

ENR 1.7 ALTIMETER SETTING PROCEDURES**1. INTRODUCTION**

The Altimeter Setting Procedures in use generally conform to those contained in ICAO Doc 8168, Vol. 1, Part 6. Transition altitudes are given on the instrument approach charts in AD 2 section.

QNH values and temperature information used in determining obstacle clearance height are provided in MET reports broadcasted on aerodromes in ATIS and are available on request from the ATS units. QNH values at an aerodrome are given in hectopascals. Flight levels below the transition level are assigned by ATC by pressure at the aerodrome expressed in QNH. Values of the pressure at an aerodrome (QFE) are transmitted on request by ATC unit for flight level control only.

2. BASIC ALTIMETER SETTING PROCEDURES**2.1 General**

The transition altitude in the airspace of the Republic of Kazakhstan is 10000 feet (3050 metres).

Transition level (lower usable flight level) is determined depending on the QNH value at the aerodrome (along the flight route / in the area) - FL120 with QNH values at the aerodrome (along the flight route / in the area) 977.2 hPa and higher, FL130 at values QNH at the aerodrome (along the flight route / in the area) below 977.1 hPa.

Flights in the transition layer between the transition altitude and the transition level in horizontal flight mode are prohibited.

Determining of the transition level is provided according to the following table:

| Transition height | | QNH hPa | Transition level |
|-------------------|--------|-----------------|------------------|
| Feet | Metres | | |
| 10000 | 3050 | 977.2 and above | FL 120 |
| | | 977.1 and below | FL 130 |

Transition level and the minimum value of the pressure coerced to mean sea level is reported by ATS unit if there is no (en-route) VOLMET broadcasts messages in the terminal area.

The vertical position of aircraft during the flight at the transition altitude or below is expressed in terms of altitude. The vertical position of aircraft at the transition level or above is expressed in terms of flight levels. Crossing the transition layer, aircraft position in a vertical plane is expressed in terms of altitude when descending and in flight levels when climbing.

Flight level zero corresponds to the atmospheric pressure level 1013.2 mbar (760 mm Hg. v.).

Performing aviation operations on terrain where the absolute elevation of the terrain is 10,000 feet or more, flights are carried out by IFR with a variable profile at true heights of not more than 2,000 feet from the underlying surface.

2.2 Take-off and Climb

The vertical position of climbing aircraft is expressed in terms of altitudes until reaching the transition altitude, above the transition altitude the position is expressed in terms of flight levels.

2.3 En - route vertical separation

During en-route flight at the transition altitude and below and if it is necessary to reach flight level, change of pressure scale of the barometric altimeter from the minimum atmospheric pressure (en-route) that coerced to the sea level, to the standard atmospheric pressure is performed during intersection the transition altitude.

During en-route flight at the transition level or above, and if it is necessary to continue the flight at the transition

altitude and below, change of pressure scale of the barometric altimeter from the standard atmospheric pressure to the minimum atmospheric pressure on en-route, that coerced to mean sea level, is performed at the intersection of the transition level (the lowest flight level used) or at the beginning of the descending from the transition level. ATC unit reports transition level and minimum value of the pressure coerced to mean sea level if there is no transcribed weather broadcasts messages in the terminal area and broadcasting en-route VOLMET.

Vertical separation is performed in accordance with the requirements in paragraph 5 on airways in the airspace where the Republic of Kazakhstan is responsible for ATS.

During IFR flights the following minimum vertical separation intervals shall be applied:

1. below flight levels FL290 (8850 m) - 300 m (1000 feet);
2. between flight levels FL290 (8850 m) and FL410 (12500 m):
 - a. 300 m (1000 feet) - between aircraft that admitted to RVSM flights;
 - b. 600 m (2000 feet):
 - between State aircraft that not admitted to RVSM flights and other aircraft performing flights in the RVSM airspace;
 - between all State aircraft performing a group flight in the RVSM airspace and other aircraft;
 - between aircraft that not admitted to RVSM flights during the transition from / to RVSM airspace, and any other aircraft;
 - between aircraft performing the flight with communication failure, and any other aircraft, when both aircraft are performing the flight in the RVSM airspace;
3. above flight level FL 410 (12500 m) - 600 m (2000 feet).

2.4 Terrain clearance

QNH values and temperature information are included in ATIS (VOLMET) messages in order to evaluate the terrain clearance. In addition, this information may be requested from the ATC unit.

ATC unit assigns the lowest usable flight level in the responsible controlled area, use it for assigning the flight level and transmit it to flight crew by request.

Mission of ATS does not include collision avoidance with terrain. The flight crew is responsible for ensuring that any ATC permission in this regard is safe, except of IFR flight performing by radar vectoring.

2.5 Approach and landing

Pressure value at an aerodrome, coerced to sea level (QNH) for barometric altimeter setting are provided in ATIS and / or in the approach clearance and / or in the clearance to enter the traffic circuit.

Vertical positioning of aircraft during approach is expressed in terms of flight levels until reaching the transition level, below which vertical positioning is expressed in terms of altitude.

Transition level is reported to flight crew before they reach this flight level during descending (approach). Such messages may be transmitted by voice communications, ATIS broadcasts. If approach clearance is given above the transition level, this clearance shall include the transition level.

2.6 Missed approach

In case of missed approach, the vertical positioning of the aircraft is expressed in terms of altitude, unless otherwise instructed by ATC unit.

3. DESCRIPTION OF ALTIMETER SETTING REGION(S)

The rules are applied up to the borders of the regions where the Republic of Kazakhstan is responsible for ATS and the flight crews should operate in accordance with the ICAO documents out of above regions.

4. PROCEDURES APPLICABLE TO OPERATORS (INCLUDING PILOTS)

4.1 Flight planning

The flight levels at which a flight is to be conducted shall be specified in a flight plan. The record about flight level on a route segment passing through the airspace where the Republic of Kazakhstan is responsible for ATS, shall be made in the following manner:

- in flight levels, expressed as the letter F followed by three digits (for example, F330);
- if a flight is performing in aerodrome area at an altitude below the transition level, the altitude is expressed in terms of the level of the working runway threshold, coerced to the mean sea level (QNH).

5. TABLE OF CRUISING LEVELS

Vertical separation in the airspace of the Republic of Kazakhstan is provided according to the following table:

| Magnetic track from 180° to 359° | | | | | | Magnetic track from 0° to 179° | | | | | |
|----------------------------------|----------|--------|--------------|----------|--------|--------------------------------|----------|--------|--------------|----------|--------|
| IFR Flights | | | VFR Flights | | | IFR Flights | | | VFR Flights | | |
| Flight Level | Altitude | | Flight Level | Altitude | | Flight Level | Altitude | | Flight Level | Altitude | |
| | Feet | Metres | | Feet | Metres | | Feet | Metres | | Feet | Metres |
| - | 2000 | 600 | - | - | - | - | 1000 | 300 | - | - | - |
| - | 4000 | 1200 | - | 4500 | - | - | 3000 | 900 | - | 3500 | 1050 |
| - | 6000 | 1850 | - | 6500 | - | - | 5000 | 1500 | - | 5500 | 1700 |
| - | 8000 | 2450 | - | 8500 | - | - | 7000 | 2150 | - | 7500 | 2300 |
| - | 10000 | 3050 | - | - | - | - | 9000 | 2750 | - | 9500 | 2900 |
| 120 | 12000 | 3650 | 120 | 12000 | 3650 | - | 11000 | 3350 | - | 11000 | 3350 |
| 140 | 14000 | 4250 | 140 | 14000 | 4250 | 130 | 13000 | 3950 | 130 | 13000 | 3950 |
| 160 | 16000 | 4900 | 160 | 16000 | 4900 | 150 | 15000 | 4550 | 150 | 15000 | 4550 |
| 180 | 18000 | 5500 | 180 | 18000 | 5500 | 170 | 17000 | 5200 | 170 | 17000 | 5200 |
| 200 | 20000 | 6100 | 200 | 20000 | 6100 | 190 | 19000 | 5800 | 190 | 19000 | 5800 |
| 220 | 22000 | 6700 | - | - | - | 210 | 21000 | 6400 | - | - | - |

| Magnetic track from 180° to 359° | | | | | | Magnetic track from 0° to 179° | | | | | |
|----------------------------------|----------|--------|--------------|----------|--------|--------------------------------|----------|--------|--------------|----------|--------|
| IFR Flights | | | VFR Flights | | | IFR Flights | | | VFR Flights | | |
| Flight Level | Altitude | | Flight Level | Altitude | | Flight Level | Altitude | | Flight Level | Altitude | |
| | Feet | Metres | | Feet | Metres | | Feet | Metres | | Feet | Metres |
| 240 | 24000 | 7300 | | | | 230 | 23000 | 7000 | | | |
| 260 | 26000 | 7900 | | | | 250 | 25000 | 7600 | | | |
| 280 | 28000 | 8550 | | | | 270 | 27000 | 8250 | | | |
| 300 | 30000 | 9150 | | | | 290 | 29000 | 8850 | | | |
| 320 | 32000 | 9750 | | | | 310 | 31000 | 9450 | | | |

| Magnetic track from 180° to 359° | | | | | | Magnetic track from 0° to 179° | | | | | |
|--|----------|--------|--------------|----------|--------|--------------------------------|----------|--------|--------------|----------|--------|
| IFR Flights | | | VFR Flights | | | IFR Flights | | | VFR Flights | | |
| Flight Level | Altitude | | Flight Level | Altitude | | Flight Level | Altitude | | Flight Level | Altitude | |
| | Feet | Metres | | Feet | Metres | | Feet | Metres | | Feet | Metres |
| 340 | 34000 | 10350 | | | | 330 | 33000 | 10050 | | | |
| 360 | 36000 | 10950 | | | | 350 | 35000 | 10650 | | | |
| 380 | 38000 | 11600 | | | | 370 | 37000 | 11300 | | | |
| 400 | 40000 | 12200 | | | | 390 | 39000 | 11900 | | | |
| 430 | 43000 | 13100 | | | | 410 | 41000 | 12500 | | | |
| 470 | 47000 | 14350 | | | | 450 | 45000 | 13700 | | | |
| 510 | 51000 | 15550 | | | | 490 | 49000 | 14950 | | | |
| Note: VFR flight heights in feet 3500, 4500, 5500, 6500, 7500, 8500, 9500 can be used by aircraft crews only in uncontrolled airspace. In controlled airspace, IFR flight levels should be used during the VFR flights. | | | | | | | | | | | |