



International Civil Aviation Organization

**The Nineteenth Meeting of the Regional Airspace Safety Monitoring  
Advisory Group (RASMAG/19)**

Pattaya, Thailand, 27-30 May 2014

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**Agenda Item 5: Airspace Safety Monitoring Activities/Requirements in Asia/Pacific Region**

**UPDATED ESTIMATE OF RVSM LONG TERM HEIGHT MONITORING BURDEN FOR  
THE AUSTRALIAN AIRSPACE MONITORING AGENCY (AAMA)**

(Presented by Australia)

**SUMMARY**

*This paper presents the current monitoring burden for aircraft registered and operated by Australia, Indonesia, the Solomon Islands and Papua New Guinea to meet Annex 6 requirements. A number of the identified aircraft did not meet the Annex 6 requirements by the agreed November 2012 target.*

**1. Introduction**

1.1. The Long Term Height Monitoring Impact Statement developed by RASMAG was endorsed by APANPIRG/20 in September 2009. That statement included a determination by each of the Asia/Pacific Regional Monitoring Agencies (RMAs) of the anticipated monitoring burden for each State within the region. RASMAG/12 tasked the RMAs to review and update that data and subsequent meetings have seen RMAs report accordingly. The Australian Airspace Monitoring Agency (AAMA) last provided anticipated monitoring burden data at RASMAG/18. This current paper provides an update to that data.

**2. Discussion**

2.1 The AAMA has previously supplied data on its anticipated monitoring burden following the implementation of long term height monitoring in November 2010. The data was based on a review of the current RVSM approvals data for the State airspaces that the AAMA is responsible for, taking into account completed successful monitoring activity.

2.2 A review of the most recent RVSM approvals databases maintained by the AAMA on behalf of ICAO determined that the total number of RVSM approved aircraft totalled 1028 as at May 2014.

2.3 Applying the minimum monitoring requirements (MMR) to the total of approved aircraft results in a total monitoring burden of 302 aircraft. Taking into account the aircraft already successfully monitored, the current outstanding burden is 79 aircraft a reduction of 23 airframes from that reported to RASMAG in 2013. The existing burden comprises 31 Australian registered, 46 Indonesian registered, 1 Papua New Guinea registered and 1 Solomon Islands registered aircraft. The AAMA expects that nearly all of the Australian registered aircraft will be monitored in the medium term as the ADSB mandate takes effect. To date the AAMA has calculated in excess of 4 billion separate altimetry system error (ASE) measurements for approximately 2800 individual airframes since it began ADSB height monitoring in 2010.

2.4 In relation to the Australian data, all of the major airline operator fleets have now been monitored. Nearly 100% of all aircraft in the fleets of QANTAS, Virgin Australia, Jetstar, Tiger, Alliance Airlines, National Jet, Network Aviation, Air North, and Nauru Air Corporation, totalling some 354 aircraft have been successfully monitored. Of the total Australian registered RVSM approved fleet 27 airframes from 20 operators are considered overdue in terms of the minimum monitoring requirements (MMR). This means that either the aircraft have not been monitored at all since the introduction of long term height keeping monitoring in November 2010, or the operator has not met the 2 year requirement for subsequent monitoring. A review of the operators involved shows they have small fleets of business jets or are single aircraft private operators. Reasons for not having met the requirements range from currently not ADSB equipped, difficulties obtaining GMU monitoring, or simply unexplained non-compliance. The AAMA continues to follow up the status of these operators with the relevant State authorities.

2.5 The AAMA has also monitored a significant number of Royal Australian Air Force aircraft with the KC30, BE30, B737NX, C130J and CL60 fleets exceeding the MMR requirements. These aircraft were monitored with a mix of ADSB and GMU systems. The C17 fleet remains approved but unmonitored as they are considered part of the world-wide USAF fleet in terms of altimetry system maintenance and monitoring.

2.6 In relation to Indonesian registered RVSM approved aircraft, 34 aircraft remain overdue in terms of the MMR, representing 15 airline or IGA operators. Difficulties with accessing GMU monitoring in a timely way underlie the overdue status for these aircraft as a number are 'classics' that are not ADSB equipped or do not operate outside the Indonesian FIRs. Recently the AAMA and DGCA Indonesia have reached agreement on ADSB data provision that will enable the AAMA to extend AHMS based monitoring to larger numbers of suitably equipped aircraft operating in the Indonesian airspace.

2.7 Attachment 1 provides details of the monitoring burden based on the minimum monitoring requirements.

### **3. Actions by the Meeting**

3.1 The meeting is invited to:

- a) review the information provided in the paper and Attachment 1;
- b) use the information to update the current monitoring burden anticipated for the Asia/Pacific RMAs.

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## AAMA Monitoring Burden (compiled May 2014 )

### Australia

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
<b>ANO</b>	CAPITEQ LTD	E170-190	1	4	2	0
<b>IGA</b>	SKYTRADERS PTY LTD	A320	1	2	2	0
	EXPRESS FREIGHTERS AUSTRALIA	B737CL	1	4	2	0
		B767	1	1	1	0
	TATARY PTY LTD	BD700	2	1	1	0
	GAMBAMORA INDUSTRIES PTY LTD	BE30	2	1	1	0
	STATE OF QUEENSLAND	BE30	2	1	1	1
	AP JETS PTY LTD	BE40	2	1	1	0
	BUSINESS AVIATION SOLUTIONS PTY LTD	BE40	2	1	1	0
	AVESCO PTY LTD	C25A	2	1	1	0
	BOND AIR CHARTERS PTY LTD	C25A	2	1	1	1
	EDWARDS COACHES PTY LTD	C25A	2	1	1	0
	T & R PASTORAL PTY LTD	C25A	2	1	1	0
	CELIJET AVIATION SOLUTIONS PTY LTD	C25B	2	1	1	0
	AUSTRALIAN CORPORATE JET CENTRE	C500	2	1	1	0
	FLIGHT OPTIONS (AUSTRALIA) PTY LTD	C510	2	2	2	1
	M AND G HOSKINS SALES PTY LTD	C510	2	1	1	1
	SINGAPORE FLYING COLLEGE PTE LTD	C510	2	4	3	0
	SKYPAC AVIATION PTY LTD	C510	2	1	1	0
	DICK SMITH ADVENTURE PTY LTD	C525	1	1	1	1
	MAXEM AVIATION PTY LTD	C525	1	1	1	1
	PROFESSIONAL JET AVIATION PTY LTD	C525	1	1	1	0
	SOUTHERN AIR SERVICES PTY LTD	C525	1	1	1	1
	EXECUTIVE AIRLINES PTY LTD	C550-552	2	1	1	0

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
	MACARTHUR JET CHARTER PTY LTD	C550-552	2	1	1	1
	MACHJET INTERNATIONAL PTY LTD	C550-552	2	1	1	1
	MAXEM AVIATION PTY LTD	C550-552	2	1	1	1
	PROFESSIONAL JET AVIATION PTY LTD	C550-552	2	1	1	0
	AUSTRALIAN CORPORATE JET CENTRE	C560	1	1	1	0
	JET CITY PTY LTD	C560	1	1	1	1
	MAXEM AVIATION PTY LTD	C560	1	1	1	0
	BUSINESS AVIATION SOLUTIONS PTY LTD	C650	1	1	1	0
	FLIGHT OPTIONS (AUSTRALIA) PTY LTD	C650	1	1	1	1
	SUNDYNE PTY LTD	C650	1	1	1	1
	AUSTRALIAN CORPORATE JET CENTRE	C680	1	1	1	1
	EXECUTIVE AIRLINES PTY LTD	C680	1	1	1	0
	TWENTIETH SUPER PACE NOMINEES PTY LTD	C680	1	1	1	0
	BUSINESS AVIATION SOLUTIONS PTY LTD	C750	1	1	1	0
	JET CITY PTY LTD	C750	1	1	1	1
	AIR NATIONAL AUSTRALIA PTY LTD	CL600	1	1	1	1
	AVWEST PTY LTD	CL600	1	1	1	0
	BLISSETT HOLDINGS PTY LTD	CL600	1	1	1	0
	CAPE YORK AIRLINES PTY LTD	CL600	1	1	1	1
	EXEJUJET AUSTRALIA PTY LTD	CL600	1	3	2	0
	REVESCO AVIATION PTY LTD	CL600	1	1	1	1
	TOWER HOLDINGS PTY LTD	CL600	1	1	1	1
	JETGO AUSTRALIA HOLDINGS PTY LTD	E135-145	1	3	2	2
	MARCPAN CHARTER PTY LTD	E135-145	1	1	1	0
	REVESCO AVIATION PTY LTD	E50P	2	1	1	0
	BALMORAL AIR PTY LTD	F2TH	2	1	1	0

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
	BRENZIL PTY LIMITED	F2TH	2	1	1	1
	RAMSAY AIRCHARTER PTY LTD	F2TH	2	1	1	0
	LLOYD AVIATION JET CHARTER PTY LTD	F900	1	1	1	0
	MAXEM AVIATION PTY LTD	F900	1	1	1	0
	BUSINESS AVIATION SOLUTIONS PTY LTD	FA20	2	1	1	1
	FALCON OPERATIONS AUSTRALASIA PTY LTD	FA50	2	1	1	0
	PIONAIR AUSTRALIA PTY LTD	FA50	2	1	1	0
	BRENZIL PTY LIMITED	FA7X	2	1	1	0
	PACIFIC FLIGHT SERVICES PTY LTD	G150	2	1	1	1
	AIR NATIONAL AUSTRALIA PTY LTD	GLEX	1	1	1	1
	EXECUJET AUSTRALIA PTY LTD	GLEX	1	3	2	0
	GANDEL INVESTMENTS PTY LTD	GLEX	1	1	1	0
	PRATT AVIATION PTY LTD	GLEX	1	2	2	0
	WALKER AIR SERVICES PTY LTD	GLEX	1	1	1	0
	CROWN MELBOURNE LTD	GLF4	1	1	1	0
	EXECUJET AUSTRALIA PTY LTD	GLF4	1	1	1	0
	MARCPLAN CHARTER PTY LTD	GLF4	1	1	1	0
	REVESCO AVIATION PTY LTD	GLF4	1	1	1	1
	CROWN MELBOURNE LTD	GLF5	1	2	2	0
	LITTLE AVIATION PTY LTD	GLF5	1	1	1	0
	PACIFIC FLIGHT SERVICES PTY LTD	GLF5	1	1	1	0
	AUSTRALIAN CORPORATE JET CENTRE	H25B-700	2	1	1	0
	AP JETS PTY LTD	H25B-800	1	1	1	0
	MARCPLAN CHARTER PTY LTD	H25B-800	1	1	1	0
	NANTAY PTY LTD	H25B-800	1	2	2	0
	REMOREX PTY LTD	H25B-800	1	1	1	0

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
	STATE OF QUEENSLAND	H25B-800	1	1	1	0
	SUNDOWN PASTORAL CO PTY LTD	H25B-800	1	1	1	0
	SUNSHINE AIR SERVICES PTY LTD	H25B-800	1	1	1	0
	SHORTSTOP JET CHARTER PTY LTD	H25C	2	1	1	0
	AIR NATIONAL AUSTRALIA PTY LTD	LJ35-36	2	1	1	1
	JET CITY PTY LTD	LJ35-36	2	3	2	0
	PACIFIC FLIGHT SERVICES PTY LTD	LJ35-36	2	2	2	0
	CAREFLIGHT (QLD) LTD	LJ45	1	2	2	1
	PACIFIC FLIGHT SERVICES PTY LTD	LJ45	1	1	1	0
	GOJET PTY LTD	PRM1	1	1	1	0
	SYDNEY JET CHARTER PTY LTD	PRM1	1	1	1	0
	ANTHONY JOHN LODGE	TBM	2	1	1	0
<b>JST</b>	JETSTAR AIRWAYS PTY LTD	A320	1	62	2	0
		A330	1	8	2	0
		B787	2	4	3	0
<b>MIL</b>	ROYAL AUSTRALIAN AIR FORCE	A330	1	4	2	0
		B737NX	1	8	2	0
		BE30	2	8	5	0
		C130	2	12	8	0
		C17	1	6	2	2
		CL600	1	3	2	0
<b>NHN</b>	NETWORK AVIATION PTY LTD	F100	1	12	2	0
<b>NJS</b>	NATIONAL JET SYSTEMS PTY LTD	B712	1	17	2	0
	FMG AIR PTY LTD	GLEX	1	1	1	0
<b>QFA</b>	QANTAS AIRWAYS LTD	A330	1	22	2	0

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
		A380	2	12	8	0
		B737CL	1	8	2	1
		B737NX	1	62	2	0
		B744-10	1	13	2	0
		B744-5	1	10	2	0
		B767	1	15	2	0
<b>RON</b>	NAURU AIR CORPORATION	B737CL	1	3	2	0
<b>TGW</b>	TIGER AIRWAYS AUSTRALIA PTY LTD	A320	1	13	2	0
<b>TMN</b>	TASMAN CARGO AIRLINES PTY LTD	B752	1	1	1	0
<b>UTY</b>	ALLIANCE AIRLINES PTY LTD	F100	1	17	2	0
		F70	2	6	4	0
<b>VAU</b>	VIRGIN AUSTRALIA INTERNATIONAL AIRLINES PTY LTD	B737NX	1	10	2	0
		B773	1	5	2	0
<b>VOZ</b>	VIRGIN AUSTRALIA REGIONAL AIRLINES PTY LTD	A320	1	2	2	0
	VIRGIN AUSTRALIA AIRLINES PTY LTD	A330	1	7	2	0
		B737NX	1	54	2	0
		E170-190	1	18	2	0
	VIRGIN AUSTRALIA REGIONAL AIRLINES PTY LTD	F100	1	10	2	0
<b>GRAND TOTALS:</b>				<b>545</b>	<b>181</b>	<b>31</b>

Indonesia

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
AFE	AIRFAST INDONESIA	B732	2	1	1	0
		E135-145	1	3	2	0
		MD80	1	3	2	0
AWQ	INDONESIA AIR ASIA	A320	1	32	2	0
		B737CL	1	6	2	2
BTK	BATIK AIR INDONESIA	B737NX	1	5	2	0
BTV	METRO BATAVIA AIRLINES	A320	1	8	2	1
		A330	1	2	2	2
		B737CL	1	27	2	2
CGR	CARDIG AIR	B737CL	1	3	2	2
		B737NX	1	1	1	1
CTV	CITILINK INDONESIA	A320	1	15	2	0
DAN	DABI AIR NUSANTARA	C560	1	1	1	0
GIA	GARUDA INDONESIA	A320	1	3	2	1
		A330	1	18	2	0
		B737CL	1	21	2	0
		B737NX	1	67	2	0
		B744-10	1	2	2	2
		B744-5	1	1	1	1
		B773	1	4	2	0
		CARJ	1	11	2	0
		CL600	1	1	1	0
CRJ10	2	1	1	0		
IGA	EKSPRES TRANSPORTASI ANTARBENUA	E135-145	1	4	2	2



<b>Operator</b>	<b>Operator Name</b>	<b>Aircraft Monitoring Group (e.g. [A342, A343])</b>	<b>MMR Category (1,2,3)</b>	<b>Total # Approved Airframes</b>	<b>Resultant Monitoring Burden (# Airframes)</b>	<b>Total # of Aircraft Remaining To Be Monitored By 30/11/12</b>
	ENGGANG AIR SERVICES	E135-145	1	1	1	0
	EXPRESS TRANSPORTASI ANTARBENUA	E135-145	1	2	2	2
	EKSPRES TRANSPORTASI ANTARBENUA	E55P	2	1	1	0
	BALAI KALIBRASI	H25B-700	2	1	1	1
<b>JLB</b>	JHONLIN AIR TRANSPORT	H25B-700	2	2	2	0
		H25B-800	1	2	2	0
<b>KLS</b>	KALSTAR AVIATION	B737CL	1	2	2	2
		B737NX	1	1	1	1
<b>LNI</b>	LION MENTARI AIRLINES	B737CL	1	11	2	0
		B737NX	1	89	2	0
		B744-5	1	2	2	0
		H25B-700	2	1	1	0
		H25B-800	1	1	1	0
		MD80	1	1	1	1
		MD90	1	4	2	2
<b>MDL</b>	MANDALA AIRLINES	A320	1	9	2	0
<b>MNA</b>	MERPATI NUSANTARA AIRLINES	B732	2	2	2	2
		B737CL	1	13	2	0
		B737NX	1	1	1	1
<b>NAM</b>	NAM AIR	B737NX	1	2	2	0
<b>PAS</b>	PELITA AIR SERVICE	F100	1	2	2	2
<b>SJY</b>	SRIWIJAYA AIRLINES	B732	2	12	8	5
		B737CL	1	28	2	0
		B737NX	1	10	2	0

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
<b>SQS</b>	SUSI AIR	P180	2	5	3	0
<b>TGN</b>	TRIGANA AIR SERVICE	B732	2	2	2	1
		B737CL	1	1	1	1
<b>TMG</b>	TRI-MG INTRA ASIA AIRLINES	B732	2	2	2	1
		B737NX	1	1	1	0
<b>TRV</b>	TRAVIRA AIR	B737CL	1	1	1	0
		C560	1	1	1	1
		H25B-800	1	1	1	0
<b>TWA</b>	TRANSWISATA AIRLINE	F100	1	1	1	1
		GLF4	1	1	1	0
		PRM1	1	1	1	1
<b>WON</b>	WINGS ABADI AIRLINES	MD80	1	5	2	2
<b>XAR</b>	TRAVEL EXPRESS AVIATION SERVICES	B732	2	4	3	1
		B737CL	1	4	2	0
		B737NX	1	2	2	2
<b>GRAND TOTALS:</b>				<b>472</b>	<b>112</b>	<b>46</b>

**Papua New Guinea**

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
<b>ANG</b>	AIR NIUGINI	B737NX	1	3	2	0

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
		B767	1	3	2	0
		F100	1	1	1	0
		F900	1	1	1	0
<b>C550</b>	PACIFIC JETS LIMITED	C550-552	2	1	1	1
<b>GRAND TOTALS:</b>				<b>9</b>	<b>7</b>	<b>1</b>

**Solomon Islands**

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
<b>SOL</b>	SOLOMON AIRLINES	A320	1	1	1	0
<b>GRAND TOTALS:</b>				<b>1</b>	<b>1</b>	<b>0</b>

**Vanuatu**

Operator	Operator Name	Aircraft Monitoring Group (e.g. [A342, A343])	MMR Category (1,2,3)	Total # Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Aircraft Remaining To Be Monitored By 30/11/12
<b>AVN</b>	AIR VANUATU	B737NX	1	1	1	0

**GRAND TOTALS:**

**1**

**1**

**0**