International Civil Aviation Organization

THIRTEENTH MEETING OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/13)
Bangkok, Thailand, 9 to 13 September 2002

Agenda Item: 2.1

Assessment of Non-State Approved Operators Using Pacific RVSM Based on an April 2002 Traffic Sample

Presented by the United States of America

(Prepared by the FAA Technical Center)

Summary

This paper presents a comprehensive assessment of the identification of non-RVSM approved operators using Asia/Pacific airspace where RVSM is applied. Using actual Pacific traffic movement data collected during April 2002, the Asia Pacific Approvals Registry and Monitoring Organization (APARMO) compared all observed air carrier aircraft operations flying between FL290 and FL390, inclusive, against the RVSM operational approvals noted in the APARMO Approvals Registry, the North Atlantic (NAT) Central Monitoring Agency (CMA) database, and the MASPS-compliant airframes identified by Eurocontrol. The traffic movement data used for this analysis were from the Anchorage, Auckland, Brisbane, Naha, Oakland, Tahiti, and Tokyo Flight Information Regions (FIRs). By using the methodology explained in this paper, the APARMO identified potentially non-RVSM approved operations and comprehensively summarized all cases of the identified operators and aircraft types. It reveals possible cases of non-RVSM approved operations, with some possible non-approved operations showing /W in Field 10 of the ICAO flight plans. The paper proposes that the APARMO provide a copy of this document to the appropriate Asia-Pacific State civil aviation authorities (CAAs), and that the CAAs investigate the RVSM approval status of the identified operators and aircraft that are under their jurisdiction.

1. Introduction

1.1. The Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) established the APARMO as a safety oversight function to support RVSM implementation in the Asia Pacific Region (reference 1). The APARMO is a service provided by the United States Federal Aviation Administration's (FAA) Technical Center.

1.2. The APARMO serves as a regional monitoring agency (RMA) as is called for in ICAO *Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive* (Doc 9574). Along with maintaining a registry of State RVSM approvals of operators and aircraft using RVSM airspace, the APARMO has produced readiness and safety assessments in conjunction with the Safety and Airspace Monitoring (SAM) Working Group of the RVSM Task Force.

1.3. On 24 February 2000, RVSM was implemented in the following Pacific FIRs: Anchorage, Auckland, Brisbane, Nadi, Naha, Oakland, Tahiti and Tokyo.

1.4. Among the duties and responsibilities of the APARMO (reference 2, Appendix L) is: "to provide the means for identifying non-RVSM approved operators using Asia/Pacific airspace where RVSM is applied; and notifying the appropriate State approval authority."

1.5. In fulfillment of this responsibility, the APARMO conducted examinations in calendar years 2000 and 2001 of the approval status of operators and aircraft using Pacific RVSM airspace. The first was based on a June 2000 sample of traffic movements from all Pacific FIRs and the second on a 15 April through 14 May 2001 sample. The results of each examination served as the basis for communications with State authorities and subsequent improvements.

1.6. The APARMO reported the results of its examinations to the Twelfth Meeting of the APANPIRG (reference 3). In response, the APANPIRG "noted the need of the APARMO to collect a 4-week sample of traffic movements in early calendar year 2002 from those Pacific FIRs where RVSM is applied in order to perform another analysis." (reference 3, paragraph 2.1.31).

1.7. The purpose of this working paper is to present the APARMO examination of the State RVSM approval status of operators and aircraft observed in the sample of traffic movements collected from Pacific FIRs where RVSM is applied.

2. Background

2.1. The APARMO maintains a database of State RVSM approvals issued in connection with RVSM introduction into the Asia Pacific Region. In addition, the APARMO regularly acquires the latest version of a similar database maintained by the North Atlantic (NAT) Central Monitoring Agency (CMA). The union of these two databases is termed the Unified APARMO Database of Approvals. Further, the APARMO regularly consults the database of State RVSM approvals maintained by Eurocontrol in connection with continental European RVSM, which was implemented on 24 January 2002.

2.2. Each State approval in the Unified APARMO Database of Approvals identifies an aircraft by operator, type and registration number. The APARMO calendar year 2000 and 2001 examinations of approval status consisted of comparing the operator, aircraft type and, where provided, registration number of each flight in each FIR traffic movement sample to the entries in the database. All flights which appeared not to have State RVSM approval were further checked against the Eurocontrol database. Those flights failing this matching were then analyzed further in order to remove any possible coding errors in preparing the samples. The flights still appearing to lack State RVSM approval were then the object of subsequent correspondence between the APARMO and the relevant State authorities and operators.

2.3. Table 1 presents the RVSM flight level orientation scheme for the Pacific FIRs as modified at the 5th Meeting of the ICAO RVSM Task Force (RVSM/TF/5) (reference 4, paragraph 2.0).

State	FIRs	Flight Levels	Flight Level Orientation Scheme	Exclusive Airspace	Phased Implementation
Australia	Brisbane	290-390	Single	Yes	No
Fiji	Nadi	290-390	Single	Yes	No
Japan	Naha, Tokyo	290-390	Single	Varies[1]	Yes[1]
New Zealand	Auckland	290-390	Single	Yes	No
Tahiti	Tahiti	290-390	Single	No[2]	No
United States	Anchorage, Oakland	290-390	Single	Yes	No

State	FIRs	Flight Levels	Flight Level Orientation Scheme	Exclusive Airspace	Phased Implementation
Papua New Guinea	Port Moresby	290-390	Single	Yes	Yes
Note: "Exclusive" means non-approved aircraft may NOT flight plan into RVSM altitudes. Aircraft that have not received State RVSM approval may be cleared to operate in airspace where RVSM may be applied in accordance with the policy and procedures established by the ATS Provider States provided that 2,000 ft vertical separation is applied. Some States may choose to allow non-RVSM State aircraft to flight plan into RVSM airspace.					

Table 1. Operational Implementation of the RVSM in Pacific FIRs

[1] Japan – Phase I: Tokyo FIR exclusive except G581 and western A590, G339 will be exclusive and apply altitudes per ICAO Annex 2, Appendix 3b (CVSM); Naha FIR non-exclusive; Phase II: expand exclusive area; Phase III: exclusive in all of Tokyo and Naha FIRs. (Naha is currently non-exclusive.)

[2] Tahiti – Non-exclusive until 24 August 2000, exclusive thereafter. (Although originally planned to go exclusive on 24 August 2000, Tahiti has remained non-exclusive.)

2.4. The 7th Meeting of the ICAO RVSM Task Force (RVSM/TF/7) (reference 5, paragraph 2.2) agreed that an operational advantage could be gained by expanding the applicable altitudes of RVSM up to and including FL 410. It was agreed that this expansion should not be exclusionary in nature, that is the altitudes between FL 390 and FL 410 would be a mixed-equipage environment.

2.5. The expansion of Pacific RVSM up to and including FL410 was implemented on 5 October 2000 in the Tokyo, Naha, Auckland, Anchorage, and Oakland FIRs.

2.6. Due to the mixed-equipage environment, operations above FL390 were not considered for inclusion in the analyses presented in this report; hence, the traffic samples were screened for traffic between FL290 and FL390, inclusive.

2.7. Table 2 presents the Pacific airspace fleet data sources available to the APARMO.

Source	Providers	Description
State Approvals	State CAA Authorities	Airworthiness and Full (Ops) RVSM Fleet Approvals for Operator by Aircraft Type. Pacific RVSM approvals sent directly to the APARMO (both fleet and individual airframe approvals). NAT approvals on file with the NAT CMA, and downloaded to the FAA Technical Center periodically.
Pacific RVSM Monitoring Applications	Airline Operators	RVSM monitoring applications provide complete fleet descriptions by aircraft type to the APARMO.
Exogenous information	State CAA Authorities, Operators, Inspectors, Manufacturers, etc.	Knowledge obtained from various sources that allow the APARMO to make educated judgments about an operator's RVSM approval status in the Pacific. This is useful in evaluating operators identified in the traffic movement data for which no RVSM approvals have yet been granted.

Source	Providers	Description
Asia/Pacific Traffic Movement Data Files	ATS Providers	Historical traffic movement data for selected Pacific FIRs that provides operation counts for each operator/aircraft type. This allows Pacific operators to be evaluated for potential violations of RVSM operational approval requirements in Pacific RVSM airspace.

Table 2. Asia/Pacific RVSM Fleet Data Sources

2.8. As one of its major responsibilities, the APARMO maintains a database of Pacific RVSM approvals that have been granted by the appropriate State civil aviation authorities (CAAs) to the Pacific operators. The appropriate CAA notifies the APARMO when an RVSM approval has been granted.

2.9. As these approvals are received by the APARMO, they are added to the Pacific RVSM Approvals Database.

2.10. As of 30 August 2002, the APARMO Approvals Database contained RVSM full operational approval records for 1,847 airframes, representing 105 Pacific operators using 46 aircraft types.

2.11. For the purpose of this assessment, the APARMO obtained the NAT CMA database of RVSM approvals. The NAT CMA database identifies each operator aircraft pair with State approval for NAT RVSM operations. The NAT CMA Approvals Database contained RVSM full operational approval records for 9,316 airframes, representing 436 operators using more than 119 aircraft types.

2.12. The APARMO utilized the database of Minimum Aviation System Performance Standards (MASPS)-compliant airframes identified by Eurocontrol for this assessment for those operators and aircraft types not found on the APARMO or NAT CMA Approval Databases.

2.13. For this current assessment, an operational approval for the operator/aircraft type pair in either the APARMO, NAT CMA or Eurocontrol RVSM Approval Registries counts for full RVSM approval.

2.14. Appendix A contains the Asia-Pacific RVSM Minimum Monitoring Requirements. The APARMO referenced the contents of Appendix A when considering valid operational approvals for the defined aircraft groups. These defined aircraft groups allow for "group fleet approvals" for operator/aircraft pairs identified in the Pacific traffic movement files.

3. Discussion

3.1. In order to evaluate operators for violations of RVSM operational approval requirements in the Pacific oceanic region, knowledge of the operators using the Pacific RVSM airspace is required. An analysis of traffic movement data is necessary to identify the specific aircraft operators and the aircraft types that use the airspace. This section provides basic data on the Pacific operator and aircraft populations that were used for this analysis.

3.2. The need for Pacific traffic movement data was discussed at 16th Meeting of the Informal South Pacific ATS Coordinating Group (ISPACG/16), Papeete, Tahiti 13-15 February 2002 (reference 6). That meeting reaffirmed that one APARMO safety oversight responsibility was to use the APARMO Approvals Registry in conjunction with records of aircraft operating in Pacific airspace

where RVSM is applied in order to identify any operators and aircraft using the airspace without State RVSM approval. Accordingly, the meeting endorsed the collection of the sample of traffic movements requested by the APARMO.

3.3. The collection of the traffic movement sample was also coordinated with the Japan Civil Aviation Bureau (JCAB).

3.4. The Pacific FIR traffic samples used in this assessment of non-RVSM approved operators using Pacific airspace represents traffic movements observed from 1-30 April 2002.

3.5. As a result of the request for traffic movement data, five States provided traffic movement data to be examined by the APARMO, representing seven Pacific FIRs. Usable data was obtained from the United States FAA's Enhanced Traffic Management System (ETMS), Airways Corporation of New Zealand, Airservices Australia, French Polynesia Service d'Etat de l'Aviation Civile (SEAC), and the Tokyo and Naha Area Control Centers (ACCs) in Japan.

4. Traffic Data Summary

4.1. The total number of all flights for each of the traffic movement samples used in this analysis is presented in Table 3. The counts in Table 3 include commercial operators (COM), international general aviation (IGA), and State aircraft.

State	FIR	Traffic Sample	Total Number of All Flights
Australia	Brisbane	One month traffic sample (1-30 April 2002)	4,063
Japan	Naha	One month traffic sample (1-30 April 2002)	3,410
Japan	Tokyo	One month traffic sample (1-30 April 2002)	10,361
New Zealand	Auckland	One month traffic sample (31 March - 30 April 2002)	4,157
Tahiti	Tahiti	One month sample (1-30 April 2002)	428
United States	Anchorage, Oakland	One month sample (31 March – 1 May 2002; missing days 19-21 April)	17,307

Table 3. Total Number of All Flights in Traffic Movement Data Collected by Pacific FIR

4.2. The total number of COM flights for each traffic movement sample is presented in Table 4.

State	FIR	Traffic Sample	Total Number of COM Flights
Australia	Brisbane	One month traffic sample (1-30 April 2002)	3,695
Japan	Naha	One month traffic sample (1-30 April 2002)	3,252
Japan	Tokyo	One month traffic sample (1-30 April 2002)	10,218
New Zealand	Auckland	One month traffic sample (31 March - 30 April 2002)	3,792
Tahiti	Tahiti	One month sample (1-30 April 2002)	416
United States	Anchorage, Oakland	One month sample (31 March – 1 May 2002; missing days 19-21 April)	16,442

Table 4. Total Number of Commercial Flights in Traffic Movement Data Collected by Pacific FIR

4.3. The total number of IGA flights for each traffic movement sample is presented in Table 5.

State	FIR	Traffic Sample	Total Number of IGA Flights
Australia	Brisbane	One month traffic sample (1-30 April 2002)	344
Japan	Naha	One month traffic sample (1-30 April 2002)	25
Japan	Tokyo	One month traffic sample (1-30 April 2002)	18
New Zealand	Auckland	One month traffic sample (31 March - 30 April 2002)	336
Tahiti	Tahiti	One month sample (1-30 April 2002)	10
United States	Anchorage, Oakland	One month sample (31 March – 1 May 2002; missing days 19-21 April)	364

Table 5. Total Number of International General Aviation Flights in Traffic Movement Data Collected by Pacific FIR

4.4. The total number of State flights for each traffic movement sample is presented in the Table 6.

State	FIR	Traffic Sample	Total Number of State Flights
Australia	Brisbane	One month traffic sample (1-30 April 2002)	24
Japan	Naha	One month traffic sample (1-30 April 2002)	133
Japan	Tokyo	One month traffic sample (1-30 April 2002)	125
New Zealand	Auckland	One month traffic sample (31 March - 30 April 2002)	29
Tahiti	Tahiti	One month sample (1-30 April 2002)	2
United States	Anchorage, Oakland	One month sample (31 March – 1 May 2002; missing days 19-21 April)	501

Table 6. Total Number of State Flights in Traffic Movement Data Collected by Pacific FIR

4.5. The percent of COM, IGA and State aircraft found in the collected traffic movement samples are presented in Table 7.

	Percent of Sample (%)		
FIR	COM	IGA	State
Brisbane	90.94	8.47	0.59
Naha	95.37	0.73	3.90
Tokyo	98.62	0.17	1.21
Auckland	91.22	8.08	0.70
Tahiti	97.20	2.34	0.47
Anchorage, Oakland	95.00	2.10	2.89

Table 7. Percent of Commercial, International General Aviation, and State Flights in the Traffic Movement Data Collected by Pacific FIR

5. Summary of Observed Pacific Traffic Without RVSM Operational Approval

5.1. Table 8 presents a summary of the operations in the Brisbane FIR for which RVSM approvals were not found.

Agency Name / Registration Number	Operator/Aircraft Type	Number of Operations in Sample	RVSM Approval Status

Agency Name / Registration Number	Operator/Aircraft Type	Number of Operations in Sample	RVSM Approval Status
ASIAN EXPRESS AIRLINES PTY LIMITED / VHDHE	AXF B722	46	Not approved – this is an Australian registered aircraft owned by AXF and wet-leased by ACI for freight only on peak season
FOHJM	VNR J328	2	Not approved – Wan Air is French-registered and based at Tahiti, French Polynesia
N105BK	F900	2	Not approved
N61DP	LJ60	1	Not approved

Table 8. Operations in the Brisbane FIR Traffic Sample for Which RVSM Approvals Were Not Found

5.2. Table 9 presents a summary of the operations in the Naha FIR for which RVSM approvals were not found.

Agency Name / Registration Number	Operator/Aircraft Type	Number of Operations in Sample	RVSM Approval Status
CGIRE	LJ35	1	Not approved – Did not show /W in ICAO flight plan in Naha traffic sample

Table 9. Operations in the Naha FIR Traffic Sample for Which RVSM Approvals Were Not Found

5.3. Table 10 presents a summary of the operations in the Tokyo FIR for which RVSM approvals were not found.

Agency Name / Registration Number	Operator/Aircraft Type	Number of Operations in Sample	RVSM Approval Status
AIR NIPPON CO. LTD. / JA8286, JA8323	ANK B763	3	Both airframes are approved under operators AJX & ANA. These 3 flights were under wet-lease arrangement between ANK (lessee) and ANA (Lessor)

Table 10. Operations in the Tokyo FIR Traffic Sample for Which RVSM Approvals Were Not Found

5.4. Table 11 presents a summary of the operations in the Auckland FIR for which RVSM approvals were not found.

Agency Name / Registration Number	Operator/Aircraft Type	Number of Operations in Sample	RVSM Approval Status
AIR CALEDONIE INTERNATIONAL / VHDHE	ACI B722	9	Not approved – this is an Australian registered aircraft owned by AXF and wet-leased by ACI for freight only on peak season
ASIAN EXPRESS AIRLINES PTY LIMITED / VHDHE	AXF B722	45	Not approved – this is the same aircraft as listed above for ACI.
JET CITY, MELBOURNE, AUSTRALIA / VHJCR	LJ35	1	Not approved – Jet City uses the Tenix maintenance base at Melbourne Airport
VHSCD	C550	3	Not approved
ZKNAI	B732	1	Not approved – Currently registered to ANZ?

Table 11. Operations in the Auckland FIR Traffic Sample for Which RVSM Approvals Were Not Found

5.5. Table 12 presents a summary of the operations in the Tahiti FIR for which RVSM approvals were not found.

Agency Name / Registration Number	Operator/Aircraft Type	Number of Operations in Sample	RVSM Approval Status
N105BK	F900	2	Not approved
N724CL	B722	2	Not approved

Table 12. Operations in the Tahiti FIR Traffic Sample for Which RVSM Approvals Were Not Found

5.6. Table 13 presents a summary of the operations in the Anchorage and Oakland FIRs for which RVSM approvals were not found.

Agency Name / Registration Number	Operator/Aircraft Type	Number of Operations in Sample	RVSM Approval Status
CGIRE	LJ35	1	Not approved
ALLCANADA EXPRESS LTD	CNX B722	2	Not approved (SFO – HNL, HNL – MAJ) No /W shown in field 10 of ICAO flight plan
CUSTOM AIR TRANSPORT, INC. (DANIA, FL)	CTT B722	11	Not approved – No /W shown in Field 10 of ICAO flight plan
JA358K	ANK BE73	1	Not approved – Possible a ferry flight (4/1/02) to deliver the aircraft to ANK
LN432JW	LJ36	2	Not approved
N54JA	LJ35	4	Not approved
N105BK	F900	1	Not approved

Agency Name / Registration Number	Operator/Aircraft Type	Number of Operations in Sample	RVSM Approval Status
N108AR	GLF3	1	Not approved
N1123G	GLF2	1	Not approved
N275WC	B722	2	Not approved
N375NW	GLF3	1	Not approved
N55CJ	LJ36	1	Not approved
N6819	B722	2	Not approved
N71PG	LJ36	2	Not approved - showed /W in field 10 of ICAO flight plan in US traffic sample
N724CL	B72Q	1	Not approved - showed /W in field 10 of ICAO flight plan in US traffic sample
SOUTHERN CROSS AVIATION, INC. (MENA, AR)	SXA (A300, A310)	5	Not approved (most likely ferry flights – SXA *delivers* aircraft) 1 flight 4/6/02 PHNL -KMHV shows /W in field 10 of ICAO flight plan
TAG AVIATION USA, INC. (SEATTLE, WA)	TAG (B752, GLF3, GLF5)	6	Not approved
N54JA	LJ35	1	Not approved
AVBASE AVIATION – CHARTER SERVICES (CLEVELAND, OH)	VBS GALX	1	Not approved – 1 flight 4/2/02 PHNL - KBFI shows /W in field 10 of ICAO flight plan
YC153	B738	2	Not approved - showed /W in field 10 of ICAO flight plan in US traffic sample
YC154	B738	2	Not approved - showed /W in field 10 of ICAO flight plan in US traffic sample
YR390	B744	1	Not approved

Table 13. Operations in the Anchorage and Oakland FIR Traffic Sample for Which RVSM Approvals Were Not Found

6. Summary

6.1. Section 5 provides a summary of the potentially non-RVSM approved air carrier and international general aviation operations in the Asia-Pacific Flight Information Regions (FIRs) that the APARMO uncovered during its analysis of the April 2002 traffic samples.

6.2. Note that all operations that are listed in Section 5 as 'Not-approved' are subject to the final investigation of the appropriate State civil aviation authorities to determine the true status of the operations. For example, ferry flights may have been properly coordinated with Air Traffic

Control (ATC) prior to the delivery flights, and, under certain circumstances, operations may have been conducted at 2000 ft VSM in RVSM airspace with prior coordination with ATC who granted oceanic clearance.

6.3. It was assumed that State (military) and medical evacuation operations were properly coordinated with ATC and that they followed appropriate RVSM and/or non-RVSM procedures; thus, they were not summarized in this report.

6.4. It should be noted that there may be cases described in Section 5 that involve the situation where an aircraft that is RVSM operationally approved for a particular air carrier/operator is either wet-leased, dry-leased, or code-shared by *another* air carrier/operator. For these, and possibly other reasons (e.g. to overcome ATC clearance problems) the *other* operator then files an ICAO flight plan using a call sign that denotes his company, and not the company of the original RVSM-approved operator.

6.5. The APARMO feels that an aircraft that is RVSM operationally approved for a particular operator should still be considered to be RVSM operationally approved when it is wet-leased by another company. Under a wet-lease, the lessor includes crew and other services as part of the lease arrangement. Control of the aircraft remains with the lessor company and the lessor's crew is responsible for the operation of the aircraft. Thus, the pilot training and other crew-specific requirements that were satisfied for RVSM operational approval of the original operator are maintained during the wet-lease agreement.

6.6. Under a dry-lease, the lessee furnishes his own pilot and crew. Control of the aircraft is transferred to the lessee. In this case, even if the aircraft was both RVSM airworthiness and operationally approved for the lessor, a new pilot and crew is in control of the aircraft—in all probability the new crew has not met the RVSM training qualifications, flight-manual-update and other requirements that would be necessary to have the lessee operator be RVSM operationally approved for the leased aircraft.

6.7. The RVSM approval problems associated with wet-leasing, dry-leasing, code-sharing, charter flights, and multiple operators of an aircraft (termed as "fractional ownership") were discussed at RVSM TF/10 in Honolulu, Hawaii, 29-30 January 2001. Paragraphs 4.14 and 4.15 of the Summary Report of the TF/10 meeting address the concern for instances in which the State approval status of an operator or operator/aircraft-type combination was rendered unclear due to wet-lease, dry-lease, charter flight, code-sharing, or fractional ownership. Specifically, in Paragraph 4.15 of the Summary Report, the APARMO was directed to work with State authorities in the Region in order to develop enhanced procedures to properly identify RVSM-approved operations that are conducted under these types of arrangements.

7. Conclusions

7.1. The APARMO will provide a copy of this document to the appropriate Asia-Pacific State Civil Aviation Authorities (CAAs), and suggests that in turn, those CAAs investigate the RVSM approval status of the identified operators and aircraft that are under their jurisdictions.

7.2. The APARMO will continue to work with State authorities in the Asia-Pacific Region to develop enhanced procedures to properly identify RVSM-approved operations that are conducted under the leasing and other arrangements discussed in Paragraphs 6.5 through 6.7 above.

7.3. In this regard, the APARMO is acting on the following APANPIRG/12 Conclusion (reference 3, Conclusion 12/1):

That, States are urged to co-operate with APARMO to investigate RVSM approval status of operators and aircraft with the aim of resolving problems of RVSM non-compliant operations

8. Recommendations

8.1. The meeting is invited to note the results of the assessment completed.

8.2. The meeting is further invited to provide the APARMO with any additional clarifying information pertinent to the examples cited in Section 5.

8.3. Finally, the meeting is invited to endorse the APARMO efforts to work with States in order to clarify the RVSM approval status of operators and aircraft in a manner similar to that adopted in APAPIRG Conclusions 12/1 of reference 3.

References

1. Report of the Tenth Meeting of the Asia/Pacific Planning and Implementation Regional Group (APANPIRG), ICAO Asia and Pacific Office, Bangkok, August 1999.

2. Report of the Sixth Meeting of the ICAO Reduced Vertical Separation Minimum Implementation Task Force (RVSM/TF/6), Singapore, 10 – 14 April 2000.

3. Report of the Twelfth Meeting of the Asia/Pacific Planning and Implementation Regional Group (APANPIRG/12), ICAO Asia and Pacific Office, Bangkok, 20-24 August 2001.

4. Report of the Fifth Meeting of the ICAO Reduced Vertical Separation Minima Implementation Task Force (RVSM/TF/5), Tokyo, Japan, 4-5 November 1999.

5. Report of the Seventh Meeting of the ICAO Reduced Vertical Separation Minima Implementation Task Force (RVSM/TF/7), Honolulu, Hawaii, 17-18 April 2000.

6. "Specification for a Traffic Movement Sample to Support Examination of the State Reduced Vertical Separation Minimum (RVSM) Status of Operators and Aircraft Using Pacific Airspace Where RVSM Is Applied", Sixteenth Meeting Of The Informal South Pacific Air Traffic Services Coordinating Group (ISPACG/16), Papeete, Tahiti – 13-15 February 2002, WP/8.

Appendix A

ASIA-PACIFIC RVSM MINIMUM MONITORING REQUIREMENTS:

AS OF: 24 JANUARY 2002

1. INITIAL MONITORING. All Asia-Pacific operators that operate or intend to operate in airspace where RVSM is applied are required to participate in the RVSM monitoring program. The attached chart of monitoring requirements establishes requirements for initial monitoring associated with the RVSM approval process. In their application to the appropriate State authority for RVSM approval, operators must show a plan for meeting the applicable initial monitoring requirements.

2. AIRCRAFT STATUS FOR MONITORING. Aircraft engineering work that is required for the aircraft to receive RVSM airworthiness approval must be completed prior to the aircraft being monitored. Any exception to this rule will be coordinated with the State authority.

3. FOLLOW-ON MONITORING. Monitoring is an on-going program that will continue after the RVSM approval process. A follow-on sampling program for additional operator aircraft will be coordinated by the Asia-Pacific RVSM Implementation Task Force.

4. MONITORING OF AIRFRAMES THAT ARE RVSM COMPLIANT ON DELIVERY. If an operator adds new RVSM compliant airframes of a type for which it already has RVSM operational approval and has completed monitoring requirements for the type in accordance with the attached chart, the new airframes are not required to be monitored - except as targeted at a later date in the follow-on monitoring program. If an operator adds new RVSM compliant airframes of an aircraft type for which it has NOT previously received RVSM operational approval, then the operator should complete monitoring in accordance with the attached chart.

5. APPLICABILITY OF MONITORING FROM OTHER REGIONS. Monitoring data obtained in conjunction with RVSM monitoring programs from other regions can be used to meet Asia-Pacific monitoring requirements. The Asia-Pacific Approvals Registry and Monitoring Organization (APARMO), which is responsible for administering the Asia-Pacific monitoring program, has access to monitoring data from other regions and will coordinate with States and operators to inform them on the status of individual operator monitoring requirements.

6. UPDATE OF MONITORING REQUIREMENTS CHART AND WEBSITE. As significant data is obtained, monitoring requirements for specific aircraft types may change. When the chart is updated, a letter will be distributed to States and operators. The updated chart will be posted on the APARMO website being maintained by the Federal Aviation Administration (FAA) on behalf of the International Civil Aviation Organization (ICAO) Asia-Pacific regional planning group. The website address is:

http://www.tc.faa.gov/act-500/niaab/rvsm/aparmo_intro.html

7. PRIOR RVSM EXPERIENCE. When a new-entrant-RVSM operator completes the regional monitoring requirements for State approval for all of its Pacific aircraft types or North Atlantic aircraft types, the operator is considered by APARMO to have "Prior RVSM Experience."

For most aircraft types, monitoring is not required to be completed PRIOR to operational approval being granted, however participation in monitoring IS REQUIRED in accordance with the attached chart.

ASIA-PACIFIC APPROVALS REGISTRY AND MONITORING ORGANISATION
EFFECTIVE AS OF: 24 JANUARY 2002

MONITORING NOT REQUIRED **PRIOR** TO THE GRANT OF RVSM APPROVAL, HOWEVER PARTICIPATION IN MONITORING **IS REQUIRED** IN ACCORDANCE WITH THIS CHART			
CATEGORY		**AIRCRAFT TYPE**	**MINIMUM OPERATOR MONITORING FOR EACH AIRCRAFT GROUP**
1	OPERATORS PLANNING TO CONDUCT OPERATIONS IN PACIFIC AIRSPACE AND OPERATORS WITH PRIOR RVSM EXPERIENCE PLANNING TO OPERATE IN THE WESTERN PACIFIC/SOUTH CHINA SEA AREA	New aircraft types from a manufacturer with a demonstrable track record of the production of MASPS compliant airframes **or** [A30B, A306], A310 (GE), A310 (PW), [A319, A320, A321], A330, A340, B712, [B721, B722] [B733, B734, B735] [B736, B737/BBJ, B738, B739] [B741, B742, B743, B74S] B744, [B752, B753], [B762, B763], B764 [B772, B773], DC10, MD10, MD11, MD80, L101 CL60, GLEX, GLF3, GLF4, GLF5 [F900, F900EX] FA50, FA50EX, F2TH, LJ45 LJ60, H25B	Two airframes of each type* to be monitored as soon as possible but not later then 6 months after the issue of RVSM operational approval. ** Note. For the purposes of the minimum monitoring requirement, aircraft within parenthesis [ ] may be considered as the same type.*
Category 2 below has been adopted in preparation for RVSM implementation in the Western Pacific/South China Sea Area on 21 Feb 2002			
2	OPERATORS WITHOUT PRIOR RVSM EXPERIENCE WHOSE OPERATIONS ARE PRIMARILY IN THE WESTERN PACIFIC/SOUTH CHINA SEA AREA	Same types as above in section 1.	At least 3 airframes of each type unless operator has only 1 or 2 of a type, then all operator airframes of that type should be monitored. Monitoring to be completed as soon as possible but **not later then 3 months** after the issue of RVSM operational approval or not later then 3 months after the start of Western Pacific/South China Sea RVSM operations, whichever occurs later.

MONITORING REQUIRED PRIOR TO THE GRANT OF RVSM APPROVAL			
3	OPERATORS OF AIRCRAFT TYPES SHOWN IN THE BLOCK TO THE RIGHT	Other group or non –group aircraft other than those listed above including: A124, ASTR, B707, B731, B732, C525, C560, C650, C750, DC8, DC9, E145, FA10, FA20, F100, GLF2, GALX, H25A, H25C, IL62, LJ31, LJ35, LJ55, MD90 or new aircraft types from a manufacturer **without** a demonstrable track record of the production of MASPS compliant airframes.	60% of target number of airworthiness approved, same type, airframes of each operator to be monitored **or** individual monitoring of airworthiness approved airframes of a given operator.