APAC FPP Case and Short Sum up

MA Gang

(APAC FPP)

CONTENTS
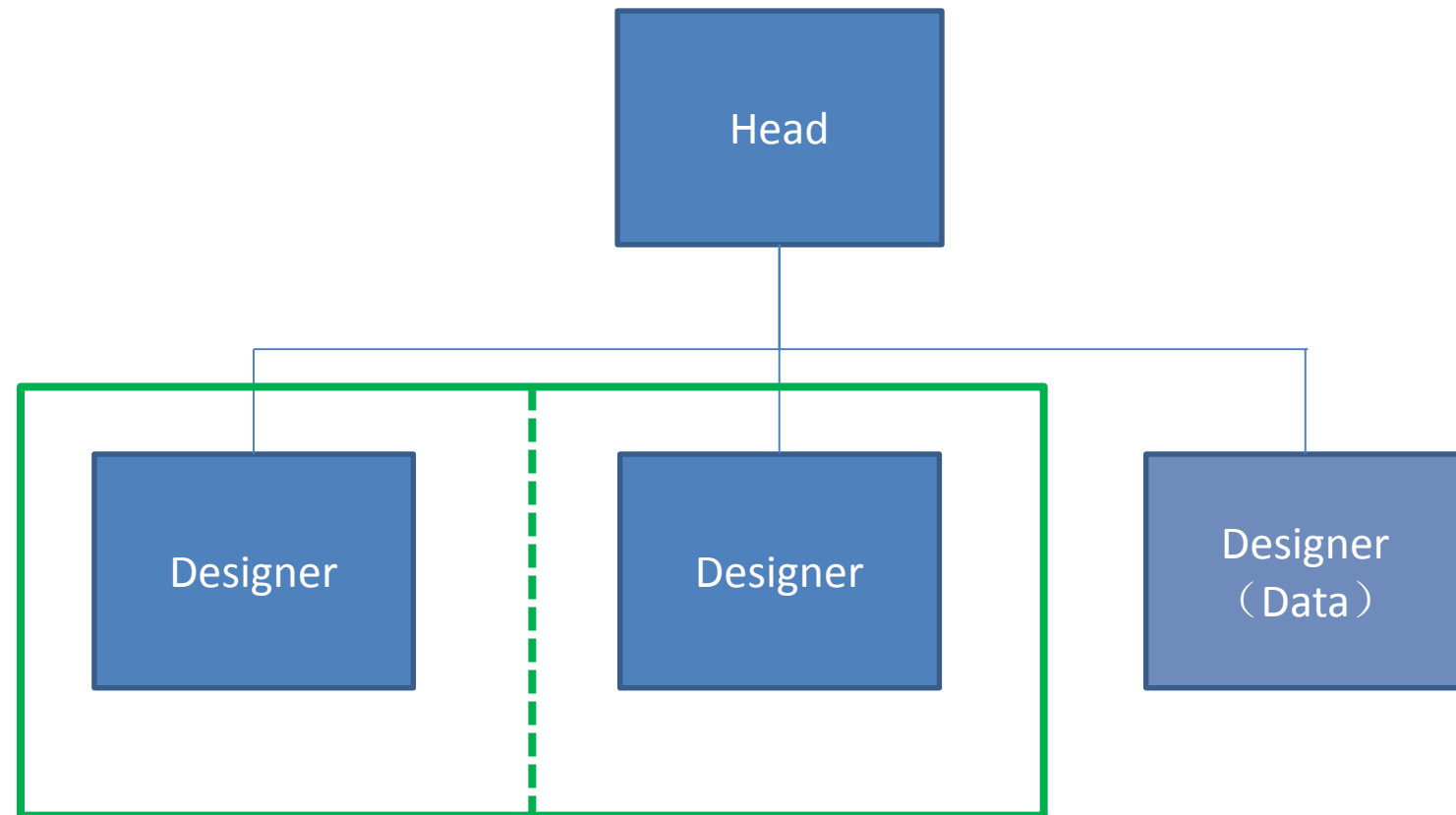
- Overview of APAC FPP IFPD Team

- Tools for IFPD

- Lessons learned from FPP cases

Overview of FPP IFPD Team

- ## APAC FPP IFPD Team

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                    │   Head   │
                    └────┬─────┘
        ┌────────────────┼──────────────────┐
   ┌────────────┬──────────────┐            │
   │  Designer  │   Designer   │   Designer │
   │            │              │   （Data）  │
   └────────────┴──────────────┘            │
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Overview of FPP IFPD Team

- FPP Operations Manual

- DOC 8168

- DOC 9906

- DOC 8697

- Cir 336

- Annex

Chapter 2. Instrument Flight Procedure Process
   2.1 Step 1: Initiation
   2.2 Step 2: Collect and validate all data
   2.3 Step 3: Create conceptual design
   2.4 Step 4: Review by State authorities and s
   2.5 Step 5: Apply criteria
   2.6 Step 6: Document and store :FPP IFP doc
   2.7 Step 7: Conduct safety activities
      2.7.1 Determine level of safety impact
      2.7.2 Develop safety documentation
   2.8 Step 8: Conduct criteria verification: see
   2.9 Step 9: Conduct validation and data veri
      2.9.1 Conduct ground validation and data
      2.9.2 Conduct flight validation and data
   2.10 Step 10: Consult with stakeholders
   2.11 Step 11: Approve IFP
   2.12 Step 12: Create draft publication
   2.13 Step 13: Verify draft publication
   2.14 Step 14: Provide IFP package to State S
Chapter 3. Safety Management Programme
   3.1 Safety objectives
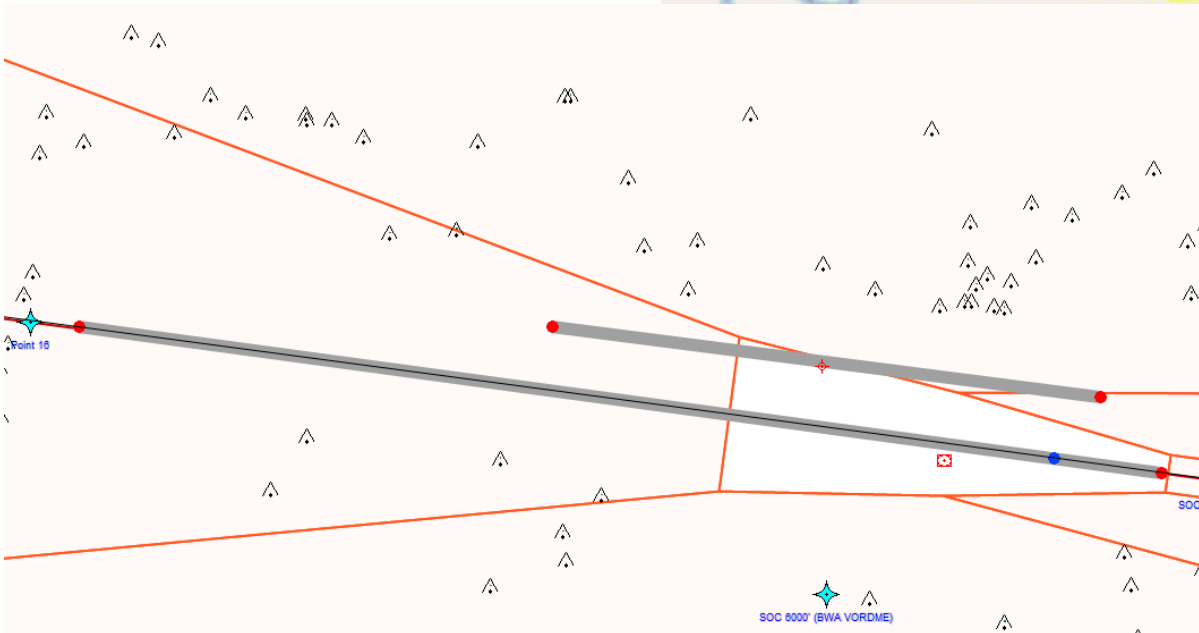   3.2 Safety accountabilities

Tools for IFPD

- Data tools

- Design tools

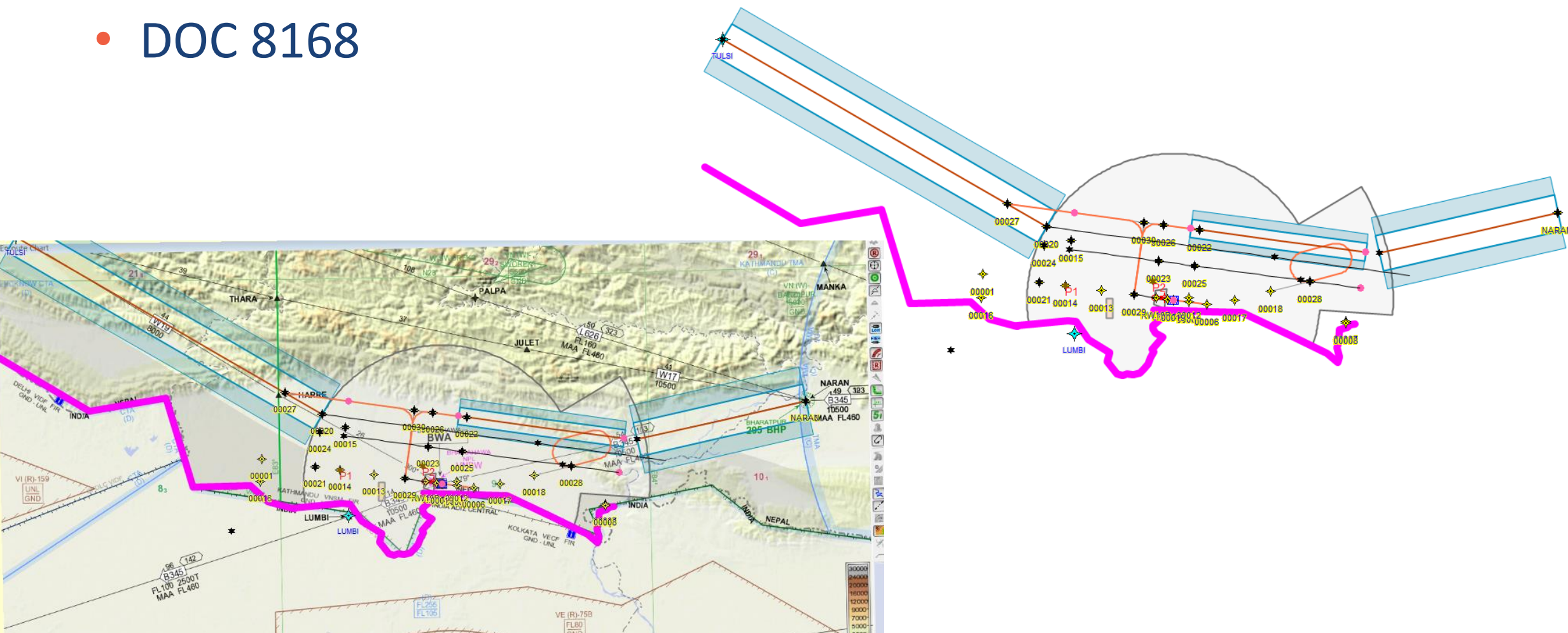- Validation tools(Under evaluation)

- Other tools(By requirements)

Data tools

- Aero data
  - (AIXM, AIP)
- GIS data

Design tools

- DOC 8168

Validation tools(Under evaluation)

- ## Ground validation tools
  - ## Design validation
    - PAN-OPS rules
    - DOC 9905 rules (for RNP AR)
    - ARNIC 424 rules
  - ## Flyability validation

CONTENTS

Validation tools(Under evaluation)

- ## Ground validation tools
  - – PAN-OPS rules

Table 3–4: List of criteria and checks based on PANS-OPS rules for intermediate approach segment.

Criteria / Checks	Result	Severity
[IT010] Either no turn or a fly-by turn is defined at the FAF Ref.: [PANSOPS] I-3-2.4.1.1		
• No turn at FAF (XJ08E)	Pass	
[IT030] Altitude constraints are defined at all the fixes of the intermediate approach segments Ref.: [PANSOPS] I-4-3.2.1		
• Altitude constraint at XJ08E is A5000+	Pass	
[IT040] Any altitude constraint at any fix of the intermediate approach segments is defined in 100-ft increments Ref.: [PANSOPS] I-4-4.2		
• Altitude constraint at XJ08E is 2500 ft (100-ft multiple)	Pass	
[IT060] Minimum altitude (as defined by the altitude constraint) at any fix of the intermediate approach segment is not lower than the minimum altitude (as defined by the altitude constraint) at the final approach fix. Ref.: [PANSOPS] I-4-4.3.3.3		
• There is only one leg in the intermediate segment (FAF).	N/A	
[IT070] Minimum altitude (as defined by the altitude constraint) at any fix of the intermediate approach segment is not lower than the highest OCA defined for the aircraft categories for which the procedure is designed. Ref.: [PANSOPS] I-4-3.2.3		
• Altitude constraint at XJ08E is A2500+ (greater or equal than 580 ft OCA for category D).	Pass	
[IT080] Maximum speed (as defined by the speed constraint) at any fix of the intermediate approach segments should not be higher than the maximum allowed speed for the fastest aircraft category for which the procedure is designed (i.e. 150, 180, 240 and 250 Knots for A, B, C and D aircraft categories, respectively) Ref.: [PANSOPS] I-4-1.8.5		
• N/A	N/A	
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Validation tools(Under evaluation)

- ## Ground validation tools
  - ARNIC 424 rules

3.2 ARINC 424 coding rules

Table 3–2: List of criteria and checks based on ARINC 424 coding rules.

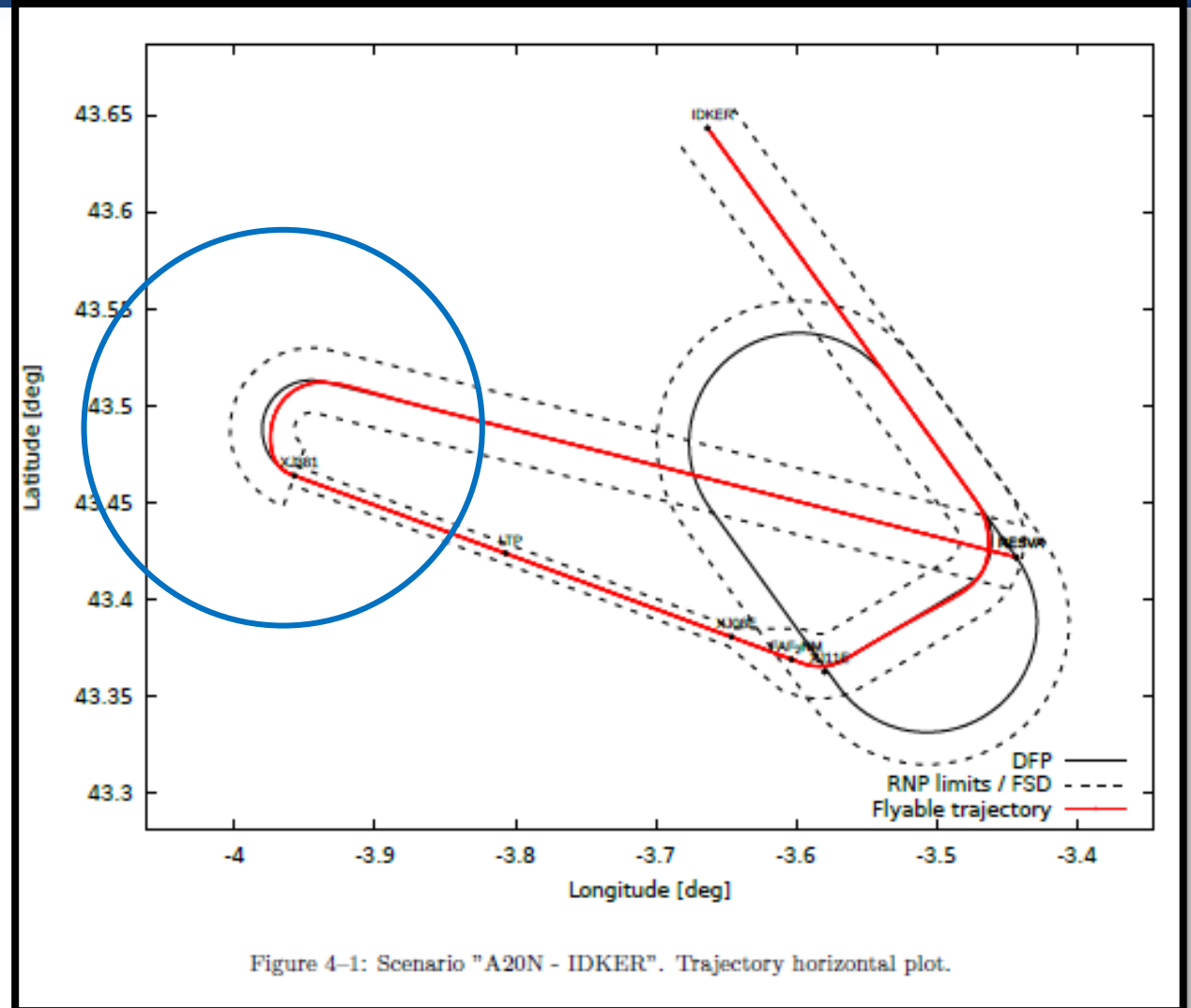| Criteria / Checks	Result	Severity
[AR010] Path terminator defined for the initial leg of any initial approach segment is an IF. Ref.: [PANSOPS] Table III-2-5-App-1		
• Path terminator at IDKER is IF	Pass	
• Path terminator at RESVA is IF	Pass	
• Path terminator at AMPUR is IF	Pass	
[AR020] Path terminator defined for any leg, other than the first one, of any initial approach segment is a TF or a RF. Ref.: [PANSOPS] III-2-5.2.1		
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Validation tools(Under evaluation)〉

- Ground validation tools

- ARNIC 424

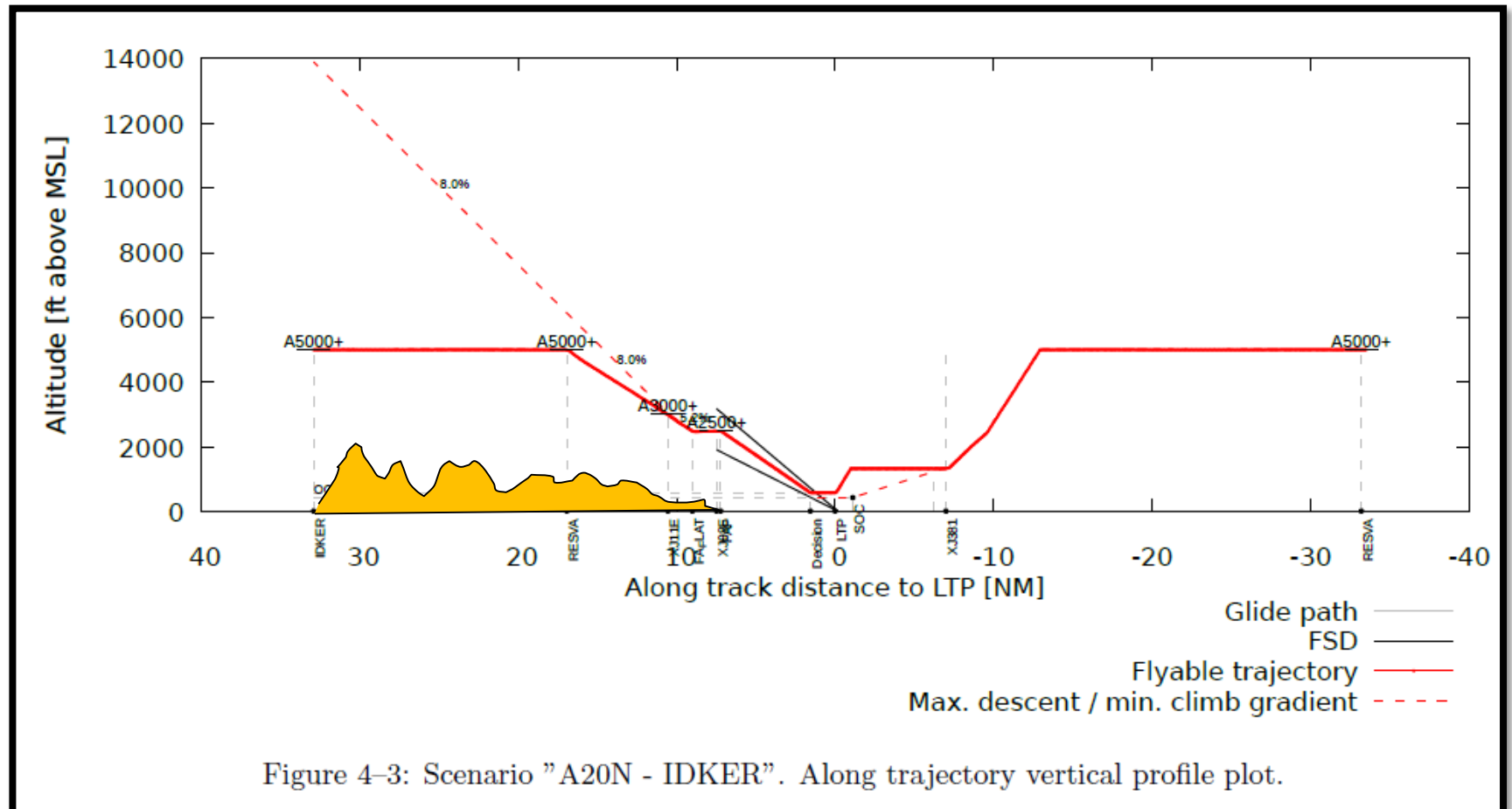|		
• Path terminator at XJ08E is TF	Pass	
[AR040] Path terminator defined for the leg of the final approach segment is a TF or a CF Ref.: [PANSOPS] Table III-2-5-App-1		
• Path terminator of the final approach is TF	Pass	
[AR080] Path terminator defined for the initial leg of the missed approach segment is DF, CF or CA Ref.: [PANSOPS] Table III-2-5-App-1		
• Path terminator at XJ381 is DF	Pass	
[AR100] Path terminator defined for any leg, except the first and last ones, of the missed approach segment is TF, DF, RF, CF, CA or FA Ref.: [PANSOPS] III-2-5-App-1		
• N/A	N/A	
[AR110] Path terminator defined for the last leg of the missed approach segment is TF, DF, RF or CF Ref.: [PANSOPS] Table III-2-5-App-1 Table III-2-5-App-2		
• Path terminator at (RESVA) is DF	Pass	
[AR125] For any two consecutive legs an IF must be followed by a TF Ref.: [PANSOPS] Table III-2-5-App-2		
• IF (IDKER) is followed by TF (RESVA)	Pass	
• IF (RESVA) is followed by TF (XJ11E)	Pass	
• IF (AMPUR) is followed by TF (XJ14E)	Pass	
[AR130] For any two consecutive legs a TF to fly-over must be followed by TF or CF Ref.: [PANSOPS] Table III-2-5-App-2		
• TF to fly-over leg not found	N/A	
[AR140] For any two consecutive legs a TF to a fly-by must be followed by TF, RF, CF or FA Ref.: [PANSOPS] Table III-2-5-App-2		
• TF to fly-by (RESVA) is followed by TF (XJ11E)	Pass	
• TF to fly-by (XJ11E) is followed by TF (XJ08E)	Pass	
• TF to fly-by (XJ08E) is followed by TF (RW29)	Pass	
• TF to fly-by (XJ14E) is followed by TF (XJ11E)	Pass	
	Continued on next page	

Validation tools(Under evaluation)

- ## Ground validation tools
  - ### — Flyability check

Figure 4–1: Scenario "A20N - IDKER". Trajectory horizontal plot.

Validation tools(Under evaluation)

- ## Ground validation tools
  - — Flyability check

Figure 4–3: Scenario "A20N - IDKER". Along trajectory vertical profile plot.

Validation tools(Under evaluation)

- Ground validation tools
- Flyability check

Flyability check	Compliant
The vertical path of the flyable trajectory meets the altitude constraints	Yes
The vertical path of the flyable trajectory meets the vertical boundaries	Yes
The IAS of the flyable trajectory meets the speed constraints	Yes
The vertical path of the flyable trajectory stays within the vertical FSD limits	Yes
The horizontal path of the flyable trajectory stays within the lateral RNP/FSD limits	Yes
The vertical path of the flyable trajectory meets the minimum altitude in the initial phase of the missed approach	Yes
The vertical path of the flyable trajectory meets the minimum climb gradient	Yes

Validation tools(Under evaluation)
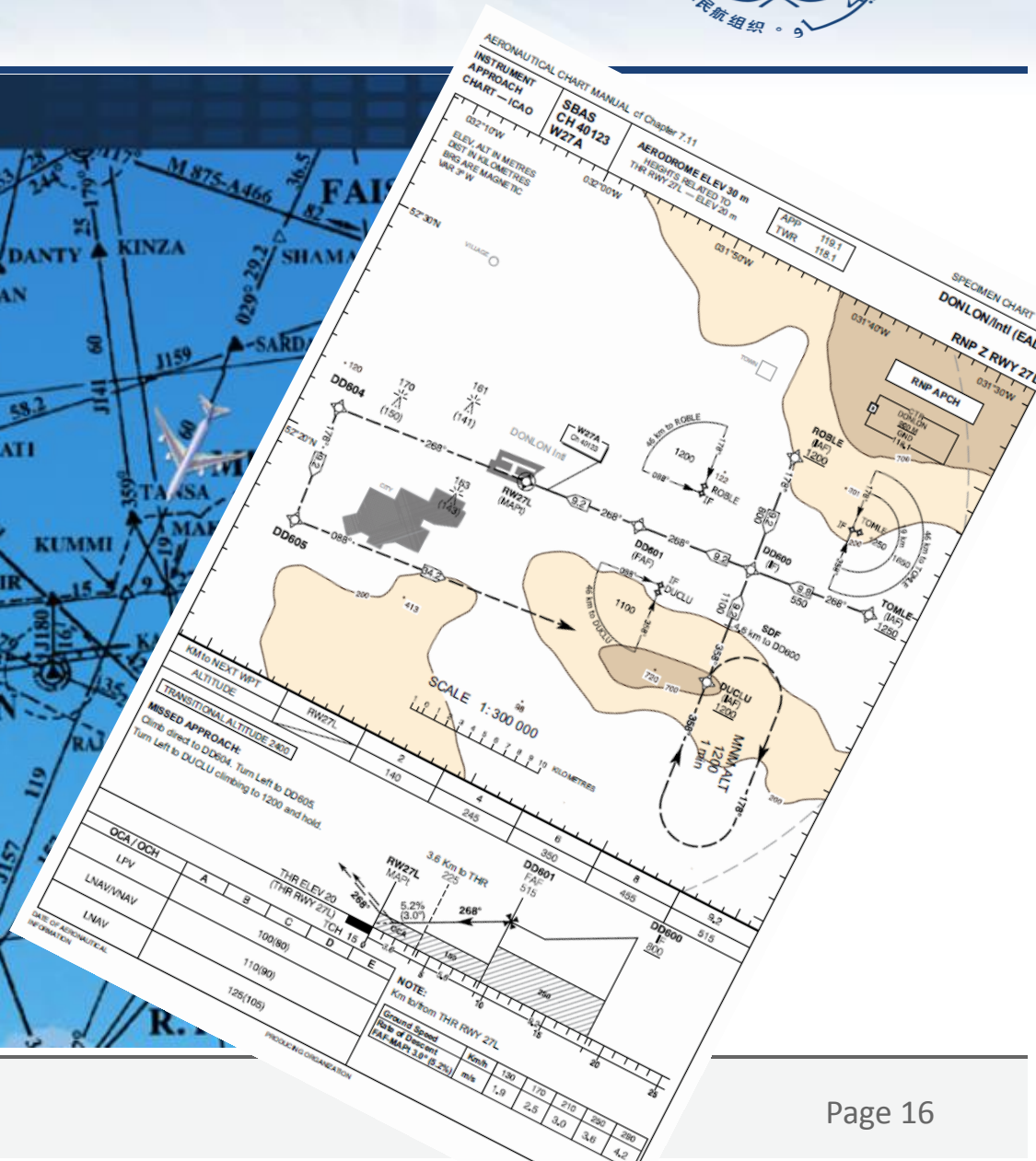
- Ground validation tools
- 3D view
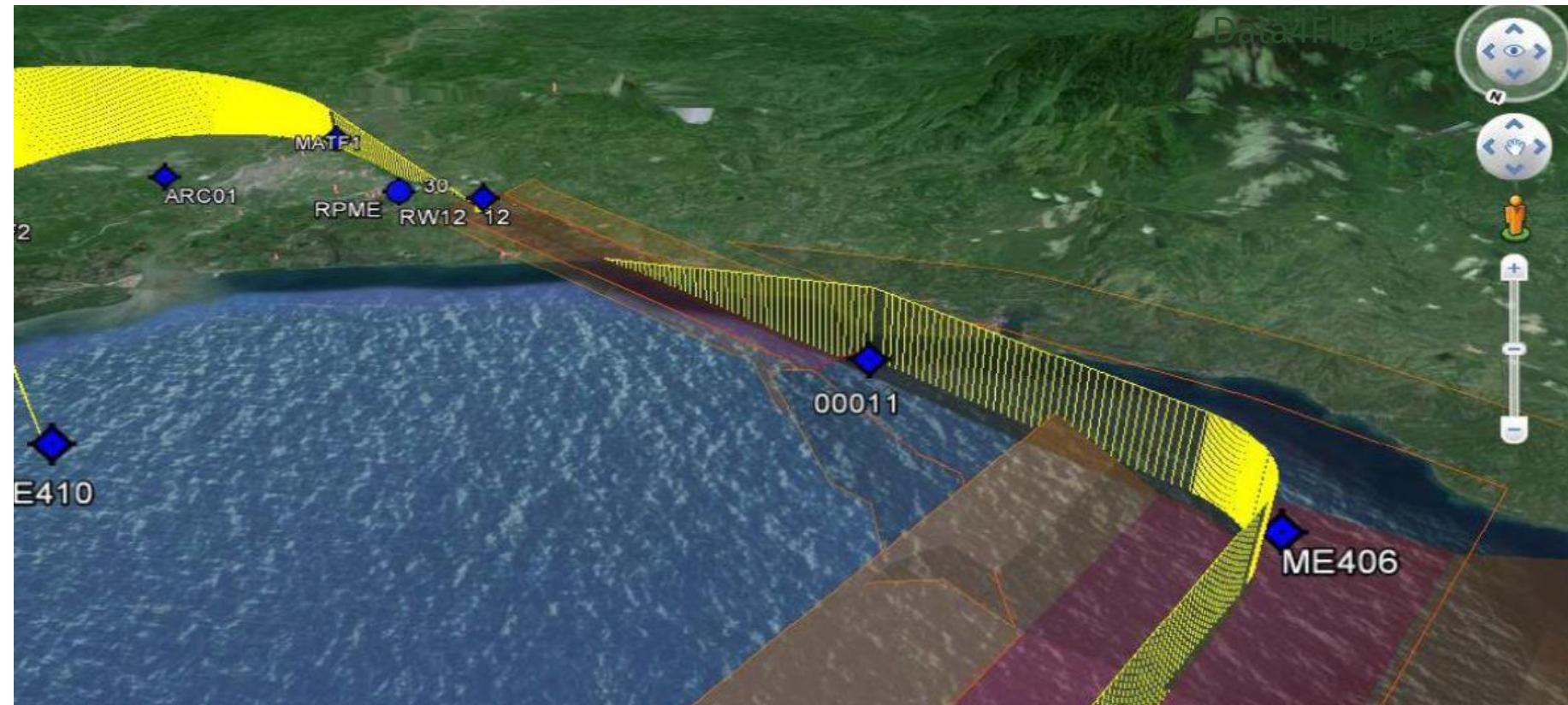
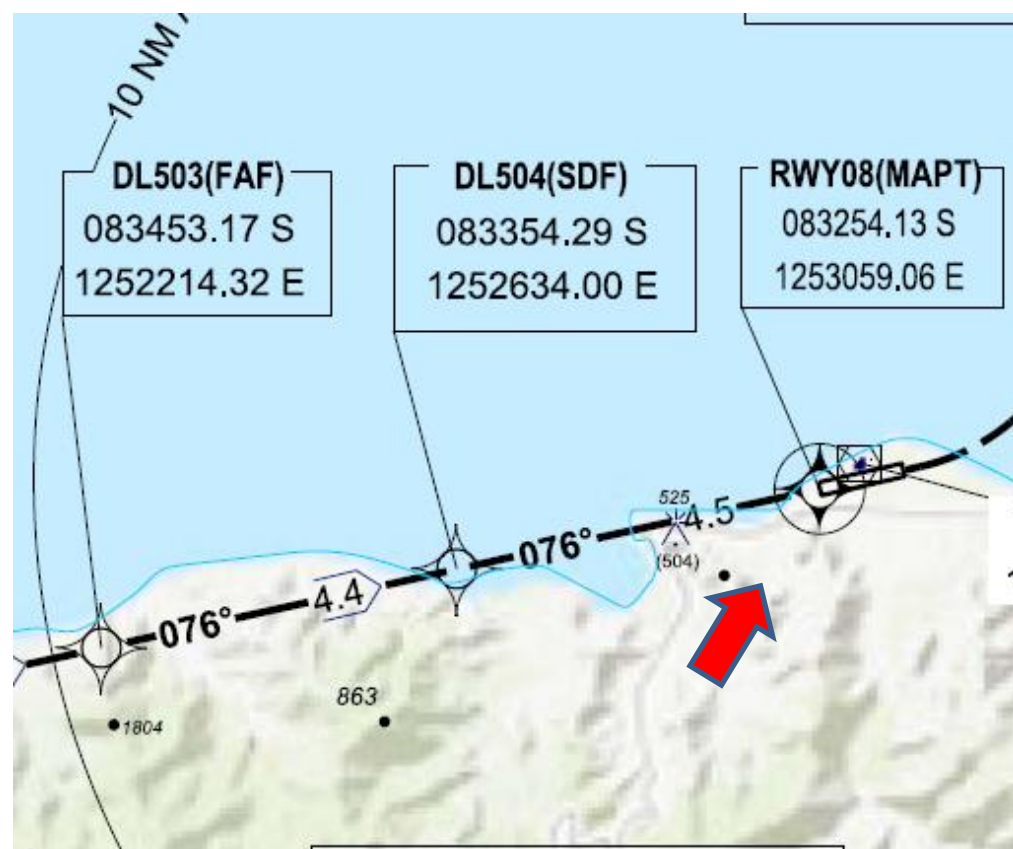# Other tools(By requirements)

- AIS
- Chart
- 3D study

- ## IFP Charts as language

- ## Independent validations

Lessons learned

- Independent validations

North American Central American and Caribbean (NACC) Office MexicoCity

South American (SAM) Office Lima

ICAO Headquarter Montreal

Western and Central African (WACAF) Office Dakar

European and North Atlantic (EUR/NAT) Office Paris

Middle East (MID) Office Cairo

Eastern and Southern African (ESAF) Office Nairobi

Asia and Pacific (APAC) Office Bangkok

ICAO Asia Pacific Flight Procedure Programme **(APAC FPP)**

Co-located with ICAO APAC Regional Sub Office(RSO) in Beijing China

Let's Focus/Propose/Plan Together