



International Civil Aviation Organization

**MIDANPIRG Communication Navigation and Surveillance
Sub-Group (CNS SG)**

Sixth Meeting
(Tehran, Iran, 9 – 11 September 2014)

Agenda Item 5: Performance Framework for CNS Implementation in the MID Region

FLIGHT CALIBRATION INTERRUPTION MANAGEMENT

(Presented by I.R.Iran)

SUMMARY

The aim of this paper is to share the experience of CAO.IRI about the Flight calibration of radio navigation.

1. INTRODUCTION

1.1 Flight calibration of radio navigation aids has a key role to determine the operational status of these systems. In special circumstances which flight calibration is impossible, the States have to analyze the safety aspects of the interruption and to decide about the necessary action.

1.2 In this information paper, the experience of CAO.IRI in such circumstances will be discussed.

2. DISCUSSION

2.1 According to DOC 8071 Vol. 1, the responsibility to determine facility status rests with the appropriate State authority or the organization authorized by the State.

2.2 The status determination should include all factors involved. This includes judgment (by the pilot) of the fly ability of the instrument procedures supported by the facility, analysis of airborne measurements of the facility (by the flight inspection technician/engineer), and a statement of readiness (by ground maintenance personnel).

2.3 Civil Aviation Organization of I.R.IRAN is the authority for status determination of CNS systems. CAO.IRI has provided flight calibration services for more than 50 years. Due to an unexpected event in May 2014, flight calibration aircraft of CAO.IRI disabled.

2.4 The first available time of other flight calibration service providers was not before 2 months. An Action Group was established in CAO to study the situation and provide the recommended action for next 2 months.

2.5 The Action Group started a safety assessment process to identify the risk of operation of the radio navigation systems which their flight check period was going to be expired.

2.6 A two dimensional safety graph was formed. The horizontal axis refers to technical uncertainty and the vertical axis refers to operational hazards. The data of technical uncertainty was gathered from 3 separate entities below:

- **Flight Calibration Department**

By analyzing the results of previous flight calibrations and trend of the results, the technical uncertainty factor of systems were summarized. No. 1 was the index of most reliable and No. 5 was the index of most unreliable system.

- **Maintenance Service Provider**

Iran Airports Co. (IAC), provided the summary of systems uncertainty, according to their technical observations and records. A number from 1 to 5 was allocated for each system.

- **Safety Oversight Authority**

ANS oversight Directorate General in CAO is responsible for safety audit of CNS service providers. Their inspectors have a recording of safety status of systems and maintenance organization compliance with rules of CAO. A number from 1 to 5 was allocated for each system.

2.7 The total technical uncertainty factor formula was:

$$\frac{(\text{Flight calibration index} \times 2) + \text{maintenance technical index} + \text{safety oversight index}}{4}$$

2.8 The data of operational hazard was driven from 3 separate analyses:

- Obstacle clearance, more clearance, less hazardous
- Flight procedures, more hazards for more precise procedures
- Estimated traffic using the radio navigation system.

2.9 The safety index of each system was marked in 2 dimensional graph, and 3 zones were categorized as acceptable, not acceptable and acceptable based on mitigation (**Figure 1**).

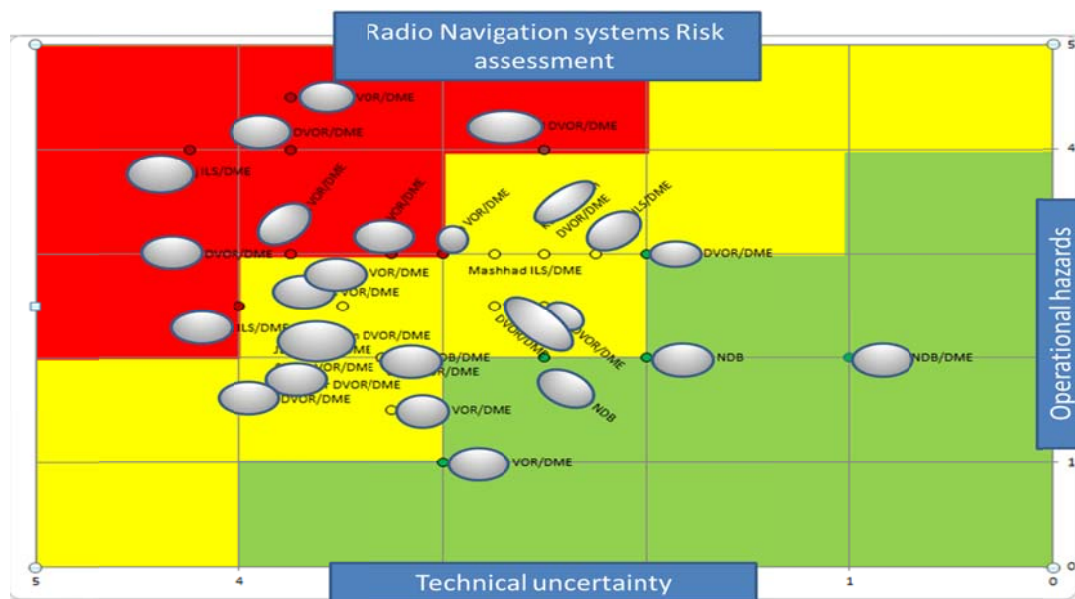


Figure 1. Radio Navigation Systems Risk Assessment

2.10 The operational status of systems in green area was extended as operational, systems in red area announced as unusable and some systems in yellow area announced as operational while some limitations on the related operations were applied.

2.11 During the 2 months period, the status of operational extended systems were monitored carefully by receiving reports from engineers and pilots.

2.12 Right now, the flight calibration is in normal condition, using the aircraft of an approved contractor.

3. CONCLUSION

3.1 Flight calibration interruption in Iran, was passed safely by a performance based approach. Radio navigation systems risk management according to discussed procedure could be employed in crisis situation.

3.2 Practically, the only documented process for determining the operational status of navigation aids is flight calibration results. This experience could be used to develop the new guideline for determining the operational status of navigation aids.

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