



International Civil Aviation Organization

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

Pattaya, Thailand, 27-30 May 2014

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

MAAR LTHM BURDEN ESTIMATE UPDATE

(Presented by Monitoring Agency for Asia Region)

SUMMARY

This paper presents the estimated monitoring burden for aircraft registered or operated by operators under States within MAAR's responsibility to meet Annex 6 monitoring requirements as of 1 May 2014.

This paper relates to –

Strategic Objectives:

A: *Safety* – Enhance global civil aviation safety

Global Plan Initiatives:

GPI-2 Reduced vertical separation minima

1. INTRODUCTION

1.1 To meet the ICAO Annex 6 Long-Term Height Monitoring (LTHM) Requirements, the MAAR undertakes monitoring programs using an in-flight GPS-based monitoring system and an ADS-B height monitoring system (AHMS) with ADS-B data from Bangkok and Taipei FIR.

1.2 To track the monitoring burden according to the Annex 6 LTHM requirements and the global Minimum Monitoring Requirements (MMR), the MAAR maintains a database of approvals and height monitoring history for aircraft registered within States under MAAR's responsibility. The height monitoring data derives from the MAAR's applied monitoring systems as well as monitoring data shared by other RMAs. This paper provides an update on the MAAR monitoring burden as of 1 May 2014.

2. DISCUSSION

2.1 The monitoring burden for the 21 States under MAAR's responsibilities is 663 airframes. **Appendix A** provides details of the remaining monitoring burden based on the Minimum Monitoring Requirements.

2.2 As of 1 May 2014, there are 200 airframes remaining to be monitored. MAAR has contacted States to ensure that the operators satisfied the Annex 6 monitoring requirements. With States being more and more aware of the LTHM requirements and pressing for operators' compliance, "new" operators have contacted MAAR to schedule monitoring.

2.3 **Table 1** contains the remaining monitoring burden by States as of 1 May 2014:

States	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Afghanistan (OA)	21	14	4
Bangladesh (VG)	23	18	14
Bhutan (VQ)	3	2	1
Brunei (WB)	13	8	0
Cambodia (VD)	5	4	0
Hong Kong, China (VH)	255	53	2
India (VA)	599	206	44
Laos (VL)	4	2	0
Macau, China (VM)	20	7	3
Malaysia (WM)	258	43	19
Maldives (VR)	4	4	0
Mongolia (ZM)	6	6	1
Myanmar (VY)	14	8	3
Nepal (VN)	2	2	2
Pakistan (OP)	55	34	23
Philippines (RP)	164	59	23
Singapore (WS)	193	31	0
Sri Lanka (VC)	25	8	0
Taiwan, China (RC)	180	40	7
Thailand (VT)	311	102	52
Viet Nam (VV)	91	12	2
Grand Total	2246	663	200

Table 1: Summary of Monitoring Burden by State as 1 May 2014

2.4 To date, 28 airframes have scheduled monitoring and 9 airframes are awaiting their monitoring results, which should lower the monitoring burden to 172 airframes.

2.5 **Table 2** contains a summary of RVSM Approval Data submission as an annual update for Period ending 2013.

States	Status
Afghanistan	Partial
Bangladesh	Received
Bhutan	Received
Brunei Darussalam	Not Received
Cambodia	Received
Hong Kong, China	Received
India	Not Received
Lao PDR	Not Received
Macau, China	Received
Malaysia	Not Received

Maldives	Not Received
Mongolia	Received
Myanmar	Not Received
Nepal	Not Received
Pakistan	Partial
Philippines	Partial
Singapore	Received
Sri Lanka	Received
Thailand	Received
Vietnam	Not Received

Table 2: Summary of RVSM Approval Data Submission for Period ending 2013

2.6 From the list of remaining monitoring burden (Table 1) and the RVSM approval data submission table (Table 2), it can be deduced that some State Civil Aviation Authorities (CAA) may still lack understanding of the RVSM requirements. Thus, MAAR has started to visit State CAAs to raise awareness of such requirements and ensure a continuous line of communication between the CAA and the RMA. Since October 2013, MAAR has visited the State Secretariat of Civil Aviation (SSCA) of Cambodia and the Civil Aviation Authority of the Philippines (CAAP). This enabled us to better understand how each State CAA operates and acquire the right point of contact for each issue of concerns (eg. LHD, TSD, approvals, etc.) for more effective coordination. MAAR plans to visit State CAAs under its responsibilities every year until concerned safety issues are resolved.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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Appendix A: Remaining Monitoring Burden for MAAR

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Afghanistan (OA)	ARIANA AFGHAN AIRLINES	A310-GE	3	2	1
	ARIANA AFGHAN AIRLINES Total		3	2	1
	SAFI AIRWAYS	B737CL	2	2	2
		B752	1	1	1
	SAFI AIRWAYS Total		3	3	3
Afghanistan (OA) Total			6	5	4

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Bangladesh (VG)	ARIRANG AVIATION LIMITED	P180	2	2	2
	ARIRANG AVIATION LIMITED Total		2	2	2
	BIMAN BANGLADESH AIRLINES	A310-PW	2	2	2
		B737NX	2	2	2
		B772	2	2	2
	BIMAN BANGLADESH AIRLINES Total		6	6	6
	REGENT AIRWAYS	B737NX	2	2	1
	REGENT AIRWAYS Total		2	2	1
	UNITED AIRWAYS BANGLADESH	A310-PW	2	2	2
		MD80	5	2	2
	UNITED AIRWAYS BANGLADESH Total		7	4	4
	ZAINUL HAQUE SIKDER WOMENS MEDICAL COLLEGE & HOSPITAL (PVT) LTD. (DBA): R & R AVIATION	H25B-800	1	1	1
	ZAINUL HAQUE SIKDER WOMENS MEDICAL COLLEGE & HOSPITAL (PVT) LTD. (DBA): R & R AVIATION Total		1	1	1
Bangladesh (VG) Total			18	15	14

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Bhutan (VQ)	DRUK AIR - ROYAL BHUTAN AIRLINES	A320	3	2	1
	DRUK AIR - ROYAL BHUTAN AIRLINES Total		3	2	1
Bhutan (VQ) Total			3	2	1

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Hong Kong, China (VH)	METROJET LTD.	C680	1	1	1
		GALX	1	1	1
	METROJET LTD. Total		2	2	2
Hong Kong, China (VH) Total			2	2	2

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
India (VA)	AIR COSTA	E170-190	2	2	2
	AIR COSTA Total		2	2	2
	AIR INDIA	A330	2	2	1
	AIR INDIA Total		2	2	1
	ASIA AVIATION LIMITED	C550-II	1	1	1
		GLF4	1	1	1
	ASIA AVIATION LIMITED Total		2	2	2
	BAJAJ AVIATION PRIVATE LIMITED	F2TH	1	1	1
	BAJAJ AVIATION PRIVATE LIMITED Total		1	1	1
	BLUEDART RAMDAS K.P.	B732	1	1	1
	BLUEDART RAMDAS K.P. Total		1	1	1
	DECCAN AVIATION LTD.	A310-GE	2	2	2

	A310-PW	1	1	1
	A320	9	2	2
	A330	1	1	1
DECCAN AVIATION LTD. Total		13	6	6
DECCAN CHRONICLES HOLDING LTD	BE40	1	1	1
DECCAN CHRONICLES HOLDING LTD Total		1	1	1
EIH LTD.	H25B-700	1	1	1
EIH LTD. Total		1	1	1
EUROPEAN PROJECTS AND AVIATION PVT. LTD.	F2TH	1	1	1
EUROPEAN PROJECTS AND AVIATION PVT. LTD. Total		1	1	1
FLEX INDUSTRIES LTD.	C56X	1	1	1
FLEX INDUSTRIES LTD. Total		1	1	1
FUTURA TRAVELS LTD.	H25B-800	2	2	1
FUTURA TRAVELS LTD. Total		2	2	1
GOLDEN WINGS PVT LTD.	BD100	1	1	1
	F2TH	1	1	1
GOLDEN WINGS PVT LTD. Total		2	2	2
GOVERNMENT OF TAMILNADU	C560	1	1	1
GOVERNMENT OF TAMILNADU Total		1	1	1
INDIAN AIRLINES	A300	3	2	2
	A320	18	2	2
INDIAN AIRLINES Total		21	4	4
JET AIRWAYS	A340	3	2	1
	B737CL	6	2	2
JET AIRWAYS Total		9	4	3
KESTREL AVIATION PVT. LTD.	C550-B	1	1	1
KESTREL AVIATION PVT. LTD. Total		1	1	1
KINGFISHER AIRLINES LTD.	A320	24	2	1
KINGFISHER AIRLINES LTD. Total		24	2	1

PARAMOUNT AIRWAYS	E170-190	5	2	2
PARAMOUNT AIRWAYS Total		5	2	2
POONAWALLA AVIATION	GLF5	1	1	1
POONAWALLA AVIATION Total		1	1	1
RAINBOW AIR PVT. LTD.	C56X	1	1	1
RAINBOW AIR PVT. LTD. Total		1	1	1
RAYMOND LTD.	H25B-800	1	1	1
RAYMOND LTD. Total		1	1	1
RELIANCE TRANSPORT & TRAVELS PVT. LTD.	GLF4	1	1	1
RELIANCE TRANSPORT & TRAVELS PVT. LTD. Total		1	1	1
RELIGARE AVIATION LTD	H25B-800	1	1	1
RELIGARE AVIATION LTD Total		1	1	1
SUN TV NETWORK LTD.	GLEX	2	2	1
SUN TV NETWORK LTD. Total		2	2	1
TATA IRON & STEEL CO., LTD.	F2TH	1	1	1
TATA IRON & STEEL CO., LTD. Total		1	1	1
TRIVENI EARTH MOVERS PRIVATE LIMITED	LJ45	1	1	1
TRIVENI EARTH MOVERS PRIVATE LIMITED Total		1	1	1
UTTAR PRADESH GOVERNMENT	PRM1	1	1	1
UTTAR PRADESH GOVERNMENT Total		1	1	1
VEDANTA ALUMINA LTD.	C680	1	1	1
VEDANTA ALUMINA LTD. Total		1	1	1
VISA AVIATION LIMITED	LJ45	1	1	1
VISA AVIATION LIMITED Total		1	1	1
WELSPUN LOGISTICS LTD.	PRM1	1	1	1
WELSPUN LOGISTICS LTD. Total		1	1	1
India (VA) Total		103	49	44

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Macau, China (VM)	JET ASIA LTD.	CL600	2	2	2
		H25B-800	1	1	1
	JET ASIA LTD. Total		3	3	3
Macau, China (VM) Total			3	3	3

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Malaysia (WM)	BERJAYA AIR SDN. BHD.	BD100	1	1	1
	BERJAYA AIR SDN. BHD. Total		1	1	1
	DEPARTMENT OF CIVIL AVIATION MALAYSIA	LJ60	2	2	2
	DEPARTMENT OF CIVIL AVIATION MALAYSIA Total		2	2	2
	EAGLEXPRESS AIR	B744-10	2	2	2
	EAGLEXPRESS AIR Total		2	2	2
	FIREFLY	B737CL	2	2	2
		B737NX	1	1	1
	FIREFLY Total		3	3	3
	GADING SARI AVIATION SERVICES SDN BHD	B737CL	2	2	2
	GADING SARI AVIATION SERVICES SDN BHD Total		2	2	2
	GENERAL AVIATION	B737CL	1	1	1
	GENERAL AVIATION Total		1	1	1
	HORNBILL SKYWAYS SDN. BHD.	CL605	1	1	1
	HORNBILL SKYWAYS SDN. BHD. Total		1	1	1
	MALAYSIA AIRLINES	B727	1	1	1
		B737CL	29	2	2
	MALAYSIA AIRLINES Total		30	3	3

	MALAYSIAN JET SERVICES	GLF4	1	1	1
	MALAYSIAN JET SERVICES Total		1	1	1
	NEPTUNE AIR	B737CL	1	1	1
	NEPTUNE AIR Total		1	1	1
	TRANSMILE	B727	4	2	2
	TRANSMILE Total		4	2	2
Malaysia (WM) Total			48	19	19

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Mongolia (ZM)	MIAT MONGOLIAN AIRLINES	B767	2	2	1
	MIAT MONGOLIAN AIRLINES Total		2	2	1
Mongolia (ZM) Total			2	2	1

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Myanmar (VY)	AIR BAGAN	F100	1	1	1
	AIR BAGAN Total		1	1	1
	ASIAN WINGS AIRWAYS	A320	1	1	1
	ASIAN WINGS AIRWAYS Total		1	1	1
	GOLDEN MYANMAR AIRLINES	A320	2	2	1
	GOLDEN MYANMAR AIRLINES Total		2	2	1
Myanmar (VY) Total			4	4	3

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Nepal (VN)	ROYAL NEPAL AIRLINES	B752	2	2	2
	ROYAL NEPAL AIRLINES Total		2	2	2

Nepal (VN) Total			2	2	2
	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Pakistan (OP)	AIR BLUE	A320	6	2	2
		A340	2	2	2
	AIR BLUE Total		8	4	4
	GENERAL AVIATION	BE40	2	2	2
		G150	1	1	1
		LJ45	1	1	1
	GENERAL AVIATION Total		4	4	4
	KINGCRETE ASSOCIATES	BE40	1	1	1
	KINGCRETE ASSOCIATES Total		1	1	1
	LUCKY AIR PRIVATE LIMITED	LJ60	1	1	1
	LUCKY AIR PRIVATE LIMITED Total		1	1	1
	LYNX AVIATION (PVT) LTD.	H25B-800	1	1	1
	LYNX AVIATION (PVT) LTD. Total		1	1	1
	PAKISTAN AIRLINES	A310-PW	6	2	1
		B737CL	3	2	2
		B747CL	4	2	2
	PAKISTAN AIRLINES Total		13	6	5
	PRINCELY JETS (PVT) LTD.	C550-B	1	1	1
		CL600	2	2	1
	PRINCELY JETS (PVT) LTD. Total		3	3	2
RAYYAN AIR	B747CL	2	2	1	
RAYYAN AIR Total		2	2	1	
SHAHEEN INTERNATIONAL	B732	3	2	2	
SHAHEEN INTERNATIONAL Total		3	2	2	
VISION AIR INTERNATIONAL PRIVATE LIMITED	B732	1	1	1	

	B747CL	1	1	1
	VISION AIR INTERNATIONAL PRIVATE LIMITED Total	2	2	2
Pakistan (OP) Total		38	26	23

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Philippines (RP)	AIR PHILIPPINES	B732	14	9	9
	AIR PHILIPPINES Total		14	9	9
	ASTRO AIR INTERNATIONAL, INC.	MD80	1	1	1
	ASTRO AIR INTERNATIONAL, INC. Total		1	1	1
	CRYSTAL SUGAR COMPANY INC.	C525	1	1	1
	CRYSTAL SUGAR COMPANY INC. Total		1	1	1
	GENERAL AVIATION	H25B-800	1	1	1
	GENERAL AVIATION Total		1	1	1
	LIONAIR INC.	C500	1	1	1
		WW24	2	2	2
	LIONAIR INC. Total		3	3	3
	PHILIPPINE AIRLINES INC.	B737CL	1	1	1
		B744-10	5	2	2
		B747CL	3	2	2
	PHILIPPINE AIRLINES INC. Total		9	5	5
	SUBIC INTERNATIONAL AIR CHARTER INC.	LJ45	2	2	2
	SUBIC INTERNATIONAL AIR CHARTER INC. Total		2	2	2
	WORLD AVIATION CORPORATION	C56X	1	1	1
	WORLD AVIATION CORPORATION Total		1	1	1
Philippines (RP) Total			32	23	23

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Taiwan, China (RC)	AEROSPACE INDUSTRIAL DEVELOPMENT CORPORATION (AIDC)	ASTR-SPX	2	2	1
	AEROSPACE INDUSTRIAL DEVELOPMENT CORPORATION (AIDC) Total		2	2	1
	FAR EASTERN AIR TRANSPORT	MD80	6	2	1
	FAR EASTERN AIR TRANSPORT Total		6	2	1
	MANDARIN AIRLINES	E170-190	8	2	1
	MANDARIN AIRLINES Total		8	2	1
	SUNRISE AIRLINE	BE40	1	1	1
	SUNRISE AIRLINE Total		1	1	1
	UNI AIRWAYS CORPORATION	MD90	4	2	2
	UNI AIRWAYS CORPORATION Total		4	2	2
	WIN AIR BUSINESS JET	GLF5	2	2	1
WIN AIR BUSINESS JET Total		2	2	1	
Taiwan, China (RC) Total			23	11	7

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Thailand (VT)	AC AVIATION	H25B-800	1	1	1
	AC AVIATION Total		1	1	1
	ADVANCE AVIATION JET COMPANY LIMITED	GALX	2	2	2
	ADVANCE AVIATION JET COMPANY LIMITED Total		2	2	2
	ASIA ATLANTIC AIRLINES CO. LTD.	B767	2	2	2
	ASIA ATLANTIC AIRLINES CO. LTD. Total		2	2	2
	ASIAN AIR COMPANY LIMITED	B767	1	1	1
	ASIAN AIR COMPANY LIMITED Total		1	1	1
BANGKOK AVIATION CENTER CO.LTD.	C510	1	1	1	

BANGKOK AVIATION CENTER CO.LTD. Total		1	1	1
BUSINESS AIR CENTRE	B767	6	2	1
BUSINESS AIR CENTRE Total		6	2	1
CITY AIRWAYS COMPANY LIMITED	B737CL	4	2	2
CITY AIRWAYS COMPANY LIMITED Total		4	2	2
H.S. AVIATION CO.LTD.	H25B-800	1	1	1
	LJ35-36	1	1	1
H.S. AVIATION CO.LTD. Total		2	2	2
HRH THE CROWN PRINCE	B737CL	1	1	1
HRH THE CROWN PRINCE Total		1	1	1
KANNITHI AVIATION COMPANY LIMITED	PRM1	1	1	1
KANNITHI AVIATION COMPANY LIMITED Total		1	1	1
KING POWER INTERNATIONAL COMPANY LIMITED	GLF6	1	1	1
KING POWER INTERNATIONAL COMPANY LIMITED Total		1	1	1
MJETS LIMITED	GALX	1	1	1
	GLF5	1	1	1
MJETS LIMITED Total		2	2	2
NOK AIRLINES CO., LTD.	B737CL	7	2	2
NOK AIRLINES CO., LTD. Total		7	2	2
ORIENT THAI AIRLINE	B737CL	9	2	1
	B744-5	1	1	1
	B747CL	7	2	2
	L101	2	2	2
	MD80	8	2	2
ORIENT THAI AIRLINE Total		27	9	8
P.C. AIR COMPANY LIMITED	A310-GE	1	1	1
P.C. AIR COMPANY LIMITED Total		1	1	1
PHUKET AIR	B744-10	1	1	1
	B744-5	1	1	1

	B747CL	2	2	2
PHUKET AIR Total		4	4	4
SABAIDEE AIRWAYS	B737CL	2	2	2
SABAIDEE AIRWAYS Total		2	2	2
SIAM AIR TRANSPORT COMPANY LIMITED	B737CL	1	1	1
SIAM AIR TRANSPORT COMPANY LIMITED Total		1	1	1
SIAM AIRNET COMPANY LIMITED	C750	1	1	1
SIAM AIRNET COMPANY LIMITED Total		1	1	1
SIAM LAND FLYING	H25B-800	1	1	1
SIAM LAND FLYING Total		1	1	1
SKYVIEW AIRWAYS COMPANY LIMITED	B737CL	1	1	1
SKYVIEW AIRWAYS COMPANY LIMITED Total		1	1	1
SUNNY AIRWAYS	B767	1	1	1
SUNNY AIRWAYS Total		1	1	1
THAI AIR ASIA	B737CL	1	1	1
THAI AIR ASIA Total		1	1	1
THAI AIRASIA X COMPANY LIMITED	A330	2	2	1
THAI AIRASIA X COMPANY LIMITED Total		2	2	1
THAI AIRWAYS INTERNATIONAL LTD.	A306	20	2	1
	A310-PW	1	1	1
	A345	4	2	1
	B737CL	8	2	1
	NONGROUP	2	2	2
THAI AIRWAYS INTERNATIONAL LTD. Total		35	9	6
THAI FLYING SERVICE	C550-552	1	1	1
	C650	1	1	1
	LJ35-36	1	1	1
THAI FLYING SERVICE Total		3	3	3
U AIRLINES COMPANY LIMITED	A320	1	1	1

U AIRLINES COMPANY LIMITED Total		1	1	1
VIP JETS LIMITED	C510	1	1	1
VIP JETS LIMITED Total		1	1	1
Thailand (VT) Total		113	58	52

	Operator Name	MMR Group	Total RVSM Approved Airframes	Resultant Monitoring Burden	Total Airframes Remaining to be Monitored
Viet Nam (VV)	HANG KHONG VIETNAM	F70	2	2	2
	HANG KHONG VIETNAM Total		2	2	2
Viet Nam (VV) Total			2	2	2
Grand Total			399	223	200