



SAM/IG/4
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**International Civil Aviation Organization
South American Regional Office**

**FOURTH WORKSHOP/MEETING OF THE SAM IMPLEMENTATION GROUP (SAM/IG/4)
REGIONAL PROJECT RLA/06/901**

Lima, Peru, 19 to 23 October 2009

Agenda Item 4: Standards and procedures for performance-based navigation operations approval

Progress of work made in the framework of Project RLA/99/901 related to the performance based navigation

(Presented by SRVSOP)

Summary

This working paper presents the proposed Advisory Circulars (AC) related to the approval of aircrafts and operators for RNAV 10 (designated and authorized as RNP 10), RNAV 1 and RNAV 2, and basic RNP 1. It also presents the first revision to the AC: RNAV 5, RNP APCH, RNP AR APCH and APV/baro-VNAV, to incorporate the changes proposed in the SAM/IG/2 and SAM/IG/3 Meetings, respectively.

References:

- Regional Project RLA/99/901
- SAM/IG/2 and SAM/IG/3 Report

1 Background

1.1 In the Second Workshop/Meeting of the SAM Implementation Group (SAM/IG/2) (Lima, Peru, 3 to 7 November 2008), the Meeting took note on the job program for the development of PBN Advisory Circulars (AC) and on the content of the AC 91-002 related to aircrafts and operators approval for RNAV 5 operations.

1.2 About this matter, the Meeting considered that the work program and guide material presented by the Technical Committee (TC) of the Regional Safety Oversight Cooperation System of Latin America, were adequate to regional requirements, and consequently their contents were approved.

1.3 In the Third Workshop/Meeting of the SAM Implementation Group (SAM/IG/3) (Lima, Peru, 20 to 24 April 2009), the meeting was informed about the development of the ACs regarding the approval of aircraft and operators for RNP APCH, RNP AR APCH and APV/baro-VNAV operations. In this regard, the Meeting agreed the approval with minor modifications.

2 Discussion

2.1 Continuing the job program for the implementation of PBN, the CT of SRVSOP has developed the following ACs for SAM/IG/4:

- ✓ AC 91-001 – Aircraft and operators approval for RNAV 10 operations (designated and authorized as RNP 10);
- ✓ AC 91-003 - Aircraft and operators approval for RNAV 1 and RNAV 2 operations; and
- ✓ AC 91-006 – Aircraft and operators approval for basic RNP 1 operations.

2.2 *The AC 91-001 - Aircraft and operators approval for RNAV 10 operations (designated and authorized as RNP 10)*, establishes the RNP 10 approval criteria for aircraft and operations in oceanic or remote airspace. This AC is entitled RNAV 10 in order to be consistent with the criteria set forth in ICAO Doc 9613 – *Performance-based navigation (PBN) manual*. This new designation and version of this document does not change any requirement nor does it affect operators that have already obtained an RNP 10 approval by the Civil Aviation Authority (CAA). RNP 10 operations in oceanic or remote areas with no ground-based navigation aids, except for isolated areas, require aircraft navigation to be based on long-range navigation capability with inertial navigation and/or global positioning systems.

2.3 *The AC 91-003 - Aircraft and operators approval for RNAV 1 and RNAV 2 operations*, provides the RNAV 1 and RNAV 2 approval criteria for aircraft and operations en-route and in terminal area. The guidance material of this AC harmonizes the European and the United States RNAV criteria within a single navigation specification designated as RNAV 1 and RNAV 2 in accordance with ICAO Doc 9613. The navigation specification RNAV 1 and RNAV 2 applies to all ATS routes, including those established in the en-route domain; to standard instrument departures and arrivals (SID / STAR) and to instrument approach procedures up to the final approach fix (FAF)/final approach point (FAP). The criteria for final approach from the FAF to the runway threshold, together with the associated missed approach maneuver, are not considered in the AC 91-003 and will be object of another AC.

2.4 *The AC 91-006 - Aircraft and operators for basic RNP 1 operations*, provides the basic RNP 1 approval criteria for aircraft and operations in terminal area. This navigation specification is used in standard instrument departures and arrivals (SID / STAR) and in approaches up to the final approach fix (FAF) /final approach point (FAP) with no or limited ATS surveillance and with low to medium density traffic. With the use of this navigation specification, it is planned to perform similar operations to RNAV 1 and RNAV 2, but outside radar coverage.

2.5 The implementation in the SAM Region of RNAV 10 (designated and authorized as RNP 10), RNAV 1 and RNAV 2 and Basic-RNP 1, requires the participation of all States and the need to harmonize the requirements and procedures of this type of operations.

2.6 Before authorizing the RNAV 10 (designated and authorized as RNP 10), RNAV 1 and RNAV 2 and Basic-RNP 1, the States should include in their national regulations the requirements for these navigation specifications and develop procedures related to the aircrafts and operators approval .

2.7 Taking into account that ACs for RNAV 5, RNP APCH, RNP AR APCH and APV/baro-VNAV were reviewed by the TC of SRVSOP to incorporate the changes agreed at the SAM/IG/2 and SAM/IG/3 Meetings, respectively, these documents are presented again along with their Job Aids and the ACs related to RNAV 10 (designated and authorized as RNP 10), RNAV 1 and RNAV 2 and basic RNP1 operations, for Meeting's consideration in the following appendices:

- ✓ Appendix A-1: AC 91-001 – Aircraft and operators approval for RNAV 10 operations (designated and authorized as RNP 10)
- ✓ Appendix A-2: RNAV 10 Job Aid

- ✓ Appendix B-1: AC 91-002 - Aircraft and operators approval for RNAV 5 operations
- ✓ Appendix B-2: RNAV 5 Job Aid

- ✓ Appendix C-1: AC 91-003 - Aircraft and operators approval for RNAV 1 and RNAV 2 operations
- ✓ Appendix C-2: RNAV 1 and RNAV 2 Job Aid

- ✓ Appendix D-1: AC 91-006 – Aircraft and operators approval for Basic-RNP 1 operations
- ✓ Appendix D-2: Basic-RNP 1 Job Aid

- ✓ Appendix E-1: AC 91-008 - Aircraft and operators approval for RNP APCH operations
- ✓ Appendix E-2: RNP APCH Job Aid

- ✓ Appendix F-1: AC 91-009 - Aircraft and operators approval for RNP AR APCH operations
- ✓ Appendix F-2: RNP AR APCH Job Aid

- ✓ Appendix G-1: AC 91-010 - Aircraft and operators approval for APV/baro-VNAV operations
- ✓ Appendix G-2: APV/baro-VNAV Job Aid

3. Suggested Action:

3.1 The Meeting is invited to:

- a) Take note of the information provided in this Working Paper and appendices; and
- b) Review and make the amendments deemed appropriate to the Advisory Circulars and adopt them as guide documents in the region.

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