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**IMPLEMENTATION OF PERFORMANCE-BASED SEPARATION MINIMA IN
KUALA LUMPUR FLIGHT INFORMATION REGION**

1 PURPOSE

1.1 The purpose of this circular is to provide guidance to aircraft operators on the material to be included in pilot and dispatcher training programs and operations manuals to prepare them for operations in the oceanic airspace of Kuala Lumpur Flight Information Region (FIR) under performance-based separation minima.

2 OVERVIEW

2.1 Performance-based separation minima predicated on Performance-based Communications and Surveillance (PBCS) and Performance-based Navigation (PBN), in accordance with ICAO Doc 4444 Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) are planned for implementation in the oceanic airspace of Kuala Lumpur FIR. Appropriate AIP publications will be issued in due time prior to commencement.

2.2 Separation Minima

a) Lateral

- i. 50 NM lateral separation minima will be applied between aircraft which are approved for RNP 10/RNP 4.
- ii. 23 NM lateral separation minima will be applied between aircraft which are approved for RNP 4/RNP 2.

b) Longitudinal

- i. 50 NM longitudinal separation minima will be applied between aircraft which are approved for RNP 10/RNP 4.
- ii. 30 NM longitudinal separation minima will be applied between aircraft which are approved for RNP 4/RNP 2.

2.3 Designated ATS Routes and segments

| Route | Segment |
|--------------------|-------------------------|
| P574 | Between ANSAX and NOPEK |
| N571 | Between GUNIP and IGOGU |
| N571/Y338/L510 (W) | Between GUNIP and EMRAN |
| L510/P628 (E) | Between EMRAN and VPL |
| P628 | Between VPL and IGREX |
| L645 | Between SAPAM and SAMAK |

Table 2.1

3 OPERATOR/AIRCRAFT ELIGIBILITY

3.1 Operators shall consult with the State authority for their operation to obtain appropriate PBCS and PBN approval in order to be eligible for the performance-based separation minima. (Aircraft Eligibility) The aircraft manufacturer or equipment supplier should demonstrate that aircraft system meets the required communication performance (RCP)/ required surveillance performance (RSP) specifications allocated to the aircraft system as contained in PBCS Manual and CAAM CAD 6. The demonstration of compliance with the RCP and RSP specifications should be specific to each individual airframe or the combination of the aircraft type and configuration.

3.2 In addition to the indication of compliance with specific RCP/RSP specifications, the aircraft manufacturer or equipment supplier should document any associated operating limitations, information and procedures in AFM or other appropriate documents. The aircraft manufacturer or equipment supplier should identify any specific items related to PBCS capability in the master minimum equipment list (MMEL) and / or minimum equipment list (MEL).

3.3 Malaysian registered operators shall refer to the **Civil Aviation Directives** (CAD 6) and **Civil Aviation Guidance Material** (CAGM 6008 (VI)) for the purpose of approval or validation. Foreign registered operators shall meet the requirements of their State Authority.

Note: Information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance-based Communication and Surveillance (PBCS) Manual (ICAO Doc 9869) and CAGM 6008 (VI) - NAT HLA, PBCS, CPDLC & ADS.

3.4 Eligibility for the provision of performance-based minima is based on the following table below:

| | Required Navigation Performance (RNP) | | | FANS 1/A CPDLC ADS-C | RCP240 | RSP180 |
|------------------------------|---------------------------------------|-----|-----|-------------------------|--------|--------|
| | 10 | 4 | 2 | | | |
| 50NM longitudinal separation | YES | YES | - | YES | YES | YES |
| 30NM longitudinal separation | - | YES | YES | | | |
| 23 NM lateral separation | - | YES | YES | | | |

Table 3.1

3.5 Operators are eligible to file FPL to operate on published ATS routes as shown in Table 2.1 (Designated ATS routes and segment) provided the flights comply with the requirement as follows:

- a) Authorised for RNP 10;
- b) Authorised for RNP 4; or
- c) Authorised for RNP 2;
- d) Equipped with and operating FANS 1/A CPDLC and ADS-C; and
- e) Authorised for RCP 240 and RSP 180.

3.6 PBN-based separation will be based on the concept of 'best equipped or capable, best served' and 'most capable, best served'.

3.7 In accordance with ICAO Annex 6, for operations where communication equipment is required to meet an RCP and RSP specification for PBCS, an aircraft shall:

- a) be provided with communication equipment that will enable it to operate in accordance with the prescribed RCP and RSP specification(s);
- b) have information relevant to the aircraft RCP and RSP specification capabilities listed in the flight manual or other aircraft documentation approved by the State of Registry;
- c) have information relevant to the aircraft RCP and RSP specification capabilities included in the Minimum Equipment List (MEL); and
- d) be authorised by the CAAM for operations in such airspace for local operators. For foreign operators, operations shall be approved by the State Authority

3.8 The State of the Operator shall, for operations where an RCP and RSP specification for PBCS has been prescribed, ensure that the operator has established and documented:

- a) normal and abnormal procedures, including contingency procedures;
- b) flight crew qualification and proficiency requirements, in accordance with appropriate RCP/RSP specifications;
- c) a training programme for relevant personnel consistent with the intended operations;
- d) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RCP and RSP specifications.
- e) the equipment in accordance with the required communication performance;
- f) identify the specific aircraft to be used for the operations for which approval is sought;
- g) demonstrate that any aeroplane so identified is appropriately equipped to perform in accordance with the required communication performance specified by the appropriate air traffic service authority for the airspace or along the route for which the approval is sought; and
- h) specify the airspace or routes for which approval is sought.

3.9 The State of the Operator shall also ensure that, in respect of the foregoing operations, adequate provisions exist for:

- a) receiving the reports of observed communication performance issued by monitoring programmes established in accordance with Annex 11, Chapter 3, para 3.3.5.2; and
- b) taking immediate corrective action for individual aircraft, aircraft types or operators, identified in such reports as not complying with the RCP and RSP specification(s).

4 EQUIPMENT DEGRADATION

4.1 Whenever, as a result of failure or degradation of navigation, communications and aircraft performance is degraded below the level required for performance-based separation in which it is operating, the flight crew shall advise the controller without delay. Where the failure or degradation affects the separation minimum currently being employed, the controller shall take action to establish another appropriate type of separation or separation minimum.

5 FLIGHT PLANNING PROVISIONS

5.1 Operators must file the correct ICAO Flight Plan annotations in Items 10 and 18 to indicate that required equipment and authorizations are available for the flight.

a) Indicate in item 10 letters:

| ITEM 10 | DESCRIPTOR |
|----------------------------------|------------|
| RNP specification | R |
| RCP240 | P2 |
| CPDLC ATN VDL Mode 2 (ATN B1) | J1 |
| CPDLC FANS 1/A HFDL | J2 |
| CPDLC FANS 1/A VDL Mode 0/A | J3 |
| CPDLC FANS 1/A VDL Mode 2 | J4 |
| CPDLC FANS 1/A SATCOM (INMARSAT) | J5 |
| CPDLC FANS 1/A SATCOM (MTSAT) | J6 |
| CPDLC FANS 1/A SATCOM (Iridium) | J7 |
| ADS-C with FANS 1/A capabilities | D1 |
| ADS-C with ATN | G1 |

Table 5.1

b) Indicate in item 18:

| ITEM 18 | DESCRIPTOR |
|---------|------------|
| RNP10 | PBN/A1 |
| RNP 4 | PBN/L1 |
| RNP 2 | NAV/RNP 2 |
| RSP180 | SUR/RSP180 |

Table 5.2

6 MALAYSIA PBCS IMPLEMENTATION PLAN ROADMAPS

6.1 Below is the proposed timeline for implementation of performance-based separation minima in the oceanic airspace of Kuala Lumpur FIR.

a) Phase 1 (As soon as possible):

50 NM longitudinal and 50 NM lateral performance-based separation to be applied between pair of RNP 10/ RNP 4 approved aircraft.

b) Phase 2 (Tentatively by 1 March 2024):

i. ADS-C/CPDLC mandate.

ii. Trial implementation of 30 NM longitudinal / 23 NM lateral performance-based separation between any pair or combination of RNP 4 / RNP 2 approved aircraft.

c) Phase 3 (Tentatively by March 2026):

Permanent implementation of 30 NM longitudinal / 23 NM lateral performance-based separation.

6.2 The AIP Supplement and AIP amendment will be published prior to the trial and permanent implementation as appropriate.

7 Contacts

7.1 The following personnel may be contacted for information or to provide feedback on PBCS operations:

Flight Operations Division

ops.pbcsc@caam.gov.my

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