



*International Civil Aviation Organization*

**The Sixth Meeting of the APANPIRG ATM Sub-Group  
(ATM/SG/6)**

Hong Kong, China, 30 July – 03 August 2018

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**Agenda Item 4: ATM Systems (Modernisation, Seamless ATM, CNS, ATFM)**

**IMPLEMENTATION OF RNP AR APPROACHES IN MALAYSIA**

(Presented by Malaysia)

**SUMMARY**

This paper presents information related to the implementation of RNP AR approach in airports within Kuala Lumpur FIR and Kota Kinabalu FIR. This paper describes how collaborative efforts with air operators in order to achieve ICAO ASBU under PBN implementation and CDO operation that have resulted in reducing fuel consumption, increasing efficiencies, reducing noise together with reduced release of carbon emission.

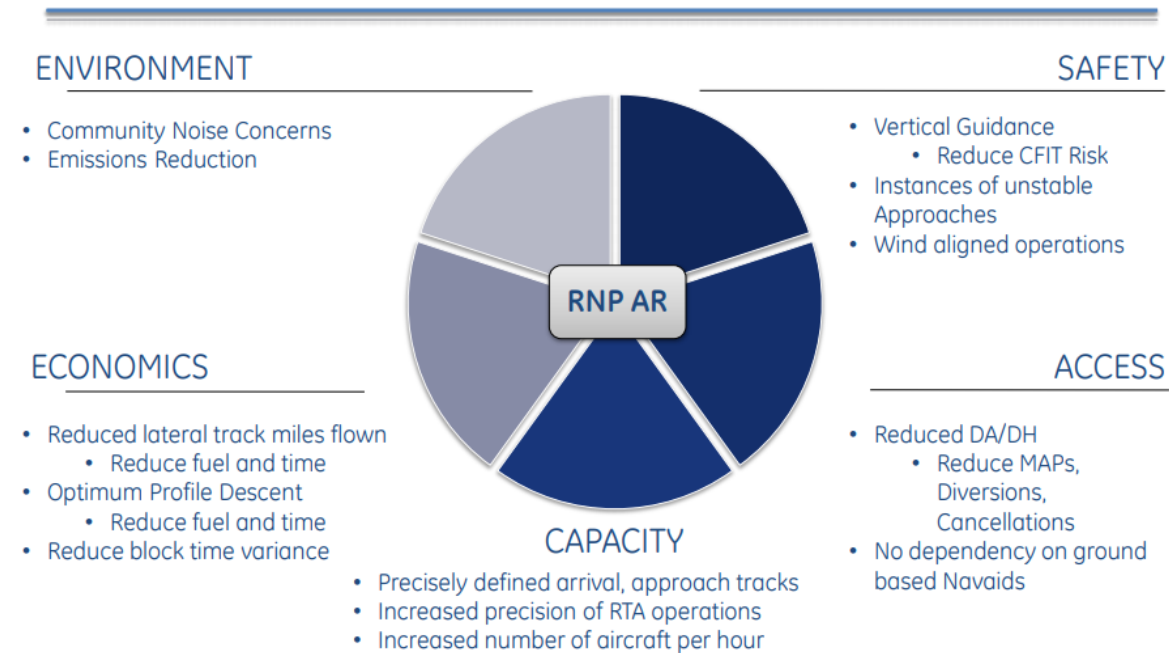
**1. INTRODUCTION**

1.1 The RNP AR APCH or the *Required Navigation Performance Authorization Required Approach*, is an advanced form of Performance-based Navigation (PBN) technology, allowing pilots to use onboard GPS technology to follow precise tracks independent of ground aids beacon. This design will shorten the distance an aircraft has to fly en-route, and reduces fuel burn, exhaust emissions and noise pollution in communities near airports. As for air traffic control (ATC), it will assist in reducing congestion and also reducing flight delays.

1.2 In view of its operational and also global benefits, Malaysia's largest low cost carrier AirAsia took the lead in engaging a *third party designer* (General Electric – GE) to design and undertake all implementation process to start RNP AR in selected airports within KL and KK FIRs. AirAsia and the *Department of Civil Aviation Malaysia, DCA* (the previous CAA entity now known as *Civil Aviation Authority Malaysia, CAAM*) in collaboration with GE were the first in ASEAN to pioneer the use of these procedures nationwide. Under the terms of agreement, GE designed, deployed, validated and maintained a network of precise RNP procedures to utilize the performance characteristics of AirAsia's A320 fleet.

1.3 This is an example of how close collaboration between government and industry/private agencies can result in innovation, and contribute positively towards the transportation infrastructure of the country.

# Articulated Benefit



1.4 In 2013, the DCA granted AirAsia approval to fly RNP AR APCH flight procedures in Malaysia. The approval covered 14 airports within KL and KK FIRs, which is about 50 % from the total number of airports within both FIRs, some of which are still operating under a non-radar environment. As a start, these procedures were for the exclusive use of AirAsia's certified aircraft / pilots until 2015, when it was published in the Malaysian AIP for use by all certified users. By 2015, Malaysia Airlines also certified their fleet and crew to perform the RNP IFP.

1.5 To ensure the success of the implementation of these procedures, the DCA supported AirAsia in terms of pilot certification and aircraft navigation related matters. In turn, ATC personnel were provided relevant 'hands-on' training at each of the designated airport.

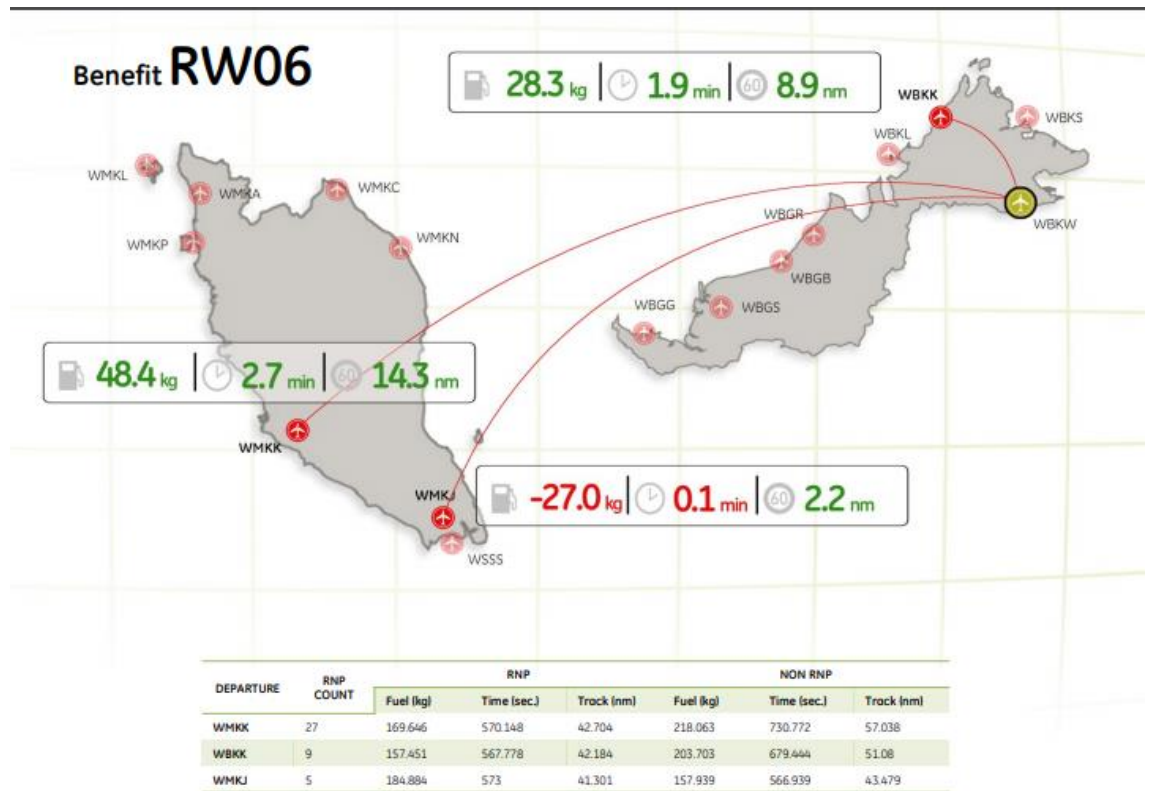
1.6 Under the current good rapport with the Malaysian military authorities, and under the joint user airspace concept, the military also supported the implementation of these procedures in airports where the military air traffic controllers are providing ATC services.

1.7 The DCA granted the nation's first RNP AR operations approval on 28 November 2013 following a successful RNP flight validation conducted at Penang on 18 October 2013.

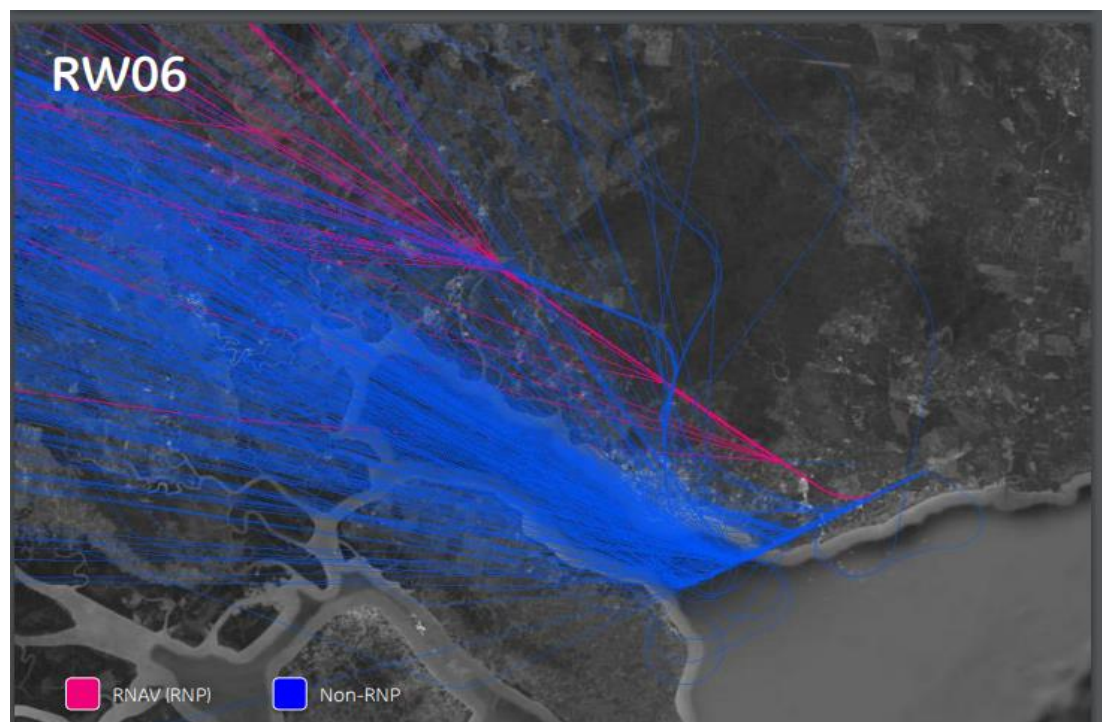
## 2. DISCUSSION

2.1 As an example, below are the graphics illustrating (i) fuel savings and (ii) track miles by AirAsia operating into Tawau airport which is located in KK FIR :

(i) Fuel Savings



(ii) Track Miles Savings



2.2 Though currently the existing precision procedures using ILS is still the primary instrument procedure, the CAAM has emphasized for ATC personnel to offer RNP AR approach to all those RNP AR certified operators 'on opportunity basis' when operating in the certified airports. Based on data provided by both air operators and ATC, the percentage of flights using these procedures are still low i.e. between 12- 18 % from the total number of daily flights. However, the statistics indicate an upward trend.

2.3 In order to encourage more participation of these procedures, regular surveys are conducted amongst all stakeholders including air operators, military, general aviation etc.in order to gather comments and queries. The objective is to understand barriers that may hinder the increased utilization rates and maximization of the potential / value to the operators.

2.4 Regarding the need for ATC personnel to actually observe the cockpit activity and thence to obtain a better understanding of the pilot's perspective / workload in this implementation, air operators have supported and facilitated an *ATC Familiarization Flight Programme*.

2.5 In term of equipage and pilot certification, the CAAM continues to encourage the air operators to upgrade their fleets in order for both operators and ANS providers to gain the benefits in terms of operational cost, airspace efficiencies, carbon / noise reduction, etc.

2.6 As the current RNP AR has not been certified for use under independent simultaneous approaches, implementation of these procedures at *Kuala Lumpur International Airport (KLIA)* has not started. KLIA is currently operated with precision Cat 1, VOR DME and RNP approach procedures.

#### Challenges face by ATC

2.7 ATC faces the challenge when offering the RNP AR procedures during mix mode runway operation. For example, in sequencing traffic, some pilots may question ATC when a re-sequence of arrival / landing is done after a succeeding traffic accepts the RNP AR approach, which eventually overtakes the preceding traffic which is using the conventional procedures.

#### Airport not served by Approach Surveillance Services

2.8 The opportunity to use RNP AR will be not available at airports where Approach Surveillance Services are not provided by the ATC provider, as separation and approaches are done procedurally.

### **3 ACTION BY THE MEETING**

3.1 The meeting is invited to note the information contained in this paper.

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