



International Civil Aviation Organization

**SIXTEENTH MEETING OF THE  
COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND  
METEOROLOGY SUB-GROUP (CNS/MET SG/16) OF APANPIRG**

Bangkok, Thailand, 23 – 27 July 2012

**Agenda Item 5: Navigation**

**FRANGIBILITY CRITERIA FOR ILS GLIDE PATH ANTENNA MAST**

(Presented by India – Airports Authority of India)

**SUMMARY**

This paper presents the consideration for implementation of frangible criteria for the ILS Glide Path Antenna. It has been made mandatory that all structures lying in the runway strip are to be frangible. However, as per Aerodrome Design Manual Doc. 9157, frangibility criteria for the ILS Glide Path Antenna mast have not yet been developed. Therefore, Airports Authority of India (AAI) is having concerns in replacing Glide Path Antenna masts with frangible ones for complying to the Regulatory Authority order based on Annex 14 Para 9.9.3.

This paper relates to –

**Strategic Objectives:**

**A: Safety** - Enhance global civil aviation safety

**C: Environmental Protection and Sustainable Development of Air Transport** - Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment

**Global Plan Initiatives:**

GPI-21 Navigation systems

**1. Introduction**

1.1 As per Aerodrome Design Manual Doc. 9157 (Part 6 - Frangibility) any equipment or installation required for air navigation purposes which are located on the runway basic strip, runway end safety area and taxiway strip should be frangible and mounted as low as possible

1.2 However, frangibility criteria for the tower structure supporting the ILS glide path have not yet been developed.

1.3 Since as per Aerodrome Draft Manual Part 6. Para 4.9.31 (b) no frangibility criteria has been developed for Glide Path Mast, replacement of existing masts can only be possible with masts proclaimed to be frangible by vendors.

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**2. Discussion**

2.1 The para 9.9.3 of Annex 14, Vol. II states that existing non-visual aids need not meet the requirement of 9.9.2 until 1<sup>st</sup> January, 2010 i.e. any equipment or installation required to be installed for air navigation purposes which must be located in runway strip or in RESA shall be frangible.

2.2 As per Aerodrome Design Manual Doc.9157 (Part 6 - Frangibility) Para 4.9.31 (b) *“Considering the unique nature of tower structure supporting the ILS Glide Path antenna, frangibility criteria have not yet been developed”*.

2.3 As per Aerodrome Design Manual Doc.9157 (Part 6 - Frangibility) Para 4.9.31 (c) *“It has been recognized that because of its heavy mass, the transmitter housing for ILS installations cannot be made frangible. Therefore, when planning for the installation of ILS, the location of the transmitter housing for the localizer as well as for the glide path should be carefully considered. In no instance should the transmitter housing for the ILS localizer be located within the run way end safety area ( or the extension thereof within a distance of 300 m from the runway end). In any event, the lateral displacement of the transmitter housing for the ILS glide path should not be less than 120 m with respect of the runway centre line. Where practicable, the transmitter housing for the ILS glide path should be located outside the runway strip.”*

2.4 Airports Authority of India (AAI) is of opinion that since frangibility design criteria of antenna mast and housing of Glide Path are not available till date, a suitable advisory clause indicating exclusion of Glide Path antenna mast and housing from the mandate of frangibility requirement, till the frangibility criteria for those are developed, may be included in Aerodrome Manual Doc 9157 (Part 6 - Frangibility) Para 4.9.31 (b) as well as in Annex 14 Volume I Para 9.9.3.

**3. Action by the Meeting**

3.1 The meeting is invited to:

- a) note the information contained in this paper and share the similar experience if being faced by respective ANSPs; and
- b) endorse the recommendations of AAI for inclusion of suitable advisory clause for exclusion of Glide Path antenna mast and housing from the mandate of frangibility requirement till appropriate frangibility design criteria are developed for the same.

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