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UNITING AVIATION

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Aeronautical Charts

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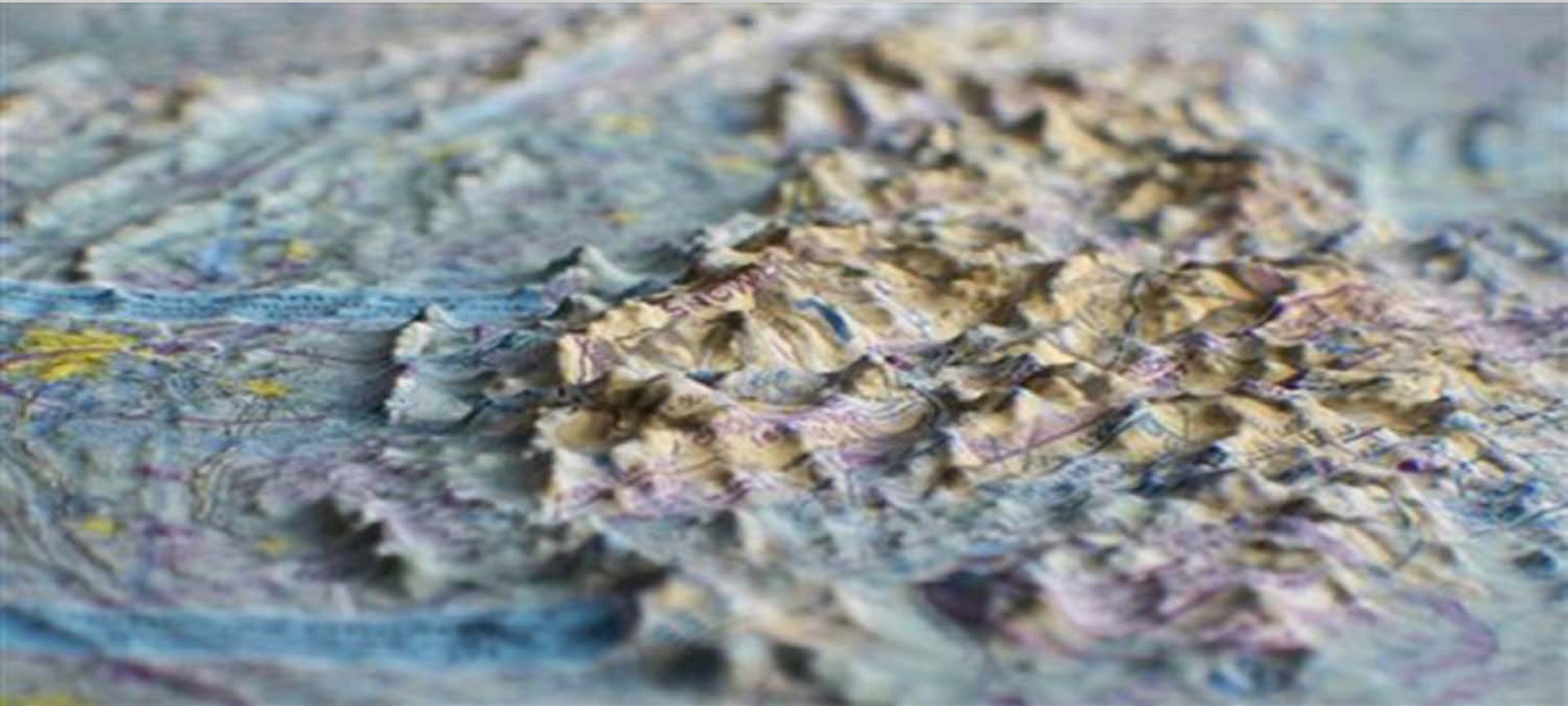
ICAO NACC

24 -27 Aug 2015



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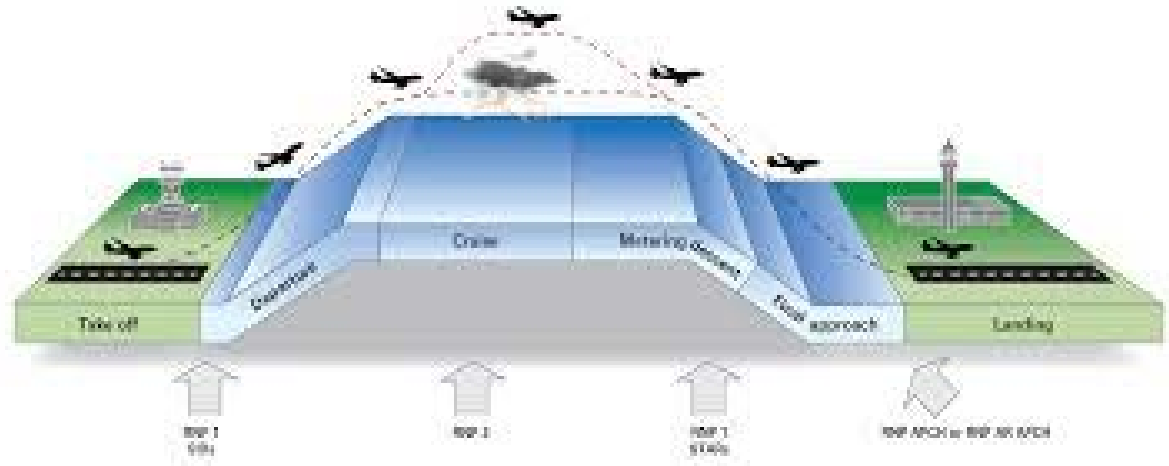
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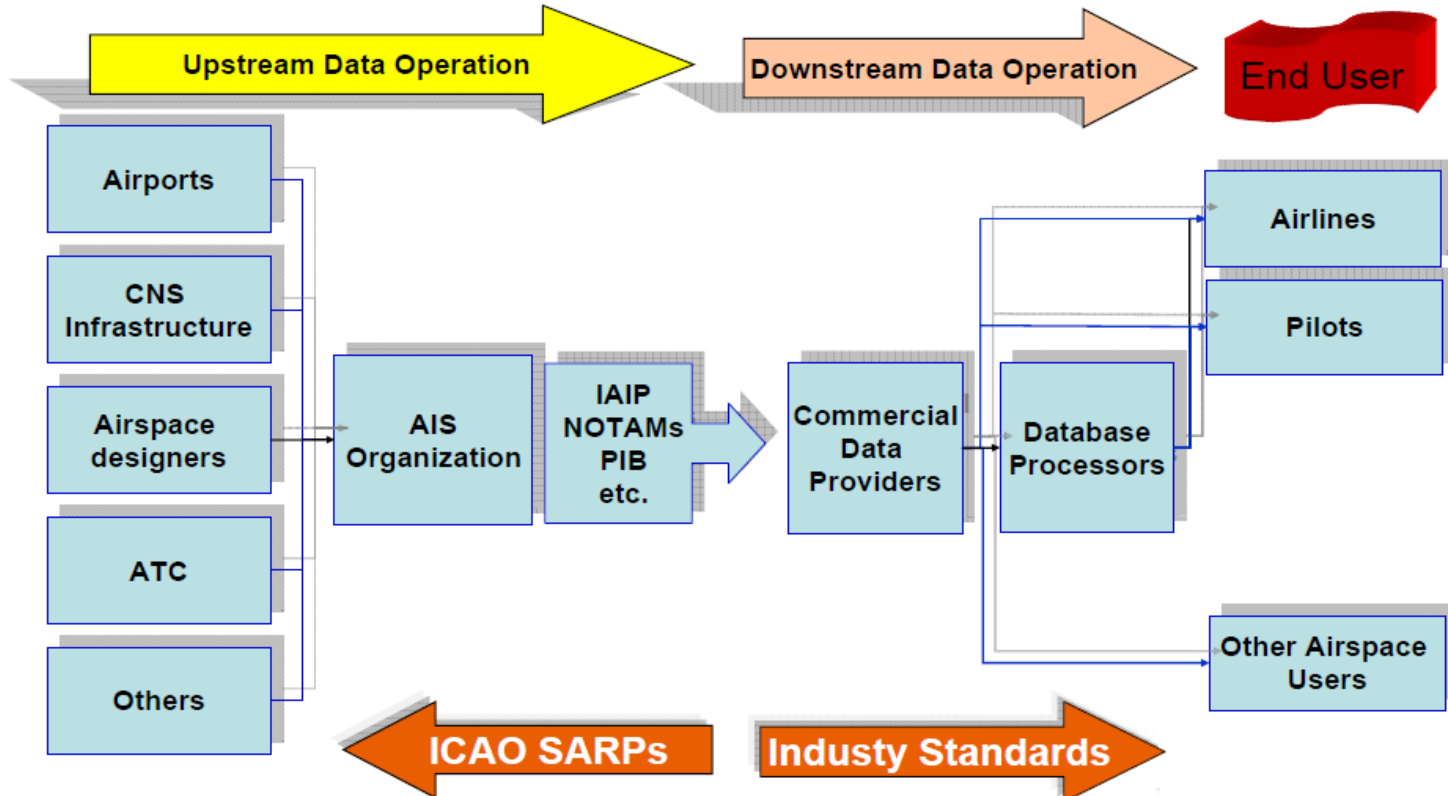




Topics

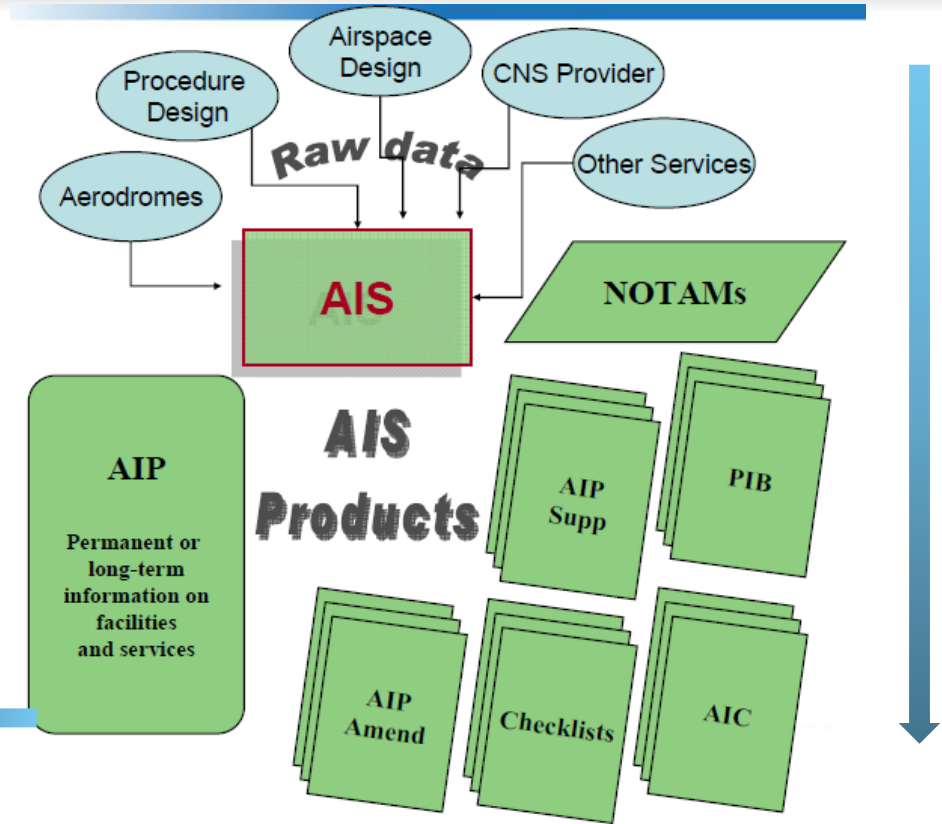
1. AIS/AIM
2. Data flow
3. ICAO PBN Documents
4. Procedures design
5. PBN Aeronautical Charts

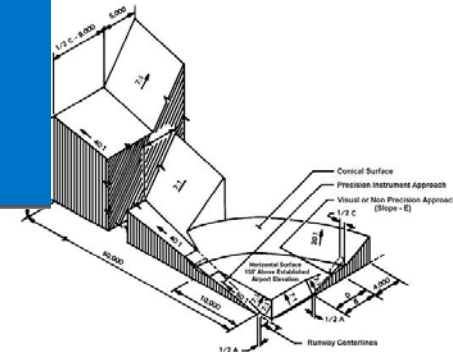
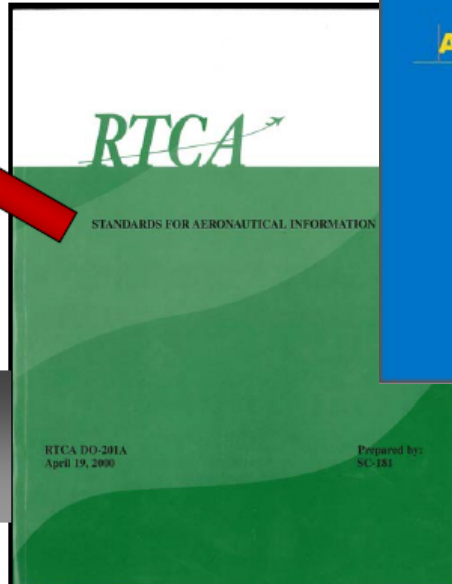
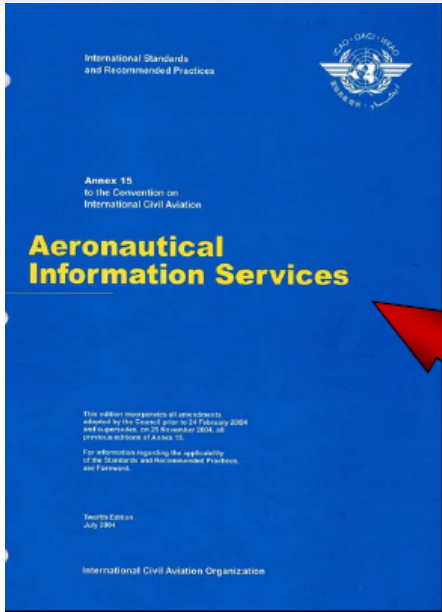






Aeronautical
Charts





Key elements of DO-211A incorporated in ICAO Annex 15, Aeronautical Information Services



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International Standards
and Recommended Practices

Annex 4
to the Convention on
International Civil Aviation

Aeronautical Charts

This edition incorporates all amendments adopted by the Council prior to 5 March 2009 and supersedes, on 19 November 2009, all previous editions of Annex 4.

For information regarding the applicability of Standards and Recommended Practices, see Chapter 1 and the Foreword.

Eleventh Edition
July 2009

International Civil Aviation Organization

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Appendix A. Example outline of a State transition plan

Appendix B. Extract from Amendment 6 to PANS-OPS (Doc 8168), Volume II, regarding chart identification

Appendix C. Hazard log — RNAV to RNP approach chart identification

Doc 336
AN/195



Area Navigation (RNAV) to Required Navigation Performance (RNP) Instrument Approach Chart Depiction

Approved by the Secretary General
and published under his authority



INSTRUMENT APPROACH CHART - ICAO		AERODROME ELEV 30 m HEIGHTS RELATED TO THR RWY 27L - ELEV 20 m	APP 119.1	DONLON/Intl (EADD)
			TWR 118.1	

RNP APCH

INSTRUMENT APPROACH CHART - ICAO	SBAS Ch 40123 W27A	AERODROME ELEV 30 m HEIGHTS RELATED TO THR RWY 27L - ELEV 20 m	APP 119.1	DONLON/Intl (EADD)
			TWR 118.1	

RNP APCH

INSTRUMENT APPROACH CHART - ICAO		AERODROME ELEV 30 m HEIGHTS RELATED TO THR RWY 27L - ELEV 20 m	APP 119.1	DONLON/Intl (EADD)
			TWR 118.1	

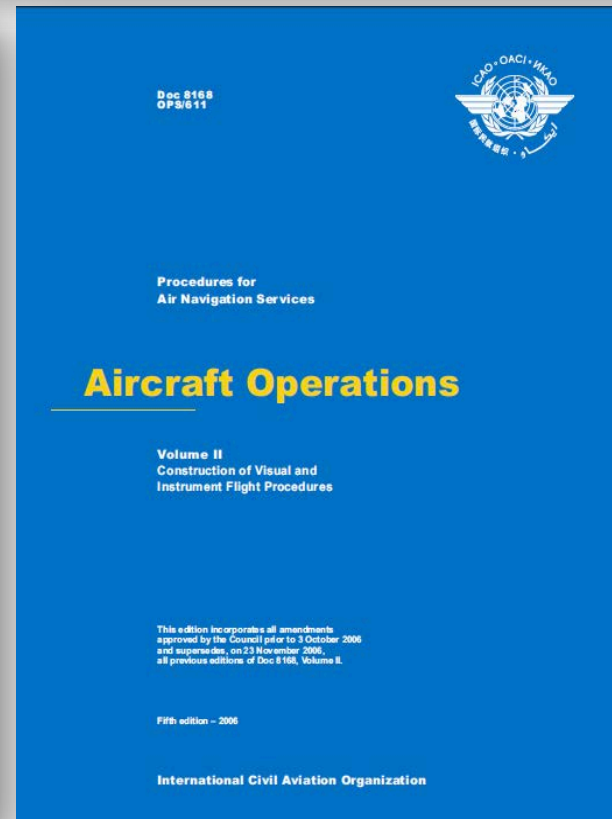
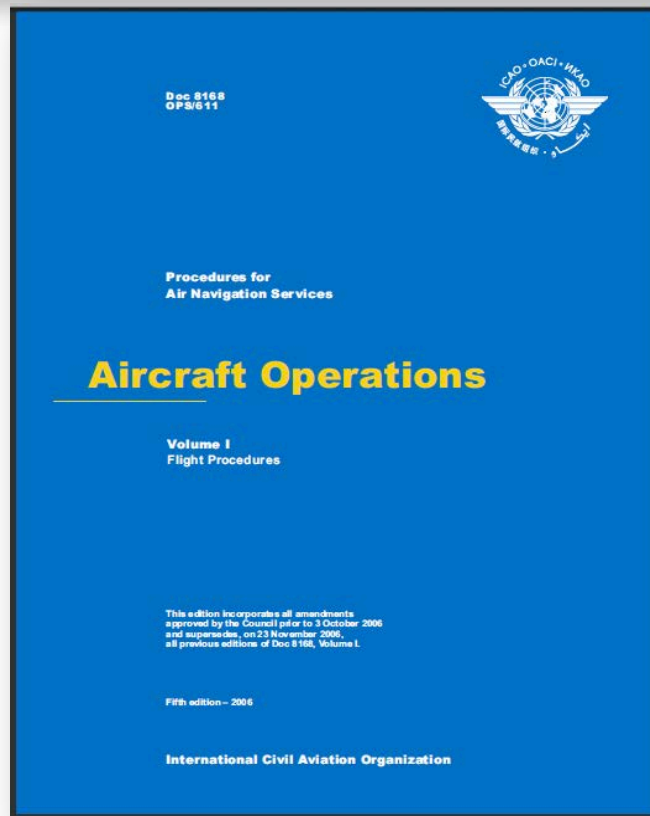
RNP AR

RF Leg Required



Operating and Design Criteria

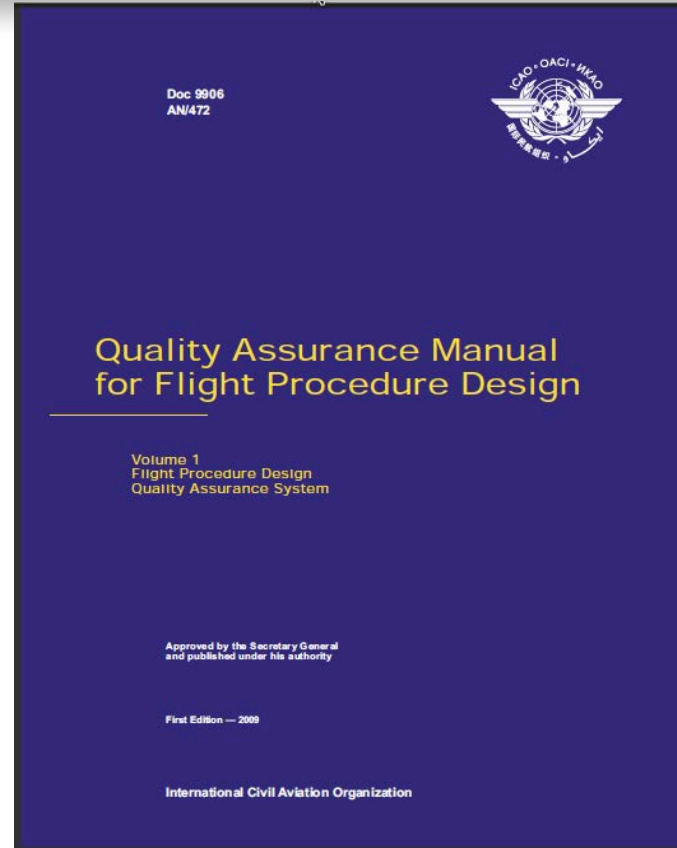
- ICAO Doc 8168 PANS-OPS 611 Vol I & Vol II





Quality Assurance Criteria

- Doc 9906 AN472
Vol I
- FPD QA System
- First Edition





Training Criteria

- Doc 9906
AN472 Vol 2
- FPD Training
- First Edition





Software Criteria

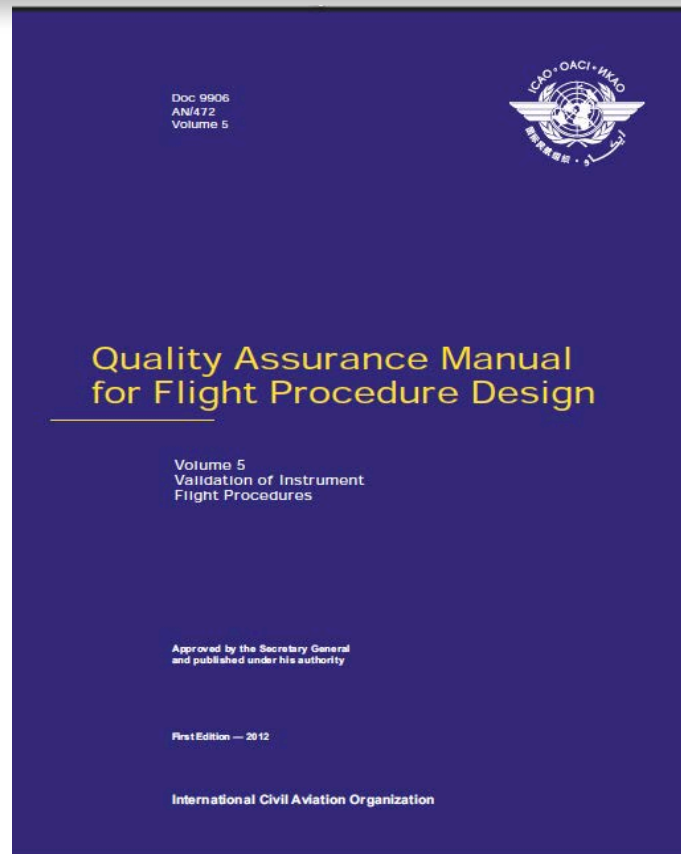
- Doc 9906
AN472 Vol 3
- FPD Software
Validation
- First Edition
Corrigendum 1





FPD Validation Criteria

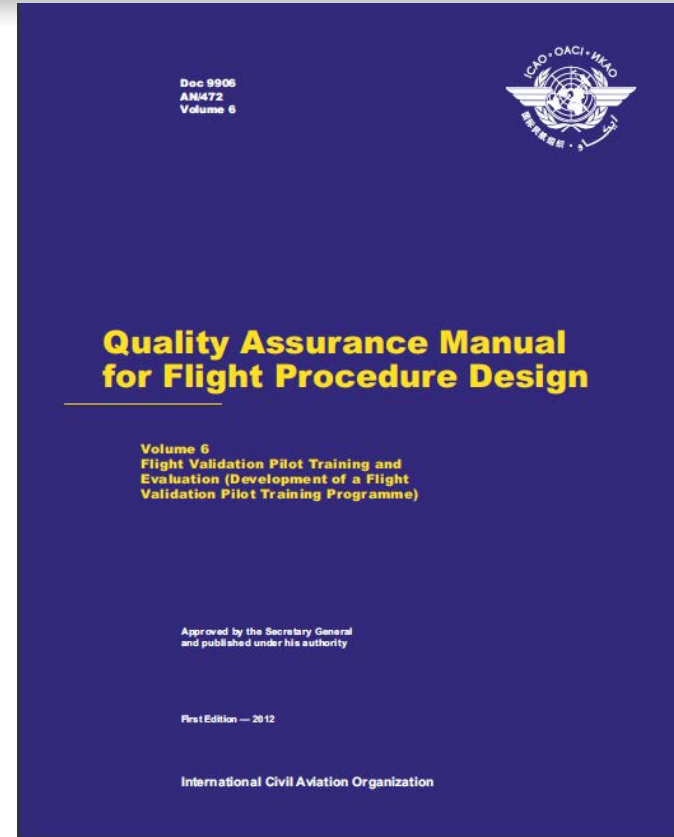
- Doc 9906 AN472
Vol 5
- Validation of FPD
- First Edition





Flight Validation Pilot Criteria

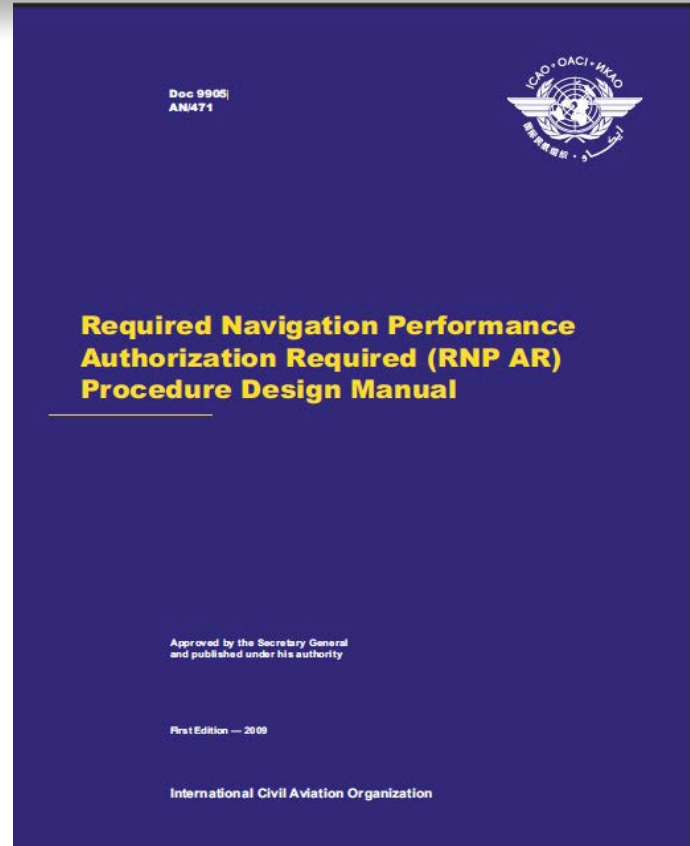
- Doc 9906 AN472 Vol 6
- Flight Validation Pilot Training and Evaluation
- First Edition





RNP AR Design Criteria

- Doc 9905 AN471
- RNP AR Procedure Design Manual
- First Edition,
Corrigendum 1





Additional Guidance - Airspace Design/CDO/CCO

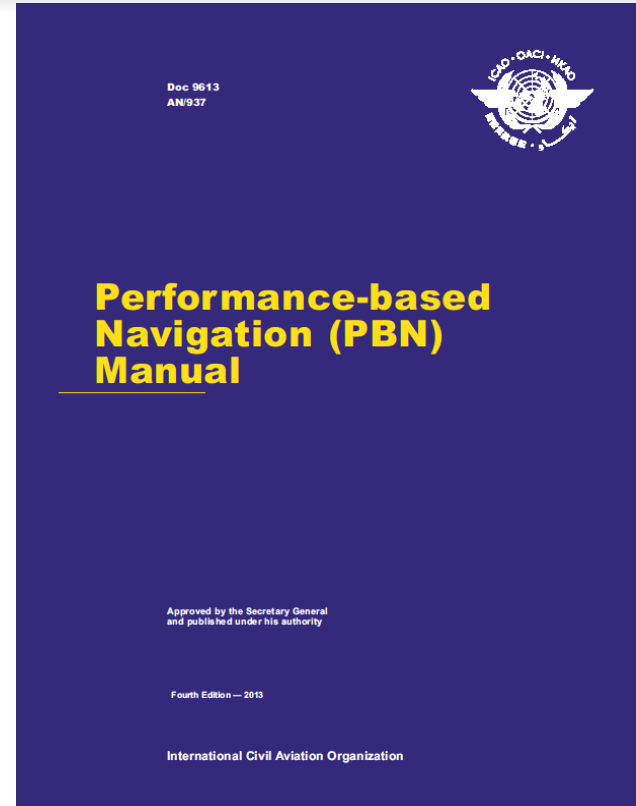
- Doc 9992 AN494 - Manual on PBN in Airspace Design
- Doc 9993 CCO Manual
- Doc 9931/AN476 - CDO Manual





PBN

- Doc 9613/AN937
- PBN Manual
- Edition 4





- **Doc 8168 Vol II** currently provides design criteria for following PBN applications:
 - En-route - RNP 4, RNAV 5, RNAV 2, RNAV 1,
 - Terminal - RNP 1, RNAV 2, RNAV 1
 - Approach - RNP APCH (LNAV, LNAV/VNAV & Localizer Performance with Vertical guidance (LPV) (U.S. GPS/WAAS)
 - Helicopter Point in Space (PinS) approaches



- Following 3 years of IFP Panel deliberations, the following PBN changes are expected to be published in 2013/2014:
 - En-route - RNP 2, RNP and RNP 0.3 (Cat H)
 - Terminal - RNP and RNP 0.3 (Cat H)
 - Approach - RNP APCH (LNAV/VNAV)
 - Helicopter Point in Space (PinS)
 - Departures
 - Approaches and departures with maneuvering areas.



New Approach Classification

Domain	Document	Aspect						
Approach Operations	Annex 6	Classification	Type A ($\geq 250'$)		Type B CAT I ($\geq 200'$)	CAT II ($\geq 100'$)	CAT III ($<100'$)	
			Method	2D	3D			
		Minima	MDA/H	DA/H*				
Approach Runways	Annex 14	M(DA/H) \geq VMC	Non Instrument RWY					
		M(DA/H) $\geq 250'$ Visibility $\geq 1\ 000\text{m}$	Non Precision Approach RWY					
		DA/H $\geq 200'$ Visibility $\geq 800\text{m}$ or RVR $\geq 550\text{m}$	Precision Approach RWY, Category I					
		DA/H $\geq 100'$ RVR $\geq 300\text{m}$	Precision Approach RWY, Category II					
		DA/H $\geq 0'$ RVR $\geq 0\text{m}$	Precision Approach RWY, Category III (A, B & C)					
System Performance Procedures	Annex 10 PANS-OPS Vol. II	NPA	NDB, Lctr, LOC, VOR, Azimuth, GNSS					
		APV		GNSS/Baro/SBAS				
		PA		ILS, MLS, SBAS, GBAS				

* For guidance on applying a continuous descent final approach (CDFA) flight technique on a non-precision approach procedures refer to PANS-OPS (Doc. 8168) Vol. I Section 1.7



Title (Part One)	Duplicate Procedure Identification Or Circling Suffix (Part Two)	Runway Or Final Approach Course (Part Three)	Parens (Part Four)
RNAV	X, Y, Z Or A, B, C ¹	Rwy 17L Or 234 ²	See Below in Section 2.4

Parens Explanation

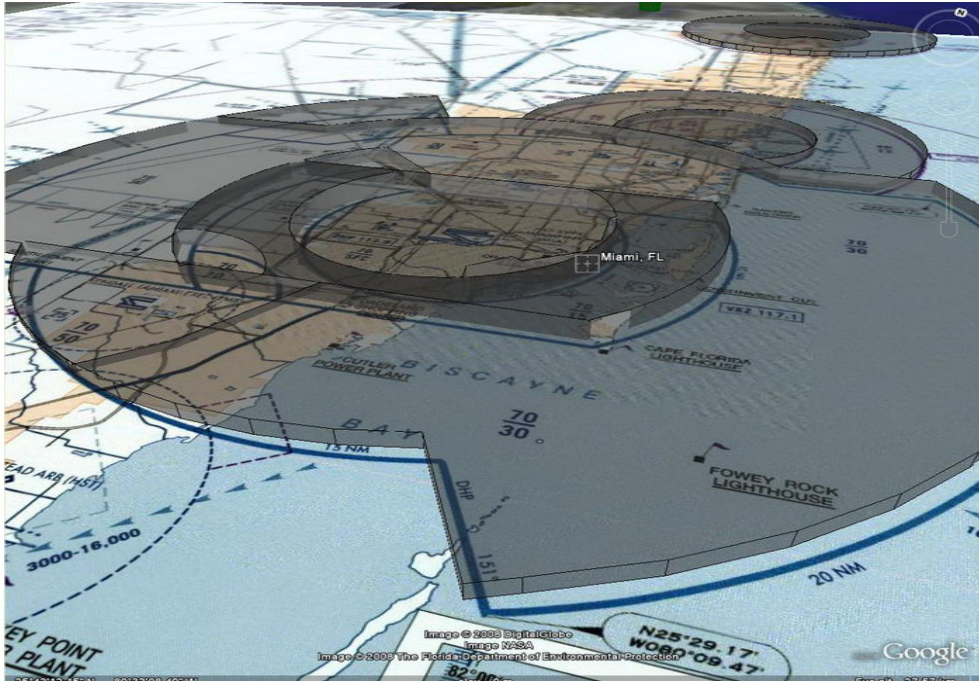
- No Parenthetical minimums) (at least LNAV line of minimums, may also have any valid combination of the other lines of
- LPV Only (has only LPV lines of minimums)
- LNAV/VNAV Only (has only LNAV/VNAV lines of minimums)
- LPV, LNAV/VNAV Only (has both LPV and LNAV/VNAV lines of Minimums but no LNAV)
- LP Only (has only LP lines of minimums)

- AR (Authorization Required based on Doc 9613 and Doc 9905)

RNAV will change to RNP in 2028



Aeronautical data processes are expected to operate under a Quality Management System (QMS)



- Corrective action
- Document control
- Records management
- Management review
- Nonconforming products
- Letters of Acceptance
- Certificates of Conformity
- Audits
- Preventative actions



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