

# AERONAUTICAL INFORMATION CIRCULAR P 053/2020

UNITED KINGDOM



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## Date Of Publication

30 Jul 2020

## Subject

Safety

## Cancellation

P 087/2008



## INSTRUMENT PRESSURE SETTINGS IN CONDITIONS OF ABNORMALLY LOW ATMOSPHERIC PRESSURE

- 1** During periods of abnormally low atmospheric pressure, instances can occur when pilots of certain aircraft are unable to set QFE or QNH values on altimeters or in air data computers. The problem is restricted to those aircraft fitted with systems on which the lowest allowable pressure setting is 950 hectopascals (hPa). Other systems allow a range of pressure settings between 800 hPa and 1050 hPa. To avoid difficulties, operators are urged to replace those restricted setting range systems with ones that allow the full pressure setting range, or when unable to set the correct pressure, temporarily to suspend operations in Instrument Meteorological Conditions (IMC) in accordance with the recommendation in paragraph 4.
- 2** Since at mean sea level a change in surface pressure of 1 hPa is roughly equivalent to a 30 feet height change, it will be appreciated that an air data system with a restricted setting range set to its lowest value will over-read by approximately 30 feet for each hPa the actual QNH is less than 950 hPa.
- 3** The purpose of the air data system setting procedures outlined in the UK AIP is to provide pilots with suitable pressure information to assist them in maintaining adequate terrain clearance and to ensure a safe standard of flight separation. Accurate setting of the reported pressure in the system is clearly essential to this purpose. Should it not be possible to set this lower pressure then flight crews must remain aware that direct reference to an over-reading system will effectively reduce the vertical clearance between the aircraft and high ground. Furthermore, during flight below the transition altitude difficulty in maintaining adequate vertical separation from other aircraft and an inability to comply fully with ATC clearances could be experienced. Restricted specification systems could therefore hazard flight safety when used in conditions of very low pressure unless exceptional precautions are taken, and appropriate operating procedures followed.
- 4** When abnormally low pressure is forecast, pilots of aircraft fitted with restricted setting range systems are advised to pay particular attention before take-off and during flight to the QNH values likely to be encountered during each stage of flight. If IMC conditions prevail, it is the responsibility of individual pilots who find that the QNH is too low to set on their systems, to take appropriate action in accordance with the following recommendations:

  - a) if the QNH at the departure aerodrome or the QNH expected at the destination aerodrome is below 950 hPa, take-off should not be made;
  - b) an aerodrome should not be nominated as an alternate if the expected QNH for that aerodrome is below 950 hPa;
  - c) if the reported QNH en-route is less than 950 hPa, a pilot flying below the Transition Altitude should request clearance to climb and continue flight above the Transition Altitude, provided that where this would entail flight in Controlled Airspace, he/she holds the appropriate rating. If in such low pressure conditions, a pilot flying above the Transition Altitude is compelled to descend below the Transition Level, he/she should set the pressure input to his/her system to 950 hPa and take into account when flying below the Transition Level that his/her system will over-read by approximately 30 feet for each hPa the reported QNH is less than 950 hPa;
  - d) if during flight the reported QNH at the destination falls below 950 hPa, a pilot should divert to an aerodrome where the reported pressure can be set into the system.
  - e) when approach operations require to use Barometric Vertical Navigation (Baro-VNAV) equipment it is essential that the procedure is only considered the actual QNH/QFE, as appropriate, can be set on the aircraft's altimeter. If the actual QNH/QFE is, or predicted to be, below the minimum equipment setting, then the procedure must not be planned or used.
- 5** It is recognized that for some flights in Visual Meteorological Conditions (VMC) the above recommendations could be considered too stringent. Pilots of aircraft fitted with the restricted setting range systems are therefore reminded that if they elect to fly in VMC when the pressure is less than 950 hPa they should set their systems to the lowest possible setting. However, it is stressed that during such a flight pilots should take extreme care to assess their terrain clearance accurately and to maintain the correct altitude as cleared by ATC. It is important to remember that flying with an over-reading air data system can be extremely hazardous, particularly in IMC; therefore, if at any time before or during flight there is even the remotest possibility of encountering IMC, the flight should be cancelled.