PBN Procedure Design Course 2026

ICAO APAC FPP

Beijing,China

(7-25/Sep/2026)

PBN Arrival

Regulatory References

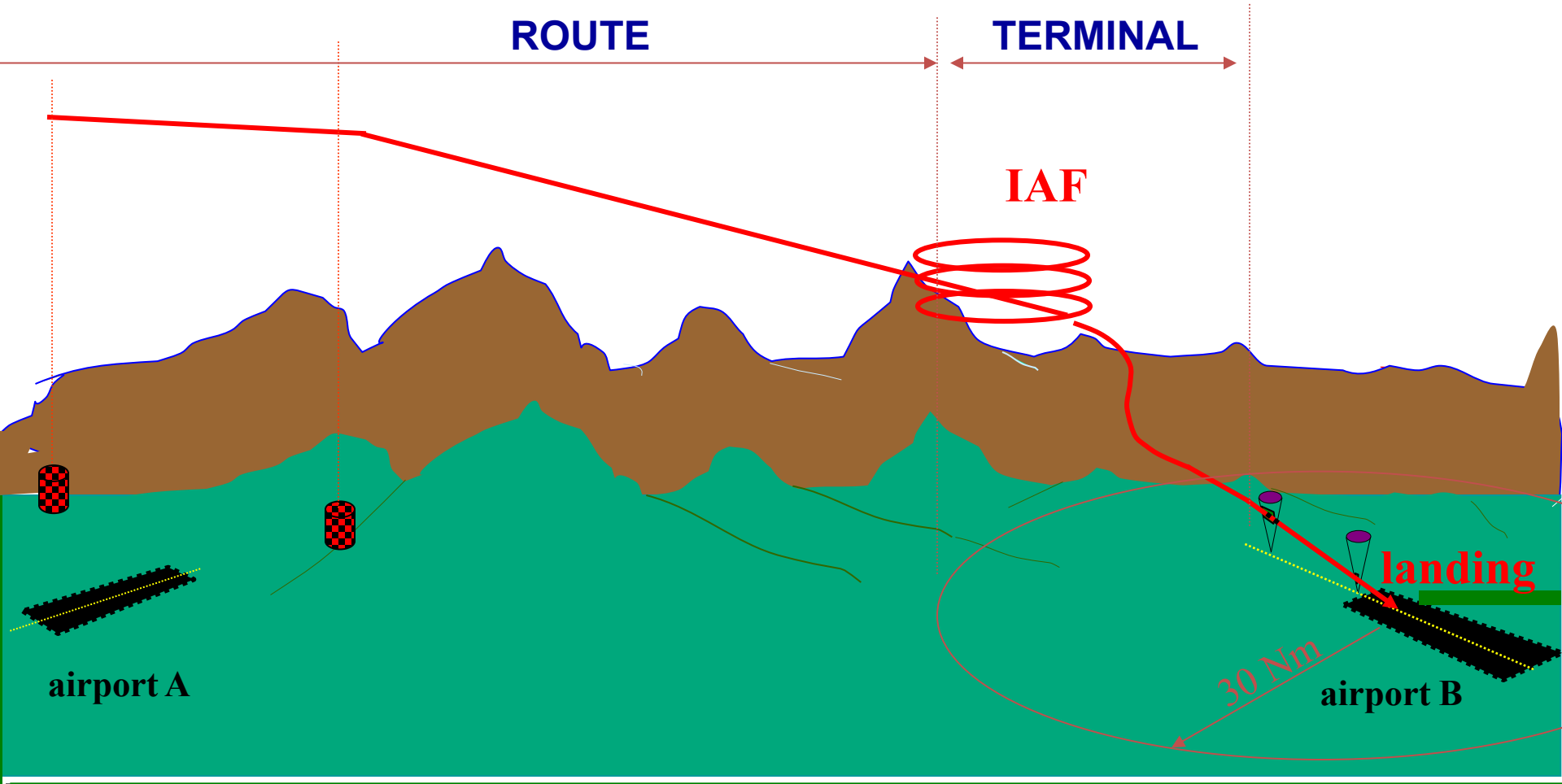
Vol II Part I

- Section 4 chapter 2
  - General criteria for arrival

Vol II Part III

- Section 2 chapter 4
  - TAA
- Section3 chapter 2
  - Specific criteria for RNAV and RNP
- Sections 1 and 2
  - General criteria for RNAV and turn protection

When is “ Route” Phase?



Arrival Criteria

- Transition from **EN-ROUTE** to **Terminal**
  - Change at **30 NM** from **ARP**
  - Calculate area width at 30 Nm using
    - **XTT** of **subsequent** segment
    - **BV** of **en route** phase

General Method for Calculation of Area Width

1

XTT value
(according to navigation specification)

Identify distance to ARP for Buffer Value (BV)

Semi- Area Width calculation
1/2 A/W = 1.5 XTT + BV

2 If part of the arrival is at a distance > 30 Nm

Calculate AW at 30 NM using

BV of ENROUTE

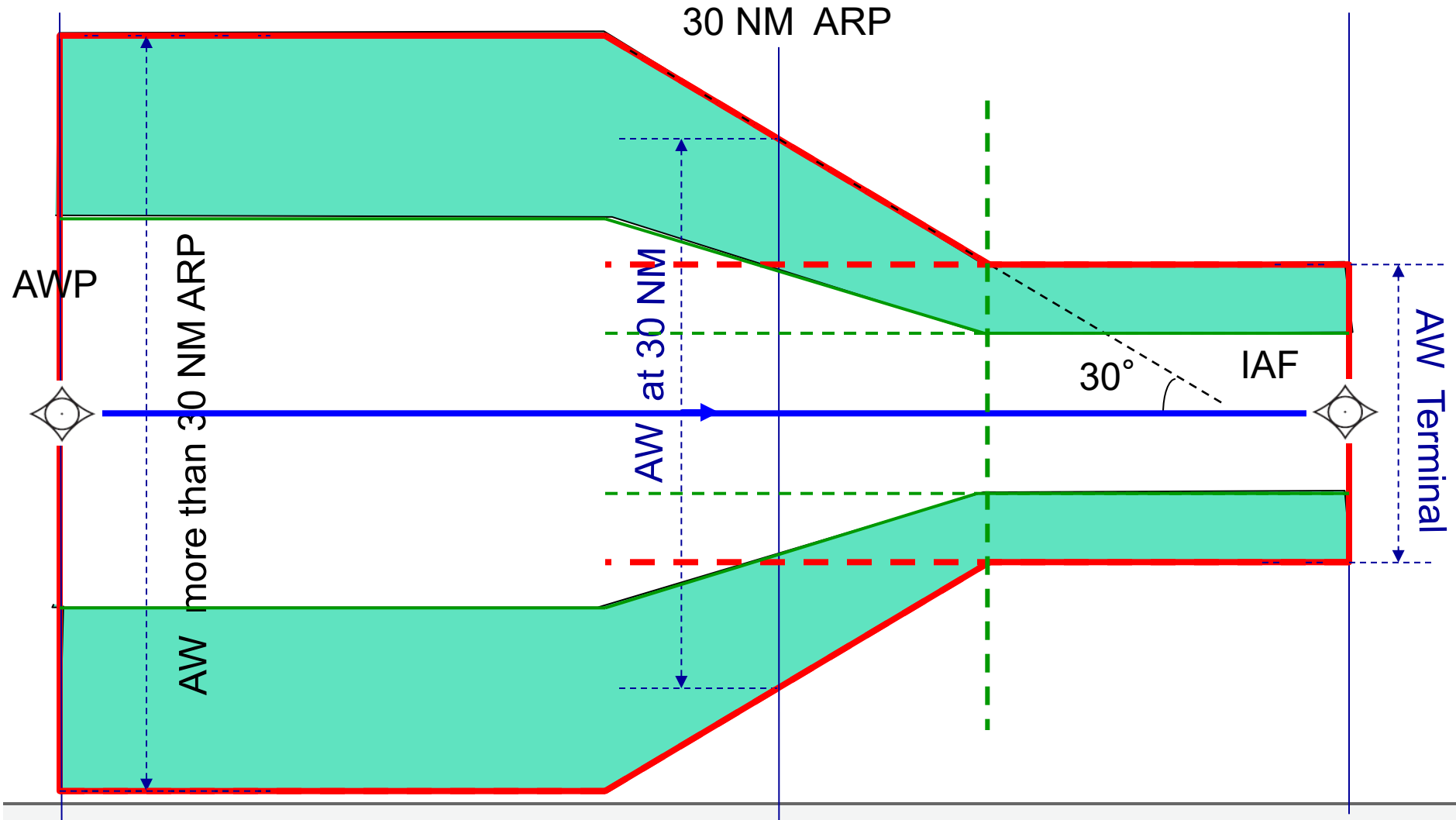
XTT of subsequent segment

Apply MERGING method to connect

EXAMPLE FOR RNAV1 WITH GNSS SENSOR

- **BV** for en route is 2 NM
- XTT of less than 30NM is 1 Nm
- ½ AW at 30 NM is :
  - 1.5 x 1 + 2 = 3.5
- ½ AW at MORE than 30 NM is : 5 NM
- ½ AW at LESS than 30 NM is : 2.5 Nm
- Merging method :
  - 30° ANCHORED by the area width (3.5 NM) at the point of change (30 NM) to
    - TAPER to 2.5 NM
    - SPLAY up to 5 NM

Merging Method



Protection Area

- FO or FB waypoint
- Pilot reaction delay : 6 Sec
- Bank angle delay :5 s
- Bank angle : 25 °
- Descent gradient max 15%
- MOC = 300 m up to 600 m
- Secondary area principle

Omnidirectional Arrival

- **MSA** based on **ARP**
- MSA based on navaids
- **TAA** based on **IAFs**
  - Associated with T and Y bar concept
  - Not relevant when associated to IAFs with long initial segment

ARRIVAL SEGMENT

TAA

TERMINAL ARRIVAL ALTITUDE

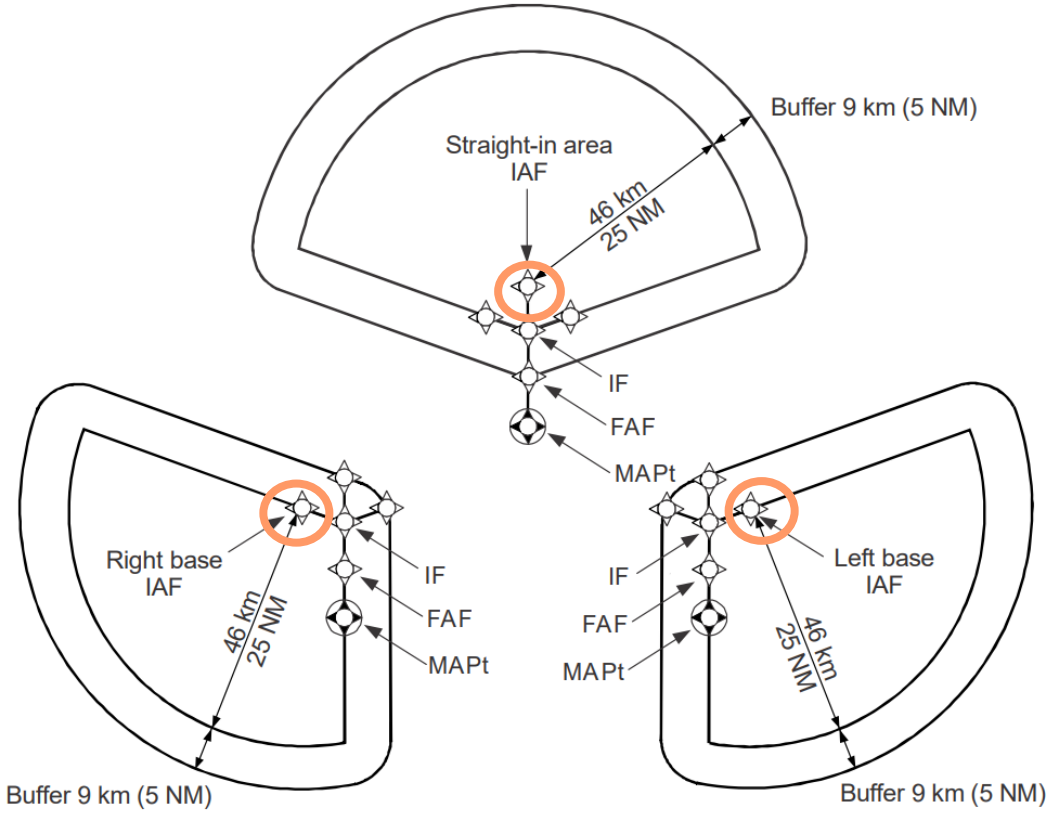
TAA

TAA definition:

- The **lowest altitude** that will provide a minimum clearance of **300 m (1 000 ft)** above **all objects** located in an arc of a circle defined by a **46 km (25 NM)** radius centred on the initial approach fix (**IAF**)

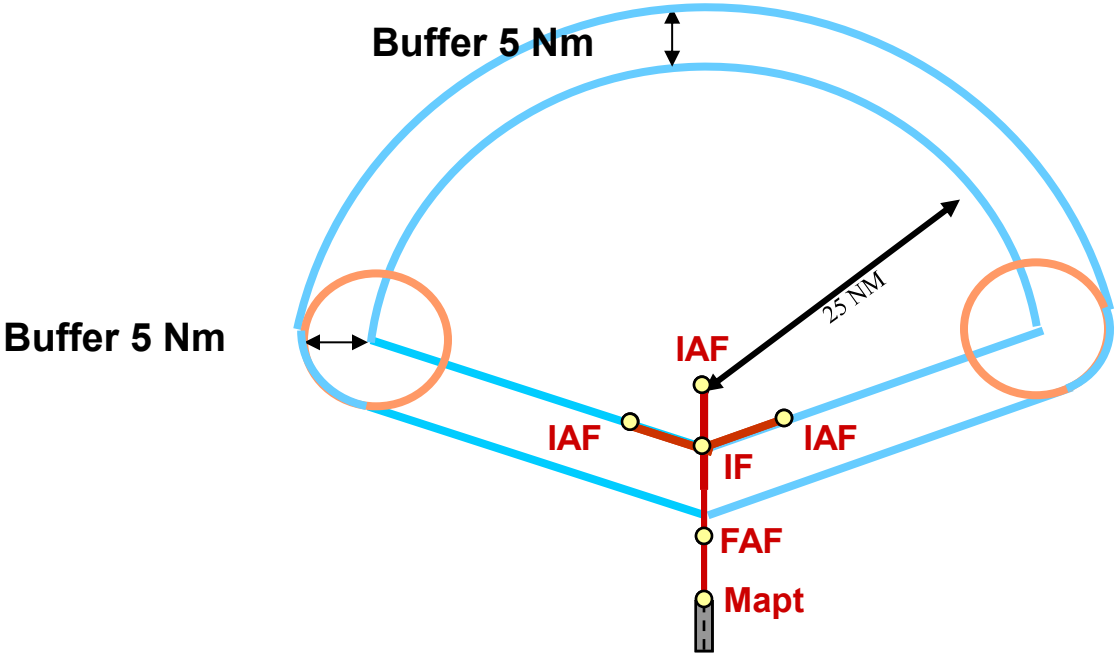
TAA

- Associated with T and Y RNAV procedure
- MSA based on ARP for RNAV procedure seem unsuitable
- Minimum altitudes for TAA related to IAFs

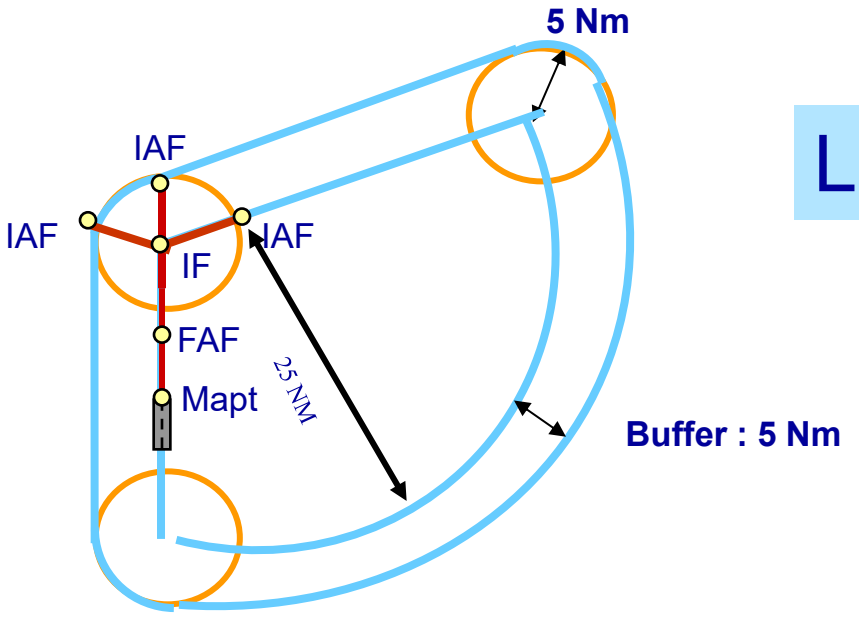


Straight-in Area

Straight-in area



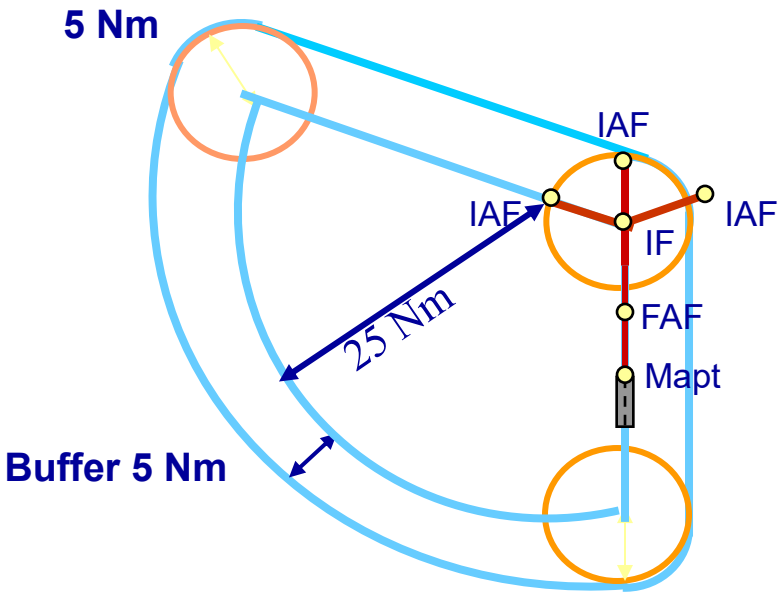
Left-base Area



Left base area

Right-base Area

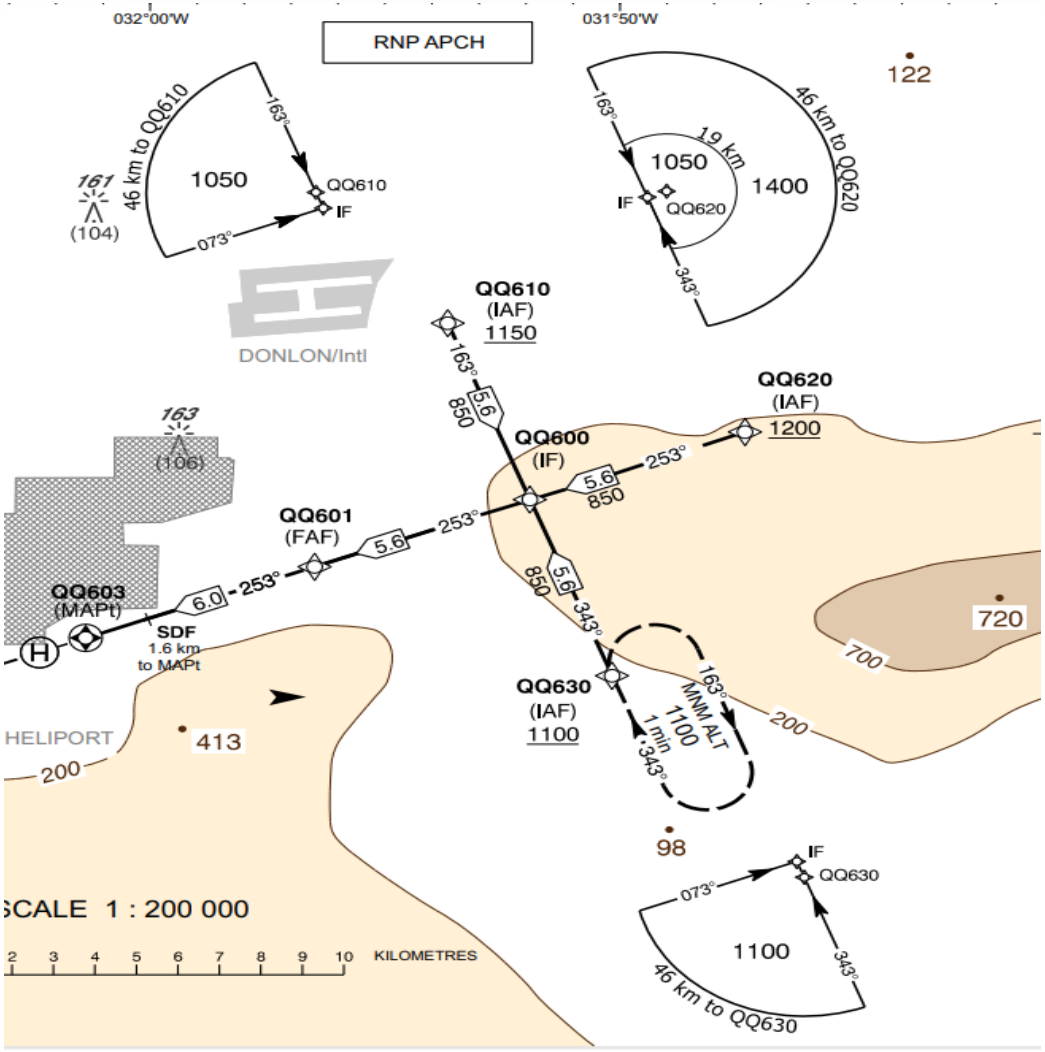
Right base area



Step Down Arc and Subsector

- Step down arc can be defined
  - dist min to IAF: 10 Nm
- Sub sector in the straight-in area can be defined
  - minimum 30°
  - if step down arc ⇒ minimum 45 °

Step Down Arc and Subsector



TAA Minimum Altitude

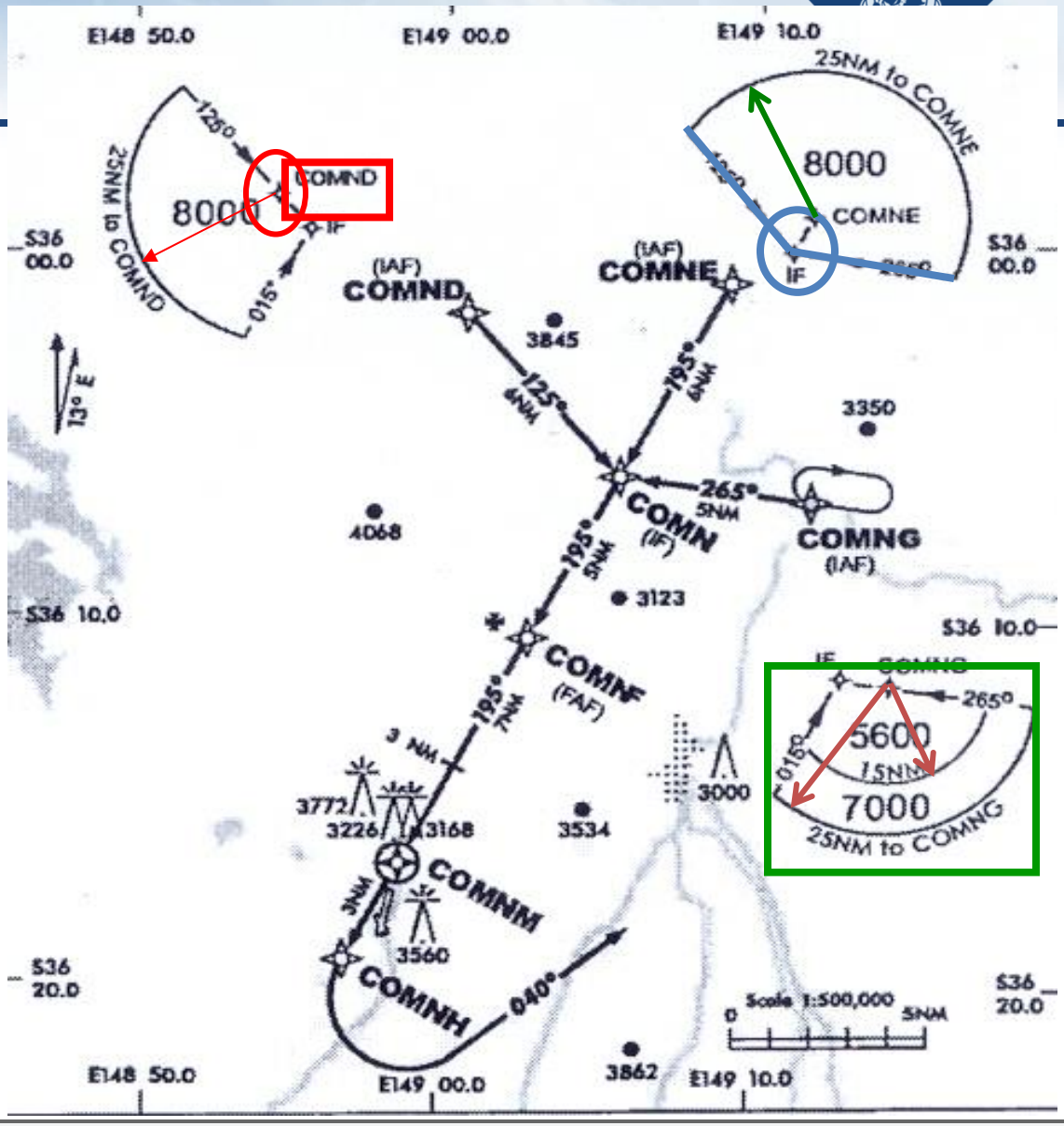
Minimal altitude = altitude of the highest obstacle in each area + MOC

MOC= 300 m (1000ft)

Minimum altitude rounded up to next 100 ft or 50 m

Charting

- 25 NM arc **CENTRED** on IAF
- **Display the NAME OF IAF of the sector**
- Lateral boundaries extended to IF
- **Display the ACRONYM IF**
- Step down arc centred on IAF



Q&A?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Thank You