

## Section 2. Barometric Altimeter Errors and Setting Procedures

### 7-2-1. General

a. Aircraft altimeters are subject to the following errors and weather factors:

1. Instrument error.
2. Position error from aircraft static pressure systems.
3. Nonstandard atmospheric pressure.
4. Nonstandard temperatures.

b. The standard altimeter 29.92 inches Mercury (“Hg.”) setting at the higher altitudes eliminates station barometer errors, some altimeter instrument errors, and errors caused by altimeter settings derived from different geographical sources.

### 7-2-2. Barometric Pressure Altimeter Errors

a. High Barometric Pressure: Cold, dry air masses may produce barometric pressures in excess of 31.00 “Hg. Many aircraft altimeters cannot be adjusted above 31.00 “Hg. When an aircraft’s altimeter cannot be set to pressure settings above 31.00 “Hg, the aircraft’s true altitude will be higher than the indicated altitude on the barometric altimeter.

b. Low Barometric Pressure: An abnormal low-pressure condition exists when the barometric pressure is less than 28.00 “Hg. Flight operations are not recommended when an aircraft’s altimeter is unable to be set below 28.00 “Hg. In this situation, the aircraft’s true altitude is lower than the indicated altitude. This situation may be exacerbated when operating in extremely cold temperatures, which may result in the aircraft’s true altitude being significantly lower than the indicated altitude.

#### **NOTE—**

*EXTREME CAUTION SHOULD BE EXERCISED WHEN FLYING IN PROXIMITY TO OBSTRUCTIONS OR TERRAIN IN LOW PRESSURES AND/OR LOW TEMPERATURES.*

### 7-2-3. Altimeter Errors

a. Manufacturing and installation specifications, along with 14 CFR Part 43, Appendix E requirement

for periodic tests and inspections, helps reduce mechanical, elastic, temperature, and installation errors. (See Instrument Flying Handbook.) Scale error may be observed while performing a ground altimeter check using the following procedure:

1. Set the current reported airfield altimeter setting on the altimeter setting scale.

2. Read the altitude on the altimeter. The altitude should read the known field elevation if you are located on the same reference level used to establish the altimeter setting.

3. If the difference from the known field elevation and the altitude read from the altimeter is plus or minus 75 feet or greater, the accuracy of the altimeter is questionable and the problem should be referred to an appropriately rated repair station for evaluation and possible correction.

b. It is important to set the current altimeter settings for the area of operation when flying at an enroute altitude that does not require a standard altimeter setting of 29.92 “Hg. If the altimeter is not set to the current altimeter setting when flying from an area of high pressure into an area of low pressure, the aircraft will be closer to the surface than the altimeter indicates. An inch Hg. error in the altimeter setting equals 1,000 feet of altitude. For example, setting 29.90 “Hg instead of 30.90 “Hg. To quote an old saying: “GOING FROM A HIGH TO A LOW, LOOK OUT BELOW.”

c. The aircraft cruising altitude or flight level is maintained by referencing the barometric altimeter. Procedures for setting altimeters during high and low barometric pressure events must be set using the following procedures:

1. Below 18,000 feet mean sea level (MSL).

- (a) Barometric pressure is 31.00 “Hg or less.

- (1) Set the altimeter to a current reported altimeter setting from a station along the route and within 100 NM of the aircraft, or;

- (2) If there is no station within this area, use the current reported altimeter setting of an appropriate available station, or;

#### **NOTE—**

*Air traffic controllers will furnish this information at least*