International Civil Aviation Organization

Twenty Eighth Meeting of the Communications/ Navigation and Surveillance Sub-group (CNS SG/28) of APANPIRG

Bangkok, Thailand, 01-05 July 2024

Agenda Item 6: Navigation

6.5 Other navigation related matters

UPDATE OF FLIGHT INSPECTION GUIDANCE MATERIAL

(Presented by China and Hong Kong, China)

SUMMARY

This working paper is jointly prepared by China and Hong Kong, China, with the support from Singapore and New Zealand, to propose updates to the Flight Inspection Guidance Material.

1. INTRODUCTION

1.1. The third edition of the Flight Inspection Guidance Material (FIGM) was adopted by the 26th Meeting of ICAO APAC CNS Sub-Group on 9 September 2022.

1.2. The FIGM is subject to regular review and update, in the light of on-going development of flight inspection standards and recommended practices. The Civil Aviation Administration of China (CAAC) Flight Inspection Center (FIC) and Hong Kong, China have volunteered to jointly conduct a review on the contents of the FIGM and propose updates, with contributions from New Zealand and Singapore, in this paper.

1.3. As continuous enhancements on the FIGM, it is recommended to update the sample checklist for commissioning and periodic flight inspection items of Instrument Landing Systems (ILS) to maintain consistency with the ICAO documents.

1.4. In addition, it is recommended to incorporate the monitoring of Difference in Depth of Modulation (DDM) during both localizer (LOC) and glide path (GP) coverage checks as a guideline in the FIGM, as it is considered a good practice to ensure reliable ILS operation and enhance flight safety. It is worth noting that in ICAO Doc 8071, the checking of DDM values is only explicitly recommended in the LOC coverage check but not mentioned in the glide path coverage check.

1.5. The presence of incorrect DDM values of glide path signals within the usable GP coverage sector, which typically extends to 8 degrees in azimuth on each side of the centerline, can potentially trigger safety concerns. This issue has been observed in several recorded incidents where aircraft experienced inaccurate fly up or fly down indication during certain arrival procedures within the GP signal coverage area.

1.6. Therefore, for enhancing flight safety, it is recommended to include DDM monitoring in both LOC and GP coverage checks during a flight inspection. By analyzing the flight inspection results, States/Administrations can determine the extent of usable coverage with correct signal indication and implement measures, if considered appropriate and necessary, for the relevant ILS, should the DDM value be found to be out of tolerance at a specific range / angle.

2. DISCUSSION

2.1. The paragraph in the FIGM, as stipulated in Appendix 1, is proposed to be updated for the enhanced guidance of commissioning and periodic flight inspection check items.

2.2. With the aforementioned, a draft conclusion is formulated and proposed for endorsement by the CNS Sub-group as follows:

<table>
<tr><td colspan="2">Draft Conclusion CNS/SG/28/XX - Update of Flight Inspection Guidance Material (FIGM)</td></tr>
<tr><td>What: That, the Edition 4.0 of the Flight Inspection Guidance Material (FIGM) provided in Appendix 1 to this paper be adopted.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The FIGM is subject to regular review and update, in the light of on-going development of flight inspection standards and recommended practices.</td><td>Follow-up: ☒Required from States</td></tr>
<tr><td>When: 2-Jul-24</td><td>Status: Draft to be adopted by Subgroup</td></tr>
<tr><td colspan="2">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

3. ACTION BY THE MEETING

3.1. The meeting is invited to:

a) recognize the contributions from China, Hong Kong China, New Zealand and Singapore on the updated contents;

b) review the proposed updates to the new edition of FIGM in **Appendix 1**;

c) endorse the Draft Conclusion in paragraph 2.2; and

d) encourage States/Administrations to continue regular review and update of the FIGM, in the light of ongoing development of flight inspection standards and recommended practice.

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**PROPOSED UPDATES TO
FLIGHT INSPECTION GUIDANCE MATERIAL
(THIRD EDITION)**

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

1. The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

a) ~~Text to be deleted is shown with a line through it.~~	text to be deleted
b) New text to be inserted is highlighted with grey shading.	new text to be inserted
c) ~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

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***Page (vii)* of Flight Inspection Guidance Material (Third Edition)**

ABBREVIATIONS

3.1.2.7 An example checklist of commissioning and periodic flight inspection items for ILS is tabulated below for reference.

Check Item	Commission	Periodic
Identification	X	X
Modulation Balance	X	R
Modulation Depth	X	X
Polarisation	X	R
Front Course Alignment	X	X
Course Structure	X	X
Course Sector Width and Symmetry	X	~~R~~ X
Off-course DDM Clearance	X	~~-~~ X
Coverage or Usable Distance	X (4)	-
Monitor Alarm – Front Course Alignment (Position Alarm)	X	X
Monitor Alarm - Course Sector Width (Width Alarms)	X	X
Monitor Alarm - Off-Course DDM Clearance	X (1)	X
Monitor Alarm – Coverage	X	-
Dual Equipment	X	X (3)
Flyability	X	X
Associated Navigation Aids (Navaids)	X	X (2)

LEGEND:
R = To action on request
X = To action
- = Not required
(1) = Capture/Clearance Wide Alarm applies only for a dual frequency localizer
(2) = Includes runway visual aids
(3) = Alignment, Modulation Depth and Identification Only
(4) = Monitoring the DDM value during localizer and glide path coverage checks is recommended to ensure signal integrity