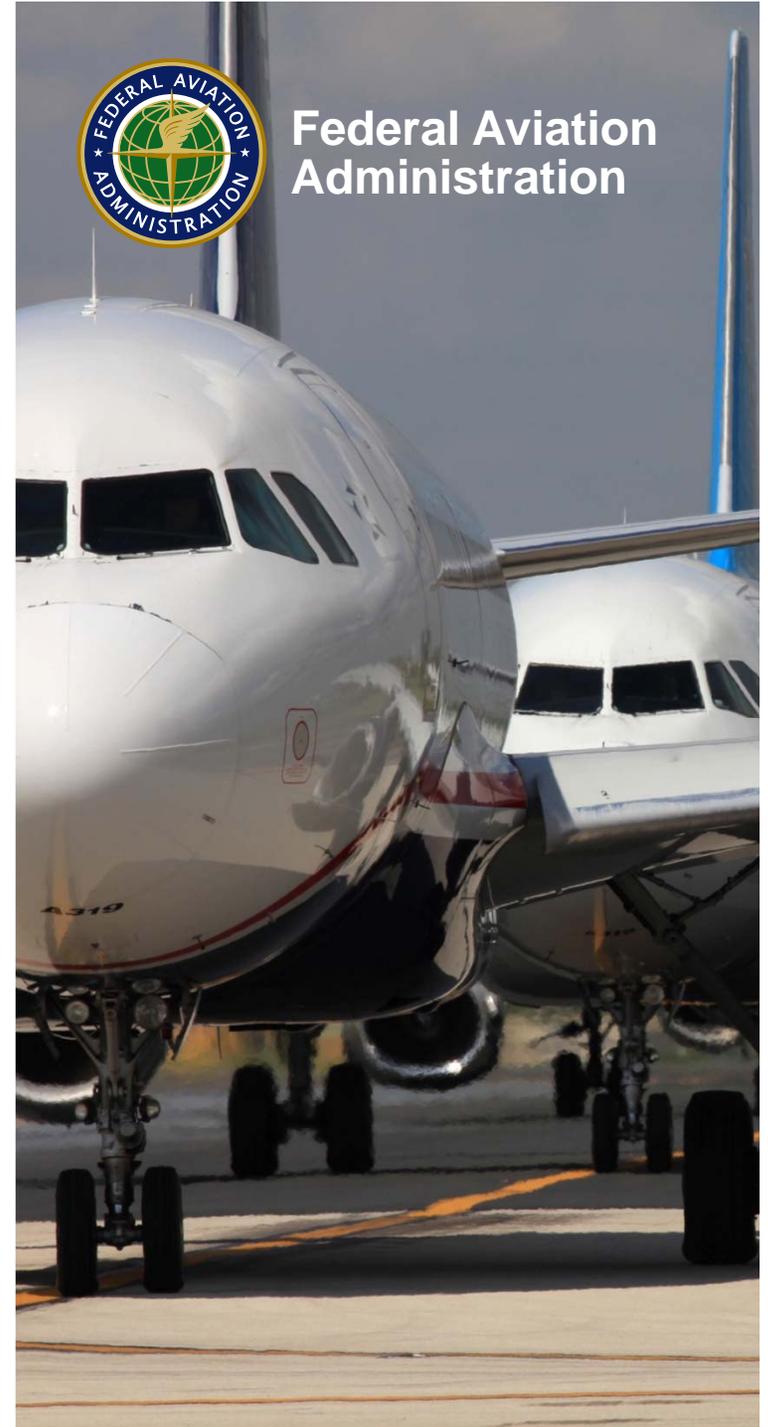


ICAO / IFPP Committee Report

Presented to: ACF 12-02

By: Mike Webb, US Member ICAO IFPP

Date: October 24, 2012



Overview

- **ICAO INTEGRATION WORKING GROUP (IWG) REPORT**
- **ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES**
- **NEXT STEPS**



ICAO IWG REPORT

The following are the approved Integration Working Group (IWG) task listing:

- **Development and identification of charting recommendations to support new Performance Based Navigation criteria, as well as support of other new technologies such as precision GBAS and SBAS landing systems. (Task 3.1)**
- **Development of charting and navigation data requirements to promote harmonization of charts, databases and avionics systems (Procedure identification for SIDs/STARS and further guidance for IAP charts, MSA chart/database harmonization, harmonized guidelines about magnetic variation). (Task 3.2)**
- **Development of charting criteria for PinS Approach and Departure for helicopters.(Task 3.3)**
- **Development of SBAS charting requirements. (Task 3.4)**

ICAO IWG REPORT

- **Charting of RNAV Routes**
- **Naming Conventions for PBN Terminal Procedures**
- **Promulgation and depiction of RNP Accuracy Requirements for all Phases of Helicopter Flight.**
- **Portrayal of altitudes on Terminal Charting.**
- **Example RNAV Instrument Approach Procedure Chart**
- **SID/STAR Charting Data Requirements and Depiction Requirements.**
- **Significant Point Publication and Depiction Requirements.**
- **Introducing the concept of Transitions to ICAO guidance on Airspace Design.**
- **Fixed Radius Transition. 3.2.8 Continued Review of Harmonization in the Area of Information Promulgation.**
- **Development of charting criteria for PinS operations for helicopters.**
- **Principles of Charting the PinS Approach Maneuvering Visual**
- **Development of charting criteria for PinS Departures for helicopter.**

ICAO IWG REPORT

- Development of charting criteria for PinS LPV.
- Development of charting criteria SBAS Approach Procedures.
- SBAS Charting Examples.
- ICAO Location Identifier Scheme Enhancements.
- SBAS Pins LPV Charting.
- SBAS Lines of Minimums for PinS LPV Chart.

Additional Integration Working Group Activities.

- DOC 8697.
- Database Driven Charting has been discussed at several IWG meetings.
- Clarification of the “Path Descriptor” Rules for Procedure Design.
-

ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

- **Addresses approach, departure, and arrival procedures.**
 - It addresses both PBN specific procedures as well as so-called hybrid procedures, procedures that are a combination of both PBN and non-PBN Navigation.
- **It does not address non-PBN Procedures.**

ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

Impact Details:

- International and National Policy guidance
- Database standards –
- Database editions –
- Charting -
- Production Systems and Process –
- ANSP limitations –
- Chart producers
- Synchronization of chart & database production –
- Procedural changes –
- Compliance –
- Cost & cost justification –
- Certification –
- IAP parentheses –
- Retrofit –
- Safety Management System (SMS) and Risk Hazard Assessments –

ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

Impact Details:

- **Flight Deck avionics –**
- **Flight Deck and Non-Flight Deck avionics –**
- **DO-200A**



ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

Traditional Procedure Titling

Title (Part One)	Paras (Part Two)	Duplicate Procedure Identification Or Circling Suffix (Part Three)	Runway or Final Approach Course (Part Four)
RNAV	(GNSS)	X, Y, Z Or A, B, C	Rwy 17L or 234

Proposed Procedure Titling

Title (Part One)	Duplicate Procedure Identification Or Circling Suffix (Part Two)	Runway or Final Approach Course/ (Part Three)	Parenthetical (Part Four)
RNP	X, Y, Z Or A, B, C	Rwy 17L Or 234	See next figures

ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

Parenthetical Discussion

<u>List Content</u>	<u>Meaning</u>
No Parenthetical	(procedure has at least LNAV line of minimums, may also have any valid combination of the other lines of minimums)
LPV Only	(procedure has only LPV lines of minimums)
LNAV/VNAV Only	(procedure has only LNAV/VNAV lines of minimums)
LPV, LNAV/VNAV Only	(procedure has both LPV and LNAV/VNAV lines of Minimums but no LNAV)
LP Only	(procedure has only LP lines of minimums)
AR	(Authorization Required based on Doc 9613 and Doc 9905)

ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

Approach PBN Requirements Box

- **RF Leg Required** = Indicator of such a requirement somewhere in the Procedure, see procedure details for specific requirements. ¹
- **Missed Approach requires less than RNP 1,** = Indication provided only when NavSpec is RNP AR
- **RNP Less than 0.3 anywhere,** = Indication provided only when NavSpec is RNP AR. Indicator of such a requirement somewhere in the Procedure, see procedure details for specific requirements.
- **Hybrid Procedure Requirements.** = All non-PBN procedure charts that include PBN segments will include the appropriate NavSpec Name and all appropriate additional requirements for those segments.

Note: there is no change to the naming of non-PBN procedures , directly or implied, in this statement. In addition, the charting requirements of any RNAV NavSpec that have been used in the Hybrid Procedure shall be met. This also applies to the equipment options available in the RNAV NavSpecs.

ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

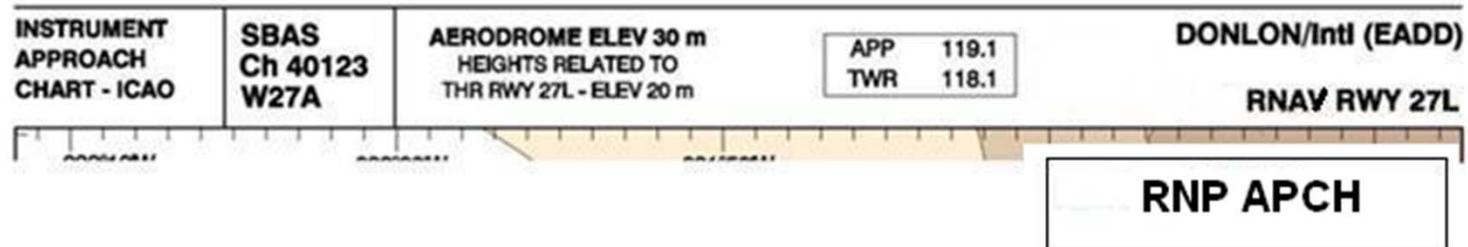
Arrival/Departure Requirements Box

- **Navigation Specification, example = RNAV 1, RNAV 2, etc,**
- **Additional Requirements, example =**
 - RF Leg Capability Required,
 - Accuracy Value when the ADV RNP NavSpec is used
- **Hybrid Procedure Requirements**
 - All non-PBN procedure charts that include PBN segments will include the appropriate NavSpec Name and all appropriate additional requirements. Note there is no change to the naming of non-PBN procedures, directly or implied, in this statement. In addition, the charting requirements of any RNAV NavSpec that have been used in the Hybrid Procedure shall be met. This also applies to the equipment options available in the RNAV NavSpecs.
- **Navigation Specification Requirement Limitations,**
 - This portion is intended to cover the following – If the NavSpec allows for options and the procedure designer has to limit the options, this must be stated in this section.

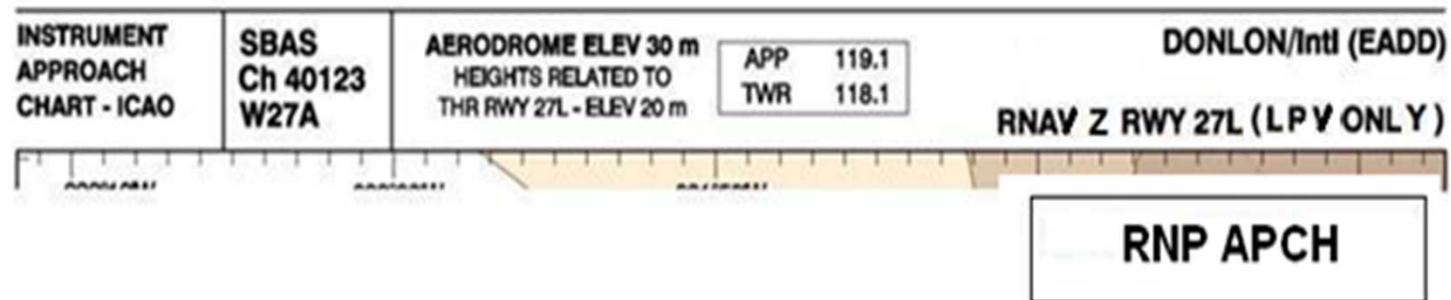
ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

Examples

The base-line RNAV Procedure Chart:



The RNAV Procedure this is limited to LPV only:



ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

Examples

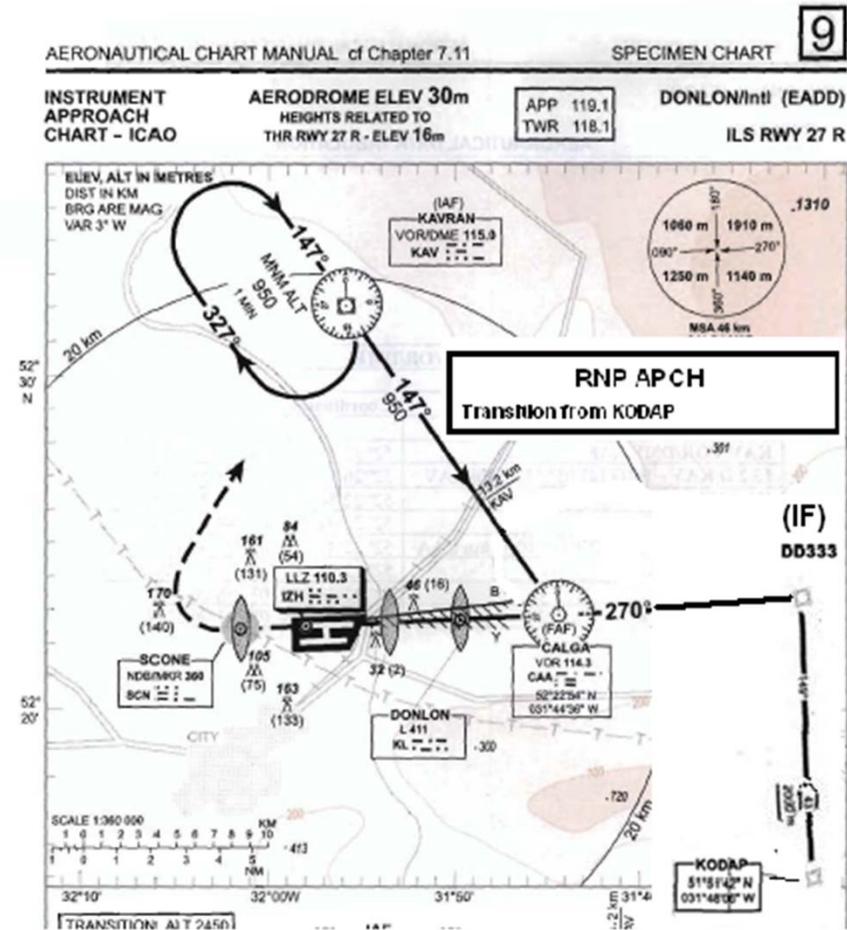
The RNAV Procedure with Authorization Required and an RF Leg Requirement:

INSTRUMENT APPROACH CHART - ICAO	SBAS Ch 40123 W27A	AERODROME ELEV 30 m HEIGHTS RELATED TO THR RWY 27L - ELEV 20 m	<table border="1"><tr><td>APP</td><td>119.1</td></tr><tr><td>TWR</td><td>118.1</td></tr></table>	APP	119.1	TWR	118.1	DONLON/Intl (EADD) RNAV X RWY 27L (AR)
APP	119.1							
TWR	118.1							
				<table border="1"><tr><td>RNP AR RF Leg Required</td></tr></table>	RNP AR RF Leg Required			
RNP AR RF Leg Required								

ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

Examples

Arrival/Departure Example



ICAO NAMING CONCEPTS FOR PBN INSTRUMENT PROCEDURES

Next Steps

State Letter distribution this Fall, looking for implementation in 2014

Change over from RNAV to RNP and fully implement by 2028

