



ICAO IFPP Integration WG

NAMING CONCEPTS FOR INSTRUMENT PROCEDURES

Instrument Flight Procedures Panel (IFPP)

Presented by

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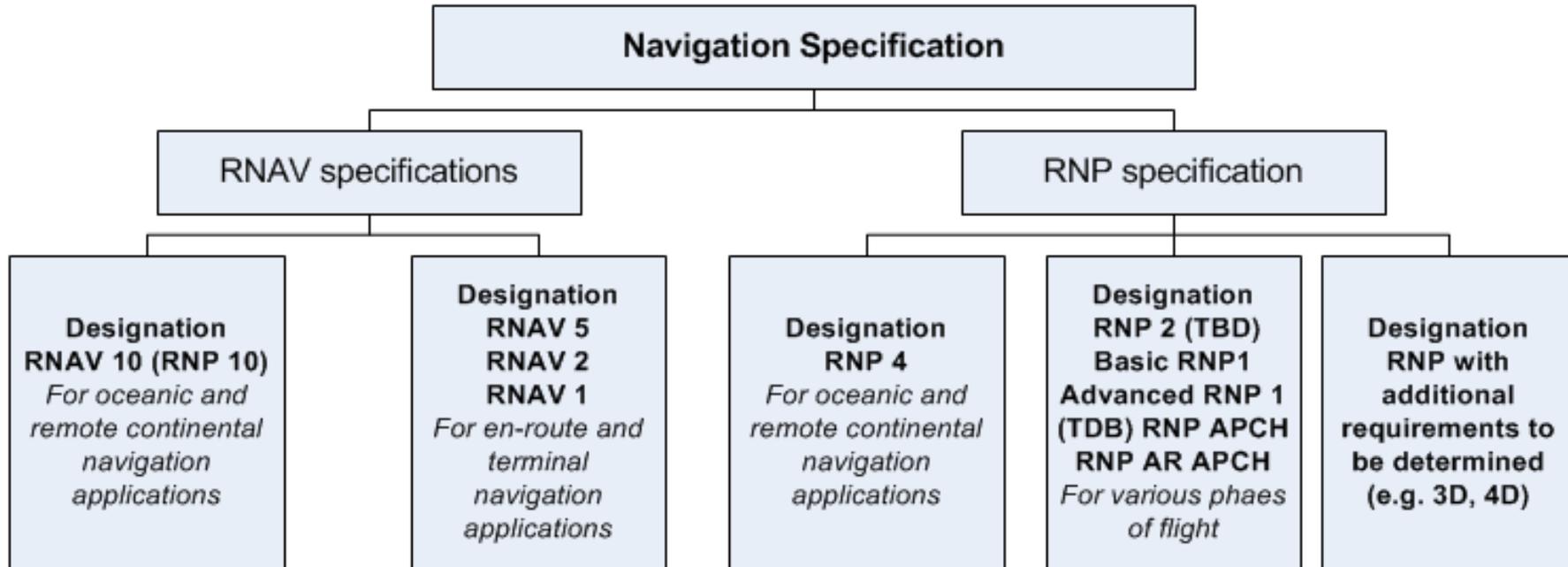


Purpose

Concern within the ICAO Secretariat that the current guidance materials for PBN Procedure Naming may be lacking in detail and clarity to ensure a uniform application by the Member States is certainly universally looked upon as a problem and the ICAO IFPP IWG paper addresses those issues. This problem is evidenced in numerous ANSP procedures charts and documents as they begin publishing procedures designed around the Navigation Specification concepts defined in Document 9613, the Performance Based Navigation Manual.

Support New Navigation Specifications

Figure I-A-1-4. Accommodating existing and future designations





Problems Identified with Current Procedure Naming

- International and National Policy guidance – Changes to the naming convention will require incorporation into ICAO and national policy guidance before implementation could begin e.g. changes will be required to ICAO Doc 8168, Doc 9905, Annex 4, Annex 11 and local documentation such as U.S. TERPS, Air Traffic Procedure Manual and Flight Operations guidance material, just to name a few. The time line for ICAO documentation is seen as three to five years, other documentation will vary by updating processes.
- Database standards – Changes to the naming convention will require changes to industry database standards. Currently, the ARINC 424 communications protocol and DOD's Digital Aeronautical Flight Information File (DAFIF) specification use a predefined format that is limited in its flexibility. The timeline for accomplishing changes is three to seven years
- Database editions – The development of a new database edition to support a procedure naming change (ARINC 424 or DAFIF) increases the number of editions that a database manufacturer must support.



Problems Identified with Current Procedure Naming

- **Charting - Individual government and commercial supplier standards on chart composition, chart heading size/location, etc., will require changes.**
- **Production Systems and Process – After the policy and standards changes have been published, changes to various software programs such as AIS, Procedure Design, Charting, EFB and Database Production will be required to implement the changes. Previously coordinated agreements with subcontractors may require modification.**
- **ANSP limitations – The rate at which ANSP can amend procedures is a function of resources available.**
- **Chart producers – The rate at which they publish the newly amended procedures, is a function of resources available.**
- **Synchronization of chart & database production – Chart and navigation database production and release must be synchronized.**



Problems Identified with Current Procedure Naming

- Procedural changes – A procedure naming and/or PBN information change will require changes to operators' procedures, e.g., checklists and procedures, operations specifications, etc.
- Compliance – Non uniform timing on implementation and deviation from an ICAO standard will be a constraint requiring mitigation tactics.
- Cost & cost justification – The cost is related to the magnitude of the change and its implementation timeline. Any proposed change must be justified (business model).
- Certification – A proposed change will impact OEM and/or avionics certification.
- IAP parentheses – Some business and military aircraft use the information contained in the parentheses for function.
- Retrofit – A procedure naming change that requires upgrading or retrofitting avionics to display the new procedure title is expensive and would take years, even decades, to accomplish.
- Safety Management System (SMS) and Risk Hazard Assessments – A proposed change may require a formal SMS and/or risk assessment in some States prior to implementation.
- Flight Deck avionics – For Flight Deck avionics (FMS, Navigation Displays & associated signal generators, EFBs) a procedure naming change will create impacts in integration.



Problems Identified with Current Procedure Naming

- Flight Deck and Non-Flight Deck avionics – In addition to flight deck avionics, a procedure naming change may impact mission/flight planning systems, various types of simulators & other training systems, and flight control systems.
- DO-200A – The database process and approval may be impacted. This would be particularly problematic if during database processing additional steps needed to be introduced to enable an avionics system to recognize or accept a PBN procedure with a new naming convention..



What procedures are effected?

- Approach Procedure Naming is the area most impacted
- Departure and
- Arrival
- Approach Procedures concepts of
 - Circling,
 - Visual and
 - Helicopter procedure names.



Current Standard Naming

Current

Title (Part One)	Parens (Part Two)	Suffix (Part Three)	Runway/Circling (Part Four)
RNAV	(GNSS)	X, Y, Z	Rwy 17L or A

Proposed

Title (Part One)	Suffix (Part Two)	Runway/Circling (Part Three)	Parenthetical (Part Four)
RNP	X, Y, Z	Rwy 17L or A	By Exception



Paranthesical Discussion

- Removing the parenthesical completely as it is not part of the ATC clearance language and not generally available on the flight deck avionics. Instead, look at the suffix as being more than just a “multiple procedure indicator”.
- If it is retained, move it to the end of the string to provide a procedure name that is better harmonized across all parts of the system. This is generally agreed to be part of the long term solution.
- Include and better define procedure required sensor information. This is seen as consistent with conventional procedure naming.
- Include the Navigation Specification name as that is supposed to be the one piece of information that does answer the end user question.
- Include the DOC 9613 Mode of Operation terminology such as LPV, LNAV/VNAV, as this is an important piece of information in the end user decision.
- Include the “Authorization Required” information as this is seen as critical in the decision making process for “can I use this procedure”.



Approach PBN Requirements Box

- Items lined thru should be explained as options available to the ANSP.
- **Authorization, example = AUTHORIZATION REQUIRED**
Navigation Specification, example = RNP APCH, RNP AR
Mode of Operation, example = LPV, LNAV/VNAV, LNAV, RNP 0.15
Commentary: Additional location of the same information found in the lines of minimums.
- **Procedure Qualifier, example = COPTER, VISUAL, CIRCLING**
- **Navigation Specification Requirement Limitations,**
 - example = GNSS Required,
- **Flight Plan Code, example = B1, T2**
 - *Commentary - codes are found in “Doc 4444 2012”, see Appendix A to this paper.*
- **Functional Requirements, example = RF Leg Required, Missed Approach less than RNP 1, RNP Less than 0.3 anywhere, hybrid resolution such as RNAV ILS Encoding**



PBN Requirements Box

- **Authorization, example = AUTHORIZATION REQUIRED (TBD)**
- **Navigation Specification, example = RNAV 1, RNAV 2, etc**
- **Procedure Qualifier, example = COPTER, VISUAL, CIRCLING**
- **Navigation Specification Requirement Limitations, example = GNSS Required Flight Plan Code, example = D1, O1**



PBN Requirements Box

- *Commentary - codes are found in “Doc 4444 2012”, see Appendix A to this paper.*
- Functional Requirements, example = RF Leg Capability resolution
- Required, RNP requirement,
- Other Items still under discussion within the IWG
 - Radar Requirements
 - Simultaneous operations
 - Altimetry
 - Revisionary instructions (due to loss of navigation capabilities)



PBN Requirements Box Procedure Designer Checklist

Authorization:	AUTHORIZATION NOT REQUIRED
Navigation Specification:	RNP APCH
Mode of Operation:	LPV, LNAV/VNAV, LNAV,
Procedure Qualifier:	STRAIGHT-IN
Navigation Specification	
Requirement Limitations:	GNSS Required,
Flight Plan Code:	S1
Functional Requirements:	None



Flimsy 3

After first day discussing in the Plenary Questions to be addressed.

- **Question One – Is the proposal to retain the current naming conventions for Approach SIDs and STARs unchanged for the near term an acceptable part of the IFPP Direction**
- **Question Two – Is the proposal to establish a target time frame for a change in Approach Procedures naming from RNAV to RNP an acceptable part of the IFPP Direction**
- **Question Three – Is the proposal to establish a PBN Requirements Box concept for Approach, SID and STAR charting an acceptable part of the IFPP Direction.**



Flimsy 3

Title (Part One)	Suffix (Part Two)	Runway/Circling /PinS (Part Three)	Parenthetical (Part Four)
RNAV	X, Y, Z (where required)	Rwy Designation (RWY 17L) or Circling Character (A) or Final Approach Course for PinS (342)	(LPV Only) (AR Only) (COPTER Only)



Flimsy 3

**Authorization,
Navigation Specification, example
Mode of Operation
Procedure Qualifier
Navigation Specification Requirement
Limitations
Flight Plan Code
Functional Requirements,**



Next Steps

- Distribute Naming Concept for Comment
- Merge comments at IWG meeting in Germany in June 2012
- Finalize at IFPP 11, September 23, 2012