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Ref.: T 3/10.1.17 – AP018/08 (ATM)

31 January 2008

**Subject:** Global Long Term RVSM Height Monitoring

**Action required:** To note and take action

Sir/Madam,

I have the honour to direct your attention to recent initiatives of the APANPIRG Regional Airspace Safety Monitoring Advisory Group (RASMAG) in relation to the pending implementation from 2010 of ICAO global provisions for the long term monitoring of the height keeping performance of individual airframes involved in RVSM operations.

To be approved for operation in RVSM airspace, aircraft must comply with technical requirements that ensure that the aircraft will accurately maintain the actual height cleared by air traffic services. Extensive height-keeping performance data was collected globally to demonstrate the stability of altimetry system error (ASE), but the results to date indicate that altimetry systems drift is more than what was previously expected. This situation has led to the amendment proposal to Annex 6 – *Operation of Aircraft*, as promulgated for State comments in ICAO State Letter ref: AN 13/11.1-07/72 of 7 December 2007, that requires States to establish mechanisms for monitoring height-keeping performance at specified periodicity. The Annex 6 amendment is proposed for implementation from November 2010.

Presently, the on-going monitoring of RVSM operations is undertaken globally by entities known as RVSM Regional Monitoring Agencies (RMAs), which are specifically established for this purpose in order to meet existing ICAO Standards which require such monitoring. For the Asia/Pacific region, APANPIRG endorsed RMA services are provided by:

- The Australian Airspace Monitoring Agency (AAMA) operated by Airservices Australia;
- The JCAB RMA operated by the Japan Civil Aviation Bureau;
- The Monitoring Agency for the Asia Region (MAAR) operated by Aeronautical Radio of Thailand (AEROTHAI); and
- The Pacific Approvals Registry and Monitoring Organization (PARMO) operated by the United States Federal Aviation Administration.

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Additionally the China RMA, operated by the Air Traffic Management Bureau (ATMB) of China, is presently undertaking the credentialing process to receive APANPIRG endorsement for the provision of RMA services for Chinese RVSM airspace. The FIRs for which each RMA takes responsibility have been described in the RASMAG "*List of Competent Airspace Safety Monitoring Organizations*" – a copy of which is included as **Attachment B**.

In considering these matters, the Eighteenth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/18, September 2007) recognized that the pending implementation of long term monitoring requirements would have significant impacts in the way regional monitoring was managed, including the need for widespread regional height monitoring capability to be made available. APANPIRG/18 was of the opinion that work should be undertaken as soon as possible in order to assess the consequences for the Asia/Pacific Region and, under the provisions of Conclusion 18/4, tasked Asia/Pacific RMAs to work with RASMAG to prepare a regional impact statement summarizing the estimated consequences for the Region.

The RASMAG meeting in late 2007 (RASMAG/8, December 2007) considered these matters at length. RASMAG/8 considered that although the final composition of the global long-term height monitoring provisions in Annex 6 was still subject to final resolution, it was reasonable to expect that an RMA would need to carry out at least the following tasks:

- a) Educate States and airspace users as to the roles and functions of an RMA,
- b) Establish the monitoring requirements to be satisfied by each operator,
- c) Coordinate with other RMAs so that monitoring results are shared, and
- d) Ensure that an adequate regional monitoring system infrastructure exists.

In order to progress these matters in a timely fashion, RASMAG/8 formulated six Long Term Height Monitoring (LTHM) Actions for regional promulgation, as outlined in **Attachment A** to this letter.

Accordingly, in order to ensure adequate preparations for the implementation of the global long term RVSM height monitoring provisions, States and Asia/Pacific RMAs are requested to review the work of RASMAG in the context of ICAO State Letter ref: AN 13/11.1-07/72 of 7 December 2007 and consider implementing early responses to the attached LTHM Actions identified by RASMAG/8. In particular, I would encourage all States to immediately strengthen relationships with their respective RMAs and ensure that robust mechanisms are in place to ensure that information in relation to RVSM approvals status is continuously available to RMAs.

Accept, Sir/Madam, the assurances of my highest consideration.



Mokhtar A. Awan  
Regional Director

**Attachments:**

- A – List of RASMAG Long Term Height Monitoring Actions
- B – RASMAG List of Competent Airspace Safety Monitoring Organizations

## **Long Term RVSM Height Monitoring Actions – Asia/Pacific Region**

APANPIRG/18 (September, 2007) was of the opinion that work should be undertaken as soon as possible in order to assess the consequences for the Asia/Pacific Region of the implementation of ICAO global long term RVSM height monitoring requirements from 2010 and, under the terms of Conclusion 18/4, requested Asia/Pacific Regional Monitoring Agencies (RMAs) in conjunction with the APANPIRG Regional Airspace Safety Monitoring Advisory Group (RASMAG) to prepare a regional impact statement summarizing the estimated consequences for the Region, including consideration of the numbers of airframes required to be monitored.

In order to progress these matters in a timely fashion, RASMAG/8 (December, 2007) formulated six Long Term Height Monitoring (LTHM) Actions for promulgation, as outlined below. More details in respect to each LTHM Action can be found in the RASMAG/8 report, available from the website of the ICAO Asia/Pacific Office at <http://www.bangkok.icao.int/> under the “Meetings” menu.

**LTHM Action 1:** Based on the final draft of the RMA Manual which was expected to be available from June 2008, Asia/Pacific RMAs in conjunction with RASMAG prepare and widely promulgate an information circular detailing, as a minimum, the roles and responsibilities of an RMA, the height monitoring process and equipment required, and the reasons and quantum of the global long term height monitoring requirements.

**LTHM Action 2:** To maintain effective delivery of existing RMA services and facilitate planning specifically designed to prepare for application of global long-term RVSM height monitoring requirements from 2010, each Asia/Pacific RMA should, as a matter of priority, bring to the attention of State regulators the difficulties being experienced by RMAs in receiving timely and accurate information (including routine large height deviation [LHD] reporting) from States. Asia/Pacific RMAs should seek assistance from States in implementing robust processes to:

- a) continuously update RMA databases of operators and aircraft holding State RVSM approvals;
- b) enable the expeditious forwarding of all LHD and related reports to RMAs, and
- c) ensure availability of current details for State RVSM Point of Contact (POC) officials.

**LTHM Action 3:** Whilst recognizing that responsibility for compliance with Annex 6 height monitoring provisions remains the responsibility of States, as soon as practicable each Asia/Pacific RMA, in conjunction with State regulatory authorities and airspace user organizations, should develop a methodology for reviewing the RMA database of RVSM approvals in order to develop and promulgate a list of the minimum height monitoring which must be accomplished by each operator to which the RMA provides services. In preparing this list, account should be taken of special circumstances pertaining to infrequent airspace users recognizing that some operators may be required to complete minimum monitoring requirements which are a function of the proposed 1,000-flying-hour limit rather than the two-year limit.

**LTHM Action 4:** After determining the potential monitoring burden posed by the operators to which it provides service, each Asia/Pacific RMA should examine monitoring results accumulated by all other authorized global RMAs, regardless of region, in order to utilize monitoring results from other regions to avoid duplication and reduce the actual monitoring burden the RMA faces.

**LTHM Action 5:** Each Asia/Pacific Region RMA should, in light of its anticipated height monitoring burden, propose recommendations through RASMAG to APANPIRG useful in determining the regional ground-based and GPS-based Monitoring System (GMS) height monitoring infrastructure necessary to enable its affiliated operators to meet the global long-term RVSM monitoring requirements applicable from November 2010.

**LTHM Action 6:** Asia/Pacific RMAs collaboratively investigate the technical feasibility of using the aircraft geometric height produced by ADS-B and Multilateration surveillance systems to support monitoring of aircraft height keeping performance.

..... *End* .....

**APANPIRG Asia/Pacific Airspace Safety Monitoring**

**RASMAG LIST OF COMPETENT AIRSPACE SAFETY MONITORING ORGANIZATIONS**

The Regional Airspace Safety Monitoring Advisory Group of APANPIRG (RASMAG) is required by its terms of reference to recommend and facilitate the implementation of airspace safety monitoring and performance assessment services and to review and recommend on the competency and compatibility of airspace monitoring organizations. In order to assist in addressing these requirements, RASMAG updates and distributes the following list of competent airspace safety monitoring organizations for use by States requiring airspace safety monitoring services. In the context of the list, abbreviations have meanings as follows:

- RMA – Regional Monitoring Agency – safety assessment in the vertical plane (i.e. RVSM);
- SMA – Safety Monitoring Agency – safety assessment in the horizontal plane (i.e. RHSM, RNP10, RNP4); and
- CRA – Central Reporting Agency – technical performance of data link systems (i.e. ADS/CPDLC)
- FIT – FANS 1/A Interoperability/Implementation Team – parent body to a CRA.

*(last updated 11 January 2008)*

Organisation <i>(including contact officer)</i>	State	Competency	Status	Airspace assessed (FIRs)
<b>Australian Airspace Monitoring Agency (AAMA) - Airservices Australia</b>  Mr. Robert Butcher, Manager Human Factors and Analysis, Safety Management Group, email: robert.butcher@airservicesaustralia.com	Australia	APANPIRG RMA	Current	Brisbane, Melbourne, Port Moresby, Nauru and Honiara FIRs.
		SMA	Current	Brisbane, Melbourne FIRs.

Organisation <i>(including contact officer)</i>	State	Competency	Status	Airspace assessed (FIRs)
<b>China RMA, Air Traffic Management Bureau, China</b>  Mr. Tang Jinxiang, Engineer of Safety and Monitoring Technical Group, ATMB e-mail: tangjx@adcc.com.cn	China	RMA	Current	Beijing, Guangzhou, Kunming, Lanzhou, Shanghai, Shenyang, Urumqi and Wuhan FIRs and Sector 01 (airspace over Hainan Island) of the Sanya FIR.
<b>JCAB RMA Japan Civil Aviation Bureau</b>  Mr. Masao Kondo, Special Assistant to the Director, Flight Procedures and Airspace Program Office, e-mail: kondou-m2pd@mlit.go.jp	Japan	APANPIRG RMA	Current	Fukuoka FIR
		SMA	Available second quarter – 2009	Fukuoka FIR
<b>Monitoring Agency for the Asia Region (MAAR)</b>  Dr. Paisit Herabat Executive Officer, Systems Engineering, Aeronautical Radio of Thailand Ltd. e-mail: paisit@aerothai.co.th	Thailand	APANPIRG RMA	Current	Bangkok, Kolkatta, Chennai, Colombo, Delhi, Dhaka, Hanoi, Ho Chi Minh, Hong Kong, Jakarta, Karachi, Kathmandu, Kota Kinabalu, Kuala Lumpur, Lahore, Male, Manila, Mumbai, Phnom Penh, Sanya FIR, Singapore, Taipei, Ujung Pandang, Ulaan Bataar, Vientiane, Yangon FIRs

Organisation <i>(including contact officer)</i>	State	Competency	Status	Airspace assessed (FIRs)
<b>Pacific Approvals Registry and Monitoring Organization (PARMO) - FAA</b> Mr. Brian Colamosca Manager, Separation Standards Analysis Group, FAA, e-mail: brian.colamosca@faa.gov	USA	APANPIRG RMA	Current	Anchorage Oceanic, Auckland Oceanic, Incheon, Nadi, Oakland Oceanic, Tahiti FIRs
<b>Civil Aviation Authority of Singapore (CAAS)</b>  Mr. Kuah Kong Beng, Chief Air Traffic Control Officer, e-mail: Kuah_Kong_Beng@caas.gov.sg	Civil Aviation Authority of Singapore (CAAS)	Monitoring Authority for Gross Navigation Error (GNE) in South China Sea	Current	Hong Kong, Ho Chi Minh, Manila, Sanya, Singapore FIRs,
		SMA	From 3 <sup>rd</sup> quarter 2008	Hong Kong, Ho Chi Minh, Manila, Sanya, Singapore FIRs,
<b>FIT/SEA</b>  (ICAO Regional Office email icao_apac@bangkok.icao.int &  CRA Japan Mr. Yoshiro Nakatsuji, Director, Air Traffic Control Association Japan, e-mail: naka@atcaj.or.jp	ICAO Regional Office & CRA Japan	FIT & CRA	Current	South China Sea FIRs

Organisation <i>(including contact officer)</i>	State	Competency	Status	Airspace assessed (FIRs)
<b>IPACG/FIT</b>  Mr. Hiroshi Inoguchi, JCAB Co-Chair, e-mail: Inoguchi-h2hh@mlit.go.jp & Mr. Reed Sladen, FAA Co-Chair, e-mail: reed.b.sladen@faa.gov	Japan & USA	FIT & CRA	Current	North & Central Pacific (Oceanic airspace within Fukuoka FIR, and Anchorage & Oakland FIRs)
<b>CRA Japan</b>  Mr. Yoshiro Nakatsuji, Director, Air Traffic Control Association Japan, e-mail: naka@atcaj.or.jp	Japan	CRA	Current	Fukuoka FIR for IPACG/FIT Ho Chi Minh, Manila, Singapore FIRs for FIT-SEA
<b>FIT/BOB</b>  ICAO Regional Office e-mail: icao_apac@bangkok.icao.int & Mr. Bradley Cornell, Boeing Engineering, e-mail: Bradley.D.Cornell@Boeing.Com	ICAO Regional Office & Boeing USA	FIT & CRA	Current	Bay of Bengal FIRs, Ujung Pandang and Jakarta FIRs, provides assistance to the members of the Arabian Sea/Indian Ocean ATS Coordination Group (ASIOACG)
<b>ISPACG/FIT</b>  Mr. Bradley Cornell, Boeing Engineering, e-mail: Bradley.D.Cornell@Boeing.Com	Boeing USA	FIT & CRA	Current	South Pacific FIRs and members of the Informal South Pacific ATS Coordination Group (ISPACG)