



International Civil Aviation Organization

**The Twenty-First Meeting of the Regional Airspace Safety Monitoring
Advisory Group (RASMAG/21)**

Bangkok, Thailand, 14-17 June 2016

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

**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.

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/20. 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 1135 as at 8 June 2016. This represents an increase of 7 aircraft since the last report at RASMAG/20 in May 2015.

2.3 Applying the minimum monitoring requirements (MMR) to the total of approved aircraft (including Australian military) results in a total monitoring burden of 328 aircraft. Taking into account the aircraft already successfully monitored, the current outstanding burden is 85 aircraft which represents a decrease of 28 from that reported in May 2015. The current outstanding burden comprises the following aircraft counts:

- 27 Australian;
- 57 Indonesian;
- 0 Papua New Guinea; and
- 1 Solomon Islands.

2.4 Of the total Australian civil registered and military RVSM approved fleet 27 airframes 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 2year requirement for subsequent monitoring. A review of the operators involved shows they are generally 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 expects that nearly all of the Australian registered aircraft will be monitored in the medium term as the ADSB mandate takes effect. Table 1 indicates that approximately 92% of all active RVSM approved aircraft with Australian registration have been monitored using the ADS-B Height Monitoring System (AHMS).

Total RVSM approved (<i>includes 5 B767 non active aircraft in storage.</i>)	548
Total active RVSM approved	543
Total active RVSM approved and successfully monitored	495 (91%)
Total active RVSM approved fitted with ADS-B	527 (97%)
Total active RVSM approved and successfully monitored using AHMS	485 (92%)
Total active RVSM approved not ADS-B equipped but monitored successfully	10

Table 1. Australian civil registered RVSM monitoring data

2.6 The AAMA has also monitored a significant number of Royal Australian Air Force aircraft including the KC30, BE30, B737NX, C130J and CL60 fleets. These aircraft were monitored with a mix of ADSB and GMU systems. Table 2 shows that 43% of the approved military aircraft are fitted with ADS-B. Data for the C17 fleet has now been provided by NAARMO and European RMA and as a result that fleet now meets the monitoring requirements.

Total RVSM approved	41
Total RVSM approved successfully monitored	34 (82%)
Total RVSM approved with ADS-B (<i>Note 5 KC30 aircraft have ADS-B but not geometric height data enabled in message</i>)	18 (43%)

Table 2. Australian military RVSM monitoring data

2.7 The AAMA has identified a number of aircraft that have fitted with ADS-B but not ensured that geometric height is available in the message data. This is an essential element for AHMS monitoring and the relevant operators have been advised.

2.8 In relation to Indonesian registered RVSM approved aircraft, 57 aircraft remain overdue in terms of the MMR. This represents an increase of 7 aircraft from the number reported at RASMAG/20. 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. The AAMA will continue to source suitable ADS-B data so that more effective monitoring of Indonesian aircraft can take place.

2.9 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 June 2016)

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
ANO	CAPITEQ LTD	E170-190	1	4	2	0
CFH	CAREFLIGHT LIMITED	BE40	1	2	2	0
IGA	SKYTRADERS PTY LTD	A320	1	2	2	0
	EXPRESS FREIGHTERS AUSTRALIA	B737CL	1	4	2	0
		B767	1	1	1	0
	EASTERN WELL SERVICE NO 2 PTY LTD	BE20	2	2	2	0
		BE30	2	1	1	0
	GAMBAMORA INDUSTRIES PTY LTD	BE30	2	1	1	0
	STATE OF QUEENSLAND	BE30	2	1	1	0
	BUSINESS AVIATION SOLUTIONS PTY LTD	BE40	1	1	1	1
	BOND AIR CHARTERS PTY LTD	C25A	1	1	1	1
	EDWARDS COACHES PTY LTD	C25A	1	1	1	0
	T & R PASTORAL PTY LTD	C25A	1	1	1	0
	DICK SMITH ADVENTURE PTY LTD	C25B	1	1	1	1
	DIVAIR PTY LTD	C25B	1	1	1	1
	AUSTRALIAN CORPORATE JET CENTRE	C500	2	1	1	0
	FLIGHT OPTIONS (AUSTRALIA) PTY LTD	C510	1	5	2	0
	IVAN ERCEG AND HELENA ERCEG	C510	1	1	1	0
	SINGAPORE FLYING COLLEGE PTE LTD	C510	1	1	1	0
	SKYPAC AVIATION PTY LTD	C510	1	1	1	0
	HENADECK PTY LTD	C525	1	1	1	0
	MAXEM AVIATION PTY LTD	C525	1	1	1	0
	MITCHELL WATER AUSTRALIA PTY LTD	C525	1	1	1	0
	PROFESSIONAL JET AVIATION PTY LTD	C525	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
	SOUTHERN AIR SERVICES PTY LTD	C525	1	1	1	0
	EXECUTIVE AIRLINES PTY LTD	C550-B	2	1	1	0
	MACARTHUR JET CHARTER PTY LTD	C550-B	2	1	1	0
	MAXEM AVIATION PTY LTD	C550-B	2	1	1	0
	EXECUTIVE AIRLINES PTY LTD	C550-II	2	1	1	1
	MACHJET INTERNATIONAL PTY LTD	C550-SII	2	1	1	1
	AUSTRALIAN CORPORATE JET CENTRE	C560	1	1	1	1
	FLIGHT OPTIONS (AUSTRALIA) PTY LTD	C560	1	1	1	1
	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
	EDWARDS COACHES PTY LTD	C650	1	1	1	0
	EXECUJET AUSTRALIA PTY LTD	C650	1	1	1	0
	FLIGHT OPTIONS (AUSTRALIA) PTY LTD	C650	1	1	1	0
	AUSTRALIAN CORPORATE JET CENTRE	C680	1	1	1	0
	EXECUTIVE AIRLINES PTY LTD	C680	1	1	1	0
	GULF AIRCRAFT PTY LTD	C680	1	1	1	0
	SILVER LININGS AVIATION PTY LIMITED	C680	1	1	1	0
	TWENTIETH SUPER PACE NOMINEES PTY LTD	C680	1	1	1	0
	JET CITY PTY LTD	C750	1	1	1	1
	AIR NATIONAL AUSTRALIA PTY LTD	CL600	1	1	1	0
	BUSINESS AVIATION SOLUTIONS PTY LTD	CL600	1	1	1	0
	CAREFLIGHT (QLD) LTD	CL600	1	1	1	0
	EXECUJET AUSTRALIA PTY LTD	CL600	1	5	2	0
	GSA INDUSTRIES PTY LTD	CL600	1	1	1	0
	MWP RACING PTY LTD	CL600	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
	REVESCO AVIATION PTY LTD	CL600	1	1	1	0
	SUNSHINE AIR SERVICES PTY LTD	CL600	1	1	1	0
	JETGO AUSTRALIA HOLDINGS PTY LTD	E135-145	1	3	2	2
	MARCPLAN CHARTER PTY LTD	E135-145	1	1	1	0
	REVESCO AVIATION PTY LTD	E50P	1	1	1	0
	SKIPPERS AVIATION PTY LTD	F100	1	2	2	2
	BALMORAL AIR PTY LTD	F2TH	2	1	1	0
	SYDNEY JET CHARTER 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	2	2	0
	FALCON OPERATIONS AUSTRALASIA PTY LTD	FA50	2	1	1	0
	PIONAIR AUSTRALIA PTY LTD	FA50	2	1	1	0
	BRENZIL PTY LIMITED	FA7X	1	1	1	0
	PACIFIC FLIGHT SERVICES PTY LTD	G150	2	1	1	0
	AIR NATIONAL AUSTRALIA PTY LTD	GLEX	1	2	2	1
	CROWN MELBOURNE LTD	GLEX	1	3	2	0
	EXECUJET AUSTRALIA PTY LTD	GLEX	1	4	2	0
	GANDEL INVESTMENTS PTY LTD	GLEX	1	1	1	0
	PRATT AVIATION PTY LTD	GLEX	1	3	2	0
	WALKER AIR SERVICES PTY LTD	GLEX	1	1	1	0
	CML AVIATION PTY LTD	GLF4	1	1	1	0
	CROWN MELBOURNE LTD	GLF4	1	1	1	0
	EXECUJET AUSTRALIA PTY LTD	GLF4	1	1	1	0
	JET CITY PTY LTD	GLF4	1	1	1	0
	MARCPLAN CHARTER PTY LTD	GLF4	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
	REVESCO AVIATION PTY LTD	GLF4	1	1	1	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
	NANTAY PTY LTD	H25B-800	1	3	2	0
	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
		LJ31	2	1	1	0
	AIR NATIONAL AUSTRALIA PTY LTD	LJ35-36	2	1	1	1
	AUS WEST AIRLINES (2010) PTY LTD	LJ35-36	2	1	1	0
	JET CITY PTY LTD	LJ35-36	2	3	2	0
	MARCPLAN CHARTER PTY LTD	LJ35-36	2	1	1	0
	PACIFIC FLIGHT SERVICES PTY LTD	LJ35-36	2	2	2	0
	CAREFLIGHT (QLD) LTD	LJ45	1	2	2	0
	JET CITY PTY LTD	LJ45	1	2	2	0
	PACIFIC FLIGHT SERVICES PTY LTD	LJ45	1	1	1	0
	AVCAIR PTY LTD	LJ60	1	1	1	0
	PACIFIC FLIGHT SERVICES PTY LTD	LJ60	1	1	1	1
	MATTHEW ALEXANDER LUMB	PAY4	2	1	1	0
	SYDNEY JET CHARTER PTY LTD	PRM1	1	1	1	0
	TWC LOGISTICS PTY LTD	PRM1	1	1	1	0
	ANTHONY JOHN LODGE	TBM	2	1	1	1
	CAPITAL JET RESOURCES PTY LTD	WW24	2	1	1	1

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
	OBERON AVIATION SERVICES PTY LTD	WW24	2	1	1	0
	PEL-AIR AVIATION	WW24	2	1	1	1
JST	JETSTAR AIRWAYS PTY LTD	A320	1	59	2	0
		B787	2	11	7	0
JTE	NATIONAL JET EXPRESS	E170-190	1	1	1	0
MIL	ROYAL AUSTRALIAN AIR FORCE	A330	1	5	2	2
		B737NX	1	7	2	0
		BE30	2	8	5	4
		C130	1	12	2	0
		C17	1	6	2	0
		CL600	1	3	2	0
NHN	NETWORK AVIATION PTY LTD	F100	1	14	2	0
NJS	NATIONAL JET SYSTEMS PTY LTD	B712	1	20	2	0
	FMG AIR PTY LTD	GLEX	1	1	1	0
OZW	VIRGIN AUSTRALIA REGIONAL AIRLINES PTY LTD	A320	1	2	2	0
		F100	1	14	2	0
QFA	QANTAS AIRWAYS LTD	A330	1	28	2	0
		A380	1	12	2	0
		B737NX	1	67	2	0
		B744-10	1	10	2	0
		B744-5	1	1	1	0
		B767	1	5	2	0
RFDS	ROYAL FLYING DOCTOR SERVICE AUSTRALIA (QLD)	BE20	2	11	7	0
		BE30	2	1	1	1

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
RON	NAURU AIR CORPORATION	B737CL	1	6	2	0
TGW	TIGER AIRWAYS AUSTRALIA PTY LTD	A320	1	14	2	0
TMN	TASMAN CARGO AIRLINES PTY LTD	B752	1	1	1	0
UTY	ALLIANCE AIRLINES PTY LTD	F100	1	15	2	0
		F70	2	8	5	0
VAU	VIRGIN AUSTRALIA INTERNATIONAL AIRLINES PTY LTD	B737NX	1	17	2	0
		B773	1	5	2	0
VOZ	VIRGIN AUSTRALIA AIRLINES PTY LTD	A330	1	6	2	0
		B737NX	1	60	2	0
		E170-190	1	18	2	0
GRAND TOTALS:				588	198	27

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	1
		E135-145	1	2	2	0
	PT. AIRFAST INDONESIA	MD10	1	1	1	1
		AIRFAST INDONESIA	MD80	1	3	2
AWQ	INDONESIA AIR ASIA	A320	1	30	2	0
		B737CL	1	2	2	2

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
BTK	BATIK AIR INDONESIA	A320	1	18	2	0
		B737NX	1	20	2	0
BTV	METRO BATAVIA AIRLINES	A320	1	2	2	2
		B737CL	1	18	2	2
CGR	CARDIG AIR	B737CL	1	3	2	0
		B737NX	1	1	1	1
CTV	CITILINK INDONESIA	A320	1	36	2	0
DAN	DABI AIR NUSANTARA	C560	1	1	1	0
GIA	GARUDA INDONESIA	A320	1	1	1	1
		A330	1	25	2	0
		B737CL	1	5	2	0
		B737NX	1	80	2	0
		B744-10	1	2	2	1
		B773	1	10	2	0
IDX	INDONESIA AIRASIA EXTRA	CRJ10	2	18	11	7
		A330	1	2	2	0
IGA	ELANG LINTAS INDONESIA	BE40	1	1	1	0
	EXPRESS TRANSPORTASI ANTARBENUA	C560	1	1	1	0
	EKSPRES TRANSPORTASI ANTARBENUA	E135-145	1	2	2	2
	ENGGANG AIR SERVICES	E135-145	1	1	1	1
	EXPRESS TRANSPORTASI ANTARBENUA	E135-145	1	2	2	2
	INDONESIA AIR TRANSPORT	E135-145	1	1	1	0
	EKSPRES TRANSPORTASI ANTARBENUA	E55P	1	1	1	1
	PURAWAISATA BARUNA	E55P	1	1	1	0
	BALAI KALIBRASI	H25B-700	2	1	1	1

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
	ANGKASA SUPER SERVICES	H25B-800	1	1	1	1
	ELANG LINTAS INDONESIA	H25B-800	1	1	1	1
	ALFA TRANS DIRGANTARA	PRM1	1	1	1	1
JLB	JHONLIN AIR TRANSPORT	H25B-800	1	2	2	0
KLS	KALSTAR AVIATION	B737CL	1	2	2	0
		E170-190	1	3	2	0
LNI	LION MENTARI AIRLINES	A330	1	3	2	1
		B737CL	1	10	2	1
		B737NX	1	107	2	0
		B744-5	1	2	2	0
		H25B-800	1	1	1	0
		MD80	1	1	1	1
		MD90	1	1	1	1
MDL	MANDALA AIRLINES	A320	1	1	1	0
MNA	MERPATI NUSANTARA AIRLINES	B732	2	2	2	2
		B737CL	1	8	2	2
NAM	NAM AIR	B737CL	1	5	2	2
PAS	PELITA AIR SERVICE	F100	1	2	2	2
SJY	SRIWIJAYA AIRLINES	B732	2	5	3	3
		B737CL	1	30	2	0
		B737NX	1	17	2	0
SQS	SUSI AIR	P180	2	5	3	3
SSY	SKY AVIATION	SU95	2	2	2	2
TGN	TRIGANA AIR SERVICE	B732	2	2	2	2

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
		B737CL	1	1	1	1
TMG	TRI-MG INTRA ASIA AIRLINES	B732	2	1	1	1
		B737CL	1	2	2	0
		BE40	1	1	1	0
TNR	TRANSNUSA AVIATION MANDIRI	F70	2	1	1	0
TRV	TRAVIRA AIR	B737CL	1	1	1	0
		GLF4	1	1	1	0
		H25B-800	1	1	1	0
TWA	TRANSWISATA AIRLINE	F100	1	1	1	1
		GLF4	1	1	1	0
WON	WINGS ABADI AIRLINES	MD80	1	2	2	2
XAR	TRAVEL EXPRESS AVIATION SERVICES	B732	2	2	2	2
		B737CL	1	7	2	0
GRAND TOTALS:				528	119	57

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
ANG	AIR NIUGINI	B737NX	1	3	2	0
		B767	1	3	2	0
		F100	1	7	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
		F70	2	3	2	0
		F900	1	1	1	0
IGA	TROPIC AIR	C25B	1	1	1	0
GRAND TOTALS:				18	10	0

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
SOL	SOLOMON AIRLINES	A320	1	1	1	1
GRAND TOTALS:				1	1	1

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
AVN	AIR VANUATU	B737NX	1	2	2	0

GRAND TOTALS:

2

2

0