



Agenda Item 4: Rules and procedures to approve Performance Based Navigation Operations.

(Presented by Colombia)

Summary	
<p>This working paper presents the progress status of approvals of operators and aircraft not only in RNAV 5 but also in RNAV 10, RNAV 1 and 2, RNP APCH and baro-VNAV. Furthermore this information bulletin presents a summary of what has been done by Colombian CAA in the implementation of the predictive RAIM tool and the possibility to extend this service to the SAM Region.</p>	
ICAO Strategic Objectives:	<p>A. <i>Safety</i> C. <i>Environmental Protection and Sustainable Development of Air Transport</i> D. <i>Efficiency</i></p>

1. Introduction

1.1 During the SAM/IG/7 meeting the task to research about the possibility to extend the service of the predictive RAIM tool SAPET (Satellite Performance Evaluation Tool) to the SAM Region was assigned to Colombia. In addition the status of the approval process of Colombian Operators and aircraft carried out by Colombian CAA and registered in the CARSAMMA format CMA F5 is presented.

2. Discussion

2.1. This is the list of RNAV and RNP approved operators and aircraft:

Operator	Model	Register	PBN codes
Avianca	B767-300	N-984AN*	A1, B3, B4, B5, C3, C4, D3, D4
Avianca	B767-300	N-728CG*	A1, B3, B4, B5, C3, C4, D3, D4
Avianca	B767-300	N-421AV*	A1, B3, B4, B5, C3, C4, D3, D4
Avianca	A318-111	N-590EL	A1, B1, C1, D1, S1
Avianca	A318-111	N-591EL	A1, B1, C1, D1, S1
Avianca	A318-111	N-592EL	A1, B1, C1, D1, S1

* These aircraft are not operating anymore with Avianca.

Avianca	A318-112	N-266CT	A1, B1, C1, D1, S1
Avianca	A 319-115	HK-4552	A1, B1, C1, D1, S1
Avianca	A 319-115	HK-4553	A1, B1, C1, D1, S1
Avianca	A319-115	N-422AV	A1, B1, C1, D1, S1
Avianca	A319-115	N-647AV	A1, B1, C1, D1, S1
Avianca	A319-115	N-691AV	A1, B1, C1, D1, S1

Avianca	A320-214	HK-4659	A1, B1, C1, D1, S1
Avianca	A320-214	HK-4549	A1, B1, C1, D1, S1
Avianca	A320-214	N-281AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-284AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-345AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-398AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-401AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-411AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-416AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-417AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-426AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-446AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-451AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-481AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-567AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-599AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-664AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-961AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-980AV	A1, B1, C1, D1, S1
Avianca	A320-214	N-992AV	A1, B1, C1, D1, S1
Copa Col*	ERJ-190	HK-4453	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4454	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4456	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4505	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4506	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4507	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4508	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4559	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4560	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4599	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HK-4601	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HP-1562-CMP	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HP-1563-CMP	A1, B1, C1, D1, S1
Copa Col	ERJ-190	HP-1566-CMP	A1, B1, C1, D1, S1
Copa Col	B737-700	HP-1371-CMP	A1, B1, C1, D1, S1
Copa Col	B737-700	HP-1372-CMP	A1, B1, C1, D1, S1

* Before Aerorepublica currently Copa Colombia.

LAN Col*	B737-700W	HK-4627	A1, B1, C1, D1, S1, S2
LAN Col	B737-700W	HK-4635	A1, B1, C1, D1, S1, S2
LAN Col	B737-700W	HK-4641	A1, B1, C1, D1, S1, S2
LAN Col	B737-700W	HK-4660	A1, B1, C1, D1, S1, S2
LAN Col	B737-700W	HK-4675	A1, B1, C1, D1, S1, S2
LAN Col	B737-700W	HK-4694	A1, B1, C1, D1, S1, S2

LAN Col	B737-700W	HK-4695	A1, B1, C1, D1, S1, S2
LAN Col	B737-700W	EI-EEB	A1, B1, C1, D1, S1, S2
LAN Col	B737-700W	EI-EEV	A1, B1, C1, D1, S1, S2

2.2. Regarding implementation of SAPET as predictive RAIM tool in Colombia, we would like to clarify next topics:

2.2.1. Currently version 3.7 is available and version 3.8 will be available soon.

2.2.2. This tool has been used to predict RAIM availability in the next Colombian airports: SKBO, SKBQ, SKAS, SKTM, SKSV, SKYP, SKSA, SKBS, SKCG, SKCZ, SKUI, SKSP and SKUC.

2.2.3. Colombian CAA is evaluating the acquisition of terminal with more capacity and exclusive and dedicated internet access to the NANU and GPS almanacs. Currently the internet channel is shared with all users and sometimes the connection fails.

2.3 In order to extend this service to the SAM Region, next items should be taken into account:

2.3.1. Updated Data Base of airports, air space terminals and terrain of all SAM Region.

2.3.2. Updated obstacles Data Base of all SAM Region.

2.3.3. Interactive presentation to the user in similar way to the FAA web page: <http://www.raimprediction.net/applet.php> or AUGUR web page: <http://augur.ecacnav.com/>. (See samples in Appendix of this document).

2.3.4. Designation of technical personnel to assume the responsibility for the tool management.

2.3.5. Tool validation

3. **Suggested Action**

3.1 Taking into account the RNAV 5 implementation date, October 20th for the SAM Region and according to the SAMIG discussion about the predictive RAIM tool and the conclusion that it is not a requirement for RNAV 5, continue with the implementation plan as established.

3.2 Ask for quotations to other suppliers of the predictive RAIM tool and do a proposal to Colombian CAA to extend this service to the SAM Region. According to the Colombian CAA response choose the most convenient option.

3.3 Issue a bulletin clarifying that predictive RAIM tool is not a requirement for the RNAV5 implementation.

* Before Aires S.A. currently LAN Colombia.

APENDIX

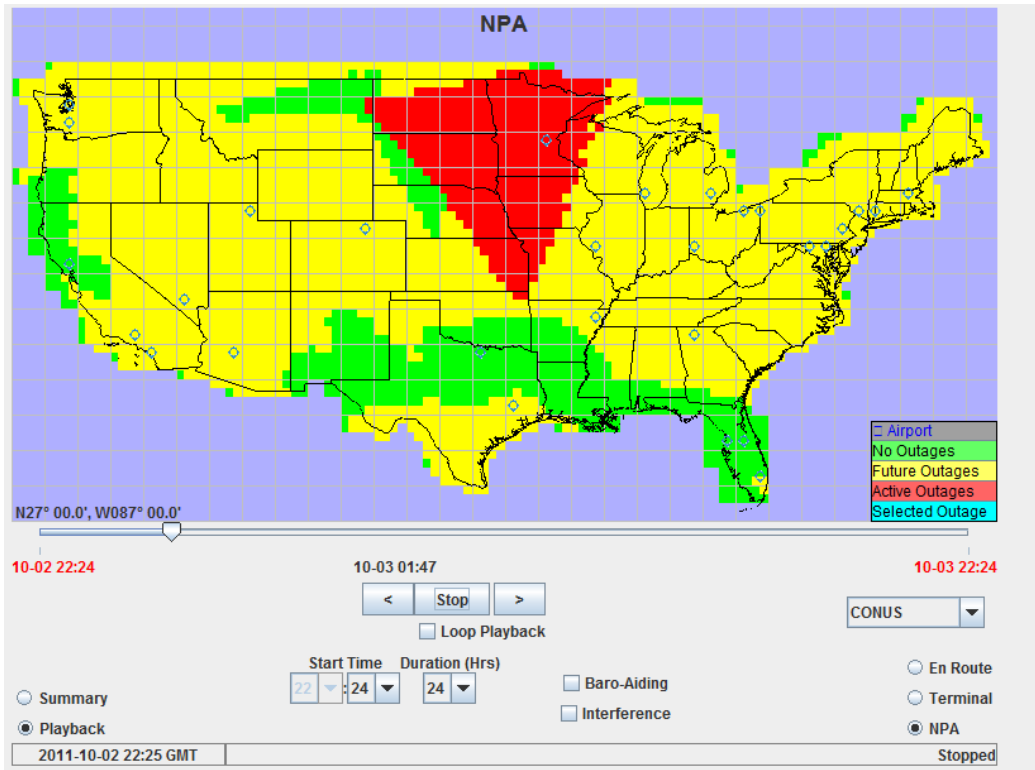


Fig.1. FAA RAIM predictive tool presentation.

AUGUR GPS RAIM Prediction Tool - Terminal/Approach Tool

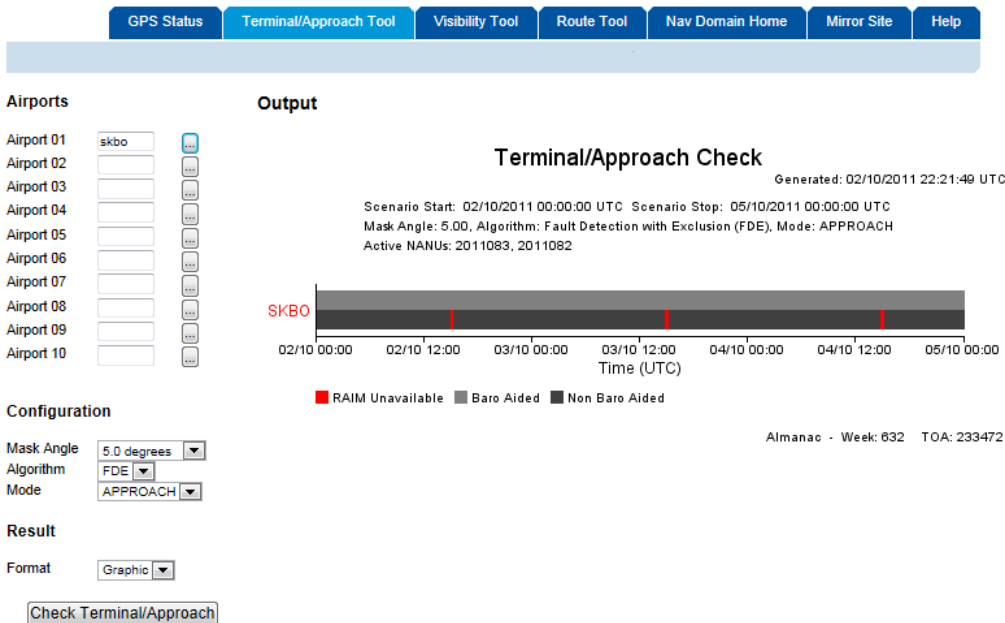


Fig.2. AUGUR RAIM predictive tool presentation