



## WORKING PAPER

### SPECIAL AFRICA-INDIAN OCEAN (AFI) REGIONAL AIR NAVIGATION (RAN) MEETING

Durban, South Africa, 24 to 29 November 2008

**Agenda Item 3: Overview of the *Comprehensive Regional Implementation Plan for Safety in Africa*, the Global Air Navigation Plan (GANP) and the Global Aviation Safety Plan (GASP) (General Committee)**

#### PERFORMANCE-BASED APPROACH AND MEASUREMENT

(Presented by the Secretariat)

##### SUMMARY

The SP AFI RAN meeting offers an opportunity to strengthen continent wide commitment to improving safety and efficiency, resolving deficiencies and addressing critical issues. The planned outcome of the meeting should be a comprehensive report which contains a set of proposed work programmes based on performance objectives with measurable outcomes and metrics. This will facilitate regional and global management, technical and financial assistance and provide a comprehensive and documented set of needs and requirements for the AFI Region. This paper proposes an initial set of key performance areas and metrics to be used as the basis for performance measurement in follow-up to the meeting and which should be integrated into the regional work programmes.

Action by the meeting is in paragraph 9.

## 1. INTRODUCTION

1.1 The SP AFI RAN meeting offers a unique opportunity to develop a new and comprehensive performance-based approach to aviation safety and air navigation planning. Working paper 5 clearly describes the process and many of the other working papers of the meeting propose performance objectives supported by performance framework forms (PFFs).

## 2. PERFORMANCE-BASED APPROACH

2.1 The performance-based approach to planning stems from requirements associated with the results based environment that ICAO, industry and States have been steadily moving toward. The ICAO *Global ATM Operational Concept* (Doc 9854) provides a clear statement of the expectations of the Air Traffic Management (ATM) Community. Eleven of these expectations, also referred to as key performance areas (KPAs) have been identified in the operational concept. To support this approach, the *Manual on Global Performance of the Air Navigation System* (Doc 9883) was developed. Doc 9883 provides a step by step approach to performance-based planning on the

basis of the KPAs identified in the operational concept. The Global Aviation Safety plan also lays the foundation for measuring safety performance.

2.2 The performance-based approach is structured upon the following principles:

- a) strong focus on desired/required results through adoption of performance objectives and targets;
- b) informed decision making, driven by the desired/required results; and
- c) reliance on facts and data for decision making.

2.3 Assessment of achievements must be periodically checked through performance reviews, which in turn require adequate performance measurement and data collection capabilities. Putting in place a performance-based approach requires knowledge sharing, training and some specific expertise. In the long run, all of this is expected to result in a safer and more efficient aviation system. As the work effort is challenging, requiring a globally coordinated effort, the aviation community should be encouraged to follow a common approach toward development and implementing a performance-based approach to safety of aviation and air navigation system planning.

### 3. AGREEMENT ON GOALS

3.1 The number one principle of the Performance-Based Approach is a *strong focus on desired/required results*. The ability to reach consensus on the desired outcome of performance management in terms of performance results to be achieved (i.e. to agree on objectives and targets), is a basic prerequisite for the successful application of the approach.

### 4. DATA COLLECTION, PROCESSING, STORAGE AND REPORTING

4.1 Data collection, processing, storage and reporting are fundamental to the performance-based approach. It should not be assumed that all data which is needed is simply available “somewhere” and only needs to be copied. Although re-use of data prepared by others is sometimes possible, the data reporting chain always starts at the “grass-roots level”, and properly setting up and managing the entire chain is an integral part of the approach. Establishing a data reporting chain usually involves participation from many ATM community members. Their willingness to participate requires the establishment of a performance data reporting culture, a capability to successfully manage disclosure and confidentiality aspects, and deciding on a case-by-case basis which approach works best: mandatory or voluntary reporting.

4.2 In the end, data will be condensed into a few indicators which represent the high level knowledge about the performance of the system. But before we get to this point, data from a variety of sources will need to be collected, quality-checked and stored. This also requires initiatives at the technical level: harmonization and standardization of reporting requirements; and investments in appropriate IT infrastructure. The above-mentioned harmonization and standardization of reporting requirements is needed to allow consistent interpretation of data across different reporting sources. This in turn is a prerequisite for meaningful benchmarking (comparison of reporting sources) and aggregation of data (calculation of totals across reporting sources).

### 5. STEP-BY-STEP APPROACH

5.1 Doc 9883 describes a step by step process to the performance-based approach as follows:

- a) Step 1: Define/review scope, context and general ambitions/expectations;
- b) Step 1.1 : Define scope;
- c) Step 1.2 : Define context;
- d) Step 1.3 : Identify ambitions and expectations;
- e) Step 2 : Identify opportunities, issues and set objectives;
- f) Step 2.1 : Develop a list of present and future opportunities and issues that require performance management attention;
- g) Step 2.2 : Focus efforts by defining and prioritizing performance objectives as needed;
- h) Step 3 : Quantify objectives;
- i) Step 3.1 : Define how progress in achieving performance objectives will be measured and which data are required to do so;
- j) Step 3.2 : Define the desired speed of progress in terms of baseline and target performance;
- k) Step 4 : Select solutions to exploit opportunities and resolve issues;
- l) Step 4.1 : Select the decisive factors to reach the target performance;
- m) Step 4.2 : Identify solutions to exploit opportunities and mitigate the effects of the selected drivers and blocking factors;
- n) Step 4.3 : Select a sufficient set of solutions;
- o) Step 5 : Implement solutions; and
- p) Step 6 : Assess achievement of objectives.

5.2 Many of the working papers of this meeting offer proposals addressing Steps 1 through 5. This paper proposes a set of metrics to address Step 6, based on the KPAs defined in the operational concept and elaborated upon in Doc 9883.

## **6. PERFORMANCE FRAMEWORK FORMS**

6.1 In addition to the above, ICAO is transitioning to a results based approach to its work and it is therefore important to trace all activities and work programmes to the Business Plan (and the outputs contained therein) to ensure consistency of strategy and traceability to previously agreed global results. To address both the performance-based approach to implementation planning and the results based approach of ICAO, PFFs have been developed.

## 7. CHOOSING METRICS FOR THE AFI REGION

### 7.1 Safety

7.1.1 The Global Aviation Safety Plan (A36-7 refers) contains the global safety targets.

7.1.2 It is therefore recommended that the AFI Region measure the KPA-Safety with direct derivatives of the global targets through the following metrics:

- a) Safety-1 : Number of fatal accidents;
- b) Safety-2 : Number of fatalities;
- c) Safety-3 : Accident rate in the AFI Region as compared to the global average; and
- d) Safety-4 : Number of Accidents and Serious incidents that are reported to ICAO (as a percentage of the total number of reportable accidents and incidents known to ICAO).

### 7.2 Efficiency

7.2.1 On the basis of the Global ATM Operational Concept and the Manual on Performance of the Global Air Navigation System, the following metrics are proposed:

- a) Capacity-1 : Average daily airport capacity for a group of 35 airports measured as a 5-year moving average;
- b) Cost Effectiveness-1 : Total operating cost plus cost of capital divided by IFR flights;
- c) Efficiency-1 : Estimated fuel savings (based on 2000 as baseline);
- d) Efficiency-2 : Number of PBN routes/Number of APV approaches to runway ends; and
- e) Environment-1 : CO2 burn.

## 8. CONCLUSION

8.1 The meeting is invited to adopt the following recommendation:

### **Recommendation 6/x — Performance-based approach and measurement**

That APIRG and regional safety groups develop indicators that are specific, measurable, achievable, realistic and time bound and attach them to the PFFs in the appropriate box, using the following metrics and/or others determined to be appropriate indicators for the African continent:

#### **Safety**

- a) Safety-1 : Number of fatal accidents;

- b) Safety-2 : Number of fatalities;
- c) Safety-3 : Accident rate in the AFI Region as compared to the global average; and
- d) Safety-4 : Number of accidents and serious incidents that are reported to ICAO (as a percentage of the total number of reportable accidents and incidents known to ICAO).

**Efficiency**

- a) Capacity-1 : Average daily airport capacity for a group of 35 airports measured as a 5-year moving average;
- b) Cost Effectiveness-1 : Total operating cost plus cost of capital divided by IFR flights;
- c) Efficiency-1 : Estimated fuel savings (based on 2000 as baseline);
- d) Efficiency-2 : Number of PBN routes/Number of APV approaches to runway ends;
- e) Environment-1 : CO<sub>2</sub> burn;

and that,

ICAO coordinate with States, Organizations and Stakeholders in the region to collect and process data to measure the metrics, leveraging to the extent possible all existing data and ongoing efforts.

**9. ACTION BY THE MEETING**

- 9.1 The meeting is invited to approve the draft recommendation in paragraph 8.1 above.

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