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THE USE OF INSTRUMENT LANDING SYSTEM (ILS) FACILITIES IN THE UNITED KINGDOM**1 Introduction**

1.1 The purpose of this Circular is to remind Pilots of the ILS coverage areas and the protection of the ILS guidance signal when Low Visibility Procedures (LVPs) are in place.

2 General

2.1 ILS facilities in the United Kingdom conform to ICAO Annex 10 Volume 1 Radio Navigation Aids Standards and Recommended Practices (SARPs) appropriate to the promulgated Facility Performance Category. Where the UK has differences filed to the SARPs, these will be published in Supplements to the ICAO Annex and notified in the UK AIP General section GEN 1.7 - Differences From ICAO Standards, Recommended Practices and Procedures.

2.2 An ILS can therefore be relied upon to provide navigational information to the required accuracy providing:

- (a) It is only used inside the specified coverage areas;
- (b) the signal-in-space is being adequately protected by Air Traffic Control;
- (c) due account is taken of any warnings or differences notified in the UK AIP or by NOTAM.

2.3 An aerodrome's ILS facilities should only be used when an Air Traffic Control Service is available for the airport. No attempt should be made to use the ILS outside the aerodrome's promulgated hours of operation, unless specific arrangements have been made with the aerodrome operating authority for this purpose which include the provision of an Air Traffic Control Service.

3 Localiser

3.1 The standard ILS Localiser Designated Operational Coverage (DOC) provides coverage in the following overlapping areas. From the centre of the Localiser antenna to distances of:

- (a) 25 nm within plus and minus 10° of the front course line;
- (b) 17 nm within plus and minus 35° from the front course line.

3.2 Where topographical features dictate or operational requirements permit the DOC may be reduced to the following coverage areas. From the centre of the Localiser antenna to distances of:

- (a) 18 nm within plus or minus 10° of the front course line;
- (b) 10 nm within plus and minus 35° from the front course line.

In these circumstances the coverage will be notified in the UK AIP Part 3 Aerodromes, AD 2.19 - Radio Navigation and Landing Aids, specific to that facility.

3.3 Flight crews are warned that use of the Localiser outside these coverage areas can lead to false course and reverse sense indications being received. Such use should not be attempted.

3.4 In the United Kingdom there is no provision for Localiser 'Back Beams' to be used and any indications from them must be ignored.

3.5 Certain combinations of Localiser signal characteristics and modern receiver/autopilot combinations can cause premature Localiser capture. Where these conditions are known to exist, then this information will be notified in the UK AIP Part 3 Aerodromes, AD 2.19 - Radio Navigation and Landing Aids, specific to that facility or by NOTAM.

3.6 Flight crews should be alert to the possibility of premature capture. Flight deck procedures should be designed to reduce the risk of premature capture by not allowing Flight Director/Autopilot capture modes to be armed too early. Flight crews are advised to confirm the validity of ILS capture by cross-checking with other sources of navigational information where available. Being alert to anomalous aircraft performance such as illogical heading or descent will also assist in guarding against premature capture.

4 Glidepath

4.1 The standard ILS Glide Path DOC provides coverage in the following areas:

- (a) Coverage sectors of 8° in azimuth each side of the Localiser centre-line to a distance of at least 10 nm from threshold;
- (b) Vertical Coverage is provided from 0.45Ø up to 1.75Ø above the horizontal where Ø is the promulgated Glide Path angle.

This equates to coverage from 1.35° to 5.25° above the horizontal for a 3° Glide Path. Where the coverage is greater than 10 nm, then the coverage will be notified in the UK AIP Part 3 Aerodromes, AD 2.19 - Radio Navigation and Landing Aids, specific to that facility or by NOTAM.

4.2 Flight crews are warned that use of the Glide Path outside the coverage areas can lead to intermittent and incorrect indications being received. In particular, use of the Glide Path below 0.45Ø, that is below 1500 ft QFE at 10 nm range, for a 3° glide path, should only be attempted when the Notified Glide Path Intercept Procedure requires such use, and then never below 0.30Ø (0.9° for a 3° Glide Path), that is below 1000 ft QFE at 10 nm range.

4.3 Where special approach procedures have been devised in which the Glide Path may be joined from above, pilots must bear in mind that a false Glide Path may exist at an angle of about 2Ø which equates to 6° for a 3° Glide Path. This false Glide Path must not be used for descent guidance. Establishment on the promulgated Glide Path should be confirmed by the relationship between aircraft height and distance to runway threshold.

4.4 Certain Glide Paths may not exhibit correct deflection sensitivity to one side of the Localiser course line. This effect is caused by terrain or other problems and can lead to inadequate 'Fly Up' indications being received. When this situation exists a warning will be notified in UK AIP Part 3 Aerodromes, AD 2.19 - Radio Navigation and Landing Aids, specific to that facility or by NOTAM.

5 Protection of ILS guidance signals

5.1 The use of an ILS in its promulgated Category is subject to the 'signal-in-space' being adequately protected from interference due to the reflection from objects 'illuminated' by the Localiser or Glide Path guidance signals. Moving objects, particularly aircraft manoeuvring in close proximity to the runway, may disturb the ILS guidance signals. ATC will apply increased separation and such other methods considered necessary to prevent interference during Low Visibility Procedures.

5.2 Protection measures may also be applied, at the discretion of ATC, when requested by pilots wishing to use Low Visibility Procedures when meteorological conditions do not necessitate them.

5.3 Flight crews should be aware that interference to the ILS guidance signals can occur when signal protection is not in force. This interference may result in deviations from the desired approach path and may be accompanied by warning flags appearing briefly.

5.4 When making auto-lands when signal protection is not provided, flight crews should closely monitor the flight path of their aircraft and be prepared to disconnect the autopilot immediately if excessive disturbances occur near to the ground.

6 Distance Measuring Equipment

6.1 Distance Measuring Equipments that are frequency paired with ILS channels are provided to supplement or replace the range information provided by ILS markers.

6.2 All range information is zero referenced to the ILS runway threshold.

6.3 The DME is protected from interference from other DME services only within the Localiser service area as described in paragraph 3 up to a height of 25,000 ft above threshold.

6.4 Certain ILS paired DME support other notified approach and departure procedures, in these cases protection from interference from other DME is assured within the coverage area required by those procedures.

6.5 Use of an ILS paired DME outside its coverage area may result in erroneous distance information and/or corrupt or erroneous identification coding.

7 Maintenance

7.1 When an ILS is undergoing maintenance, or is radiating for test purposes only, the identification coding will either be removed completely or replaced by a continuous tone.

7.2 Under these conditions no attempt should be made to use the ILS as erroneous indications may be received.

7.3 In the event of an unserviceable Glide Path, the ILS Localiser may be radiating for Localiser only approaches. In which case the identification coding will be radiating. However, it is possible that the Glide Path may also be radiating for setting-up purposes or for flight inspection; it may be subject to interruptions and alterations without warning and may give erroneous indications. In this case ATC will warn all users of this fact and no attempt should be made to use the Glide Path.

This Circular is issued for information, guidance and necessary action.