

## Asia/Pacific Air Navigation Concept of Operations

1.1 The following principles supporting an APAC Concept of Operations are intended to be the ‘default’ operations environment so that States can specify expected facilities and standards in accordance with a specified timeframe, so airlines could plan for the appropriate equipage.

- The delivery of CNS/ATM services should be based primarily on the CNS/ATM capability. It is understood that a transition period for the enablement of capabilities and or enhancements may be necessary.
- **Flight Information Regions:** FIR boundaries should not limit the delivery of surveillance separation services (this requires Letters of Agreement and data sharing to facilitate seamless Transfer of Control). Where possible the number of FIRs should be minimized particularly along traffic flows. FIRs should not necessarily be based strictly on the boundaries of sovereign territories.
- **Special Use Airspace:** SUA should only be established<sup>1</sup> after due consideration of the impact on civil air traffic, and must be regularly reviewed by the appropriate State Airspace Authority to ensure that it is:
  - being used for the purpose that it was established;
  - being used regularly;
  - as small as possible; and
  - activated only when it is being utilised in accordance with the Flexible Use Airspace concept.
- **Communication:** areas where VHF (Very High Frequency) communications are not possible must be provided with a minimum communications services based on CPDLC (Controller Pilot Datalink Communications) capability, backed up by HF (High Frequency) or SATVOICE (Satellite Voice Communications).
- **Navigation:** air-routes above FL195 and within terminal controlled airspace (CTA and CTR) associated with major international aerodrome must be PBN based with an appropriate specification determined by the Airspace Authority (such as en-route RNP2, terminal RNP1/0.3) based on the GANP and the Regional Navigation Strategy.
- **Surveillance:** in areas where the provision of direct ATS surveillance is possible, ATC separation must be based on these surveillance systems (i.e. radar, multilateration and ADS-B). In areas where direct surveillance is not possible, ADS-C surveillance (and associated CPDLC capability) must be enabled providing reduced horizontal separations (i.e. RNP4 30/30 and planning for RNP2).
- Establishing equipage mandates requiring operators to equip with a specific technology is an acceptable concept provided the timeline for compliance is developed after due consultation and the benefits in equipage are clearly identified and agreed<sup>2</sup>.

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<sup>1</sup> Restricted areas must not be established over the high seas or over waters of undetermined sovereignty (reference: Annex 11 definition of restricted areas).

<sup>2</sup> Examples of this concept are the ADS-B mandate established by Australia, and those being established by Hong Kong China and Singapore.

- **Safety Nets:** powered aeroplanes operating above FL195 and within terminal controlled airspace (CTA and CTR) associated with major international aerodrome must have an operable mode S transponder, ACAS (airborne collision avoidance system), and the ATS surveillance systems must be fitted with STCA (Short Term Conflict Alert) and MSAW (Minimum Safe Altitude Warning).
- **Priority:** in each case where a minimum aircraft equipage is specified for this Concept, any aircraft that does not meet these requirements should receive a lower priority, except where prescribed (such as for State aircraft). States should require State aircraft to conform with the Concept of Operations wherever possible.
- **ATM Systems:** ATM system design should enable appropriate ATC capabilities including Conflict Prediction and Resolution (CPAR), AIDC (ATS Inter-facility Datalink Communications), and A/D-MAN (Arrival/Departure Management).
- **ATFM:** flow management requirements to enhance capacity should be implemented for all major traffic flows and major aerodrome terminal operations, using bi-lateral and multi-lateral agreements, as well as CDM (Collaborative Decision-Making) procedures.

1.2 The APAC Concept of Operations should be applied against the Major Traffic Flows identified in the GANP (Global Air Navigation Plan). The following table is not part of the Concept of Operations itself but is an example of how concepts could be applied with the expectation that the navigation specification would deliver appropriate separation standards.

Areas (AR)	Homogeneous ATM areas/ Major Traffic Flows/Routes	Operational Concept
AR1	Asia/Australia and Africa	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR2	Asia (Indonesia north to China, Japan and the Republic of Korea), Australia/New Zealand	RNAV5/RNAV2 based on direct surveillance/ VHF and planned RNAV1/RNP2
AR3	Asia and Europe via north of the Himalayas	RNAV5/RNAV2 based on direct surveillance/ VHF and planned RNAV1/RNP2
AR4	Asia and Europe via south of the Himalayas	Combination of: <ul style="list-style-type: none"> <li>• RNP4 based on ADS-C/CPDLC and planned RNP 2</li> <li>• RNAV5/RNAV2 based on direct surveillance/ VHF and planned RNAV1/RNP2</li> </ul>
AR5	Asia and North America via the Russian Far East and the Polar Tracks via the Arctic Ocean and Siberia	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR6	Asia and North America via the Central and North Pacific	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR7	New Zealand/Australia and South America	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR8	Australia/New Zealand, the South Pacific Islands and North America	RNP4 based on ADS-C/CPDLC and planned RNP 2
AR9	South-East Asia and China, Republic of Korea, and Japan	RNAV5/RNAV2 based on direct surveillance/ VHF and planned RNAV1/RNP2