



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

CHINA RMA LTHM BURDEN ESTIMATE UPDATE

(Presented by China RMA)

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SUMMARY

This paper presents the current expected monitoring burden for the aircraft registered and operated by China and DPR Korea to meet the long term height monitoring requirement. The data were based on the RVSM approval database by the end of February, 2013.

Strategic Objectives:

A: *Safety* – Enhance global civil aviation safety

Global Plan Initiatives:

GPI-2 Reduced vertical separation minima

1. INTRODUCTION

1.1 The Long Term Height Monitoring Impact Statement developed by RASMAG was endorsed by APANPIRG/20 in September 2009. In RASMAG/11 meeting China RMA provided the burden list to the meeting, and this paper is the update for the data.

2. DISCUSSION

2.1 In the last version for the monitoring burden list of China RMA, there were 46 operators with 2060 aircrafts and the biennial monitoring number is about 252. Because of the rapid development for the Chinese Civil Aviation, by the end of February, 2014, there were 51 operators with 2367 aircraft and the biennial monitoring number is about 302.

2.2 Since 2008 China RMA has been using two sets of EGMU to conduct on-board monitoring for Chinese Airlines, and from 2014, China RMA started to use ADS-B Height Monitoring System (AHMS) for HKP monitoring. Every year the monitoring plan of China RMA will be published and sent to the domestic operators biannually. The first time of plan publishing is confirmed at the beginning of each year and it is adjusted in the middle of the year based on the progress. The monitoring data shared from other RMAs will also be considered in the monitoring plan.

2.3 For the Democratic People's Republic of Korea (DPRK), there are 10 aircraft and the biennial monitoring number is about 9. It is suggested by GACA of DPRK that some of the RVSM approved aircraft only conduct domestic flights and don't enter RVSM FLs, so these aircraft have not been monitored.

2.4 **Appendix A** provides details of the monitoring burden based on the minimum monitoring requirements of China RMA. **Appendix B** provides detail of airframes monitored by different monitoring systems.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

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

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Appendix A: Estimated RVSM Monitoring Burden for Asia/Pacific Region as a result of Long Term Height Monitoring Requirements of Annex 6

China RMA Monitoring Burden (compiled March 2014)

Responsible State	Operator	Operator Name	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	Remaining # of Monitoring
China	APJ	Allpoints Jet Co.,Ltd	GLF4	1	1	1	1
			GLF5	1	1	1	0
	BJN	Beijing Airlines	GLF5	1	1	1	0
			B737NX	1	1	1	0
			FA7X	2	4	3	1
			A320	1	1	1	0
			A318	1	1	1	0
			GLF4	1	3	2	0
			GLEX	1	1	1	0
	CAO	Air China Cargo	B752	1	2	2	2
			B744-5	1	3	2	0
			B772	1	2	2	0
			B744-10	1	4	2	0
	CBJ	Beijing Capital Airlines Co., Ltd.	A320	1	46	2	0
	CBJ-IGA	Capital Jet Company Co., Ltd.	FA7X	2	1	1	1
			B737NX	1	1	1	0
			CL605	1	1		1
			A320	1	2	1	0
			GLF4	1	11	2	2
			HA4T	2	2	1	0
			GALX	1	5	2	0
			GLEX	1	1		1
			H25B-800	1	7	2	1
	CCA	Air China	B737NX	1	118	2	0
			B77W	1	2	2	0
			B744-10	1	5	2	0
			B737CL	1	4	2	0
			B767	1	1	1	1
			B773	1	16	2	0
			B752	1	6	2	0
			A320	1	111	2	0
			A330	1	43	2	0
B772			1	10	2	0	
A340			1	4	2	0	
CCD	Dalian	B737NX	1	6	2	0	

Responsible State	Operator	Operator Name	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	Remaining # of Monitoring
		Airlines					
	CDC	Zhejiang Loong Airlines Co.,Ltd	B737CL	1	2	2	2
	CDG	Shandong Airlines	CARJ	1	5	2	0
			B737NX	1	64	2	0
			CRJ7	1	2	2	2
			B737CL	1	3	2	2
	CES	China Eastern Airlines	B767	1	1	1	1
			E135-145	1	11	2	2
			CARJ	1	5	2	2
			B737NX	1	72	2	0
			A306	1	7	2	2
			GLEX	1	1	1	0
			A330	1	34	2	0
			A346	1	5	2	0
			B737CL	1	16	2	0
	CES-IGA	China Eastern Airlines Excecutive Air	H25B-800	1	1	1	1
			BD100	1	1	1	0
			GLF5	1	2	2	0
	CFI	Flight Inspection Center of CAAC	C750	1	1	1	1
			GLF4	1	1	1	0
			C680	1	3	2	2
			C56X	1	5	2	2
	CHB	West Air	A320	1	15	2	0
	CHH	Hainan Airlines	B767	1	3	2	1
			A346	1	3	2	0
			A330	1	13	2	0
			B737NX	1	110	2	0
			B737CL	1	5	2	2
			B787	2	6	4	0
	CHJ	Star Jet Co., Ltd	GLF5	1	1	1	0
			GALX	1	1	1	0
	CKK	China Cargo Airlines Ltd.	B772	1	6	2	0
			B744-10	1	5	2	0
			MD11	1	1	1	0
			B752	1	2	2	2
	CNM	Air China Inner Mongolia	B737NX	1	1	1	0

Responsible State	Operator	Operator Name	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	Remaining # of Monitoring
		Co.,Ltd					
	CQH	Spring Airlines	A320	1	40	2	0
	CQN	Chongqing Airlines	A320	1	11	2	0
	CSC	Sichuan Airlines	A320	1	79	2	0
			A330	1	6	2	0
	CSH	Shanghai Airlines	B767	1	7	2	0
			B737NX	1	57	2	0
			B752	1	8	2	0
			A330	1	4	2	0
	CSN	China Southern Airlines	A306	1	4	2	2
			B752	1	15	2	2
			B77W	1	1	1	0
			B787	2	8	5	0
			B737NX	1	140	2	0
			B772	1	16	2	0
			A320	1	215	2	0
			A330	1	28	2	0
			A380	2	5	3	0
			MD90	1	4	2	2
			E170-190	1	21	2	0
	CSS	Shunfeng Airlines	B752	1	8	2	2
			B737CL	1	6	2	1
	CSZ	Shenzhen Airlines	A320	1	66	2	0
			B737NX	1	70	2	0
	CUA	China United Airlines	B737NX	1	25	2	0
	CXA	Xiamen Airlines	B752	1	6	2	0
			B737NX	1	95	2	0
	CYZ	China Postal Airlines	B737CL	1	20	2	0
	DER	Shanghai Deer Jet Co.,Ltd	GLF4	1	5	2	0
			GLF5	1	4	2	0
			FA7X	2	1	1	0
			H25B-800	1	2	2	2
			GALX	1	3	2	2
	DKH	Juneyao Airlines	A320	1	34	2	0
	EPA	Donghai	B737CL	1	7	2	1

Responsible State	Operator	Operator Name	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	Remaining # of Monitoring	
China		Airlines	B737NX	1	2	2	0	
			EPB	Donghai Jet Co. Ltd	BD100	1	5	2
		FSJ	Free Sky Aviation Co.,Ltd	CL600	1	2	2	0
				CARJ	1	2	2	2
		GCR	Tianjin Airlines	P180	2	2	2	2
				E135-145	1	22	2	0
				A320	1	9	2	0
		GDC	Grand China Airlines	E170-190	1	50	2	0
				B737NX	1	3	2	2
				HAH	Hanhwa Business Jet Airlines Co.,Ltd	BD100	1	2
		HBH	Hebei Airlines	B737NX	1	5	2	0
				E170-190	1	5	2	1
				E135-145	1	1	1	1
		HXA	China Express Air	CRJ9	1	8	2	0
				CARJ	1	5	2	1
	JBE	Bear Jet Co.,Ltd	GALX	1	1	1	1	
	ICU	Asia Air Medical(Beijing) Ltd	LJ60	1	2	2	1	
			BE40	2	1	1	1	
	KNA	Kunming Airlines	B737NX	1	12	2	0	
	LKE	Lucky Air	B737NX	1	14	2	0	
			A320	1	10	2	0	
	MSF	Minsheng International Jet Co.,Ltd	E135-145	1	1	1	0	
			F900	1	1	1	1	
			FA7X	2	2	2	2	
	MZT	ZYB Lily Jet	CL604	1	1	1	1	
			CL605	1	1	1	0	
			CL600	1	1	1	1	
			GALX	1	1	1	0	
			GLEX	1	2	2	0	
			CARJ	1	4	2	2	
	NSJ	Nanshan Jet Co.,Ltd	GLF5	1	1	1	0	
B737NX			1	1	1	0		
FA7X			2	1	1	0		
GLF4			1	3	2	2		
China	OKA	Okay Airway Ltd.	B737NX	1	7	2	0	
			B737CL	1	1	1	0	

Responsible State	Operator	Operator Name	Aircraft Monitoring Group (e.g.[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	Remaining # of Monitoring
	TBA	Tibetan Airlines	A320	1	8	2	0
	UEA	Chengdu Airlines Co., Ltd.	A320	1	11	2	0
	UNA	Business Aviation Asia Ltd.	HA4T	2	2	2	2
			F900	1	2	2	0
			GLEX	1	2	2	0
			GLF4	1	7	2	0
			A318	1	2	2	0
			A320	1	1	1	0
			CARJ	1	3	2	0
			GLF5	1	3	2	0
			LJ60	1	1	1	0
			C525	1	1	1	1
			FA7X	2	4	3	0
			CL600	1	1	1	0
	CL605	1	2	2	0		
	GALX	1	2	2	1		
	UTP	Uni-top Airlines	B747CL	1	2	2	1
	YZR	Yangze River Express Airlines	B744-5	1	1	1	0
A330			1	1	1	0	
B737CL			1	15	2	0	
B744-10			1	2	2	0	
Total China					2366	295	80

Responsible State	Operator	Operator Name	Aircraft Monitoring Group	MMR Category (1, 2 or 3)	Total Aircraft Type Count	Resultant Monitoring Burden (# Airframes)	Remaining # of Monitoring
DPRK	KOR	Air Koryo	IL62	2	4	3	3
			IL76	2	1	1	1
			T134	2	1	1	1
			T154	1	1	1	1
			T204	2	2	2	1
			A148	2	1	1	0
Total DPRK					10	9	7

China RMA Grand Total (China + DPRK)					Total Aircraft Type Count	Resultant Monitoring Burden	Remaining # of Monitoring
					2,376	304	87

Responsible State	Operator	Operator	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	China EGMU	China ADS-B	EUR HMU	AAMA ADS-B	JASMA HMU	US AGHME	MAAR ADS-B	Remaining # of Monitoring		
			H25B-800	1	7	2			1					1		
			GLF5	1	20	2					1	5		0		
	CCA	Air China	B737NX	1	118	2	2	98			22		83	0		
			B77W	1	2	2		2	16				12		0	
			B744-10	1	5	2		5	2		1		6	1	0	
			B737CL	1	4	2		2							0	
			B767	1	1	1									1	
			B773	1	16	2		2	16			11			0	
			B752	1	6	2		2	0						0	
			A320	1	111	2		2	101				22		69	0
			A330	1	43	2		2	43	32		24			38	0
			B772	1	10	2		2	10				5		10	0
			A340	1	4	2			4	5						0
	CCD	Dalian Airlines	B737NX	1	6	2	2	6					6	0		
	CDC	Zhejiang Loong Airlines Co.,Ltd	B737CL	1	2	2								2		
	CDG	Shandong Airlines	CARJ	1	5	2	2							0		
			B737NX	1	64	2			64			4		56	0	
			CRJ7	1	2	2									2	
			B737CL	1	3	2									2	
	CES	China Eastern Airlines	B767	1	1	1								1		
			E135-145	1	11	2									2	
			CARJ	1	5	2									2	
			B737NX	1	72	2		1	61			9		58	0	
			A306	1	7	2									2	
			GLEX	1	1	1		1	1					1	0	

Responsible State	Operator	Operator	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	China EGMU	China ADS-B	EUR HMU	AAMA ADS-B	JASMA HMU	US AGHME	MAAR ADS-B	Remaining # of Monitoring	
			A330	1	34	2		33	19	28	22		34	0	
			A346	1	5	2		5		4	5	1	5	0	
			B737CL	1	16	2								2	0
			A320	1	202	2		141	6		57			136	0
	CES-IGA	China Eastern Airlines Excecutive Air	H25B-800	1	1	1									1
			BD100	1	1	1	1								0
			GLF5	1	2	2	1	2				1			0
	CFI	Flight Inspection Center of CAAC	C750	1	1	1									1
			GLF4	1	1	1		1							0
			C680	1	3	2									2
			C56X	1	5	2									2
	CHB	West Air	A320	1	15	2	2	15					5	0	
	CHH	Hainan Airlines	B767	1	3	2	1								1
			A346	1	3	2	2	3							0
			A330	1	13	2		13	4	3				10	0
			B737NX	1	110	2	2	90	1					87	0
			B737CL	1	5	2									2
			B787	2	6	4		6						1	0
	CHJ	Star Jet Co., Ltd	GLF5	1	1	1	1								0
			GALX	1	1	1	1					1	1		0
	CKK	China Cargo Airlines Ltd.	B772	1	6	2		6	6			6		6	0
			B744-10	1	5	2	2	4	1			4	1	3	0
			MD11	1	1	1								1	0
			B752	1	2	2									2

Responsible State	Operator	Operator	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	China EGMU	China ADS-B	EUR HMU	AAMA ADS-B	JASMA HMU	US AGHME	MAAR ADS-B	Remaining # of Monitoring	
	CNM	Air China Inner Mongolia Co.,Ltd	B737NX	1	1	1		1						0	
	CQH	Spring Airlines	A320	1	40	2	2	39	2		12		39	0	
	CQN	Chongqing Airlines	A320	1	11	2	2	7					1	0	
	CSC	Sichuan Airlines	A320	1	79	2		63					45	0	
			A330	1	6	2		6	2						0
	CSH	Shanghai Airlines	B767	1	7	2		2		1			1	0	
			B737NX	1	57	2		30			11			27	0
			B752	1	8	2					2				0
			A330	1	4	2		4	2		2			2	0
	CSN	China Southern Airlines	A306	1	4	2								2	
			B752	1	15	2									2
			B77W	1	1	1		1	5						0
			B787	2	8	5		8			5			8	0
			B737NX	1	140	2		96					1	70	0
			B772	1	16	2		8		1	8			8	0
			A320	1	215	2		160	2		19			154	0
			A330	1	28	2		28	12	21	9			26	0
			A380	2	5	3		3	1		4				0
			MD90	1	4	2									2
			B737CL	1	14	2								1	2
	E170-190	1	21	2		20						10	0		
	CSS	Shunfeng Airlines	B752	1	8	2								2	
			B737CL	1	6	2	1								1
	CSZ	Shenzhen Airlines	A320	1	66	2		66					67	0	

Responsible State	Operator	Operator	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	China EGMU	China ADS-B	EUR HMU	AAMA ADS-B	JASMA HMU	US AGHME	MAAR ADS-B	Remaining # of Monitoring
			B737NX	1	70	2		52			4		47	0
	CUA	China United Airlines	B737NX	1	25	2		16					16	0
	CXA	Xiamen Airlines	B752	1	6	2	2							0
			B737NX	1	95	2		85					85	0
	CY Z	China Postal Airlines	B737CL	1	20	2	2				4			0
	DER	Shanghai Deer Jet Co.,Ltd	GLF4	1	5	2		1	1					0
			GLF5	1	4	2		1	2			1		0
			FA7X	2	1	1						1		0
			H25B-800	1	2	2								2
			GALX	1	3	2								2
	DKH	Juneyao Airlines	A320	1	34	2	2	34	3				33	0
	EPA	Donghai Airlines	B737CL	1	7	2	1							1
			B737NX	1	2	2		2						
	EPB	Donghai Jet Co. Ltd	BD100	1	5	2								2
			CL600	1	2	2		2				1		
	FSJ	Free Sky Aviation Co.,Ltd	CARJ	1	2	2								2
			P180	2	2	2								
	GCR	Tianjin Airlines	E135-145	1	22	2	2							0
			A320	1	9	2		9					5	0
			E170-190	1	50	2	2							
	GDC	Grand China Airlines	B737NX	1	3	2								2
	HAH	Hanhwa Business Jet Airlines Co.,Ltd	BD100	1	2	2	1							1
	HBH	Hebei Airlines	B737NX	1	5	2	2	5					4	0
			E170-190	1	5	2	1							

Responsible State	Operator	Operator	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	China EGMU	China ADS-B	EUR HMU	AAMA ADS-B	JASMA HMU	US AGHME	MAAR ADS-B	Remaining # of Monitoring
			E135-145	1	1	1								1
	HXA	China Express Air	CRJ9	1	8	2	2							0
			CARJ	1	5	2	1							1
	JBE	Bear Jet Co.,Ltd	GALX	1	1	1								1
	ICU	Asia Air Medical(Beijing) Ltd	LJ60	1	2	2						1		1
			BE40	2	1	1								1
	KNA	Kunming Airlines	B737NX	1	12	2	2	3					2	0
	LKE	Lucky Air	B737NX	1	14	2	1	6						0
			A320	1	10	2	2	10					2	0
	MSF	Minsheng International Jet Co.,Ltd	E135-145	1	1	1	1							0
			F900	1	1	1								1
			FA7X	2	2	2								2
	MZT	ZYB Lily Jet	CL604	1	1	1								1
			CL605	1	1	1		1						0
			CL600	1	1	1								1
			GALX	1	1	1						1		0
			GLEX	1	2	2			2					0
			CARJ	1	4	2								2
	NSJ	Nanshan Jet Co.,Ltd	GLF5	1	1	1		1	1			1		0
			B737NX	1	1	1		1				1	1	0
			FA7X	2	1	1	1							0
			GLF4	1	3	2						1		2
	OKA	Okay Airway Ltd.	B737NX	1	7	2	2	7					4	0
			B737CL	1	1	1	1							0
	TBA	Tibetan Airlines	A320	1	8	2	1	8					1	0

Responsible State	Operator	Operator	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	China EGMU	China ADS-B	EUR HMU	AAMA ADS-B	JASMA HMU	US AGHME	MAAR ADS-B	Remaining # of Monitoring	
	UEA	Chengdu Airlines Co., Ltd.	A320	1	11	2		11					7	0	
	UNA	Business Aviation Asia Ltd.	HA4T	2	2	2									2
			F900	1	2	2	1	1	1			1			0
			GLEX	1	2	2		2				1			0
			GLF4	1	7	2	2	1	1						0
			A318	1	2	2	1	2	2					2	0
			A320	1	1	1	1	1				1			0
			CARJ	1	3	2	2	1							0
			GLF5	1	3	2	1	2				1			0
			LJ60	1	1	1						1			0
			C525	1	1	1									1
			FA7X	2	4	3	1		1			1			0
			CL600	1	1	1		1				1			0
			CL605	1	2	2		2						1	0
	GALX	1	2	2	1									1	
	UTP	Uni-top Airlines	B747CL	1	2	2	1		1						1
YZR	Yangze River Express Airlines	B744-5	1	1	1	1	1	1	1		1			0	
		A330	1	1	1	1	1					1		0	
		B737CL	1	15	2	2				2				0	
		B744-10	1	2	2	1	2	2		2				0	
DPRK	KOR	Air Koryo	A148	2	1	1	1							0	
			IL62	2	4	3								3	
			IL76	2	1	1									1
			T134	2	1	1									1
			T154	1	1	1									1

Responsible State	Operator	Operator	Aircraft Monitoring Group (e.g[A342,A342])	MMR Category (1, 2 or 3)	Total Approved Airframes	Resultant Monitoring Burden (# Airframes)	China EGMU	China ADS-B	EUR HMU	AAMA ADS-B	JASMA HMU	US AGHME	MAAR ADS-B	Remaining # of Monitoring
			T204	2	2	2	1							1
					2376	304	88	1609	160	95	249	61	1334	87