.**9**2 with the pressure at 29.**4**2. Our workload was obviously heavy, but we should not have missed this basic procedure. Someone always must pay attention to flying.*

A 1997 ASRS study on flight crew monitoring incidents found that a large majority of such incidents occurred when the aircraft was in a "vertical" flight mode—climbing or descending. Flight crews also were more likely to experience monitoring errors while performing two or more flight-related tasks—like the crew in this report who were avoiding weather, dealing with a pressurization problem, and talking to ATC, all while descending through FL180.

As our reporter noted, appropriate division of cockpit tasks (one pilot to fly the aircraft, the other to handle the malfunction), and adherence to procedures (the checklist) probably would have allowed the flight crew to catch this mistake before ATC did.

12 O'Clock High

An air carrier crew's altitude problem started during preflight, when they failed to notice that their altimeter needles were aligned at the "12 o'clock" position–at an airport with a field elevation of 1,000 feet MSL. The First Officer reports:

■ *After we leveled at 11,000 feet, Center said to descend and maintain 11,000 feet. We replied that we were level at 11,000 feet. About a minute later, Center again said to descend and maintain 11,000 feet. They said they showed us level at 12,000 feet and pointed out traffic at 13,000 feet. About that time, we discovered that the altimeters were set to 2**8**.88 instead of the proper setting of 2**9**.88. We quickly descended to 11,000 feet.*

The night before, maintenance personnel had dialed both altimeters back to sea level...[the actual] field elevation is approximately 1,000 feet MSL. We accomplished all checklists on preflight, but failed to notice that the second digit [of the barometric setting indicator] had been set to an 8 instead of a 9. This is something that is easy to miss.

High to Low, Look Out Below

The rapidly changing weather associated with cold fronts and steep frontal slopes can create significant and sudden drops in barometric pressure, causing some pilots to mis-set their altimeters. An air carrier Captain provides an example:

■ *During descent below FL180, I put 29.82 into my altimeter. When the First Officer [FO] came back from talking to company on the #2 radio, he also put 29.82 into his altimeter. We were descending through 6,000 feet for 5,400 feet when the Approach Controller announced a ground proximity alert, and told us to climb immediately to 6,000 feet and to recheck our altimeters at 2**8**.82. We started to climb, checked our altimeters and discovered our mistake...*

It was an unusually low altimeter setting that day. Both the FO and I wrote the correct altimeter setting on our note pads, and both of us misset the correct altimeter.

Unusually low barometric pressures may take pilots by surprise, especially if the weather appears to be improving, leading the crew to believe that a higher altimeter setting looks plausible. The old adage, "High to low, look out below" is still sound advice.

With winter around the corner, a related reminder applies: Flying into cold air has the same effect as flying into a low pressure area; that is, the aircraft is lower than the altimeter indicates. Altimeters cannot be corrected for temperature-related errors. However, pilots can adjust their minimum procedure altitudes to compensate for extremely low temperatures. Canadian pilots consult a government-provided chart to determine how much altitude to add to the procedure altitudes listed on approach charts, thus ensuring obstacle clearance during very low temperature operations. The U.S. Defense Mapping Agency publishes a similar altitude correction table for military pilots.

Readers who would like more information about low temperature correction charts should refer to ASRS *Directline*, Issue #9, available on the ASRS Web site, at **http://olias.arc.nasa.gov/asrs**.

ASRS Recently Issued Alerts On...
Uncommanded autopilot disengagement on a DA-20
FK-100 fuel leak attributed to a dislodged fuel vent line
Pilot confusion over control of stop-bar lights at a Florida airport
Inadequate runway signs/markings reported at a Nevada airport
Uncommanded reduction of B757-200 engine power to flight idle

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September 1998 Report Intake	
Air Carrier/Air Taxi Pilots	1680
General Aviation Pilots	697
Controllers	59
Cabin/Mechanics/Military/Other	198
TOTAL	**2634**

To Enter "B" or Not to Enter "B"...

Many pilots assume that VFR "flight following" offers more ATC services than it does. A General Aviation pilot reports entering Class B airspace without a clearance, after mistakenly believing that VFR flight following service would provide the necessary clearance.

■ *I requested flight following as I proceeded direct to XYZ. I was given a code and radar identification was confirmed. I was on a heading of 180 degrees, when the controller asked me, "Where are you going?" I confirmed XYZ and then he told me I was not cleared into the Class B airspace and I should turn left to 150 degrees. I expected since I was requesting flight following and I was in radar contact, if the controller had not given me a Class B clearance, he would have vectored me around the area or told me to stay clear of Class B until advised.*

VFR flight following provides *traffic advisories*, not clearances or traffic separation, and only as controller workload permits. Pilots are responsible for monitoring their position and making a timely request for clearance into the Class B area. Often, the controller providing traffic advisories can coordinate the issuance of a clearance upon request from the pilot.

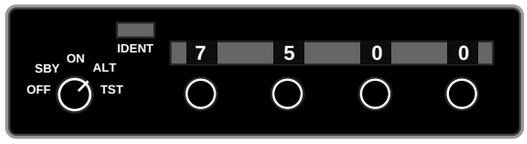
In the next incident, ATC was trying to provide advisories, but an apparent malfunction in the aircraft radio interfered with the controller's efforts, nearly putting the reporter in harm's way.

■ *In cruise, using VFR flight following, flying direct to a fix using LORAN, I inadvertently flew into an active Restricted Area. I had the volume on the radio turned low, although I believe it was still at an audible level. After not hearing radio chatter for a while, I called Center and was informed that I was in a hot Restricted Area. Center said they had been trying to contact me but had been unable. I did experience several other problems with reception on that radio, and wound up using [the #2 radio].*

I climbed to 11,500 feet to get out of the area. I had become complacent about following my position on the charts, knowing that Center would help keep me clear of Restricted Areas. I should have tracked my position more closely without relying on ATC.

The reporter used LORAN as the primary navigation source, and relied on ATC for "back-up." Making full use of all resources, including charts and other navigational aids, will help keep pilots out of "hot" areas.

Transponder Transgressions



An aircraft that squawks an incorrect transponder code can cause a lot of confusion for ATC. Squawking an incorrect **emergency** transponder code can also cause major embarrassment for the flight crew—and added workload for others involved in the miscommunication—as the next report suggests:

■ *En route we had communications trouble. During frequency change to Tower, we lost both the Captain's and the First Officer's transmit and receive. Resetting the circuit breakers was no help. Downwind in the middle of an IFR arrival is not a good place to go "no-comm." The Captain, in a very busy state, said, "We have to let ATC know we have no comm. Go ahead and enter the no-comm transponder code 7500." Insert spurious braintron here. Although there is a subtle difference between 7600 and 7500, it is nevertheless a large tactical error.*

We finally got the First Officer's comm back, established communication with Tower, and they asked us to verify the 7500 transponder. We acknowledged, and said we were now VFR and could squawk 1200. At the same time, both the Captain and the First Officer realized the mistake, and advised Tower we were all OK and required no special handling. However, the wheels of progress were already in motion for the 7500 squawk. We advised Ground, Dispatch and Tower that we were all OK...that 7500 was entered for a no-comm situation.

It was an honest mistake in a very busy environment, but it caused quite a stir.

One memory trick for ensuring the correct use of 7500 is to think of the hand-slapping gesture "high-five," often signifying a job well done. Pilots will earn a high-five if they correctly remember that only a **hi**jack warrants a 7**5**00 transponder code.

ATC 1, Flight Crew 0000

In another report of an incorrect transponder code, ATC won game, set and match. The "losing team" tells the story:

■ *After we lifted off, the controller said, "We had a transponder test and your score is in the window—all zeroes!" We...realized we had failed to go to the gate to pick up the PDC [Pre-Departure Clearance, which includes a transponder code for the flight].*

Some flight crews make a habit of setting all zeroes in the transponder when they depart the aircraft, as a heads-up to the next crew to obtain their clearance and new squawk code. The outbound flight crews can improve their "score" by using the checklist item for *transponder "on"* as a reminder to ensure that the correct squawk code is *"in."*