



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

Durban, South Africa, 24 to 29 November 2008

Agenda Item 6: Development of a set of comprehensive work programmes in the air navigation field, aimed at improving efficiency of the air navigation system (Efficiency Committee)

ESTABLISHMENT OF AN AFRICA ICAO FLIGHT PROCEDURE OFFICE

(Presented by the Secretariat)

SUMMARY

This paper presents a framework for the establishment of an Africa (AFI) ICAO Flight Procedure Office (FPO) to assist States in the Africa and Indian Ocean Regions to enhance the quality of their instrument flight procedures and to meet the PBN implementation goals of Assembly resolution A36-23.

Action by the meeting is in paragraph 4.

1. BACKGROUND

1.1 The 36th session of the ICAO Assembly (Montreal, 18 September to 28 September 2007) through its Resolution A36-23, called upon the States and planning and implementation regional groups (PIRGs) to develop performance-based navigation (PBN) implementation plans and implement PBN in accordance with the timelines established in those plans.

1.2 Amendment No. 1 to the fifth edition of the *Procedures for Air Navigation Services — Aircraft Operations*, Volume II — *Construction of Visual and Instrument Flight Procedures* (PANS-OPS, Doc 8168), applicable on 15 March 2007, included a new quality assurance chapter (Part I, Section 2, Chapter 4) dedicated to specific requirements with regard to quality assurance in the procedure design process, including requirements for initial, on-the-job and recurrent training of procedure designers.

2. INTRODUCTION

2.1 New instrument flight procedures developed to take advantage of the benefits of PBN are totally reliant on the data in data bases on aircraft. For this reason, quality assurance in the flight procedure design process, while always important, takes on added significance for PBN-based procedures. Many States lack the expertise to establish a sustainable internal procedure design capability, meeting the requirements of PANS OPS and to meet their responsibilities in accordance with Annex 15 — *Aeronautical Information Services* for the quality of their instrument flight procedures, often due to insufficient density of instrument flight procedures in their airspace and a

consequent inability to support the required expertise. Additionally, one of the best measures that can be taken to improve quality in the States' procedure design process is through use of procedure design automation solutions and associated data storage. These automation solutions are very expensive, and for many States it is either cost-prohibitive or not cost-effective to implement.

2.2 The following are some of the main procedure design-related issues and problems faced by States:

- a) lack of procedure design training: initial, on the job training, and/or recurrent;
- b) high turnover among procedure designers;
- c) shortage of trained procedure designers worldwide;
- d) insufficient procedure design work in some States to attain or maintain proficiency;
- e) lack of depth in procedure design organization to perform quality assurance;
- f) insufficient expertise in procedure design organization to provide adequate quality assurance of procedures;
- g) lack of procedure design and obstacle data storage automation in States; and
- h) insufficient regulatory expertise to oversee the procedure design service provider.

2.3 This paper presents the concept and goals for an AFI ICAO Flight Procedure Office (FPO) that would be established as a means to assist States in the region to address the issues noted above. The paper also seeks the support and endorsement of the AFI Region States and international organizations for the establishment of an FPO in the region, indicating that the States would consider such a project useful in accelerating the implementation of PBN, thereby realizing the safety, access, efficiency, and reduced environmental impact benefits of PBN.

3. DISCUSSION

3.1 *Concept.* The FPO is envisioned by ICAO to be a not-for-profit centre of excellence in the field of flight procedure design. The FPO would employ best practices in training, automation and quality assurance with experts in the field to address the procedure design needs of the States. It would be managed by a full-time ICAO employee whose position would be funded from the FPO funding sources. Target date for initial operating capability would be in the first half of 2010. Location, size and initial operational capability date of the FPO would however be based on demand for the services and the level of financial support extended by the States and international organizations for start-up and initial operating costs. It is anticipated that success of the concept will require that there be at least one donor State or organization that provides the start-up capital and operating costs for the first 2-3 years, and infrastructure support after that. Under this concept, user fees would be introduced gradually to the level necessary to cover the cost of the services not covered by donors.

3.2 *Goal.* Foster implementation of flight procedures, developed with the appropriate quality systems, especially PBN and vertically guided instrument approach procedures by:

- a) assisting those States with sufficient density of procedures to establish a sustainable internal procedure design capability capable of meeting the

requirements of PANS-OPS and their responsibility under Annex 15 for the quality of their procedures;

- b) providing the appropriate level of technical expertise necessary to enable States that do not have the density of procedures necessary to sustain an internal procedure design capability, to meet their responsibilities under Annex 15 and PANS-OPS; and
- c) providing a vehicle to improve quality in the States' procedure design process through access to procedure design automation solutions and associated data storage.

3.3 **Operating concept**

3.3.1 At States' request the FPO would:

- a) assist State procedure designers in developing their procedures;
- b) develop procedures for States that have no procedure design capability;
- c) assist State with quality assurance; and
- d) provide on the job training to procedure designers, remotely, on-site or at the FPO location.

3.3.2 As part of the services provided in 3.3.1 above:

- a) provide States access to server-based procedure design software applications;
- b) provide States access to server-based electronic terrain and obstacle data storage; and
- c) provide conversion of procedures for a limited choice of avionics, for use during the pre-publication flight validation.

3.3.3 All work would be performed under an agreement between the FPO and the State that includes, among other provisions, those to ensure that the State retains liability for the procedure(s) and responsibility for including the procedures in their Aeronautical Information Publication (AIP).

3.4 *Costs.* See Attachment A for an estimate of the costs for start-up and annual operation of the FPO, based on the services discussed in 3.3.

3.5 *Funding.* Subsequent to endorsement by the RAN meeting, ICAO would send a State letter asking for proposals from donor States or international organizations interested in being a primary donor and hosting such an office or that are interested in making smaller one-time or periodic monetary contributions to fund FPO start-up and operating expenses. Specifics of the responsibilities and the relationship between the host State and ICAO and possibly other large contributors would be subject to negotiation and would be formalized through a memorandum of understanding between the parties, covering all relevant aspects of the relationship.

3.6 All States in the AFI Region would be encouraged to make use of the services of the FPO at the earliest opportunity, noting that initial operational capability of the FPO would be based on availability of the required resources.

3.7 Considering that implementation of PBN in the region is very important and will yield immediate safety, efficiency and environmental benefits, and considering that quality assurance in the procedure design process is particularly important with regard to data-driven PBN-based flight procedures, the meeting is invited to adopt the following recommendation:

Recommendation 6/x – Support for establishment of an Africa ICAO Flight Procedure Office

That:

- a) States and international organizations support the Africa ICAO FPO through financial and in-kind contributions; and
- b) ICAO proceed with establishment of the Africa ICAO FPO at the earliest opportunity consistent with availability of the required resources.

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a) note the information provided in this working paper; and
- b) approve the draft Recommendation at paragraph 3.7 above.

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Appendix A
Africa Flight Procedure Office
Projected Costs

8-YEAR COST ESTIMATE*								
Expense	2010	2011	2012	2013	2014	2015	2016	2017
Furniture and automation equipment	80,000	40,000	40,000	40,000	50,000	50,000	50,000	50,000
PD Software TBD@ \$225,000/license	1,125,000	900,000	675,000	450,000	0	0	0	0
Software maintenance @ 40,000/year/license	0	200,000	360,000	480,000	560,000	560,000	560,000	560,000
Office Startup consultant	20,000	0	0	0	0	0	0	0
Salary and Benefits-see staffing table	465,000	840,000	980,000	1,120,000	1,153,600	1,188,208	1,223,854	1,260,570
Relocation (if necessary) @ 30,000 per move	120,000	90,000	60,000	30,000	30,000	30,000	30,000	30,000
Training-Internal Staff	20,000	20,000	30,000	30,000	40,000	40,000	40,000	40,000
Training-External users of software	20,000	20,000	20,000	40,000	40,000	40,000	40,000	40,000
Travel-Staff	30,000	40,000	60,000	70,000	72,100	74,263	76,491	78,786
Travel assistance to States	50,000	75,000	100,000	100,000	100,000	100,000	100,000	100,000
Supplies	3,000	3,000	3,000	5,000	5,000	5,000	5,000	5,000
Subscriptions, Data, miscellaneous expenses	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Total (USD)	1,943,000	2,238,000	2,338,000	2,375,000	2,060,700	2,097,471	2,135,345	2,174,355

17,361,872

*Cost estimate based on workload assumptions and assumes space will be provided free of charge

WORKLOAD ANALYSIS							
	% of work	runway ends	man-hours	3 procs/rwy	total m-h	total m-y	over 8 yrs
Assume 686 airports with 2 runway ends each	1372	1372					
FPO to do 30% of QA	30%	411.6	40	3	49392	23.75	2.97
10% of "all of design"	15%	205.8	120	3	74088	35.62	4.45
30% OJT assistance	30%	411.6	24	3	29635.2	14.25	1.78
Total					153115.2	73.61	9.20

STAFFING TABLE									
Staffing	annual \$	2010	2010 \$	2011	2011 \$	2012	2012 \$	2013	2013 \$
Manager	200,000	1	200,000	1	200,000	1	200,000	1	200,000
Procedure Designers*	70,000	4	140,000	7	490,000	9	630,000	11	770,000
IT staff	70,000	1	70,000	1	70,000	1	70,000	1	70,000
Data*	50,000	1	25,000	1	50,000	1	50,000	1	50,000
Admin	30,000	1	30,000	1	30,000	1	30,000	1	30,000
Total		8	465,000	11	840,000	13	980,000	15	1,120,000
*assumes 1/2 year in 2010									
	Price	2010	2011	2012	2013	2014+			
Procedure Design software licenses	225,000	5	4	3	2	0			
Procedure Design software maintenance per license	40,000		5	9	12	14			