8. ILS
a. The Instrument Landing System (ii) The Localiser and Glideslope

- **The ILS ground equipment consists of two radio services**
  - **a Localiser (LOC) transmission providing horizontal (or 'azimuth') guidance**
  - **a Glideslope (GS) transmission providing vertical guidance**
- **The combination of Localiser and Glideslope meets the ICAO criteria for a Precision Approach**

The Localiser and Glideslope are considered to be 5° and 1.4^O wide, respectively, since this is the deflection limit of typical deviation instruments (although a signal is present outside these boundaries)

0.7^O
0.7^O
1.4^O
Glideslope
2.5^O
2.5^O
Localiser
5.0^O

The Localiser track is normally aligned with the runway; if there is a small offset, the angle will be published on the chart. The chart may also detail a Localiser-only (non-precision) procedure to be used if the Glideslope is unavailable

Typically, the centre of the glideslope is 3° above the horizontal. The exact angle will be published in the procedure chart; the ICAO standard is between 2.5^O and 3.5^O. Some runways may require a steeper approach, which is normally restricted to specifically approved aircraft and flight crews.

Aircraft well above GS

Aircraft on glideslope

Aircraft well below GS

Aircraft to the far right of the Localiser

Aircraft centred on Localiser

Aircraft to the far left of the Localiser

The Glideslope Pointer represents the desired glide path relative to the aircraft position at the centre of the scale.

Full-scale deflection indicates a deviation of 0.7^O or greater. Different instruments have different kinds of marking; in this example one dot = 0.35^O deviation
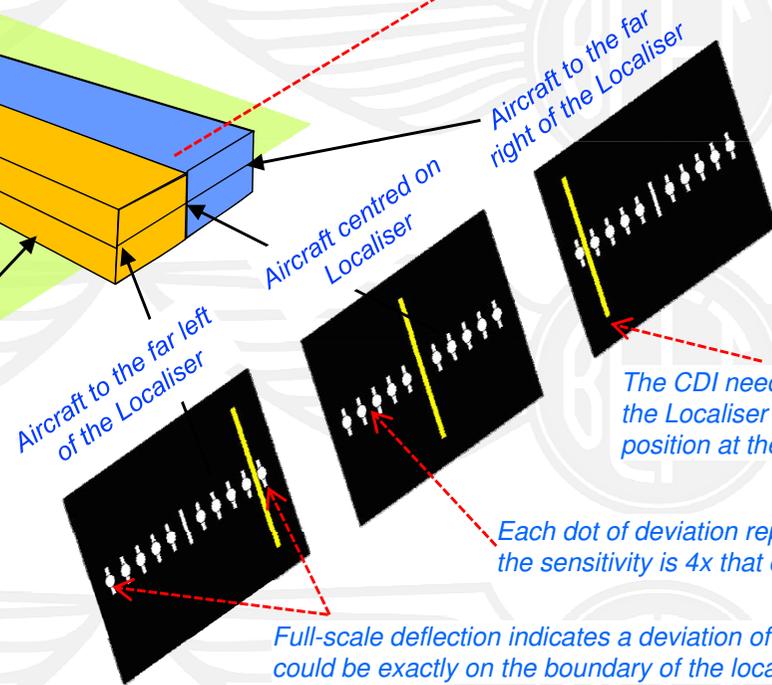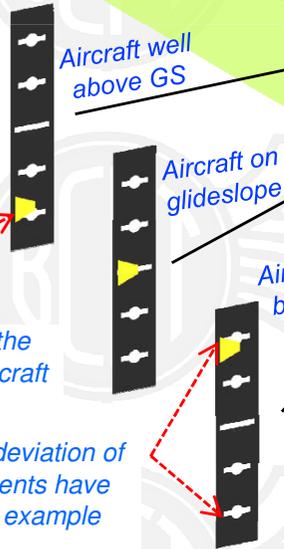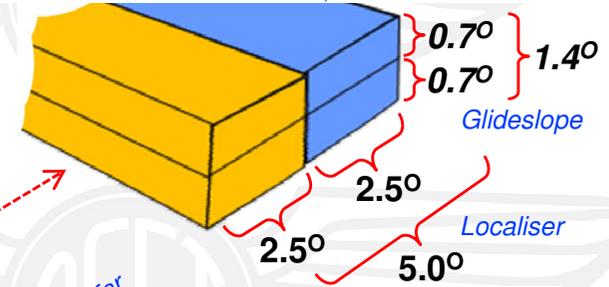
The CDI needle (or 'beam bar') represents the Localiser track relative to the aircraft position at the centre of the scale.

Each dot of deviation represents 0.5^O; the sensitivity is 4x that of a VOR

Full-scale deflection indicates a deviation of 2.5^O or greater, ie. the aircraft could be exactly on the boundary of the localiser, or well beyond it.

- **If a full-scale deflection in either the LOC or GS occurs, we must initiate a missed approach, since it is not safe to attempt to correct an effectively unknown deviation. ILS obstacle clearance buffers are designed assuming that the aircraft flies to within half-scale deflection, hence this is the performance standard for the IR**