



*International Civil Aviation Organization*

**Fifteenth Meeting of the APANPIRG ATM/AIS/SAR Sub-Group  
(ATM/AIS/SAR/SG/15)**

Bangkok, Thailand, 25 - 29 July 2005

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**Agenda Item 3: Review and progress the tasks assigned to the ATM/AIS/SAR/SG by  
APANPIRG**

**STATE IMPLEMENTATION OF ICAO PROVISIONS ON CARRIAGE OF ACAS II AND  
PRESSURE-ALTITUDE REPORTING TRANSPONDERS**

(Presented by the Secretariat)

**SUMMARY**

This paper outlines, and seeks an update of, the current information held by the Asia/Pacific Regional Office regarding the status of the implementations by States of regulations pertaining to the carriage of ACAS II and pressure-altitude reporting transponders in the Asia/Pacific Region. In accordance with APANPIRG/15, States who have not implemented the respective ICAO provisions would be included on the APANPIRG List of Deficiencies.

**1. INTRODUCTION**

1.1 The APANPIRG/14 meeting (4-8 August 2003) recalled that a survey was conducted by the Asia/Pacific Regional Office in August 2000 to obtain detailed information from States regarding the status of their implementation plans for the carriage and operation of pressure-altitude reporting transponders, and of the implementation plans for the carriage and operation of ACAS II. The information gained from the survey was updated on 15 June 2001 to include recent information provided by States. Since that time, although no additional survey has been undertaken, some States have advised the Regional Office of amendments for inclusion on the list.

1.2 APANPIRG/14 noted that the APANPIRG/12 meeting (20-24 August 2001, Bangkok, Thailand) had considered it necessary that the situation where States had not established the requirement for the carriage and operation of pressure-altitude reporting transponders specified as a Standard in Annex 6 be listed as a "Deficiency".

1.3 APANPIRG/14 also noted that from 1 January 2003, Annex 6 requires aeroplanes that have a maximum certificated take-off mass in excess of 15000 kg or that are authorized to carry more than 30 passengers to be fitted with ACAS II. Further, with effect from 1 January 2002, Annex 10, Volume IV requires all aeroplanes to be equipped with a pressure-altitude reporting transponder

## 2 DISCUSSION

2.1 The results of the June 2001 update were reviewed by APANPIRG/12 (20-24 August 2001) and the following information was noted:

- a) thirteen (13) States have already mandated the carriage and operation of **pressure-altitude reporting transponders**;
- b) six (6) have an implementation plan of the carriage and operation of **pressure-altitude reporting transponders**;
- c) one (1) indicates that there is no implementation plan of the carriage and operation of **pressure-altitude reporting transponders**;
- d) nine (9) have already mandated the carriage and operation of **ACAS but NOT ACAS II**; while two (2) have mandated the carriage of **ACAS II** specifically;
- e) nine (9) have a plan to mandate the carriage of **ACAS II** specifically on or earlier dates before the worldwide applicability date of Annex 6, i.e. 1 January 2003;
- f) one (1) has a plan to mandate the carriage of **ACAS II** specifically on dates after the worldwide applicability date of Annex 6, i.e. 1 January 2003;
- g) one (1) indicates that there is no implementation plan of the carriage and operation of **ACAS II**; and
- i) nineteen (19) States and Territories have not replied.

2.2 Subsequent amendments received from States were reviewed and updated during the APANPIRG/14 meeting as shown in **Appendix A** (transponder) and **Appendix B** (ACAS) to this paper.

2.3 Although the APANPIRG/13 meeting (9-13 September 2002) also re-emphasized the critical nature of these implementations, advice was given to the APANPIRG/14 meeting that twelve States in the Asia/Pacific Region were listed as not having implemented the Annex 6 requirements for carriage of ACAS II by 1 January 2003, and the APANPIRG/14 meeting urged those States to take necessary action to implement this requirement. The meeting was reminded of incidents that occurred recently whereby potential collisions were avoided by aircraft operating their ACAS and taking avoiding action.

2.4 The APANPIRG/14 meeting stressed that it was of critical importance that aircraft not equipped with a pressure reporting transponder should not be permitted to share airspace used by aircraft equipped with ACAS II. The performance of ACAS was totally dependant on all aircraft in the vicinity being equipped with pressure-altitude reporting transponders in order to detect conflicting traffic and for the ACAS II system to issue a Traffic Advisory (TA) or Resolution Advisory (RA). The meeting was reminded that ACAS II provides a proven independent safety net to prevent mid-air collisions. Operational monitoring programmes had highlighted in numerous actual events the significant contribution ACAS II made to improved flight safety.

2.5 The APANPIRG/14 meeting, on reviewing the status of ACAS II implementation, recognized that TCAS Version 6.04a was not designed for an RVSM environment and it was not compatible with RVSM. However, ACAS II (TCAS Version 7.0) had improved capability and was compatible with RVSM operations.

2.6 In light of the above, APANPIRG/14 agreed that it was a matter of urgency that States implement Annex 6 requirements in regard to ACAS II and pressure-altitude reporting transponders especially in RVSM operations. The meeting formulated the following Conclusion:

**Conclusion 14/6 – Implementation of ACAS II and pressure-altitude reporting transponders in the Asia Pacific Region**

That, States in the Asia/Pacific Region as a matter of urgency implement ACAS II and pressure-altitude reporting transponders required by Annex 6 especially in view of RVSM operations.

2.7 APANPIRG/15 (August 2004) reviewed (paragraph 2.196 to 2.198, Report on Agenda Item 2.1 refers) the status of ACAS II and pressure-altitude reporting transponders implementation by States in line with the above. In this regard, APANPIRG/15 agreed that States who had not implemented the ICAO provisions in respect of ACAS II and pressure-altitude reporting transponders would be included on the list of deficiencies to be presented to APANPIRG/16.

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note that from 1 January 2002, Annex 10 Volume IV requires all aeroplanes to be equipped with pressure-altitude reporting transponders;
- b) note that from 1 January 2003, Annex 6 requires aeroplanes in excess of 15,000kg maximum certificated take-off mass or that are authorized to carry more than 30 passengers to be fitted with ACAS II;
- c) note that States unable to comply with the Annex 10 and Annex 6 standards should lodge a report with the Regional Office in accordance with the APANPIRG Procedural Handbook - Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies;
- d) note and review the information in the tables at Appendices A and B and update where necessary;
- e) consider ways to encourage those States which have not provided information to the Regional Office to do so, in order to ensure that an accurate record of the status of the implementation of pressure-altitude reporting transponders and ACAS II is available for consideration by APANPIRG/16;
- f) consider any further actions required by States and/or ICAO to facilitate the implementation of pressure-altitude reporting transponders and ACAS II in the Asia Pacific Region; and

- g) identify those States who have not implemented the ICAO provisions on ACAS II and pressure-altitude reporting transponders to be included on the APANPIRG List of Deficiencies.

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## Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders - Civil Aircraft

(2nd Survey AP-ATM 0551, 17 August 2000)

Editorial note: Changes are arranged to show "deleted text" using strikeout (~~text to be deleted~~), and "new text" in bold Italics (*new text to be inserted*).

### **2nd Survey on Pressure-Altitude Reporting Transponders - Civil Aircraft (Updated 29 July 2005)**

State/Territory	Effective date (dd/mm/yy)	Applicable airspace	Applicable to			Aeronautical Publication
			aeroplanes engaged in international air transport operations	aeroplanes engaged in international general aviation operations	helicopters engaged in international commercial air transport or international general aviation operations	
Australia	Early 1990's	Controlled airspace inside radar coverage	YES	YES	YES	AIP
Bangladesh						
Bhutan						
Brunei Darussalam	1-Jul-01	All Brunei airspace	YES	YES	YES	Brunei airspace falls inside Kota Kinabalu FIR, therefore Malaysian AIC 06/2000 (March 2000) applies.
			* State aircraft as well			
Cambodia	1-Jan-03	All airspace within FIR				
China	1-Jan-02	All airspace within FIR	YES	YES	YES	Published as AIC 05/2001
Hong Kong,China	1980	Controlled airspace within Hong Kong FIR	YES	YES	YES	AIP
Macau, China	2-Jan-97	Controlled airspace within Macau ATZ	All aircraft flying within Macau ATZ			AIP
Cook Islands						
DPR Korea						
Fiji						
France (French Polynesia)	23-Jan-03	All airspace within FIR	YES	YES (All aircraft in general aviation)	YES	AIP
(New Caledonia)						
India	7-Sep-99	All airspace within FIRs	YES	YES	YES	Civil Aviation Requirements Section2, Series "R", PART IV
Indonesia	28-Oct-04	All Indonesian FIRs	YES	YES	YES	AIP SUP 08/04

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State/Territory	Effective date (dd/mm/yy)	Applicable airspace	Applicable to			Aeronautical Publication
			aeroplanes engaged in international air transport operations	aeroplanes engaged in international general aviation operations	helicopters engaged in international commercial air transport or international general aviation operations	
Japan	10-Oct-75	Airspace defined by Minister of Transportation	YES	YES	YES	AIP
Kiribati						
Lao PDR						
Malaysia	1-Jan-03	All airspace within FIRs	YES	YES	YES	AIC 6/2000 dated 10 Mar 2000
Maldives	2002	Defined portion	YES	YES	YES	
Marshal Islands						
Micronesia, Federated States of						
Mongolia	1-Jan-02	International routes	YES	NO	NO	To be published in Dec 2001
Myanmar	1-Jan-00	All airspace within FIR	YES	YES	YES	Notice to owner T/41 dated 20 Jan 1999
Nauru						
Nepal	Not specified	Not specified	YES	YES	YES	Flight Operations Requirements, Amendment Number 2 dated 18 Feb 2000
New Zealand	1-Apr-97	Transponder Mandatory Airspace prescribed in NZ Air Navigation Register	YES	YES	YES	Civil Aviation Rules Part 91
Pakistan	1-Jul-01	All airspace within FIR	YES			AIP
Palau						
Papua New Guinea						

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			aeroplanes engaged in international air transport operations	aeroplanes engaged in international general aviation operations	helicopters engaged in international commercial air transport or international general aviation operations	
Philippines	31-Jan-01	Airspace defined by Air Transport Office (ATO)	20%			
	31-Jan-02		50%			
	31-Jan-04		ALL			
Republic of Korea	30-Nov-94	All airspace within FIR	YES	YES	YES	AIP
Samoa	2000	All airspace within FIR	YES	NO	NO	NOTAM will be issued on 30 Sep 2000
Singapore	Jul-81	All airspace within FIR	YES	YES	YES	AIP in 1981
Solomon Islands						
Sri Lanka	1-Jan-03	All airspace within Colombo FIR	YES	YES	YES	Aviation Safety Notice issued. AIC will be issued
Thailand	26-Feb-99	All airspace within FIR	YES	YES	YES	AIC 3/02 dated 23 April 2002
Tonga						
U.S.A.		Defined portion	The requirements are based on the location of aircraft operation, not the weight, engine configuration or type of operation of aircraft			FAR, Part 91
Vanuatu	1-Jan-00	All airspace within FIR	YES	N/A	N/A	
Viet Nam	1994	All airspace within FIR	YES	YES	N/A	AIP

*Note: Blank indicates that no information has been provided.*

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State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Australia	1-Jan-00	Version 7	All airspace within FIRs	YES	No plan	Civil Aviation Regulation and AIP
Bangladesh	1-Jan-03	Version 7				AIP will be published 09/2003
Bhutan						
Brunei Darussalam	1-Jul-01	Version 7	All Brunei airspace	YES		Brunei airspace falls inside Kota Kinabalu FIR, therefore Malaysian AIC 06/2000 (March 2000) applies.
Cambodia	1-Jan-03	Version 7	All airspace within FIR	YES		AIP will be published
China	11-Jul-02	Version 7	At the specified 10 airports, and along ATS routes A461, A593 and A599	YES	YES (On 31 Dec 2003)	AIC 06/2001 and AIC 08/2001
	1-Jan-03	Version 7	All airspace within FIR	YES	YES (On 31 Dec 2003)	To be published
Hong Kong, China	1-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIP



Carriage and Operation of ACAS and Pressure-Altitude Reporting Transponders - Civil Aircraft

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State/Territory	Effective date (dd/mm/yy)	Required TCAS types	Applicable airspace	Applicable to		Aeronautical Publication
				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Macau, China	1-Jan-00	Version 7	Controlled airspace within Macau ATZ	All fixed wing aircraft registered in Macau greater than 5700 kg or certified for more than 9 passengers seats.		AIC 07/99 dated 1 Dec 1999
Cook Islands						
DPR Korea	1-Jan-01	ACAS II	All airspace within FIR	all turbine engine aeroplane of maximum take off mass in excess of 90 000kg shall be equipped with ACAS II		AIP
Fiji						
France (French Polynesia)	23-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIP & AIC 010/00 dated 3 Aug 2000
(New Caledonia)	23-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIP & AIC 010/00 dated 3 Aug 2000
India	1-Jan-03	Version 7	All airspace within FIRs	Aeroplane having a maximum certified passenger seating configuration of more than 30 or <u>maximum payload capacity of more than 3 tonnes</u>	YES (on 1 Jan 2005)	Civil Aviation Requirements, Section2, Series 'I', PART VIII, Revision2 dated 4 Dec 2000
Indonesia	28-Oct-04	ACAS II version 7	All Indonesian FIRs	YES		AIP SUP 08/04
Japan	4-Jan-01	Version 7	Domestic airspace	YES	YES (on 1 Jan 2005)	AIP
Kiribati						

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				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Lao PDR	1-Jan-03	ACAS II	All airspace within FIRs	YES		Notice to owner/operator No. 0401/DCA dated 15 May 2002
Malaysia	1-Jan-03	Version 7	All airspace within FIRs	YES	YES	AIC 6/2000 dated 10 Mar 2000
Maldives	Jan-00	Version 7	All airspace within FIR	YES	YES (in Jan 2005)	Published on 14 Sep 1997

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				turbine-engined aeroplanes of a maximum certified take-off mass in excess of 15000kg or authorized to carry more than 30 passengers engaged in international air transport operations	turbine-engined aeroplanes of a maximum certified take-off mass in excess of 5 700kg or authorized to carry more than 19 passengers engaged in international air transport operations	
Marshall Islands						
Micronesia, Federated States of						
Mongolia	1-Jan-02	ACAS II	International routes	YES	No	AIP
Myanmar	1-Jan-03	Version 7	International routes	YES	No	Notice to owner T/42 dated 1 Sep 2000
Nauru						
Nepal	1-Jan-03	Version 7	Not specified	YES	YES (on 1 Jan 2005)	Flight Operations Requirements, Amendment Number 2 dated 18 Feb 2000
New Zealand	1-Aug-03	ACAS II, Version 7	All airspace within FIR	YES. Phased introduction complete with the exception of two types operating as freight only aircraft which must provide risk assessment and mitigation programmes acceptable to the Director	YES (by 01 Jan 2005)	Civil Aviation Rules, parts 121, 125 & 129
Pakistan	1-Jul-01	Version 6.04 or greater	All airspace within FIR	YES		AIP
Palau						
Papua New Guinea						
Philippines	31-Jan-01	Airspace defined by Air Transport Office (ATO)	20%			
	31-Jan-02		50%			
	31-Jan-04		ALL			

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Republic of Korea	1-Jan-00	Version 7	All airspace within FIR	YES	YES	Aviation Law, AIP
Samoa	2000	Version 6.04 or greater & Version 7 for new installation after Jan 2002	All airspace within FIR	YES	YES (on 1 Jan 2005)	NOTAM will be issued
Singapore	1-Jan-02	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	AIC will be issued
Solomon Islands						
Sri Lanka	1-Jan-02	Version 7	All airspace within Colombo FIR	YES		AIP
Thailand	1-Jan-03	Version 7	All airspace within FIR	YES	YES (on 1 Jan 2005)	
Tonga						
U.S.A.	31-Dec-95	Version 6.04 or greater	Within the territorial limit of 12 miles from the US coast	A passenger or combination cargo/passenger (combi) airplane that has a passenger seat configuration, excluding any pilot seat, of more than 10 seats		FAR, Part 121
Vanuatu	1-Jan-00	Version 6.04 or greater	All airspace within FIR	YES	N/A	Australia CAA Act 1998, Subsection 9 (1)
Viet Nam	Jun-03	Version 7	All airspace within FIR	YES	YES	AIP

Note: Blank indicates that no information has been provided.