



International Civil Aviation Organization

**The Second Meeting of the APANPIRG ATM Sub-Group
(ATM /SG/2)**

Hong Kong, China, 04-08 August 2014

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

PERFORMANCE-BASED AIRSPACE REGIONAL SUPPLEMENTARY PROCEDURES

(Presented by the Secretariat)

SUMMARY

This paper presents Proposals for Amendments to Regional Supplementary Procedures (ICAO Doc 7030) to support State mandates for performance-based airspace including PBN airspace and Mode S SSR transponder, ACAS II, ADS-C, CPDLC and ADS-B equipage for aircraft operating outside territorial airspace, within the area of responsibility of the State.

1. INTRODUCTION

1.1 The ICAO Regional Supplementary Procedures (SUPPS) form the procedural part of the Air Navigation Plans developed by Regional Air Navigation (RAN) Meetings to meet those needs of specific areas which are not covered in either the Annexes to the Convention on Civil Aviation or the Procedures for Air Navigation Services (PANS). The RAN Meeting function for the Asia/Pacific Region is carried out by the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG).

1.2 SUPPS approved by the Council of ICAO are recommended to Contracting States for application in the Flight Information Regions (FIRs) to which they are relevant.

1.3 APANPIRG has adopted Conclusions supporting mandates for the carriage and use of ADS-B, ADS-C and CPDLC equipment within portions of airspace within their area of responsibility, and priority for access to such airspace.

1.4 The Preferred Aerodrome/Airspace and Route Specifications (PARS) and Preferred ATM Service Levels (PASL) of the Asia/Pacific Seamless ATM Plan's Performance Improvement Plan includes expectations of performance-based improvements including requirements for carriage of Mode S SSR transponders and ACAS, and PBN-based separations requiring the carriage of ADS-C and CPDLC equipment. In many cases in the Asia/Pacific Region the airspace within which these improvements are is over the high seas, outside territorial airspace.

2. DISCUSSION

2.1 The following APANPIRG Conclusions support mandates for equipment carriage and performance-based navigation outside territorial airspace but within the area of responsibility of States:

Conclusion 22/8 – ADS-B Airspace Mandate

That, States intending to implement ADS-B based surveillance services may designate portions of airspace within their area of responsibility:

- a) *mandate the carriage and use of ADS-B equipment; or*
- b) *provide priority for access to such airspace for aircraft with operative ADS-B as equipment over those aircraft not operating ADS-B equipment.*

Conclusion 22/36 – Amendment to Regional Supplementary Procedures on ADS-B

That, the Regional Supplementary Procedure Doc7030 MID/ASIA Chapter 5 be amended in accordance with the established procedure to include regional requirements on ADS-B as provided in the Appendix N to the report on Agenda Item 3.4.

Conclusion 23/5 – Asia/Pacific Air Navigation Concept of Operations Mandates

That, States intending to implement Performance-Based Navigation and Safety Nets may, after appropriate consultation with airspace users, designate portions of airspace within their area of responsibility:

- a) *as providing priority for access to such airspace for aircraft with prescribed Performance-Based Navigation (PBN) specifications and supporting data-link equipage (ADS-C/CPDLC); and/or*
- b) *mandating the carriage and use of an operable Automatic Dependent Surveillance-Contract/ Controller Pilot Data-link Communications Systems (ADS-C/CPDLC) system, and mode A/C and/or mode S transponder.*

Conclusion 24/39 – Asia/Pacific Regional PBN Implementation Plan Ver. 4

*That, recognizing the need for alignment of PBN Strategies and Guidance Material, as well as development of the Asia/Pacific Seamless ATM Plan, the Asia/Pacific Regional PBN Implementation Plan Version 4.0, provided in **Appendix F** to the Report on Agenda Item 3.4 be adopted.*

2.2 The following Proposals for Amendment (PfA) to *Regional Supplementary Procedures ICAO Doc 7030/5* have been drafted by the ICAO Asia/Pacific Regional Office:

- APAC-S 14/07 – MID/ASIA/PAC (**Attachment A**), supporting State mandates for carriage and operation of serviceable CPDLC equipment;
- APAC-S 14/08 – MID/ASIA/PAC (**Attachment B**), removing reference to the redundant standard RNP 12.6, and supporting State PBN airspace mandates; and
- APAC-S 14/09 – MID/ASIA/PAC (**Attachment C**), supporting State mandates for carriage and operation of serviceable of SSR Mode S transponders, ACAS II, ADS-C and ADS-B equipment.

2.3 The PfAs are intended to provide a framework for Asia/Pacific States to establish performance-based airspace by enabling States to promulgate PBN airspace and equipage mandates in airspace over the High Seas. They are intended to encourage a regional approach to the establishment of such mandates, where it is appropriate to do so. The proposals recognize that unlike the cases of Europe, the North Atlantic or North America it is not practical for the Asia/Pacific Region to establish Sub-Regional or Region-wide simultaneous mandates.

2.4 The proposed amendments are in accordance with the concept of Seamless ATM and performance-based approaches, the Global Air Navigation Plan's Aviation System Block Upgrade (ASBU) initiative and the Global Air Traffic Management Operational Concept (ICAO Doc 9854). They provide an enabler for States to plan and implement the performance objectives of the Seamless ATM Plan in an effective and coordinated manner.

2.5 In response to Recommendation 6/11 of the Twelfth Air Navigation Conference (AN-Conf/12) Doc 7030 *Regional Supplementary Procedures* is in the process of being aligned with Regional Air Navigation Plans. To facilitate this realignment ICAO Headquarters has declared a moratorium on the processing of Doc. 7030 amendments from May to October 2014. The attached PfA's will be modified as necessary by Regional Office to reflect the realignment of Doc 7030 before submission.

2.6 Following endorsement by APANPIRG the PfAs will be formally circulated to States and International Organizations before then being submitted for Council approval in late October 2014.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss the principle of performance based airspace and the Regional Supplementary Procedures necessary to support State mandates.

**Proposal for Amendment of
Regional Supplementary Procedures ICAO Doc 7030/3**
(Serial No. APAC-S 14/07 – MID/ASIA/PAC)

- a) **Regional Supplementary Procedures, Doc 7030/3:** MID/ASIA and PAC
- b) **Proposing State:** ICAO
- c) **Proposed Amendment:** 1. On page MID/ASIA 3-2 dated 25/08/09

Insert the following text on 3.3.1:

3.3 Controller-Pilot Data Link Communications (CPDLC)

3.3.1 All aircraft operating within the following FIRs shall carry and operate serviceable CPDLC equipment within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Auckland Oceanic, Bangkok, Beijing, Brisbane, Chennai, Colombo, Delhi, Dhaka, Fukuoka, Guangzhou, Hanoi, Ho Chi Minh, Honiara, Hong Kong, Incheon, Jakarta, Kabul, Karachi, Kathmandu, Kolkata, Kota Kinabalu, Kuala Lumpur, Kunming, Lahore, Lanzhou, Male, Manila, Melbourne, Mumbai, Nauru, Phnom Penh, Port Moresby, Pyongyang, Sanya, Shanghai, Shenyang, Singapore, Taipei, Ujung Pandang, Ulan Bator, Urumqi, Vientiane, Wuhan, Yangon.

3.3.2 The portions of airspace referred to in 3.3.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

2. On page PAC 3-2 dated 30/11/07

Insert the following text on 3.3.1:

3.3 Controller-Pilot Data Link Communications (CPDLC)

3.3.1 All aircraft operating within the following FIRs shall carry and operate serviceable CPDLC equipment within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Anchorage Oceanic, Auckland Oceanic, Nadi, Tahiti.

3.3.2 The portions of airspace referred to in 3.3.1 may only be designated after the following actions had been undertaken:

a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;

b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;

c) appropriate pilot and ATC training;

d) the ability to provide an enhanced service delivery; and

e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

d) Proposers' Reasons for Amendment:

Since 2011, the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) has agreed to a number of Conclusions designed to facilitate the enhancement of Air Navigation Services (ANS) within performance-based airspace. In essence, APANPIRG endorsed the concept of airspace mandates to improve the safety and efficiency of airspace, as long as there was appropriate consultation and a performance benefit to airspace users. The development of the Seamless ATM Plan in 2013 was the main mechanism for States to improve ANS and airspace performance on a region-wide basis. The Conclusions are as follows:

APANPIRG/23 (2012)

Conclusion 23/5 – Asia/Pacific Air Navigation Concept of Operations Mandates

That, States intending to implement Performance-Based Navigation and Safety Nets may, after appropriate consultation with airspace users, designate portions of airspace within their area of responsibility:

a) as providing priority for access to such airspace for

aircraft with prescribed Performance-Based Navigation (PBN) specifications and supporting data-link equipage (ADS-C/CPDLC); and/or
b) mandating the carriage and use of an operable Automatic Dependent Surveillance-Contract/ Controller Pilot Data-link Communications Systems (ADS-C/CPDLC) system, and mode A/C and/or mode S transponder.

While it is recognised that States may introduce restrictions and performance-based measures over their sovereign territory, mandates over the High Seas need to be implemented in line with regional air navigation agreements; in this case through APANPIRG. Thus it is necessary to introduce an amendment to the Regional Supplementary Procedures (ICAO Doc 7030) for Asia/Pacific FIRs that allows States to designate portions of performance-based airspace when they are able to provide the performance benefit and in accordance with aircraft equipage and capability.

The level of ANS capability and aircraft equipage varies throughout the Asia/Pacific, so it is intended that States will designate airspace when possible, in either exclusive or ‘non-exclusive’ (mixed mode with lower priority for non-equipped aircraft), as appropriate.

e) **Proposed Implementation Date of the Amendment** Upon approval of the Council

f) Proposal Circulated to the Following States and International Organizations:	Afghanistan	Mongolia
	Australia	Myanmar
	Bangladesh	Nauru
	Brunei Darussalam	New Zealand
	Cambodia	Palau, Republic of
	China	Papua New Guinea
	(cc: Hong Kong, China)	Philippines
	(cc: Macao, China)	Republic of Korea
	Cook Islands	Samoa
	Democratic People’s Republic of Korea	Singapore
	Fiji	Solomon Islands
	France	Sri Lanka
	Indonesia	Thailand
	Japan	Timor-Leste
	Kiribati	Tonga
	Lao People’s Democratic Republic	United States
	Malaysia	Vanuatu
	Maldives	Viet Nam
	Marshall Islands	IATA
	Micronesia, Federated States of	IFALPA
	IFATCA	

g) Secretariat Comments:

This Doc 7030 amendment proposal in respect of CPDLC, together with amendment proposals APAC-S 14/08 and 14/09 for MID/ASIA and PAC Regions, provides a framework for the state to establish performance based airspace, with consideration of such matters as existing and proposed airspace user equipages, mandate timing, definition of airspace volumes (both vertical and horizontal), exclusive or non-exclusive application, exemption provisions and management of State aircraft.

The amendment is specifically intended to enable States to promulgate airspace mandates over the High Seas, and to encourage a regional approach to the establishment of such mandates, where it is appropriate to do so and recognizing that it is not practical for the Asia/Pacific Region to establish Sub-Regional or Region-wide simultaneous mandates. This is in accordance with the concept of the Seamless ATM and performance-based approaches, as well as the Aviation System Block Upgrade (ASBU) initiative and Global Air Traffic Management Operational Concept (ICAO Doc 9854).

**Proposal for Amendment of
Regional Supplementary Procedures ICAO Doc 7030/4**
(Serial No. APAC-S 14/08 – MID/ASIA/PAC)

- a) **Regional Supplementary Procedures, Doc 7030/4:** MID/ASIA/PAC
- b) **Proposing State:** ICAO
- c) **Proposed Amendment:** 1. On page MID/ASIA 4-2 dated 27/03/12

Delete the following text using strikeout on 4.1.1.5.1:

~~4.1.1.5.1 RNP 12.6~~

Area of applicability

~~4.1.1.5.1.1 For flights on controlled oceanic routes across the Tasman Sea within the Auckland Oceanic, Brisbane, Melbourne and New Zealand FIRs and for flights across the South China Sea within Bangkok, Hanoi, Ho Chi Minh, Hong Kong, Kota Kinabalu, Kuala Lumpur, Manila, Taipei and Singapore FIRs, the minimum lateral separation shall be 110 km (60 NM).~~

Means of compliance

~~4.1.1.5.1.2 For application of 4.1.1.5.1.1, aircraft must be RNAV equipped and RNAV approved using inertial navigation systems (INS) provided that:~~

- ~~a) the INS is updated at least every 4.5 hours;~~
- ~~b) the standard deviation of lateral track errors shall be less than 11.7 km (6.3 NM);~~
- ~~e) the proportion of the total flight time spent by aircraft 55.5 km (30 NM) or more off the cleared track shall be less than 5.3×10^{-4} ; and~~
- ~~d) the proportion of the total flight time spent by aircraft between 93 and 130 km (50 and 70 NM) off the cleared track shall be less than 13×10^{-4}~~

~~Such navigation performance capability shall be verified by the State of Registry or the State of the Operator, as appropriate. Lateral separation of 185 km (100 NM), or greater if required, shall be used if the track-keeping capability of the aircraft has been reduced for any reason.~~

~~*Note.— The navigation performance accuracy contained in b) is considered to be comparable to RNP 12.6 or better.*~~

~~4.1.1.5.1.3 When granting approval for operations as indicated in 4.1.1.5.1.1, either the State of Registry or the State of the Operator shall ensure that in flight operating drills include mandatory navigation cross-checking procedures which will identify navigation errors in sufficient time to prevent the aircraft from inadvertently deviating from the ATC cleared route.~~

2. On page MID/ASIA 4-4 dated 27/03/12

Insert the following text on 4.1.3:

4.1.3 PBN Airspace Mandates

4.1.3.1 All aircraft operating within the following FIRs shall be approved by the State of Registry (or the State of the Operator as appropriate) to PBN navigation specifications within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Auckland Oceanic, Bangkok, Beijing, Brisbane, Chennai, Colombo, Delhi, Dhaka, Fukuoka, Guangzhou, Hanoi, Ho Chi Minh, Honiara, Hong Kong, Incheon, Jakarta, Kabul, Karachi, Kathmandu, Kolkata, Kota Kinabalu, Kuala Lumpur, Kunming, Lahore, Lanzhou, Male, Manila, Melbourne, Mumbai, Nauru, Phnom Penh, Port Moresby, Pyongyang, Sanya, Shanghai, Shenyang, Singapore, Taipei, Ujung Pandang, Ulan Bator, Urumqi, Vientiane, Wuhan, Yangon.

4.1.3.2 The portions of airspace referred to in 4.1.3.2 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

3. On page PAC 4 – 3 dated 30/11/07

Insert the following text on 4.1.3:

4.1.3 PBN Airspace Mandates

4.1.3.1 All aircraft operating within the following FIRs shall be approved by the State of Registry (or the State of the Operator as appropriate) to PBN navigation specifications within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Anchorage Oceanic, Auckland Oceanic, Nadi, Tahiti.

4.1.3.2 The portions of airspace referred to in 4.1.3.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

d) Proposers' Reasons for Amendment:

The existing section 4.1.1.5.1 refers only to RNP 12.6, which is a redundant RNP standard, no longer in use.

Since 2011, the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) has agreed to a number of Conclusions designed to facilitate the enhancement of Air Navigation Services (ANS) within performance-based airspace. In essence, APANPIRG endorsed the concept of airspace mandates to improve the safety and efficiency of airspace, as long as there was appropriate consultation and a performance benefit to airspace users. The development of the Seamless ATM Plan in 2013 was the main mechanism for States to improve ANS and airspace performance on a region-wide basis. The Conclusions are as follows:

APANPIRG/24 (2013)

Conclusion 24/39 - Asia/Pacific Regional PBN Implementation Plan Ver. 4

That, recognizing the need for alignment of PBN Strategies and Guidance Material, as well as development of the Asia/Pacific Seamless ATM Plan, the Asia/Pacific Regional PBN Implementation Plan Version 4.0, provided in **Appendix F** to the Report on Agenda Item 3.4 be adopted.

While it is recognised that States may introduce restrictions and performance-based measures over their sovereign territory, mandates over the High Seas need to be implemented in line with regional air navigation agreements; in this case through APANPIRG. Thus it is necessary to introduce an amendment to the Regional Supplementary Procedures (ICAO Doc 7030) for Asia/Pacific FIRs that allows States to designate portions of performance-based airspace when they are able to provide the performance benefit and in accordance with aircraft equipment and capability.

The level of ANS capability and aircraft equipage varies throughout the Asia/Pacific, so it is intended that States will designate airspace when possible, in either exclusive or 'non-exclusive' (mixed mode with lower priority for non-equipped aircraft), as appropriate.

**e) Proposed Implementation
Date of the Amendment**

Upon approval of the Council

**f) Proposal Circulated to the
Following States and
International Organizations:**

Afghanistan	Mongolia
Australia	Myanmar
Bangladesh	Nauru
Brunei Darussalam	New Zealand
Cambodia	Palau, Republic of
China	Papua New Guinea
(cc: Hong Kong, China)	Philippines
(cc: Macao, China)	Republic of Korea
Cook Islands	Samoa
Democratic People's Republic of Korea	Singapore
Fiji	Solomon Islands
France	Sri Lanka
Indonesia	Thailand
Japan	Timor-Leste
Kiribati	Tonga
Lao People's Democratic Republic	United States
Malaysia	Vanuatu
Maldives	Viet Nam
Marshall Islands	IATA
Micronesia, Federated States of	IFALPA
	IFATCA

g) Secretariat Comments:

This Doc 7030 amendment proposal in respect of PBN, together with amendment proposals APAC-S 14/07 and 14/09 for MID/ASIA and PAC Regions, provides a framework for the state to establish performance based airspace, with consideration of such matters as existing and proposed airspace user equipages, mandate timing, definition of airspace volumes (both vertical and horizontal), exclusive or non-exclusive application, exemption provisions and management of State aircraft.

The amendment is specifically intended to enable States to

promulgate airspace mandates over the High Seas, and to encourage a regional approach to the establishment of such mandates, where it is appropriate to do so and recognizing that it is not practical for the Asia/Pacific Region to establish Sub-Regional or Region-wide simultaneous mandates. This is in accordance with the concept of the Seamless ATM and performance-based approaches, as well as the Aviation System Block Upgrade (ASBU) initiative and Global Air Traffic Management Operational Concept (ICAO Doc 9854).

**Proposal for Amendment of
Regional Supplementary Procedures ICAO Doc 7030/5**
(Serial No. APAC-S 14/09 – MID/ASIA/PAC)

- a) **Regional Supplementary Procedures, Doc 7030/5:** MID/ASIA and PAC
- b) **Proposing State:** ICAO
- c) **Proposed Amendment:** 1. On page MID/ASIA 5-2 dated 30/11/07

5.2.1 Carriage and operation of SSR Mode S

Insert the following text on 5.2.1.1:

5.2.1.1 All aircraft operating within the following FIRs shall carry and operate a serviceable SSR Mode S facility within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Auckland Oceanic, Bangkok, Beijing, Brisbane, Chennai, Colombo, Delhi, Dhaka, Fukuoka, Guangzhou, Hanoi, Ho Chi Minh, Honiara, Hong Kong, Incheon, Jakarta, Kabul, Karachi, Kathmandu, Kolkata, Kota Kinabalu, Kuala Lumpur, Kunming, Lahore, Lanzhou, Male, Manila, Melbourne, Mumbai, Nauru, Phnom Penh, Port Moresby, Pyongyang, Sanya, Shanghai, Shenyang, Singapore, Taipei, Ujung Pandang, Ulan Bator, Urumqi, Vientiane, Wuhan, Yangon.

5.2.1.2 The portions of airspace referred to in 5.2.1.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

2. On page PAC 5-2 dated 30/11/07

Insert the following text on 5.2.1.1:

5.2.1 Carriage and operation of SSR Mode S

5.2.1.1 All aircraft operating within the following FIRs shall carry and operate a serviceable SSR Mode S facility within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Anchorage Oceanic, Auckland Oceanic, Nadi, Tahiti.

5.2.1.2 The portions of airspace referred to in 5.2.1.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

3. On page MID/ASIA 5-2 dated 30/11/07

5.3.1 Carriage and operation of ACAS II

Insert the following text on 5.3.1.1:

5.3.1.1 All aircraft operating within the following FIRs shall carry and operate a serviceable ACAS II facility within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Auckland Oceanic, Bangkok, Beijing, Brisbane, Chennai, Colombo, Dhaka, Delhi, Fukuoka, Guangzhou, Hanoi, Ho Chi Minh, Honiara, Hong Kong, Incheon, Jakarta, Kabul, Karachi, Kathmandu, Kota Kinabalu, Kolkata, Kuala Lumpur, Kunming, Lahore, Lanzhou, Male, Manila, Melbourne, Mumbai, Nauru, Phnom Penh, Port Moresby, Pyongyang, Sanya, Shanghai, Shenyang, Singapore, Urumqi, Wuhan, Taibei, Ujung Pandang, Vientiane, Ulan Bator, Yangon.

5.3.1.2 The portions of airspace referred to in 5.3.1.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;

- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

4. On page PAC 5-2 dated 30/11/07

5.3.1 Carriage and operation of ACAS II

Insert the following text on 5.3.1.1:

5.3.1.1 All aircraft operating within the following FIRs shall carry and operate a serviceable ACAS II facility within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Anchorage Oceanic, Auckland Oceanic, Auckland Oceanic, Nadi, Tahiti.

5.3.1.2 The portions of airspace referred to in 5.3.1.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

5. On page MID/ASIA 5-3 dated 30/11/07

5.4 Automatic Dependent Surveillance – Contract (ADS–C)

Insert the following text on 5.4.1:

5.4.1 Carriage and operation of ADS–C

5.4.1.1 All aircraft operating within the following FIRs shall carry and operate a serviceable ADS – C facility within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Auckland Oceanic, Bangkok, Beijing, Brisbane, Chennai, Colombo, Delhi, Dhaka, Fukuoka, Guangzhou, Hanoi, Ho Chi Minh, Honiara, Hong Kong, Incheon, Jakarta, Kabul, Karachi, Kathmandu, Kolkata, Kota Kinabalu, Kuala Lumpur, Kunming, Lahore, Lanzhou, Male, Manila, Melbourne, Mumbai, Nauru, Phnom Penh, Port Moresby, Pyongyang, Sanya, Shanghai, Shenyang, Singapore, Taipei, Ujung Pandang, Ulan Bator, Urumqi, Vientiane, Wuhan, Yangon.

5.4.1.2 The portions of airspace referred to in 5.4.1.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

6. On page PAC 5-3 dated 30/11/07

5.4 Automatic Dependent Surveillance – Contract (ADS–C)

Insert the following text on 5.4.1:

5.4.1 Carriage and operation of ADS–C

5.4.1.1 All aircraft operating within the following FIRs shall carry and operate a serviceable ADS–C facility within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Anchorage Oceanic, Auckland Oceanic, Nadi, Tahiti.

5.4.1.2 The portions of airspace referred to in 5.4.1.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace

- users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

7. On page MID/ASIA 5-3 dated 30/11/07

5.5 Automatic Dependent Surveillance – Broadcast (ADS–B)

Insert the following text on 5.5.1:

5.5.1 Carriage and operation of ADS–B OUT

5.5.1.1 All aircraft operating within the following FIRs shall carry and operate serviceable ADS–B OUT equipment within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Auckland Oceanic, Bangkok, Beijing, Brisbane, Chennai, Colombo, Delhi, Dhaka, Fukuoka, Guangzhou, Hanoi, Ho Chi Minh, Honiara, Hong Kong, Incheon, Jakarta, Kabul, Karachi, Kathmandu, Kolkata, Kota Kinabalu, Kuala Lumpur, Kunming, Lahore, Lanzhou, Male, Manila, Melbourne, Mumbai, Nauru, Phnom Penh, Port Moresby, Pyongyang, Sanya, Shanghai, Shenyang, Singapore, Taibei, Ujung Pandang, Ulan Bator, Urumqi, Vientiane, Wuhan, Yangon.

5.5.1.2 The portions of airspace referred to in 5.5.1.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the

provisions of Annex 15.

8. On page PAC 5-3 dated 30/11/07

5.5 Automatic Dependent Surveillance – Contract (ADS–B)

Insert the following text on 5.5.1:

5.5.1 Carriage and operation of ADS–B OUT

5.5.1.1 All aircraft operating within the following FIRs shall carry and operate serviceable ADS–B OUT equipment within designated portions of airspace and the conditions mandated by the State with responsibility for the FIR concerned: Anchorage Oceanic, Auckland Oceanic, Nadi, Tahiti.

5.5.1.2 The portions of airspace referred to in 5.5.1.1 may only be designated after the following actions had been undertaken:

- a) appropriate consultation with affected airspace users and affected Air Traffic Control (ATC) units;
- b) conduct of a safety case, which includes, *inter alia*, a human factors review and the integration of data into the ATC workstation;
- c) appropriate pilot and ATC training;
- d) the ability to provide an enhanced service delivery; and
- e) promulgation of the airspace mandate with appropriate notice, and in accordance with the provisions of Annex 15.

d) Proposers' Reasons for Amendment:

Since 2011, the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) has agreed to a number of Conclusions designed to facilitate the enhancement of Air Navigation Services (ANS) within performance-based airspace. In essence, APANPIRG endorsed the concept of airspace mandates to improve the safety and efficiency of airspace, as long as there was appropriate consultation and a performance benefit to airspace users. The development of the Seamless ATM Plan in 2013 was the main mechanism for States to improve ANS and airspace performance on a region-wide basis. The Conclusions are as follows:

APANPIRG/22 (2011)

C 22/8 ADS-B Airspace Mandate

That, States intending to implement ADS-B based surveillance services may designate portions of airspace within their area of responsibility:

- a) mandate the carriage and use of ADS-B equipment; or
- b) provide priority for access to such airspace for aircraft with operative ADS-B as equipment over those aircraft not operating ADS-B equipment.

C 22/36 Amendment to Regional Supplementary Procedures on ADS-B

That, the Regional Supplementary Procedure Doc7030 MID/ASIA Chapter 5 be amended in accordance with the established procedure to include regional requirements on ADS-B as provided in the Appendix N to the report on Agenda Item 3.4.

APANPIRG/23 (2012)

Conclusion 23/5 – Asia/Pacific Air Navigation Concept of Operations Mandates

That, States intending to implement Performance-Based Navigation and Safety Nets may, after appropriate consultation with airspace users, designate portions of airspace within their area of responsibility:

- a) as providing priority for access to such airspace for aircraft with prescribed Performance-Based Navigation (PBN) specifications and supporting data-link equipage (ADS-C/CPDLC); and/or
- b) mandating the carriage and use of an operable Automatic Dependent Surveillance-Contract/Controller Pilot Data-link Communications Systems (ADS-C/CPDLC) system, and mode A/C and/or mode S transponder.

While it is recognised that States may introduce restrictions and performance-based measures over their sovereign territory, mandates over the High Seas need to be implemented in line with regional air navigation agreements; in this case through APANPIRG. Thus it is necessary to introduce an amendment to the Regional Supplementary Procedures (ICAO Doc 7030) for Asia/Pacific FIRs that allows States to designate portions of performance-based airspace when they are able to provide the performance benefit and in accordance with aircraft equipage and capability.

The level of ANS capability and aircraft equipage varies throughout the Asia/Pacific, so it is intended that States will

e) **Proposed Implementation Date of the Amendment:** designate airspace when possible, in either exclusive or ‘non-exclusive’ (mixed mode with lower priority for non-equipped aircraft), as appropriate.

f) **Proposal Circulated to the Following States and International Organizations:** Upon approval of the Council

Afghanistan	Mongolia
Australia	Myanmar
Bangladesh	Nauru
Brunei Darussalam	New Zealand
Cambodia	Palau, Republic of
China	Papua New Guinea
(cc: Hong Kong, China)	Philippines
(cc: Macao, China)	Republic of Korea
Cook Islands	Samoa
Democratic People’s Republic of Korea	Singapore
Fiji	Solomon Islands
France	Sri Lanka
Indonesia	Thailand
Japan	Timor-Leste
Kiribati	Tonga
Lao People’s Democratic Republic	United States
Malaysia	Vanuatu
Maldives	Viet Nam
Marshall Islands	IATA
Micronesia, Federated States of	IFALPA
	IFATCA

g) **Secretariat Comments:**

The amendment of Doc 7030 in respect of ADS-B, ADS-C, ACAS II and Mode S transponders, together with amendment proposals APAC-S 14/07 and 14/08 for MID/ASIA and PAC Regions, provides a framework for the state to establish performance based airspace, with consideration of such matters as existing and proposed airspace user equipages, mandate timing, definition of airspace volumes (both vertical and horizontal), exclusive or non-exclusive application, exemption provisions and management of State aircraft.

The amendment is specifically intended to enable States to promulgate airspace mandates over the High Seas, and to encourage a regional approach to the establishment of such mandates, where it is appropriate to do so and recognizing that it is not practical for the Asia/Pacific Region to establish Sub-Regional or Region-wide simultaneous mandates. This is in accordance with the concept of the Seamless ATM and performance-based approaches, as well as the Aviation System Block Upgrade (ASBU) initiative and Global Air Traffic

Management Operational Concept (ICAO Doc 9854).