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Charting issues

Know the reference documents regarding charting;





Contents

African Flight Procedure Programme(AFPP)

1. Regulatory framework
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Regulatory framework

African Flight Procedure Programme(AFPP)



- Annex 4, Aeronautical Charts
- Annex 15, Aeronautical Information Services
- Doc.8697, Aeronautical Chart Manual
- Doc. 8168, Vol. 2, Construction Of Visual And Instrument Flight Procedures
- Circular 336, RNAV to RNP IAP chart depiction



General specifications

African Flight Procedure Programme(AFPP)

Operational requirements: Each shall provide:

- Information on its function;
- Information on the relevant phase of flight;
- Information shall be accurate, unambiguous;
- Colours and tints: smart;
- Easy reading and understanding;
- Smooth transition from chart to chart.



General specifications

African Flight Procedure Programme(AFPP)

Contents of a chart:

- Title;
- Legend;
- Relevant symbols;
- Distance of measurement :
 - Geodetic distances;
 - Distances in m or in NM;
 - Altitudes, elevations, heights in m, ft or both;
- Scales and projection (large areas).



General specifications

African Flight Procedure Programme(AFPP)

Contents of a chart (cont'd):

- Date of validity;
- Geographical name : official one & in roman alphabet;
- Abbreviations: Doc. 8400;
- Political boundaries;
- Colors: Color guide (annex 4);
- Relief;
- PRD.



General specifications

African Flight Procedure Programme(AFPP)

Contents of a chart (cont'd):

- Airspaces;
- Magnetic variation;
- Topography;
- Aeronautical data;
- Horizontal reference: WGS-84 (geographical coordinates);
- Vertical reference system: MSL;
- All needed informations.



General specifications

African Flight Procedure Programme(AFPP)

PBN chart identification (Examples):

Existing naming or condition	Interim naming (up to Nov. 2022)	Final naming (1st December 2022)
RNAV(GNSS) RWY 23	RNAV _(GNSS) RWY 23	RNP RWY 23
RNAV(GPS) RWY 23	RNAV _(GNSS) RWY 23	RNP RWY 23
RNAV(RNP) RWY 23	RNAV _(RNP) RWY 23	RNP RWY 23 (AR)
LPV minima only (SBAS cat 1 & APV Cat.)	RNAV _(GNSS) RWY 23 (LPV only)	RNP RWY 23 (LPV only)
Only an LP line of minima (NPA SBAS)	RNAV _(GNSS) RWY 23(LP only)	RNP RWY 23 (LP only)
LNAV/VNAV minima only	RNAV _(GNSS) RWY 23 (LNAV/VNAV only)	RNP RWY 23 (LNAV/VNAV only)
LNAV/VNAV & LPV minima no LNAV	RNAV _(GNSS) RWY 23(LP, LNAV/VNAV only)	RNP RWY 23 (LP, LNAV/VNAV only)



General specifications

African Flight Procedure Programme(AFPP)

Notes:

- State may decide to go directly to the final naming
- Additional requirements possible in the plan view:

Navigation specification	Optional requirements
RNP APCH	RF required
RNP AR APCH	RF required RNP < 0.3 Missed approach RNP < 1
Advanced RNP	RNP < 1 initial & intermediate segments
RNP 0.3	RF required



General specifications

African Flight Procedure Programme(AFPP)

PBN chart identification (Examples):

Existing naming or condition	Interim naming (up to 2022)	Final naming (1st December 2022)
SID	No change	No change
STARs	No change	No change
En-route charts	No change	No change



PBN Applicable charts

African Flight Procedure Programme(AFPP)

PBN procedures to be charted:

- En-route charts
- Arrival charts (STARs)
- Approach charts
- Departure charts (SIDs)



ICAO PBN charts templates

African Flight Procedure Programme(AFPP)

1. [RNP with/without baro VNAV aeroplanes](#)
2. [RNP with/without baro VNAV helicopters 1](#)
3. [RNP with/without baro VNAV helicopters 2](#)
4. [RNP SBAS aeroplane](#)
5. [GLS IAC](#)
6. [PBN STARs aeroplanes](#)
7. [PBN SID helicopters 1](#)
8. [PBN SID helicopters 2](#)
9. [Example of ICAO proposed coding table](#)



Examples of PBN charts

African Flight Procedure Programme(AFPP)

1. [En-route](#)
2. [Radar airspace definition](#)
3. [PBN SID Beira \(Mozambique\) RWY 30](#)
4. [PBN STARs Entebbe \(HUEN\) RWY 17](#)
5. [RNAV\(GNSS\) RWY 17 Entebbe \(HUEN\)](#)



Publications issues

African Flight Procedure Programme(AFPP)

Some CAA and executives are not often aware of publication constraints:

- AIRAC cycle: 28 days;
- No AIP information shall be effective between 21st December and 17th January;
- Minimum publication delay : 42 days;
- Minimum publication delay for major changes: 56 days.



How to chart geographical features at scale?

- Hydrography: Shore lines, rivers, seas, lakes, glaciers, etc.
- Landmarks: railroad, bridge, pipeline, dunes;
- Cultures and topography: Cities, contours, wooded areas, borders, etc.
- Segments and procedure's features: holding, racetracks, reversal procedures, vertical profiles.

Procedure designers are not cartographers and cartographers are not often trained in IFP:

- How to deal with coordinates system and projection?
- How to understand the criticality of some informations?



Charting issues

African Flight Procedure Programme(AFPP)

Shoals



Tidal flats



Charted isolated rock



Sand area



Gravel



Contours



How to chart without errors and at scale?

- Manual charting cannot reach these goals;
- GIS solutions exist but not often fitted to aeronautical charting purposes;
- Other automated solutions but not often GIS softwares.



Je vous remercie !