



*International Civil Aviation Organization*

**THE THIRD MEETING OF PERFORMANCE BASED NAVIGATION  
IMPLEMENTATION COORDINATION GROUP (PBNICG/3)**

Bangkok, Thailand, 08 – 10 March 2016

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**Agenda Item 10: Issues and challenges regarding PBN implementations**

**IMPLEMENTING PBN FOR REMOTE AND MOUNTAINOUS AREA AIRPORT**

(Presented by DGCA Indonesia)

**SUMMARY**

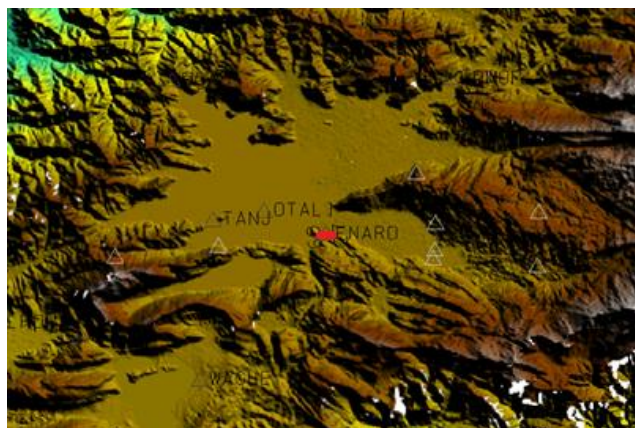
This paper presents the application of the available PBN navspec to fit with the condition of an airport in remote and mountainous area

**1. INTRODUCTION**

1.1 Indonesia has 237 airports, 78 airports are without Navaid, 62 airports are in the Papua Island, most of them have characteristic mountainous area, limited resource and landed by small aircraft without sophisticated avionics.

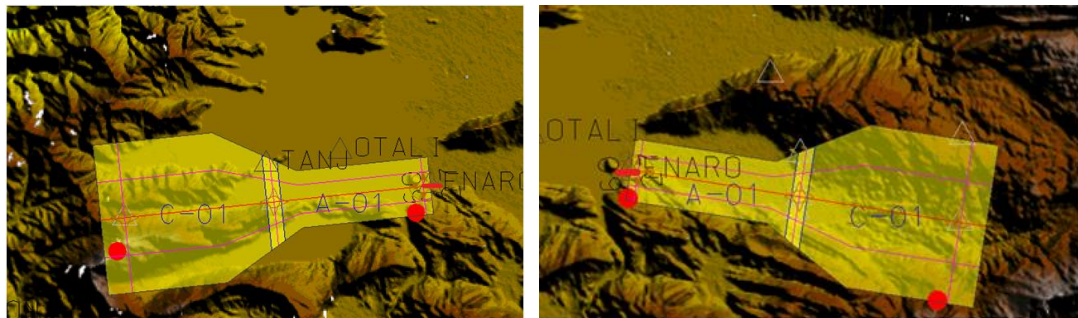
**2. DISCUSSION**

**2.1 Example Case**



Picture 1. Enarotali airport (red strip) surround by the mountain

For example Enarotali Airport, at first assessment we tried to implement RNP APCH navspec as approach procedure, the terrain in the protection area makes the aerodrome minima's (obstacle clearance height (OCH) and visibility) are high, even higher than visual procedure.

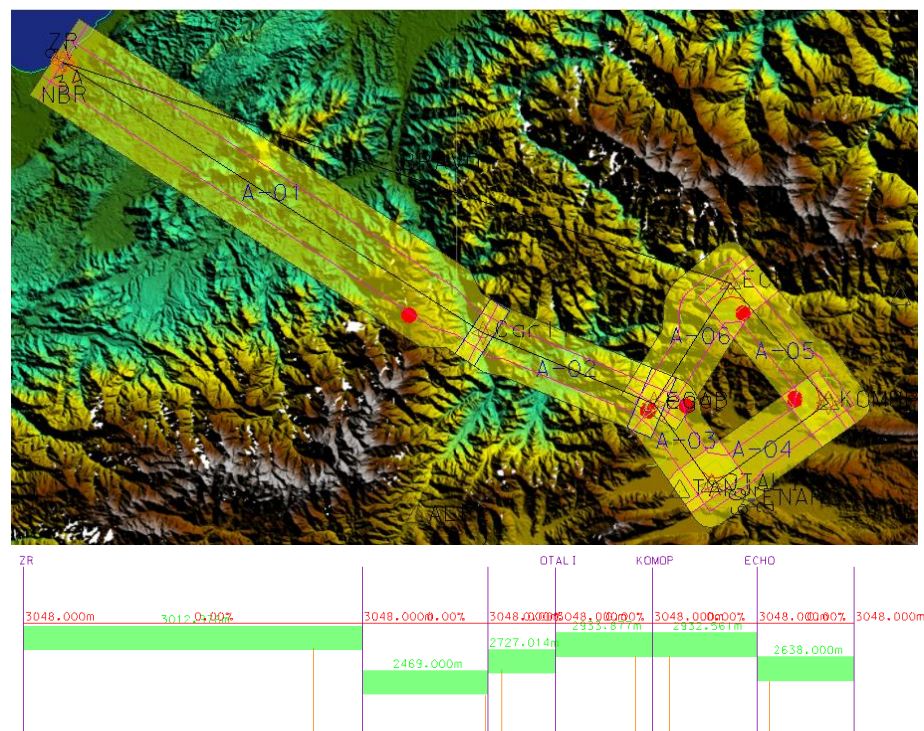


Picture 2. The terrain penetrates the protection area of RNP APCH procedure

In Enarotali Airport, the advanced navspec such as RNP AR have some difficulties to apply due to the limited resource and small aircraft without sophisticated avionics population.

## 2.2 Solution Concept

As a solution, to continue providing the instrument guidance until the closest distance to the airport we try to use the STAR RNP1 concept to guide the aircraft until certain point (Visual Decision Point (VDP)), at this point the pilot must see the runway to continue fly to land in visual, if the pilot do not see the runway, then the pilot must execute a missed approach procedure.



Picture 3. The profile of STAR RNP1 concept

The problem with this concept is the height at Visual Decision Point (VDP) is high around 4.200 ft and yet the distance to the airport is short, around 3 NM. We have planned to discuss this situation with the airline that fly in Papua Island to find whether the pilots can accept this concept.

**3. ACTION REQUIRED BY THE MEETING**

3.1 The meeting is invited to:

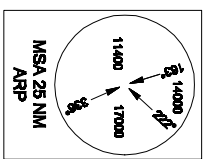
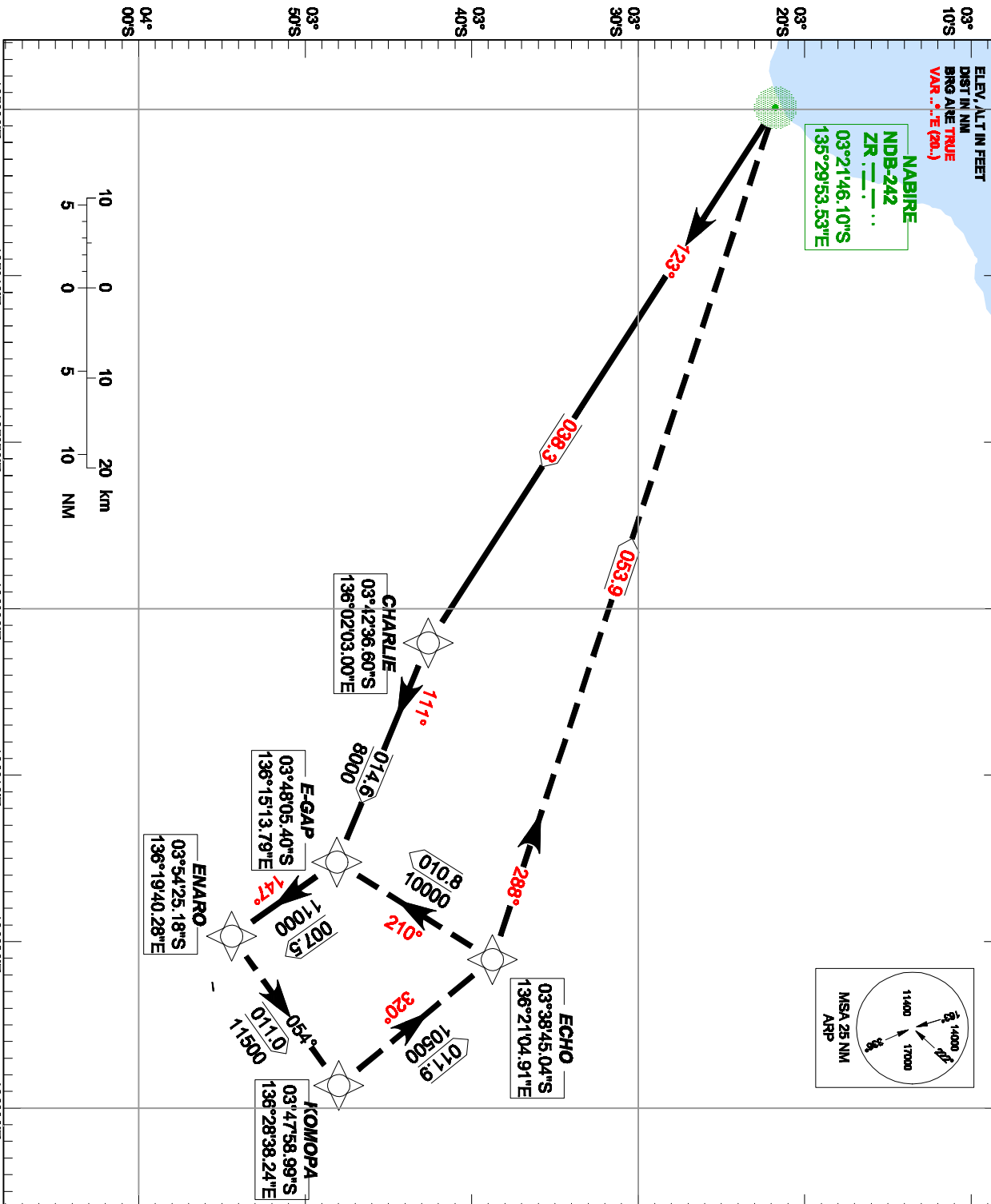
- a) note the information contained in this paper; and
- b) discuss and give suggestion to the application of the STAR RNP1 concept mentioned above.

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AIP INDONESIA (VOL.IV)  
STANDARD ARRIVAL CHART INSTRUMENT (STAR) - ICAO

TRANSITION LEVEL : FL 180  
TRANSITION ALT : 1800 ft

WABT AD 2.24-9  
ENAROTALI/  
Enarotali  
RNP 1



**RWY 10-28**  
**CHARLIE ONE ARRIVAL.**  
Arrival from ZR NDB, to CHARLIE, then  
to E-GAP then to ENARO.

**Missed Approach Procedure.**  
If no visual contact at ENARO, proceed to  
KOMOPA then to ECHO.

	OCA (H)	
	A	B
Cat of ACFT	A	B
Decision Point	10800 (5300)	
Circling	9000 (3500)	
Vis. Circling	2000 m	2400 m

