

CALLBACK

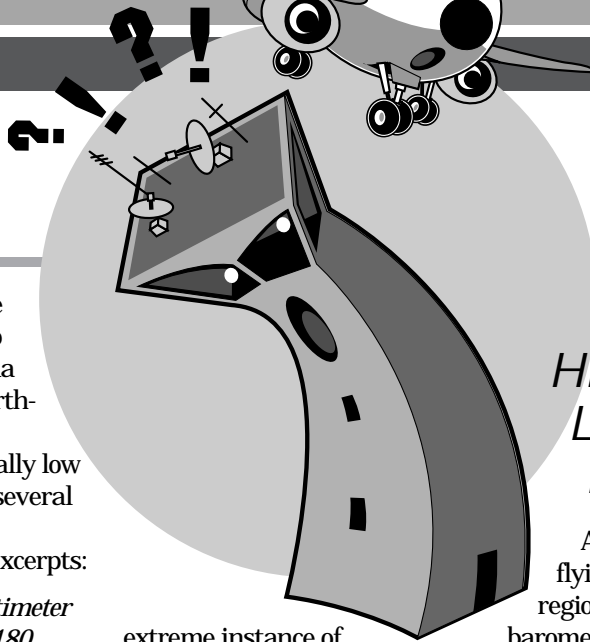
ASRS

From NASA's Aviation Safety Reporting System

Number 190

March 1995

The Low-Down on Altimeter Settings



High to Low, Look Out Below!

ASRS recently received three reports from three separate operations, all occurring on the same day and referring to the same situation—low barometric pressure at an Alaska airport. Although these incidents occurred at a single northerly location, they offer a reminder to pilots in other parts of the country that the season is not past for unusually low barometric settings. They are also of interest because of several misconceptions expressed by reporters about ATC/FSS responsibilities in regard to altimeter settings. Here are excerpts:

■ *ATIS [reported altimeter] 28.84. No mention of low altimeter was made. Center cleared us [up] to FL330. Leaving FL180, altimeters were set to 28.92 Captain and 29.92 First Officer (F/O). At FL320 Captain's altimeter, I called FL320 for 330. The First Officer called 330 noticing the wrong altimeter setting on my side. I immediately leveled off and descended to FL330...while resetting my altimeter to 29.92. In the future, I intend to be much more careful when resetting and cross-checking the altimeters, especially when low altimeter settings are reported. I feel this mistake might have been avoided if the ATIS had mentioned the low altimeter setting.*

In recording the ATIS, some controllers may emphasize the altimeter setting by stating, for example, "a low 28.84." Some Flight Service Station briefers also adhere to this practice. However, this procedure is not mandatory.

■ *Destination weather [reported altimeter] 28.83. Prior to initial descent, the Second Officer received and put the ATIS information on the landing bug card, except the altimeter was written as 29.83... The Captain started [a] go-around at the same time the Tower reported they had a low altitude alert warning from us... ATC does use the term low/low after low altimeter settings. At what setting it is required, I don't know, but I feel any time it is below 29.00, it should be used.*

Again, there is no requirement for controllers to notify pilots of unusually low barometric conditions, although many controllers elect to do so. The phrasing "low/low" is a technique used by some controllers to emphasize a particularly low altimeter setting, but pilots shouldn't count on hearing it.

■ *We departed [airport] where the local altimeter setting was 28.84... About 15 minutes after reaching cruise altitude—FL410—the copilot noticed we had set 28.92 rather than 29.92 at FL180. We reset the altimeter...and descended to FL410... In over 30 years of flying, this may have been the tenth time that I've had an altimeter setting below 29.00. We are careful in setting the hundredths portion (—.92) of the altimeter, but need to consider the total setting (29.92). It can jump up and bite you occasionally.*

This Captain recognizes the bottom line: it is the flight crew's responsibility to ensure correct setting of the altimeter, and to maintain good cockpit communication to catch any errors.

A general aviation pilot flying in the Great Lakes region encountered an extreme instance of barometric pressure changes. His story also illustrates why it's important for pilots to note significant changes in barometric pressure readings during preflight checks of weather along an intended flight route:

■ *Southeast bound [on airway] at 17,000 feet indicated altitude, controller reported my altitude encoder indicated 16,000 feet on the readout. I had departed VFR and picked up my IFR clearance at about 4,000 feet... I had set the barometric pressure as provided by Center when clearance was provided. I was approaching a cold front which was lying north to south over Lake Michigan. The controller asked if I had a backup encoder. I said no, and asked for an altimeter setting. The setting provided was 1 inch lower than the previous provided setting (about 100 nm earlier). I reset my altimeter... After the reset my altimeter now indicated 16,000 feet... The problem was evidently a very steep pressure gradient behind an approaching the [cold] front...*

A Toss—and a Catch

Altimeter setting mishaps are more often due to human performance fluctuations than the barometric variety. Here's what happened to a flight crew that forgot to "wipe the slate clean":

■ *The engineer threw the ATIS up onto the center console (or perhaps he handed it up to me and I put it there). The altimeter on the ATIS called for 30.17. When we set this in up front and ran the approach check, the sharp engineer remembered that he had copied down 29.67 and brought this to our attention. We had turned the ATIS sheet face up rather than the arrival ATIS which he had copied on the [back]. Weather at our destination was 300 feet, and the difference in altimeter settings between 30.17 and 29.67 was 500 feet. Had this not have been caught by the engineer or later through ATC, the results might have been disastrous. This could be the result of having the company departure/arrival ATIS on the same sheet...* ▲

ASRS Recently Issued Alerts On...

A BA-41 emergency due to improper fairing repair
Recurring inflight airframe vibrations on the Airbus 320
HF frequency congestion between Singapore and Taipei
BA-31 loss of control attributed to B-757 wake turbulence
Concerns about new ATC departure sequencing equipment

A Monthly Safety Bulletin
from

The Office of the NASA
Aviation Safety Reporting
System,
P.O. Box 189,
Moffett Field, CA
94035-0189

January 1995 Report Intake

Air Carrier Pilots	1949
General Aviation Pilots	582
Controllers	56
Cabin/Mechanics/Military/Other	17
TOTAL	2604

“Practice in Little Things, Proceed to Greater”

Springtime usually brings an increase in flight activities, and with it, the challenge to instructors of supervising many small but vital cockpit details. Two flight instructors relate how neglect of small matters led to significant consequences.

■ *My student and I took off for a night flight in the local practice area. We were level at 2,000 feet when the engine quit... My first physical action was to take the controls, pull out the carb heat, check mixture and fuel, and I told my student to take up the checklist and go through the restart procedures while I'm flying the airplane and looking for a field... At approximately 600 feet, I called out again to my student to check the prime and ignition, and I checked the carb heat, mixture, and fuel. No start. I started to shut down the engine. I pulled the mixture, took the fuel selector towards the OFF position, and same with the ignition switch. Something was wrong with that picture. It probably took a few seconds before I realized that the ignition switch was in the OFF position. I reached over and twisted it to BOTH, pushed the fuel back on, and the mixture in. The engine started and I initiated a climb...*

What caused this “emergency?” My student probably must have hit the ignition switch with his knee, causing it to twist to the OFF position.. I took for granted that my student would perform the checklist. Later when I called out for him to check the prime and ignition switch, which I physically did not check myself, I could see him reaching out for the items, but I did not realize that he just touched them, not actually verifying them to be in the right position. I learned my lesson. Teach students to visually check all items on the checklist, not just call them out and touch them without even bothering to look at what they are doing.

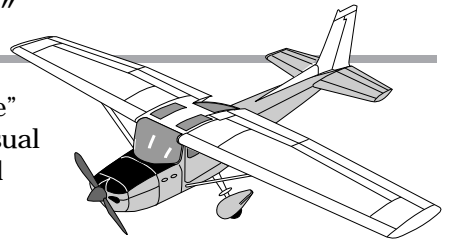
In preparation for simulated emergencies, many students simply memorize the drill, without associating the checklist

“Mis” Manners

Any radio problem is an inconvenience, even when a handheld transceiver is on aboard for backup. But when a bad radio affects the entire frequency, it becomes inconvenient for everyone. ATC transmissions may come to a standstill, and other aircraft must return to a previous frequency or try to contact the next sector's frequency in an effort to maintain communication. More from this ASRS report:

■ *Shortly after takeoff I noticed that I was not hearing anything on my radios. I tried the second comm and switched all possible switches on the radio panel. I also tried to receive ATIS from two different airports. We did some sightseeing while I tried to sort things out. After about an hour, we returned to the field. I remained clear of all restricted airspace, Class B and C space, etc. Approximately 8 miles out, I called them on my handheld transceiver and landed without incident. After landing, I was asked to call the Tower and was told that I had a stuck mike and was interfering with their communications for 45 minutes after*

words and “make believe” physical actions with visual verification of knobs and switches.



What a Difference a Letter Makes

“What a difference a day makes, twenty-four little hours...” So goes the old song. This instructor learned that one little letter—as in assure versus assume—can be important, too.

■ *On a routine training flight to practice instrument approaches, we were given an IFR clearance to “Maintain 5,000, cleared to the [fix] via 12 mile DME arc and inbound on 117 degree radial.” We were not cleared for the approach due to company aircraft conducting an approach at the same airport. Immediately after we read the clearance back, the company aircraft reported his missed approach. The student turned onto the arc and began descending... After he descended to 4,900 feet, I asked him if we were cleared for the approach. He replied that we were. At this point I made several assumptions: 1) We were told to expect approach clearance after company aircraft completed his approach; I heard him call missed and assumed we were cleared. 2) Student said we were cleared and I thought I missed the radio call... At 4,500 feet, Center asked us to verify our altitude—busted!*

Reasons: Instructor's failure to verify clearance (You know you're in trouble when you state items such as “student said” and “I thought”), and assuming the student was right. I violated a cardinal credo for instructors here. Corrective action: Increase communication between instructor, student, and Controller to assure and not assume critical items are not misunderstood. ▲

takeoff. While trying ATIS, I also interfered with that frequency. Better training on radio communications could have prevented this... Look for a common denominator—it is very unusual for two radios to fail while navs continue to function.

Pilots use a variety of techniques to check for stuck mikes: setting the microphone to “interphone” to see if the radio clears; reducing squelch; and other techniques that can help quickly pinpoint the nature of the radio problem.

... and ELT Manners

■ *While changing the ELT battery, I inadvertently activated it to the ON position. I did not turn on my radio to see if it was broadcasting. After about 3 hours, a gentleman from search and rescue came by to turn it off.*

What more is there to say, except that the bill is probably in the mail! ▲

061

Official Business
Penalty for Private Use, \$300

Ames Research Center
Moffett Field, California 94035-1000

National Aeronautics and
Space Administration



BULK RATE
POSTAGE & FEES PAID
NASA
Permit No. G-27