ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY

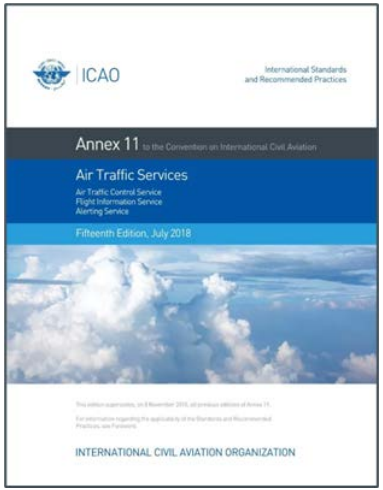
PBN SID & STAR CHARTING ISSUES IN MID

AIM SG/10 (CAIRO, EGYPT, 28 - 29 FEBRUARY 2024)

SID & STAR Charts provisions

Material relating to the publication of charts is contained in Annex 4 : SID in Chapter 9 and STAR, in Annex 4, Chapter 10.

Material relating to the principles governing the identification of SID/STAR are contained in Annex 11, Appendix 3



SID & STAR Charts provisions

Chart 7 Standard Departure Chart — Instrument (SID) — ICAO
Chart 8 Standard Arrival Chart — Instrument (STAR) — ICAO

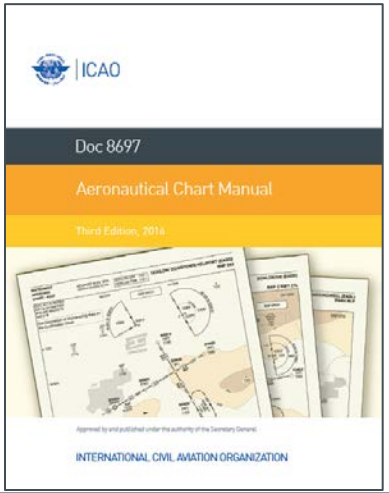
The Specimen charts are available electronically in Adobe PDF format and provided separately in conjunction with the Aeronautical Chart Manual.

Chart 01 Aerodrome Obstacle Chart Type A en	Adobe Acrobat Document
Chart 12 Aerodrome Ground Movement	Adobe Acrobat Document
Chart.02.Aerodrome.Obstacle.Chart.Type.B.en	Adobe Acrobat Document
Chart.04.Precision.Approach.Terrain.en	Adobe Acrobat Document
Chart.05.enroute.black.and.white.en	Adobe Acrobat Document
Chart.05.enroute.colour.en	Adobe Acrobat Document
Chart.06.area.chart.black.and.white	Adobe Acrobat Document
Chart.06.area.chart.colour.en	Adobe Acrobat Document
Chart.07.Standard.Departure.S	Adobe Acrobat Document
Chart.08.Standard.Arrival.STA	Adobe Acrobat Document
Chart.09.IAC.black.and.white	Adobe Acrobat Document
Chart.09.IAC.colour.en	Adobe Acrobat Document
Chart.09.IAC.verso.en	Adobe Acrobat Document
Chart.10.Visual.Approach.en	Adobe Acrobat Document
Chart.11.Aerodrome.Chart.en	Adobe Acrobat Document
Chart.13.Parking.Docking.en	Adobe Acrobat Document
Chart.14.ATC.Sur.mnm.alt.en	Adobe Acrobat Document
Chart.15.IAC.Standard.en	Adobe Acrobat Document
Chart.15.IAC.verso.en	Adobe Acrobat Document
Chart.16.IAC.SBAS.Standard.en	Adobe Acrobat Document
Chart.16.IAC.SBAS.verso.en	Adobe Acrobat Document
Chart.17.IAC.GBAS.Standard.en	Adobe Acrobat Document
Chart.17.IAC.GBAS.verso.en	Adobe Acrobat Document

No PBN SID & STAR Charts

Doc 8697

Aeronautical Chart Manual



Charting Navigation Specifications & Accuracies

✈ With the introduction of PBN

— Requirement to chart the relevant navigation specification and navigation accuracies was introduced.

✈ This requirement was not introduced comprehensively in ICAO Annex 4, PANS-OPS (Doc 8168), and Doc 8697.

– SL Ref.: SP 65/4-23/7 dated 20 January 2023 proposing amendments to Annex 4, PANS-OPS and PANS-AIM to improve related provisions by providing additional requirements, and improving guidance.

– Applicable on 28 November 2024

– The provision of PBN SID and STAR specimen charts is not included

PBN SID & STAR Charting issues IN MID

- Survey conducted by the secretariat to collect SID/STAR data from States AIPs
- Review and extraction of information such Chart title and identification, PBN box (NAV Spec, sensors), RNAV/RNP naming, Database coding description
- Survey has shown the lack of harmonization in the way the PBN Information is published in SID/STAR Charts :
  - Chart Title
  - Chart Identification
  - PBN Box
- Examples are shared illustrating the lack of harmonization.

Chart Title - ICAO provisions

PANS-OPS PART III. Section 5, Chapter 1. Publication and charting — General.

1.3 DEPARTURES AND ARRIVALS

1.3.1 *Chart titles.* Charts shall be titled in accordance with Annex 4, 2.2. The required navigation specification for any published procedure shall be published in the State AIP, either on the chart or in the ENR 1.5 section.

Annex 4, Chapter 2. General specifications.

2.2 Titles

The title of a char[t] ... nd intended to satisfy the function of th... y Standard contained therein, except that such title shall not include "ICAO" unless the chart conforms with all Standards specified in this Chapter 2 and any specified for the particular chart.

Note: There is no mention of PBN in the Chart Title

Doc8697, 7.9 Standard Departure Chart — Instrument (SID) — ICAO.

The title must be "Standard Departure Chart — Instrument (SID) — ICAO". Such title must not include "ICAO" unless the chart conforms with all Standards specified in Annex 4, Chapters 2 and 9. The chart title is placed at the top left corner of the chart in bold upper-case type.

Chart Title - Examples

STANDARD DEPARTURE CHART - INSTRUMENT (SID) - ICAO RNAV

DEP/ARR STANDARD RNAV ROUTES - ICAO

RNAV STANDARD DEPARTURE CHART INSTRUMENT (SID) - ICAO

STANDARD DEPARTURE CHART — INSTRUMENT (SID) — ICAO

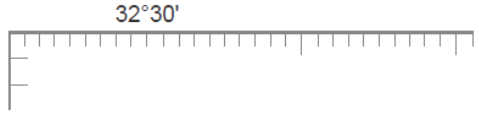


Chart Identification - ICAO provisions

PANS-OPS PART III. Section 5, Chapter 1. Publication and charting — General.

1.3.2 Chart identification

1.3.2.1 The chart shall be identified in accordance with Annex 4, 9.5 for departures and 10.5 for arrivals and shall include the term RNAV or RNP, depending on the navigation specification.

Annex 4, Chapter 9.

9.5 Identification

The chart shall be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome and the identification of the standard departure route(s) — instrument as established in accordance with the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168), Volume II, Part I, Section 3, Chapter 5.

Doc8697, 7.9 Standard Departure Chart — Instrument (SID) — ICAO.

The chart must be identified by the name of the city or town, or area, that the aerodrome serves, the name of the aerodrome, and the identification of the standard departure route(s) — instrument as established in accordance with the PANS-OPS, Volume II, Part I, Section 3.

Chart Identification - Examples

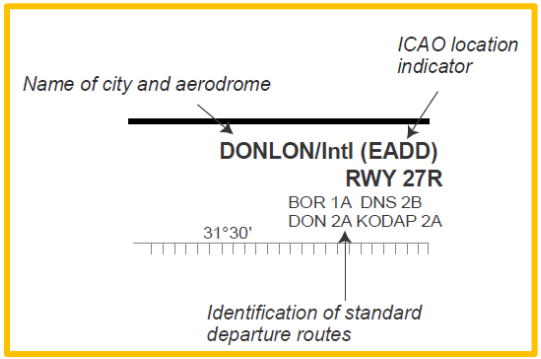
BAHRAIN INTL (OBBI)
RWY 12L/30R
KOBOK 1 ARRIVAL (RNAV1)

AMMAN/Marka Intl (OJAM)
STAR RNAV (GNSS) RWY 06

DOHA/Hamad Intl. (OTHH)
RNP RWY 16L
ALVEN 2M /LUBET 1M /LUBET 1Y
/TULUB 1M

AMMAN/Marka Intl (OJAM)
SID RNAV (GNSS) RWY 24

SAYUN /Sayun Intl. (OYSY)
RWY 07
NABUP 1A - NADAK 1A - XALTA 1A - ASLAB 1A
IVINA 1A - XAGAG 1A - DEMNA 1A



KUWAIT / Kuwait Intl
STATE OF KUWAIT
RNAV (GNSS) SID RWY 15L/15R

TEHRAN/IMAM KHOMAINI
RNAV1 RWY 29R
RADAL 3X
BOXAM 2X

ASWAN / ASWAN
RNAV (VOR/DME or GNSS)
RWY 17

ABU DHABI / Intl.
RNAV 1 STAR RWY 31L/R

RAFIC HARIRI INTL' BEIRUT
BALMA 1R - KUKLA 1R - ELIKA 1R – LEBOR 1R
RNAV (GNSS) STAR RWY 21

PBN Box - ICAO provisions

Nav Specification
Sensor Limitations
Functional Requirements

Example

RNAV 1
GNSS required
RF required

1.3.4 *Chart notes.* Additional procedure requirements shall be provided as chart notes. PBN items shall be separated out and published in a PBN requirements box on the plan view of the chart immediately below the chart identifier. The PBN requirements box shall include the identification of the navigation specification used in the procedure design, any navigation sensor limitations and any required functionalities that are described as options in the navigation specification, that is, not included in the core navigation specification as follows:

a) Navigation specification:

— RNAV 5

— RNAV 1

— RNP 1

— Advanced RNP (RNP navigation accuracies shall be specified, e.g. RNP 2, RNP 1)

— RNP 0.3

b) Navigation sensor limitations, e.g:

— GNSS required

c) Functional requirements:

— RF required.

PBN Box - Examples

RNAV-1 REQUIRED

RNP 1

RNAV 1 (GNSS) REQUIRED

GNSS required

RNAV-1
GNSS REQUIRED

NOTE:
DME/DME required

GNSS REQUIRED
RNAV 1 OPERATIONS

RNAV 1 WITH
GNSS REQUIRED

PBN Requirements Box - Issues

- No PBN box – Information provided elsewhere;
  - NAVSPEC/Sensors indicated in the Title or identification of the chart, database coding table or AD2.22

- PBN box
  - NAVSPEC only
  - Sensor limitation only :
    - Charts with all sensors required, or
    - Charts with no sensor limitation in area where DME/DME (RNAV1) is not available
    - Charts with DME/DME only (are they not valid for GNSS?)

Lack of harmonization - room for improvement

✈ The lack of harmonization in SID/STAR charts can pose challenges for AUs. It might be confusing for pilots and ATC.

✈ Some common issues associated with the lack of harmonization :

- Different ways of publishing PBN information,
- Charts can be confusing,
- Information is not easy to find,
- DME/DME sensor acceptability is one of the most difficult things to evaluate.

✈ Harmonization is crucial for promoting safety, efficiency, and standardization

✈ There is a need for ongoing efforts to promote harmonization and consistency in the publication of PBN SID/STAR charts:

- ICAO Standards and Guidance
- Regular Reviews and Updates
- Training and Awareness

The following Draft Decision is proposed by the PBN SG/8 meeting

Draft Decision 8/4: *PBN SID and STAR Charting Ad Hoc Working Group*

That a PBN SID and STAR Charting Ad Hoc Working Group ,

a) be established to develop guidance/Specimen of PBN SID and STAR Charts, in coordination with the AIM Sub Group.

b) be composed of:

— Chairpersons of the PBN SG and the AIM SG

— Mrs. Pamela Erice (Qatar)

— Mr. Saqr Obaid Al Marashda (UAE)

— Mr. Kedari Manthanwar (UAE)

— Mr. Muhammad Aljuhani (KSA)

— Mr. Sulaiman Selmi (Oman)

— Mr. Suwarn Raj Upadhyay (Oman)

— ICAO Secretariat

c) present its outcome to the PBN SG/9 and AIM SG/11 meetings.

Action by the meeting

The meeting is invited to:

a) take note of the information provided in this presentation;

b) discuss the PBN SID & STAR Charting issues in MID Region; and

c) endorse the proposed Draft Decision.


MONTRÉAL
(HEADQUARTERS)
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NORTH ATLANTIC)
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MEXICO CITY
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DAKAR
(WESTERN AND
CENTRAL AFRICA)
CAIRO
(MIDDLE EAST)
BANGKOK
(ASIA-PACIFIC)
NAIROBI
(EASTERN AND
SOUTHERN AFRICA)
LIMA
(SOUTH AMERICA)
ICAO

THANK YOU!