



สำนักงานการบินพลเรือนแห่งประเทศไทย  
The Civil Aviation Authority of Thailand

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# RNP VISUAL MANEUVERING WITH PRESCRIBED TRACK (VPT) GUIDELINES

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CAAT-GL-OPS-RNP VPT

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Air Chief Marshal

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## Acronyms and Abbreviations

| Acronym/Abbreviation | Full Term                                           |
|----------------------|-----------------------------------------------------|
| ANSP                 | Air Navigation Services Provider                    |
| AOC                  | Air Operator Certificate                            |
| CAAT                 | Civil Aviation Authority of Thailand                |
| FSTD                 | Flight Simulation Training Device                   |
| IFR                  | Instrument Flight Rules                             |
| MOC                  | Management of Change                                |
| OPS                  | Flight Operations Standard Department               |
| RNP (VPT)            | RNP Visual Maneuvering with Prescribed Track        |
| RNP AR               | RNP with Authorization Required                     |
| SMS                  | Safety Management System                            |
| SOP                  | Standard Operating Procedures                       |
| TCAR OPS             | Thailand Civil Aviation Regulation – Air Operations |
| VF                   | Visual Fix                                          |

## Record of Amendments

| Issue | Revision | Date        | Amendment Summary |
|-------|----------|-------------|-------------------|
| 01    | 00       | 01 Sep 2026 | -                 |

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## 0. INTRODUCTION

### 0.1 Background

RNP (VPT), or RNP Visual Maneuvering with Prescribed Track, is an IFR approach procedure comprising an initial RNP instrument path followed by a visual segment defined by waypoints for stabilized approach under visual conditions after Visual Fix (VF). RNP (VPT) allows more structures and precise visual maneuvering. Whereby the Flight Management System provides horizontal and vertical guidance to be followed during the approach.

### 0.2 Purpose

This guideline provides operators with comprehensive understanding of RNP (VPT) fundamentals, required documentation, and CAAT Flight Operations Standard Department (OPS) approval procedures.

### 0.3 Applicability

- AOC holders intend to operate the published RNP (VPT) procedures.

### 0.4 References

- ICAO Circular 359: Procedures for Visual Maneuvering with Prescribed Track Using RNP
- ICAO Doc 9905: RNP AR Procedure Design Manual
- EASA SIB 2025-05: Development and Usage of Procedures for RNP (VPT)
- TCAR OPS Part SPA.PBN.105
- CAAT AIP Supplements

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## 1. GENERAL PRINCIPLES

The purpose of this guideline is to provide guidance to air operators when developing instrument flight rules (IFR) procedures, including an RNP instrument path followed by a visual path defined by waypoints, to promote stabilized approach and prescribe visual maneuvering to a designated runway.

Substituting a visual approach by an RNP (VPT) supplemented by the area navigation capabilities of the aircraft is often used to improve the safety of the operation by providing track and vertical path guidance, thereby assisting with the safe completion of the approach.

Two issues needed to be resolved to facilitate the development of the RNP (VPT) procedure. One was the determination of obstacle clearance, the second related to establishing the ability of the aircraft intended to be operated on the procedure to successfully follow the route as designed.

To resolve the obstacle clearance issue, it was decided to use as a baseline the required navigation performance authorization required approach (RNP AR APCH) navigation specification. This would provide clear criteria, as defined in Doc 9905, for the development of the underlying procedure and ensure the designed route remained clear of terrain.

The development of an RNP (VPT) procedure is not guaranteed for all RNP AR procedures. The procedure must be evaluated by the ANSP to determine if an RNP (VPT) can be implemented. The design of the underlying RNP AR procedure will be important – the more complex the RNP AR procedure, the less likely it is to be usable as the basis for an RNP (VPT) procedure.

For aircraft operators who do not have an RNP AR APCH approval, a process would be needed to ensure an assessment is made of the aircraft intended for the operation to determine if these can be safely operated on the RNP (VPT) route, in limited visual conditions only. In following this path, it was clear that the RNP (VPT) procedures could not, therefore, be made publicly available for all operators since the operational assessment would be key to ensuring the correct operation on the intended route. The procedures would need to be published as ‘authorization required’ and published by the CAAT in the AIP.

Procedures which are developed by the air navigation services provider (ANSP) in conjunction with an operator and are intended to be published for use. These procedures would be the subject of an air traffic control (ATC) clearance and could be available for use by other suitable qualified and authorized operators.

The responsibility to ensure correct operation of the aircraft when flying the procedure would therefore rest with the operator, overseen by the CAAT, to ensure the relevant operational assessment had taken place.

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## 2. APPLICATION PROCESS

The Air Operators shall notify the Flight Operations Standard Department (OPS) of the Civil Aviation Authority of Thailand (CAAT) of intention to apply for approval for RNP VPT at least 90 days before the intention date of operation. The intention letter shall consist of Airport of Operation with Runway and Approach Procedure of RNP VPT to be authorized together with the supplemental document for the operation. The 5 phases of authorization process will be performed by the inspector team.

Note: The Air Operators are requested to kindly review the relevant checklists to ensure complete and accurate preparation of information prior to submitting the application.

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### 3. AUTHORIZATION

#### 3.1 Required evidence for Authorization process

An authorization to conduct RNP (VPT) procedure is required. This should be an authorization of the operator's processes (safety assessment, aircraft eligibility, training, standard operating procedures).

Air Operators wishing to conduct RNP (VPT) approach should prepare the following evidence:

- 1) details of the operational assessment process used to determine the ability to operate on each RNP (VPT) procedure, with the applicable aircraft types and variants;
- 2) training requirements for pilots to operate on these procedures;
- 3) operating procedures detailing normal and contingency procedures to be followed;
- 4) MEL with appropriate entries for the equipment relevant to the RNP (VPT) operations;
- 5) Result of performing validation and testing prior to implementation in various operational environments and conditions (wind, temperature, landing weight etc.); and
- 6) the process for recording the operator's review, assessment and reporting on the procedures.

The CAAT shall be satisfied that the operator has the capability to conduct all parts of the process, in particular the flyability assessment and review of the navigation database, before granting such an authorization.

Moreover, the CAAT should include in its air operator surveillance plan the verification of effective implementation of the operator's processes, as described above.

Note: For foreign operator approval to conduct the RNP (VPT) procedure, evidence of an approval of the State of the Operator to conduct RNP (VPT) in accordance with this guideline is required.

#### 3.2 Information about Performance-Based Navigation Capabilities of the Air Operator

For all operations related to the use of an RNP (VPT) procedure, the operator must have an authorization to conduct PBN operations consistent with the navigation specification used in the design of the procedure down to the VF and along the missed approach route. This would typically be RNP 1 or A-RNP.

For the visual part of the RNP (VPT), it is expected that the operator would have authorization to conduct RNP APCH with vertical guidance.

For RNP (VPT) designed with RF legs in the instrument portion of the procedure, the operator must have authorization to operate using RF legs associated with either RNP 1, A-RNP or RNP APCH.

### 3.3 Information about Simulator Demonstration

The Air Operator is responsible for demonstrating the capability of the aircraft intended to be used for the operation. The Air Operator should analyze the impact of any changes to the aircraft configuration that may affect the previously established eligibility of the aircraft, such as updates to navigation systems.

The Air Operator should demonstrate that the procedure is flyable with the intended equipment, such as autopilot engaged or manual flight with flight director. A representative flight simulation training device (FSTD) should be used to demonstrate the flyability of the procedure.

In this context flyable means ensuring the ability of the aircraft to follow the intended path throughout all segments (including the missed approach) under both normal and abnormal operating conditions. This should include the intended level of automation, given due consideration of the expected weather conditions (wind, temperature etc.). Consideration of any likely aircraft failure during the visual part of the RNP (VPT) procedure should also be included.

### 3.4 Information about requirement for RNP (VPT) Approach Chart

RNP (VPT) is an IFR approach procedure that combines RNP navigation with visual approach techniques. It consists of two main segments: An Initial RNP instrument path (instrument segment) and A subsequent visual path (visual segment) defined by waypoints.

The approach chart should at least address the following issues:

- RNP 1 Required
- RF Required
- Authorization is required
- RNP to Visual Maneuvering on Prescribed Track
- Required weather conditions including ceiling, visibility and specific visual references (where needed)
- Where necessary, restrictions (such as maximum wind, day-only) must be included as plain text
- The minimum temperature associated with the RNP AR procedures
- A chart note should be provided if the VASI/PAPI does not align with the RNP (VPT) approach slope.
- Instructions for discontinuation of the approach should be provided in note form.

Note: any modification to altitude and speed constraints will require re-validation of the procedure.

## 4. OPERATIONAL CONSIDERATIONS

### 4.1 Operational Considerations

In common with the normal process for the management of change (MOC), the potential use of an RNP (VPT) procedure should be assessed as part of the Air Operator's Safety Management System (SMS).

The Air Operator should consider the following when making this assessment:

- the complexity of the procedure;
- terrain;
- operating environment;
- crew's familiarity with the destination; and
- crew's experience with the type of procedure published.

These additional measures are also required: Crew Briefing Materials, Specific Training Requirements, and Standard Operating Procedures (SOP). Any limitations from the Risk Assessment should be included into the SOP.

The RNP (VPT) procedure should be considered an instrument approach which makes use of visual references to the ground as a mitigation for the lack of a full RNP AR APCH operational authorization. It should be clear to both pilots and controllers that once cleared to fly the approach, the pilot will do so adhering to the lateral and vertical profile. Modifications such as shortcuts, while acceptable in a typical visual approach, are not permitted without explicit clearance from the controller.

While the RNP (VPT) procedure is based on the RNP AR APCH, the lack of a full AR authorization means that operations on simultaneous approaches such as "established on RNP AR APCH" cannot be used when the aircraft is operating on the RNP (VPT) procedure.

Where a runway served by an RNP (VPT) procedure is being equipped with a visual or electronic vertical guidance system, such as VASI/PAPI, the pilot should be notified by chart note or other means if the vertical profile of the RNP (VPT) procedure is not aligned with the VASI/PAPI provided for the runway.

Visual reference with the ground to ensure obstacle clearance must be maintained at all times after the VF, however visual reference with the airport is not required at all times. Specific visual references may also be defined, such as the need to be visual with particular terrain or obstacle before commencing the visual segment of the approach.

## 4.2 Risk Assessment and Relevant Mitigations

The risk assessment should at least address the following issues:

- Errors in the coding of the waypoints.
- Human factors, among others in relation to visual illusions.
- GNSS jamming/spoofing.
- Pressure to continue the approach also when visual conditions are lost.
- Missed Approach Procedure.
- Overconfidence in the automation and navigation systems.
- Mistakes in comparing waypoints between FMS and charts (in relation to fly-over/fly-by waypoints, coordinates, altitude, speeds).
- Outdated terrain and obstacle database.
- Risk that operators/crews might fly RNP-AR procedures even though not validated and tested.
- Different conventions in naming RNP(VPT) procedures worldwide, which are causing confusion.
- Lack of standardization of approach charts.
- Inadequate monitoring by Pilot Monitoring (PM).
- Inadequate application of temperature correction.
- Inadequate QNH setting.

## 5. FLIGHT CREW PROCEDURE AND TRAINING

### 5.1 Operating Procedures

The RNP (VPT) procedure is established to ensure a predictable and repeatable path will be flown by all aircraft. While the procedure uses visual reference with the ground as a mitigation, it should be clear that this is not a typical 'visual approach'. There is no facility to vary the path flown by taking shortcuts, modifying the vertical profile, etc. and controller procedures will be dependent on the aircraft adhering to the published path unless a specific request to deviate from this is requested and granted.

Pilots should not fly an RNP (VPT) procedure unless it is retrievable by procedure name from the on-board navigation database and conforms to the charted procedure.

Manual entry, or creation of new waypoints, is not permitted. Additionally, pilots should not change the database waypoint type for a fly-by to a flyover, or vice versa.

Pilots should request the RNP (VPT) on initial contact with the ATC unit, unless previously coordinated. RNP (VPT) procedure clearance should be issued by the controller before the IAF.

Pilots can refuse or accept an RNP (VPT) procedure if proposed by ATC.

Pilots should use an adequate method to adhere to the intended flight track and to achieve an appropriate level of performance.

Pilots should decide at the VF at the latest if the weather conditions are suitable to continue visually and follow the RNP (VPT) path to avoid any obstacles and complete a safe landing. If the weather conditions are unsuitable, the pilot must execute the missed approach procedure. If the missed approach involves the discontinuation of the lateral part of the approach, the pilot cannot follow the flight management system (FMS) flight plan and must manually initiate the missed approach.

After the VF, the pilot monitoring should monitor lateral and vertical deviation above and below the vertical path. Action should be taken if the lateral and vertical trajectory is not followed as published.

During the visual segment the pilot flying should monitor the progress of the aircraft using instruments and visually.

### 5.2 Contingency Procedures

The Air Operator's flight crew contingency procedures should address aircraft and RNP system component failures affecting the aircraft's lateral and vertical performance (such as loss of the Global Navigation Satellite System (GNSS) signal in space, loss of the flight director or autopilot).

The flight crew should understand the impacts of significant failures on the aircraft performance the RNP (VPT) operation and how the failure affects their ability to safely comply with the procedural path.

### 5.3 Flight Crew Training

Air Operators shall ensure that they have adequately trained their pilots on RNP (VPT) procedures before operating those procedures.

Theoretical training shall address the concept of RNP (VPT) and include, as a minimum, material detailing the following concepts:

- a) use of RF legs (where these are intended to be included in the procedures);
- b) normal and contingency procedures to follow when operating on RNP (VPT);
- c) Level of Automation to be used;
- d) standard phraseology related to operation on the procedure;
- e) specific RNP (VPT) procedure to be used and requirements specified on the RNP (VPT) chart;
- f) Pilot's report of any occurrence of risk; and
- g) Air Operator's Safety Risk Assessment.

Theoretical training shall be conducted as classroom training with minimum period of 3 hours.

Simulator training is also required to practice for the successful completion of the approach to landing and cover scenarios such as loss of visual reference and missed approach procedure due to other reasons.

## 6. STANDARD PHRASEOLOGY

### 6.1 Standard Phraseology for Normal Operations

| Scenario                                                                                          | Pilots                                  | ATC                                                                                   |
|---------------------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------|
| Pilot request on initial contact with approach control                                            | REQUEST RNP ALPHA<br>APPROACH RUNWAY 09 |                                                                                       |
| Response to initial contact by Approach Controller (when clearing the aircraft for the procedure) |                                         | CLEARED RNP ALPHA APPROACH<br>RUNWAY 09, REPORT VISUAL FIX                            |
| Position over Visual Fix (VF)                                                                     | VISUAL FIX                              |                                                                                       |
| Confirmation from the Approach Controller                                                         |                                         | CONFIRM VISUAL?                                                                       |
| Visual references as specified on the procedure chart are achieved by the VF                      | VISUAL                                  |                                                                                       |
| Change from Approach Controller to Tower                                                          |                                         | CONTACT TOWER 119.25                                                                  |
| On initial contact with tower controller                                                          | VISUAL                                  |                                                                                       |
| Tower controller in charge                                                                        |                                         | CONTINUE AS CLEARED; or<br>REPORT FINAL; or<br>RUNWAY 09, WIND (..),<br>CLEAR TO LAND |

### 6.2 Standard Phraseology for Degrade Conditions

| Scenario                                                                         | Pilots                                  | ATC                       |
|----------------------------------------------------------------------------------|-----------------------------------------|---------------------------|
| <b>RNP (VPT) NOT AVAILABLE</b>                                                   |                                         |                           |
| On initial contact with approach control                                         | REQUEST RNP ALPHA<br>APPROACH RUNWAY 09 |                           |
| Response to initial contact                                                      |                                         | NEGATIVE, PROCEED FOR ... |
| <b>VISUAL REFERENCES NOT ACHIEVED BY THE VISUAL FIX</b>                          |                                         |                           |
| Confirmation from the Approach Controller                                        |                                         | CONFIRM VISUAL?           |
| Visual references as specified on the procedure chart are not achieved by the VF | NEGATIVE, GOING AROUND                  |                           |
| <b>INTERRUPTION OF THE APPROACH ONCE PASSED THE VISUAL FIX</b>                   |                                         |                           |
| Issue encountered after the VF                                                   | GOING AROUND                            | GO AROUND                 |

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