



FIGURE 3-3 PROCESS FOR SHOWING INITIAL AND CONTINUED COMPLIANCE OF AIRFRAME STATIC PRESSURE SYSTEMS FOR NEW MODEL AIRCRAFT.



Note: The flight test installation chosen to get the calibration data will need to have an accuracy compatible with the level of performance to be demonstrated and an analysis of this accuracy will need to be provided. Any possible degradation of this accuracy will need to be monitored and corrected during the flight test period.

APPENDIX 4 TRAINING PROGRAMMES AND OPERATING PRACTICES AND PROCEDURES

1. INTRODUCTION

Flight crews will need to have an awareness of the criteria for operating in RVSM airspace and be trained accordingly. The items detailed in paragraphs 2 to 6 of this appendix should be standardised and incorporated into training programmes and operating practices and procedures. Certain items may already be adequately standardised in existing procedures. New technology may also remove the need for certain actions required of the flight crew. If this is so, then the intent of this guidance can be considered to be met.

Note: This document is written for all users of RVSM airspace, and as such is designed to present all required actions. It is recognised that some material may not be necessary for larger public transport operators.

2. FLIGHT PLANNING

During flight planning the flight crew should pay particular attention to conditions that may affect operation in RVSM airspace.

These include, but may not be limited to:

- (a) verifying that the airframe is approved for RVSM operations;
- (b) reported and forecast weather on the route of flight;
- (c) minimum equipment requirements pertaining to height keeping and alerting systems; and
- (d) any airframe or operating restriction related to RVSM approval.

3. PRE-FLIGHT PROCEDURES AT THE AIRCRAFT FOR EACH FLIGHT

The following actions should be accomplished during the pre-flight procedure:

- (a) review technical logs and forms to determine the condition of equipment required for flight in the RVSM airspace. Ensure that maintenance action has been taken to correct defects to required equipment;
- (b) during the external inspection of aircraft, particular attention should be paid to the condition of static sources and the condition of the fuselage skin near each static source and any other component that affects altimetry system accuracy. This check may be accomplished by a qualified and authorised person other than the pilot (e.g. a flight engineer or ground engineer);
- (c) before takeoff, the aircraft altimeters should be set to the QNH of the airfield and should display a known altitude, within the limits specified in the aircraft operating manuals. The two primary altimeters should also agree within limits specified by the aircraft operating manual. An alternative procedure using QFE may also be used. Any required functioning checks of altitude indicating systems should be performed.

Note. The maximum value for these checks cited in operating manuals should not exceed 23m (75ft).

(d) before take-off, equipment required for flight in RVSM airspace should be operative, and any indications of malfunction should be resolved.

4. PROCEDURES PRIOR TO RVSM AIRSPACE ENTRY

The following equipment should be operating normally at entry into RVSM airspace:

- (a) Two primary altitude measurement systems.
- (b) One automatic altitude-control system.
- (c) One altitude-alerting device.
- Note: Dual equipment requirements for altitude-control systems will be established by regional agreement after an evaluation of criteria such as mean time between failures, length of flight segments and availability of direct pilot-controller communications and radar surveillance.
- (d) Operating Transponder. An operating transponder may not be required for entry into all designated RVSM airspace. The operator should determine the requirement for an operational transponder in each RVSM area where operations are intended. The operator should also determine the transponder requirements for transition areas next to RVSM airspace.
- Note: Should any of the required equipment fail prior to the aircraft entering RVSM airspace, the pilot should request a new clearance to avoid entering this airspace;

5. IN-FLIGHT PROCEDURES

- 5.1 The following practices should be incorporated into flight crew training and procedures:
 - (a) Flight crews will need to comply with any aircraft operating restrictions, if required for the specific aircraft group, e.g. limits on indicated Mach number, given in the RVSM airworthiness approval.
 - (b) Emphasis should be placed on promptly setting the sub-scale on all primary and standby altimeters to 1013.2 (hPa) /29.92 in. Hg when passing the transition altitude, and rechecking for proper altimeter setting when reaching the initial cleared flight level;
 - (c) In level cruise it is essential that the aircraft is flown at the cleared flight level. This requires that particular care is taken to ensure that ATC clearances are fully understood and followed. The aircraft should not intentionally depart from cleared flight level without a positive clearance from ATC unless the crew are conducting contingency or emergency manoeuvres;
 - (d) When changing levels, the aircraft should not be allowed to overshoot or undershoot the cleared flight level by more than 45 m (150 ft);
 - Note: It is recommended that the level off be accomplished using the altitude capture feature of the automatic altitude-control system, if installed.
 - (e) An automatic altitude-control system should be operative and engaged during level cruise, except when circumstances such as the need to re-trim the aircraft or turbulence require

disengagement. In any event, adherence to cruise altitude should be done by reference to one of the two primary altimeters. Following loss of the automatic height keeping function, any consequential restrictions will need to be observed.

- (f) Ensure that the altitude-alerting system is operative;
- (g) At intervals of approximately one hour, cross-checks between the primary altimeters should be made. A minimum of two will need to agree within ± 60 m (± 200 ft). Failure to meet this condition will require that the altimetry system be reported as defective and notified to ATC;
 - (i) The usual scan of flight deck instruments should suffice for altimeter crosschecking on most flights.
 - Before entering RVSM airspace, the initial altimeter cross check of primary and standby altimeters should be recorded
 Note: Some systems may make use of automatic altimeter comparators.
- (h) In normal operations, the altimetry system being used to control the aircraft should be selected for the input to the altitude reporting transponder transmitting information to ATC.
- (i) If the pilot is advised in real time that the aircraft has been identified by a heightmonitoring system as exhibiting a TVE greater than ± 90 m (± 300 ft) and/or an ASE greater than ± 75 m (± 245 ft) then the pilot should follow established regional procedures to protect the safe operation of the aircraft. This assumes that the monitoring system will identify the TVE or ASE within the set limits for accuracy.
- (j) If the pilot is notified by ATC of an assigned altitude deviation which exceeds ± 90 m (± 300 ft) then the pilot should take action to return to cleared flight level as quickly as possible.

5.2 Contingency procedures after entering RVSM airspace are:

5.2.1 The pilot should notify ATC of contingencies (equipment failures, weather) which affect the ability to maintain the cleared flight level, and co-ordinate a plan of action appropriate to the airspace concerned. Appendices 6 and 7 are relevant to EUR and NAT airspace.

Note: Other appendices may be added as necessary to address additional areas of operation.

- 5.2.2 Examples of equipment failures which should be notified to ATC are:
 - (a) failure of all automatic altitude-control systems aboard the aircraft;
 - (b) loss of redundancy of altimetry systems;
 - (c) loss of thrust on an engine necessitating descent; or
 - (d) any other equipment failure affecting the ability to maintain cleared flight level;
- 5.2.3 The pilot should notify ATC when encountering greater than moderate turbulence.

5.2.4 If unable to notify ATC and obtain an ATC clearance prior to deviating from the cleared flight level, the pilot should follow any established contingency procedures and obtain ATC clearance as soon as possible.

6. POST FLIGHT

6.1 In making technical log entries against malfunctions in height keeping systems, the pilot should provide sufficient detail to enable maintenance to effectively troubleshoot and repair the system. The pilot should detail the actual defect and the crew action taken to try to isolate and rectify the fault.

- 6.2 The following information should be recorded when appropriate:
 - (a) Primary and standby altimeter readings.
 - (b) Altitude selector setting.
 - (c) Subscale setting on altimeter.
 - (d) Autopilot used to control the aeroplane and any differences when an alternative autopilot system was selected.
 - (e) Differences in altimeter readings, if alternate static ports selected.
 - (f) Use of air data computer selector for fault diagnosis procedure.
 - (g) The transponder selected to provide altitude information to ATC and any difference noted when an alternative transponder was selected.

7. SPECIAL EMPHASIS ITEMS: FLIGHT CREW TRAINING

- 7.1 The following items should also be included in flight crew training programmes:
 - (a) knowledge and understanding of standard ATC phraseology used in each area of operations;
 - (b) importance of crew members cross checking to ensure that ATC clearances are promptly and correctly complied with;
 - use and limitations in terms of accuracy of standby altimeters in contingencies. Where applicable, the pilot should review the application of static source error correction/ position error correction through the use of correction cards;
 Note: Such correction data will need to be readily available on the flight deck.
 - (d) problems of visual perception of other aircraft at 300m (1,000 ft) planned separation during darkness, when encountering local phenomena such as northern lights, for opposite and same direction traffic, and during turns; and
 - (e) characteristics of aircraft altitude capture systems which may lead to overshoots;
 - (f) relationship between the aircraft's altimetry, automatic altitude control and transponder systems in normal and abnormal conditions;

(g) any airframe operating restrictions, if required for the specific aircraft group, related to RVSM airworthiness approval.

APPENDIX 5 - REVIEW OF ICAO DOCUMENT 9574 - HEIGHT KEEPING PARAMETERS

1. ICAO Document 9574 Manual on the implementation of a 300m (1,000 ft) Vertical Separation Minimum Between FL 290-FL 410 Inclusive, covers the overall analysis of factors for achieving an acceptable level of safety in a given airspace system. The major factors are passing frequency, lateral navigation accuracy, and vertical overlap probability. Vertical overlap probability is a consequence of errors in adhering accurately to the assigned flight level, and this is the only factor covered in this document.

2. In ICAO Doc. 9574, Section 2.1.1.3, the vertical overlap probability requirement is restated as the aggregate of height keeping errors of individual aircraft that must lie within the total vertical error (TVE) distribution, expressed as the simultaneous satisfaction of the following four criteria:

- (a) 'the proportion of height keeping errors beyond 90 m (300 ft) in magnitude must be less than 2.0×10^{-3} ; and
- (b) the proportion of height keeping errors beyond 150 m (500 ft) in magnitude must be less than 3.5×10^{-6} ; and
- (c) the proportion of height keeping errors beyond 200 m (650 ft) in magnitude must be less than 1.6×10^{-7} ; and
- (d) the proportion of height keeping errors between 290 m (950 ft) and 320 m (1,050 ft) in magnitude must be less than 1.7×10^{-8} .'

3. The following characteristics presented in ICAO Doc. 9574 were developed in accordance with the conclusions of ICAO Doc. 9536. They are applicable statistically to individual groups of nominally identical aircraft operating in the airspace. These characteristics describe the performance that the groups need to be capable of achieving in service, exclusive of human factors errors and extreme environmental influences, if the airspace system TVE criteria are to be satisfied. The following characteristics are the basis for development of this document:

- (a) The mean altimetry system error (ASE) of the group shall not exceed $\pm 25m$ (± 80 ft); and
- (b) The sum of the absolute value of the mean ASE for the group and three standard deviations of ASE within the group shall not exceed 75 m (245 ft); and
- (c) Errors in altitude keeping shall be symmetric about a mean of 0 m (0 ft) and shall have a standard deviation not greater than 13 m (43 ft) and should be such that the error frequency decreases with increasing error magnitude at a rate which is at least exponential.'

4. ICAO Doc. 9574 recognises that specialist study groups would develop the detailed specifications, to ensure that the TVE objectives can be met over the full operational envelope in RVSM airspace for each aircraft group. In determining the breakdown of tolerances between the elements of the system it was considered necessary to set system tolerances at levels that recognise that the overall objectives must be met operationally by aircraft and equipment subject to normal production variability, including that of the airframe static source error, and normal in-service degradation. It was also recognised that it would be necessary to develop specifications and procedures covering the means for ensuring that in-service degradation is controlled at an acceptable level.

5. On the basis of studies reported in ICAO Doc. 9536, Volume 2, ICAO Doc. 9574 recommended that the required margin between operational performance and design capability should be achieved by ensuring that the performance criteria are developed to fulfil the following, where the narrower tolerance in sub-paragraph 5 (b) is specifically intended to allow for some degradation with increasing age:

- (a) 'the mean uncorrected residual position error (static source error) of the group shall not exceed ± 25 m (± 80 ft); and
- (b) the sum of the absolute value of the mean ASE for the group and three standard deviations of ASE within the group, shall not exceed 60 m (200 ft); and
- (c) each individual aircraft in the group shall be built to have ASE contained within ± 60 m (± 200 ft); and
- (d) an automatic altitude control system shall be required and will be capable of controlling altitude within a tolerance band of ± 15 m (± 50 ft) about selected altitude when operated in the altitude hold mode in straight and level flight under non-turbulent, non-gust conditions.'

6. These standards provide the basis for the separate performance aspects of airframe, altimetry, altimetry equipment and automatic altitude control system. It is important to recognise that the limits are based on studies (Doc. 9536, Volume 2), which show that ASE tends to follow a normal distribution about a characteristic mean value for the aircraft group and that the in-service performances of the separate groups aggregate together to give an overall performance spread which is distributed about the population mean TVE that is nominally zero. Consequently, controls should be provided which will preclude the possibility that individual aircraft approvals could create clusters operating with a mean significantly beyond 25 m (80 ft) in magnitude, such as could arise where elements of the altimetry system generate bias errors additional to the mean corrected static source error.

APPENDIX 6 - SPECIFIC PROCEDURES FOR EUROPEAN RVSM AIRSPACE

1 INTRODUCTION

1.1 This Appendix is included for information. It states the procedures that were approved by the EUROCONTROL Airspace and Navigation Team in February 1998.

1.2 The area of applicability will be defined in an amendment to ICAO document 7030 which is expected to be approved in 1998. This appendix will be updated as required in a later issue of this Temporary Guidance Leaflet to take account of the amended ICAO document 7030.

2 **DEFINITIONS**

For the purposes of these procedures, the following terms will have the following meanings:

Flight Level Allocation Scheme (FLAS):

The scheme whereby specific flight levels may be assigned to specific route segments within the route network

RVSM (Operational) Approval:

The approval that is issued for each individual aircraft by the appropriate State authority once an operator has achieved the following:

- I. RVSM Airworthiness approval; and
- II. State Approval of operations manual (where applicable) and on-going maintenance procedures.

Strategic Flight Level:

A flight level which is flight-plannable in accordance with the Table of Cruising Levels of ICAO Annex 2, Appendix 3 (see Attachment A) and the Flight Level Allocation Scheme (FLAS), as specified in the relevant Aeronautical Information Publications.

Tactical Flight Level:

A flight level which is not flight-plannable and which is reserved for tactical use by ATC.

3 AREA OF APPLICABILITY

- 3.1 Except for State aircraft operating as Operational Air Traffic (OAT), and as per the provisions of ICAO Annex 2, Appendix 3, only flight operations conducted under IFR shall be permitted in the RVSM airspace.
- 3.2 The RVSM procedures shall apply to operations between FL 290 and FL 410 inclusive in the Flight Information Regions/Upper Information Regions (FIRs/UIRs)as defined in ICAO doc 7030.
- 3.3 Provisions for the transition of aircraft, including the accommodation of civil aircraft non-RVSM approved within RVSM airspace for the purpose of clearing aircraft to flight levels appropriate to

the adjacent operating environment, shall be applicable in the FIRs/UIRs as defined in ICAO doc 7030.

4 **PROCEDURES**

The ATC procedures related to RVSM include the following:

- General Procedures
- Procedures for non-RVSM approved State Aircraft operating as General Air Traffic (GAT) within the RVSM airspace
- Procedures for State Aircraft Operating as OAT, Crossing ATS Routes, within the RVSM Airspace
- Procedures relative to Airspace Restrictions and Reservations
- Flight planning procedures
- Inter-centre co-ordination procedures
- Contingency procedures
- Transition procedures
- Phraseology

5 GENERAL PROCEDURES.

5.1 ATC shall only clear RVSM approved aircraft into the RVSM airspace, except for State aircraft and except as provided for in paragraph 11.

Note: See Paragraph 12 for applicable controller-pilot RTF.

- 5.2 ATC shall provide a minimum of 300m (1,000 ft) vertical separation between RVSM approved aircraft operating within the RVSM airspace.
- 5.3 ATC shall provide a minimum of 600m (2,000 ft) vertical separation between any non-RVSM approved State aircraft and any other aircraft operating within the RVSM airspace.
- 5.4 In airspace where transition tasks are carried out (sub-paragraph 3.3 above refers), ATC shall provide a minimum of 600m (2,000 ft) vertical separation between any non-RVSM approved aircraft and any other aircraft.
- 5.5 ATC shall withhold clearance into the RVSM airspace for all formation flights involving civil aircraft.
- 5.6 ATC shall provide a minimum of 600m (2,000 ft) vertical separation between all formation flights involving State aircraft and any other aircraft operating within the RVSM airspace.
- 5.7 ATC shall assign flight levels to non-RVSM approved aircraft, other than State aircraft, in accordance with the table below:

Landing aerodrome within	Landing aerodrome outside
lateral limits of RVSM	lateral limits of RVSM
airspace	airspace

Departing aerodrome within	Assign level below RVSM	Assign level below RVSM	
lateral limits of RVSM airspace	airspace	airspace	
Departing aerodrome outside	Assign level below RVSM	Assign level below or above	
lateral limits of RVSM airspace	airspace	RVSM airspace	

6 PROCEDURES FOR STATE AIRCRAFT OPERATING AS OPERATIONAL AIR TRAFFIC (OAT), CROSSING ATS ROUTES, WITHIN THE RVSM AIRSPACE.

- 6.1 The majority of State aircraft operating as OAT will be non altimetry MASPS compliant. Therefore, as a basic principle, and unless otherwise notified, State aircraft operating as OAT shall be considered as being non-RVSM approved.
- 6.2 The minimum vertical separation required between (a) State aircraft operating as OAT, crossing ATS routes, and (an) aircraft operating as GAT, where both are operating within the RVSM airspace, shall be 600m (2,000 ft).
- 6.3 However, in an airspace environment where both the civil and military ATC units are fully aware as to the RVSM approval status of all traffic involved, a reduced vertical separation of 300m (1,000 ft) can be applied between a RVSM approved State aircraft operating as OAT, and RVSM approved GAT.

7 PROCEDURES RELATIVE ТО AIRSPACE RESTRICTIONS /OR AND RESERVATIONS

- The procedures specified in this paragraph 7 are subject to further review by the Note: EUROCONTROL Airspace and Navigation Team after the implementation of a common methodology of delineation, publication and use of restricted and/or reserved airspace.
- 7.1 Unless an appropriate horizontal spacing exists:
- 7.1.1 ATC shall provide a minimum 600m (2,000 ft) vertical spacing below the published lower limit of an airspace restriction and/or reservation with a published lower limit of FL 300 or above and aircraft operating within the vertical limits of the RVSM airspace so as to ensure that vertical separation minima are not infringed.
- 7.1.2 ATC shall provide a minimum 600m (2,000 ft) vertical spacing above the published upper limit of an airspace restriction and/or reservation and aircraft operating within the vertical limits of the RVSM airspace so as to ensure that vertical separation minima are not infringed.
- 7.2 Consequently:
- 7.2.1 The first flight level usable by ATC below an airspace restriction and/or reservation shall be 600m (2,000 ft) below the published lower limit of such airspace, where the published lower limit is FL 300 or above.
- The first flight level usable by ATC above an airspace restriction and/or reservation shall be 600m 7.2.2 (2,000 ft) above the published upper limit of such airspace, where the published upper limit is FL 290 or above.

8 FLIGHT PLANNING

TGL6 46

- 8.1 The flight plan submitted for a flight intending to operate across the lateral limits of the RVSM airspace shall include:
 - the specific requested flight level for that portion of the route commencing immediately after the entry point at the lateral limits of the RVSM airspace, consistent with the FLAS, if published;
 - the specific requested flight level for that portion of the route commencing immediately after the exit point at the lateral limits of the RVSM airspace, consistent with the FLAS, if published.
- All operators of RVSM approved aircraft, shall insert the letter "W" in Item 10 of the ICAO Flight Plan, regardless of the requested flight level.
 Note: to be included in the flight planning section of Doc. 7030.
- 8.3 All operators of non-RVSM approved State aircraft with a requested flight level of FL 290 or above, shall insert the phrase "**STS/NONRVSM**" in Item 18 of the ICAO Flight Plan.
- 8.4 Operators of customs or police aircraft shall insert the letter "**M**" in Item 8 of the ICAO Flight Plan if non-RVSM approved and intending to operate within the RVSM airspace.
- 8.5 All operators filing repetitive flight plans (RPLs) shall include in Item Q equipment information in regards to their RVSM approval status in the format "EQPT/W", for flights RVSM approved and "EQPT/", for flights non RVSM approved with operational service ceilings corresponding to FL 250 regardless of the requested flight level.

Note: the ability to address Item Q with equipment information is to be confirmed as policy.

8.6 Operators of State aircraft, not RVSM approved, filing repetitive flight plans including a requested Flight Level of FL 290 or above, shall include "**STS/NONRVSM**" in Item Q.

Note: The ability to address Item Q with equipment information is to be confirmed as policy.

- 8.7 Regardless of the RVSM approval status of the individual aircraft concerned, the letter "**W**" shall never be inserted in Item 10 of flight plans related to formation flights involving State aircraft.
- 8.8 Operators of formation flights involving State aircraft intending to operate as General Air Traffic (GAT) in RVSM airspace shall include "STS/NONRVSM" in Item 18 of the ICAO Flight Plan.

9 INTER-CENTRE CO-ORDINATION

- 9.1 The On-line Data Exchange System should support the co-ordination of requests for special handling (e.g.: STS) as filed in Item 18 of the ICAO Flight Plan.
- 9.2 Computer Assisted Co-ordination of Estimate Messages.

In the case of automated messages not containing the information provided in Item 18 of the flight plan relating to RVSM operations, the sending air traffic control unit shall inform the receiving air traffic control unit of that information by verbally supplementing the activation message.

Note: See paragraph 12 below for details of the precise RTF to be used.

9.3 Verbal Co-ordination of Estimate Messages

When a verbal co-ordination process is being used, the sending air traffic control unit shall include the information filed in Item 18 of the ICAO flight plan, relevant to RVSM operations, at the end of the verbal estimate message.

Note: See paragraph 12 for details of the precise RTF to be used.

9.4 For the case of a single aircraft experiencing an in flight contingency, the associated co-ordination messages shall be supplemented verbally by a description of the cause of the contingency.

Note: See paragraph 12 for details of the precise RTF to be used.

10 CONTINGENCY PROCEDURES

Note: See paragraph 12 for details of the precise co-ordination RTF to be used.

10.1 <u>Procedures applicable to individual aircraft.</u>

Equipment related:

- 10.1.1 Where an aircraft's Mode C displayed level indicates a deviation from the cleared flight level of 90m (300 ft). or more, the controller shall inform the pilot as soon as practicable and the pilot shall return to his cleared flight level immediately.
- 10.1.2 When informed by the pilot that the aircraft's equipment has degraded to below altimetry MASPS compliance levels while operating within the RVSM airspace, the controller shall provide for either a minimum vertical separation of 600m (2,000 ft) or an appropriate horizontal separation. Controllers shall normally clear the aircraft below FL 290 before the next inter-centre transfer of control point, unless otherwise co-ordinated.

Weather related:

- 10.1.3 For the case of an individual aircraft reporting severe turbulence, the controller shall provide for either an appropriate horizontal separation, or an increased vertical separation.
- 10.1.4 If informed of the existence of severe turbulence, the controller shall solicit other relevant turbulence reports to determine, in co-ordination with the Supervisor, whether RVSM operations should be suspended entirely or within a specific level band and/or area.

10.2 <u>Procedures for multiple aircraft.</u>

Weather related, non-predicted:

10.2.1 For the case of immediate requirements where a controller has received no advance warning of impending meteorological conditions that could create severe turbulence, the controller shall provide for an increased minimum vertical separation or an appropriate horizontal separation, and the following, although not exhaustive, should be considered:

- Since each real time situation will demand very specific, distinct actions, the controller should use his/her best judgement to ensure the safety of the aircraft under his/her responsibility.
- The controller should pass traffic information to the extent possible.
- The controller will co-ordinate with the Supervisor for the purpose of determining whether RVSM operations will be suspended entirely or within a specific level band and/or area.
- If a reversion to Conventional Vertical Separation Minima is deemed necessary, coordination with adjacent ACCs shall be accomplished to ensure an orderly progression to the transfer of traffic under Conventional Vertical Separation Minima conditions.
- Supervisors may co-ordinate, to the extent deemed necessary, a request for the deactivation of any airspace restrictions and/or reservations required to provide additional radar vectoring airspace necessary to facilitate the transition to Conventional Vertical Separation Minima.
- The Supervisor should co-ordinate with the parent flow management position to adjust the applicable sector capacities.

Weather related, predicted:

10.2.2 For the case of meteorological conditions causing severe turbulence, predicted by Meteorological Services, the procedures required will of consequence be of a strategic nature. A meteorological forecast, predicting severe turbulence, received by an ACC, will demand of the Supervisor a decision as to whether RVSM operations are to be interrupted, for what period of time, and for what specific level(s) and/or area. Should an increased vertical separation be necessary, the Supervisor will co-ordinate with the adjacent ACCs concerned as to the flight levels appropriate for the transfer of traffic, unless a contingency FLAS has been determined in the Letter of Agreement. The Supervisor should co-ordinate with the parent flow management position to establish the applicable sector capacities. The issuance of a NOTAM should be considered as circumstances require.

11 TRANSITION PROCEDURES

- 11.1 For aircraft to be transferred from RVSM airspace to non-RVSM airspace, the last area control centre providing air traffic control service to such aircraft shall establish a minimum of 600m (2,000 ft) vertical separation before the aircraft passes the transfer of control point to the adjacent area control centre established at a flight level in accordance with the ICAO Table of Cruising Levels as published in ICAO Annex 2, Appendix 3, table b), and/or in accordance with the FLAS, if applicable, and/or as specified in the inter-centre Letter of Agreement.
- 11.2 For aircraft transferred from non-RVSM airspace to RVSM airspace, the first area control centre providing air traffic control service to such aircraft shall ensure that RVSM approved aircraft and non-RVSM approved State aircraft are cleared so as to be established at a flight level in accordance with the ICAO Table of Cruising Levels as published in ICAO Annex 2, Appendix 3, table a), and/or in accordance with the FLAS, if applicable and/or as specified in the inter-centre Letter of Agreement, before the aircraft passes the transfer of control point to the adjacent ACC.
- 11.3 For aircraft landing at an aerodrome within the lateral limits of the RVSM airspace, the first area control centre providing air traffic control to aircraft transferred to RVSM airspace from non-RVSM airspace shall ensure that non-RVSM approved aircraft, except State aircraft, are cleared so as to be established at a flight level below FL 290 in accordance with the FLAS, if applicable

and/or as specified in the inter-centre Letter of Agreement, before the aircraft passes the transfer of control point to the adjacent ACC.

11.4 For aircraft landing at an aerodrome outside and transiting the lateral limits of the RVSM airspace, the first area control centre providing air traffic control to aircraft transferred to RVSM airspace from non-RVSM airspace shall ensure that non-RVSM approved aircraft, except State aircraft, are cleared so as to be established at a flight level below FL 290 or above FL 410 before the aircraft passes the transfer of control point to the adjacent area control centre in accordance with the FLAS, if applicable and/or as specified in the inter-centre Letter of Agreement.

12 PHRASEOLOGY

Paragraph	Message	Phraseology	
12.1.1	To ascertain the RVSM approval status of a flight:	(callsign) CONFIRM RVSM APPROVED	
12.1.2	 Pilot indication of non-RVSM approval status: To be stated: in the initial call on any frequency within the RVSM airspace (controllers shall provide a readback with this same phrase), and in all requests for flight level changes pertaining to flight levels within the RVSM airspace III. in all readbacks to flight level clearances pertaining to flight levels within the RVSM airspace As well, pilots of aircraft, other than State aircraft, shall respond to level clearances involving the vertical transit 	NEGATIVE RVSM *	
	through either FL 290 or FL 410 with this phrase.		
12.1.3	State aircraft, not RVSM approved, shall indicate their status as being that of a State aircraft, in conjunction with a negative response to the RTF indicated in sub-paragraph. 12.1.1, with the phrase:	NEGATIVE RVSM STATE AIRCRAFT*	
12.1.4	Denial of clearance into the RVSM airspace:	(callsign) UNABLE CLEARANCE INTO RVSM AIRSPACAsia PacificE, MAINTAIN [or DESCEND TO, or CLIMB TO] FLIGHT LEVEL (number)	
12.1.5	For the case of an individual aircraft reporting severe turbulence or other severe weather related phenomenon, the pilot phraseology shall be:	UNABLE RVSM DUE TURBULENCE*	
12.1.6	The phraseology required of a pilot to communicate those circumstances which would cause an aircraft's equipment		

12.1 Controller-pilot RTF: (* *indicates a pilot transmission*)

Paragraph	Message	Phraseology	
	to degrade to below altimetry MASPS compliance levels shall be:	UNABLE RVSM DUE EQUIPMENT*	
	The phrase is to be used to convey both the initial indication of the non-altimetry MASPS compliance and, henceforth, on initial contact on all frequencies within the RVSM airspace until such time as the problem ceases to exist. The phrase is to be used to convey both the initial indication of the non-altimetry MASPS compliance and, henceforth, on initial contact on all frequencies within the lateral limits of the RVSM airspace.		
12.1.7	The pilot shall communicate his/her ability to resume operation within the RVSM airspace after an equipment related contingency, or his/her ability to resume RVSM operations after a weather related contingency with the phrase:	READY TO RESUME RVSM*	
12.1.8	Controllers wishing to solicit this information shall use the phrase:	REPORT ABLE TO RESUME RVSM	

12.2 Co-ordination between ATS units:

Paragraph	Message	Phraseology	
12.2.1	To verbally supplement an automated estimate message exchange which does not automatically transfer Item 18 information:	NEGATIVE RVSM	
12.2.2	To verbally supplement estimate messages of flights non-RVSM approved:	NEGATIVE RVSM	
12.2.3	To communicate the cause of a single aircraft contingency:	UNABLE RVSM DUE TURBULENCE [or EQUIPMENT, as applicable]	

APPENDIX 7 - SPECIFIC PROCEDURES FOR THE NORTH ATLANTIC AIRSPACE

1. INTRODUCTION

1.1 North Atlantic Minimum Navigation Performance Specification (NAT MNPS) airspace is the area where RVSM has been first implemented. The guidance that follows should be applied when RVSM is in use in NAT MNPS airspace.

1.2 This Appendix contains information on procedures that are unique to North Atlantic RVSM airspace. Contingency procedures contained in Regional Supplementary Procedures and guidance specifically related to RVSM are presented in this appendix. Contingencies that relate to lateral as well as vertical navigation are discussed.

2. GENERAL INFORMATION: AIRSPACE DIMENSIONS

2.1 Entry into NAT RVSM airspace requires the holding approvals for both lateral navigation and height keeping performance.

2.2 NAT MNPS airspace has a ceiling of FL 420 and a base of FL 285 with 300m (1,000 ft) vertical separation applied to aircraft operating at and between FL 290 and FL 410.

3. INTENDED USE OF THIS APPENDIX MATERIAL

3.1 Paragraph 4, Basic Concepts for Contingencies

This paragraph provides an overview of contingency procedures. It is intended to direct the pilot's thinking to the concepts involved and aid in understanding the specific guidance detailed in paragraphs 5 and 6. This material should be included in training programmes and appropriate operations manuals.

3.2 Paragraph 5, Guidance to the Pilot in the Event of Equipment Failures or Encounters with Turbulence after Entering NAT MNPS Airspace

This paragraph details guidance on specific actions for the pilot to take in the situations listed. The pilot actions should be considered required pilot knowledge and should be included in training/qualification programmes and appropriate operations manuals.

3.3 Paragraph 6 and Supplement, Doc. 7030 North Atlantic Contingency Procedures

In this paragraph and the Supplement to this Appendix, North Atlantic Regional Supplementary Procedures (Doc 7030) paragraph 6, Special Procedures for In-flight Contingencies (applicable when RVSM is implemented) are reprinted for ease of reference. Doc. 7030 paragraph 6 gives guidance on actions to be taken by the pilot. Pilot actions should be considered required pilot knowledge. The material may be condensed for ease of presentation and should be included in training/qualification programmes and appropriate operations manuals.

3.4 Paragraphs 7 and 8

Paragraph 7 discusses RVSM transition areas. Paragraph 8 is a general discussion of pilot action in relation to the proposed RVSM monitoring system. These paragraphs should be covered in training programmes and operations manuals.

3.5 Paragraph 9 Expanded RVSM Equipment Failure and Turbulence Scenarios

This paragraph reviews the situations discussed in paragraph 5 in greater detail. The material may be used in training programmes as an operator considers necessary.

4. BASIC CONCEPTS FOR CONTINGENCIES

4.1 General

The NAT Regional Supplementary Procedures document (Doc. 7030) were revised to provide for RVSM implementation in NAT MNPS airspace. The North Atlantic Systems Planning Group developed draft paragraph 6 revisions that were endorsed by the Limited NAT Regional Air Navigation Meeting in November 1992. They have been made effective at the start of operational trials which commenced on 27 March 1997. The NAT MNPS Operations Manual has been revised with this material.

4.2 The basic concepts for contingencies, described in this paragraph, have been developed from the specific guidance contained in Doc. 7030 paragraph 6 reprinted in the Supplement to this Appendix. Contingency procedures are complicated when specific situations are detailed. However, if the details are examined in the context of certain basic concepts, then they are more easily understood. Reviewing these concepts should serve to aid pilots understanding of the specific contingency procedures detailed in Doc. 7030.

4.3 The basic concepts for contingencies are:

4.3.1 *Pilot in Command Responsibility* Guidance for contingency procedures should not be interpreted in any way that prejudices the final authority and responsibility of the pilot-in-command for the safe operation of the aircraft.

4.3.2 If the pilot is unsure of the vertical or lateral position of the aircraft or the aircraft deviates intentionally from its assigned flight level or track, without prior ATC clearance, then the pilot will need to take action to mitigate the potential for collision with aircraft on adjacent routes or flight levels.

In this situation, the pilot should alert adjacent aircraft by making maximum use of aircraft lighting and broadcasting position, flight level and intentions on 121.5 MHz, or 131.8 MHz as a back-up frequency.

4.3.3 Unless the nature of the contingency dictates otherwise, the pilot should advise ATC as soon as possible of the problem and request an ATC clearance before deviating from the assigned route or flight level.

4.3.4 If a revised ATC clearance cannot be obtained in a timely manner and action is required to avoid potential conflict with other aircraft, then the aircraft should be flown at a flight level and/or on a track where other aircraft are least likely to be encountered.

This can be accomplished by off-setting the aircraft from routes or flight levels normally flown in the airspace. Doc. 7030 paragraph 6 provides recommendations on the preference for the pilot's following actions:

- (a) Offsetting half the lateral distance between routes or tracks, or
- (b) Offsetting half the vertical distance between flight level normally flown.
- (c) Descending below FL 285 or climbing above FL 410. Flight flown at these levels limits the possibility of conflict with other aircraft.
- 4.3.5 When executing a contingency manoeuvre the pilot should:
 - (a) Watch for conflicting traffic.
 - (b) Continue to alert other aircraft using 121.5 MHz or 131.8 MHz and aircraft lights.
 - (c) Continue to fly tracks or flight levels which are likely to be unoccupied.
 - (d) Obtain an ATC clearance as soon as possible.

5. GUIDANCE TO THE PILOT (INCLUDING EXPECTED ATC ACTIONS) IN THE EVENT OF EQUIPMENT FAILURES OR ENCOUNTERS WITH TURBULENCE AFTER ENTRY INTO NAT MNPS AIRSPACE

5.1 In addition to emergencies that require immediate descent, such as loss of thrust or pressurisation, ATC should be made aware of conditions that may make it impossible for an aircraft to maintain its cleared flight level appropriate to RVSM. Controllers will react to such conditions but these actions cannot be specified, as they will depend upon the situation at the time.

5.2 Objective of the Guidance Material

The following material is provided with the purpose of giving the pilot guidance on actions to take under certain conditions of equipment failure and encounters with turbulence. It also describes the expected ATC controller actions in these situations. It is recognised that the pilot and controller will use judgement to determine the action most appropriate to any given situation. The guidance material recognises that for certain equipment failures, the safest course of action may be for the aircraft to continue in MNPS airspace while the pilot and controller take precautionary action to protect separation. For extreme cases of equipment failure, however, the guidance recognises that the safest course of action may be for the aircraft to leave MNPS airspace by obtaining a revised ATC clearance or if unable to obtain prior ATC clearance, executing the established contingency manoeuvre to leave the assigned route or track.

Note: Paragraph 9 gives an expanded description of the scenarios listed below:

5.3 Contingency Scenario

The pilot is unsure of the vertical position of the aircraft due to loss or degradation of all primary altimetry systems or is unsure of the capability to maintain cleared flight level due to turbulence or loss of all automatic altitude control systems.

5.3.1 *Pilot Actions* The pilot should maintain cleared flight level while evaluating the situation and:

- (a) Watch for conflicting traffic
- (b) If considered necessary, alert nearby aircraft by:
 - (i) Making maximum use of exterior lights;
 - (ii) Broadcasting position, flight level, and immediate intentions on 121.5 MHz or 131.8 MHz as a back up.
- (c) Notify ATC of the situation and the intended course of action. Possible courses of action include:
 - (i) Continuing in MNPS airspace provided that the aircraft can maintain the cleared flight level.
 - (ii) Requesting ATC clearance to climb above or descend below RVSM airspace if the aircraft cannot maintain the cleared flight level and ATC cannot establish adequate separation from other aircraft.
 - (iii) Executing the Doc. 7030 contingency manoeuvre to leave the assigned track if prior ATC clearance cannot be obtained and the aircraft cannot maintain cleared flight level.

5.3.2 *Expected ATC actions* The following information is provided for information purposes. ATC can be expected to:

- (a) Obtain the pilot's intentions;
- (b) If the pilot intends to continue in MNPS airspace, consider establishing increased vertical, longitudinal, or lateral separation;
- (c) Pass traffic information;
- (d) If the pilot requests clearance to exit MNPS airspace, accommodate expeditiously, if possible;
- (e) If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit MNPS airspace, ATC can be expected to notify other aircraft nearby and continue to monitor the situation.
- (f) Advise adjoining ATC facilities/sectors of the situation.

5.4 Contingency Scenario

Failure or loss of accuracy of one primary altimetry system; for example, 60m (200 ft) or more difference between primary altimeters.

5.4.1 *Pilots Actions* Cross check standby altimeter, confirm the accuracy of a primary altimeter system and notify ATC of the loss of redundancy. If unable to confirm primary altimeter system accuracy, follow the actions stated in the preceding scenario.

6. DOC 7030 NORTH ATLANTIC CONTINGENCY PROCEDURE

The revised contingency procedures for RVSM are reprinted in a supplement to this Appendix 7 for ease of reference. However, Doc. 7030 is the source document for NAT contingency procedures. Doc. 7030 and the North Atlantic MNPS Airspace Operations Manual should be consulted before preparing training material.

7. TRANSPONDER FAILURE AND RVSM TRANSITION AREAS

The specific actions taken by ATC in the event an aircraft's transponder failure in an RVSM transition area will be determined by the provider States.

Note: Transition areas have been implemented where different separation standards exist between adjacent airspace.

8. HEIGHT MONITORING

A height-monitoring system is an element of the RVSM implementation programme for the NAT with regional procedures for its use.

9. EXPANDED GUIDANCE FOR RVSM EQUIPMENT FAILURE AND TURBULENCE SCENARIOS

The scenarios given below expand upon the basic concepts given in paragraph 5. They may be used as the basis for training programmes.

9.1 Scenario: All automatic altitude control systems fail (e.g. automatic altitude hold)

- 9.1.1 *Initial actions* The pilot should:
 - (a) Maintain cleared flight level
 - (b) Evaluate the aircraft's capability to maintain flight level through manual control.
- 9.1.2 *Subsequent actions* The pilot should:
 - (a) Watch for conflicting traffic;
 - (b) If considered necessary, alert nearby aircraft by;
 - (i) Making maximum use of exterior lights:
 - Broadcasting position, flight level and immediate intentions on 121.5 MHz.(131.8 MHz may be used as a back-up);
 - (c) Notify ATC of the failure and the intended course of action. Possible courses of action include:
 - (i) Continuing in MNPS airspace provided that the aircraft can maintain the cleared flight level.

JAA Temporary Guidance Leaflet – 6 TC Appendix E page E-56

TGL6 56

- (ii) Requesting ATC clearance to climb above or descend below RVSM airspace if the aircraft cannot maintain flight level and ATC cannot establish increased vertical, longitudinal, or lateral separation.
- Executing the Doc. 7030 contingency manoeuvre to leave the assigned route or track if (d) prior ATC clearance cannot be obtained and the aircraft cannot maintain level.
- 9.1.3 *Expected ATC actions* ATC can be expected to:
 - (a) Obtain the pilot's intentions.
 - If the pilot intends to continue in MNPS airspace, consider establishing increased vertical, (b) longitudinal, or lateral separation.
 - Pass traffic information. (c)
 - (d) If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible.
 - (e) If increased vertical, longitudinal, or lateral separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, ATC can be expected to notify other aircraft nearby and continue to monitor the situation. In this situation, the pilot may be executing his authority to protect the safety of the aircraft by flying the established contingency procedures to leave the assigned route or track.
 - Advise adjoining ATC facilities/sectors of the situation. (f)

9.2 Scenario: Loss of redundancy in primary altimetry systems

9.2.1 *Course of action* The pilot should take the following action:

If the remaining altimetry system is functioning normally, couple that system, where possible, to the automatic altitude control system, notify ATC of the loss of redundancy and maintain vigilance of altitude keeping.

9.2.2 *Expected ATC actions* ATC can be expected to acknowledge the situation and continue to monitor progress.

9.3 Scenario: All primary altimetry systems fail or are considered unreliable

- 9.3.1 Initial actions The pilot should:
 - (a) Maintain altitude by reference to the standby altimeter (if the aircraft is so equipped);
 - (b) Alert nearby aircraft by:
 - Making maximum use of exterior lights; and (i)
 - Broadcasting position, flight level and intentions on 121.5 MHz (131.8 MHz can (ii) be used as a back-up).

JAA Temporary Guidance Leaflet - 6 Appendix E page E-57

TGL6 57

- (c) Notify ATC of the inability to meet MNPS performance requirements, consider declaring an emergency, and request clearance to exit MNPS airspace.
- 9.3.2 *Subsequent actions* The pilot should:
 - (a) If unable to obtain ATC clearance, in a timely manner, execute Doc. 7030 contingency procedures to leave the assigned route or track and descend below RVSM airspace (if operationally feasible).
 - (b) If it is not operationally feasible to execute Doc. 7030 contingency procedures, continue to alert nearby aircraft and co-ordinate with ATC.
- 9.3.3 *Expected ATC actions* ATC can be expected to:
 - (a) When notified by the pilot that the aircraft cannot meet MNPS performance requirements, ATC can be expected to accommodate the request for clearance to exit the airspace in an expeditious manner.
 - (b) If unable to accommodate the request for clearance to exit the airspace, ATC should request the pilot's intentions, advise the pilot of traffic in the proximity, advise other aircraft and continue to monitor the situation.

9.4 Scenario: Primary altimeters diverge by more than ± 60 m (± 200 ft)

- 9.4.1 *Course of action* The pilot should:
 - (a) Attempt to determine the defective system through established trouble shooting procedures and/or comparing the primary altimeter displays to the standby altimeter (as corrected by correction cards, if required)
 - (b) If the defective system can be determined, couple the functioning altimetry system to the altitude keeping device.
 - (c) If the altimeter displays differ by more than ± 60 m (± 200 ft) and it cannot be determined which system is defective, follow the guidance in sub-paragraph 9.1(c) for failure or unreliable altimeter indications of all primary altimeters.

9.5 Scenario: Aircraft encounters turbulence greater than moderate, which the pilot believes will affect the aircraft's capability to maintain flight level

- 9.5.1 *Course of action* The pilot should:
 - (a) Watch for conflicting traffic and make maximum use of exterior lights.
 - (b) Broadcast call sign, position, flight level, nature and severity of turbulence, and intentions on 121.5 MHz (131.8 MHz may be used as a back-up).
 - (c) Notify ATC as soon as possible and request flight level change if necessary.

- (d) If the aircraft cannot maintain level, execute Doc. 7030 contingency procedures to leave the assigned route or track.
- 9.5.2 *Expected ATC actions* ATC can be expected to:
 - (a) If possible, establish increased vertical, longitudinal, or lateral separation.
 - (b) Accommodate the request for change in flight level, if possible.
 - (c) If neither of the above actions are possible, notify other aircraft in the vicinity and monitor the situation.
 - (d) Consider suspending RVSM operations in the affected area.

SUPPLEMENT TO APPENDIX 7 - SPECIAL PROCEDURES FOR IN-FLIGHT CONTINGENCIES

Extract from ICAO DOC 7030 Regional Supplementary Procedures, Part 1 RULES OF THE AIR, AIR TRAFFIC SERVICES AND SEARCH AND RESCUE (revised 5 February 1997)

6 <u>SPECIAL PROCEDURES FOR IN-FLIGHT CONTINGENCIES</u> (P-RAC, Part II-16)

6.1 The following procedures are intended for guidance only. Although all possible contingencies cannot be covered, they provide for the more frequent cases of:

- 1) inability to maintain assigned level due to weather, aircraft performance, pressurisation failure and problems associated with high level supersonic flight;
- 2) loss of, or significant reduction in, the navigation capability when operating in parts of the airspace where high accuracy of navigation is a prerequisite to the safe conduct of flight operations; and
- 3) en route diversion across the prevailing NAT traffic flow.

With regard to 1) and 3) above, the procedures are applicable primarily when rapid descent and/or turnback or diversion is required. The pilot's judgement shall determine the sequence of actions taken, and air traffic control shall render all possible assistance having regard to the specific circumstances.

6.2 <u>General Procedures</u>

The following general procedures apply to both subsonic and supersonic aircraft.

6.2.1 If an aircraft is unable to continue flight in accordance with its air traffic control clearance, a revised clearance shall, whenever possible, be obtained prior to initiating any action. This shall also apply to aircraft which are unable to maintain an accuracy of navigation on which the safety of the separation minima applied by air traffic control between it and adjacent aircraft depends. This shall be accomplished using the radiotelephony distress or urgency signal as appropriate. Subsequent air traffic control action with respect to that aircraft shall be based on the intentions of the pilot and the overall air traffic situation.

6.2.2 If prior clearance cannot be obtained, an air traffic control clearance shall be obtained at the earliest possible time and, in the meantime, the pilot shall:

- 1) broadcast position (including the ATS route designator or the track code, as appropriate) and intentions on frequency 121.5 MHz at suitable intervals until air traffic control clearance is received;
- 2) make maximum use of aircraft lights to make the aircraft visible;
- 3) maintain a watch for conflicting traffic; and
- 4) initiate such action as necessary to ensure safety of the aircraft.

6.3 <u>Special contingency procedures for subsonic aircraft</u>

6.3.1 The following guidance is recommended for aircraft operating within North Atlantic airspace.

6.3.2 <u>Initial action</u>

6.3.2.1 If unable to comply with the provision of 6.2.1 to obtain prior air traffic control clearance, the aircraft should leave its assigned route or track by turning 90 degrees to the right or left whenever this is possible. The direction of the turn should, where possible, be determined by the position of the aircraft relative to any organised route or track system (e.g. whether the aircraft is outside, at the edge of, or within the system). Other factors which may affect the direction of the turn are the direction of an alternate airport, terrain clearance and the levels allocated to adjacent routes or tracks.

6.3.3 <u>Subsequent action</u>

6.3.3.1 An aircraft able to maintain its assigned flight level should:

- 1) turn to acquire and maintain in either direction a track laterally separated by 30 NM from its assigned route or track; and
- 2) if above FL 410, climb or descend 300m (1,000 ft); or
- 3) if below FL 410, climb or descend 150m (500 ft); or
- 4) if at FL 410, climb 300 m (1,000 ft) or descend 150 m (500 ft).

6.3.3.2 An aircraft not able to maintain its assigned flight level should:

- 1) initially minimise its descent rate to the extent that it is operationally feasible;
- 2) turn while descending to acquire and maintain in either direction a track laterally separated by 30 NM from its assigned route or track; and
- 3) for the subsequent level flight, a level should be selected which differs from those normally used by 300 m (1,000 ft) if above FL 410 or by 150 m (500 ft) if below FL 410.

6.3.4 <u>En route diversion across the prevailing NAT air traffic flow</u>

- 6.3.4.1 The guidance in sub-paragraph 6.3.4.3 applies to aircraft that:
 - 1) are operating within the OTS or on random routes that are proximate to the OTS; and
 - 2) can climb or descend to an altitude above or below those where the majority of NAT aircraft operate.

Sub-paragraph 6.3.4.4 contains guidance for other situations where diversion across adjacent tracks or routes is necessary.

6.3.4.2 The basic concept of this guidance is that, when operationally feasible, before diverting across tracks or routes with heavy traffic, the aircraft should offset from the assigned track or route by 30 NM and expedite a descent to an altitude below or a climb to an altitude above those where the vast majority of NAT aircraft operate before proceeding toward the alternate aerodrome. Flight below FL 285 or above FL 410 should meet this objective.

6.3.4.3 In the event of a contingency which necessitates an en route diversion to an alternate aerodrome, across the direction of the prevailing NAT traffic flow, and prior ATC clearance cannot be obtained:

- 6.3.4.3.1 An aircraft able to maintain its assigned flight level should:
 - 1) turn toward the alternate aerodrome to acquire a track which is separated laterally by 30 NM from the assigned route or track; and
 - 2) if above FL 410, climb or descend 300 m (1,000 ft); or
 - 3) if below FL 410, climb or descend 150 m (500 ft); or
 - 4) if at FL 410, climb 300 m (1,000 ft) or descend 150m (500 ft); and
 - 5) fly the offset track while expediting its descent to an altitude below FL 285 or a climb to an altitude above FL 410; and
 - 6) when below FL 285 or above FL 410, proceed towards the alternate aerodrome while maintaining a level which differs from those normally used by 150 m (500 ft) if below FL 410 or 300 m (1,000 ft) if above FL 410; or
 - 7) if unable or unwilling to make a major climb or descent, fly an altitude offset for the diversion until obtaining an ATC clearance. See sub-paragraph 6.3.4.4 below.
- 6.3.4.3.2 An aircraft not able to maintain its assigned flight level should:
 - 1) initially minimise its descent rate to the extent it is operationally feasible; and
 - 2) start its descent while turning to acquire a track separated laterally by 30 NM from its assigned route or track; and
 - 3) unless the nature of the contingency dictates otherwise, maintain the offset track while expediting its descent to an altitude below FL 285; and
 - 4) unless the nature of the contingency dictates otherwise, when below FL 285, it should proceed towards the alternate aerodrome; and
 - 5) continue descent to a level which can be maintained and which differs from those normally used by 150 m (500 ft) if below FL 410.

6.3.4.3.3 If these contingency procedures are employed by a twin-engine aircraft as a result of a shutdown of a power unit or a primary aeroplane system failure, the pilot should so advise ATC as soon as practicable, reminding ATC of the type of aircraft involved and requesting expeditious handling.

6.3.4.4 Aircraft which are required to divert across the prevailing NAT air traffic flow and are:

- 1) unable or unwilling to descend to an altitude below those where the majority of NAT aircraft operate due to operational constraints; or
- 2) unsure of their proximity to other routes or tracks; or
- 3) assigned to a route which crosses the OTS at a significant angle;

should execute the actions specified in sub-paragraphs 6.3.4.4.1 or 6.3.4.4.2 below.

6.3.4.4.1 An aircraft which is able to maintain its assigned flight level should:

- 1) if above FL 410, climb or descend 300 m (1,000 ft); or
- 2) if below FL 410, climb or descend 150 m (500 ft); or
- 3) if at FL 410, climb 300 m (1,000 ft) or descend 150 m (500 ft)

while turning to proceed toward the alternate aerodrome.

- 6.3.4.4.2 An aircraft which is unable to maintain its assigned flight level should:
 - 1) expedite a descent to an altitude below those where the majority of NAT aircraft operate while turning toward the alternate aerodrome; and
 - 2) diligently follow the guidance in sub-paragraph 6.2.2 above in regard to radio calls, aircraft lights and watching for conflicting traffic.

APPENDIX F Example Operator Application for Approval To Conduct Operations in Airspace Where RVSM Is Applied

This Appendix provides an EXAMPLE of an operator application for authority to conduct RVSM operations. It shows a suggested format and content for such an application.

This information is provided for <u>EXAMPLE</u> purposes only! Other States may have different requirements.

This material has been reviewed by the Technical Programs And Aircraft Maintenance Divisions at FAA Headquarters in Washington. It is believed that this material provides a useful aid for operators preparing material to submit to FAA Flight Standards District Offices (FSDO) and Certificate Holding District Offices (CHDO).

It is assumed that each operator will review the applicable paragraphs in FAA Interim Guidance On The Approval Of Operators/Aircraft For RVSM Operations (91-RVSM found at Appendix A to this document), and provide information pertinent to the specific aircraft type or group for which it intends to seek approval and to the operator's individual operations and maintenance programs.

Additional information is available on the RVSM website:

www.faa.gov/ats/ato/rvsm1.htm OR www.faa.gov , QUICK JUMP MENU, RVSM, GO

For questions or revisions to this material, please contact one of the following:

Roy Grimes (FAA HQ, AFS-400) Ph. 202-267-3734; Fax 202-267-5086; E-Mail: roy.grimes@faa.gov

Bob Hanson (FAA HQ, AFS-430) Ph 202-267-3739; Fax 202-267-5086; E-Mail: robert.g.hanson@faa.gov

Bob Miller (FAA/CSSI Inc.) Ph: 202-484-3359, Fax 202-863-2398, E-Mail: rmiller@cssiinc.com

Additional References:

1. PILOT TRAINING RELATED TO TCAS OPERATION IN RVSM. The FAA has developed coordinated, and distributed a package that informs pilots on the effect that RVSM may have on TCAS. Operators should include this information in the RVSM pilot training program. Training may take the form of a pilot bulletin. This material is published on the FAA web page.

2. Policy Regarding Aircraft System Requirements for RVSM Operations in MMEL (7/18/96) (CG 59). Operators are expected to revise their MEL, as necessary, in accordance with the guidance provided in GC-33. GC-33 is published on the FAA web page.

EXAMPLE OPERATOR APPLICATION

SAMPLE COVER LETTER

Date:

Name of Point of Contact Principal Operations Inspector Point of Contact's Office Number Federal Aviation Administration Point of Contact's Address

Subject:	Application for Approval of XYZ Airline's Reduced Vertical Separation Minimum (RVSM) Program - ABC Aircraft
Reference:	FAA "Interim Guidance Material on the Approval of Operators/Aircraft for RVSM Operations (91-RVSM)", dated March 14, 1994
	Joint Flight Standards Information Bulletin (FSIB) for Air Transportation (FSAT) and General Aviation (FSGA), Number FSAT 95-22/FSGA 95-12

Dear Point of Contact:

Airline XYZ respectfully requests FAA approval to conduct flight operations in Pacific airspace at or above flight level (FL) 290 with 1,000 feet vertical separation (i.e., RVSM operations) using ABC aircraft.

In support of this request, we have prepared the attached approval package. This document has been developed in accordance with the requirements of the referenced guidance material and FSIB/FSAT. In addition, this document will satisfy all requirements for issuance of approved Operations Specifications [FAR Part 121, 125, 135 operators] or Letter of Authorization (LOA) [FAR Part 91 operators] authorizing RVSM operations utilizing ABC aircraft, as outlined in the referenced FSIB/FSAT.

Your review and approval of our attached application for RVSM operations with aircraft ABC is requested. If you have any questions, or require any additional information, please contact (airline's point of contact for RVSM approval) at (telephone number). Airline XYZ expects to start RVSM operations on DD/MM/YY.

Sincerely,

Airline Official Official's Title

TABLE OF CONTENTS OF APPROVAL PACKAGE

Request for Approval

(See cover letter)

<u>APPROVAL FACTORS:</u> <u>BASED ON FAA Interim Guidance Material On The</u> <u>Approval Of Operators/Aircraft For RVSM Operations (91-RVSM)" (March 14, 1994)</u>

	Page	91 RVSM
	Number	Paragraph
		Reference
AIRWORTHINESS APPROVAL		
Aircraft Manufacturer's Certification	1	9
CONTINUED AIRWORTHINESS -		
MAINTENANCE REQUIREMENTS		
General	2	10.a
Maintenance Program Approval Requirements	3	10.b
Maintenance Documents Requirements	4	10.c
Maintenance Practices	5	10.d.
Maintenance Practices for Non-compliant Aircraft	7	10.e
Maintenance Training Requirements	8	10.f
Test Equipment	9	10.g
* *		0
OPERATIONAL APPROVAL		
General	10	11.b
Pre-application Meeting	11	11.c
Content of Operator RVSM Application:		11.d)
Airworthiness Documents	12	11.d.(1)
Description of Aircraft Equipment	13	11.d.(2)
Operations Training Programs and		
Operating Practices and Procedures	14	11.d.(3)
Operations Manuals and Checklists	15	11.d.(4)
Past Performance	16	11.d.(5)
Minimum Equipment List	17	11.d.(6)
Maintenance	18	11.d.(7)
Plan for Participation in Verification/		
Monitoring Programs	19	11.d.(8)
Authority Review and Evaluation of Application	20	11.e
Validation Flights	21	11.f
Form of Authorizing Documents	22	11.g
Verification/Monitoring Programs	23	11.h
Conditions for Removal of RVSM Authority	24	11.i
Aircraft t ABC Service Bulletin XXXX, dated MM/DD/YY	(Appendix I)	
Airline XYZ Engineering Authorization (EA) 1-11111-11,	· • • · · · · · · · · · · · · · · · · ·	
dated MM/DD/YY	(Appendix II)	

Aircraft Manufacturer's Certification

Paragraph 9 of the FAA 91-RVSM Interim Guidance Material specifies the requirements for airworthiness approval of an RVSM data package. These requirements have been complied with by the aircraft manufacturer, and is documented in Aircraft ABC Service Bulletin (SB) XXXX, dated MM/DD/YY.

This SB meets the requirements for the manufacturer's data package, as specified in Paragraph 9 of the FAA "Interim Guidance Material on the Approval of Operators/Aircraft for RVSM Operations (91-RVSM)", dated March 14, 1994, and has been FAA-approved. Consequently, no additional operator-specific approval is required; an operator need only meet the requirements of this SB.

A copy of this SB is included as Appendix I. Airline XYZ has complied with this SB on our ABC aircraft in accordance with Airline XYZ Engineering Authorization (EA) 1-11111-11, dated MM/DD/YY. A copy of this EA is included as Appendix II.

<u>Requirement</u>:

10. CONTINUED AIRWORTHINESS (MAINTENANCE REQUIREMENTS)

a. General:

(1) The integrity of the design features necessary to ensure that altimetry systems continue to meet RVSM standards should be verified by scheduled tests and/or inspections in conjunction with an approved maintenance program. The operator should review its maintenance procedures and address all aspects of continuing airworthiness which are affected by RVSM requirements.

(2) Each person or operator should demonstrate that adequate maintenance facilities are available to ensure continued compliance with the RVSM maintenance requirements.

Airline XYZ Response:

Airline XYZ conducts operations as a flag air carrier in accordance with Federal Aviation Regulation (FAR) 121. XYZ maintains its aircraft under an FAA-approved continuous airworthiness maintenance program (CAMP) in accordance with FAR 121 and FAR 43, and in accordance with FAA-approved Operations Specifications, Part D, "Aircraft Maintenance". FAA oversight of Airline XYZ's CAMP and Operations Specifications is provided by the FAA, Flight Standards District Office (FSDO), FSDO Number ##. Accordingly, Airline XYZ's current approved maintenance program is sufficient to maintain the aircraft systems and equipment in accordance with RVSM requirements.

Specific information related to Airline XYZ's maintenance procedures and CAMP for RVSM is contained in subsequent sections in this application.

Airline XYZ operates sufficient maintenance facilities for its ABC aircraft to ensure continued compliance with RVSM requirements. Airline XYZ's primary maintenance base is located at [Airport Name] Airport, in City, State. Additional maintenance support is provided by an extensive network of hangar and line maintenance at various stations throughout the Airline XYZ system.

<u>Requirement</u>:

10. CONTINUED AIRWORTHINESS (MAINTENANCE REQUIREMENTS)

b. <u>Maintenance Program Approval Requirements</u>: Each operator requesting RVSM operational approval should submit a maintenance and inspection program which includes any maintenance requirements defined in the approved data package (paragraph 9) as part of a continuous airworthiness maintenance program approval or an equivalent program approved by the FAA. Although air carriers operating aircraft subject to a continuous airworthiness maintenance program do not have to comply with the provisions of FAR Section 91.411 pertaining to altimeter system and altitude reporting equipment test and inspections, an effective maintenance and inspection program will, typically, incorporate these provisions as a requirement for maintenance program approval.

Airline XYZ Response:

The following pages list aircraft components required for RVSM, together with scheduled maintenance requirements for that equipment. No RVSM-specific maintenance requirements have been identified by the aircraft manufacturer. A copy of Aircraft ABC Service Bulletin (SB) XXXX, dated MM/DD/YY, which outlines maintenance requirements for RVSM equipment, is included as Appendix III.

- There are no RVSM-specific maintenance requirements for the Aircraft ABC Altimetry/Air-Data system. U.S. airlines who operate under FAR 121 and comply with FAR 43 for periodic maintenance via the Aircraft ABC maintenance planning document (MPD) meet the requirements of FAR 91.411 and 91.401, and therefore need not perform the periodic (2 year) altimeter check for either RVSM or normal operations.
- No RVSM-specific maintenance requirements exist for the automatic altitude control system.
- No scheduled maintenance requirements are outlined for the altitude alert module.
- Periodic checks of the ATC/MODE C Transponder shall be performed per FAR 43, Appendix F, as required by FAR 91.413, at 24 month intervals. Airline XYZ conducts a functional check of the Air Traffic Control System (ATC) at intervals not to exceed 24 months per routine operation 1234.

Note, however, that Aircraft ABC SB XXXX requires replacement of pitot-static probes that have been in service for more than three (3) years. This requirement is detailed on Page 12-1 of this application (reference 91-RVSM - Interim Guidance Material, Paragraph 11.d.(2): "Operational Approval - Content of Operator RVSM Application - Description of Aircraft Equipment").

<u>Requirement</u>:

10. CONTINUED AIRWORTHINESS (MAINTENANCE REQUIREMENTS)

c. <u>Maintenance Documents Requirements</u>: The following items should be reviewed as appropriate for RVSM maintenance approval:

- (1) Maintenance Manuals. (MM)
- (2) Structural Repair Manuals. (SRM)
- (3) Standards Practices Manuals.
- (4) Illustrated Parts Catalogs. (IPC)
- (5) Maintenance Schedule.
- (6) MMEL/MEL.

Airline XYZ Response:

No RVSM-specific MM procedures have been identified; current MM procedures are sufficient for RVSM equipment.

Airline XYZ will revise the Aircraft ABC SRM to identify the area around the pitot-static probes as RVSM-critical, and to require the Airline XYZ Structures Engineer to be contacted for specific repair instructions in this area. A draft SRM revision is enclosed.

Airline XYZ's Standard Practice Manual will be revised in accordance with the enclosed draft revision. This manual will outline Airline XYZ's standard practices for the necessary RVSM maintenance requirements.

Airline XYZ will revise the aircraft ABC IPC in accordance with Airline XYZ's Engineering Authorization (EA) 22222 (draft copy enclosed) to identify RVSM-critical equipment. This equipment will also be identified as required inspection items (RIIs), requiring work on this equipment to be subject to a "buy-back" inspection per FAR 121.369 and FAR 121.371.

No change to the aircraft ABC maintenance schedule is required for RVSM. Please refer to Page 3-1 for additional information on the required maintenance schedules (reference 91-RVSM - Interim Guidance Material, Paragraph 10.b: "Continued Airworthiness (Maintenance Requirements) - Maintenance Program Approval Requirements").

Please refer to Page 16-1 for a discussion of MMEL/MEL changes for RVSM (reference FAA 91-RVSM Interim Guidance Material, Paragraph 11.d.(6): "Operational Approval - Content of Operator RVSM Application - MEL").
10. CONTINUED AIRWORTHINESS (MAINTENANCE REQUIREMENTS)

d. <u>Maintenance Practices:</u>

(1) If the operator is subject to an ongoing approved maintenance program, that program should contain the maintenance practices outlined in the applicable aircraft and component manufacturer's maintenance manuals for each aircraft type. The following items should be reviewed for compliance for RVSM approval and if the operator is not subject to an approved maintenance program the following items should be followed:

(i) All RVSM equipment should be maintained in accordance with the component manufacturer's maintenance requirements and the performance requirements outlined in the approved data package.

(ii) Any modification, repair, or design change which in any way alters the initial RVSM approval, should be subject to a design review by persons approved by the approving authority.

(iii) Any maintenance practices which may affect the continuing RVSM approval integrity, e.g., the alignment of pitot/static probes, dents, or deformation around static plates, should be referred to the approving authority or persons delegated by the authority.

(iv) Built-in Test Equipment (BITE) testing is not an acceptable basis for system calibrations, (unless it is shown to be acceptable by the airframe manufacturer with the approval authorities agreement) and should only be used for fault isolation and troubleshooting purposes.

(v) Some aircraft manufacturers have determined that the removal and replacement of components utilizing quick disconnects and associated fittings, when properly connected, will not require a leak check. While this approach may allow the aircraft to meet static system certification standards when properly connected, it does not always ensure the integrity of the fittings and connectors, nor does it confirm system integrity during component replacement and reconnections. Therefore, a system leak check or visual inspection should be accomplished any time a quick disconnect static line is broken.

(vi) Airframe and static systems should be maintained in accordance with the airframe manufacturer's inspection standards and procedures.

(vii) To ensure the proper maintenance of airframe geometry for proper surface contours and the mitigation of altimetry system error, surface measurements or skin waviness checks should be made if needed to ensure adherence to the airframe manufacturer's RVSM tolerances. These tests and inspections should be performed as established by the airframe manufacturer. These checks should also be performed following repairs, or alternations having an effect of airframe surface and airflow.

(viii) The maintenance and inspection program for the autopilot should ensure continued accuracy and integrity of the automatic altitude control system to meet the height-keeping standards for RVSM operations. This requirement will typically be satisfied with equipment inspections and serviceability checks.

(ix) Where the performance of existing equipment is demonstrated as being satisfactory for RVSM approval, it should be verified that the existing maintenance practices are also consistent with continued RVSM approval integrity. Examples of these are:

- (A) Altitude alert.
- (B) Automatic altitude control system.
- (C) ATC altitude reporting equipment (transponders FAR 91.215).
- (D) Altimetry systems.

Airline XYZ Response:

No RVSM-specific maintenance requirements have been identified for aircraft ABC, as detailed in Appendix V. Please refer to Page 3-1 for additional information on required maintenance (reference FAA 91-RVSM Interim Guidance Material, Paragraph 10.b: "Continued Airworthiness (Maintenance Requirements) - Maintenance Program Approval Requirements"). Current Maintenance Manual procedures are acceptable for RVSM, and will continue to be followed.

All RVSM equipment will be identified in the IPC as RVSM-critical, and will be identified as required inspection items, requiring work on this equipment to be subject to a "buy-back" inspection per FAR 121.369 and FAR 121.371. Please refer to Page 4-1 of this application for details on this subject (reference 91-RVSM - Interim Guidance Material, Paragraph 10.c: "Continued Airworthiness (Maintenance Requirements) - Maintenance Documents Requirements").

10. CONTINUED AIRWORTHINESS (MAINTENANCE REQUIREMENTS)

e. <u>Maintenance Practices for Non-compliant Aircraft</u>: Those aircraft positively identified as exhibiting height-keeping performance errors which require investigation as specified in paragraph 11I(1) should not be operated in airspace where RVSM is applied until the following actions have been taken:

(1) The failure or malfunction is confirmed and isolated by maintenance action and,

(2) Corrective action is carried out as required to comply with paragraph 9b(5)(iv)(F) and verified to ensure RVSM approval integrity.

Airline XYZ Response:

Airline XYZ will prepare a Standard Practice manual section that outlines responsibilities for RVSM. This manual will detail the requirements for non-compliant aircraft, including notification of Airline XYZ's Maintenance Coordination Center (MCC) and aircraft ABC Fleet Team. The MCC and fleet team will coordinate appropriate action, including:

- adding flight plan remarks to prevent aircraft operation in RVSM airspace until corrective action is accomplished;
- implementing corrective action, and;
- if required, advising Airline XYZ's FAA Liaison section to report the height-keeping performance error to FAA within 72 hours, along with initial analysis of causal factors and measures to prevent further events (refer to Page 23-1 for additional information)

A draft copy of this manual is enclosed with Page 4-1 of this application (reference 91-RVSM Interim Guidance Material, Paragraph 10.c: "Continued Airworthiness (Maintenance Requirements) - Maintenance Documents Requirements").

10. CONTINUED AIRWORTHINESS (MAINTENANCE REQUIREMENTS)

f. <u>Maintenance Training Requirements</u>: It is expected that new training requirements will be introduced by the RVSM approval processes. Areas that may need to be highlighted for initial and recurrent training of shop and line personnel are:

- (1) Aircraft geometric inspection techniques.
- (2) Test equipment calibration/usage techniques.
- (3) Any special documentation or procedures introduced by RVSM approval.

Airline XYZ Response:

Airline XYZ's initial maintenance training will be revised to: highlight the importance of the area surrounding the pitot-static probe; emphasize that any defects in the fuselage skin around the probe can affect the accuracy of the altimetry system, and; require inspection of the area around the probe whenever a probe is replaced. Additionally, general RVSM awareness information will be added to the training.

Airline XYZ does not conduct routine recurrent maintenance training. The above information for initial training will also be included in a Maintenance Bulletin for all mechanics who have completed initial training prior to the aforementioned initial training program revision.

Test equipment calibration/usage techniques are currently taught by Avionics coordinators in the Avionics Maintenance area, as "on-the-job training" (OJT). As detailed in this application, no changes to the maintenance programs or inspection schedule are necessary. Accordingly, we believe our current training of test equipment calibration/usage techniques is sufficient, and no changes are warranted.

In addition, since no changes to the maintenance programs or inspection schedule are required, we do not anticipate the need for any special documentation or procedures.

10. CONTINUED AIRWORTHINESS (MAINTENANCE REQUIREMENTS)

g. Test Equipment

(1) <u>General</u>: The test equipment should have the capability to demonstrate continuing compliance with all the parameters established for RVSM approval in the initial data package or as approved by the approving authority.

(2) <u>Standards</u>: Test equipment should be calibrated utilizing reference standards whose calibration is certified as being traceable to the national standard. It should be calibrated at periodic intervals as agreed by the approving authority. The approved maintenance program should encompass an effective quality control program which includes the following:

(i) Definition of required test equipment accuracy.

(ii) Regular calibrations of test equipment traceable to a master in-house standard. Determination of calibration interval should be a function of the stability of the test equipment. The calibration interval should be established on the basis of historical data so that degradation is small in relation to the required accuracy.

(iii) Regular audits of calibration facilities both in-house and outside.

(iv) Adherence to acceptable shop and line maintenance practices.

(v) Procedures for controlling operator errors and unusual environmental conditions which may affect calibration accuracy.

Airline XYZ Response:

The maintenance programs identified for RVSM operations can be accomplished without specialized test equipment. Airline XYZ does utilize several test equipment sets to troubleshoot the air data computer system on an "as-needed" basis. These sets are highly accurate, and their calibration procedures can be traced to the national standard.

Additionally, the calibration and accuracy of test equipment used in the Avionics instruments shop are verified in accordance with the requirements outlined in the Component Maintenance Manual and by the equipment manufacturers. The calibration of individual components is performed at periodic intervals, and can be traced to the national standard.

11. OPERATIONAL APPROVAL

b. <u>General</u>: The FAA should ensure that each operator can maintain high levels of height-keeping performance.

(1) The FAA should be satisfied that operational programs are adequate. Flight crew training as well as operations manuals should be evaluated. Approval should be granted for each individual operator.

(2) Approval should be granted for each individual aircraft group and each individual aircraft to be used by the operator in RVSM operations. Each aircraft should receive airworthiness approval in accordance with paragraph 9 prior to being approved for use by the operator. (Aircraft group is defined in paragraph 9b(2)).

Airline XYZ Response:

This application is submitted for approval of RVSM operations with the ABC aircraft only. As detailed on Page 1-1 of this application, and in the Aircraft ABC Service Bulletin contained in Appendix III, the aircraft has been found to meet the airworthiness requirements contained in Paragraph 9 of the FAA Interim Guidance Material.

Additionally, Airline XYZ' various operational programs are scrutinized by the FAA, Flight Standards District Office (FSDO), FSDO number ##. Flight crew and aircraft dispatcher training programs are FAA-approved, as are various operational manuals.

Specific information relating to operational programs, manuals, and training for RVSM can be found in the subsequent sections of this application. Please refer to the Table of Contents in this application for a listing of the discrete elements of this application.

11. OPERATIONAL APPROVAL

c. <u>Pre-application Meeting</u>: A pre-application meeting should be scheduled between the operator and the CMO or FSDO. The intent of this meeting is to inform the operator of FAA expectations in regard to approval to operate in a RVSM environment. The content of the operator RVSM application, FAA review and evaluation of the application, validation flight requirements, and conditions for removal of RVSM authority should be basic items of discussion.

Airline XYZ Response:

Airline XYZ has arranged for a pre-application meeting with the FAA/Flight Standards District Office, FSDO Number ##, to be conducted on [date], at [location]. The purpose of this meeting will be to review Airline XYZ's proposed RVSM application for the ABC aircraft.

11. OPERATIONAL APPROVAL

d. <u>Content of Operator RVSM Application</u>: The following paragraphs describe the material which an operator applying for RVSM authority should provide to the FAA for review and evaluation at least 60 days prior to the intended start of RVSM operations.

(1) <u>Airworthiness Documents</u>: Sufficient documentation should be available to show that the aircraft has been approved by appropriate airworthiness authorities.

Airline XYZ Response:

Specific FAA Airworthiness Approval for RVSM operations with the ABC aircraft has been obtained by the aircraft manufacturer, as documented in Aircraft ABC Service Bulletin (SB) XXXX, dated 1-1-11. A copy of this SB is enclosed as Appendix III. For additional discussion of the Airworthiness Approval for RVSM operations with the ABC aircraft, please refer to Page 1-1 of this application (Aircraft Manufacturer's Certification: Airworthiness Approval).

The FAA-approved Operations Specifications for Airline XYZ, operating certificate XYZA0000, Paragraph A3, authorize Airline XYZ to conduct FAR Part 121 operations using the aircraft listed therein. Airline XYZ's ABC aircraft, the subject of this RVSM application, are listed in that paragraph. A copy of Airline XYZ' Operations Specifications, Paragraph A3, is enclosed.

Paragraph D85 of Airline XYZ' Operations Specifications authorizes Airline XYZ to conduct FAR Part 121 operations using the aircraft individually identified in the attached listing (Airline XYZ' Standard Practice manual, section 00-00-00). Copies of Airline XYZ' Operations Specifications, Paragraph D85, and the pertinent section of Airline XYZ's manual, Section 00-00-00, are enclosed.

11. OPERATIONAL APPROVAL

d. <u>Content of Operator RVSM Application</u>: The following paragraphs describe the material which an operator applying for RVSM authority should provide to the FAA for review and evaluation at least 60 days prior to the intended start of RVSM operations.

(2) <u>Description of Aircraft Equipment</u>: The applicant should provide a configuration list which details all components and equipment relevant to RVSM operations. (Paragraph 8 discusses equipment for RVSM operations).

Airline XYZ Response:

The following pages list aircraft components required for RVSM, together with scheduled maintenance requirements for that equipment.

This equipment will be identified in the IPC as RVSM-critical components. Additionally, this equipment will be identified as "Required Inspection Items" (RIIs), and will be subject to "buy-back" inspection procedures outlined in FAR 121.369 and FAR 121.371. Please refer to Page 4-1 for additional information on the IPC and RIIs (reference FAA 91-RVSM Interim Guidance Material, Paragraph 10.c: "Continued Airworthiness (Maintenance Requirements) - Maintenance Documents Requirements").

Aircraft ABC SB XXXX requires replacement of pitot-static probes that have been in service for more than three (3) years. Airline XYZ's aircraft ABC Fleet Team will monitor this requirement, and ensure that pitot-static tubes that have been in service for three or more years are replaced before the aircraft is operated in RVSM operations. However, we anticipate that certification activities currently underway by Pitotstatic Company (the manufacturer of the probes) will result in a plated probe that will have unlimited service life, and will not require replacement after three years of service. We plan to install these probes on our ABC aircraft when the probes are available.

11. OPERATIONAL APPROVAL

d. <u>Content of Operator RVSM Application</u>: The following paragraphs describe the material which an operator applying for RVSM authority should provide to the FAA for review and evaluation at least 60 days prior to the intended start of RVSM operations.

(3) <u>Operations Training Programs and Operating Practices and Procedures</u>: FAR Part 121 and FAR Part 135 operators should submit training syllabi and other appropriate material to the FAA to show that the operating practices and procedures and training items related to RVSM operations are incorporated in initial and, where warranted, recurrent training programs. (Training for dispatchers should be included, where appropriate). FAR Part 91 operators should demonstrate to the FAA through oral or written tests that their knowledge of RVSM operating practices and procedures is equivalent to FAR Part 121 and FAR Part 135 operators and is sufficient to warrant granting of approval to conduct RVSM operations. Practices and procedures in the following areas should be standardized using the guidelines of appendix 4: flight planning, preflight procedures at the aircraft for each flight, procedures prior to RVSM airspace entry, in-flight procedures, and flight crew training procedures. Appendix X presents procedures that are unique to Pacific airspace.

CHANGE. PILOT TRAINING RELATED TO TCAS OPERATION IN RVSM. Part 121, 125, and 135 125 operators must include pilot training on TCAS operation in RVSM in their application for RVSM authority/approval. Part 91 operators/aircraft equipped with TCAS operator are encouraged to provide information to their pilots.

Airline XYZ Response:

<u>Initial training</u>: RVSM will be introduced to Airline XYZ aircraft dispatchers and flight crewmembers during the 1996 recurrent training classes, commencing in January, 1996, using the enclosed training syllabi. These same syllabi will be added to, and become a standard part of, the initial flight training for flight crewmembers, and the international initial class curriculum for new aircraft dispatchers.

<u>Recurrent Training</u>: In 1996 and subsequent international recurrent classes, a review of RVSM operations and any new or changed procedures will become a standard part of the curriculum.

Our operating practices and procedures will be standardized in accordance with the enclosed syllabi.

11. OPERATIONAL APPROVAL

d. <u>Content of Operator RVSM Application</u>: The following paragraphs describe the material which an operator applying for RVSM authority should provide to the FAA for review and evaluation at least 60 days prior to the intended start of RVSM operations.

(4) <u>Operations Manuals and Checklists</u>: The appropriate manuals and checklists should be revised to include information/guidance on standard operating procedures detailed in appendix 4. Appropriate manuals should include a statement of the airspeeds, altitudes, and weights considered in RVSM aircraft approval to include identification of any operating restrictions established for that aircraft group. (See paragraph 7c(4)(iii)). Manuals and checklists should be submitted for authority review as part of the application process.

Airline XYZ Response:

Four (4) manuals will need to be updated with information about RVSM: the Flight Department Manual (FDM), the Dispatcher's Training Manual (DTM), the Airline XYZ Airway Manual (AM), and the Aircraft ABC Pilot's Manual (PM).

<u>Flight Department Manual</u>: The long-range operations section will be revised to include background and general guidance information for RVSM operations. Additionally, there exists a separate section within the FDM for aircraft dispatchers, called the dispatcher's supplement (DS). In this section, a brief description of RVSM will be inserted, following the general outlines of the aircraft dispatcher's RVSM training syllabus.

<u>Dispatcher's Training Manual</u>: In this new manual, the description of the international initial and recurrent classes will include references to RVSM training, down to the level of detail on aircraft dispatcher's RVSM training syllabus, if appropriate.

<u>Airline XYZ Airway Manual</u>: The route information section will be revised to include specific RVSM operational procedures applicable to NAT/MNPS.

<u>Aircraft ABC Pilot's Manual</u>: The abnormal procedures section will be revised to include appropriate contingency procedures outlined on the flight crewmembers initial training syllabus.

Note: Copies of the aircraft dispatchers and flight crewmember RVSM training syllabi referred to on this page can be found enclosed with Page 13-1 of this application (reference FAA 91-RVSM Interim Guidance Material, Paragraph 11.d.(3): "Operational Approval - Content of Operator RVSM Application - Operations Training Programs and Operating Practices and Procedures").

11. OPERATIONAL APPROVAL

d. <u>Content of Operator RVSM Application</u>: The following paragraphs describe the material which an operator applying for RVSM authority should provide to the FAA for review and evaluation at least 60 days prior to the intended start of RVSM operations.

(5) <u>Past Performance</u>: An operating history should be included in the application. The applicant should show any events or incidents related to poor height keeping performance which may indicate weaknesses in training, procedures, maintenance, or the aircraft group intended to be used.

Airline XYZ Response:

The flight crew operating report system was reviewed for the previous 12 months. No incidents of height-keeping performance errors were noted for the aircraft ABC fleet.

A review of the Equipment Removal History will be conducted for the previous 12 months, to determine if any failures have been detected on RVSM equipment. This review will examine the RVSM equipment identified on Page 12-1 of this application (reference FAA 91-RVSM Interim Guidance Material, Paragraph 11.d.(2): "Operational Approval - Content of Operator RVSM Application - Aircraft Equipment").

11. OPERATIONAL APPROVAL

d. <u>Content of Operator RVSM Application</u>: The following paragraphs describe the material which an operator applying for RVSM authority should provide to the FAA for review and evaluation at least 60 days prior to the intended start of RVSM operations.

(6) <u>Minimum Equipment List</u>: A minimum equipment list (MEL), adopted from the master minimum equipment list (MMEL), should include items pertinent to operating in RVSM airspace.

CHANGE. Operators are expected to revise their MEL's in accordance with the guidance published in GLOBAL CHANGE (GC)-33. GC-33 is published on the ARINC bulletin board.

Airline XYZ Response:

The aircraft manufacturer has stated that no MMEL revisions specific to RVSM are planned.

The current Airline XYZ aircraft ABC Minimum Equipment List (MEL) requires the primary altimeter, flight control computer, TCAS, and altitude hold systems to be operational. The Airline XYZ aircraft ABC MEL will be revised to require the Altitude Alert System (AAS) to be operative for flights in RVSM airspace.

11. OPERATIONAL APPROVAL

d. <u>Content of Operator RVSM Application</u>: The following paragraphs describe the material which an operator applying for RVSM authority should provide to the FAA for review and evaluation at least 60 days prior to the intended start of RVSM operations.

(7) <u>Maintenance</u>: The operator should submit a maintenance program for approval in accordance with paragraph 10 at the time the operator applies for operational approval.

Airline XYZ Response:

No RVSM-specific maintenance program changes will be required. Please refer to Page 3-1 of this application for details (reference FAA 91-RVSM Interim Guidance Material, Paragraph 10.c: "Continued Airworthiness (Maintenance Requirements) - Maintenance Program Approval Requirements").

Pitot-static tubes must be replaced after three years in service. Please refer to Page 12-1 of this application for details (reference FAA 91-RVSM Interim Guidance Material, Paragraph 11.d.(2): "Operational Approval - Content of Operator RVSM Application - Aircraft Equipment").

11. OPERATIONAL APPROVAL

d. <u>Content of Operator RVSM Application</u>: The following paragraphs describe the material which an operator applying for RVSM authority should provide to the FAA for review and evaluation at least 60 days prior to the intended start of RVSM operations.

(8) <u>Plan for Participation in Verifications/Monitoring Programs</u>: The operator should provide a plan for participation in the verification/monitoring program. This program should normally entail a check of at least a portion of the operator's aircraft by an independent height-monitoring system. (See paragraph 11h for further discussion of verification/monitoring programs).

Airline XYZ Response:

Background

In order to help assess the continuing operational and mathematical integrity of the airspace system in an RVSM environment, operators are required to participate in both a pre-operational verification of aircraft height keeping performance and a post-operational monitoring of same. To perform the verification/monitoring of aircraft altitude-keeping performance, the Asia-Pacific Registry and Monitoring Organization (APARMO) is planning to use the Global Positioning System (GPS)-based Monitoring System (GMS). The GMS is administered by the APARMO. The APARMO processes the data to estimate altimetry system error (ASE) and total vertical error (TVE). An operator without RVSM experience should plan to have three of each of its aircraft types monitored within three months of approval. Operators with RVSM experience should have two aircraft of each type monitored. The APARMO will notify the operator when the monitoring data is sufficient.

RVSM Aircraft Monitoring

The monitoring of an approved RVSM fleet will be carried out through the GPS-based Monitoring System (GMS). Therefore, Airline XYZ proposes the following plan for each fleet of aircraft which it intends to operate in RVSM airspace.

- ➔ A member of the aircraft ABC Fleet Team from Airline XYZ will contact the APARMO support contractor when aircraft have been inspected and modified as per the manufacturer's RVSM Service Bulletin.
- → Airline XYZ will arrange with the GMS support contractor to operate a GPS-based monitoring Unit (GMU) on one leg of a revenue flight, most likely a domestic one. While initial flights may require GMS support contractor participation in the installation and removal of the GMU, it is intended that the majority of verification flights will have the GMU installed and removed by licensed Airline XYZ line maintenance personnel.
- → When the verification flight has terminated, the GMU and collected data will be returned to GMS support contractor for post-processing.
- → ASE and TVE for the flight will be derived by the APARMO. ASE and TVE may be obtained by sending a fax request to the APARMO at (+1 609 485 5117). A successful flight will also be

annotated on the APARMO website: <u>www.tc.faa.gov/act500/rvms/aparmo-intro.html</u>. The APARMO will contact the operator when a flight is unsuccessful and arrange for a repeat measurement.

→ <u>RVSM Aircraft Monitoring Following Trials Period</u>

The requirements for aircraft altitude-keeping performance monitoring after implementation have not yet been established. The APANPIRG RVSM Task Force will establish those requirements

11. OPERATIONAL APPROVAL

e. Authority Review and Evaluation of Applications

(1) Once the application has been submitted, the FAA will begin the process of review and evaluation. If the content of the application is insufficient, the FAA will request additional information from the operator.

(2) When all the airworthiness and operational requirements of the application are met, the authority will proceed with the approval process.

Airline XYZ Response:

Airline XYZ requests review, evaluation, and approval of this application for aircraft ABC RVSM operations.

Airline XYZ believes the content of this application is sufficient. However, if additional information is requested from FAA, Airline XYZ will provide it in a timely manner.

Airline XYZ RVSM Points of Contact are:

Airline XYZ RVSM Coordinators

NAME	TITLE	Phone Number
NAME	TITLE	Phone Number

11. OPERATIONAL APPROVAL

f. <u>Validation Flight(s)</u>: In some cases, the review of the RVSM application and programs may suffice for validation purposes. However, the final step of the approval process may be the completion of a validation flight. The FAA may accompany the operator on a flight through airspace where RVSM is applied to verify that operations and maintenance procedures and practices are applied effectively. If the performance is adequate, operational approval for RVSM airspace should be granted. If performance is not adequate, then approval should be delayed.

Airline XYZ Response:

Airline XYZ does not believe a validation flight should be required, for the following reasons:

- As noted previously, aircraft ABC RVSM operations will not require any maintenance program changes or use of any new, specialized maintenance procedures;
- Airline XYZ operates in accordance with an FAA-approved continuous airworthiness maintenance program (CAMP) in accordance with FAR 121 and FAR 43, and in accordance with FAA-approved Operations Specifications, Part D, "Aircraft Maintenance";
- Airline XYZ has operated and maintained ABC aircraft since [date];
- Airline XYZ's crew training and operational programs are FAA-approved, and;
- A review of the Airline XYZ flight crew operating report system for the previous 12 months revealed no height-keeping performance errors.

Accordingly, we do not believe a validation flight is necessary.

If FAA requires a validation flight, we propose to accomplish such a flight in conjunction with a scheduled Airline XYZ revenue operation (i.e., a revenue validation flight).

11. OPERATIONAL APPROVAL

g. Form of Authorizing Document

(1) <u>FAR Part 121, Part 125, and Part 135 Operators</u>: Approval to operate in RVSM airspace should be granted through the issuance of an operations specifications paragraph from Part B (En route Authorizations, Limitation, and Procedures). Each aircraft type group for which the operator is granted authority should be listed in Operational Specifications.

(2) <u>FAR Part 91 Operators</u>: These operators should be issued a letter of authorization (LOA) when the approval process has been completed. This LOA should be reissued on a biennial basis.

Airline XYZ Response:

The above requirement states, "Approval to operate in RVSM should be granted through the issuance of an operations specifications paragraph from Part B ..." However, FSIB/FSAT 95-22 stipulates, "Interim approval can be granted through a letter to the operator stating that RVSM approval has been given, and that OPSPECS will be issued only after the FAR pertaining to RVSM is published."

Airline XYZ requests appropriate authorizing documents be issued to authorize aircraft ABC RVSM operations, based upon the data contained in this application.

Note that requirements 11.g.(1) and 11.g.(2), above, are mutually exclusive, and the latter does not apply to Airline XYZ.

11. OPERATIONAL APPROVAL

h. <u>Verification/Monitoring Programs</u>: A program to monitor or verify aircraft height-keeping performance is considered a necessary element of RVSM implementation for at least the initial area where RVSM is implemented. Verification/Monitoring programs have the primary objective of observing and evaluating aircraft height-keeping performance to gain confidence that airspace users are applying the airplane/operator approval process in an effective manner and that an equivalent level of safety will be maintained when RVSM is implemented. It is anticipated that the necessity for such programs may be diminished or possibly eliminated after confidence is gained that RVSM programs are working as planned.

Note: A height-monitoring system based on Global Positioning Satellites or an earth-based system may fulfill this function.

Airline XYZ Response:

Please refer to Page 18-1 of this application for details on Airline XYZ' Verification/Monitoring Programs for RVSM (reference FAA 91-RVSM Interim Guidance Material, Paragraph 11.d.(8): "Operational Approval - Content of Operator RVSM Application - Plan for Participation in Verification/Monitoring Programs").

11. OPERATIONAL APPROVAL

i. Conditions for Removal of RVSM Authority

(1) The incidence of height-keeping errors which can be tolerated in an RVSM environment is very small. It is incumbent upon each operator to take immediate action to rectify the conditions which caused the error. The operator should also report the event to the FAA within 72 hours with initial analysis of causal factors and measures to prevent further events. The requirement for follow-up reports should be determined by the FAA. Errors which should be reported and investigated are: TVE equal to or greater than +300 ft (+90 m), ASE equal to or greater than +245 ft (+75 m), and AAD equal to or greater than +300 ft (+90 m).

(2) Height-keeping errors fall into two broad categories: errors caused by malfunction of aircraft equipment and operational errors. An operator which consistently commits errors of either variety may be required to forfeit authority for RVSM operations. If a problem is identified which is related to one specific aircraft type, then RVSM authority may be removed for the operator for that specific type.

(3) The operator should make an effective, timely response to each height-keeping error. The FAA may consider removing RVSM operational approval if the operator response to a height-keeping error is not effective or timely. The FAA should also consider the operator's past performance record in determining the action to be taken. If an operator shows a history of operational and/or airworthiness errors, then approval may be removed until the root causes of these errors are shown to be eliminated and RVSM programs and procedures are shown to be effective. The FAA will review each situation on a case-by-case basis.

Airline XYZ Response:

An Airline XYZ Standard Practice manual section will outline the responsibilities for monitoring Airline XYZ's RVSM program. A draft copy of this manual is enclosed with Page 4-1 of this application (reference FAA 91-RVSM Interim Guidance Material, Paragraph 10.c: "Continued Airworthiness (Maintenance Requirements) - Maintenance Documents Requirements").

A revision to the Airline XYZ Airway Manual will describe flight crewmember reporting functions for any suspected RVSM height-keeping performance errors. The Aircraft ABC program manager will be responsible for monitoring the flight crew operating report system, and notifying appropriate departments (Aircraft ABC Fleet Team, Maintenance Coordination Center (MCC), etc.) of any height-keeping errors. The MCC and fleet team will coordinate appropriate action, including:

- adding flight plan remarks to prevent aircraft operation in RVSM airspace until corrective action is accomplished;
- implementing corrective action, and ;
- advising Airline XYZ's FAA Liaison section to report the height-keeping performance error to FAA within 72 hours, along with initial analysis of causal factors and measures to prevent further events.

APPENDIX I

Aircraft ABC Service Bulletin XXXX, dated 1-1-11

"Initial Qualification of Aircraft ABC Airplanes for Reduced Vertical Separation Minimum (RVSM) Operation"

APPENDIX II

Airline XYZ's Engineering Authorization (EA) 1-11111-11, dated MM/DD/YY

"Structural Inspection to Allow Reduced Vertical Separation Minimum (RVSM) Operation"

	ICAO Asia/Pacific Regional Office WGS-84 Implementation Survey										
			If Co	nversion Con	npleted	If Conversion I	ICAO				
State	Conversion	Completed	Is	Data Publish	ed ?	Planned	Planned	SIP			
	Yes	No	Yes	No	Effective	Transformation	Publication	Participant			
					Date	Date	Date				
Australia	Yes		Yes		17-Jul-97						
Bangladesh	Yes		Yes		12-Aug-99			Yes			
Bhutan	Yes			No	n/a	n/a	to be decided				
Brunei	Yes		Yes		1-Jan-98						
Cambodia	Yes		Yes		1-May-97			Yes			
China		No				not adopted	not adopted				
Cook Islands	Yes		Yes		24-Apr-97						
DPR Korea		No					to be advised	Yes			
Fiji	Yes		Yes		25-May-95						
French	Yes										
Polynesia	main apts		Yes		1-Jan-98						
Hong Kong,											
China	Yes		Yes		25-Apr-96						
India	Yes		Yes		1-Jan-99						
Indonesia	Yes Apts		Yes		1-Jan-99						
Japan	Yes		Yes		1-Jan-98						
Kiribati		No		No		Jun-99	to be advised				
Lao PDR	Yes partial						to be decided	Yes			
Macau	Yes		Yes		2-Jan-97						
Malaysia	KUL FIR - part	tial; KK FIR - or	n-going								
Maldives	Yes		Yes		22-May-97			Yes			
Marshall Islands	Yes		Yes		Unknown						
Micronesia	Yes		Yes		Unknown						
Mongolia	Yes		Yes		Aug-97			Yes			

	ICAO Asia/Pacific Regional Office WGS-84 Implementation Survey											
			If Co	onversion Con	npleted	If Conversion N	Not Completed	ICAO				
State	Conversion	Completed	Is	Data Publish	ed ?	Planned	Planned	SIP				
	Yes	No	Yes	No	Effective	Transformation	Publication	Participant				
					Date	Date	Date					
Myanmar	Yes		Yes		1-Jan-98			Yes				
		No		No		asap after conferring	ng with consultan	t				
Nepal	Yes		Yes		15-Jan-98							
New Zealand	Yes		Yes		27-Feb-97							
New												
Caledonia	Yes		Yes		26-Feb-98							
Pakistan		No				31-Jul-02	31-Jul-02					
Palau	Yes		Yes		4-Sep-97							
Papua New												
Guinea	Yes		Yes		13-Jul-00							
Philippines	Yes partial											
Rep of Korea	Yes		Yes		1-Jan-98							
Samoa	Yes		Yes		Dec-99							
American Sa	moa Completed											
Singapore	Yes		Yes		1-Jan-98							
Solomon												
Islands		No		No		31-Mar-99	1-May-99					
Sri Lanka	Yes		Yes		30-Apr-98			Yes				
Thailand	Yes		Yes		1-Jan-98							
Tonga	Yes		Yes		9-Oct-97							
United States	Yes		Yes		15-Oct-92							
Vanuatu	Yes (main apts))	Yes		25-Mar-99							
Viet Nam	Yes		Yes		1-Jan-98							

		Shr	- (c	R	Com	Qu					Com	SAR	Sub	Specia						
		60	SON	ale	alli				Ree		~	ulter P		Z OI	eq.	· ·	Zal			
a	i le	15/0) IS	Call			OU	, F		1Sa	[an	OP PP	ID I	alle	102	. 17	1	
	10	3	NO	60	25	05	13	0/0	2/	es l'	$\overline{\varphi}$	Z	03/	Se :	30			9	<u>く</u> の	51
Australia	Е	Е	E	Е	E	С	E	Е	Е	Е	Е	Е	Е	Е	E	Е	Е	Е	С	Е
Bangladesh	В	С	D	А	Α	С	С	А	D	А	Α	С	А	А	С	С	D	А	D	С
Bhutan																				
Brunei	Ε	Ε	E	Ε	D	Ε	E	Ε	Ε	Ε	E	С	В	Ε	D	D	E	Е	Е	Α
Cambodia	Α	А	В	В	В	Α	С	Α	В	В	Α	С	А	Α	Α	А	В	А	Α	А
China	Е	Е	E	Е	E	Е	D	D	Е	D	D	С	В	Α	E	Е	E	Е	Ε	Α
Cook Islands	А	В	В	Α	Α	С	С	С	В	Α	В	Α	А	Α	Α	В	В	Α	Е	Α
DPR Korea	В	D	В	D	Α	В	D	D	D	С	В	А	А	А	В	А	С	С	Α	А
Fiji	В	С	С	С	С	С	С	В	D	С	D	С	А	С	В	Α	С	С	С	Α
French Polynesia	С	D	D	D	С	D	Ε	Α	Е	С	С	В	А	Α	Е	D	Е	Е	Ε	Е
Hong Kong, China	Е	Е	Е	D	С	Е	Е	Е	Е	Е	Е	D	Е	D	Е	Е	Е	Е	Ε	Е
India	D	С	С	В	В	С	С	Α	С	С	С	С	С	D	D	D	С	Α	В	Е
Indonesia	Е	D	Е	Е	Е	D	D	D	Е	D	Е	D	D	D	С	D	D	D	D	Е
Japan	Е	Е	Е	Е	D	Е	Е	Е	Е	Е	Е	Е	D	Е	Е	Е	Е	Е	Е	Е
Kiribati																				
Lao PDR	В	Α	В	В	В	Α	В	Α	В	В	Α	С	А	Α	Α	Α	Α	А	Α	Α
Macau, China	Е					Ε	Е				Е						Е			
Malaysia	Е	Е	С	Е	D	Е	Е	Е	Е	Е	Е	D	Е	Е	Е	D	Е	Е	E	В
Maldives	В	Α	Α	Α	Α	Α	Α	Α	D	Α	С	Α	А	Α	Α	Α	Α	Α	Α	Α
Marshall Islands																				
Micronesia	С	В		Α	Α	В	С					Α		В	В					
Mongolia	Α	С	С	Α	Α	В	Α	В	В	Α	Α	Α	А	Α	Α	Α	Α	А	Α	Α
Myanmar	В	Α	В	С	Α	D	С	С	D	Α	Α	Α	А	Α	С	Α	D	С	Α	Α
Nauru																				
Nepal	D	D	С	В	Α	С	С	В	D	В	Α	В	А	D	D	С	D	D	D	В
New Caledonia	С	D	D	D	С	D	Е	Α	Е	С	С	В	А	Α	Е	D	Е	Е	Ε	Е
New Zealand	Ε	Е	Ε	Е	Α	Е	Ε	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Ε	Ε
Pakistan	С	С	D	D	Α	D	D	С	D	С	Α	Α	А	Α	D	Α	D	D	С	Ε
Palau																				
Papua New Guinea	D	Е	D	С	D	D	С	С	D	С	С	D	С	С	С	Α	Α	Α	Е	Α
Philippines	D	С	Ε	D	D	С	D	D	Е	С	С	С	С	С	С	В	С	Е	С	Α
Rep. of Korea	С	С	С	С	С	D	Е	Е	Е	Е	С	Α	D	Е	D	Е	Е	Е	E	Е
Samoa																				
Solomon Islands																				
Singapore	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е
Sri Lanka	D	Α	С	D	В	С	С	D	Е	D	В	С	А	Α	D	D	С	Α	С	Α
Thailand	Е	Е	Е	Е	D	Е	Е	Е	Е	Е	Е	D	В	В	Е	Е	Е	Е	Е	В
Tonga	С	В	Α	Α	В	С	С	Α	D	Α	Α	Α	А	Α	Α	Α	С	Α	Е	Α
United States	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е	Е
Vanuatu																				
Viet Nam	С	D	D	В	В	D	D	В	Е	D	В	В	В	В	С	D	D	С	В	В
														U	lpda	ted	30 Jı	une 2	2000	

Analysis of SAR Capability of ICAO States in the ASIA/PAC Region

Categorisations:

- A = Not implemented
- B = Initial implementation
- C = Meets Annex 12 requirements in some areas
- D = Meets Annex 12 requirements in most areas
- E = Fully meets Annex 12 requirements

Blank = No response

Survey on Carriage of ACAS and Pressure-Altitude Reporting Transponder (AP-ATM0808 dated 22 October 1999)

State	Has implemented or has a plan to implement?	Aeronautical Publication
Australia	YES: 01/1/2000	
Bangladesh	YES: 01/1/2003	
Bhutan	YES: date not specified	
Brunei Darussalam	YES: 31/12/2000	
Cambodia	Under consideration	
China	YES: 31/12/2000	
Cook Islands		
DPR Korea	YES: date not specified	
Fiji		
France	YES: 23/1/2003	
(French Polynesia)		
(New Caledonia)	VES: 01/1/2000	AID Hong Kong, CEN 1.5.2
Hong Kong,China	153.01/1/2000	NOTAM G1030/98 dated
India	YES: 01/1/1999	21/12/1998
Indonesia	YES: 01/1/2003	
Japan	YES: 04/1/2001	
Kiribati		
Lao PDR	YES: 01/1/2003	
Macau, China	YES: 01/1/1998	AIC 05/B/97 dated 25/9/1997
Malaysia	YES: 01/1/2003	
Maldives	YES: 01/1/2000	Department Circular dated 14/9/1997
Marshal Islands	YES: 01/1/2003	
Micronesia, Federated States of		
Mongolia		
Myanmar	NO	
Nauru	NO	
Nepal	YES for international routes only: date not specified	
New Zealand	YES: 01/7/2000 for international air transport airplanes	
Pakistan	YES: 01/7/2001	AIP Supplement S05/1999 dated 12/8/1999
Palau		
Papua New Guinea		
Philippines	YES: evolutionary implementation from 31/12/2000 until 31/12/2003	
Republic of Korea	YES: 01/1/2003	
Samoa	YES: date not specified	
Singapore	YES: 01/1/2000	
Solomom Islands		
Sri Lanka	NO	
Thailand	YES: 01/1/2003	
Tonga	YES: 11/7/2002	
U.S.A.	YES: all passenger aircraft currently required to be equipped with ACAS (TCAS Version 6)	FAR Part 121
Vanuatu	YES: 31/12/2001 (applicable on internatinal routes only)	
Viet Nam	YES: 01/1/2003	

Note: Blank indicates that no information has been provided.

List of ATS routes which have not been implemented in accordance with the ASIA/PAC Air Navigation Plan

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
A202	BANGKOK DONGHOI HONG KONG KAGOSHIMA NIIGATA CHITOSE		Not implemented	ICAO - continue ongoing implementation co- ordination with China and Viet Nam China and Viet Nam - consider implementation	China Japan Thail and Hong Kong, China Viet Nam
A203	HONG KONG TAIPEI		Not implemented	China - consider implementation	China Hong Kong, China
A211	TARAKAN TAWAU		Not implemented	 ICAO- co-ordinate with Malaysia and report the outcome to SEACG ICAO has requested Malaysia to c o - o r d i n a t e e a r l y implementation of A211 with States concerned, and awaits input from Malaysia. 	Mal aysia
A218	HARBIN (EKIMCHAN) (MYS SHMIDTA) BARROW	(EKIMCHAN) (MYS SHMIDTA) BARROW	The Harbin-Ekimchan segment has not been implemented.	ICAO has taken action to co- ordinate with States for implementation of the Harbin- Ekimchan segment. Action taken to amend ANP (APAC 99/1-ATS). APAC 99/1 to delete Beijing-Harbin was approved on 26/1/00.	China Russian Federation
A223	RUSAR FUKUOKA		Not implemented	Japan - consider implementation	Japan

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
A224	JOHOR BAHRU MERSING		Not implemented	 ICAO - co-ordinate with Malaysia for implementation ICAO has requested Malaysia to implement A224. Malaysia has advised that implementation is under consideration. 	Mal aysia
A335	HOHHOT TUMURTAI ULAN BATOR (IRKUTSK)		Not implemented	China- consider promulgation of this route in AIP with route indicator A335 ICAO has requested China to implement A335 as a matter of priority, and awaits input from China	China Mongolia
A341	SURABAYA Kota kinabalu Sandakan Zamboanga	KINABALU Sandakan Zamboanga	The Surabaya-Kota Kinabal u segment has not been implemented	ICAO - co-ordinate with Indonesia/Malaysia for implementation of the Surabaya-Kota Kinabalu segment ICAO has requested Indonesia to co-ordinate implementation with Malaysia.	Indonesia Malaysia

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
A450	DENPASSAR HASSANUDDIN KOROR YAP IS GUAM WAKE KATHS	KOROR NIMITZ WAKE IS KATHS	Denpassar-KOROR not implemented.	 ICAO - co - or dinate with I n donesia for promulgation of the Denpassar-Hassanuddin segment in AIP with route indicator A450; and co - or dinate with Indonesia/United States for promulgation of the Hassanuddin-Koror segment in AIP with route indicator A450 ICAO has requested Indonesia to coordinate implementation with USA. USA has agreed to the implementation, and an reply from Indonesia is being awaited. 	Indonesia United States
A459	CALICUT KAGLU	CALICUT KAGLU	The route has been implemented as A330.	India - propose an amendment to ANP to delete therequirement for this route as the route has been covered by the current route A330 APAC99/4 to delete A459 is under preparation.	India

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
A466	(TERMEZ) KABUL SANAM DERA ISMAIL KHAN JHANG SAMAR ASARI	TERMEZ KABUL SANAM DERA ISMAIL KHAN JHANG SAMAR ASARI HISSAR DELHI		India - propose amendment to ANP to extend therequirement for this route to Delhi Action taken to include this amendment in a comprehensive amendment proposed by MIDANPIRG. APAC 99/4 to extend the requirement to Delhi is under preparation.	Pakistan India
A469	CONSON IS HO CHI MINH		The route has been implemented as a domestic route W9.	Viet Nam -promulgate the route in AIP with route indicator A469 ICAO has requested Viet Nam to	Viet Nam
A470	MERSING CONSON IS PHAN THIET PHUCAT HONG KONG MAGOG SHANTOU XINGLIN FUZHOU YUNHE TONGLU HANGZHOU LISHUI BANTA PIXIAN	MERSING CONSON IS PHAN THIET PHUCAT and MAGOG SHANTOU XINGLIN FUZHOU YUNHE TONGLU HANGZHOU LISHUI BANTA PIXIAN	Phucat-MAGOG segment has not been implemented. (i.e. 2 ATS routes with same designator in fairly close proximity)	ICAO - co-ordinate with States for implementation	China Viet Nam

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
A473	JALALABAD NEPALGUNJ Kathmandu		No implemented Domestic route W41 established Nepalguni - Kathmandu.	ICAO- co-ordinate with Nepal for promulgation of theroute in AIP with route indicator A473 India - implement the Jalalabad - Nepalguni segment. India has advised realignment is under consideration.	India Nepal
A581	BAGO CHIANG MAI JINGHONG KUNMING MAGUOHE XIFENG HUAYUANG LINLI WUHAN	BAGO CHIANG MAI and KUNMING MAGUOHE XIFENG HUAYUANG LINLI WUHAN	The segment between a Bangkok/Yangon FIR boundary point and Kunming has not been implemented. (i.e. 2 ATS routes with same designator) Co-ordination through the BBACG.	 ICAO - Will assist Lao PDR in co- ordinating with China in implementing the segment Chaing Rai-PONUK-SAGAG. ICAO has requested China to co- ordinate the implementation of the missing segment. China, Lao PDR, Thailand have proposed an amendment in follow-upto BBACG, and APAC 99/11 to amend A581 is under preparation. 	China Myanmar Thail and Lao PDR
A584	TONGA NIUE APIA FUNAFUTI NAURU KOSRAE	FUA'AMOTU NIUE FALEOLO FUNAFUTI NAURU IS	The Nauru-Kosrae segment has not been implemented	 ICAO - co-ordinate with the United States for implementation ICAO has requested United States to implement the Nauru Is - Kosrae segment. USA has proposed an amendment to delete the Nauru-Kosrae segment, and an ANP amendment proposal is under prepration. 	United States

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
B201	NIUE AUCKLAND		Niue has been linked with Auckland via Tonga, i. e. A584 and B575	Fiji - consider implementation for the route ICAO - co-ordinate with States for implementation	Fiji New Zeal and
B204		MEGOK ANIRA	A requirement for this route is not specified in ANP.	ICAO - co-ordinate with Maldives for draft amendment proposal for ANP	Mal dives
B212	KANGNUNG NIIGATA		Not Implemented	Japan - consider implementation Japan is considering implementation as a conditional ATS route.	Japan Rep of Korea
B213	LHASA CHENGDU		Not implemented	China-consider implementation	China

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
B345	BEIJING HUAIROU HUAILAI BAOTOU YINCHUAN LANZHOU YUSHU LHASA KATHMANDU DELHI	KATHMANDU BHARATPUR BHAIRAHAWA LUCKNOW	Beijing-Baotou has been implemented as A596. Baotou-Kathmandu has not been implemented Lucknow-Delhi covered by R460.	China - c o n s i d e r implementation of t h e Baotou- Kathmandusegment India - p r o p o s e a n amendment to ANP to delete the Luk n ow - Del h i segment ICAO- co-ordinatewith Nepal for implementation of the Baotou-Kathmandu segment Action taken to amend B345 to Kathmandu-Bahratpur-Lucknow. China has proposed to delete the Beijing-Lhasa-Kathmandu segment. APAC 99/4 to amend the r equirement is under preparation.	China India Nepal
B456	MADANG WEWAK VANIMO JAYAPURA	WEWAK JAYAPURA	Madang-Wewak segment not implemented.	ICAO - co-ordinate with Papua New Guinea for promulgation of the Madan-Wewak segment with route indicator B456 Papua New Guinea has advised that they will propose an ANP amendment to delete MADANG and VANIMO from the requirement.	Papua New Guinea

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
B579	DELHI NAGPUR VISHAKHAPATNAM PORT BLAIR PHUKET LANGKAWI PENANG	DELHI NAGPUR VISHAKHAPATNAM PORT BLAIR PHUKET	Phuket-Langkawi-Penang not implemented	ICAO has requested Malaysia to co-ordinate implementation with Thailand. Malaysia has advised that co- ordination with adjacent State is on-going.	Mal aysia Thail and
B588	DENPASAR MANILA		Not implemented Bali-Zamboanga covered by G578. Zamboanga-Manila covered by A461	 ICAO - co-ordinate with States for implementation Philippines considers that the B588 is no longer required, and coordinated with Indonesia to delete the route. APAC 99/3 to delete the requirement is under preparation. 	Indonesia Phil ippines
B591	SHANGHAI TAIBEI HENGCHUN LAOAG SAN FERNANDO LUBANG LADER KOTA KINABALU JAKARTA	TAIBEI HENGCHUN LAOAG SAN FERNANDO LUBANG LADER KOTA KINABALU JAKARTA	The Shanghai-Taibei segment has not been implemented	China - consider implementation	China
G211	PENANG ANOKO		Not implemented	ICAO - co-ordinate with Malaysia for implementation ICAO has requested Malaysia to co-ordinate the implementation. Malaysia has advised that the implementation co-ordination is on-going.	Mal aysia
G348	PARO BAGDOGRA	PARO (SIBSU)	Not implemented in India	ICAO - co-ordinate with India for implementation	

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
G461	JAKARTA CIREBON SEMARANG BLORA SURABAYA	PAGAI HALIM CIREBON SEMARANG BLORA SURABAYA		ICAO - co - or dinate with Indonesia to draft an amendment proposal to ANP to extend this route to PAGAI APAC99/2 to amend the requirement is under preparation.	Indonesia
G466	KUALA LUMPUR KOTA BHARU HO CHI MINH PHUCAT HENGCHUN	BATU ARANG KOTA BHARU TANSONNHAT	Tansonnhat-Dalat implemented as W15 Dalat-Phucat is covered by A470 Phucat-Hengchun not implemented	<pre>Viet Nam - promulgate the Tansonnhat-Dalat segment in AIP with route indicator G466 in accordance with ANP ICAO - co - or dinate with China/Viet Nam for implementation of the Phucat - Hengchun segment Coordination ongoing regarding implementation of the new South China Sea route structure.</pre>	China Viet Nam
G473	BAGO MAKAS Phitsanulok Danang Lubang	BAGO MAKAS Phitsanulok Ubon	Ubon-Danang covered by A1 Danang-Lubang not implemented.	ICAO - co-ordinate with States and report the out come to SEACG Coordination ongoing regarding implementation of the new South China Sea route structure and establishment of Sanya FIR.	Lao PDR Phil ippines Thail and Viet Nam
G589	AVGOK Kangnung		Not implemented	ICAO - co-ordinate with States for implementation	DPR Korea Rep of Korea

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
R207	VIENTIANE NAN CHIANG MAI MANDALAY	ANBOK NAN CHIANG MAI MANDALAY	Vientiane-ANBOK has been implemented as W29	ICAO - co-ordinate with Lao PDR for promulgation of the route in AIP with route indicator R207	Lao PDR
R209	TATOX LANGKAWI		Not implemented	Malaysia - consider early implementation	Mal aysia
R216	URUMQI (ALMA ATA)		Not implemented	ICAO - co-ordinate with States for implementation and report outcome to EAAR	China Kazakhsta n
R217	NOGOR SENDAI NIIGATA		The route has been implemented as V51	Japan - promulgatethe route with route indicator R217 APAC 98/15 to amend the requirement was approved on 25/6/00. Japan will implement the route accordingly by 12/2000.	Japan
R218	CUCUT ALTAR PANGKALPINANG TANJUNG PINANG		CUCUT-ALTAR has not been implemented. ALTAR-Tanjung Pinang has been implemented as W26.	 ICAO - co - or dinate with Indonesia/Singapore for implementation ICAO has requested Indonesia to co-ordinate implementation of R218. Indonesia and Singapore have advised that they agreed to delete the requirement. APAC 99/2 to delete R218 is under preparation. 	Indonesia Singapore
ATS routes	Requirements in ANP	Implemented route (if different from ANP route	Status	Action proposed/Action taken	States
---------------	---	---	--	---	-----------------------------------
R221	MERSING PULAU TIOMAN	YUZHNO- SAKHALI-NSK ANIMO	R221: Mersing - Palau Tioman not implemented. The Yuzhno Sakhal insk-ANIMO route has been implemented as R221.	ICAO - co-ordinate with Russian Federation to redesignate R221 to R466 and report the outcome to EAAR Russian Federation has been required to promulgate R466 and delete R221 from their AIP. Malaysia has been requested to implement R221, and a reply is being awaited.	Russian Federation Malaysia
R328	KARACHI MINAR SAPNA BILAT	KARACHI MINAR SAPNA BILAT BOMBAY		India - propose amendment to ANP to extend the route requirement to Bombay APAC 99/4 to extend the requirement is under preparation.	India
R331	COLOMBO LADET PUPOB ISGOR GURSI		Not implemented	India - consider implementation ICAO - co-ordinate with Sri Lanka for implementation of the route with route indicator R331 India has proposed to delete the requirement. APAC99/4 to delete R331 is under preparation.	India Sri Lanka
R333	DOTMI Akero		Not implemented	China - being considered for future implementation	China

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
R335	MAGOG MAKUNG		The route has been implemented as A1 via ELATO, common Taibei/Hong Kong FIR boundary point.	China - consider implementation	China Hong Kong, China
R345	VIENTIANE TAKHAEK PAKSE STUNG TRENG RUPED		Not implemented	ICAO - co-ordinate with States for implementation	Cambodia Lao PDR Thail and
R455	PONTIANAK KUCHING		Not Implemented	ICAO - co-ordinate with Malaysia for implementation ICAO has requested Malaysia to co-ordinate the implementation, and Malaysia has advised that co- ordination is on-going.	Mal aysia
R459	MANADO BALIKPAPAN ELANG PONTIANAK MINOS TANJUNG PINANG		Manado-Palu has been implemented as W51. Palu-Balikpapan-Tanjung Pinang has been implemented as W36.	Indonesia - promulgate the route in AIP with route indicator R459 ICAO has requested Indonesia to co-ordinate implementation of R459.	Indonesia
R466	(YUZHNO SAKHALINSK) ANIMO		The Yuzhno Sakhal insk-ANIMO route has been implemented as R221. The requirement for Mersing- Palau Tioman has been detailed in ANP as R221, but not implemented.	ICAO - co-ordinate with Russian Federation to redesgnate route indicator R221 to R466 and report the outcome to EAAR Russian Federation has been requested to re-designate the route with correct designator, and a reply is being awaited	Mal aysia Russian Federation

ATS routes	Requirements in ANP	Implemented route (if different from ANP route requirement	Status	Action proposed/Action taken	States
R579	PADANG PEKANBARU MALACCA		Not implemented	 ICAO - co - or dinate with Indonesia/Malaysia for implementation ICAO has requested Malaysia to co-ordinate implementation with Indonesia. 	Indonesia Mal aysia
R593	BOMBAY (HAIMA)		Not implemented	India - consider implementation ICAO - co-ordinate with Oman for implementation and report the outcome to SWACG	India Oman

- END -

Agenda Item 4: Consider problems and make specific recommendations concerning the provision of ATS/AIS/SAR in the Asia/Pacific Region

4.1 Airspace Classification

4.1.1 The Meeting recalled the outstanding Conclusion C2/28 which specifies: *States to classify airspace in accordance with SARPs and update AIPs, provide area control service on appropriate ATS routes and ensure AIPs reflect correct ATS provision.*

4.1.2 It was also noted that non-implementation will be included on the list of air navigation shortcomings and deficiencies.

4.1.3 In addition, the Meeting recalled that APANPIRG/10 developed Conclusion 10/5 which states: *States should promulgate their classifications of airspace as required by Annex 11 and Annex 15 as soon as possible.*

4.1.4 Whilst a number of States have classified their airspace in accordance with Annex 11 - *Air Traffic Services*, there are still a great number of States which, according to Aeronautical Information materials from 35 States and Territories in the Asia/Pacific Region available at the Regional Office, have not done so.

4.1.5 In accordance with Annex 15 - *Aeronautical Information Services*, Appendix 1, airspace classification should be listed in AIPs for each individual segment of airspace, *i.e.* FIRs, UIRs, TMAs and ATS routes, and differences, if any, to this provision of Annex 15 should also be listed in AIPs and notified to ICAO.

4.1.6 With respect to the Asia/Pacific Region, the Regional Office receives Aeronautical Information materials (AIP, AIP Amendments and Supplements, AIC, NOTAM) from 35 States and Territories in the Region. Based on that Aeronautical Information, the Secretariat provided the following information for the meeting's consideration:

- a) fifteen (15) States and Territories have promulgated their classification of airspace in AIP;
- b) twenty (20) States, including three (3) States which have notified ICAO that *no differences exist*, have not promulgated any classification of airspace;
- c) information from the following 5 Contracting States in the Region is not available;

Bhutan	Marshal Islands	Micronesia, Federated States of
Palau	Vanuatu	

4.1.7 During the review of the above situation, further information was provided and noted as follows:

- a) Brunei Darussalam clarified that implementation of airspace classifications was promulgated by AIP Supplement in July 1999 and will be incorporated into AIP;
- b) Japan is currently processing the introduction of airspace classification as a matter of priority;

- c) Papua New Guinea will classify its airspace and publish the classification in AIP by middle of 2001; and
- d) United States will classify its oceanic airspace by the end of 2000.
- e) Indonesia advised that they have classified their airspace by AIP/SUPP.

4.1.8 The Meeting agreed to include the non-implementation of airspace classifications as a deficiency in the list of air navigation shortcomings and deficiencies.

4.2 **AIP Format**

4.2.1 The Meeting recalled that Amendment 28 to Annex 15 requires States to publish their AIP in the new reconstructed format as of 25 April 1996.

4.2.2 In addition, the Meeting recalled that in pursuant to this amendment APANPIRG/10 developed Conclusion 10/6 which states: *States which have not already done so, publish their AIP in the Annex 15 format as soon as possible.*

4.2.3 In an effort to monitor implementation of the amendment, based on Aeronautical Information materials available at the Regional Office, the Secretariat provided the following information for consideration by the Meeting:

- a) seventeen (17) States and Territories have published their AIP in the new format in accordance with Annex 15;
- b) eighteen (18) States, including two (2) States which have notified ICAO that *no* differences exist, have not published their AIP in the new format in accordance with Annex 15;
- c) information from the following 5 Contracting States in the Region is not available;

Bhutan	Marshal Islands	Micronesia, Federated States of
Palau	Vanuatu	

4.2.4 The meeting was advised that New Zealand notified ICAO of its significant differences to the provision concerning AIP format. In this regard, the meeting recalled that whether such notification of differences from SARPs to ICAO would be considered to justify removing an entry from the list of air navigation shortcomings and deficiencies was raised at APANPIRG/10. The Secretariat advised the meeting that ICAO HQ has been examining the issue from legal point of views and guidance would be provided in due course.

4.2.5 It was also noted that on behalf of Cook Islands, Fiji, Kiribati, Nauru, Samoa, Tonga and other Pacific States, Airways Corporation of New Zealand published a Pacific AIP in July 1999 and has a plan to redevelop the document to be in line with Annex 15 requirements in 2000.

- 4.2.6 Additional information was provided from States as below:
 - a) India and Papua New Guinea will complete transformation into the new AIP format by October 2001 and mid 2001 respectively;

- b) Viet Nam will publish in the new format in December 2000; however the new AIP will not include airspace classifications as required by Annexes 11 and 15; and
- c) Solomon Island has published their AIP in the new format.

4.2.7 After reviewing the information provided, the Meeting agreed to include nonimplementation of the new AIP format as required by Annex 15 as a deficiency in the list of air navigation shortcomings and deficiencies.

4.3 **Review ATS Co-Ordination Groups Activities - SEACG/8 And BBACG/12**

4.3.1 The meeting noted that several important ATS Coordination Groups had been established in the Asia/Pacific region. Their purpose is to foster the implementation of regional air navigation agreements and to provide opportunities for airspace providers and users, having common geographically related ATS interests, to meet and develop solutions to problems that limit the capacity and efficiency of the airspace structure. The Groups also exchange information necessary to ensure a co-ordinated approach to the introduction of the new CNS/ATM systems.

4.3.2 Two of these sub-groups, the Southeast Asia ATS Co-ordination Group (SEACG) and the Bay of Bengal ATS Co-ordination Group (BBACG), are significant to the operations in each of their respective areas especially with regard to ATS routings, ATS procedures and communications requirements.

4.3.3 SEACG/8 meeting - Manila, Philippines 27-31 March 2000

4.3.3.1 Amongst items discussed at the SEACG/8 meeting, several important topics were highlighted related to the area under consideration.

4.3.3.2 States agreed to review and amend LOAs to support the reduction from the 15 minute longitudinal separation standard to a 10 minute standard (or 80 NM) using MNT, if applicable, or less, in accordance with ICAO provisions, wherever possible.

4.3.3.3 ICAO advised the SEACG/8 that they would investigate the possibility of conducting a Sub-regional SAR exercise (SAREX) concurrent with a Search and Rescue Seminar with participation from the SEACG area. This may be combined with a similar proposal put forward by the Twelfth Meeting of the Bay of Bengal ATS Co-ordination Group.

4.3.3.4 China advised that they will continue to study the feasibility of establishing the CNS/ATM routes within their airspace.

4.3.3.5 In respect to this initiative, the ATS/AIS/SAR/SG/10 was advised that a successful trial flight had recently taken place on a new CNS/ATM route, L888 within China airspace, between London and Bangkok north of the Himalayas.

4.3.3.6 States agreed to cooperate in the implementation of RNP-10 (with emphasis on 50 NM lateral separation standards) within the SEACG area of responsibility. An amendment proposal to Doc 7030 is currently being circulated by ICAO.

4.3.3.7 States concerned agreed to co-ordinate with respective National Frequency Regulatory Authorities in order to ensure support for the ICAO position at the International Telecommunications Union (ITU) World Radiocommunication Conference (2000) (WRC-2000).

4.3.3.8 In reviewing the work of SEACG/8 meeting, the meeting discussed the reduction of

longitudinal time separation based on Mach Number Technique and RNAV criteria. In respect of the RNAV criteria, the meeting deliberated in great length whether there was a need to continue to apply AUSEP criteria bearing in mind that AUSEP was no longer being adopted in Australia. After discussion the meeting agreed that in applying the reduction of separation between aircraft, the aircraft must be equipped with Area Navigation capability and such capability or non-capability should be indicated in the item 10 or 18 of the flight plan. The meeting also agreed to amend the AIP Supplement concerning the Contingency Arrangements over the South China Sea to reflect the above.

4.4.4 <u>BBACG/12 Meeting - 5-9 June 2000</u>

4.4.4.1 Amongst items discussed at the BBACG/12 meeting, several important topics were highlighted related to the area under consideration.

4.4.4.2 ICAO undertook to liaise with China of the need for a CNS/ATM route Gawahati to Kunming, in addition to the Imphal - Kunming route, and request China to investigate the feasibility of such a route. This will then be co-ordinated with States concerned in order to progress the establishment of the route.

4.4.4.3 A tripartite co-ordination meeting between India, Myanmar and Malaysia organised by India, will be held to discuss the implementation of the revised FIR boundary between India and Myanmar, as a consequence to the recommendation of the Asia/Pac RAN meeting of 1993 and subsequently approved by the ICAO Council.

4.4.4.4 India and Sri Lanka agreed to conduct a bi-lateral meeting and advise ICAO regarding the withdrawal of delegation of airspace in the western portion of Madras FIR and the realignment of the FIR boundary between the Colombo and Madras FIRs so that all the domestic airspace of Sri Lanka is encompassed by the Colombo FIR.

4.4.4.5 It was agreed that Myanmar would take action in coordination with China to reactivate the Kunming/Yangon ATS direct speech circuits and implement the Kunming/Yangon AFTN circuit using the existing VSAT link between China and Myanmar.

4.5 Revised ATS route structure - Southeast Asia to/from Europe/Middle East, South of the Himalayas

4.5.1 BBACG/12 agreed that with the introduction of Required Navigation Performance (RNP), Area Navigation (RNAV) and Reduced Vertical Separation (RVSM) into the Asia Pacific region, consideration should be given in developing a revised ATS route structure - Southeast Asia to/from Europe and the Middle East, to gain the benefits of existing aircraft capabilities and the new CNS/ATM enhancements.

4.5.2 BBACG/12 also noted that the Bay of Bengal airspace was just the starting point for aircraft departing Southeast Asia for Europe or Middle East destinations and should not be looked at in isolation. When looking at changes to the overall route structure, it would be necessary to consider the whole flight from departure to destination. It would therefore be prudent to involve both of these regions in any changes to the ATS route structure as was the case during the Y2K period.

4.5.3 During discussions on this proposal, BBACG/12 considered it was necessary to take into account the avoidance of choke points over major airports enroute.

4.5.4 BBACG/12 considered the methodology in planning and implementing this proposed change to the route structure. A small working group was established to consider these items as well as the implementation of this project. Items discussed included:

- a) development of a set of principles for restructuring the routes;
- b) development of a project plan;
- c) form a small project team to initiate and work through the project;
- d) plan a number of sub-regional meetings to progress the work; and,
- e) co-ordination with adjacent regions with regard to the route structure and procedures to be used.

4.5.5 Time did not allow BBACG/12 to carry out an in-depth study in the development of a project plan, however Principles for the establishment of a revised route structure were created and agreed to by the meeting. These principles are shown as Appendix A to the Report on Agenda Item 4.

4.5.6 BBACG/12 also agreed that sub-regional meetings should be held to advance this project and that AIRAC 11 July 2002 would be used as a target date. It was also agreed that a small Core or Project team would be established, similar to the Core Team used in the Y2K project to lead this initiative through to implementation.

4.5.7 Interim changes to the ATS route structure over the Bay of Bengal

4.5.7.1 As for interim airspace enhancements in the Bay of Bengal, BBACG/12 decided to pursue realignment of R325 and B579 so that they would be laterally separated westbound from UM501(see Appendix B to the Report on Agenda Item 4). India agreed to add ATS route W49 and W33 as routing available off UM501 for international flights to proceed via Delhi or TIGER to/from Europe. This would offer immediate relief to westbound departures to Europe.

4.5.7.2 A further proposal was put forward by Indonesia concerning a new route in the southern portion of the Bay of Bengal (see Appendix C to the Report on Agenda Item 4). States and IATA will further examine the other routes put forward by the Indonesian proposal and the IATA proposal (Appendix D to the Report on Agenda Item 4).

4.5.8 In reviewing the work of the BBACG/12, the meeting was given a presentation on the Revised ATS route structure - Southeast Asia to/from Europe/Middle East, South of the Himalayas by the Secretariat.

4.5.9 The meeting noted that historically, the present route structure was developed to cater for short/medium haul piston engine aircraft who were in operation during the 1950-60 period. These aircraft were required to make several re-fueling stops travelling to/from Southeast Asia - Europe/Middle East. Ground-based navigation aids were put in place to to assist aircraft navigation requirements. Although there has been some changes to the route system over the past 20 years or so, the route development methodology has, by and large, remained the same.

4.5.10 Today the situation has changed considerably to the point where most aircraft planning from Southeast Asia to/from Europe fly nonstop to their destination in a 12-14 hour time period, using the latest CNS/ATM navigational technology enhancements. Their need to use ground based aids is minimal. By creating a route structure which will avoid the majority of choke points during their operation, will be a benefit, not only to the user, but also to the air traffic service provider.

4.5.11 The meeting was advised that there were many other issues to be considered in the development of this revised route structure.

4.5.12 With regard to aircraft statistical data, account should be taken of RNAV/RNP

approved population, numbers of aircraft on the present route system, and peak traffic periods eastbound and westbound along the present route structure, both in the Asia/Pacific region as well as adjacent regions.

4.5.13 Other issues presented to the meeting which were considered to be important in development of the project were the effect on controller workload, the possible simultaneous introduction of RVSM in the area under consideration and explore the possibility of extending the project to include the Australia/New Zealand to Southeast Asia route system.

4.5.14 The meeting considered the items mentioned in the planning and development of this revised route structure by the BBACG/12 meeting and developed the following draft Conclusion:

Draft Conclusion 10/7 - Revised ATS route structure - Southeast Asia to/from Europe/Middle East, South of the Himalayas

That,

Taking into account the introduction of Required Navigation Performance (RNP), Area Navigation (RNAV) and Reduced Vertical Separation (RVSM) into the Asia Pacific region, consideration should be given by States and IATA to the development of a revised ATS route structure - Southeast Asia to/from Europe and the Middle East via south of the Himalayas, to gain the benefits of existing aircraft capabilities and the new CNS/ATM enhancements.

4.5.15 Hong Kong, China advised the meeting that they would be willing to participate in a project team in connection with the revised route structure.

4.5.16 IATA gave a presentation of their work on routes between Asia and Europe. The Asia to Europe routings, both north and south of the Himalayas, do not have any airspace planning forum that looks at this important geographic flow from an end-to-end perspective. Consequently, the track structure that exists today is not designed to support flexible and efficient flight profiles for the modern long haul aircraft that span the 2 or 3 geographic regions. Therefore IATA recently establish a Joint Route Development Group (JRDG) which is a working group of airlines from the MID, EUR and ASPAC regions to review existing routes between Asia and Europe, and develop proposals for new routes associated with long range operations. Routes of medium distance, which may affect, or be impacted by the planning, are also reviewed. As for other geographical flows within the Asia/Pacific Region, the JRDG is of the opinion that the Trans Siberian and Trans Polar routes are adequately addressed by ITASPS [Informal Trans-Asia/Trans-Siberia/Cross-Polar Routes High Level Steering Group] and RACGAT [Russia/America Co-ordination Group]. IPACG [Informal Pacific ATC Co-ordinating Group] and ISPACG [Informal South Pacific ATS Coordinating Group] adequately address the routes to North America via the Pacific.

4.5.17 The IATA JRDG adopted a systematic approach on identifying routing needs, studying all factors that would impact flight planning, co-ordinating proposals among member airlines, and negotiating a formal IATA proposal with the State ATS Providers. The Luthansa LIDO Flight Planning System is initially used to provide an analysis over all routes based on a constant set of seasonal weather patterns. Included will be a review the Great Circle, Minimum Time Tracks (MTT) and Minimum Cost Tracks (MCT) and overlay these on existing routes. This will initially indicate which routes may require a change in order to provide more optimum routing solutions. The study is base on the following key city pairs that represent the majority of user needs and route profiles:

EUR	ASPAC	MID	
Frankfurt	Singapore/KL	Dubai	
London	Bangkok	Cairo	
Rome	Delhi	Jeddah	
Stockholm	Hong Kong	Tehran	
	Beijing		
	Shanghai/Seoul		
	Osaka		
	Jakarta		
	Mumbai		

REVISED ATS ROUTE STRUCTURE - SOUTHEAST ASIA TO/FROM EUROPE/MIDDLE EAST - SOUTH OF THE HIMALAYAS

PRINCIPLES TO BE USED IN THE DEVELOPMENT OF THE ROUTE NETWORK:

- That, using the advantages of CNS/ATM implementation, a revised ATS trunk route structure between Southeast Asia and Europe/Middle East will be developed. The planning of these routes structures should take advantage of existing and on-going CNS/ATM technologies in order to provide safe and efficient air traffic management with the least impact to environmental concerns;
- 2. that, these ATS trunk routes be developed primarily for international long-haul and medium-haul flights, however they may also be used where necessary for other regional and domestic operations;
- 3. that, as much as possible planning of ATS trunk routes will be on the basis that each route is laterally separated from each other;
- 4. that, the development of these route structures will be fully coordinated amongst the involved Asia/Pacific ATS Providers and airlines. Also due to the length of these trunk routes, harmonisation is required with both MID and EUR Regions; and
- 5. that co-operation is required between all concerned states and the aviation industry to ensure an efficient flow of international aircraft operations between Asia, Europe and the Middle East.









Agenda Item 5:Y2K Contingency Planning for the Asia/Pacific Region – Actions taken
and Benefits derived

5.1 The meeting was presented with an overview of the Y2K contingency planning process, including the preparation, approval, activation and deactivation processes. The meeting also noted the co-ordination role and work done by the National Y2K Air Traffic management Centres (NY2K-ATMCs), the Regional Y2K Co-ordination Unit (RY2K-CU). Their purpose was to facilitate a flow of critical information from States on their operational status as a result of the Y2K rollover through a central regional unit for dissemination to other interested parties both within and outside the region.

5.2 The meeting was advised that, by its nature, the work achieved by all concerned in the contingency planning process, and the activation of the Regional and State Contingency Plans, could be described as unique in the history of the Asia/Pacific region and indeed in aviation throughout the world. A co-ordinated and harmonised approach by all concerned was required to make the plan a success. The plan was activated at the prescribed times with all parties positively co-operating.

5.3 It was agreed by the meeting that a similar methodology could be used in other future projects. Y2K initiatives which were considered important included items such as the Core Team approach, sub-regional meetings where necessary, setting a target date for implementation and the involvement of other regions and their States at an early stage where the task would require interregional co-ordination and agreement.

5.4 The meeting therefore developed the following Draft Conclusion:

Draft Conclusion 10/8 - Methodology which may be used in Future Work Projects

That,

To assist in the development and implementation of future projects involving States and the international aviation community, ICAO, where considered necessary, be requested:

- a) to establish a small team to lead and develop the work programme, similar to what was used in the Y2K exercise (Core Team);
- b) depending on the project and the area to be covered, hold sub-regional meetings to assist in fostering implementation;
- c) to create a realistic target date for implementation and set priorities to achieve that date; and,
- d) where necessary, build into the work programme the necessary co-ordination with adjacent ICAO regions and States concerned.

Agenda Item 6: Review progress of AAIS/AATF/6

6.1 ATS/AIS/SAR Sub-Group's AIS Automation Task Force

6.1.1 The meeting recalled that APANPIRG ATS/AIS/SAR Sub-Group's AIS Automation Task Force was reactivated as a follow-up to Decision 9/7 of ATS/AIS/SAR/SG/9 in July 1999.

6.1.2 The meeting was informed that the Sixth Meeting of the Task Force (AATF/6) was conducted at the ICAO Regional Office between 28 and 30 March 2000. Ten (10) experts from six (6) States attended the meeting.

- 6.1.3 Among various works of the AATF/6, the following were highlighted:
- a) the meeting reviewed the previous work of the Task Force, given that a period of some three years had elapsed since the last meeting in June 1996, and identified the work that had been completed, was still in progress, or that required further work to be done;
- b) the meeting considered in some detail, outcomes flowing from the AISMAP Divisional Meeting held in Montreal in March/April 1998, noting that work associated with the development of an aeronautical data exchange model resides with the Aeronautical Data Modeling Study Group (ADMSG) of the Air Navigation Commission (ANC) at the ICAO Headquarters; thus it was outside the scope of work to be undertaken by the AATF;
- c) the meeting determined the update requirements for the Guidance Material for Common Operating Procedures for the Asia/Pacific Region Automated AIS System, and considered the need of an overall review of the material review in light of the work undertaken by Eurocontrol and the movement away from the national AIS system centre/regional AIS system centre (NASC/RASC) concept;
- d) the meeting felt that the level of automation of AIS systems in the Region also needed to be determined to enable assistance to be provided to States where a need was identified. The Secretariat was tasked to re-survey States to determine where and what assistance might be necessary;
- e) the meeting noted the efforts being made by China in developing an automated AIS system, the China Automatic AIS System (CAISS). Such information enabled participants to gain an important insight into the achievements that had been made towards an integrated automated AIS system;
- f) the meeting noted with particular interest issues associated with the use of XML (eXtensible Markup Language) in relation to information transfers using Internet technology which were addressed by Japan. Because of the somewhat technical nature of the matters, it was decided that further consideration should be given to the information in conjunction with experts in the States;
- g) the meeting discussed the concept of a Joint Aeronautical Database for the management of aeronautical data in the Region following the model being developed by Eurocontrol in the form of the European AIS Database (EAD) Project, with a view to promoting uniformity in the collection and dissemination of aeronautical information in the interests of safety, quality, efficiency and economy, and to improving the overall efficiency of AIS, in terms of speed, accuracy and cost effectiveness, and the increased use of automation;

h) most importantly, the meeting reviewed the existing Terms of Reference for the AATF so that those items could be deleted where work is considered to have been completed, and the other elements considered for inclusion by ATS/AIS/SAR/SG/9 be inserted. As a result, Rvised Terms of Reference and Work Programme were developed for the consideration and approval by ATS/AIS/SAR/SG/10.

6.1.4 The meeting noted the contents of the Report of AATF/6, and after careful review, adopted the Revised Terms of Reference for the AATF as proposed by AATF/6. Accordingly the meeting developed the following Decision:

Decision 10/9 - Revised Terms of Reference for the AIS Automation Task Force

That, Terms of Reference for the AIS Automation Task Force be revised as follows:

The Task Force shall:

- a) Using Doc 8126-AN/872 Chapter 8 as a guide:
 - i) Describe the integrated Regional Automated AIS System as it relates to the Asia/Pacific Region;
 - ii) Recommend distribution and fall-back procedures;
 - iii) In consultation with the COM/MET/NAV/SUR Sub-Group, recommend the communications network requirements for Asia/Pacific Automated AIS Systems;
 - iv) Recommend provisions to meet reliability and redundancy requirements;

and

- v) Recommend common AIS query procedures;
- b) Develop procedures and standard formats for the exchange of information both within the Region and with other Regions ensuring that the procedures and standard formats are consistent with those developed by the ADS Panel for datalink communications;
- c) Co-ordinate with the CNS/ATM Implementation Coordination Sub-Group to examine methods of disseminating new information to aircraft in flight;
- d) Prepare an amendment to the relevant Regional Air Navigation Plan or the Facilities and Services Implementation Document (FASID) as appropriate;

and

- e) Consider:
 - i) Outcomes from AISMAP98 in terms of data models;
 - ii) Changing technology in terms of the Internet for the distribution of aeronautical information;
 - iii) Determination of update requirements for the Guidance Material; and

 iv) Updating and incorporation of information (where appropriate) from Appendices A, B and C from the State letter originated by the ICAO Regional Office dated 24 April 1997 relating to the Guidance Material.

6.1.5 The meeting also noted the following Work Programme of AATF associated with the Revised Terms of Reference:

WORK PROGRAMME

The Task Force shall meet in plenary session as work is progressed and finalized, but not less than once per year. Work in the intervening period being conducted by correspondence;

The tasks allocated in the Terms of Reference shall be concluded within 3 years;

The Task Force shall report formally to the ATS/AIS/SAR Sub-group at each Subgroup meeting;

aimed at

a) Producing Guidance Materials, including Common Operating Procedures for Automated AIS Systems, Quality Systems, Training for AIS personnel, and use of the Internet for information transfer;

and

b) Providing assistance to States, where required, in the Region for advancement of Automated AIS Systems.

The short-term Task List for the Task Force is shown below:

Action or Task	By Whom	When	Coordinated by
Review Working Paper from Japan re use of XML.	AATF members	End of May 2000	Secretariat
Update the table regarding Automation in the Region.	Secretariat	End of August 2000	Secretariat
Update and reissue the Guidance Material.	AATF members/Secretariat	Before the next meeting, and reissue Guidance Material when completed	Secretariat
Survey regarding compliance with the Guidance Material, and any difficulties being experienced.	Secretariat	End of August 2000	Secretariat
Formulation of Guidelines for a	Australia, New Zealand and China	End of June 2000	New Zealand

ATS/AIS/SAR/SG/10 Report on Agenda Item 6

Quality System			
Interim Guidelines for	Australia and New	End of June 2000	New Zealand
Training.	Zealand		
Review Guidance	AATF	Before next meeting	Secretariat
Material after input	members/Secretariat		
from States.			

6.1.6 The meeting noted that because of the global nature of the airspace asset, particularly in terms of the movement towards a CNS/ATM environment, that the dependence on accurate and timely aeronautical data to the automated systems that are used to manage air operations is of primary importance.

6.1.7 Hong Kong, China advised the meeting that they have automated their AIS systems and expressed their desire to participate in the future AATF meetings in order to assist the work. Hong Kong, China also offered to host a meeting of the AATF.

6.1.8 The meeting noted the progress being made by Thailand towards the automation of their AIS system with considerable interest. Thailand advised the meeting that they are experiencing some difficulties with the automation of NOTAM that contain information and patterns that appear inconsistent with the NOTAM format specified in the Aeronautical Information Services Manual, Doc 8126. These inconsistencies manifest themselves as:

- a) No "Coordinate/Radius" information that presents the approximate centre of a circle whose radius encompasses in the whole area of influence or identify this information by not using the specified format.
- b) No "Qualifiers of message (Q-line)" information.
- c) Some NOFs use unspecified words, such as "corr", "corrected version" or "corrected copy" at the end of messages in order to cancel the previous messages instead of assigning new NOTAMR/NOTAMC messages.
- d) Identify more than one NOTAM Series/Number in one message.
- e) A NOTAMR does not replace the same series NOTAM.
- f) A NOTAMC does not cancel the same series NOTAM.
- g) Identify the Traffic, Purpose and Scope information that is inconsistent with those provided in the NOTAM selection criteria.
- h) No parenthesis")" sign at the end of the NOTAM messages.

6.1.9 The meeting was advised that the problems being experienced by Thailand affect not only the automatic processing and storage of NOTAM messages into the system database, but also the preparation of creating Pre-flight Information Bulletins (PIB) as well.

6.1.10 In reviewing these matters, the meeting considered that the problems could be dealt with by:

a) Approaching other NOFs directly that use other than approved procedures detailed in Doc 8126 with a view to harmonising procedures within the

Asia/Pacific Region.

b) Seeking expert advice from members of the AAIS/AATF whose States have already automated their AIS systems to see how these or similar problems have been managed elsewhere. By taking this approach, it will be possible to avoid the need for expensive software changes to already established systems, while at the same time avoiding software development costs for those States, in this instance Thailand, who are in the process of developing and implementing their automated system.

6.1.11 In this regard, some advice has already been provided by member States. The Chairman of the AAIS/AATF indicated that representatives from Thailand were very welcome to visit Australia to view first hand the Australian automated AIS system and being able to see how these problems had been addressed in other States.

6.1.12 Those members of the AAIS/AATF who were present at ATS/AIS/SAR/SG/10 indicated that these types of issues were those that should be addressed by the Task Force in keeping with its Terms of Reference for the development of a consistent AIS Automation Program throughout the Asia/Pacific Region.

Agenda Item 7:Shortcomings and Deficiencies in the Air Navigation field

7.1 Shortcomings and Deficiencies in the ATS/AIS/SAR field

7.1.1 The Sub-group noted that in accordance with the uniform methodology for the identification, assessment and reporting of shortcomings and deficiencies approved by Council on 23 June 1998, a situation where a facility is not installed or a service is not provided in accordance with a regional ANP is considered to be a **shortcoming**, whilst a situation where an existing facility or service is partially unserviceable or not operated in accordance with appropriate ICAO specifications and procedures is considered to be a **deficiency**.

7.2 It was also recalled that APANPIRG/10 considered the fact that only limited information concerning air navigation shortcomings and deficiencies had been reported, and strongly reiterated the need for States, Providers, Users and International Organizations in the region to cooperate fully in providing information on shortcomings and deficiencies so that appropriate remedial action could be taken. Thus, Conclusion 10/39 was formulated.

7.3 Following the steps as prescribed in the uniform methodology, the Secretariat collected and validated the relevant information through various sources, and presented to the meeting a updated list of air navigation shortcomings and deficiencies in the ATS/AIS/SAR fields. However, it was noted that still limited information had been made available to the Regional Office from States and other parties which are expected to provide the information for action as appropriate, as called upon by APANPIRG Conclusion 10/39.

7.4 Reviewing the information contained in the updated list of shortcomings and deficiencies, the meeting recognized that a number of follow-up actions were taken to pursue the matters with the States concerned. As a result, some of the outstanding shortcomings and deficiencies, more specifically, 15 entries in ATS routes, 6 in WGS-84, 1 in airspace classification and 1 in AIP format, had been resolved.

7.5 The meeting updated the list of shortcomings and deficiencies in the light of discussions on Agenda Items 3 and 4 so that the list will be presented to the APANPIRG/11 for appropriate action. This updated list is at Appendix A.

7.6 In addition, the meeting stressed the need of information concerning air navigation shortcomings and deficiencies to be reported to the Regional Office by States, Providers, Users and International Organizations, and reiterated APANPIRG Conclusions 10/39 and 10/40:

Conclusion 10/39 Reporting of Shortcomings and Deficiencies

That,

States, Providers, Users and International Organizations cooperate fully in providing information on shortcomings and deficiencies in air navigation facilities and services and take action for their early resolution.

Conclusion 10/40 List of Shortcomings and Deficiencies

That,

States take appropriate action to resolve the shortcomings and deficiencies shown in the list at Appendix A to the Report on Agenda Item 5 of the APANPRIG/10 and report their action to the ICAO Regional Office.

7.7 In this connection, the meeting reaffirmed that the purpose of the identification, assessment and reporting of shortcomings and deficiencies is to identify areas where problems exist and resolve them in a timely manner, and should not be interpreted as any form of criticism.

SHORTCOMINGS AND DEFICIENCIES

EXPLANATION OF THE TABLE

- * S = shortcoming D = deficiency
- ** Priority for action to remedy the shortcoming/deficiency is based on the following safety assessments:
 - "U" priority = **Urgent** requirements having a **direct** impact on **safety** and requiring **immediate** corrective actions.

Urgent requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is urgently required for air navigation safety.

"A" priority = **Top priority** requirements **necessary** for air navigation **safety**.

Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.

"B" priority = Intermediate requirements necessary for air navigation regularity and efficiency.

Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

	Identification		Shortco	omings and Deficier	ncies	Corrective action			
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**
ATS routes									
A202	China/Japan/Hong Kong, China/Viet Nam	Not implemented	24/11/93	S	Co-ordination is in progress among States and ICAO	ICAO - continue on-going implementation co-ordination related to the Revised South China Sea route structure with States. China/Viet Nam - consider implementation.	China/Japan/Hong Kong, China/Viet Nam		В
A203	China/Hong Kong, China	Not implemented	24/11/93	S		China - consider implementation	China/Hong Kong, China		В
A211	Malaysia	Not implemented	24/11/93	S	ICAO has requested Malaysia to co-ordinate the early implementation of A211 with States concerned, and awaits input from Malaysia	ICAO - co-ordinate with Malaysia and report the outcome to SEACG	Malaysia		В
A218	China/Russian Federation	Partially implemented	24/11/93	S	ICAO has taken action to co- ordinate with China/Russian Federation for implementation of Harbin-Ekimchan segment and to amend ANP. APAC 99/1-ATS was approved on 26/1/00.	China/Russian Federation - consider implementation	China/Russian Federation		В
A223	Japan	Not implemented	24/11/93	S		Japan - consider implementation	Japan		В
A224	Malaysia	Not implemented	24/11/93	S	ICAO has requested Malaysia to implement A224. Malaysia has advised that the implementation is under consideration.	Malaysia - consider implementation	Malaysia		В
A335	China/Mongolia/Russian Federation	Not implemented	24/11/93	S	ICAO has requested China to implement A335, and awaits input from China.	China - consider implementation	China/Mongolia		В
A341	Indonesia/Malaysia	Partially implemented	24/11/93	S	ICAO has requested Indonesia to co-ordinate implementation with Malaysia	Indonesia/Malaysia - consider full implementation	Indonesia/Malaysia		В

24/11/1993 in the column of "Date first reported" = ICAO Council Action on Asia/Pacific RAN/3 Report

	Identification		Shortco	omings and Deficier	ncies	Corrective action			
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**
A450	Indonesia/United States	Partially implemented	24/6/94	S	ICAO has requested Indonesia to co-ordinate implementation with United States. United States has agreed to the implementation, and a response from Indonesia is being awaited.	Indonesia/United States - consider full implementation	Indonesia/United States		В
A459	India	Implemented as A330	24/11/93	S	ICAO has taken action to co- ordinate with India to amend ANP. APAC 99/4-ATS to delete A459 is under preparation.	India - propose an amendment to ANP to delete the requirement for A459 since this route has been covered by the current A330	India		В
A466	India	Implemented with different route specification	24/11/93	S	ICAO has taken action to include this amendment in a comprehensive amendment proposed by MIDANPIRG. APAC99/4 to amend the requirement is under preparation.	India - propose an amendment to ANP to reflect current situation	India		В
A469	Viet Nam	Implemented as W9	19/8/94	S	ICAO has requested Viet Nam to implement as A469	Viet Nam - promulgate the route with designator A469 in AIP	Viet Nam		В
A470	China/Viet Nam	Partially implemented	19/8/94	S	Co-ordination is in progress among States and ICAO	ICAO - continue on-going implementation co-ordination related to the Revised South China Sea route structure with States	China/Viet Nam		В
A473	India/Nepal	Not implemented	16/3/99	S	India has advised that reallingment is under consideration.	India/Nepal- consider implementation	India/Nepal		В
A581	China/Myanmar/Thailand	Partially implemented	17/2/97	S	ICAO has requested China to co- ordinate implementation. China, Lao PDR and Thailand have proposed APAC99/11.	China/Myanmar - consider full implementation	China/Myanmar/Thailand		В

	Identification		Shortco	omings and Deficier	ncies	Corrective action			
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**
A584	United States	Partially implemented	24/6/94	S	ICAO has requested United States to implement the missing segment. United States has proposed deletion of the missing segment, and an amendment proposal is under preparation.	United States - consider implementation	United States		В
B201	Fiji/New Zealand	Not implemented	24/11/93	S		Fiji/New Zealand - consider implementation	Fiji/New Zealand		В
B204	Maldives	The requirements for this route are not detailed in ANP	24/1/96	S		Maldives - propose an amendment to ANP to add the route	Maldives		В
B212	Japan/Rep of Korea	Not implemented	24/11/93	S	Japan is considering implementation as a conditional route	Japan/Rep of Korea - consider implementation	Japan/Rep of Korea		В
B213	China	Not implemented	24/11/93	S		China - consider implementation	China		В
B345	China/India/Nepal	Partially implemented	24/11/93	S	ICAO has taken action to co- ordinate with States to amend ANP. APAC99/4 is under preparation.	China - consider implementation of the missing segment India - propose an amendment to ANP to delete segment covered by other route Nepal - implement the missing segment	China/India/Nepal		В
B456	Papua New Guinea	Partially implemented	24/11/93	S	Papua New Guinea has advised that they will formally propose ANP amendment for deletion of the missing segment.	Papua New Guinea - consider full implementation	Papua New Guinea		В
B579	Malaysia/Thailand	Partially implemented	16/3/99	S	ICAO has requested Malaysia to co-ordinate with Thailand for implementation. Malaysia has advised that co- ordination is on-going.	Malaysia - consider full implementation	Malaysia/Thailand		В

	Identification Shortcomings and Deficiencies Corrective action		Corrective action						
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**
B588	Indonesia/Philippines	Not implemented	24/11/93	S	Philippines considers that B588 is no longer required, and co- ordinates with Indonesia to delete the route. APAC 99/3 to delete the requirement is under preparation.	ICAO - co-ordinate with States for implementation or an ANP amendment	Indonesia/Philippines		В
B591	China	Partially implemented	22/7/97	S	Co-ordination is in progress among States and ICAO	ICAO - continue on-going implementation co-ordination related to the Revised South China Sea route structure with States	China		В
G211	Malaysia	Not implemented	24/11/93	S	ICAO has requested Malaysia to co-ordinate the implementation. Malaysia has advised that implementation co-ordination is on-going.	Malaysia - consider implementation	Malaysia		В
G348	India	Not implemented	2/3/99	S	Bhutan has advised that route segment in Bhutan airspace has been implemented.	India - consider implementation	India		В
G461	Indonesia	Implemented with different route specification	24/11/93	S	ICAO has taken action to co- ordinate with Indonesia to amend ANP requirement. APAC99/2 to amend the requirement is under preparation.	Indonesia - propose an amendment to ANP to reflect current situation	Indonesia		В
G466	China/Viet Nam	Partially implemented	22/7/97	S	Co-ordination is in progress among States and ICAO	ICAO - continue on-going implementation co-ordination related to the Revised South China Sea route structure with States China/Viet Nam - consider implementation	China/Viet Nam		В
G473	Lao PDR/Philippines Thailand/Viet Nam	Partially implemented	24/11/93	S	Co-ordination is in progress among States and ICAO	ICAO - continue ongoing implementation co-ordination related to the Revised South China Sea route structure with States	Lao PDR/Philippines Thailand/Viet Nam		В
G589	DPR Korea / Rep of Korea	Not implemented	24/11/93	S		DPR Korea/Rep of Korea - consider implementation	DPR Korea / Rep of Korea		В

24/11/1993 in the column of "Date first reported" = ICAO Council Action on Asia/Pacific RAN/3 Report

	Identification	Shortcomings and Deficiencies				Corrective action				
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**	
R207	Lao PDR	Partially implemented as W29	24/11/93	S		Lao PDR - consider promulgation of the route with route designator R207	Lao PDR		В	
R209	Malaysia	Not implemented		S		Malaysia - consider early implementation	Malaysia		В	
R216	China/Kazakhstan	Not implemented	24/11/93	S		ICAO - co-ordinate with States for implementation and report the outcome to EAAR	China/Kazakhstan		В	
R217	Japan	Implemented as V51	24/11/93	S	Japan proposed to amend requirement of R217, and ICAO co- ordinated with Japan to amend ANP. APAC 98/15-ATS/COM was approved on 25/6/00. Accordingly Japan will implement the route by 12/2000.	Japan -promulgate the route with designator R217	Japan	/12/2000	В	
R218	Indonesia/Singapore	Partially implemented	24/11/93	S	ICAO has requested Indonesia to co- ordinate implementation with Singapore. APAC 99/2 to delete the requirement is under preparation.	Indonesia/Singapore - consider full implementation	Indonesia/Singapore		В	
R221	Malaysia	Not implemented. The same route designator in use in Russian Federation.	24/11/93	S	ICAO has requested Russian Federation to delete R221 and promulgate the route as R466 in AIP. ICAO has requested Malaysia to implement R221. Input from Russia and Malaysia is being awaited.	Malaysia - consider implementation ICAO - co-ordinate with Russian Federation to redesignate the route as R466 as already assigned as a matter of priority	Malaysia Russian Federation		A	
R328	India	Implemented with different route specification	24/11/93	S	ICAO has taken action to co- ordinate with India to amend ANP. APAC 99/4 to amend the requirement is under preparation.	India - propose an amendment to ANP to reflect current situation			В	
R331	India/Sri Lanka	Not implemented	24/11/93	S	India has proposed to delete the requirement. APAC 99/4 to delete the requirement is under preparation.	India/Sri Lanka - consider implementation	India/Sri Lanka		В	

	Identification		Shorte	omings and Deficier	ncies	Corrective action				
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**	
R333	China	Not implemented	24/11/93	S	China is considering future implementation	China - consider implementation	China		В	
R335	China/Hong Kong, China	Not implemented	24/11/93	S		China - consider implementation	China/Hong Kong, China		В	
R345	Cambodia/Lao PDR/Thailand	Not implemented	24/11/93	S	Co-ordination is in progress among States and ICAO	ICAO - continue ongoing implementation co-ordination related to the Revised South China Sea route structure with States	Cambodia/Lao PDR/Thailand		В	
R455	Malaysia	Not implemented	24/11/93	s	ICAO has requested Malaysia to co-ordinate the implementatin of R455 with States concerned.	Malaysia - consider implementation	Malaysia		В	
R459	Indonesia	Implemented as W51 and W36	24/11/93	S	ICAO has requested Indonesia to implement as R459	Indonesia - consider promulgation of the route with designator R459 in AIP	Indonesia		В	
R466	Russian Federation	Implemented as R221 in Russian Federation. Route requirement is listed in EUR/NAT ANP	24/11/93	S	ICAO has requested Russian Federation to delete R221 and promulgate the route as R466 in AIP, and awaits input from Russia.	ICAO - co-ordinate with Russian Federation to redesignate the route as R466 as already assigned as a matter of priority	Russian Federation		A	
R579	Indonesia/Malaysia	Not implemented	24/11/93	S	ICAO has requested Malaysia to co-ordinate with Indonesia for implementation	Indonesia/Malaysia - consider implementation	Indonesia/Malaysia		В	
R593	India/Oman	Not implemented	24/11/93	S		India - consider implementation ICAO - co-ordinate with Oman for implementation and report the outcome to SWACG	India/Oman (SWACG)		В	
Revised South China Sea Route Structure	Cambodia/China/ Hong Kong, China/Malaysia Philippines/Singapore/ Thailand/Viet Nam	Not implemented	22/7/97	S	Co-ordination is in progress among States and ICAO	ICAO - continue on-going implementation co-ordination related to the Revised South China Sea route structure with States	Cambodia/China/ Hong Kong(China)/Malaysia/ Philippines/Singapore/ Thailand/Viet Nam		В	

Identification			Shortco	omings and Deficier	ncies	Corrective action				
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**	
<u>WGS-84</u>										
WGS-84	Bhutan	Not implemented		D	Data conversion completed, but not published		Bhutan		А	
WGS-84	China	Not implemented		D	Differences to Annex 15 - Aeronautical Information Services are notified		China		Α	
WGS-84	DPR Korea	Not implemented		D			DPR Korea		А	
WGS-84	French Polynesia	Implemented at main airports		D			French Polynesia		А	
WGS-84	Kiribati	Not implemented		D			Kiribati		А	
WGS-84	Lao PDR	Partially implemented		D			Lao PDR	1999	А	
WGS-84	Malaysia	Partially implemented		D			Malaysia	/06/2001	А	
WGS-84	Nauru	Not implemented		D	Conferring with consultant		Nauru		А	
WGS-84	Philippines	Partially implemented		D			Philippines		А	
WGS-84	Solomon Islands	Not implemented		D			Solomon Islands	1999	А	
WGS-84	Vanuatu	Implemented at main airports		D			Vanuatu	1999	А	

Identification		Shortcomings and Deficiencies				Corrective action				
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**	
Type of ATS										
Area Control Services	India	Several ATS route segments are subject to Advisory Services	24/11/93	D	Co-ordination in progress through BBACG	India - implement Area Control Services	India		A	
Area Control Services	Sri Lanka	Several ATS route segments are subject to Advisory Services	24/11/93	D	Co-ordination in progress through BBACG	Sri Lanka - implement Area Control Services	Sri Lanka		A	

24/11/1993 in the column of "Date first reported" = ICAO Council Action on Asia/Pacific RAN/3 Report

	Identification		Shortco	omings and Deficien	cies	Corrective action				
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**	
<u>Airspace</u> <u>Classification</u>										
Airspace Classification	Cambodia	Not implemented	/6/99	D			Cambodia		А	
Airspace Classification	China	Not implemented	/6/99	D			China		А	
Airspace Classification	Cook Islands	Not implemented	/6/99	D			Cook Islands		А	
Airspace Classification	DPR Korea	Not implemented	/6/99	D			DPR Korea		А	
Airspace Classification	Fiji	Not implemented	/6/99	D			Fiji		А	
Airspace Classification	Japan	Not implemented	/6/99	D		Implementation in progress	Japan		А	
Airspace Classification	Kiribati	Not implemented	/6/99	D			Kiribati		А	
Airspace Classification	Lao PDR	Not implemented	/6/99	D			Lao PDR		А	
Airspace Classification	Myanmar	Not implemented	/6/99	D			Myanmar		А	
Airspace Classification	Nauru	Not implemented	/6/99	D			Nauru		А	
Airspace Classification	Papua New Guinea	Not implemented	/6/99	D			Papua New Guinea	mid 2001	А	
Airspace Classification	Philippines	Not implemented	/6/99	D			Philippines		А	
Airspace Classification	Republic of Korea	Not implemented	/6/99	D			Republic of Korea		А	
Airspace Classification	Samoa	Not implemented	/6/99	D			Samoa		А	
Airspace Classification	Solomon Islands	Not implemented	/6/99	D			Solomon Islands		А	
Airspace Classification	Sri Lanka	Not implemented	/6/99	D			Sri Lanka		А	
Airspace Classification	Tonga	Not implemented	/6/99	D			Tonga		А	
Airspace Classification	Viet Nam	Not implemented	/6/99	D			Viet Nam		Α	

	Identification		Shortco	mings and Deficier	ncies	Corrective action				
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**	
AIP Format										
AIP Format	China	Not implemented	/6/99	D			China		А	
AIP Format	Cook Islands	Not implemented	/6/99	D			Cook Islands		А	
AIP Format	DPR Korea	Not implemented	/6/99	D			DPR Korea		А	
AIP Format	Fiji	Not implemented	/6/99	D			Fiji		А	
AIP Format	India	Not implemented	/6/99	D			India	/10/2001	А	
AIP Format	Indonesia	Not implemented	/6/99	D		Implementation in progress	Indonesia		А	
AIP Format	Kiribati	Not implemented	/6/99	D			Kiribati		А	
AIP Format	Lao PDR	Not implemented	/6/99	D			Lao PDR		А	
AIP Format	Myanmar	Not implemented	/6/99	D			Myanmar		А	
AIP Format	Nauru	Not implemented	/6/99	D			Nauru		А	
AIP Format	New Zealand	Not implemented	/6/99	D	Differences to Annex 15 - Aeronautical Information Services are notified		New Zealand		А	
AIP Format	Papua New Guinea	Not implemented	/6/99	D			Papua New Guinea	mid 2001	А	
AIP Format	Philippines	Not implemented	/6/99	D			Philippines		А	
AIP Format	Samoa	Not implemented	/6/99	D			Samoa		А	
AIP Format	Sri Lanka	Not implemented	/6/99	D			Sri Lanka		А	
AIP Format	Tonga	Not implemented	/6/99	D			Tonga		А	
AIP Format	Viet Nam	Not implemented	/6/99	D			Viet Nam	/12/2000	А	

Identification			Shortco	omings and Deficien	cies	Corrective action				
Requirements	States/facilities	Description	Date first reported	Implementation status (S, D)*	Remarks	Description	Executing body	Date of completion	Priority for action**	
SAR capability										
SARPs in Annex 12	Cambodia	Annex 12 requirements not implemented. No agreements with adjacent States.	20/2/97	D		Cambodia - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States	Cambodia		U	
SARPs in Annex 12	Cook Islands	Annex 12 requirements not implemented. No agreements with adjacent States.	31/1/95	D		Cook Islands - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States	Cook Islands		U	
SARPs in Annex 12	Maldives	Annex 12 requirements not implemented. No agreements with adjacent States.	2/5/95	D		Maldives - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States	Maldives		U	

Agenda Item 8: Update the list of ATS/AIS/SAR Subject/Tasks together with priorities

8.1 The meeting noted that APANPIRG/10 reviewed the updated Subjects/Task List provided by the ninth meeting of the ATS/AIS/SAR Sub Group. APANPIRG/10 decided that this Task List would constitute the work programme for this Sub Group.

8.2 The meeting reviewed and updated the List of Tasks allocated to the Sub Group by APANPIRG/10. In the context of the papers presented and the actions carried out during the meeting the List was updated for consideration by APANPIRG/11. A copy of this list is contained in Appendix A to the Report on Agenda Item 8. The meeting developed the following Draft Decision:

Draft Decision 10/10 - ATS/AIS/SAR Subject/Task List

That,

- a) ATS/AIS/SAR Subject/Tasks List as contained in Appendix A to the Report on Agenda Item 8 be adopted as the current work assignment for the ATS/AIS/SAR Sub-Group replacing the current Subject/Tasks List assigned by APANPIRG/10; and,
- b) the Subject/Tasks List be reviewed and updated at each APANPIRG meeting and a copy of the current work assignment for the ATS/AIS/SAR Sub-Group be included in each APANPIRG report.
SUBJECT/TASKS IN THE ATS/AIS/SAR FIELDS

The priorities assigned in the list have the following connotation:

A = Tasks of a high priority on which work should be expedited;

B = Tasks of a medium priority on which work should be undertaken as soon as possible but not to the detriment of Priority "A" tasks; and

C = Tasks of a medium priority on which work should be undertaken as time and resources permit but not to the detriment of Priority "A" & "B" tasks.

No.	Reference	Subject/Task	Priority		Action Proposed / In Progress	Action By	Target Date
1	RAN/3 C 6/9 R 14/22	Subject: Implementation of RNP	A	a)	i) SUPPS amendment required to extend area of applicability of RNP10 (50NM longitudinal and lateral separation minima) beyond Pacific	ICAO	12/00
	APANPIRG C 2/22 C 3/24	Task: a) Implement RNP into the Asia Pacific Region			ii) Review & update RNP Guidance Material. Incorporate ISPACG Operations Manual outlining requirements for RNP10 operational enproved of eigerstate	CNS/ATM/GM/TF	Completed
	C 4/4 C 4/5 C 5/2 C 5/3	b) Develop further SUPPS material by ISPACG for RNP4, 30NM longitudinal and lateral separation minima		b)	Sub-group to monitor progress	ICAO	12/00
		c) Review table of navigation aids in conjunction with States		c)	Table of required navigation aids to be reviewed	ATS/AIS/SAR/SG/9	Completed
2	APANPIRG C 2/8 D 3/20 C 4/6	Subject: The SSR Code Assignment System for the Asia Region as specified in the Mid/ASIA ANP may not be as efficient as it could be	В				
	C 4/7	Task: a) Define and document a Regional SSR Code		a)	Sub-group to monitor progress	ATS/AIS/SAR/SG/9	Completed
	C 4/9 C 4/10 C 9/5	Table 3			-SSR Code Assignment Working Group to convene and establish an SSR Code Management Plan and review MID/ASIA Table 3	SSRCA/WG	Completed
		b) Prepare Regional SSR Code Management Plan for Asia Pacific FASID		b)	Progress in conjunction with SSR Code Assignment Working Group	SSRCA/WG	Completed
		c) Monitor and modify as required the Regional SSR Code Management Plan for the Asia Pacific Region		c)	SSR Code Management Task Force to meet as required by Sub-group	ATS/AIS/SAR/SG	On-going

	I	1				
No.	Reference		Subject/Task	Priority	Action Proposed / In Progress Action By	Target Date
3	RAN/3 R 14/20	Subject: implemen	Insufficient co-ordination in the provision and tation of radar facilities within the region	А		
	APANPIRG C-3/6	Task:	a) Identify why there is insufficient co- ordination and develop proposals to ensure		a) ICAO to survey States on current and proposed radar ICAO facilities	Completed
			Sufficient co-ordination exists in the ruthe		Radar Facilities Table in the ANP to be reviewed ATS/AIS/SAR/SG/9 based on the survey results	Completed
					Develop proposal to enhance co-ordination in the exchange of radar information	Completed
4	APANPIRG	Subject:	Traffic congestion within the region	А		
	C 3/22	Task:	Suggest ways of reducing this congestion by means of appropriate traffic management			
			a) Review South China Sea ATS routes		+) Review complete SCS/TF	Completed
			b) In-Trail Climb using ACAS distance based information in OCA / remote airspace		 Monitor work undertaken in the United States. The United States to inform the Sub-group on progress of work 	Completed
			c) Review Bay of Bengal ATS route structure		+) Bay of Bengal Task Force (BB/TF) established. BB/TF Report to ATS/AIS/SAR/SG/10	Completed
			d) Develop revised ATS Route Structure - Southeast Asia to/from Europe/Middle East, South of the Himalayas		 Establish a Project Team to develop a plan for a revised ATS route structure taking into consideration aircraft capabilities and the new CNS/ATM enhancements. 	7/02

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
5	RAN/3 C 13/14	Subject: AIS Automation	В	a) Information on AIS automation to be collected and reviewed	ICAO	Completed
	APANPIRG D 2/35			b) Survey questionnaire concerning details of automated AIS systems developed by ATS/AIS/SG/4 to be distributed to States	ICAO	Completed
				c) Review of survey results	AA/TF	Completed
				d) Develop AIS automation plan and ANP amendment proposal following AIS/MAP Divisional Meeting, April 1998	AA/TF ATS/AIS/SAR/SG	On-going
6	APANPIRG C 2/31	Subject: Provision of AIS within the Region	В	a) Increased AIS support from the ICAO APAC Office	APANPIRG ICAO	On-going
		Task:Examine and comment on the provision of AISand develop a programme to improve the provision ofAIS within the region		b) Update Part 6 of Doc 8700 and 8755 (ANPs for the Asia pacific Region)	ICAO	Completed
				c) Regional AIS seminars to be conducted	ICAO	8/01
7	APANPIRG D-4/40	Subject: Lack of inclusion of CNS/ATM requirements in regional plans	A			
		Task: a) Ensure regional plans include CNS/ATM requirements for the provision of ATS		a) Monitor implementation of new CNS/ATM in the ATS/AIS field	ATS/AIS/SAR/SG	Completed
		b) Develop "Concept of Operations" for application in an initial ADS environment		b) Australia to present Working Paper to ATS/AIS/SAR/SG/8	<u>Australia</u>	Completed

No	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
110.	Kererenee	Subject/ Task	Thorny	Action 1 roposcu / in 1 rogress	Action by	Target Date
8	RAN/3 C 6/5	Subject: Lack of procedures and guidelines for the introduction of reduced vertical separation minima (RVSM) above FL290 in the region	А	a) Progress of IPACG / ISPACG work on RVSM being monitored	ATS/AIS/SAR/SG	Completed
		Task: Develop appropriate procedures, guidelines and implementation plans for the introduction of RVSM and evaluate benefits		b) United States to provide update on RVSM plan for Central and North Pacific to ATS/AIS/SAR/SG/8	United States	Completed
	APANPIRG C 3/24 C 9/3	Subject: Implementation of RVSM in the Asia Pacific Region		a) Form Asia Pacific RVSM Implementation Task Force	ATS/AIS/SAR/SG	Completed
	D 9/4	Task:Plan for and facilitate implementation of RVSM, as appropriate, in the Asia Pacific Region		b) Plan schedule and facilitate implementation of RVSM in the Asia Pacific Region	RVSM/TF	On-going
9	RAN/3 R-14/3	Subject: Inappropriate structure of regional Air Navigation Plan and untimely amendment process	A	a) Develop detailed content for the Facilities and Services Implementation Document (FASID) as a matter of priority	ATS/AIS/SAR/SG	Completed
		Task: Develop detailed contents for the Asia Pacific FASID FASID		b) Prepare draft outline for the Asia pacific FASID	ATS/AIS/SAR/SG	Completed
10	APANPIRG D 3/12 D 3/2	Subject: Inappropriate provision of SAR facilities, services and procedures within the Asia Pacific Region	А	a) Review the SAR system of States in the Asia Region and advise ATS/AIS/SG	States	Completed
	C 4/2	Task:a) Review SAR facilities, services and procedures in the region		b) Analyse and review the results collected	ICAO ATS/AIS/SAR/SG	Completed
		b) Assist States without SAR services to provide SAR coverage		c) Monitor the implementation of the PAC SAR SIP recommendations	ATS/AIS/SAR/SG	Completed
				d) Encourage States to delegate or negotiate SAR services	ICAO	On-going
				e) Identify shortcomings and deficiencies	ATS/AIS/SAR/SG	On-going

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
11	APANPIRG D 3/21 C 9/2	Subject: Transition to WGS-84 in the Asia Pacific Region	A			
	0 112	Task: Develop a plan and assist with the transition to		a) Information for planning to be provided by States	States	Completed
		11 35 81		b) Information to be collated for presentation to ATS/AIS/SG	ICAO	Completed
				e) Transition plan and assistance to States to be considered	ICA0	Completed
		Task: Monitor and facilitate the transition to WGS- 84		a) Maintain status report of WGS-84 implementation within the Asia Pacific Region	ATS/AIS/SAR/SG	On-going
				b) Identify States requiring assistance and where possible assist those States	States ICAO ATS/AIS/SAR/SG	On-going
				c) Identify shortcomings and deficiencies	ATS/AIS/SAR/SG	On-going
12	RAN/3 R 14/13	Subject: Implementation of ATS route requirements	А	a) ATS routes identified as not implemented are consider by ATS/AIS/SAR/SG	ATS/AIS/SAR/SG	On-going
	APANPIRG	Task: a) Identify ATS routes in the ANP which have not been implemented		b) ATS/AIS/SAR/SG to monitor progress	ATS/AIS/SAR/SG	On-going
	D 6/21 C 9/8	b) Propose guidelines for the establishment of ATS routes using RNP and/or with ADS functions		c) Identify shortcomings and deficiencies	ATS/AIS/SAR/SG	On-going
43	APANPIRG C-2/33 C-6/19	Subject: Access to Japan Area "G"	A	Secretariat to follow up and report progress. No further action possible by ATS/AIS/SAR/SG	ICAO	On-going
14	APANPIRG	Subject: NOTAM System of GPS RAIM outages	В	a) Develop a position at ATS/AIS/SAR/SG/6	ATS/AIS/SAR/SG/6	Completed
	C 7/7	Task: Develop a position for dealing with notification		b) Develop implementation plan	ATS/AIS/SAR/SG	Completed
				(overtaken by technology enhancements)	1	

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
15	RAN/3	Subject: SAR training and exercises	В	a) Follow-up action on RAN/3 Recommendation 7/18	ICAO	Completed
	R //18	Task: Facilitate SAR training and exercises		b) Co-ordinate SAR training available in the region	ICAO	On-going
	APANPIRG C 8/9			c) Facilitate international participation in SAR exercises	States	4/01
				d) Australia to organise an international SAREX	Australia	Completed
16	APANPIRG C 6/13	Subject: Appropriate SAR legislation, National SAR Plans and Amendments	А	a) Implement appropriate legislation, establish National SAR Committees and Plans to support SAR operations	States	On-going
		Task: Establish appropriate documentation and National SAR Committee		b) Monitor developments of SAR Agreements between SAR organizations	ATS/AIS/SAR/SG	On-going
				c) Establish and maintain a Register of SAR Agreements	ICAO	On-going
17		Subject: Need for development of standardised ATS Letters of Agreement (LOA)	Ą	a) Review draft LOAs as contained in Part II, Chapter 2 of the ATS Planning Manual (Doc 9426) and WP/22 presented to ATS/AIS/SAR/SG/5	ATS/AIS/SAR/SG	Completed
		Region wide use		b) Provide comments to the Regional Office before the next-meeting	States	Completed
				 Guidance material promulgated by ICAO for use by States 	ICA0	Completed
18	APANPIRG	Subject: Lack of consideration of Human Factors in the	В	a) States to provide input including lessons learned	States	On-going
		Task: Consider ways by which Human Factors aspects in the provision of ATS within the region could be improved		b) ICAO to conduct seminars	ICAO	10/00
10			P			
19	APANPIRG D 8/	Subject: Maintenance of the CNS/ATM/GM for the Region	В	a) Update the Guidance Material as required	ATS/AIS/SAR/SG States	On-going
		Task: Maintain the CNS/ATM/GM		b) Develop "Concept of Operations" for application in an initial ADS environment	ATS/AIS/SAR/SG States	12/00

No.	Reference	Subject/Task	Priority	Action Proposed / In Progress	Action By	Target Date
20	APANPIRG C 9/48	Subject: Shortcomings & Deficiencies in the field of air navigation Task: Develop and maintain Shortcomings &	А	a) Identify unimplemented items in the ANPb) Review mission reports	ATS/AIS/SAR/SG ICAO	On-going On-going
		Deficiencies list		c) Analyse differences from SARPs	ICAO ATS/AIS/SAR/SG	On-going
				d) Review accidents / incidents	ICAO ATS/AIS/SAR/SG	On-going

Agenda Item 9: Any other business

9.1 New ASIA/PAC Basic ANP and FASID

9.1.1 The meeting recalled that in accordance with APANPIRG Conclusion 9/34, the Draft Basic ANP and FASID were circulated to States for review and verification of the entries with respect to their facilities and services. Comments were received from States, and an in-house review within the Secretariat was conducted. The results of these were presented to the respective Sub-groups and further reviewed.

9.1.2 Noting that the ASIA/PAC Basic ANP and FASID were to be updated based on the developments in all fields, APANPIRG/10 concluded that the Draft ASIA/PAC Basic ANP and FASID be updated and processed in accordance with established procedures (APANPIRG Conclusion 10/27).

- 9.1.3 In the ATS/AIS/SAR fields, the FASID was updated as follows:
 - a) Table CNS 4B-ATS Automation Systems should be relocated to the ATS part of the FASID;
 - b) Chart SAR1 should not be included in the FASID since the delineation of Search and Rescue Regions (Chart SAR 1) is related to ANP and the SAR facilities are matters related to FASID;
 - c) The Analysis of SAR Capabilities of ICAO States in the ASIA/PAC Region should be removed from the FASID; and
 - d) FASID Tables CNS 1C-ATS Direct Speech Circuits, CNS3-Radio Navigation Aids, CNS 4A-Surveillance, and CNS 4B-ATS Automation System, all of which pertain to ATS, were to be updated.

9.1.4 It was informed that the Secretariat finalized the two documents and prepared a proposal for amendment of the Air Navigation Plan, Serial number APAC 00/3, proposing to replace the existing ASIA/PAC ANP (Doc 9763) with the ASIA/PAC Basic ANP and FASID. The new ASIA/PAC Basic ANP and FASID were circulated to States for review under State Letters AP-AGA0054 and 0056 dated 23 May 2000 with a closing date for comments as of 25 August 2000.

9.1.5 Considering the importance of the developments of the new ASIA/PAC Basic ANP and FASID, the meeting urged participants to ensure that their individual authorities review the documents, verify the contents in these documents and reply to ICAO by 25 August 2000.

Agenda Item 10: Date and venue for next meeting

10.1 The venue and date for the next ATS/AIS/SAR Sub-Group meeting will be advised after consideration by APANPIRG/11.

ATS/AIS/SAR/SG/10

Attachment 1 to the Report

LIST OF PARTICIPANTS

STATE/NAME	DESIGNATION/ADDRESS	TEL/FAX/TLX/AFTN/SITA/ E-MAIL
AUSTRALIA		
Mr. Robert Deavin	Aeronautical Information & Data Services Manager Aeronautical Data Services Commercial Operations Group Airservices Australia GPO Box 367 Canberra ACT 2601 Australia	Tel: 61-2-6268 5666 Mobile: 0412 073 014 Fax: 61-2-6268 5689 E-mail: robert.deavin@airservices.gov.au
Mr. Tony Williams	Flying Operations Inspector Civil Aviation Safety Authority GPO Box 2005 Canberra ACT 2601 Australia	Tel: 61-2-6217 1737 Fax: 61-2-6217 1700 E-mail: tony.williams@casa.gov.au
BANGLADESH		
Mr. Mohammad Kaisar Alam	Deputy Director Zia International Airport Civil Aviation Authority of Bangladesh Kurmitola, Dhaka 1229 Bangladesh	Tel: 880-2-8914356 Fax: 880-2-8913322
Mr. Mohammad Siddiqur Rahman	Deputy Director Communication Civil Aviation Authority of Bangladesh Kurmitola, Dhaka 1229 Bangladesh	Tel: 880-2-8915281 Fax: 880-2-8913322
Mr. MD. Nurul Islam Sarker	Aerodrome Officer Civil Aviation Authority of Bangladesh Kurmitola, Dhaka 1229 Bangladesh	Tel: 880-2-8914810-19 ext 3404, 3247 Fax: 880-2-8913322

BRUNEI DARUSSALAM		
Mr. Haji Matnor bin Haji Salleh	Chief Air Traffic Control Officer Department of Civil Aviation Ministry of Communications Brunei International Airport Bandar Seri Begawan BB2513 Brunei Darussalam	Tel: 673-2-330142 ext 1842 673-2-331157 Fax: 673-2-331157 / 331706 E-mail: catco@brunet.bn matnor_salleh@civil-aviation.gov.bn
CAMBODIA		
Mr. Sivorn Chhun	Deputy Director Flight Operation Department State Secretariat of Civil Aviation 62 Preah Norodom Blvd Phnom Penh Cambodia	Tel: 855-1-286 6659 Fax: 855-23-725938 E-mail: airsafety.ssca@bigpond.com.kh
CHINA		
Mr. Xiao Jing	Assistant of Air Traffic Control Division Air Traffic Management Bureau, CAAC P.O. Box 2272, Shilihe, Chaoyang District Beijing 100021 People's Republic of China	Tel: 86-10-6731 8866-4201 Fax: 86-10-6731 8473 E-mail: xiaojing_atmb@263.net
Mr. Pan Jianjun	Assistant of AIS Division Air Traffic Management Bureau, CAAC P.O. Box 2272, Shilihe, Chaoyang District Beijing 100021 People's Republic of China	Tel: 86-10-6731 8866-2021 Fax: 86-10-6733 7226
HONG KONG, CHINA		
Mr. George P.S. Chao	Air Traffic General Manager Civil Aviation Department 4th Floor Air Traffic Control Complex Hong Kong International Airport Lantau Hong Kong China	Tel: 852-2910 6402 Fax: 852-2910 0139 E-mail: gchao@cad.gcn.gov.hk

Mr. Peter Kwong Yee Lee	ATC Supervisor	Tel: 852-2910 6821
	Air Traffic Management Division	Fax: 852-2910 0186
	Civil Aviation Department	
	ATC Complex	
	1 Control Tower Road	
	Hong Kong International Airport	
	Chek Lap Kok, Lantau	
	Hong Kong, China	
Mr. Kwok Chung Chan	Senior Operation Officer (Search & Rescue)	Tel: 852-2910 6813
	Air Traffic Management Division	Fax: 852-2910 1188
	Civil Aviation Department	E-mail: atmdsaro@cad.gcn.gov.hk
	4/F Air Traffic Control Complex	
	Hong Kong International Airport	
	Lantau	
	Hong Kong, China	
MACAU, CHINA		
Mr. Tat Ming Lam	Technical Officer	Tel: 853-511213
this furthing Eucli	Telecommunication & Aeronautical Information	Fax: 853-338089
	Civil Aviation Authority	F-mail: aacm@macau.ctm.net
	Rua Dr. Pedro Jose J obo 1-3 Edif J uso	
	International 26° Ander	
	Macau China	
Ms. Choong Kit Mong	Air Traffic Control Supervisor	Tal: 853 8082125
Wis. Cheolig Kit Weilg	Administration of Airports Ltd	E_{0X} : 853-8082120 860024
	Administration of Aliports Etd.	Tax. 855-8782150, 800024
	Taine	
	Taipa Massay China	
		T 1 052 0002200
MS. GOTEIII Kels	Head of AIC Services	1ei: 853-8982200
	Administration of Airports Ltd.	Fax: 853-8611145
	Macau International Airport	
	Taipa	
	Macau, China	

FIJI		
Mr. Satendra Deo Gupta	Manager ATS Standards and Documentation Airport Fiji Limited Private Mail Bag Nadi Airport Fiji Islands	Tel: 679 725 777 Fax: 679 725 417
FRANCE / NEW CALEDONIA		
Mr. Jean-Paul Mugnier	Deputy Head of Air Navigation Department Service d'Etat de l'Aviation Civile BPH 1 98848 Noumea Cedex New Caledonia	Tel: 687 265 286 Fax: 687 265 206 E-mail: jpmugnier@canl.nc
INDIA		
Mr. D.P. Arora	Additional General Manager ATC Airports Authority of India Rajiv Gandhi Bhawan Safdarjung Airport New Delhi 110003 India	Tel: 91-11-463 2950 Fax: 91-11-461 1078 E-mail: aaiedatm@ndf.vsnl.net.in
INDONESIA		
Mr. Cholid Sukadjaja	Head of Sub-Directorate of ATS Directorate General of Air Communications Jl. Merdeka Barat No. 8 Jakarta Pusat 10110 Gd. Karya 23 rd Floor Indonesia	Tel: 62-21-3506451 Fax: 62-21-3506451
Mr. Suemarsono	Head of Section ADC, APP Sub-Directorate of ATS PT. (Persero) Angkasa Pura I Kota Baru Bandar Kemayoran Blok B-12 Kav. No. 2 Jakarta 10610 Indonesia	Tel: 62-21-654 1961 Fax: 62-21-654 1513-14 Tlx: 42475 PERAPS IA

Mr. Rottibul Ichjar	Staff of Sub-Directorate of Electrical and Electronic	Tel: 62-21-550 6165
	Head of Tek. AFTN	Fax: 62-21-550 1129
	Pt. Angkasa Pura II	
	Soekarno-Hatta International Airport	
	Indonesia	
Mr. Ernanto Wibisono	Sr. Operation Analyst	Tel: 62-21-550 1521
	Operation Development	Fax: 62-21-550 1528
	PT. Garuda Indonesia Airways	Tlx: 43579 GIACGKIA
	Garuda Operation Center (GOC)	SITA: CGKODGA
	Soekarno-Hatta Airport	E-mail: tonikum@hotmail.com
	P.O. Box 1004, BUSH 19130	
	Cengkareng, Indonesia	
Mr. Muhammad Luthfi	Manager, Operation Control I	Tel: 62-21-550 1823, 1887, 1889
	Operation Planning & Control Department	550 1013-14
	PT. Garuda Indonesia Airways	Fax: 62-21-550 2152
	Garuda Operation Center (GOC)	Tlx: 43579 GIACGK IA
	Soekarno-Hatta Airport	SITA: CGKOMGA
	P.O. Box 1004, BUSH 19130	E-mail: luthfi_m@yahoo.com
	Cengkareng, Indonesia	
JAPAN		
Mr. Yoh Miyajima	Special Assistant to the Director	Tel: 81-3-3580 7379
	Air Traffic Control Division	Fax: 81-3-3580 7971
	Air Traffic Services Department	E-mail: Y-MIYAJIMA@so.motnet.go.jp
	Civil Aviation Bureau	
	Ministry of Transport	
	2-1-3 Kasumigaseki, Chiyoda-ku	
	Tokyo 100 8989, Japan	
Mr. Tsukasa Yoshizawa	Special Assistant to the Director	Tel: 81-3-3580 7566
	Operations and Flight Inspection Division	Fax: 81-3-3581 5849
	Air Traffic Services Department	E-mail: TUKASA-YOSHIZAWA@so.motnet.go.jp
	Civil Aviation Bureau	
	Ministry of Transport	
	2-1-3 Kasumigaseki, Chiyoda-ku	
	Tokyo 100 8989, Japan	

ATS/AIS/SAR/SG/10 Attachment 1 to the Report

Mr. Satoshi Ishimoto	Chief of the Section	Tel: 81-3-3581 5839
	Flight Procedures and Airspace Program Office	Fax: 81-3-3580 7971
	Air Traffic Control Division	E-mail: S-ISHIMOTO@so.motnet.go.jp
	Air Traffic Services Department	
	Civil Aviation Bureau	
	Ministry of Transport	
	2-1-3 Kasumigaseki, Chiyoda-ku	
	Tokyo 100 8989, Japan	
MALAYSIA		
Mr. Maniam Appadurai	Deputy Director of ATS	Tel: 603 746 5233
11	Department of Civil Aviation	603-746 9428
	Block A. Air Traffic Services Complex	Fax: 603 747 2997
	Sultan Abdul Aziz Shah Airport	
	47200 Subang Selangor Darul Ebsan	
	Malavsia	
Mr. Kachat Din Mee	Assistant Director	Tel: 603-2539600
	Department of Civil Aviation	Fax: 603-2539533
	3 rd Floor Block B Wisma Semantan	F-mail: kachat@hotmail.com
	12 Jalan Gelanggang Bukit Damansara	
	50618 Kuala Lumpur	
	Malaysia	
Mrs. Noorlingh G. Mohd	ATS Inspectorate Unit	Tel: $603-7465233 \times 322$
Wills. Hoofman O. Wond	Department of Civil Aviation	Mobile: $013 352 5060$
	Block A Air Traffic Services Complex	$F_{2x} = 603 \ 7473286$
	Sultan Abdul Aziz Shah Airport	E mail: norlyna@pd jaring my
	47200 Subang, Salangor Darul Ebsan	E-man. norryna@pd.jaring.my
	47200 Subang, Senangoi Darui Ensan	
	Ividiaysia	
MONGOLIA		
Mr. Mendbayar M.	Manager of ATS	Tel: 976-982 013
	Civil Aviation Authority of Mongolia	Fax: 976-1-379 981
	Buyant Ukhaa Airport	E-mail: caamend@mongolnet.mn
	Ulaanbaatar 34	
	Mongolia	

Mr. Batkhaan D.	Chief of SAR Coordination Division	Tel: 976-981 622
	Civil Aviation Authority of Mongolia	Fax: 976-1-379 980
	Buyant Ukhaa Airport	
	Ulaanbaatar 34	
	Mongolia	
NEW ZEALAND		
Mr. John McConway	ATS Policy and Standards Manager	Tel: 64-3-358 1620
	Airways Corporation of New Zealand	Fax: 64-3-358 6856
	P.O. Box 14-131. Christchurch	E-mail: mcconwai@airways.co.nz
	New Zealand	
PAPUA NEW GUINEA		
Mr. Raroa Sego	Assistant Director (ATS)	Tel: 675-324 4466
	Department of Transport & Civil Aviation	Fax: 675-325 0749
	PO Box 684	AFTN AYPYYAYX
	Boroko NCD	E-mail: hzeriga@datec.com.ng
	Papua New Guinea	E man. inzeriga e datec.com.pg
	Tapua New Ounica	
PHILIPPINES		
Mr. Salvador G. Rafael	Chief Air Traffic Controller	Tel: 632-832 0906
	Air Traffic Service	Fax: 632-759 7138
	Air Transportation Office	
	Department of Transportation and Communications	
	Ninov Aquino International Airport	
	MIA Road Pasav City-1300	
	Philippines	
REPUBLIC OF KOREA		
Mr. Guen Soo Kim	Deputy Director	Tel: 82-2-500 4175
	Civil Aviation Bureau	Fax: 82-2-503 7330
	Ministry of Construction & Transportation	E-mail: kimgs@moct.go.kr
	1. Joongang-Dong, Kwacheon-Shi	0
	Kyunggi-Do 427-760	
	Republic of Korea	
	Republic of Rolea	

SINGAPORE		
Mr. Mervyn Fernando	Senior ATC Manager (Airspace)	Tel: 65-541-2457
,	Civil Aviation Authority of Singapore	Fax: 65-545-6516
	Singapore Changi Airport	E-mail: mervyn_fernando@caas.gov.sg
	P.O. Box 1	
	Singapore 918141	
Mr. Mohd Khalid Bin Ismail	ATC Watch Manager	Tel: 65-541-2668
	Civil Aviation Authority of Singapore	Fax: 65-545-6252
	Singapore Changi Airport	
	P.O. Box 1	
	Singapore 918141	
THAILAND		
Mr. Jarurat Naksavee	Chief of Search and Rescue Branch	Tel: 66-2-287 4717
	Air Safety Division	Fax: 66-2-286 2916
	Department of Aviation	
	71 Soi Ngarmduplee, Rama IV Road	
	Tungmahamek	
	Bangkok 10120, Thailand	
Mr. Vanchai Srimongkol	Chief of Communication Branch	Tel: 66-2-286 2909
	Communications and Air Traffic Control Division	Fax: 66-2-286 2909
	Department of Aviation	
	71 Soi Ngarmduplee	
	Tungmahamek	
	Bangkok 10120, Thailand	
Mr. Keeree Sukpanich	Chief of AIS Branch	Tel: 66-2-286 0922
	Communications and Air Traffic Control Division	Fax: 66-2-287 4060
	Department of Aviation	
	71 Soi Ngarmduplee	
	Tungmahamek	
	Bangkok 10120, Thailand	

Mr. Nara Chanchanakit	Acting Chief of Air Traffic Control Division	Tel: 66-2-286 8159
	Communications and Air Traffic Control Division	Fax: 66-2-286 8159
	Department of Aviation	
	71 Soi Ngarmduplee	
	Tungmahamek	
	Bangkok 10120, Thailand	
Mrs. Intira Chantranakorn	Air Transport Technical Officer	Tel: 66-2-285 5450
	Air Safety Division	
	Department of Aviation	
	71 Soi Ngarmduplee	
	Tungmahamek	
	Bangkok 10120, Thailand	
Mr. Amornthep Sachdev	Aircraft Inspector	Tel: 66-2-286 0923
-	Air Safety Division	Fax: 66-2-286 2913
	Department of Aviation	E-mail: amornthep@yahoo.com
	71 Soi Ngarmduplee	
	Tungmahamek	
	Bangkok 10120, Thailand	
Ms. Kamolrat Wongkraso	AIS Officer	Tel: 66-2-286 0922
	Communications and Air Traffic Control Division	
	Department of Aviation	
	71 Soi Ngarmduplee	
	Tungmahamek	
	Bangkok 10120, Thailand	
Mr. Wiboon Kulartyut	Chief, Avionic System Group	Tel: 66-2-563 8256
	Technical Department	Fax: 66-2-531 1913
	Thai Airways International Public Co.Ltd.	SITA: BKKTETG
	Bangkok International Airport	E-mail: wiboon.k@thaiairways.co.th
	Don Muang, Bangkok	
	Thailand	
Ms. Nongnuj Ratanavichai	Manager, Route Planning Analysis Division	Tel: 66-2-535 2449
	Operations Department	Fax: 66-2-531 0065
	Thai Airways International Public Co.Ltd.	E-mail: nongnuj@thai.com
	89 Vibhavadi Rangsit Rd	
	Bangkok 10900	
	Thailand	

Mr. Panchai Kunavuthi	Acting Director, Communications and Aeronautical Information	Tel: 66-2-285 9081, 287 3182
	Services Centre	Fax: 66-2-287 3131
	Aeronautical Radio of Thailand Ltd	Tlx: AEROT 82852 TH
	102 Ngarmduplee	AFTN: VTBBYFYX
	Tungmahamek	SITA: BKKTOYF
	Bangkok 10120	
	Thailand	
Mr. Prakit Suwannabhokin	General Administration Manager	Tel: 66-2-2859076
	ATS Operations Bureau	Fax: 66-2-2859648
	Aeronautical Radio of Thailand Ltd.	TLX: AEROT 82852 TH
	102 Ngarmduplee Tungmahamek	AFTN: VTBBYFYX
	Bangkok 10120	SITA: BKKTOYF
	Thailand	E-mail: prakit.su@aerothai.or.th
Mr. Watee Arthakamol	Air Traffic Control Manager	Tel: 66-2-2859111
	Bangkok Area Control Centre	Fax: 66-2-2859077
	Aeronautical Radio of Thailand Ltd.	
	102 Ngarmduplee Tungmahamek	
	Bangkok 10120	
	Thailand	
Mr. Somboon Saelim	Senior System Engineer	Tel: 66-2-285 9576
	Aeronautical Radio of Thailand Ltd.	Fax: 66-2-2859253
	102 Ngarmduplee	Tlx: AEROT 82852 TH
	Tungmahamek	AFTN: VTBBYFYX
	Bangkok 10120	SITA: BKKTOYF
	Thailand	E-mail: somboon@aerothai.or.th
THAILAND – OBSERVERs		
Ms. Porsook Changyawa	General Administrative Manager	Tel: 66-2-285 9837
	International NOTAM Office	
	COM and AIS Center	
	Aeronautical Radio of Thailand Ltd.	
	P.O. Box 15-16	
	Bangkok International Airport	
	Thailand	

ATS/AIS/SAR/SG/10 Attachment 1 to the Report

Mr. Manas Lomsap	General Administrative Manager	Tel: 66-2-285 9832
	International NOTAM Office	
	COM and AIS Center	
	Aeronautical Radio of Thailand Ltd.	
	P.O. Box 15-16	
	Bangkok International Airport	
	Thailand	
Mr. Sumruay Phochacom	Aeronautical Radio of Thailand Ltd.	Tel: 66-2-287 3531
5	102 Ngarmduplee	
	Tungmahamek	
	Bangkok 10120	
	Thailand	
Mr. Julanam Chuvanonda	Aeronautical Radio of Thailand Ltd.	Tel: 66-2-287 3531
	102 Ngarmduplee	
	Tungmahamek	
	Bangkok 10120	
	Thailand	
Mr. Jirasak Netiprawat	Aeronautical Radio of Thailand I td	Tel: 66-2-287 3531
Mi. Jildsak Hollplawat	102 Ngarmdunlee	101. 00 2 207 5551
	Tungmahamek	
	Bangkok 10120	
	Theiland	
Mr. Boonsong Choothaing	A group out in a logic of Theiland Ltd	Tal. 66.2.297.2521
MI. Boolisong Choolianig	102 Nacem dunlas	161. 00-2-207 5551
	Turs and handle	
	Develople 10120	
	Bangkok 10120	
	Inailand	
UNITED STATES		
Ms. Leslie McCormick	Senior International Program Officer, AAT-32	Tel: 1-202-267 7646
	Air Traffic Services International Staff	Fax: 1-603-388 6875
	Federal Aviation Administration	E-mail: LeslieM1@compuserve.com
	800 Independence Ave S.W.	-
	Washinton, D.C. 20591	
	U.S.A.	

Mr. Allan Storm	Civil/Military Aviation Issues Division	Tel: 1-240-857 2146
	Air Force Flight Standards Agency	Fax: 1-240-857 3194
	United States Air Force	E-mail: allan.storm@andrews.af.mil
	1535 Command Dr, Suite D309	
	Andrews Air Force Base, MD 20762-7002	
	U.S.A.	
VIET NAM		
Mr. Nguyen Manh Quang	Acting Manager ATS/AIS/MET/SAR	Tel: 84-4-8730320
	Vietnam Air Traffic Management (VATM)	Fax: 84-4-8272597
	Civil Aviation Administration of Vietnam	E-mail: vatmats.hn.vnn.vn
	Gialam Airport	
	Hanoi	
	The Socialist Republic of Vietnam	
Mr. Nguyen Manh Quan	SAR Expert	Tel: 84-4-8730320
	Vietnam Air Traffic Management	Fax: 84-4-8272597
	Civil Aviation Administration of Vietnam	
	Gialam Airport	
	Hanoi	
	The Socialist Republic of Vietnam	
ІАТА		
Mr. David Charles Behrens	Assistant Director Infrastructure – Asia/Pacific	Tel: 65-239 7267
	International Air Transport Association	Fax: 65-536 6267
	71 Robinson Road	E-mail: behrensd@iata.org
	#05-00, SIA Building	
	Singapore 068896	
Capt. Paul George Horsting	Manager International Operations	Tel: 852 2747 8826
	Cathay Pacific Airways Limited	Fax: 852 2334 7375
	Flight Operations Department	E-mail: paul_horsting@cathaypacific.com
	3/F, South Tower, Cathay Pacific City	
	8 Scenic Road	
	Hong Kong International Airport	
	Lantau, Hong Kong, China	

Mr. Wai Keung Hari Ng	Project Manager	Tel: 852 2747 8170
	(ATS Strategy and Planning)	Fax: 852 2747 8170
	Cathay Pacific Airways	SITA: HKGOOCX
	Flight Operations Department	AFTN: VHHHCPAO
	3/F South Tower Cathay Pacific Airways	E-mail: hari_ng@cathaypacific.com
	8 Scenic Road	
	Hong Kong International Airport	
	Lantau, Hong Kong, China	
JEPPESEN SANDERSON		
Mr. Chet Mason	Senior Manager, International AIS Programs	Tel: 1-303-328 4525
	JEPPESEN SANDERSON	Fax: 1-303-784 4111
	55 Inverness Drive East	E-mail: Chet.Mason@jeppesen.com
	Englewood, CO 80118	5.11
	U.S.A.	
ICAO		·
Mr. John Richardson	Regional Officer, ATM	Tel: 66-2-5378189
	ICAO Asia & Pacific Office	Fax: 66-2-5378199
	P.O.Box 11 Samyaek Ladprao	AFTN: VTBBICOX
	Bangkok – 10901 Thailand	SITA: BKKCAYA
		E-mail: jricho@hotmail.com
Mr. Owen Dell	Regional Officer, ATM	Tel: 66-2-5378189
	ICAO Asia & Pacific Office	Fax: 66-2-5378199
	P.O.Box 11 Samyaek Ladprao	AFTN: VTBBICOX
	Bangkok – 10901 Thailand	SITA: BKKCAYA
		E-mail: dello@loxinfo.co.th
Mr. Hiroshi Inoguchi	Regional Officer, ATM	Tel: 66-2-5378189
	ICAO Asia & Pacific Office	Fax: 66-2-5378199
	P.O.Box 11 Samyaek Ladprao	AFTN: VTBBICOX
	Bangkok – 10901 Thailand	SITA: BKKCAYA
	-	E-mail: inoguchi@icao.or.th

LIST OF WORKING PAPERS (WPs) and INFORMATION PAPERS (IPs)

WOR	WORKING PAPERS				
WP No.	Agenda Items	Presented by	Subject		
1	1	Secretariat	Provisional Agenda		
2	4	Secretariat	Review ATS Co-ordination Groups Activities – SEACG/8 and BBACG/11		
3	3	Secretariat	Implementation of ATS Routes		
4	3	RVSM TF	Proposed Guidance Material on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum (VSM) for Application in the Airspace of Asia Pacific Region		
5	5	Secretariat	Review of Y2K planning and actions taken		
6	3	Secretariat	Transition to WGS-84 in the Asia/Pacific Region		
7	6	Secretariat	Report of the Sixth Meeting of the APANPIRG ATS/AIS/SAR Sub-Group's AIS Automation Task Force (AAIS/AATF/6)		
8	3	Secretariat	Aircraft Equipage with ACAS II		
9	2	Secretariat	APANPIRG Sub-Group Work Program Review Task Force		
10	3	Secretariat	Report on Bay of Bengal Task Force progress		
11	6	Thailand	Development of Automated AIS System in Thailand		
12	3	RVSM TF	Implementation of Reduced Vertical Separation Minimum (RVSM) in the Asia/Pacific Region		
13	3	Secretariat	Search and Rescue Matters		
14	4	Secretariat	Classification of Airspace		
15	4	Secretariat	AIP Format		
16	3	Secretariat	Revision of CNS/ATM Guidance Material		
17	3	Secretariat	Review SSR Code Management		
18	3	Australia	SSR Code Management in Asia/Pacific		
19	3	Secretariat	Carriage of ACAS and Pressure-Altitude Reporting Transponders		
20	7	Secretariat	List of Air Navigation Shortcomings and Deficiencies		
21	3	Secretariat	Inclusion of SIGMET in VOLMET Broadcasts		
22	3	IATA	Need to Implement the Mandatory Carriage of Pressure-Altitude Reporting Transponders and Airborne Collision Avoidance Systems in the Asia Pacific Region		
23	8	Secretariat	ATS/AIS/SAR Task List		
24	2	Secretariat	Review of Outstanding Conclusions and Decisions of APANPIRG		
25	9	Secretariat	New ASIA/PAC Basic ANP and FASID		

IP No.	Agenda Items	Presented by	Subject
1	-	Secretariat	List of Working Papers (WPs) and Information Papers (IPs)
2	4	Singapore	Search and Rescue Training in Singapore

INFORMATION PAPERS

.