

# ICAO EUR/MID Radio Navigation Symposium

## Smart Procedure Validation

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# Smart Procedure Validation

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01

## Flight Operational Perspective

ICAO EUR Doc 025 EUR –  
FVP @ project start

02

## ICAO Doc 9906 Vol 5

Flow chart difference between Edition 1  
and Edition 2

03

## 9906 Vol 5 – No Flight Validation

Extract and example

04

## 9906 Vol 5 – Aircraft Flight Validation

Extract and example

05

## 9906 Vol 5 – SIM Flight Validation

Extract and example

06

## Regulator Opinion

Simulator Flight Validation for RNP  
APCH with LNAV, LNAV/VNAV and LPV

07

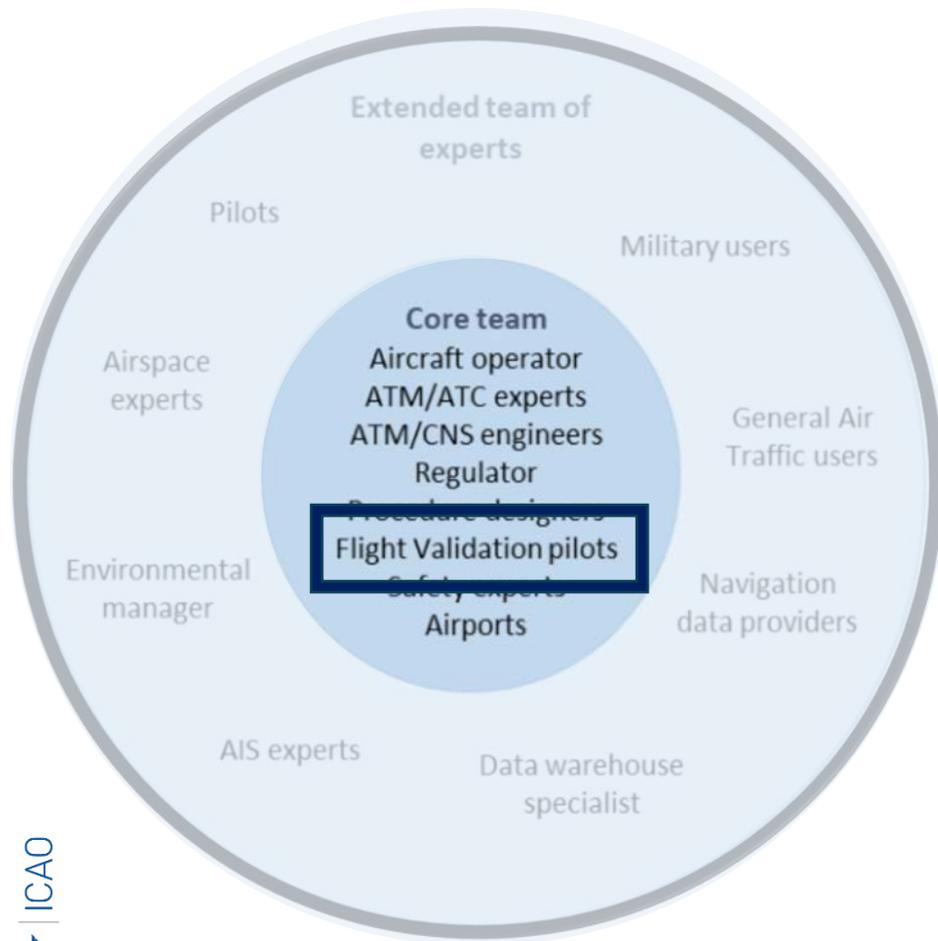
## Multiple Procedures / Airports

Experiences and Take Aways

08

## Your Opinion

on the validation of RNP 10



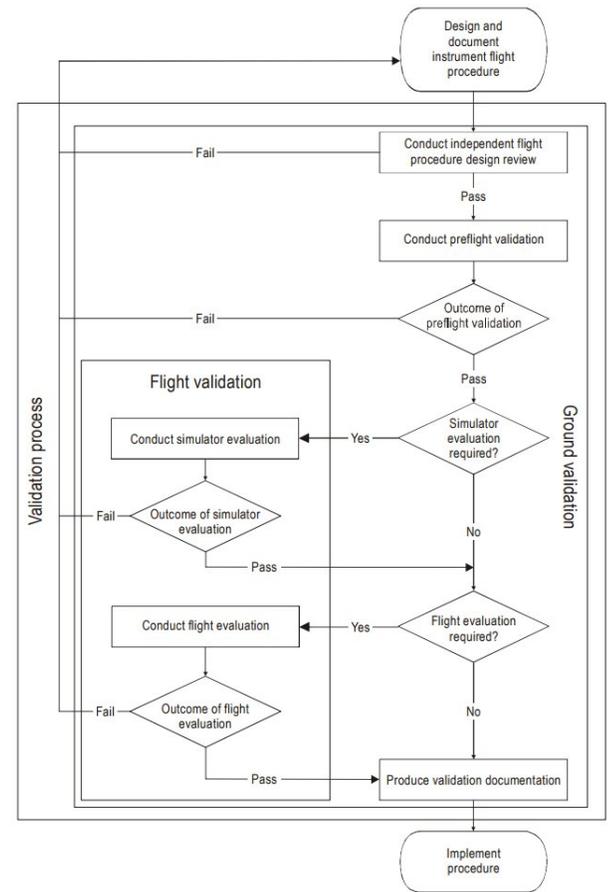
## 01 Flight Operational Perspective

ICAO EUR Doc 025

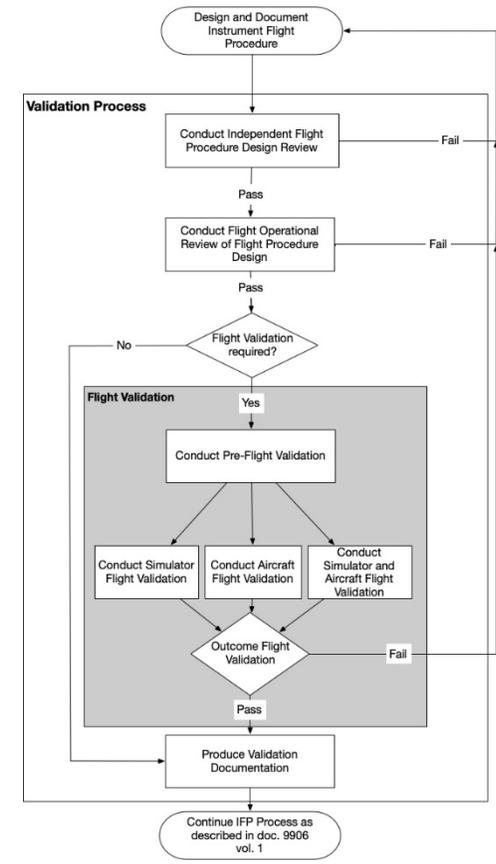
5.2.3.1 A **multi-disciplinary team** is needed to ensure **all** necessary **aspects** of the implementation of RNP Approach procedures are **recognised** and adequately **addressed**

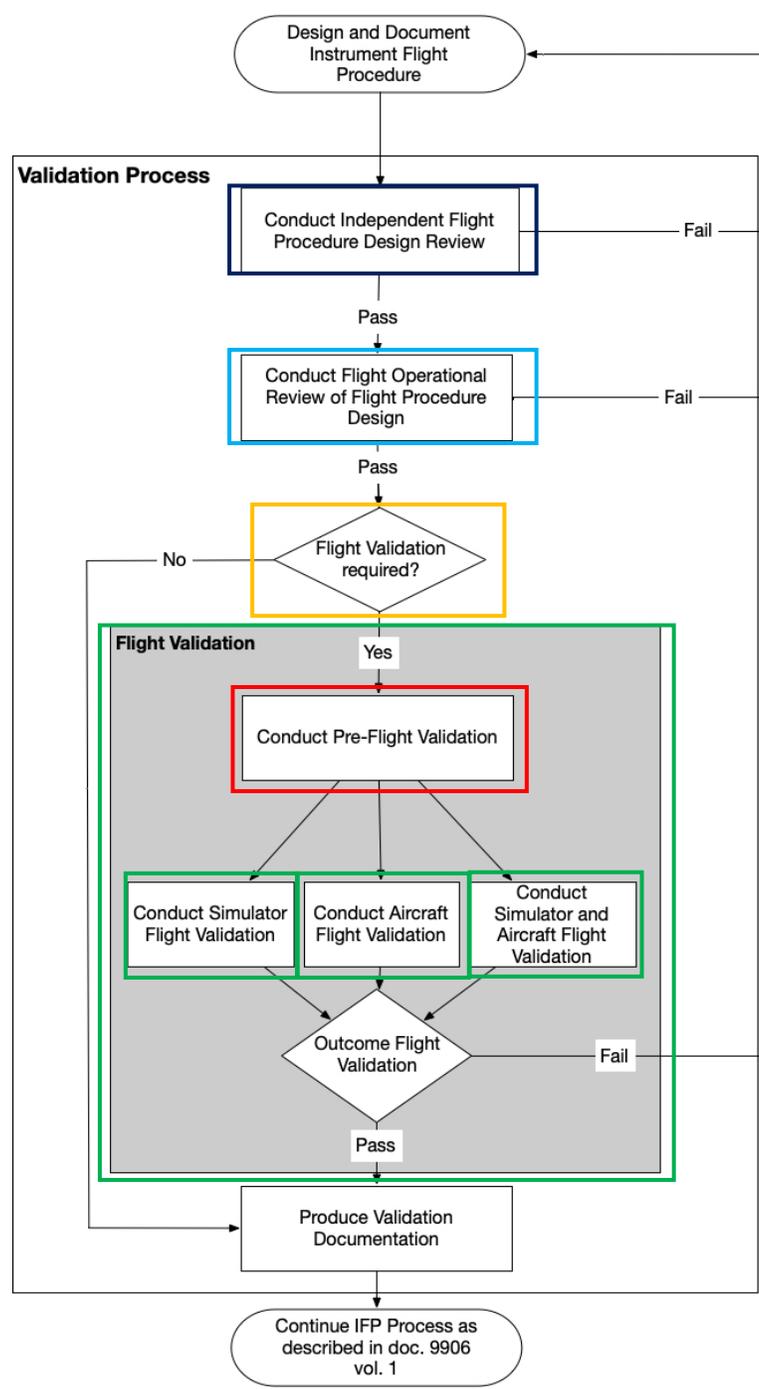
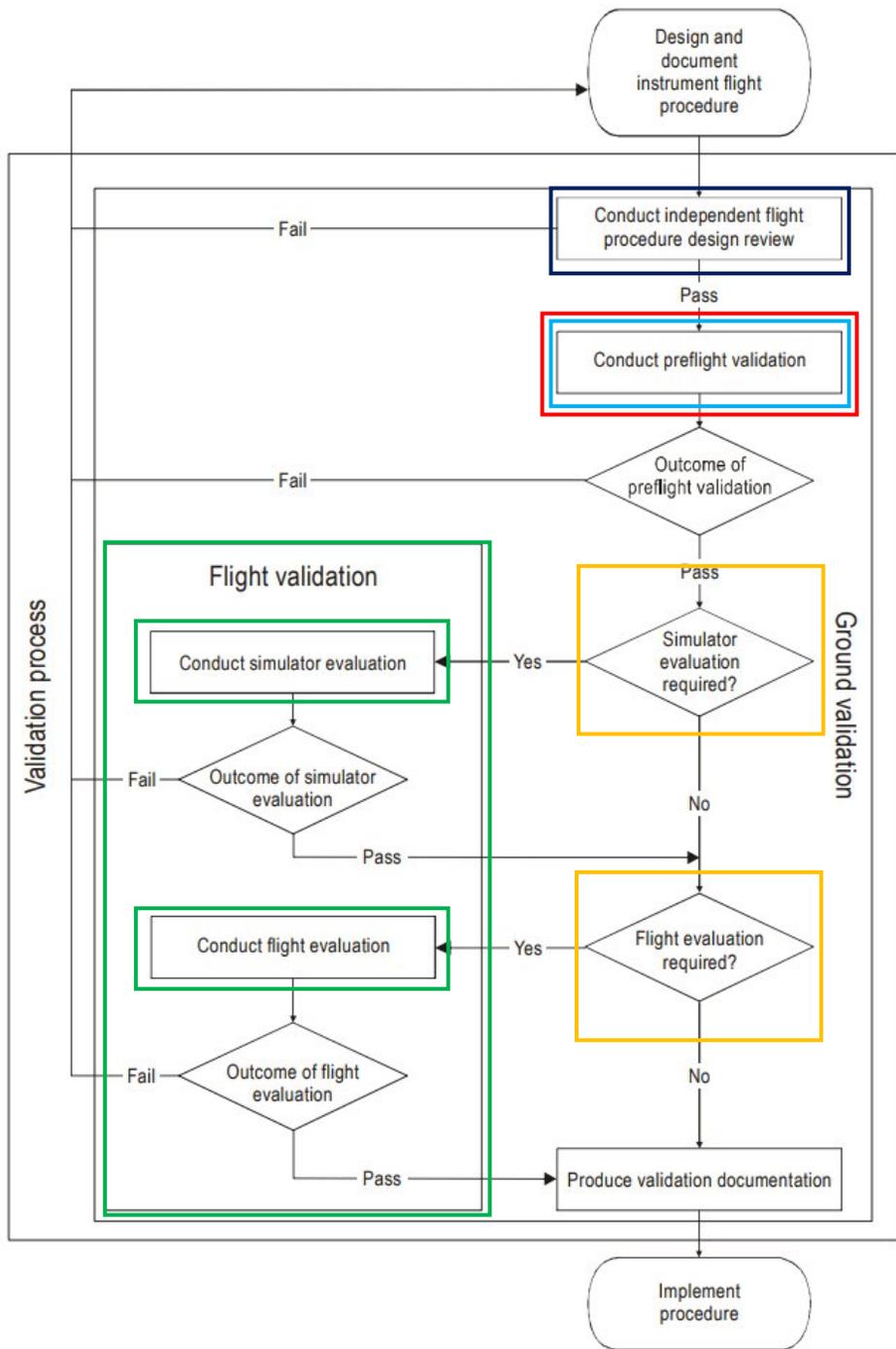
**Use FVP at project start!**

# 02 ICAO Doc 9906 Vol 5 edition 1



# edition 2





# Simulator Flight Validation

## Airplane or Helicopter

- Flyability - with most used aircraft type
- Human Factors and workload
- Efficiency – repositioning
- Weather – set as required
- Sustainable
- No interference with live traffic
- Enhanced GPWS (terrain DB) accurate

# Aircraft Flight Validation

## Airplane or Helicopter

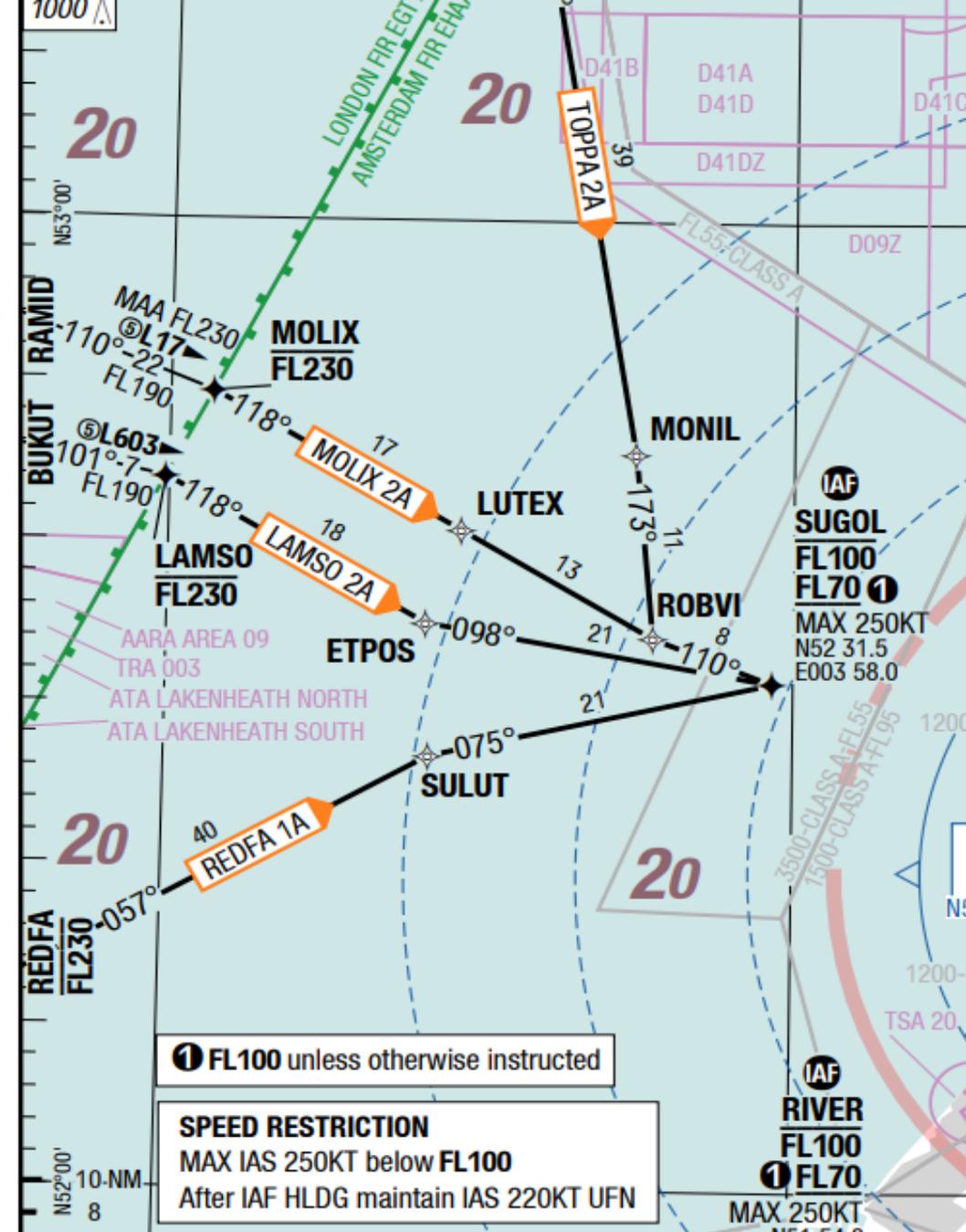
- Obstacles and terrain reviewed
- Night flight validation
- Basic GPWS (radio altimeter) is correct
- GNSS interference identifiable
- Possible Flight Inspection combined with Flight Validation
- Impact on live traffic flow can be assessed
- Human Factors and workload

# 03 No Flight Validation (GV only)

9906 Vol 5 ed. 1 para 1.2.4

- Flyability of the procedure can be determined without flying
- Procedure does not deviate from design criteria

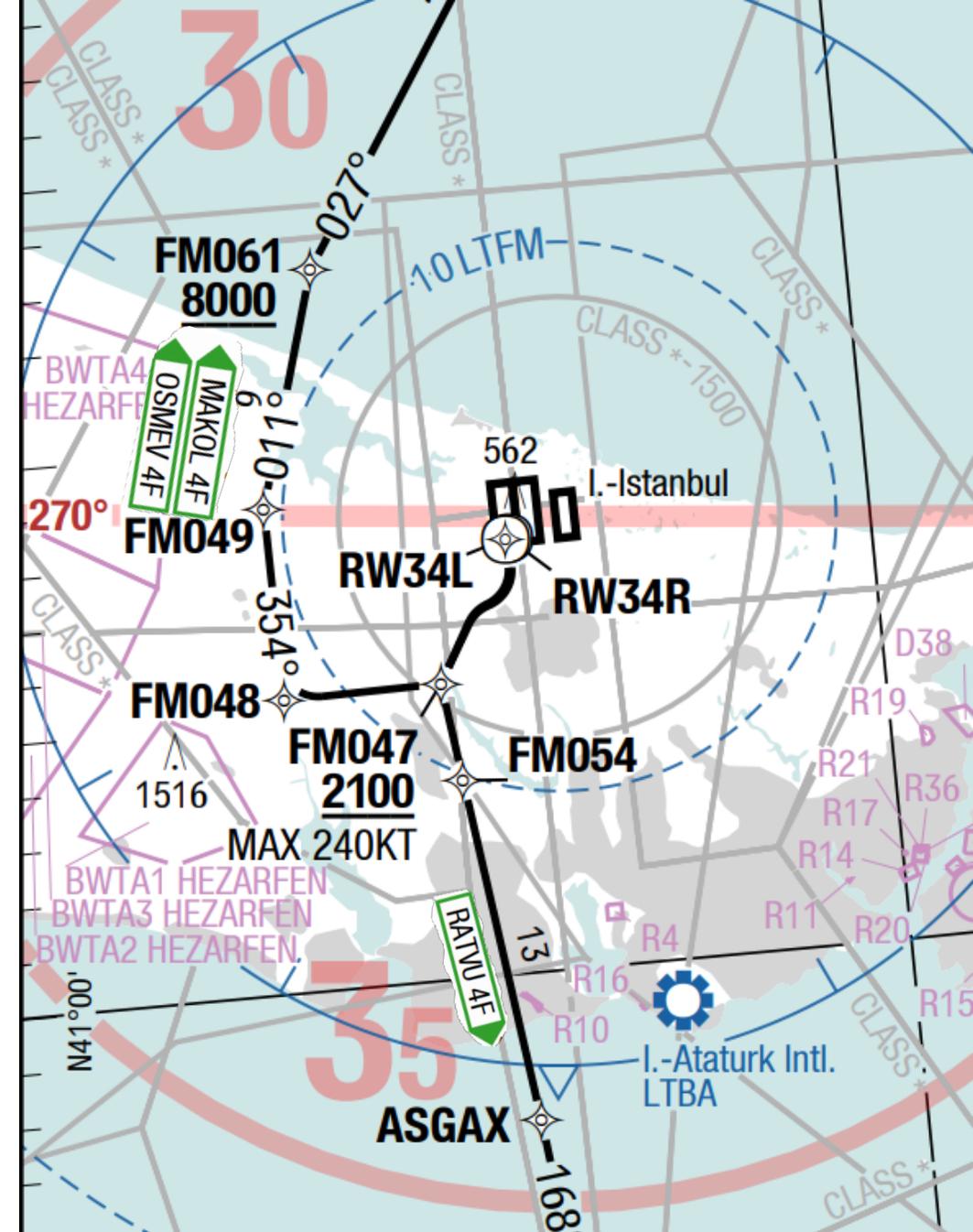
→ What validation for MOLIX 2A?



# 04 Aircraft Flight Validation

9906 Vol 5 ed. 1 para 1.2.4

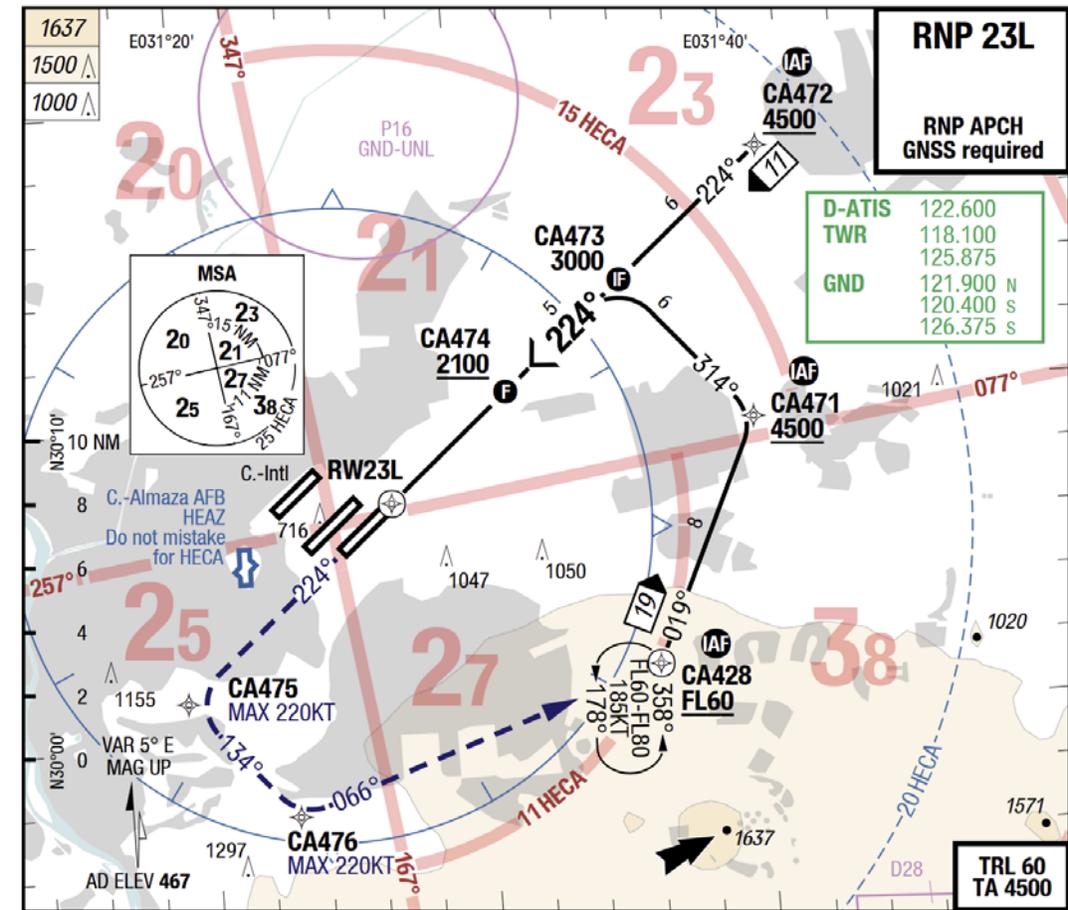
- Flyability of the procedure cannot be determined by other means
  - Procedure requires mitigation for deviations from design criteria
  - Accuracy and/or integrity of obstacle and terrain data is insufficient
  - New procedures differ significantly from existing procedures; and
  - Helicopter PinS
  - Night flight validation
- New airport with new SIDS and deviation in first turn.
- What validation for MAKOL 4F and RATVU 4F?



# 05 Simulator Flight Validation

9906 Vol 5 ed. 1 para 1.2.4

- Flyability of the procedure cannot be determined by other means
  - Procedure requires mitigation for deviations from design criteria
  - ~~Accuracy and/or integrity of obstacle and terrain data is insufficient~~
  - New procedures differ significantly from existing procedures; and
  - Helicopter PinS
  - ~~Night flight validation~~
- Obstacle survey performed prior design
- Existing airport and existing ILS used at night
- What validation for new RNP 27?



## 06 Regulator Opinion

Simulator Flight Validation for RNP APCH with LNAV, LNAV/VNAV and LPV

State / Regulator	FV with SIM only for RNP APCH – 3 minima lines <i>generally</i> accepted	Final decision based on
UK	yes	validation plan
Netherlands	yes	case by case
Denmark	yes	case by case
Sweden	no	n.a.
Italy	yes	case by case
Switzerland	yes	case by case

## 07 Multiple procedures / airports

### Experiences and Take Aways

New/ amended  
procedure

Small projects:

→ depends on the  
procedures

PBN  
implementation  
project

Large projects:

~ 50% no Flight Validation

~ 35% Simulator FV

~ 15% Aircraft FV

IFP validation  
=  
Project

IFP Validation is part of Flight  
Procedure Design, which is  
project based, not yearly  
recurring activity.

Flight Validation ≠ Flight  
Inspection

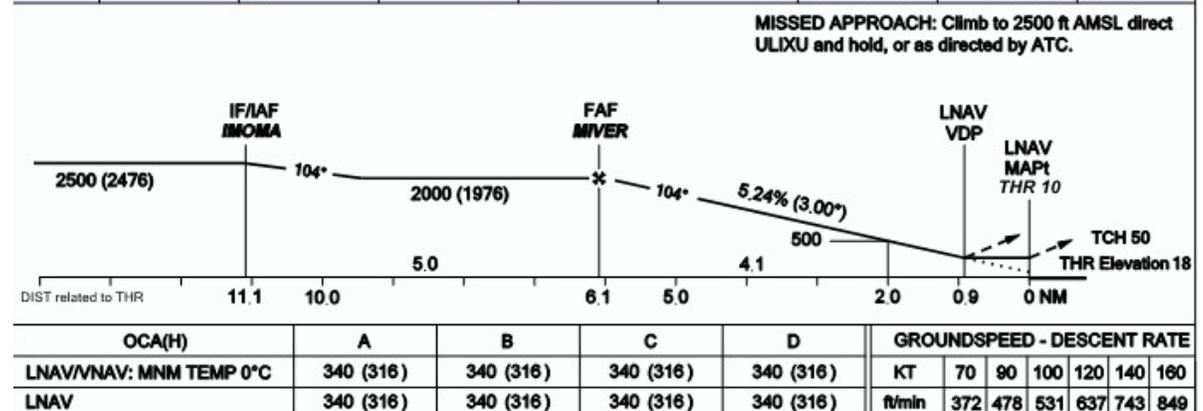
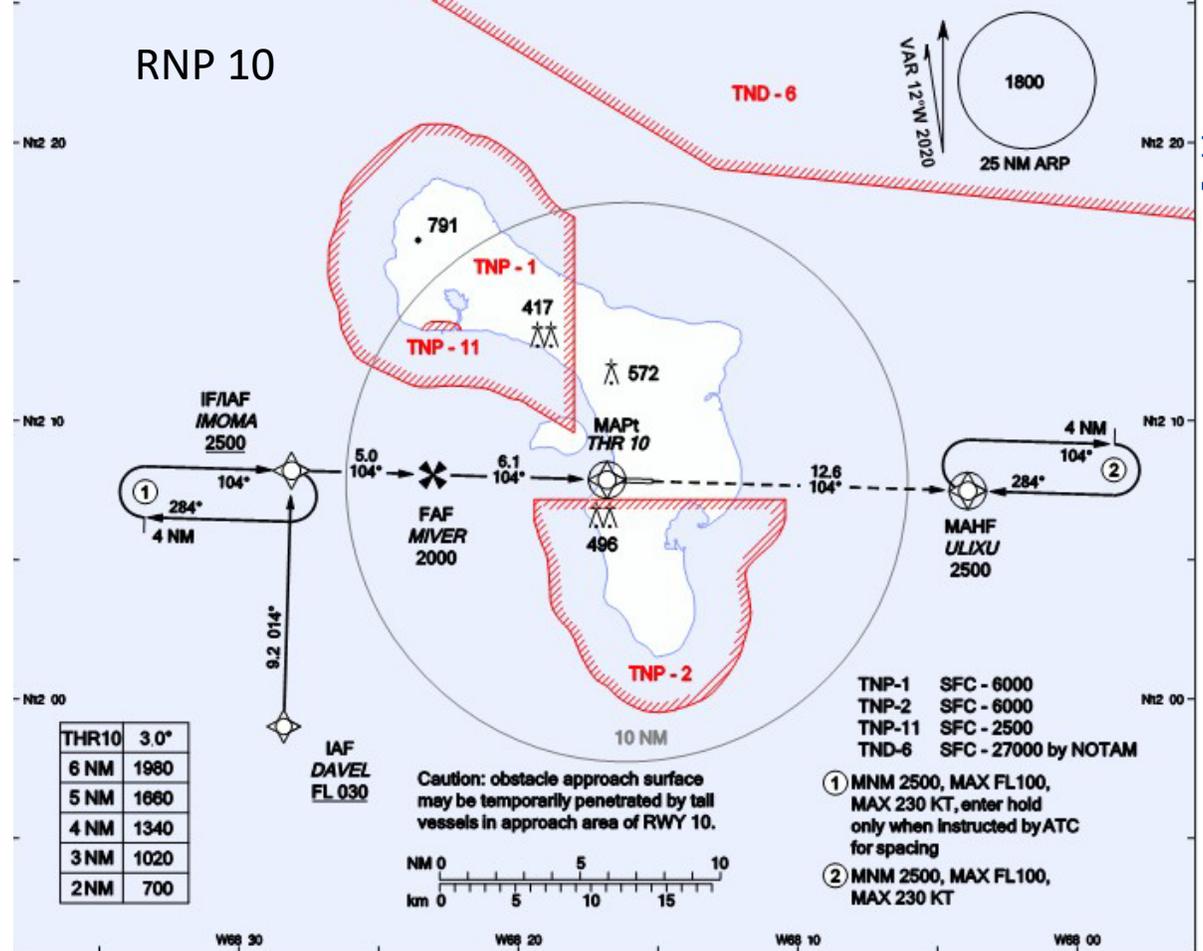
# 08 Your Opinion

on validation of RNP 10

VOR 10 with identical lateral and vertical final approach track but different missed approach flight track already flight inspected, flight validated and published.

Suppose:

- Obstacle survey of 2023 is available
- No country regulation



# Clarification?



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Thank You!