24-244

UNITED STATES OF AMERICA
CIVIL AERONAUTICS BOARD
WASHINGTON, D. C.

Civil Air Regulations Amendment 60-13
Effective: January 15, 1959
Adopted: December 4, 1958

AIR TRAFFIC RULES

ALTIMETER SETTING

This amendment provides for the use of a standard altimeter setting for aircraft operating at or above 24,000 feet MSL and the use of current reported altimeter setting from the surface upward to 23,500 feet MSL.

Though a standard setting for altimeters has been advocated for domestic use for some time, and the system is used successfully for transoceanic flights and in other countries, until recently the use of current reported altimeter setting has been satisfactory. Corrected altimeter settings are still considered desirable for use at the lower altitudes. For operations such as takeoff and landing, where terrain clearance is of primary importance, this setting provides the vital information of height above obstacles to the pilot. Where this system is used, resettings of the altimeter are required for cruising flight, but these settings are generally available and the resulting cruising altitudes are reasonably constant.

The experience gained with the present volume of jet operations has led to general agreement that the use of the standard setting is a requisite at higher altitudes. Standard setting eliminates altitude conflicts caused by altimeter settings derived from geographically different sources. In the average flight, one resetting during climb and one resetting in the terminal area before descent will replace the frequent resetting made necessary by rapid transit of pressure systems. Besides being better adapted to automatic flight and improving correlation between performance data and actual performance, the standard setting system eliminates station barometer errors and some of the altimeter instrument errors.

In earlier considered plans to enable the use of two settings, a sterile airspace, or "buffer zone," was included in which cruising flight was to be prohibited. Since cruising altitudes are at a fixed altitude above MSL, and the altitude of flight levels varies as atmospheric pressure changes, it is apparent that conditions could exist in which a flight level would be coincident with a cruising altitude. As atmospheric pressure decreases, the altitude of a flight level decreases. The sterile area was devised to provide airspace to accommodate this sinking effect of flight levels when a significant decrease below standard in the atmospheric pressure occurs. A disadvantage in this, however, is that a buffer zone entails permanent loss of altitudes which would otherwise be available for cruising flight when atmospheric pressure is at or above standard. This has been considered unacceptable because of the volume of air traffic in the United States which requires use of all available flight altitudes; therefore, this amendment provides for the use of all cruising altitudes at all times and a loss of flight levels only when atmospheric pressure is below standard.

Essentially, flight of aircraft at and above 24,000 feet MSL is to be conducted by reference to an altimeter set to a standard setting and would utilize flight levels; cruising flight in the airspace between the ground and 23,500 feet is to be conducted at cruising altitudes maintained by reference to an altimeter set to current reported altimeter setting. Through proper planning by pilots and air traffic controllers, the possibility of conflict between aircraft using the different systems of setting can be eliminated. As there is no buffer zone, the workability of this amendment is predicated on maintaining at least the standard vertical separation, 1,000 feet, between aircraft even though they may be controlled by altimeters set to different pressure references.

The rule describes the areas wherein each system will be employed. The dividing line is the lower limit of the continental control area, which is defined as 24,000 feet above MSL. All cruising altitudes from the ground to 23,500 feet are available at all times, regardless of the atmospheric pressure. However, when pressure is below 29.92" Hg., the altitude of an aircraft using standard setting is below the altimeter indication. Since this altimeter indication defines the flight level, it follows that some flight levels will fall below 24,000 feet MSL. Obviously, this situation could result in conflict with aircraft conducting flight at a cruising altitude and, therefore, pilots must not choose, nor controllers assign, flight levels without ascertaining that the flight level is actually at or above 24,000 feet MSL.

The comment received in response to Draft Release 58-12 was favorable. The military agencies and the organizations representing the pilots and operators of civil aircraft which will

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use the higher altitudes urged the adoption of the amendment. The only change of note from the draft release was a requirement to avoid conflict with existing procedures internationally recognized as applying in United States possessions, territories, and mandates. For this reason, the areas covered by altimeter setting procedures contained in ICAO documents are excluded from the application of the rule.

Interested persons have been afforded an opportunity to participate in the making of this amendment (23 F.R. 4102), and due consideration has been given to all relevant matter presented.

In consideration of the foregoing, the Civil Aeronautics Board hereby amends Part 60 of the Civil Air Regulations (14 CFR Part 60, as amended) effective January 15, 1959.

1. By adding a new § 60.25 to read as follows:

60.25 Altimeter setting. The cruising altitude or flight level of aircraft shall be maintained by reference to an altimeter which shall be set:

(a) At or below 23,500 feet MSL, to the current reported altimeter setting of a station along the route of flight within 100 nautical miles: Provided, That where there is no such station, the current reported altimeter setting of an appropriate available station shall be used: And provided further, That in aircraft having no radio the altimeter shall be set to the elevation of the airport of departure or appropriate altimeter settings available prior to departure shall be used.

(b) At or above 24,000 feet MSL, to 29.92" Hg. The use of flight levels below this altitude is not permissible.

(c) For overseas operations, in ICAO Flight Information Regions, in accordance with ICAO Regional Supplementary Procedures.

NOTE: Flight levels appropriate to normally encountered atmospheric pressure are shown in the table following:

Atmospheric pressure in inches of mercury	Lowest usable flight level
29.92	240
29.91 to 29.42	245
29.41 to 28.92	250
28.91 to 28.42	255
28.41 to 27.92	260

2. By amending the introductory paragraph of § 60.32 to read as follows:

60.32 VFR cruising altitudes. When an aircraft is operated in level cruising flight at 3,000 feet or more above the surface, the following cruising altitudes, or the equivalent flight levels, whichever is appropriate, shall be observed:

3. By amending § 60.41 (e) to read as follows:

60.41 IFR flight plan. * * *

(e) Cruising altitudes or flight levels, and the route to be followed;

4. By amending the introductory paragraph of § 60.44 to read as follows:

60.44 IFR cruising altitudes. When an aircraft is operated in level cruising flight, it shall be operated in accordance with the following cruising altitudes, or the equivalent flight levels, whichever is appropriate, except that, in the absence of a specific altitude authorized by air traffic control, aircraft operating "on top" shall be flown at altitudes specified in § 60.32:

5. By amending the first sentence of § 60.49 (b) to read as follows: "Proceed according to the latest air traffic clearance to the radio facility serving the airport of intended landing, maintaining the minimum safe altitude, or the last acknowledged assigned altitude or flight level, whichever is higher."

6. By amending § 60.60 by deleting the present definition "Cruising altitude" and inserting in lieu thereof the following:

60.60 Definitions. * * *

Cruising altitude. Cruising altitude is a level determined by vertical measurement from mean sea level.

7. By amending § 60.60 by adding in proper alphabetical order a new definition to read as follows:

60.60 Definitions. * * *

Flight level. Flight level is a level of constant atmospheric pressure related to a reference datum of 29.92'' Hg. For example, flight level 250 is equivalent to an altimeter indication of 25,000 feet, and flight level 265 to 26,500 feet.

(Sec. 205 (a), 52 Stat 984; 49 U.S.C. 425(a). Interpret or apply Sec 601, 605, 52 Stat 1007, 1010, as amended 49 U.S.C. 551, 555)

By the Civil Aeronautics Board:

/s/ Mabel McCart

Mabel McCart
Acting Secretary

(SEAL)

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