

**Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report**

**TERMS OF REFERENCE OF THE
COMMUNICATIONS, NAVIGATION, SURVEILLANCE/METEOROLOGY
(CNS/MET) SUB-GROUP OF APANPIRG**

TERMS OF REFERENCE

1. Ensure the continuing and coherent development of the ASIA/PAC Regional Air Navigation Plan and the ASIA/PAC Regional Plan for the New CNS/ATM Systems in the CNS/MET fields.
2. Review and identify ~~shortcomings and~~ deficiencies that impede the implementation or provision of efficient CNS/MET services in the ASIA/PAC Region.
3. Monitor CNS/ATM systems research and development, trials and demonstrations in the fields of CNS/MET and facilitate the transfer of this information and expertise between States.
4. Make specific recommendations aimed at improving CNS/MET services by the use of existing procedures and facilities and/or through the evolutionary implementation of CNS/ATM systems.
5. Review and identify inter-regional co-ordination issues in the fields of CNS/MET and recommend actions to address those issues.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

SUBJECT/TASKS LIST IN THE CNS/MET 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 medium priority on which work should be under taken as soon as possible but not to the detriment of Priority "A" tasks; and

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

TOR = Terms of Reference of the Sub-Group

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
1	RAN/3 C.8/6	Subject: Shortcomings in volcanic ash colour codes Task: Aviation volcanic ash color code		Study proposal by IFALPA to modify the aviation volcanic ash code.	COM/MET IFALPA	Completed
2	RAN/3 C.14/24	Subject: Relevance of the content of the table of navigation and surveillance services Task: a) To provide information for the update of the ANP taking into account required additions and deletions. b) Provide the above information in an informal document that can also be used as a planning instrument for action o other tasks.		a) Undertake a comprehensive review of the table of radionavigation aids at appropriate intervals in consultation with States and international organisations b) Develop a document to indicate the current ANP requirements, the implementation status of those requirements and future planning requirements Task completed: Review completed On-going review mechanism established	NAV/SUR	Completed
3	RAN/3 R.9/3b)	Subject: Procedures for exchange of METARS between regions Task: Exchange of METARS to support operations between ASIA/PAC and other regions.		Establish procedures for exchange of METARS between ASIA/PAC and other regions with a view of developing appropriate proposals to amend the ANP.	COM/MET	Completed
4	RAN/3 R.9/4	Subject: Designation of International OPMET data banks Task: Designation of international OPMET data bank to serve the Asia and Pacific Regions.		Recommend an international OPMET data bank or banks to be designated to serve the ASIA/PAC region.	COM/MET	Completed
5	RAN/3 C.10/12	Subject: Standard Protocols Task: Harmonization of ground-ground data links.		Consider harmonization of ground-ground data link protocols and procedures that will be inter-operable with the ATN.	COM/MET AFTN Mgmt. TF	Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

Appendix A - 3

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
6	RAN/3 R.10/18	Subject: WAFS satellite coverage in Asia Region Task: Areas to be covered by World Area Forecast System (WAFS) satellite broadcast.		Co-ordination with WAFS satellite broadcast provider States to ensure access for States in western part of Asia/Pac Region completed.	ICAO WAFS provider State	Completed
7	RAN/3 C.10/20	Subject: Alpha numeric data on WAFS satellite broadcast Task: Inclusion of alphanumeric data on ASIA/PAC World Area Forecast System (WAFS) satellite broadcast.		Consider inclusion of alphanumeric format OPMET and AIS messages on WAFS satellite broadcast.	COM/MET WAFS provider States	Completed
8	RAN/3 C.11/9	Expansion of Communication Tables Legends.		Develop terminology and legends to represent elements used in ATN.	COM/MET	Completed
9	APANPIRG C.2/27	Subject: Frequency congestion on SEA-1 network Task: Aeromobile Communications Improvements - resolution of deficiencies		Identify aeromobile communications deficiencies in the region and develop appropriate solutions	ICAO States	Completed
10	APANPIRG C. 3/15	Subject: Regional radar data exchange Task: Standardize radar data formats		1) Gather information on formats used in the Region 2) Encourage the use of standardized and automated exchange of radar cross FIR boundaries 3) Consult with Eurocontrol on the use of ASTRIX 4) Consider ATN/ADS compatibility issues	NAV/SUR ICAO US	Completed
11	RAN 3 C. 12/1	Minimum value of field strength for NDB's		Action on this subject completed.	NAV/SUR C.2/2	Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
12	RAN/3 C. 12/6	Subject: Provision of cost effective and operationally acceptable approach and landing guidance Task: 1) ILS/MLS transition planning 2) Action on the outcome of the Spec. om/Ops		Develop an ILS/MLS transition plan taking into account; 1) cost benefit studies conducted by states in the Region 2) studies and trials on MLS development and other relevant systems 3) progress achieved on technical and operation issues on MLS 4) progress in ILS/MLS transition planning in other regions 5) current plans of individual States in the Region on ILS/MLS an 6) outcome of the COM/OPS Div 95 Meeting. Task completed: ILS/MLS transition issues resolved by outcome of Spec. Com/Ops Div95 Meeting. Regional strategy review completed.	NAV/SUR	Completed
13	APANPIRG D.7/28	Subject: Non-implementation of carriage of ACAS in ASIA/PAC region Task: To examine the application of ACAS in the ASIA/PAC region and to develop a time-table for implementation		Review the benefits to be gained through carriage of ACAS in the region and develop a programme of implementation of carriage of ACAS	COM/MET/NAV/SUR	Completed
14	RAN/3 C.14/4 RAN/3 C.5/2 (TOR 1)	Development of detailed description for the contents of the ASIA/PAC Facilities and Services Implementation Document (FASID) Ensure harmonised Regional Com/Met/Nav/Sur plan development		Develop detailed format and content for the COM/MET/NAV/SUR part of the Facilities and Services Implementation Document (FASID) as a matter of priority. Take into account global CNS/ATM plans as adopted by APANPIRG.	COM/MET/NAV/SUR AFS MGT TF NAV/SUR TF	Completed
15	RAN/3 C.8/17 (TOR 3)	Subject: Lack of WAFS data for long-haul operations Task: WAFS support to long-haul operations		1) Study the development of interim arrangements to provide WAFS support to long haul operations. 2) India to rebroadcast WAFS charts received from Tokyo RAFC. 3) WAFC Washington provide wind/temp charts for 36 hours range.	COM/MET USA	Completed Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

Appendix A - 5

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
16	APANPIRG D. 9/31	Problem : Revision of GNSS RAS Task : Development of an alternative strategy for the provision of GNSS RAS	A	Review the existing strategy and an alternative strategy be developed with a view to focus on ensuring appropriate service provision from the space-based system and alternative technology available	COM/MET/NAV/ SUR SG	Completed
17	RAN/3 C.14/19 (TOR 3)	Subject: Lack of AIDC procedures Task: Development of on-line data interchange procedures and table for use in the Region	B	1) Develop on-line data-interchange procedures to support CNS/ATM applications. (AFTN AIDC) 2) Develop a logical connectivity table for the exchange of flight data information using the ATN. (ATN AIDC Table)	ICD Task Force COM/MET/NAV/SUR (ATN Trans. TF)	Completed Completed
18	APANPIRG D. 4/46 RAN/3 C.12/3 APANPIRG 5/33 (TOR 3)	Subject: Provision of adequate COM/NAV/SUR services Task: Monitor the development and implement new com/nav/sur services eg ATN,GNSS, ADS with minimal transitional impact	A	1) Encourage States to conduct R&D, Trials & demonstrations of new com/nav/sur services eg. ATN, GNSS, ADS 2) Monitor global developments that may have beneficial impact on regional planning activities eg. ATN, WADGNSS, LADGNSS 3) Consolidate information on new capabilities in the CNS/ATM system, eg. FANS 1 avionics package, oceanic display systems etc. for the Sub-Groups review and action 4) Serve as a focal point for review of ongoing work of Regional formal and informal working groups that is relevant to Com/Nav/Sur eg RNP compatibility 5) Provide for co-ordinated training/seminars to keep all States informed on developments of trials and demonstrations 6) Establish a GNSS Task Force to develop a Regional Strategy for GNSS augmentation 7) Develop transition planning consistent with Regional requirements	COM/MET/NAV/SUR	Completed Completed Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
19	RAN/3 C.9/7 (TOR 3)	Subject: Lack of adequate procedures for Exchange of OPMET data between regions Task: Exchange of OPMET data between the ASIA/PAC and other Regions.	A	1) Develop procedures and delivery scheme for exchange of OPMET data between ASIA and EUR regions Via Singapore ODREP. 2) Develop a draft proposal for amendment of the ANP and arrange amendment of the ROBEX handbook to reflect the new arrangements. 3) To develop procedure to make OPMET information available at Washington and London.	COM/MET/NAV/SUR OPMET WG	Completed Completed Completed
20	C.9/12 (TOR 3)	Subject: The need for SIGWX charts to be available in London and Washington for WAFS dissemination Task: Exchange of WAFS SIGWX charts.	A	1) Plan for the exchange of SIGWX charts between all relevant RAFCs and the London and Washington WAFS. 2) Develop transition plan for transfer of responsibilities from the RAFCs to WAFCs. 3) Coordination between RAFCs and the respective WAFCs be effected to meet time table for production of test high level SIGWX forecasts and the dates when the charts are expected to be considered operational	COM/MET/NAV/SUR WAFS Task Force States	Completed Completed Completed
21	RAN/3 R.10/19 (TOR 3)	Subject: Technical data not available for WAFS satellite broadcast implementation Task: Dissemination of World Area Forecast System (WAFS) products by satellite broadcast.	A	1) WAFS satellite broadcast provider States to advise ICAO of VSAT receiving equipment details. 2) ICAO to relay information to States in the region. 3) Develop draft proposal to amend the ANP as necessary. 4) States to install WAFS satellite receivers.	UK & US ICAO COM/MET States	Completed Completed Completed Completed
22	COM/MET /NAV/SUR /SG (TOR 2)	Subject: Protection of radio frequency spectrum to ensure safety and efficiency of aeronautical services. Task: Take steps to protect the aeromobile spectrum from unauthorised interference. Task: Support ICAO position on various Agenda at WRC including protecting GNSS spectrum for aeronautical use.	A	1) Encourage States to monitor and co-operatively resolve unauthorized intrusion into aeronautical HF bands, 2) Work actively with State Telecommunications Authorities to ensure ICAO positions are supported and aviation views are included in WRC deliberations.	ICAO States	Completed Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

Appendix A - 7

No	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
23	APANPIRG D. 10/13	Problem : Revision of Strategy for PA Landing System Task : Development of an up-dated strategy	A	Review the current strategy and develop an up-dated strategy taking into account : 1) standardized GBAS and SBAS 2) feasibility of GBAS to support CAT II and III operations 3) development and deployment of MMR 4) the definition of RNP for approach, landing and departure operations and 5) human, environmental and economic factors.	COM/MET/NAV/ SUR SG	Completed
24	APANPIRG D. 10/14	Problem : Lack of a general strategy for implementation of GNSS Task : Development of a more general strategy for implementation of GNSS.	A	A more general strategy for the implementation of GNSS navigation capability in the ASIA/PAC region taking into account : 1) RNP for all phases of flight 2) standardization of GNSS by ICAO through SARPs, PANS-OPS guidance material 3) human, environmental and economic factors.	COM/MET/NAV/ SUR SG	Completed
25	APANPIRG C. 8/21	Problem : Transition to the final phase of WAFS Task : Planning for transfer of responsibilities of the RAFCs to the WAFCs London and Washington.		Develop WAFS Transition Plan and Procedures and planning for Implementation of transfer of the RAFCs responsibilities to the WAFCs London and Washington.	COM/MET/NAV/ SUR SG WAFS Transition TF	Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
26	RAN/3 C.11/8 (TOR 1)	Subject: Planning of ground-ground communications required for implementation of ATN Task: Integration of ground -ground communications necessary for the implementation of the aeronautical telecommunication network.	B	Plan ground to ground communications for implementation of ATN, taking into account the work of the ATNP. 1) Development of ATN Routing architecture 2) Transition Plan	ATN Trans. TF/3	Completed
27	RAN/3 C.10/11 (TOR 3)	Subject: Inadequate Ground-ground data coms. Task: Aeronautical Fixed Telecommunications Network (AFTN) management.	A	1) Develop procedures for the establishment operation and management of databases. 2) Review AFTN loading, develop possible circuit improvements and routing changes. 3) Develop alternate routing coordination procedures to take into account address stripping procedures. 4) Plan changes to the AFTN with due account to transition to ATN.	COM/MET/NAV/SUR ATN Trans. TF COM/MET/NAV/SUR	Completed On-going Completed Completed Completed
28	APANPIRG C.2/23 (TOR 2)	Subject: Lack of implementation of ATS voice circuits Task: Aeronautical Fixed Service (AFS) - resolution of deficiencies	A	Identify AFS deficiencies in the region and develop appropriate solution	CNS/MET States concerned	On-going Completed On-going Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

Appendix A - 9

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
29	APANPIRG C.9/29	Problem : Lack of procedures for OPMET exchange to support the ISCS and SADIS broadcasts. Task : Planning for dissemination of ASIA/PAC OPMET data to the WAFCs London and Washington	A	Develop procedures for dissemination of OPMET data to the WAFCs for uplink on the satellite broadcasts. Planning an implementation of the procedures for OPMET exchange to support the ISCS and SADIS broadcasts. - Develop the new procedure for dissemination of OPMET messages, as listed in Annex 1 to the SADIS User Guide, to the WAFCs London and Washington to meet IATA requirements. - Planning for implementation of the new procedures	CNS/MET SG with assistance of OPMET WG	Completed Completed 2002 2003 on-going
30	RAN/3 C.11/10 (TOR 1)	Subject: Ensure effective transition to sat. coms. Task: Planning for the implementation of satellite communications.	B	In planning for the implementation of CNS/ATM take into account: 1) Requirements for an effective transition, 2) Time frame for implementing changes, 3) HF requirements after implementation of satellite communications, 4) Human factors (staffing, retraining).	CNS/MET	On-going
31	RAN/3 C.11/11 (TOR 1)	Subject: Lack of com facilities to support aircraft access to Met Data-bank(s) Task: Communications facilities to support aircraft access to a MET data bank(s) and automation of meteorological information for aircraft in flight (VOLMET) broadcasts.	B	In planning CNS/ATM implementation consider com facilities to support direct access to OPMET data bank(s) and automation of VOLMET broadcast.	CNS/MET	2003
32	RAN/3 C.8/14 (TOR 3)	Subject: Inadequate implementation of procedures for advising aircraft on volcanic ash Task: Regional planning for implementation of international airways volcano watch (IAVW)	A	Plan implementation of IAVW procedures to ensure provision of timely information on volcanic ash to aircraft.	CNS/MET Task Force Volcanic Ash	On going

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
33	APANPIRG D. 9/21	Problem : SADIS strategic assessment Task: SADIS strategic assessment of data/information to be included in the satellite broadcast.		Review requirements for SADIS broadcasts and maintain the SADIS strategic assessment tables.	CNS/MET SG	On-going
34	APANPIRG (TOR 3)	Subject: Lack of procedure for application of MET data in ADS messages Task: Use of MET data from ADS messages	A	1) Review MET information transmitted with ADS messages Presentation of the WP on the subject to the CNS/MET/SG/6 2) Develop procedures for utilization of the available MET data by operational units, MET offices and WAFCS	CNS/MET New Zealand CNS/MET	2003 2002 Completed 2004
35	(TOR 3)	Subject: To facilitate regional implementation of CNS/ATM Tasks: a) coordinate training/workshops to allow States to develop and implement new CNS/ATM procedures b) encourage States to participate in the evaluation and training of new CNS/ATM systems c) progress the adoption of WGS-84 co-ordinate system and introduction of high integrity systems for the management of the co-ordinate data	A	1) identify topics for training, develop syllabi and plan training programme 2) encourage States in the evaluation and training of new CNS/ATM systems 3) co-ordinate with States and monitor progress 4) collect information and suggest methods of resolving problems commonly faced by States	CNS/MET CNS/ATM IC SG	On-going On-going On-going On-going

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix A to the Report

Appendix A - 11

No.	Ref.	Task	Priority	Action Proposed/In Progress	Action By	Target Date
36	APANPIRG D. 4/46 RAN/3 C.12/3 APANPIRG 5/3 (TOR 3)	Subject: Provision of adequate CNS/MET services Task: Monitor CNS/ATM systems research and development, trials and demonstrations in the fields of CNS/MET and facilitate the transfer of this information and expertise between States.	A	- Encourage States to conduct R&D, trials & demonstrations of new CNS/MET services - Monitor global developments that may have beneficial consequences on regional planning activities - Consolidate information on new capabilities in the CNS/ATM system, for the Sub-Groups review and action - Serve as a focal point for review of ongoing work of Regional formal and informal working groups that is relevant to CNS/MET - Provide for coordinated training/seminars to keep all States informed on developments of trials and demonstrations	CNS/MET	On-going
37	C 12/24	Subject : Transition to the final phase of WAFS Task : Implementation of the transition to the final phase of WAFS	A	1) Development of guidelines for the use of BUFR and GRIB codes for the production of WAFS products. 2) Planning and coordinating the transfer of SIGWX and WIND/TEMP charts from the current T4 facsimile format to BUFR and GRIB format. 3) Development of a regional training programme for the operational use of BUFR and GRIB. 4) Participate in the development and implementation of an adequate WAFS back-up system for dissemination of WAFS products in the Asia/Pacific Regions.	COM/MET/NAV/SUR SG WAFS Transition Task Force	2002 Completed 2004 2003 2004
38	C12/36	Subject : Lack of ATM requirements for MET components of the ASIA/PAC CNS/ATM Plan. Task : Developing the MET Chapter for the ASIA/PAC CNS/ATM Plan.	A	- Development of the initial draft of the MET Chapter. - Development of the MET components of the CNS/ATM concept/strategy. - Inclusion of ATM requirements for MET information in the CNS/ATM Plan.	CNS/MET SG with assistance of MET WG on CNS/ATM Plan CNS/MET SG with assistance of the METATM TF	Completed 2003 Completed 2004

**Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix B to the Report**

Appendix B - 1

Actions Taken on Decisions/Conclusions of CNS/MET Sub-Group in the CNS Field

Report Ref. Deci./Concl. of Sub-Group	Report Ref. Deci./Concl. No.	Action Taken by Council	Decision/Conclusion/Action Taken	Action Taken by States/ICAO
Concl.5/3	Concl. 12/12		Conclusion 12/12 - Need to monitor AFTN circuit performance That, States concerned closely monitor performance of the following AFTN circuits and coordinate upgrading the circuits capacity, in accordance with the AFTN plan. 1. Manila/Singapore 2. *Nadi/Apia Faleolo 3. Mumbai/Colombo 4. Christchurch/Papeete 5. Mumbai/Nairobi 6. Hong Kong/Manila 7. Kuala Lumpur/Chennai 8. Colombo/Singapore 9. Tokyo/Singapore 10. Colombo/Male *the Apia Faleolo/Nadi AFTN circuit will be rerouted by Apia Faleolo/USA upon approval of the amendment proposal to ASIA/PAC ANP.	States concerned were requested to monitor loading condition and upgrade circuit capacity as specified in Table CNS-1A AFTN Plan. Consequently, - Manila/Singapore - upgraded to 300 baud; - Nadi/Apia - reconfigured to Apia/USA and implemented; - Mumbai/Colombo - planned for upgrading to 2400 bps in 07/02. Testing going on; - Christchurch/Papeete - upgraded to 2400 bps; - Hong Kong/Manila – upgraded to 300 baud; - Kuala Lumpur/Chennai – upgrading planned for 07/02; - Colombo/Singapore – upgrading planned for 12/02; - Tokyo/Singapore – upgrading planned for 12/02; and - Colombo/Male – upgrading planned for 12/02.
D. Concl.5/4	Concl. 12/13		Conclusion 12/13– Regional ATN Planning Documents That, the ASIA/PAC ATN ATS Message Handling System Plan, ATN Addressing Plan, ATN Network Service Access Point (NSAP) Address Registration Form and ATN Routing Architecture Plan be adopted and circulated to States in the ASIA/PAC and adjacent regions.	The ATN Planning Documents were published and distributed to States in ASIA/PAC region and adjacent regions.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix B to the Report

Report Ref. Deci./Concl. of Sub-Group	Report Ref. Deci./Concl. No.	Action Taken by Council	Decision/Conclusion/Action Taken	Action Taken by States/ICAO
D.Concl. 5/5	Concl. 12/14	ANC	Conclusion 12/14 – ATN Transition Plan That, the ASIA/PAC ATN Transition Plan provided in Appendix A to the report on Agenda Item 2.2 be adopted and the ASIA/PAC ATN Router Plan contained in Table CNS-1B be included in PART IV- CNS of ASIA/PAC FASID. Noted the Conclusion and requested the Secretary General to monitor related developments in other regions.	Editorial changes were made to the plan and presented to the ATN Transition Task Force. A proposal for amendment to the FASID is being processed.
D. Deci. 5/6	Deci. 12/15		Decision 12/15– Amendment of the Subject/Tasks List of the ATN Transition Task Force That, the updated Subject/Tasks List of the ATN Transition Task Force provided in Appendix B to the report on Agenda Item 2.2 be adopted.	The changes adopted by APANPIRG included in the Subject/Tasks List of the Task Force and presented to the Fourth Meeting of the Task Force to note and to take appropriate action.
D.Concl. 5/10	Concl. 12/16		Conclusion 12/16 - Strategy for the Provision of Precision Approach and Landing Guidance System That, the Strategy for the Provision of the Precision Approach and Landing Guidance System provided in Appendix C to the report on Agenda Item 2.2 be adopted.	The strategy was brought to the attention of States for compliance.

**Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix B to the Report**

Appendix B - 3

Report Ref. Deci./Concl. of Sub-Group	Report Ref. Deci./Concl. No.	Action Taken by Council	Decision/Conclusion/Action Taken	Action Taken by States/ICAO
D. Concl. 5/8	Concl. 12/17		Conclusion 12/17 - Strategy for the Implementation of GNSS Navigation Capability in the ASIA/PAC Region That, the Strategy for the Implementation of GNSS in the ASIA/PAC Region provided in Appendix D to the report on Agenda Item 2.2 be adopted.	The strategy was brought to the attention of States for compliance.
D. Concl. 5/9	Concl. 12/18	ANC	Conclusion 12/18 – Checklist for GNSS Implementation That, the Checklist for introduction of GNSS based operations contained in Appendix E to the report on Agenda Item 2.2 be circulated to States in the ASIA/PAC region to serve as a guidance material. Noted the Conclusion and requested Secretary General to monitor related developments in other regions to harmonize GNSS-based operation.	The checklist was provided to States for their use in planning and implementing GNSS as per the strategy adopted by APANPIRG.
D. Concl. 5/10	Concl. 12/19		Conclusion 12/19 – Protection of Aeronautical Frequency Spectrum That States: a) assign high priority to the aeronautical spectrum management; b) participate in the development of States' position for WRCs at the national level to ensure support to ICAO position;	ICAO Position was presented to the APT Preparatory Group Meetings for WRC-2003. The conclusion was brought to the attention of States to take appropriate action. List of CAA and APT contact points were provided to States. APT Meeting schedules were also provided to States with a request to participate at APT Meetings.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix B to the Report

Report Ref. Deci./Concl. of Sub-Group	Report Ref. Deci./Concl. No.	Action Taken by Council	Decision/Conclusion/Action Taken	Action Taken by States/ICAO
		C	c) ensure, to the extent possible that, aviation representatives are included in States delegation to the Asia-Pacific Telecommunity (APT) Conference Preparatory Group meetings and at WRCs; and d) ensure participation of designated focal point or contact person at the Regional Preparatory Group Meeting for WRC-2003 to be held from 15 to 16 November 2001 followed by the AMCP WG-F Meeting to be held from 19-27 November 2001 in Bangkok and attendance at APTAPG Meetings and WRC 2003. Noted the Conclusion and requested the Secretary General to continue to encourage States to participate at various levels in different fora to provide support for the ICAO Position at forthcoming WRC-2003	The Regional Preparatory Group Meeting was held as scheduled. The AMCP WG-F was hosted and several designated contact persons attended both meetings.
Deci. 5/24			Decision 5/24 - Establishment of ANP/FASID Review Working Group A Working Group consisting of members from Australia, China, Hong Kong China, Japan, Singapore, Thailand and USA is established to review the Regional Procedures contained in Part IV of the Basic ANP and FASID with a view to include CNS/ATM related materials in CNS part. The review should take into account all relevant Conclusions of APANPIRG, the Global Air Navigation Plan for the CNS/ATM Systems and the ASIA/PAC Regional Plan for the New CNS/ATM Systems. The result should be presented to the next meeting of the Sub-Group in 2002.	The Working Group completed its tasks and the result was reviewed by the ATN Transition Task Force at its fourth meeting held in April 2002. Action completed. It is proposed to dissolve the Working Group.

**Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix B to the Report**

Appendix B - 5

Report Ref. Deci./Concl. of Sub-Group	Report Ref. Deci./Concl. No.	Action Taken by Council	Decision/Conclusion/Action Taken	Action Taken by States/ICAO
D. Deci 5/1	Deci. 12/37		Decision 12/37 - Amendments to the Subject/Tasks List of the CNS/MET Sub-Group That, the updated Subject/Tasks List of the CNS/MET Sub-Group presented in Appendix V to the report on Agenda Item 2.2 be adopted.	The amended Tasks List was noted by the CNS/MET/SG/6.
D. Deci. 5/2	Concl. 12/45		Conclusion 12/45– Key Priorities for CNS/ATM Implementation That, the updated key priorities for CNS/ATM implementation at Appendix E to the Report on Agenda Item 3 be adopted.	The list of Key Priorities was brought to the attention of States and related Task Force to plan implementation.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix B to the Report

Actions Taken on Decisions/Conclusions of CNS/MET Sub-Group in MET Field

Report Ref. Deci./Concl. of Sub-Group	Report Ref. Deci./Concl. No.	Action Taken by Council	Decision/Conclusion/Action Taken	Action Taken by States/ICAO
D. Concl. 5/11	Concl. 12/20		Conclusion 12/20 – Requirement for a new WAFS area of coverage “M” That, a) The ASIA/PAC ANP be amended to include under the WAFS a new area of coverage “M” (FASID Chart MET 7) as shown in Appendix G to the Report on Agenda Item 2.2; and b) FASID Table MET 5 and MET 6, as developed by APANPIRG/11, be amended to include requirement for SWH prepared by the WAFC Washington for the new WAFC area of coverage “M” as given in Appendices H and I to the Report on Agenda Item 2.2.	Proposal for Amendment of FASID circulated to States.
D. Concl. 5/12	Concl. 12/21		Conclusion 12/21 – SADIS strategic assessment tables That, the ASIA/PAC SADIS strategic assessment tables, as given in Appendix J to the Report on Agenda Item 2.2, be adopted and forwarded to the SADISOPSG for planning the future SADIS bandwidth requirements.	The subject matter was discussed by the SADISOPSG/7.
D. Concl. 5/13	Concl. 12/22	C	Conclusion 12/22 – GRIB Training Workshop That, the SADIS Provider State be invited to arrange for a GRIB training workshop, in co-ordination with ICAO, WMO and other States as necessary, in the ASIA/PAC Regions in 2002. <i>Noted the conclusion and requested the Secretary General to invite SADIS Provider state to hold this workshop in coordination and WMO.</i>	Coordination is undergoing with the UK. The workshop is planned to hold by the end of 2002.
D. Concl. 5/14	Concl. 12/23		Conclusion 12/23 – WAFS Area of Coverage “E” That, ICAO be invited to consider extending the WAFS area of coverage “E” to the north up to 45°N to cover northern part of Japan.	The new “E” chart has been launched by WAFC London in November 2001.

Sixth Meeting of CNS/MET/Sub-Group of APANPIRG
Appendix B to the Report

Appendix B - 7

Report Ref. Deci./Concl. of Sub-Group	Report Ref. Deci./Concl. No.	Action Taken by Council	Decision/Conclusion/Action Taken	Action Taken by States/ICAO
D. Concl. 5/15	Concl. 12/24		Conclusion 12/24 – Amended ASIA/PAC WAFS Transition Plan and Procedures That, the ASIA/PAC WAFS Transition Plan and Procedures be amended as shown in Appendix K to the Report on Agenda Item 2.2 to reflect considerable progress in transition to the final phase of WAFS in the regions.	Chairman of the ASIA/PAC WAFS Transition Task Force made the necessary changes
Deci. 5/16			Decision 5/16 – ASIA/PAC WAFS Transition Task Force That, the Work Programme for the ASIA/PAC WAFS Transition Task Force be agreed as given in Appendix V to this report.	The agreed Work Programme of the ASIA/PAC WAFS Transition Task Force is being implemented.
D. Concl. 5/17	Concl. 12/25		Conclusion 12/25 – Application of EUR OPMET update procedure in the ASIA/PAC Regions That, the procedure similar to the EUR OPMET update procedure be developed and introduced in the ASIA/PAC Regions.	The procedure is to be developed by the OPMET Exchange Task Force.
D. Concl. 5/18	Concl. 12/26	C	Conclusion 12/26 – Tropical cyclone advisories with the data designator “FK”. That, the TCACs Honolulu, Miami, New Delhi, Darwin, Nadi and Tokyo, designated to provide the service in the ASIA/PAC Regions, issue the advisories using the data designator “FK” and ensure the routing of these bulletins to aviation users and London Centre for uplink to the SADIS broadcast. <i>Note : Requirement for Honolulu TCAC in the ASIA/PAC Regions is covered by Conclusion 12/33 formulated by the meeting.</i>	Implemented by Tokyo TCAC. Other TCACs have been notified through WMO Tropical Cyclone regional bodies.
	Concl. 12/27	C	Conclusion 12/27 – Composition of the SADISOPSG That, the composition of the SADISOPSG be reviewed to replace the members representing States not participating in the cost recovery and hence not receiving the SADIS broadcast. <i>Noted the conclusion and its relationship to the SADIS mandatory cost-recovery scheme.</i>	China designated a member for SADISOPSG in replacement to member from Singapore.
D. Concl. 5/19	Concl. 12/28		Conclusion 12/28 – Proposal for amendment of ICAO SUPPS, Doc 7030/4 That, Regional Supplementary Procedures, ICAO Doc 7030/4, MID/ASIA and PAC, Part 3 – Meteorology – Aircraft Observations and Reports, be amended as shown in Appendix M to the Report on Agenda Item 2.2.	Proposal for Amendment of the regional SUPPS circulated to states.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix B to the Report

Report Ref. Deci./Concl. of Sub-Group	Report Ref. Deci./Concl. No.	Action Taken by Council	Decision/Conclusion/Action Taken	Action Taken by States/ICAO
D. Concl. 5/20	Concl. 12/29		Conclusion 12/29 – Gia Lam Meteorological Watch Office (MWO) That, a) FASID Table MET 1B of the ASIA/PAC ANP be amended to delete requirement for Hanoi and Ho Chi Minh MWOs and to add requirements for Gia Lam MWO; and b) Consequential amendments be made to FASID Table MET 2A, renamed as FASID Table MET 2B, FASID Table3, Part I and Part II, renamed as FASID Tables 3A and 3B, accordingly.	Proposal for Amendment of FASID circulated to States.
D. Concl. 5/21	Concl. 12/30	C	Conclusion 12/30 – Operation of the VAACs That, ICAO consider the proposal to amend Annex 3, and the Handbook on the IAVW – Operational Procedures and Contact List, Doc 9766 accordingly, that each VAAC should operate on a 24-hour basis. <i>Noted the conclusion and requested the secretary General to develop proposals for amendment of Annex 3 and Doc 9766 to ensure operation of VAACs on a 24-hour basis.</i>	The requirement to be included in the Amendment proposal 73 to Annex 3.
D. Concl. 5/22	Concl. 12/31		Conclusion 12/31 – Volcanic ash advisory centre That, FASID Table MET 3, Part II of the ASIA/PAC ANP, renamed as FASID Table MET 3B, be amended as shown in Appendix N to the Report on Agenda Item 2.2.	Proposal for Amendment of FASID circulated to States.
D. Concl. 5/23	Concl. 12/32	ANC	Conclusion 12/32 – Volcanic Ash Advisory and SIGMET in graphical format That, ICAO give consideration to further improvement of the format in which the graphical advisory should be issued by VAACs and development of proposals for the format of a graphical SIGMET for volcanic ash, including the necessary guidance regarding procedures for dissemination of information. <i>Noted the conclusion and requested the Secretary General to consider further improving the format of graphical advisories to be issued by VAACs and develop proposals for the graphical format of SIGMET messages for volcanic ash, including the necessary guidance regarding procedures for dissemination of information.</i>	The recommendation for BUFR-coded graphical volcanic ash advisories to be included in the Amendment proposal 73 to Annex 3.

Sixth Meeting of CNS/MET/Sub-Group of APANPIRG
Appendix B to the Report

Appendix B - 9

Report Ref. Deci./Concl. of Sub-Group	Report Ref. Deci./Concl. No.	Action Taken by Council	Decision/Conclusion/Action Taken	Action Taken by States/ICAO
D. Concl. 5/25	Concl. 12/33		Conclusion 12/33 – Honolulu tropical cyclone advisory centre That, FASID Table MET 3, Part I of the ASIA/PAC ANP, renamed as FASID Table MET 3A, be amended, as shown in Appendix O to the Report on Agenda Item 2.2, to reflect designation of the TCAC Honolulu with the area of responsibility covering portion of the Central Pacific from 140°W to 180°W. <i>Noted the conclusion and its relationship to the designation of Honolulu as the tropical cyclone advisory centre for the Central Pacific area.</i>	Proposal for Amendment of FASID circulated to States.
D. Concl. 5/26	Concl. 12/34		Conclusion 12/34 – New FASID Charts MET 2 and MET 3 That, the ASIA/PAC ANP be amended to include the new FASID Chart MET 2 and FASID Chart MET 3, as given in Appendices P and Q to the Report on Agenda Item 2.2, showing the areas of responsibility of TCACs and VAACs respectively.	Proposal for Amendment of FASID circulated to States.
D. Concl. 5/27	Concl. 12/35		Conclusion 5/35 – ASIA/PAC Basic ANP and FASID, Part VI – Meteorology That, the regional procedures given in the introductory text to Part VI – Meteorology of the ASIA/PAC Basic ANP and FASID be amended as shown in Appendices R and S to the Report on Agenda Item 2.2.	Proposals for Amendment of Basic ANP and FASID circulated to States.
	Concl. 12/36		Conclusion 5/36 – Chapter 8 – Meteorology of the ASIA/PAC CNS/ATM Plan That, the ASIA/PAC Regional Plan for the new CNS/ATM Systems be amended to include Chapter 8 – Meteorology as given in Appendix T to the Report on Agenda Item 2.2.	To be incorporated in the next version of the Plan.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix C to the Report

Appendix C - 1

Outstanding Conclusions/Decisions in the CNS/MET Fields

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
C 5/19		Need for technical assistance to support WAFS implementation in the ASIA/PAC Regions That, ICAO initiate action to provide technical assistance in terms of equipment and training of personnel under the Technical Co-operation Programme to those States that are in need of assistance to receive WAFS products by satellite broadcast. <i>Noted the conclusion and requested the Secretary General to take action as appropriate.</i>	The use of SADIS and ISCS/2 by ASIA/PAC States has continued to grow and further expansion is expected. Implementation of the SADIS and ISCS/2 is being monitored to define the extent of the assistance required.	On-going
C 5/23	C	Operation of the OPMET data banks as an OPMET Data Regional Exchange Points (ODREP) under the ROBEX Scheme That, a) Bangkok, Brisbane, Nadi, Singapore and Tokyo OPMET data banks be designed as ODREPs under the ROBEX Scheme; and b) ICAO develop a draft proposal for amendment of the regional procedures given in the introductory text to Part IV — Meteorology of the MID/ASIA (Doc 8700) and NAT/NAM/PAC (8755) ANPs and arrange for a consequential amendment of the list of the ODREPs as given in the ROBEX Handbook and their responsibilities as follows: i) Bangkok ODREP/OPMET data bank be responsible for the ASIA/PAC MID and ASIA/PAC AFI (except south east part of the region) OPMET data exchanges;	— OPMET data banks have been implemented. — ROBEX Handbook has been amended to reflect operation of OPMET data banks/ODREPs. — New Table MET 4C — OPMET Data Banks has been included in the draft ASIA/PAC FASID.	Completed Completed Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix C to the Report

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
		ii) Brisbane ODREP/OPMET data bank be responsible for the ASIA/PAC SAM and ASIA/PAC South-east AFI OPMET data exchanges; iii) Nadi ODREP/OPMET data bank be responsible for the South PAC NAM OPMET data exchanges; iv) Singapore ODREP/OPMET data bank be responsible for EUR ASIA/PAC OPMET data exchanges; v) Tokyo ODREP/OPMET data bank be responsible for the ASIA/PAC NAM OPMET data exchanges. <i>Noted the conclusion on the understanding that necessary co-ordination would be made with the APIRG and GREPECAS.</i>		
C-6/27		Area of Responsibilities of the Designated OPMET Data Banks to Support the ROBEX Scheme That, a) The areas of responsibilities of the designated OPMET Data Banks to support the ROBEX Scheme be defined as follows: i) Areas of responsibility of Bangkok OPMET Data Bank — Bangkok, Bombay, Calcutta, Delhi and Karachi Main and/or TAF Collection Areas; ii) Area of responsibility of Brisbane OPMET Data Bank — Port Moresby, Sydney, and Auckland Main and/or TAF Collection Areas; iii) Area of responsibility of Nadi OPMET Data Bank — Nadi TAF Collection Area;	OPMET Data Banks have been implemented. ASIA/PAC and global OPMET data are available on the ISCS and SADIS broadcasts.	Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix C to the Report

Appendix C - 3

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
		iv) Area responsibility of Singapore OPMET Data Bank—Singapore, Jakarta and Kuala Lumpur Main and/or TAF Collection Areas; and v) Area of responsibility of Tokyo OPMET Data Bank—Beijing, Hong Kong, Tokyo and Seoul Main and/or TAF Collection Areas. b) Data banks exchange the METAR/TAF Bulletins collected within their areas of responsibility with other data banks; and c) Data banks disseminate the METAR/TAF Bulletins within their areas of responsibility to meet operational requirements. <i>Noted the conclusion with the understanding that its substance will be incorporated in a proposal to amend the relevant regional air navigation plans.</i>		
C 9/18		Operational efficacy of OPMET messages That, a) ICAO carry out a survey on the operational efficacy of the ISCS/2; and b) Results of the survey be made available to the ISCS/2 provider State and reported to the COM/MET/NAV/SUR SG/3 Meeting.	– Proposal to carry out a survey on the operational efficacy of the ISCS/2 was forwarded to the ISCS Provider State for review and consideration. – The United States was invited to review the proposed survey form and to provide comments.	To be completed in 2002 2004 - 2005
C 9/30		Global exchange of OPMET messages That, ICAO develop a proposal to amend Annex 3 and the regional air navigation plans to introduce a requirement for the global exchange of OPMET messages and their dissemination by the ICAO satellite broadcasts.	Requirements regarding the global exchange of OPMET information have been included in Amendment 72 to Annex 3 adopted by the Council on 7 March 2001.	Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix C to the Report

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
	C	<i>Noted the conclusion and requested the Secretariat to develop a proposal to amend Annex 3 and the air navigation plans to provide for global exchange of OPMET information using all elements of the aeronautical fixed service, as appropriate.</i>		
C 10/12		Conclusion 10/12 — Need to monitor AFTN circuit loading That, States concerned closely monitor loading conditions on the following AFTN circuits and provide the result of monitoring of plans for upgrading circuits to ICAO: 1. Manila/Singapore 2. Nadi/Apia-Faleolo 3. Nadi/Noumea 4. Hong Kong/Manila 5. Kuala Lumpur/Chennai	1. Manila/Singapore circuit upgraded to 300 baud. 2. Faleolo is routed via USA since 15 July 2002. 3. Nadi/Noumea already upgraded to 2400 bps. 4. Hong Kong/Manila already upgraded to 300 baud. 5. Kuala Lumpur/Chennai planned for upgrading in 07/02.	This conclusion has been superceded by Conclusion 12/12. Action completed.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix C to the Report

Appendix C - 5

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
C 10/16		SADIS operational focal point in user States That, SADIS User States nominate an operational person involved with day to day SADIS operations in that State, to act as the SADIS operational focal point, and to provide the person's name, official title and contact details. Note:- a) To assist States in nominating the appropriate officer, the request to States should indicate clearly that the SADIS operational focal point would be expected to be available to respond to queries and receive information from the SADIS provider State and Secretary, SADISOPSG on operational matters, and maintain contact with any other SADIS users in the State concerned; and b) On receipt of the information from States, the Secretary of the SADISOPSG should provide the information to the SADIS provider State, and include the list of the SADIS operational focal points in a future amendment to the SADIS User Guide.	The required information has been collected from the SADIS User States. The completed list of the SADIS focal points has been forwarded to the Secretary of the SADISOPSG.	Completed
C 10/19	C	Future development of the WAFS That, ICAO give consideration to the future development of the WAFS with a view of meeting the States' requirements for WAFS and non-WAFS products after transition to the final phase of WAFS and RAFCs cease to operate. <i>Noted the conclusion and requested the Secretary General to arrange for a study on how to meet any non-WAFS requirements indicated by States, in response to the survey requested in Conclusion 10/20.</i>	Proposal is being studied by the Secretariat with assistance of the WAFSSG. The subject is included in the Agenda of the MET Divisional Meeting, September, 2002	On-going

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix C to the Report

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
C 10/20		Survey on future requirements of States for the WAFS and non-WAFS products and services That, States define their future requirements for the WAFS and non-WAFS products and services so that all requirements be met after transition to the final phase of the System.	A survey was undertaken by the ASIA/PAC WAFS Transition Task Force to assess the capability of States to obtain and process GRIB forecasts into Wind/Temp Charts on an operational basis. A survey was undertaken by the Task Force to assess the operational effectiveness of WAFS.	Completed
C 10/21		Internet access to the WAFS products and OPMET data That, ICAO consider developing the policy for use of the Internet by States to obtain the WAFS products and OPMET data for operational purposes. <i>Noted the conclusion and its relationship to APIRG/12 conclusion 12/27 and requested the Secretary General to consider developing a uniform policy for the use of the Internet by States to obtain WAFS products and OPMET data for operational purposes, as well as for the dissemination for AIS products.</i>	The Uniform policy for the use of the Internet by States for operational purposes is being developed by the Secretariat as requested by the ANC. It is included in the agenda of the MET Divisional Meeting to be held in September 2002. The United Kingdom implemented the SADIS internet-based service as a back-up to the SADIS broadcast to be provided only to States and users authorized to receive SADIS and ISCS broadcasts. SADIS FTP back-up service has been operational since May 2002.	On-going
C 10/22		Dissemination of ASIA/PAC OPMET data to WAFC Washington That, - Tokyo ROBEX OPMET Data Bank forward ASIA/PAC METAR bulletins to the WAFC Washington; - Brisbane and Nadi ROBEX OPMET Data Bank forward ASIA/PAC TAF bulletins to the WAFC Washington; and - The operational procedures and the respective responsibilities of the data banks to facilitate distribution of the ASIA/PAC OPMET data to the WAFCs London and Washington be as shown in Appendix I to the report on the Agenda Item 2.2.	The ASIA/PAC and global OPMET data is available at the Washington WAFC from the Centres concerned and from London WAFC for the ISCS broadcast.	Completed

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix C to the Report

Appendix C - 7

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
C 10/23		Revision of the ROBEX Scheme That, in order to facilitate distribution of the ASIA/PAC OPMET information to the WAFC London and Washington for uplink to the satellite broadcasts, the ROBEX Scheme be revised as shown in Appendix J to this Report on Agenda Item 2.2.	The revised ROBEX Scheme is being implemented. The collection areas of some ROBEX Centres have been extended. Task to be carried out by OPMET/E TF.	On-going 2003
C 11/24		Conclusion 11/24 Protection of Aeronautical Frequency Spectrum That States; a) Assign high priority to the aeronautical spectrum management; b) Participate in the development of States' position for WRCs at the national level to ensure support to ICAO position; c) Ensure to the extent possible aviation representatives are included in States delegation to the APT Conference Preparatory Group meetings and at WRCs; d) Designate a focal point contact person responsible for the preparation of WRC 2003 issues and provide notification of appointment to the ICAO Regional Office. Note the Conclusion and requested the Secretary General to accord high priority to the ICAO's role in safeguarding the aeronautical interest at WRC 2003.	Follow up actions were taken. Focal points were designated by almost all the States. List of contact points for both CAA and Telecom Regulators were prepared and forwarded to States to facilitate co-ordination.	Superseded by Conclusion 12/19. Action completed.
C 11/26		Authorized access to the global WAFS graphical products via the Internet That, ISCS and SADIS provider States consider the possibility of providing global availability of WAFS products via the Internet, to the authorized ISCS and SADIS users.	The subject matter was discussed by the SADISOPSG/6 and 7. The United Kingdom implemented the SADIS internet-based service as a back-up to the SADIS broadcast to be provided only to States and users authorized to receive SADIS and ISCS broadcasts. SADIS FTP back-up service has been operational since May 2002.	On-going

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix C to the Report

Report Reference Concl./Dec. No.	Action by ANC/Council	Decision/Conclusion/ Action Taken	Action by States/ICAO	Status
	ANC	Noted the conclusion and that the Secretary General was developing a policy for the operational use of the Internet by States to access WAFS products as well as OPMET data, and for the dissemination of AIS Information.	A policy for the operational use of the Internet by States is being developed by ICAO. It is included in the agenda of the MET Divisional meeting to be held in September 2002.	
C 11/32		WAFS Tables MET 5 and 6 of the ASIA/PAC ANP (FASID) That, Tables MET 5 and 6 of the ASIA/PAC ANP (FASID) be amended as shown in Appendices H and I to the report.	The ASIA/PAC Basic ANP and FASID have been approved by the Council. Amendment proposal for FASID circulated to States.	On-going
C 11/33	C	SIGMET Special Implementation Project That, ICAO urgently consider a proposal for the ASIA/PAC Special Implementation Project be established with the primary objective to improve implementation of SIGMET procedures. Noted the conclusion and that such project would be put forward for Council approval through established procedures.	The SIP Project Proposal will be put forward for Council approval in 2001. The SIP Proposal is being revised in order to reduce the cost and will be put forward in 2003.	On-going 2003

TABLE CNS 1A - AFTN PLAN

Explanation of the Table

Column

1	The AFS station or facility of individual State, listed alphabetically. Each circuit appears twice in the Table.
2	Category of circuit M - Main trunk circuit connecting Main AFTN communication centres. T - Tributary circuit connecting Main AFTN communication centre and AFTN stations to relay or retransmit AFTN traffic. S - AFTN circuit which is used to transmit and receive AFTN traffic to and from a Main or Tributary AFTN communication centre directly connected to it and does not relay AFTN traffic except for the purpose of serving national station(s).
3 and 7	Type of circuit provided: HF High frequency radio teletype LTT/a landline teletypewriter, analogue (eg. cable, microwave) LTT/d landline teletypewriter, digital (eg. cable, microwave) LDD/a landline data circuit, analogue (eg. cable, microwave) LDD/d landline data circuit, digital (eg. cable, microwave) SAT/n/a/d satellite link, the number indicates the number of hops in the circuit: Also use/a for analogue or/d for digital appropriate to the tail circuit.
4 and 8	Circuit signalling speed, current or planned.
5 and 9	Circuit protocols, current or planned.
6 and 10	Data transfer code (syntax), current or planned. ITA-2 International Telegraph Alphabet No. 2 (Baudot code). IA-5 International Alphabet No. 5 (ICAO 7 - unit code). CBI Code and Byte Independent (ATN compliant).
11	Target date of implementation
12	Remarks Note 1: Circuit is required for alternate routing and for national routing for international traffic. Note 2: Requirements exist for speech and data (S + DX) communication.

TABLE CNS - 1A AFTN PLAN

Appendix D - 2

State/Station	Cat.	CURRENT				PLANNED				Target date of implemen- tation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
AMERICAN SAMOA PAGO PAGO - S/NSTU United States/KSLC	S	LDD/d	2400 bps	X.25	IA-5						
AUSTRALIA BRISBANE - M/YBBB	T	LDD/d	2400 bps	X.25	IA-5						
Christchurch/NZCH	S					LTT	75 baud	None	IA-5		Note 2 internet as interim measure
Honiara/AGGG	S	SAT/d	9600 bps	X.25	IA-5						Note 1,2
Jakarta/WIII	S	LTT	50 baud	None	ITA-2						
Mauritius/FIMP	M	LDD/d	2400 bps	IA-5	IA-5						
Nadi/NFFN	S					SAT/d	2400 bps	X.25	IA-5		Note 2 internet as interim measure
Nauru/ANAU	S	SAT/d	9600 bps	X.25	IA-5						Note 2
Port Moresby/AYPM	S	LTT	300 baud	None	ITA-2						SITA
Port Vila/NVVV	M					LDD/d	2400 bps	X.25	IA-5	12/02	Current routing
Santiago/SCSC	M	LDD/d	2400 bps	X.25	IA-5						
Singapore/WSSS	M	SAT/d	2400 bps	X.25	IA-5						
United States/KSLC	M										
BANGLADESH DHAKA - S/VGZR											
Bangkok/VTBB	S	SAT/d	300 baud	None	IA-5						
Kolkata/VECC	S	HF RTT	50 baud	None	ITA-2	LTT	2400 bps	None	IA-5	12/02	Routing to be proposed via VTBB/VABT
BHUTAN PARO - S/VQPR											
Mumbai/VABB	S					SAT/a	50 baud	None	ITA-2	12/02	Dial-up
BRUNEI DARUSSALAM BRUNEI - S/WBSB											
Singapore/WSSS	S	LTT	75 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	10/02	
Kuala Lumpur/WMKK	S	LTT	75 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	12/02	Note 1,2
CAMBODIA PHNOM PENH - S/VDPP											
Bangkok/VTBB	S	SAT/d	300 baud	None	ITA-2						Note 2

TABLE CNS - 1A AFTN PLAN

Appendix D - 3

[illegible]

TABLE CNS - 1A AFTN PLAN

Appendix D - 4

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
MACAU, CHINA MACAU - S/VMMC Hong Kong/VHHH Guangzhou/ZGGG	S S	LDD/d LDD/d	2400 bps 2400 bps	None None	IA-5 IA-5						
COOK ISLAND RAROTONGA-S/NCRG Christchurch/NZCH	S	LDD/d	2400 bps	None	IA-5						
DPR KOREA PYONGYANG-S/ZKKK Beijing/ZBBB	S	SAT/d	300 baud	None	IA-5						
FIJI NADI - M/NFFN Brisbane/YBBB Christchurch/NZCH Funafuti/NGFU Noumea/NWWW Tarawa/NGTT United States/KSLC Wallis Is./NLWW	M S S S S M S	LDD/d LDD/d LDD/d LDD/d SAT/d	2400 bps 2400 bps 2400 bps 2400 bps 2400 bps	X.25 X.25 X.25 None X.25	IA-5 IA-5 IA-5 IA-5 IA-5	LDD/d LDD/a	2400 bps 2400 bps	None None	IA-5 IA-5	when traffic justifies	Note 2 Note 2 dial-up Note 2 Note 2 Current routing via Noumea
FRENCH POLYNESIA (FRANCE) PAPEETE/NTAA Christchurch/NZCH	S	LDD/d	2400 bps	X.24	IA-5						
INDIA MUMBAI - M/VABB Bangkok/VTBB Kolkata/VECC Colombo/VCCC Karachi/OPKC Kathmandu/VNKT Muscat Seeb/OOMS Nairobi/HKNC Paro/VQPR	M S M M S M M S	SAT/a LTT SAT/a SAT/a SAT/a SAT/a SAT/a	2400 bps 2x50 50 baud 200 baud 50 baud 300 baud 50 baud	X.25 None None None None None None	IA-5 ITA-2 ITA-2 ITA-2 ITA-2 ITA-2 ITA-2	LDD/d LDD/d SAT LDD/d SAT/a	2400 bps 2400 bps 2400 bps 2400 bps 50 baud	X.25 X.25 X.25 X.25 None	IA-5 IA-5 IA-5 IA-5 ITA-2	09/02 07/02 07/02 09/02 12/02	Note 2 Dial-up

TABLE CNS - 1A AFTN PLAN

Appendix D - 5

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
KOLKATA - S/VECC Dhaka/VGZR Mumbai/VABB	S S	RTT LTT	50 baud 2x50	None None	ITA-2 ITA-2	LTT LDD/d	2400 bps 2400 bps	None X.25	ITA-2 IA-5	12/02 09/02	Routing to be proposed via VTBB/VABF
DELHI - S/VIDD Tashkent/UTTT	S	SAT/a	50 baud	None	ITA-2						
CHENNAI - S/VOMM Kuala Lumpur/WMKK	S	LTT	50 baud	None	ITA-2	LDD/d	2400 bps	X.25	IA-5	07/02	Note 1, 2
INDONESIA											
JAKARTA - S/WIII	S	SAT/d	9600 bps	X.25	IA-5						Note1,2 Note 2
Brisbane/YBBB Singapore/WSSS	S	SAT/d	2400 bps	X.25	IA-5						
JAPAN											
TOKYO - M/RJAA											
Beijing/ZBBB	M	LDD/d	9600 bps	X.25	IA-5						
Hong Kong/VHHH	M	LDD/a	9600 bps	X.25	IA-5						
Russian Federation/UHHH	M	LTT	2400 bps	None	IA-5						
Russian Federation/UUUU	M	LTT	200 baud	None	IA-5	LDD	2400 bps	None	IA-5	12/03	(Moscow)
Naha/ROAH	S	LDD/d	9600 bps	X.25	IA-5						Note 2
Seoul/RKSS	S	LDD/d	9600 bps	X.25	IA-5						
Singapore/WSSS	M	LDD/a	1200 bps	COP-B	IA-5	LDD/d	9600 bps	X.25	IA-5	12/02	
United States/KSLC	M	LDD/d	9600 bps	X.25	IA-5						
NAHA - S/ROAH											
Taibei/RCTP	S	LDD/d	4800 bps	X.25	IA-5						
Tokyo/RJAA	S	LDD/d	9600 bps	X.25	IA-5						
KIRIBATI											
TARAWA - S/NGTT											
Nadi/NFFN	S	LDD/d	2400 bps	None	IA-5						
LAO PDR											
VIENTIANE - S/VLVT											
Bangkok/VTBB	S	SAT/d	300 baud	COP-B	IA-5						Note 2
Hanoi/VVNB	S	SAT/d	9600 bps	None	IA-5						

TABLE CNS - 1A AFTN PLAN

Appendix D - 6

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
MALAYSIA KUALA LUMPUR-S/WMKK Bangkok/VTBB Brunei/WBSB Chennai/VOMM Singapore/WSSS	S S S S	SAT/d LTT LTT SAT/d	2400 bps 75 baud 50 baud 1200 bps	X.25 None None X.25	IA-5 ITA-2 ITA-2 IA-5	LDD/d LDD/d	2400 bps 2400 bps	X.25 X.25	IA-5 IA-5	12/02 07/02	Note 1, 2 Note 1, 2 Note 1, 2 Note 2
MALDIVES MALE - S/VRMM Colombo/VCCC	S	LTT	50 baud	None	ITA-2	SAT/d	2400 bps	X.25	IA-5	12/02	Note 2
MARSHAL ISLAND MAJURO - S/PKMJ United States/KSLC	S	SAT/d	1200 bps	X.25	IA-5						
MICRONESIA FEDERATED STATE OF CHUUK - S/PTKK United States/KSLC	S	SAT/a	1200 bps	X.25	IA-5						
KOSRAE - S/PTSA United States/KSLC	S	SAT/a	1200 bps	X.25	IA-5						
PONAPEI - S/PTPN United States/KSLC	S	SAT/a	1200 bps	X.25	IA-5						
YAP - S/PTYA United States/KSLC	S	SAT/a	1200 bps	X.25	IA-5						
MONGOLIA ULAANBAATAR-S/ZMUB Beijing/ZBBB Russian Federation/UIII	S S	SAT/d LTT	300 baud 50 baud	None None	IA-5 ITA-2						Note 2 (Irkutsk)
MYANMAR YANGON - S/VYYY Bangkok/VTBB Beijing/ZBBB	S S	SAT/d	300 baud	COP-B	IA-5	SAT/d	300 baud	None	IA-5	12/02	Note 2 Note 1,2

TABLE CNS - 1A AFTN PLAN

Appendix D - 7

State/Station	Cat.	CURRENT				PLANNED				Target date of implemen- tation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
NAURU NAURU - S/ANAU Brisbane/YBBB	S					SAT/d	2400 bps	X.25	IA-5		VIA Internet as interium measure
NEPAL KATHMANDU - S/VNKT Beijing/ZBBB Mumbai/VABB	S S	SAT/d SAT/a	300 baud 50 baud	None None	IA-5 ITA-2						
NEW CALEDONIA (FRANCE) NOUMEA - S/NWWW Nadi/NFFN	S	LDD/d	2400 bps	X.25	IA-5						Note 2
NEW ZEALAND CHRISTCHURCH-T/NZCH Brisbane/YBBB Nadi/NFFN Niue/NIUE Papeete/NTAA Rarotonga/NCRG Tongatapu/NFTF USA/KSLC	T S S S S S S	LDD/d LDD/d SAT/d LDD/d	2400 bps 2400 bps 2400 bps 2400 bps	X.25 X.25 X.25 None	IA-5 IA-5 IA-5 IA-5	LDD/d LDD/d	2400 bps 9600 bps	None X.25	IA-5 IA-5	07/02 11/02	Note 2 Note 1, 2 Currently by FAX
NIUE IS NIUE - S/NIUE Christchurch/NZCH	S										Currently by FAX
PAKISTAN KARACHI - M/OPKC Beijing/ZBBB Mumbai/VABB Kabul/OAKB Kuwait/OKBK	M M S M	LTT SAT/a SAT/d SAT/a	50 baud 200 baud 300 baud 50 baud	None None None None	ITA-2 ITA-2 IA-5 ITA-2	LDD/a	300 baud	None	IA-5	05/03	Note 2 Note 2
PALAU KOROR - S/PTRO United States/KSLC	S	SAT/d	1200 bps	X.25	IA-5						
PAPUA NEW GUINEA PORT MORESBY-S/AYPM Brisbane/YBBB	S	SAT/d	9600 bps	X.25	IA-5						Note 2

TABLE CNS - 1A AFTN PLAN

Appendix D - 9

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
THAILAND											
BANGKOK - M/VTBB	M	SAT/a	2400 bps	X.25	IA-5						
Mumbai/VABB	S	SAT/d	300 baud	None	IA-5						
Dhaka/VGZR	S	SAT/d	2400 bps	None	IA-5						
Ho-Chi-Minh/VVTS	M	LDD/d	2400 bps	X.25	IA-5						
Hong Kong/VHHH	S	SAT/d	2400 bps	X.25	IA-5						
Kuala Lumpur/WMKK	S	SAT/d	300 baud	None	ITA-2						Note 1, 2
Phnom Penh/VDPP	M	SAT/d	2400 bps	X.25	IA-5						Note 2
Rome/LIII	M	LDD/d	1200 bps	X.25	IA-5						
Singapore/WSSS	S	SAT/d	300 baud	COP-B	IA-5						
Vientiane/VLVT	S	SAT/d	300 baud	COP-B	IA-5						
Yangon/VYYY	S	SAT/d	300 baud	COP-B	IA-5						
TONGA											
TONGATAPU - S/NFTF	S					LDD/d	2400 bps	None	IA-5	07/02	
Cristchurch/NZCH											
TUVALU											
FUNAFUTI - S/NGFU	S					LDD/d	2400 bps	None	IA-5		Dial-up, When traffic justify, Note 2
Nadi/NFFN											
UNITED STATES											
USA-M/KSLC											
Apia/NSFA	S	LDD/d	2400 bps	X.25	IA-5						
Brisbane/YBBB	M	SAT/d	2400 bps	X.25	IA-5						
Christchurch	S					LDD/d	9600 bps	X.25	IA-5	11/02	
Chuuk/PTKK	S	SAT/d	1200 bps	X.25	IA-5						
Koror/PTRO	S	SAT/d	1200 bps	X.25	IA-5						
Kosrae/PTSA	S	SAT/d	1200 bps	X.25	IA-5						
Majuro/PKMJ	S	SAT/d	1200 bps	X.25	IA-5						
Nadi/NFFN	M	SAT/d	2400 bps	X.25	IA-5	LDD/d				08/02	
Pago Pago/NSTU	S	SAT/d	2400 bps	X.25	IA-5						
Ponapei/PTPN	S	SAT/a	1200 bps	X.25	IA-5						
Tokyo/RJAA	M	LDD/d	9600 bps	X.25	IA-5						
Yap/PTYA	S	SAT/d	1200 bps	X.25	IA-5						
VANUATU											
PORT VILA - S/NVVV											
Brisbane/YBBB	S	LTT	300 baud	None	ITA-2						SITA

TABLE CNS - 1A AFTN PLAN

Appendix D - 10

State/Station	Cat.	CURRENT				PLANNED				Target date of implementation	Remarks
		Type	Signalling Speed	Protocol	Code	Type	Signalling Speed	Protocol	Code		
1	2	3	4	5	6	7	8	9	10	11	12
VIET NAM HANOI-S/VVNB Vientiane/VLVT Ho-Chi-Minh/VVTS Guangzhou/ZGGG	S S S	SAT/d SAT/d	9600 bps 9600 bps	None None	IA-5 IA-5	SAT/d					
HO-CHI-MINH - S/VVTS Bangkok/VTBB	S	SAT/d	2400 bps	None	IA-5						
Hanoi/VVNB		SAT/d	9600 bps	None	IA-5						
Hong Kong/VHHH	S	SAT/d	2400 bps	None	IA-5						
Singapore/WSSS	S	SAT/a	300 baud	None	IA-5						
WALLIS IS. (FRANCE) WALLIS - S/NLWW Nadi/NFFN	S					LDD/A	2400 bps	None	IA-5		Current routing via Noumea

INTERNATIONAL CIVIL AVIATION ORGANISATION
ASIA PACIFIC OFFICE



ATN DOCUMENTATION TREE

April 2002

Version 1.0

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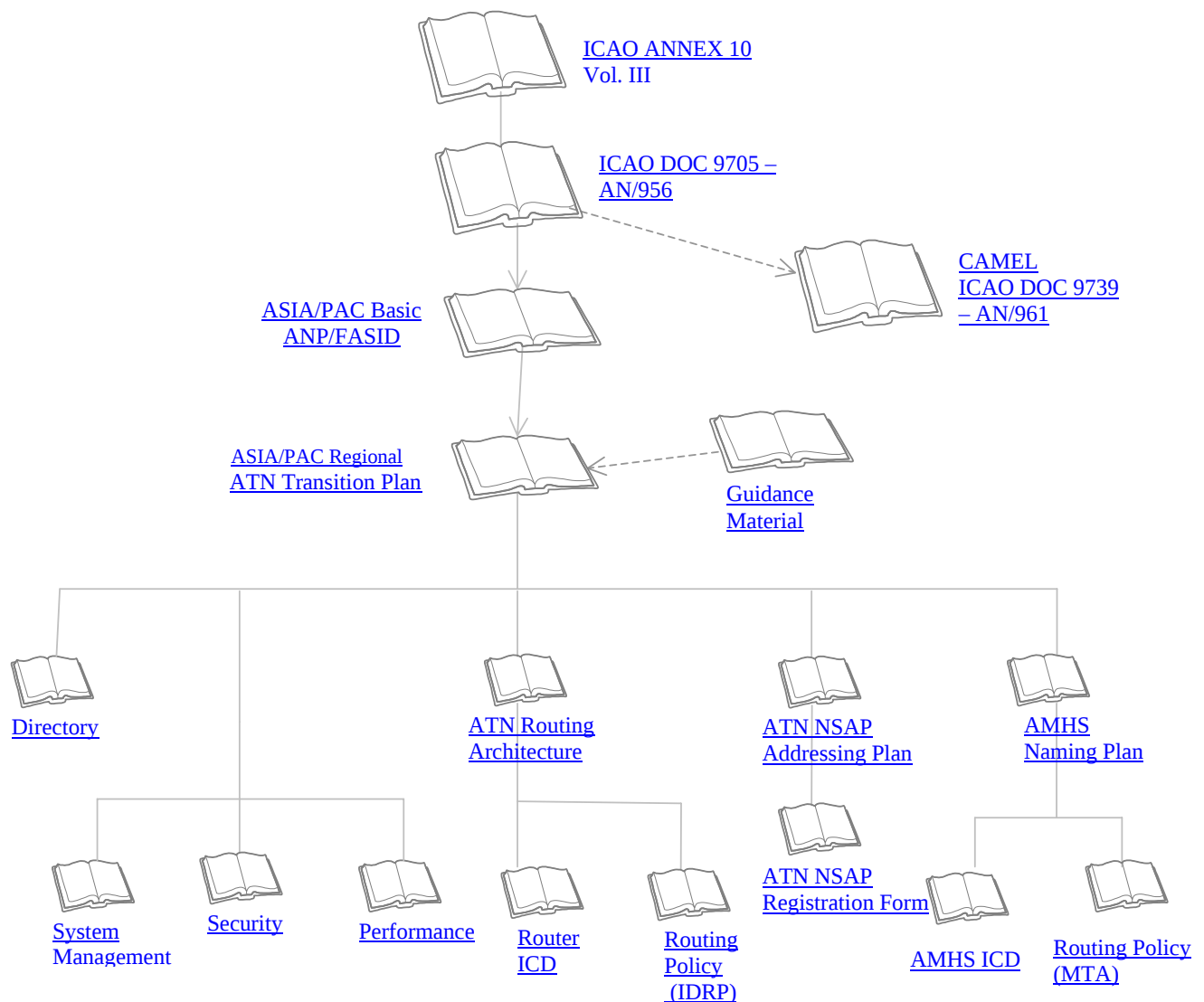
Table of Contents

1	SCOPE.....	3
2	DOCUMENTATION TREE.....	3
3	DOCUMENTATION PROFILES	4
3.1	ICAO ANNEX10 VOL. III.....	4
3.2	MANUAL OF TECHNICAL PROVISIONS FOR THE AERONAUTICAL TELECOMMUNICATION NETWORK - ICAO DOC 9705 – AN/956 3 RD EDITION	4
3.3	COMPREHENSIVE AERONAUTICAL TELECOMMUNICATIONS NETWORK MANUAL (CAMEL) - ICAO DOC 9739 – AN/961.....	5
3.4	ROUTING POLICY (IDRP)	5
3.5	ROUTING POLICY (MTA)	5
3.6	DIRECTORY	5
3.7	SYSTEM MANAGEMENT.....	5
3.8	PERFORMANCE	5
3.9	SECURITY	5
3.10	ROUTER ICD.....	6
3.11	ATN GROUND-GROUND TRANSITION PLAN.....	6
3.12	ATN ROUTING ARCHITECTURE	6
3.13	ATN NSAP ADDRESSING PLAN	7
3.14	AMHS NAMING PLAN.....	7
3.15	ATN NSAP REGISTRATION FORM.....	7
3.16	GUIDANCE MATERIAL FOR GROUND ELEMENTS IN ATN TRANSITION	8
3.17	AMHS ICD	8
3.18	FACILITIES AND SERVICES IMPLEMENTATION DOCUMENT (FASID)	9

1 Scope

This document has been developed to serve as index and hierarchy of all documentations associated with the ATN in the Asia Pacific Region. A hierarchical representation of the relationships between the various documents is presented in section 2 “Documentation Tree”, with associated document descriptions located in section 3 “Documentation Profiles”.

2 Documentation Tree



3 Documentation Profiles

3.1 ICAO Annex10 Vol. III

Title:

International Standards and Recommended Practices, Aeronautical Telecommunications, Annex 10 Volume III.

Latest Version: March 2001

Purpose:

This ICAO document defines the Standards and Recommended Practices (SARPs) for the Aeronautical Telecommunications Network (ATN).

Contents:

Subjects covered by the document:

- Part I – Digital Data communication Systems.
 - Chapter 1 – Definitions.
 - Chapter 3 – Aeronautical Telecommunication Network.
 - Chapter 4 – Aeronautical Mobile-Satellite Service.
 - Chapter 6 – VHF Air-Ground Digital Link (VDL).
 - Chapter 8 – AFTN.
- Part II – Voice Communication Systems.
 - Chapter 2 – Aeronautical Mobile Service.
 - Chapter 4 – Aeronautical Speech Circuits.
 - Chapter 5 – Emergency Locator Transmitter (ELT) for search and rescue.

3.2 *Manual of Technical Provisions for the Aeronautical Telecommunication Network - ICAO DOC 9705 – AN/956*

Title:

Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN).

Latest Version: 3rd Edition

Purpose:

This ICAO manual contains detailed technical information and serves to further elaborate on the ATN standards as defined in Chapter 3 of Annex 10, Volume III, Part I.

Contents:

Subjects covered by the document:

- Sub-Volume I – Introduction and System Level Requirements.
- Sub-Volume II – Air-Ground Applications.
- Sub-Volume III – Ground-Ground Applications.
- Sub-Volume IV – Upper Layer Communications Services (ULCS).
- Sub-Volume V – Internet Communications Services (ICS).
- Sub-Volume VI – ATN Systems Management Provisions.
- Sub-Volume VII – ATN Directory Service.
- Sub-Volume VIII – ATN Security Service.
- Sub-Volume IX – ATN Identifier Registration.

3.3 Comprehensive Aeronautical Telecommunications Network Manual (CAMEL) - ICAO DOC 9739 – AN/961

Title:

Comprehensive Aeronautical Telecommunications Network (ATN) Manual.

Latest Version: 1st Edition - 2000

Purpose:

This document provides guidance material in support of the ATN SARPS as defined in Annex 10, Vol. III and Doc. 9705.

Contents:

Subjects covered by the document:

- Components, functionality and concepts of the ATN.
- ATN Internet lower layer routing protocols.
- ATN Upper layer application protocols.
- ATN subnetworks and corresponding SNDCEF's layers.
- Air-ground applications, ADS, CPDLC, CM, FIS.
- Ground-Ground applications ATSMHS, AIDC.

3.4 Routing Policy (IDRP)

To be developed.

3.5 Routing Policy (MTA)

To be developed.

3.6 Directory

To be developed.

3.7 System Management

To be developed.

3.8 Performance

To be developed.

3.9 Security

To be developed.

3.10 Router ICD

To be developed.

3.11 ATN Ground-Ground Transition Plan

Title:

ASIA/PAC ATN Transition Plan.

Latest Version: 1.0

Purpose:

This document describes the transition activities that are to be performed by States in the region for a coordinated migration from AFTN to the new ATN environment.

Contents:

Subjects covered by the document:

- Existing ground infrastructure.
- ATN End system applications.
- ATN Traffic, both ground-ground and air-ground communication paths.
- ATN routing architecture.
- ATN backbone trunks.
- Interconnection of ATN routers.
- Transition activities.

Remarks:

Subsequent to discussions stemming from the CNS/MET SG/5 meeting much of the document's contents has been included into the CNS FASID. This document will under go no further revisions.

3.12 ATN Routing Architecture

Title:

ASIA/PAC ATN Routing Architecture.

Latest Version: 1.0

Purpose:

This document presents the routing architecture for the ground-ground infrastructure to eventually replace the existing AFTN. It is intended that this architecture will also be suitable for the accommodation of the air-ground communications traffic at some later time.

Contents:

Subjects covered by the document:

- Routing Domain Fundamentals.
- Router Fundamentals.
- ASIA/Pacific regional routing architecture.
- Routing domains.
- ATN Transition.

3.13 ATN NSAP Addressing Plan

Title:

ASIA/PAC ATN Addressing Plan.

Latest Version: 1.0

Purpose:

This document presents recommendations for the assignment of ATN NSAP addresses within the region. It also defines the methods by which values are assigned to each field of the NSAP Address and specifies the assumptions upon which the addressing format has been defined.

Contents:

Subjects covered by the document:

- NSAP Address structure adopted by states of the ASIA/PAC Region.
- Recommendations for the values of each field of the NSAP address.
- Authority responsible for NSAP field assignments.

3.14 AMHS Naming Plan

Title:

ASIA/PAC AMHS Naming Plan.

Latest Version: 1.0

Purpose:

This document presents recommendations for the AMHS naming conventions to be adopted by AMHS users within the region.

Contents:

Subjects covered by the document:

- MF-Addressing scheme.
- XF-Addressing scheme.
- Conventions for use of MF-Addressing Format.
- Conventions for use of XF-Addressing Format.
- General use of X.400 O/R Addresses.

3.15 ATN NSAP Registration Form

Title:

ASIA/PAC ATN NSAP Registration Form.

Latest Version: 1.0

Purpose:

This document specifies the information that is required for registration of devices that are to connect to the ATN environment within the Region.

Contents:

Subjects covered by the document:

- Registration of NSAP Addresses for ATN Routers and ATN End-System.
- Registration of Communication Circuits for ATN Routers and ATN End-Systems.

3.16 Guidance Material for Ground Elements in ATN Transition

Title:

Guidance Material for Ground Elements in ATN Transition.

Latest Version: 2.0

Purpose:

This document contains guidance material for ATN transition planning within the ASIA/PAC region.

Contents:

Subjects covered by the document:

- ATN overview
 - Ground-ground service components.
 - Air-ground service components.
 - ATN security service.
 - ATN system management.
 - ATN directory.
- Planning Issues to be considered
 - ATM operational concept.
 - Transition planning.
 - Implementation planning.
 - Proposed regional planning activities for transition.
 - Proposed State planning activities for transition.
- Guidance material for ground based elements
 - Integration of new and existing infrastructure.
 - Message service definition, benefit and procedure in inter-domain operation.
 - Guidance for administrative domain definition.
 - Guidance for architectural design of ATN ground elements.
 - Connection for inter-domain operation and guidance material.
 - Identification of traffic type, quality of service with respect to inter-domain operation.
 - Performance issues of reliability, maintainability, and reliability with respect to inter-domain operation.
 - Transition paths and transitional procedure in inter-domain operation.
 - Cost analysis of ATN ground elements in transitional development for inter-domain operation.
 - ATN security solution.

3.17 AMHS ICD

Title:

ICD for ATS Message Handling System (AMHS) in Asia/Pacific Region

Latest Version: 1.0

Purpose:

This ICD has been developed in order to facilitate interoperability between States in the deployment of AMHS within the ASIA/PAC region.

Contents:

Subjects covered by the document:

- AMHS functions.
- Network configuration.
- Protocol specification overview.
- AMHS specifications.
- Upper layer specifications.
- Lower layer specifications.
- AHMS PICS.

3.18 Facilities and Services Implementation Document (FASID)

Title:

Facilities and Services Implementation Document.

Latest Version: To be advised.

Purpose:

This document contains elements of Part IV, CNS of the ASIA/PAC FASID.

Contents:

Subjects covered by the document:

- Table 1A, AFTN/Data Circuit Plan.
- Table 1B, ATN Router Plan.
- Table 1C, ATSMHS Routing Plan.
- Table 1D, AIDC Circuit Plan.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix F to the Report

ASIA/PAC (ICD)

ATS Message Handling System (AMHS)

Version 1.0

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

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INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

DOCUMENT CONTROL LOG

Version	Revised contents	Date
1.0	Version 1.0 as endorsed by the ATNTTF.	9 April 2002

TABLE OF CONTENTS

1. Guidance for AMHS specification
 - 1.1 Introduction
 - 1.2 AMHS Functions
 - 1.3 Network Configuration
 - 1.4 Protocol Specification Overview
2. AMHS Specifications
 - 2.1 Guidance for Optional Parameters
 - 2.2 AMHS Specifications
 - 2.3 Upper Layer Specifications
 - 2.4 Lower Layer Specifications

Appendix: PICS of AMHS

<References>

- 1) ICAO Doc 9705/AN-956, "MANUAL OF TECHNICAL PROVISIONS FOR THE AERONAUTICAL TELECOMMUNICATION NETWORK (ATN)", SECOND EDITION (Effective 10 December 1999)
 - a) Sub-Volume I : 1.1 "DEFINITIONS AND REFERENCES"
 - b) Sub-Volume III : 3.1 "ATS Message Handling Services (ATSMHS)"
 - c) Sub-Volume V : "Internet Communication Service"
- 2) ICAO Doc 9739/AN-961 Comprehensive ATN Manual (Edition 1)
- 3) ICAO Annex 10, Vol. II, Fifth edition (July 1995)

NOTE: This ICD does not include the additional features such as CIDIN/AMHS Gateway, Security and Directory Service which are added in ICAO Doc 9705/AN-965, THIRD EDITION. This ICD may be enhanced to include such additional features in the future.

1. Guidance for AMHS specification

1.1 Introduction

1.1.1 This document is the Interface Control Document (ICD) based on which the AMHS is to be implemented in the Asia/Pacific Region. It is essential that the implementation of the AMHS be fully compliant with ICAO ATN SARPs (Doc9705) as well as this ICD, in order to preserve interoperability between States and ensure that future ATN applications are accommodated. To assist the reader, the following clauses serve as an overview of the AMHS and its underlying network protocols.

1.2 AMHS Functions

1.2.1 The AMHS defines two End Systems, these being an AFTN/AMHS Gateway and an ATS Message Server (with ATS Message User Agent). It is expected that early implementations of AMHS will require the use of an AFTN/AMHS Gateway as during the transitional process to full AMHS AFTN may need to operate concurrently with AMHS either within or between outside States. However, it is also possible to replace AFTN with ATS Message Server (with User Agent) all at once, in this situation there will be no need for AFTN/AMHS Gateways as AFTN will not be required to coexist with AMHS.

NOTE: ATN Pass-Through Service (AFTN/ATN Type A Gateway) should not be implemented since it cannot be connected with AFTN/AMHS Gateway nor ATS Message Server. The description concerning the ATN Pass-Through Service has been deleted in the Third Edition of ICAO ATN SARPs. In addition, CIDIN/AMHS Gateway has been added as a new End System of AMHS in the Third Edition SARPs.

1.2.2 Even in the case that all the AFTN connections within States (i.e. domestic communication) are replaced with X.400 (MHS and NOT AMHS) connections, the connections outside State (i.e. international communication using ATN Routers) are to be complied with ICAO ATN SARPs and this ICD. When the domestic communication is implemented prior to the international communication, the domestic MHS Server may be so modified as to comply with ATN.

1.3 Network Configuration

1.3.1 The network configuration will grow according to the level of implementation of AMHS. The followings are the typical phases of AMHS implementation. The network configuration of each phase is shown in Figure 1.

1) Phase-1

AFTN connections are currently used for both all the domestic communication within State and all the international communication with other States.

2) Phase-2

AFTN/AMHS Gateways and ATN Routers are implemented for the international communication between at least two States.

3) Phase-3

Domestic AFTN connections are replaced with AMHS connections within State. AFTN/AMHS Gateway is enhanced to ATS Message Server. However, AFTN/AMHS Gateway System/Function remains for the AFTN connections (like State C in Figure). There may be AMHS-AMHS direct international communication (via ATN Routers) with the other States.

NOTE: It is a local matter whether to implement ATS Message Server and AFTN/AMHS Gateway in separated computer systems or in one computer system.

4) Phase-4

All the States in the Region implement either ATS Message Server or AFTN/AMHS Gateway and all the international communications are done by AMHS. There may be AMHS-AMHS direct international communication (via ATN Routers) with the other States.

5) Phase-5

AMHS connections are fully applied to both the domestic communication within States and the international communication with all the neighbor States.

6) Phase-6

Full ATN connection is applied within the Region. All the data of ATN applications including AMHS are exchanged through ATN Routers.

1.3.2 The systems in Figure 1 are as follows;

AMHS Gateway : AFTN/AMHS Gateway

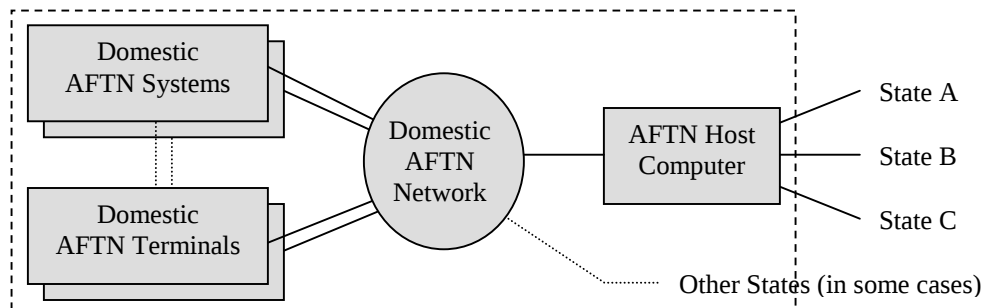
AMHS Server : ATS Message Server (enhanced from AFTN/AMHS Gateway)

End Systems of ATN Applications

: End Systems of ATN applications including Air/Ground applications such as CM (Context Management), ADS (Automatic Dependent Surveillance), CPDLC (Controller and Pilot Data Link Communication) or FIS (Flight Information Service), whose ground to ground data is forwarded through the same ground network using ATN routers. The system may consist of computer(s) and/or equipment for ATN application for communication, ATM application, Human Machine Interface and maintenance.

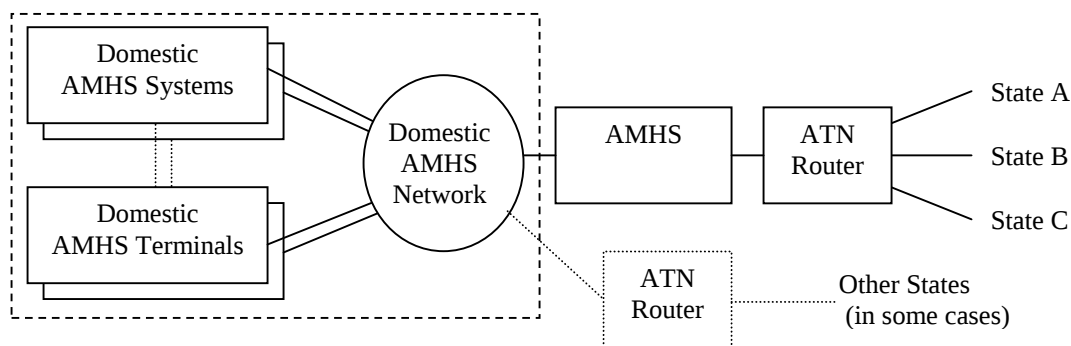
INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

AFTN System : AFTN host computer, domestic AFTN network and distributed AFTN systems/terminals (as shown below for an example)

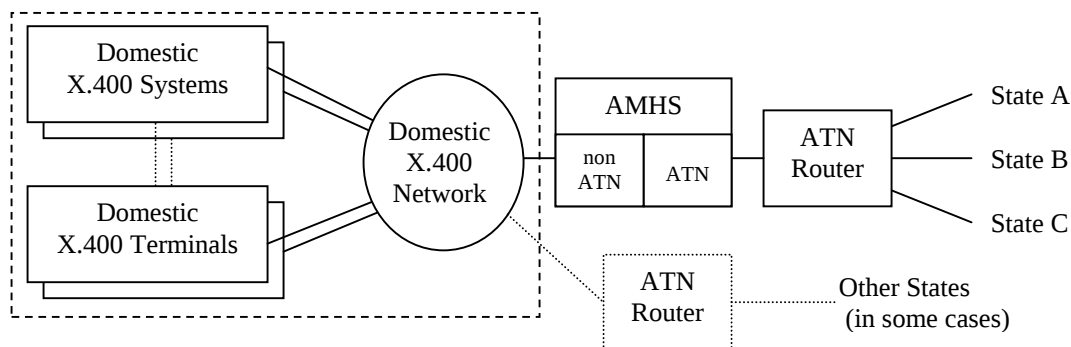


AMHS System : domestic AMHS (or X.400 MHS) network, distributed AMHS (or X.400 MHS) systems/terminals (User Agents) and AMHS (or X.400 MHS) local servers if necessary (as shown below for an example)

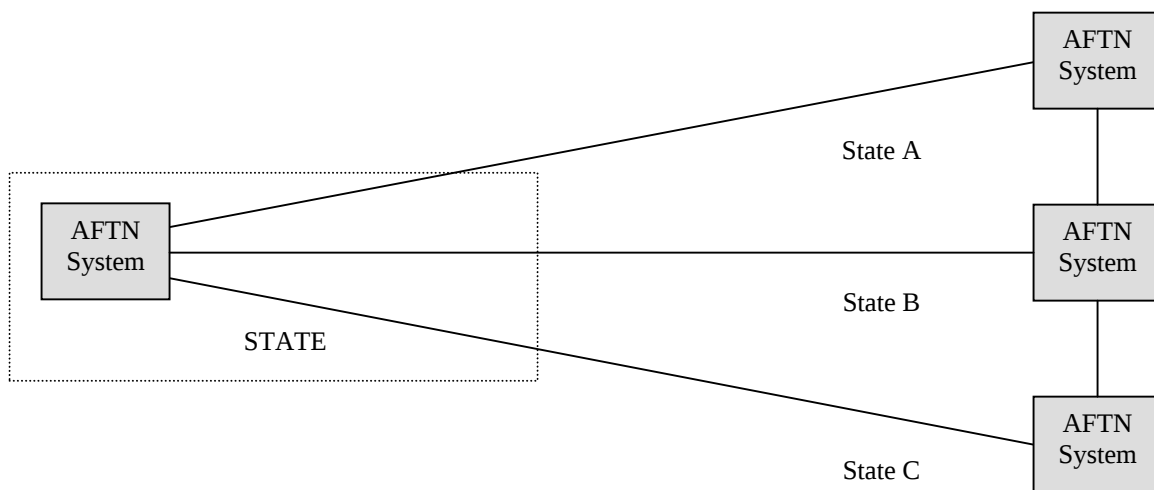
AMHS domestic connections



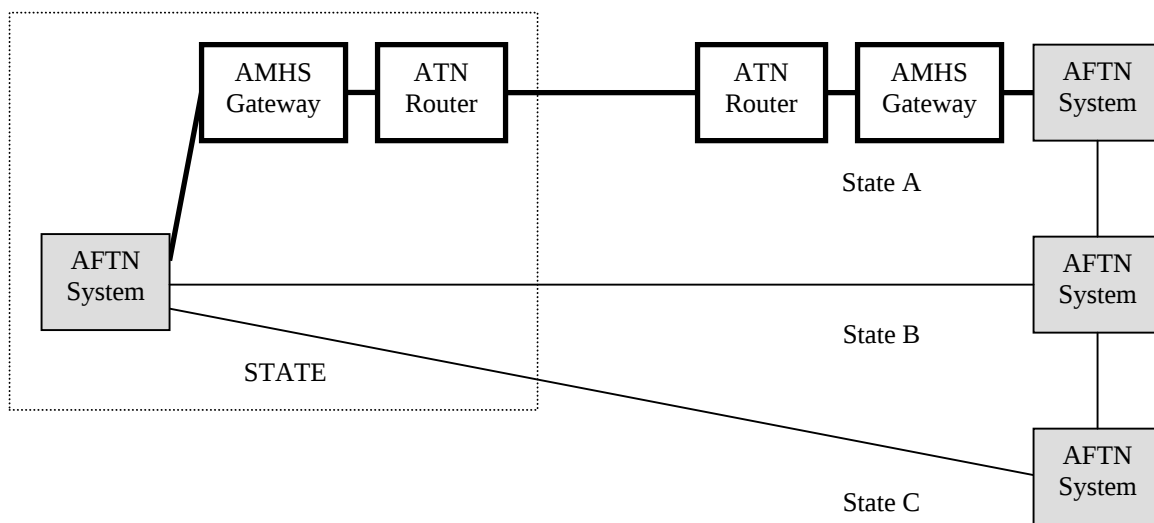
X.400 MHS domestic connections



INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)



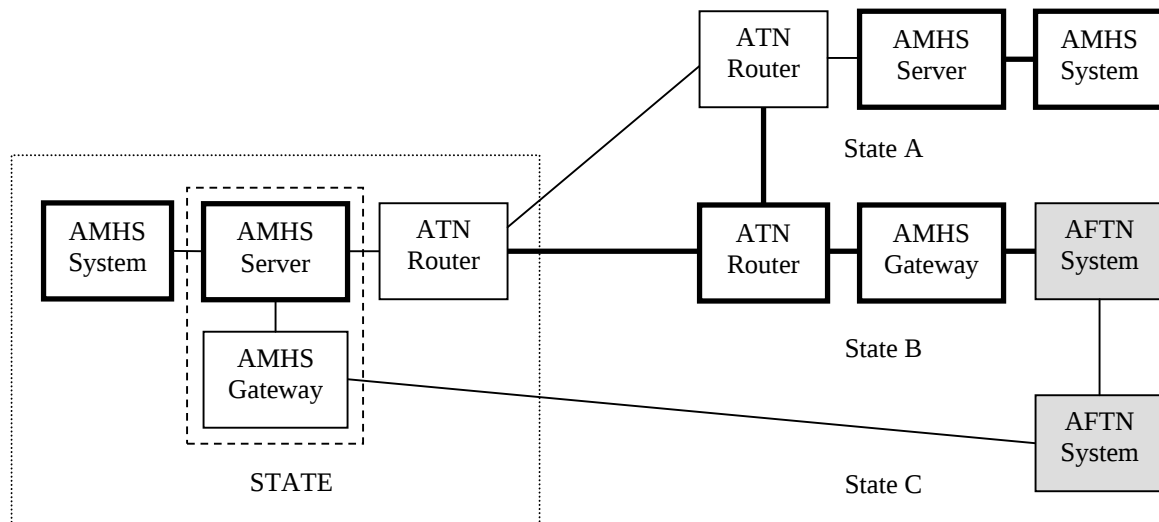
(1) Phase-1
Current AFTN connections



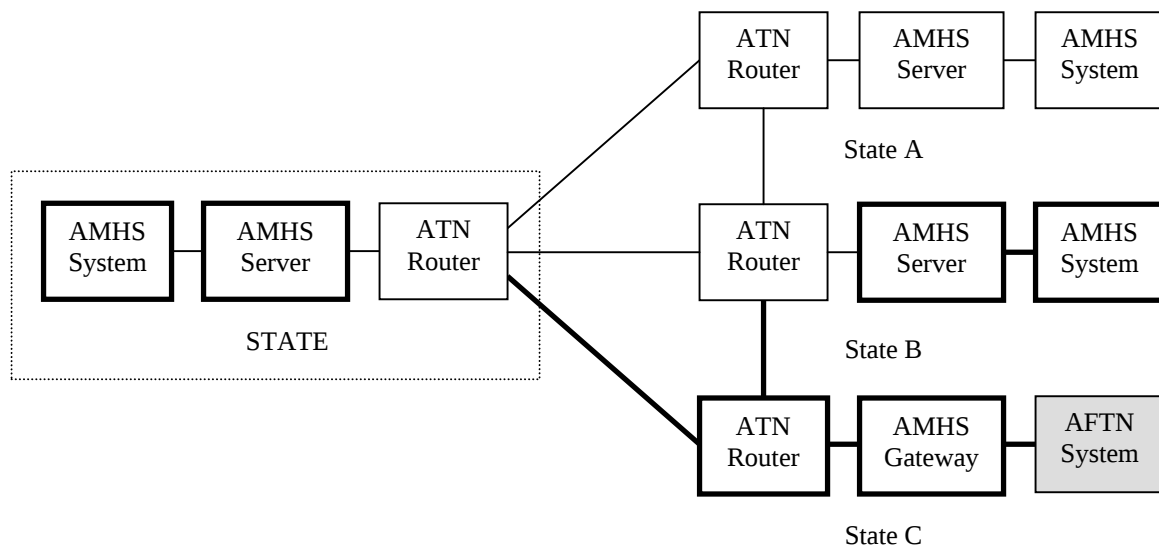
(2) Phase-2
Implementation of AFTN/AMHS Gateways and ATN Routers

Figure 1. AMHS Network Configuration (to be continued)

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

**(3) Phase-3**

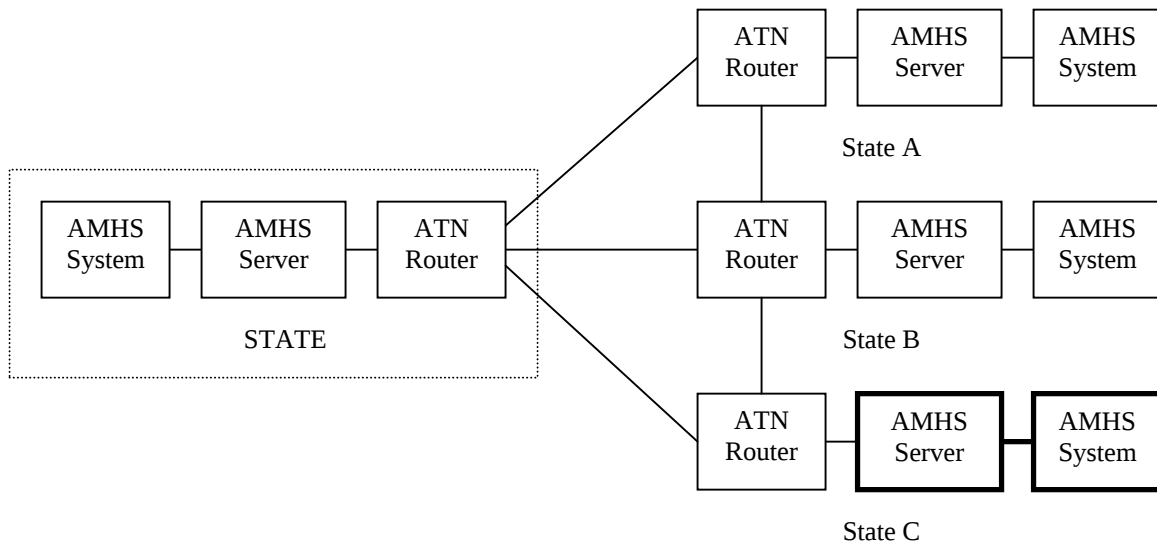
Implementation of ATS Message Server and AMHS connections within State

**(4) Phase-4**

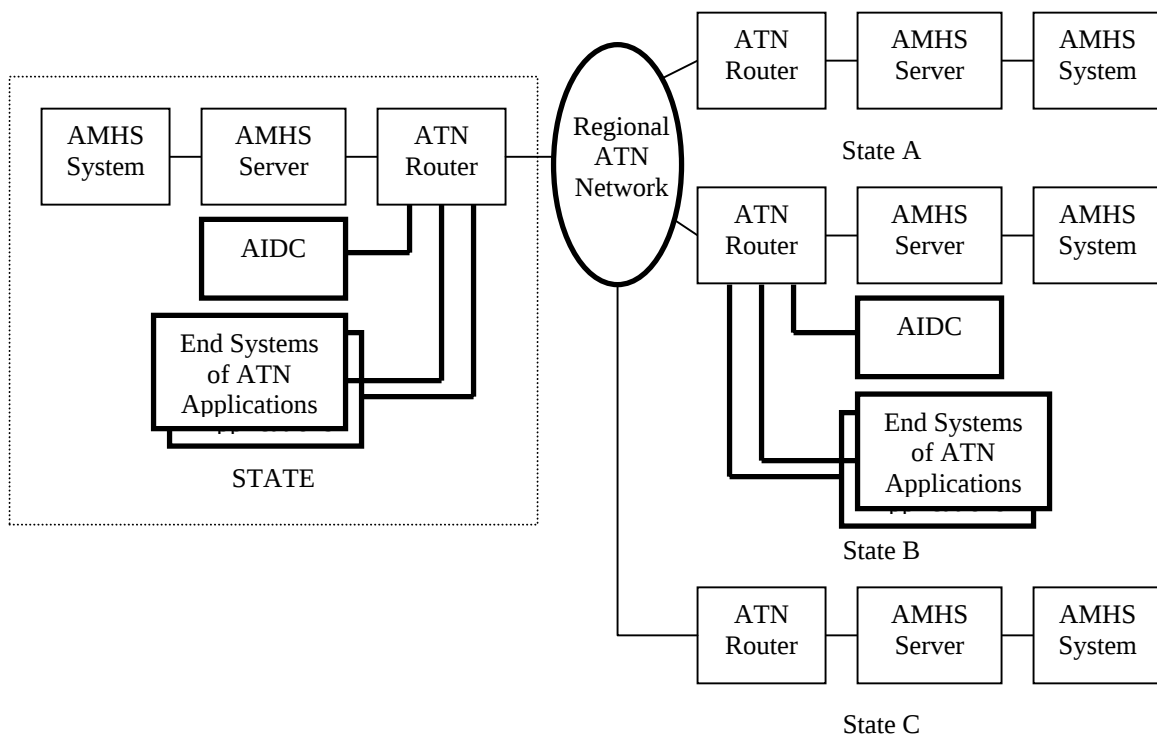
Full AMHS international connections

Figure 1. AMHS Network Configuration (to be continued)

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)



(5) Phase-5
Full AMHS connections



(6) Phase-6
Full ATN connections

Figure 1. AMHS Network Configuration

1.4 Protocol Specification Overview

1.4.1 Protocol Stack of AMHS and ATN Router

1.4.1.1 The following figure shows the OSI protocol stack of ES and IS in the ATN. AMHS is ES and ATN Router is IS.

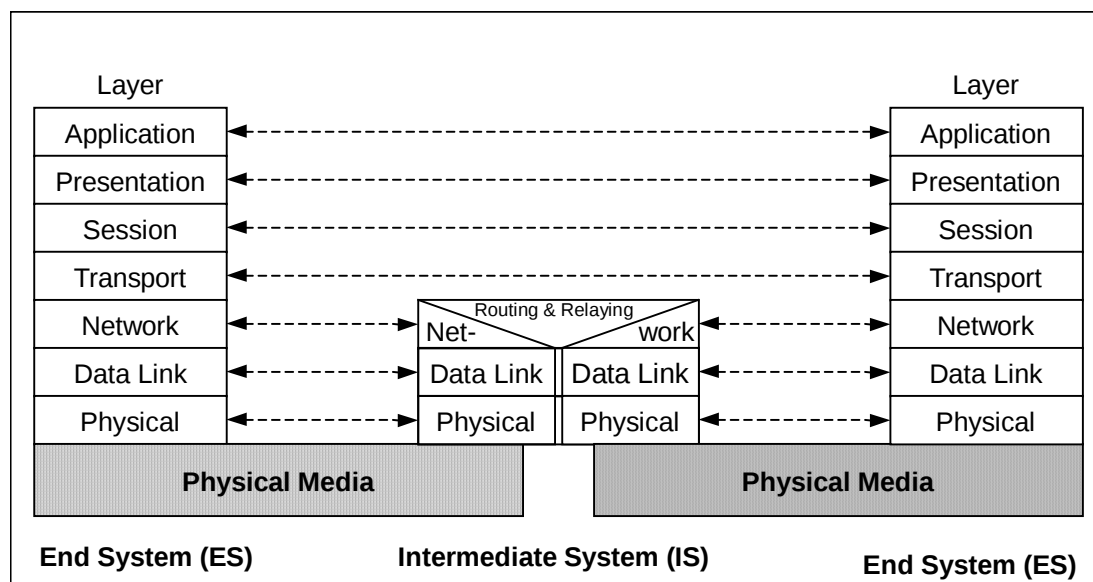


Figure 2. OSI Protocol Stack of ES and IS

1.4.2 AMHS Protocol Specification

1.4.2.1 The followings are the standards and/or ICAO Doc 9705/AN-956 descriptions of protocols at each OSI protocol layer, with which AMHS should comply.

(1) Application Layer

Application Layer is composed of MHS, RTSE, and ACSE.

MHS should comply with ITU-T X.400 (1988) and the additional requirements specified in 3.1 “ATS MESSAGE HANDLING SERVICE” of ICAO Doc 9705/AN-956. MHS supports all the mandatory elements of AMH11 and AMH21, and also supports the DL functional group.

RTSE should comply with ISO 9066-2 and support the mandatory services listed below among the services specified in ISO/IEC ISP 10611-2.

RT-OPEN
RT-CLOSE
RT-TRANSFER
RT-P-ABORT
RT-U-ABORT

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

ACSE should comply with ISO 8650 and support the mandatory functions of normal mode specified in ISO/IEC 10611-2. Moreover, the application-context name, which is used as a parameter of A-ASSOCIATE, should comply with ISO/IEC 10021-6.

(2) Presentation Layer

Presentation Layer should comply with ISO 8823 and support mandatory functions of normal mode specified in ISO/IEC ISP 10611-2.

(3) Session Layer

Session Layer should comply with ISO 8327 and support functional units listed below which are specified in ICAO Comprehensive ATN Manual and ISO/IEC ISP 10611-2.

Kernel
half duplex
exceptions
minor synchronize
activity management

(4) Transport Layer

COTP (Connection Oriented Transport Protocol) specified in ICAO Doc 9705/AN-956 should be used. COTP should comply with ISO/IEC8073 Class 4 and 5.5 “TRANSPORT SERVICE AND PROTOCOL SPECIFICATION” of ICAO Doc 9705/AN-956. The following functions should be supported as specified mandatory by ICAO Doc 9705/AN-956.

Both Initiating CR TPDU and Responding to CR TPDU	
Function of Non-use of checksum	
CR/CC/DR/DC/DT/ED/AK/EA/ER TPDUs	
Optional Parameters of CR/CC TPDUs	
	TSAP-ID (Transport-Selector designation)
	Additional option selection parameter
	Priority
	Acknowledgment time Negotiation
	Inactivity timer Negotiation
Optional Parameters of AK TPDU	
	Flow control confirmation
	Subsequence number

(5) Network Layer

The connection between AMHS and ATN Router may be a local matter. However, CLNP (Connectionless Network Protocol) should be used for the communication of subnetwork with Transport Layer. CLNP should comply with ISO/IEC8473 and 5.6 “INTERNETWORK SERVICE AND PROTOCOL SPECIFICATION” of ICAO Doc 9705/AN-956. The following functions should be supported as specified mandatory by ICAO Doc 9705/AN-956.

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Security Parameter
Partial Route Recording
Priority
QoS Maintenance Information
Congestion Notification
X.25 Priority procedure

CLNP uses SNDCEF (Subnetwork Dependent Convergence Function) over the subnetwork. SNDCEF should comply with ISO/IEC 8473-3 and 5.7 "SPECIFICATION OF SUBNETWORK DEPENDENT CONVERGENCE FUNCTIONS" of ICAO Doc 9705/AN-956. Only ES-IS in compliance with ISO/IEC9543 is used for addressing. Routing protocol IDRP will not be supported.

(6) Data Link Layer

The connection between AMHS and ATN Router may be a local matter.

(7) Physical Layer

The connection between AMHS and ATN Router may be a local matter.

2. AMHS Specification

2.1 Guidance for Optional Parameters

2.1.1 In the ICAO ATN SARPs (Doc 9705) as well as the International Standards, there are two kinds of parameters specified as “Mandatory” and “Optional”.

“Mandatory” parameters are the requirements that all the AMHS must handle the parameters.

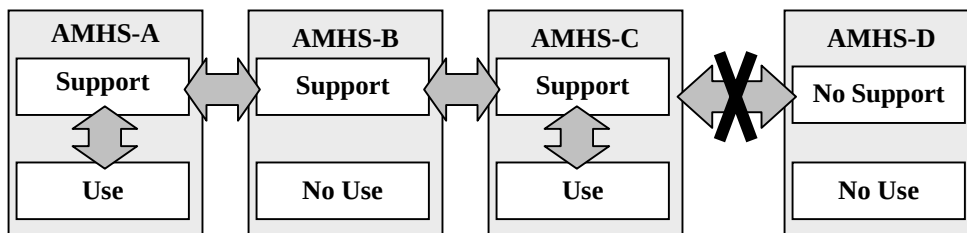
“Optional” parameters are specified as local matters and the handling must be decided locally; within State or Region.

2.1.2 In addition, each handling of parameter is specified by two profiles: “AMHS Support” and “AMHS Use”.

“AMHS Support” means that the AMHS can receive or transfer the parameter.

“AMHS Use” means that AMHS uses the functionality specified by the parameter.

Conversely, “No Support” means that the AMHS cannot receive nor transfer the parameter, and “No Use” means that AMHS does not use the functionality.



AMHS-B does not use the optional parameter, however it can transfer the parameter.

AMHS-D does not support the optional parameter, therefore it cannot receive the parameter.

There is no combination of “No Support” with “Use”.

When AMHS-B receives the parameter, no action will be performed.

When AMHS-D receives the parameter, there may be some error, which will depend on the system.

2.1.3 In order to keep the interoperability within the State and/or Region, it is necessary to unify the handling of the optional parameters by specifying the “AMHS Support” and “AMHS Use” uniformly.

2.1.4 As for the Inter-Regional AMHS connection, it is also preferable to unify the specification between the regions. However, in case there will be difference, handling of such difference will be done at either of the following AMHSs:

- 1) AMHS in the region who wants to communicate directly with the AMHS in the other region.
(This is the case when direct routing by BISs will be applied, where direct AMHS connection can be made.)
- 2) AMHS in the State who has Inter-Regional Trunk Connection by Backbone BIS.
(This is the case when AMHS routing will be applied, where all the connection of the AMHS in the region with the other region will be made, all the time, via the AMHS in the said State.)

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NOTE : The detail of the handling for the difference deeply depends on which parameter will be concerned and how. Therefore, it is recommended to discuss the issue in the region when it becomes revealed. It is also recommended to watch the status in the other regions.

2.2 AMHS Specifications

2.2.1 Set up condition of each parameter for both AFTN/AMHS Gateway and ATS Message Server is specified in the appendix in the form of PICS. (Appendix: PICS of AMHS)

2.2.2 When only ATS Message Server without AFTN/AMHS Gateway is implemented, some part (the column "AMHS Action") in the PICS can be ignored.

2.3 Upper Layer Specifications

2.3.1 Protocol Specification

The meaning of the each column in the tables is as follows:

(1) PICS Proforma Reference

The first letter of the column identifies the specific PICS proforma.

- A : ACSE – ISO/IEC 8650-2
- P : Presentation – ISO/IEC 8823-2
- S : Session – ISO/IEC 8327-2

The characters from the second character to the solidus (/) form a reference to the specific sub clause in annex A of that PICS proforma which contains the table in question.

The number after the solidus references the row number in the table.

(2) Name of Item

(3) Normative reference

It is the referenced clause number in the ISO/IEC ISP 11188-1(1995).

(4) Status

Support Level is specified below:

- m : mandatory support
- o : optional support
- o.n : optional with at least one of the marked items with the same number “n” being selected
- c : conditional support
- i : out of scope
- : not applicable

Where the status entry contains two classifications separated by a comma, these reference the sending and receiving capabilities respectively.

(5) Profile

The profile column reflects the requirement of this part of ISO/IEC ISP 11188. Each entry in this column is chosen from the following list:

- m : mandatory support
- C : conditional support
- i : out of scope

Where the profile entry contains two classifications separated by a comma, these reference the sending and receiving capabilities respectively.

The value of “Cxx” is “m” or “i” according to the specified condition described below the each table.

NOTE: The definition of the value of “Cxx” is made by the following procedures:

- a) Confirm the item of reference number.

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

- b) If AMHS supports referenced item, the item is “m” (mandatory).
- c) If AMHS does not support referenced item, the item is “i” (out of scope).

<Example> The following is an example in the case of “support operation of Session version 2” for ACSE in the next clause 2.3.1.1.

1) Condition

C11: if A.A.7/1 (1st row in the table of A.7 of ISO/IEC 8650-2) then m else I

2) Procedures

- a) The 1st row in the table of A.7 of ISO/IEC 8650-2 is the “Normal mode”.
- b) If AMHS supports “Normal mode”, “support operation of Session version 2” is “m” (mandatory).
- c) If AMHS does not support “Normal mode”, “support operation of Session version 2” is “i” (out of scope).

(6) AMHS Use

The column “AMHS use” states whether each item is “used (yes)” or “not used (no)”.

2.3.1.1 ACSE

2.3.1.1.1 ACSE should comply with ISO 8650 and support the level specified in ISO/IEC ISP 11188-1(1995).

PICS Proforma Reference	Name of Item	Normative reference	Status	Profile	AMHS Use
A.A.7/4 (4th row in the table of A.7 of ISO/IEC 8650-2)	support operation of Session version 2	9.2.1	o	C11	Yes

C11 : if A.A.7/1 (1st row in the table of A.7 of ISO/IEC 8650-2) then m else i

NOTE: The relation between the Initiator/responder roles of ACSE, presentation and session in specified in 2.2.2 and 2.2.3.

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

2.3.1.2 Presentation PRL

2.3.1.2.1 Presentation PRL should comply with ISO 8823 and should support the level specified in ISO/IEC ISP 11188-1(1995) and AMHS Requirements.

Table 1 ISO/IEC ISP 11188-1

PICS Proforma Reference	Name of Item	Normative reference	Status	Profile	AMHS Use
P.A.6.1/1 (1st row in the table of A.6.1 of ISO/IEC 8823-2)	X.410(1984)	2.2.2	o.01	C21	No
P.A.6.1/2 (2nd row in the table of A.6.1 of ISO/IEC 8823-2)	Normal	2.2.2	o.01	C22	Yes
P.A.7.1.1.1/1 (1st row in the table of A.7.1.1.1 of ISO/IEC 8823-2)	Initiator(Presentation connection)		o.03	C23	Yes
P.A.7.1.1.1/2 (2nd row in the table of A.7.1.1.1 of ISO/IEC 8823-2)	Responder(Presentation connection)		o.03	C24	Yes
P.A.7.1.1.3/1 (1st row in the table of A.7.1.1.3 of ISO/IEC 8823-2)	Requestor(orderly release)		o.05	C25	Yes
P.A.7.1.1.3/2 (2nd row in the table of A.7.1.1.3 of ISO/IEC 8823-2)	Acceptor (orderly release)		o.05	C26	Yes

C21 : if A.A.7/2 (2nd row in the table of A.7 of ISO/IEC 8650-2) then m else i

C22 : if A.A.7/1 (1st row in the table of A.7 of ISO/IEC 8650-2) then m else i

C23 : if A.A.6.1/1 (1st row in the table of A.6.1 of ISO/IEC 8650-2) then m else i

C24 : if A.A.6.1/2 (2nd row in the table of A.6.1 of ISO/IEC 8650-2) then m else i

C25 : if A.A.6.2/1 (1st row in the table of A.6.2 of ISO/IEC 8650-2) then m else i

C26 : if A.A.6.2/2 (2nd row in the table of A.6.2 of ISO/IEC 8650-2) then m else i

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 2 AMHS Requirements

Name of Item	ISO/IEC 8823-1 Reference	ISO Support	AMHS Use
user-data of CP PPDU	8.2	Either Simply-Encoded-Data or Fully-Encoded-Data	Fully-Encoded-Data
user-data of CPA PPDU	8.2	Either Simply-Encoded-Data or Fully-Encoded-Data	Fully-Encoded-Data
user-data of CPR PPDU	8.2	Either Simply-Encoded-Data or Fully-Encoded-Data	Fully-Encoded-Data
presentation-data-values of PDV-list	8.4.2	Either single-ASN1-type, octet-aligned, or arbitrary	single-ASN1-type

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

2.3.1.3 Session PRL

2.3.1.3.1 Session PRL should comply with ISO 8327 and support the level specified in ISO/IEC ISP 11188-1 (1995).

PICS Proforma Reference	Name of Item	Normative reference	Status	Profile	AMHS Use
S.A.6.2/2 (2nd row in the table of A.6.2 of ISO/IEC 8327-2)	Reuse of transport connection		o	i	Yes
S.A.6.2/4 (4th row in the table of A.6.2 of ISO/IEC 8327-2)	Extended Concatenation (sending)		o	i	Yes
S.A.6.2/5 (5th row in the table of A.6.2 of ISO/IEC 8327-2)	Extended Concatenation (receiving)		o	i	Yes
S.A.7.1.1.1/1 (1st row in the table of A.7.1.1.1 of ISO/IEC 8327-2)	initiator (session connection)		o.3	C41	Yes
S.A.7.1.1.1/2 (2nd row in the table of A.7.1.1.1 of ISO/IEC 8327-2)	Responder (session connection)		o.3	C42	Yes
S.A.7.1.1.2/1 (1st row in the table of A.7.1.1.2 of ISO/IEC 8327-2)	Requestor (orderly release)		o.4	C43	Yes
S.A.7.1.1.2/2 (2nd row in the table of A.7.1.1.2 of ISO/IEC 8327-2)	Acceptor (orderly release)		o.4	C44	Yes
S.A.7.1.1.3/1 (1st row in the table of A.7.1.1.3 of ISO/IEC 8327-2)	Requestor (normal data transfer)		o.5	C45	Yes
S.A.7.1.1.3/2 (2nd row in the table of A.7.1.1.3 of ISO/IEC 8327-2)	Acceptor (normal data transfer)		o.5	C46	Yes
S.A.7.1.2/2 (2nd row in the table of A.7.1.2 of ISO/IEC 8327-2)	Overflow Accept (OA)	9.2.2	c5,c6	i,i	No, No
S.A.7.1.2/3 (3rd row in the table of A.7.1.2 of ISO/IEC 8327-2)	Connection Data Overflow (CDO)	9.2.2	c5,c6	i,i	No, No

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

PICS Proforma Reference	Name of Item	Normative reference	Status	Profile	AMHS Use
S.A.7.5.1/1 (1st row in the table of A.7.5.1 of ISO/IEC 8327-2)	Requestor (expedited data)		o.6	C47	No
S.A.7.5.1/2 (2nd row in the table of A.7.5.1 of ISO/IEC 8327-2)	Acceptor (expedited data)		o.6	C48	No
S.A.7.6.1/1 (1st row in the table of A.7.6.1 of ISO/IEC 8327-2)	Requestor (typed data)		o.7	C49	No
S.A.7.6.1/2 (2nd row in the table of A.7.6.1 of ISO/IEC 8327-2)	Acceptor (typed data)		o.7	C50	No
S.A.7.7.1/1 (1st row in the table of A.7.7.1 of ISO/IEC 8327-2)	Requestor (capability data)		o.8	C51	No
S.A.7.7.1/2 (2nd row in the table of A.7.7.1 of ISO/IEC 8327-2)	Acceptor (capability data)		o.8	C52	No
S.A.7.8.1/1 (1st row in the table of A.7.8.1 of ISO/IEC 8327-2)	Requestor (minor synchronize)		o.9	C53	Yes
S.A.7.8.1/2 (2nd row in the table of A.7.8.1 of ISO/IEC 8327-2)	Acceptor (minor synchronize)		o.9	C54	Yes
S.A.7.11.1/1 (1st row in the table of A.7.11.1 of ISO/IEC 8327-2)	Requestor (major synchronize)		o.10	C55	No
S.A.7.11.1/2 (2nd row in the table of A.7.11.1 of ISO/IEC 8327-2)	Acceptor (major synchronize)		o.10	C56	No
S.A.7.14.1.1/1 (1st row in the table of A.7.14.1.1 of ISO/IEC 8327-2)	Requestor (activity start)		o.12	C57	Yes
S.A.7.14.1.1/2 (2nd row in the table of A.7.14.1.1 of ISO/IEC 8327-2)	Acceptor (activity start)		o.12	C58	Yes
S.A.7.14.1.2/1	Requestor (activity resume)		o.13	C59	Yes

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

PICS Proforma Reference	Name of Item	Normative reference	Status	Profile	AMHS Use
(1st row in the table of A.7.14.1.2 of ISO/IEC 8327-2)					
S.A.7.14.1.2/2 (2nd row in the table of A.7.14.1.2 of ISO/IEC 8327-2)	Acceptor (activity resume)		o.13	C60	Yes
S.A.7.14.1.3/1 (1st row in the table of A.7.14.1.3 of ISO/IEC 8327-2)	Requestor (activity interrupt)		o.14	C61	Yes
S.A.7.14.1.3/2 (2nd row in the table of A.7.14.1.3 of ISO/IEC 8327-2)	Acceptor (activity interrupt)		o.14	C62	Yes
S.A.7.14.1.4/1 (1st row in the table of A.7.14.1.4 of ISO/IEC 8327-2)	Requestor (activity discard)		o.15	C63	Yes
S.A.7.14.1.4/2 (2nd row in the table of A.7.14.1.4 of ISO/IEC 8327-2)	Acceptor (activity discard)		o.15	C64	Yes
S.A.7.14.1.5/1 (1st row in the table of A.7.14.1.5 of ISO/IEC 8327-2)	Requestor (activity end)		o.16	C65	Yes
S.A.7.14.1.5/2 (2nd row in the table of A.7.14.1.5 of ISO/IEC 8327-2)	Acceptor (activity end)		o.16	C66	Yes
S.A.7.14.1.6/1 (1st row in the table of A.7.14.1.6 of ISO/IEC 8327-2)	Requestor (give tokens confirm)		o	C67	Yes
S.A.7.14.1.6/2 (2nd row in the table of A.7.14.1.6 of ISO/IEC 8327-2)	Acceptor (give tokens confirm)		o	C68	Yes
S.A.8.1.3/4 (4th row in the table of A.8.1.3 of ISO/IEC 8327-2)	Data Overflow Item (CN)	9.2.2	c6,c5	i, i	No, No

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

1) Status

- c5 : Condition is to support “Responder (session connection)”.
- c6 : Condition is to support “Requestor (orderly release)”.

2) Profile

- C41 : if A.A.6.1/1 (1st row in the table of A.6.1 of ISO/IEC 8650-2) then m else i
- C42 : if A.A.6.1/2 (2nd row in the table of A.6.1 of ISO/IEC 8650-2) then m else i
- C43 : if A.A.6.2/1 (1st row in the table of A.6.2 of ISO/IEC 8650-2) then m else i
- C44 : if A.A.6.2/2 (2nd row in the table of A.6.2 of ISO/IEC 8650-2) then m else i
- C45 : if P.A.7.1.1.2/1 (1st row in the table of A.7.1.1.2 of ISO/IEC 8823-2) then m else i
- C46 : if P.A.7.1.1.2/2 (2nd row in the table of A.7.1.1.2 of ISO/IEC 8823-2) then m else i
- C47 : if P.A.7.4.4/1 (1st row in the table of A.7.4.4 of ISO/IEC 8823-2) then m else i
- C48 : if P.A.7.4.4/2 (2nd row in the table of A.7.4.4 of ISO/IEC 8823-2) then m else i
- C49 : if P.A.7.4.5/1 (1st row in the table of A.7.4.5 of ISO/IEC 8823-2) then m else i
- C50 : if P.A.7.4.5/2 (2nd row in the table of A.7.4.5 of ISO/IEC 8823-2) then m else i
- C51 : if P.A.7.4.6/1 (1st row in the table of A.7.4.6 of ISO/IEC 8823-2) then m else i
- C52 : if P.A.7.4.6/2 (2nd row in the table of A.7.4.6 of ISO/IEC 8823-2) then m else i
- C53 : if P.A.7.4.7/1 (1st row in the table of A.7.4.7 of ISO/IEC 8823-2) then m else i
- C54 : if P.A.7.4.7/2 (2nd row in the table of A.7.4.7 of ISO/IEC 8823-2) then m else i
- C55 : if P.A.7.4.10/1 (1st row in the table of A.7.4.10 of ISO/IEC 8823-2) then m else i
- C56 : if P.A.7.4.10/2 (2nd row in the table of A.7.4.10 of ISO/IEC 8823-2) then m else i
- C57 : if P.A.7.4.13.1/1 (1st row in the table of A.7.4.13.1 of ISO/IEC 8823-2) then m else i
- C58 : if P.A.7.4.13.1/2 (2nd row in the table of A.7.4.13.1 of ISO/IEC 8823-2) then m else i
- C59 : if P.A.7.4.13.2/1 (1st row in the table of A.7.4.13.2 of ISO/IEC 8823-2) then m else i
- C60 : if P.A.7.4.13.2/2 (2nd row in the table of A.7.4.13.2 of ISO/IEC 8823-2) then m else i
- C61 : if P.A.7.4.13.3/1 (1st row in the table of A.7.4.13.3 of ISO/IEC 8823-2) then m else i
- C62 : if P.A.7.4.13.3.2 (2nd row in the table of A.7.4.13.3 of ISO/IEC 8823-2) then m else i
- C63 : if P.A.7.4.13.4/1 (1st row in the table of A.7.4.13.4 of ISO/IEC 8823-2) then m else i
- C64 : if P.A.7.4.13.4/2 (2nd row in the table of A.7.4.13.4 of ISO/IEC 8823-2) then m else i
- C65 : if P.A.7.4.13.5/1 (1st row in the table of A.7.4.13.5 of ISO/IEC 8823-2) then m else i
- C66 : if P.A.7.4.13.5/2 (2nd row in the table of A.7.4.13.5 of ISO/IEC 8823-2) then m else i
- C67 : if P.A.7.4.13.6/1 (1st row in the table of A.7.4.13.6 of ISO/IEC 8823-2) then m else i
- C68 : if P.A.7.4.13.6/2 (2nd row in the table of A.7.4.13.6 of ISO/IEC 8823-2) then m else i

2.4 Lower Layer Specifications

2.4.1 Protocol Implementation Conformance Statements of COTP

2.4.1.1 In protocol layer 4, ICS SARPs recommend COTP. The functions of COTP are specified below.

- (1) "ATN Support" indicates that the item is Mandatory ("M"), Option ("O") or Mandatory implemented and Optionally used ("MO").
- (2) "AMHS Support" indicates whether the item is Supported ("yes") or NOT Supported ("no").
- (3) "AMHS Use" indicates whether the item is Used ("yes") or NOT Used ("no") in transfer.

Table 1 Support Class

Class	ATN Support	AMHS Support	AMHS Use
Class 0	O	no	no
Class 1	O	no	no
Class 2	O	no	no
Class 3	O	no	no
Class 4 operation over CONS	O	no	no
Class 4 operation over CLNS	M	yes	yes

Table 2 ATN Requirements

Feature	ATN Support	AMHS Support	AMHS Use
Congestion Avoidance	M	yes	yes
Transport to Network Priority	M	yes	yes
ATN Security Label	M	yes	yes
Configurable Transport Timers	M	yes	yes
Enhanced encoding of Acknowledgment Time Parameter	M	yes	yes

NOTE: Implementation of the transport protocol shall support configurable values for all timers and protocol parameters, rather than having fixed values, in order to allow modification as operational experience is gained. The actual values of transport timers are to be determined through bilateral agreement on the AMHS systems connected each other. (See the Clause 2.4.2).

Table 3 Initiator/Responder Capability

Class	ATN Support	AMHS Support	AMHS Use
Initiating CR TPDU	M	yes	yes
Responding to CR TPDU	M	yes	yes

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 4 Mandatory Functions

Function	ATN Support	AMHS Support	AMHS Use
TPDU transfer	M	yes	yes
Segmenting	M	yes	yes
Reassembling	M	yes	yes
Separation	M	yes	yes
Connection establishment	M	yes	yes
Connection refusal	M	yes	yes
Data TPDU numbering (normal)	M	yes	yes
Retention and acknowledgement of TPDUs (AK)	M	yes	yes
Explicit flow control	M	yes	yes
Checksum	M	yes	yes
Frozen references	M	yes	yes
Retransmission on time-out	M	yes	yes
Resequencing	M	yes	yes
Inactivity control	M	yes	yes

Table 5 Optional Functions

Feature	ATN Support	AMHS Support	AMHS Use
Data TPDU numbering (extended)	O	yes	yes
Non-use of checksum	M	yes	yes
Concatenation	O	no	no
Retention and acknowledgement of TPDUs Use of selective acknowledgement	O	no	no
Retention and acknowledgement of TPDUs Use of request acknowledgement	O	no	no

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 6 Supported TPDU

TPDUs		ATN Support	AMHS Support	AMHS Use
CR	supported on transmission	M	yes	yes
CR	supported on receipt	M	yes	yes
CC	supported on transmission	M	yes	yes
CC	supported on receipt	M	yes	yes
DR	supported on transmission	M	yes	yes
DR	supported on receipt	M	yes	yes
DC	supported on transmission	M	yes	yes
DC	supported on receipt	M	yes	yes
DT	supported on transmission	M	yes	yes
DT	supported on receipt	M	yes	yes
ED	supported on transmission	MO	no	no
ED	supported on receipt	MO	no	no
AK	supported on transmission	M	yes	yes
AK	supported on receipt	M	yes	yes
EA	supported on transmission	MO	no	no
EA	supported on receipt	MO	no	no
ER	supported on receipt	M	yes	yes

Table 7 Parameter Values for CR TPDU

Feature	ATN Support	AMHS Support	AMHS Use
Bits 8 and 7 in the additional options selection parameter of a CR TPDU set to zero	M	yes	yes

Table 8 Optional Parameter for a CR TPDU

Supported parameters	ATN Support	AMHS Support	AMHS Use
Called Transport-Selector	M	yes	yes
Calling Transport-Selector	M	yes	yes
TPDU size	O	no	no
Version Number	O	no	no
Protection parameters	O	no	no
Additional option selection	M	yes	yes
Throughput	O	no	no
Residual error rate	O	no	no
Priority	M	yes	yes
Transit delay	O	no	no
Acknowledgement time	M	yes	yes
Preferred maximum TPDU size	O	no	no
Inactivity timer	M	yes	yes

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 9 Optional Parameter for a CC TPDU

Supported parameters	ATN Support	AMHS Support	AMHS Use
Called Transport-Selector	M	yes	yes
Calling Transport-Selector	M	yes	yes
TPDU size	O	no	no
Protection parameters	O	no	no
Additional option selection	M	yes	yes
Throughput	O	no	no
Residual error rate	O	no	no
Priority	M	yes	yes
Transit delay	O	no	no
Acknowledgement time	M	yes	yes
Preferred maximum TPDU size	O	no	no
Inactivity timer	M	yes	yes

Table 10 Optional Parameter for a DR TPDU

Supported parameter	ATN Support	AMHS Support	AMHS Use
Additional information	O	no	no

Table 11 Optional Parameter for a DT TPDU

Supported parameter	ATN Support	AMHS Support	AMHS Use
Request of acknowledgement	M	yes	no

Table 12 Optional Parameter for an AK TPDU

Supported parameter	ATN Support	AMHS Support	AMHS Use
Flow control confirmation	M	yes	yes

Table 13 Subsequence Number Parameter in the AK TPDU

Supported parameter	ATN Support	AMHS Support	AMHS Use
Subsequence number	M	yes	yes

Table 14 Selective Acknowledgement Parameter in the AK TPDU

Supported parameter	ATN Support	AMHS Support	AMHS Use
Selective acknowledgement parameters	O	no	no

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 15 Optional Parameter for an ER TPDU

Supported parameter	ATN Support	AMHS Support	AMHS Use
Invalid TPDU	O	no	no

Table 16 User Data in Issued TPDUs

User Data	ATN Support	AMHS Support	AMHS Use
User data of up to 32 octets in a CR with preferred class 4 ?	M	yes	yes
User data of up to 32 octets in a CC ?	M	yes	yes
User data of up to 64 octets in a DR ?	M	yes	yes

Table 17 User Data in Received TPDUs

User Data	ATN Support	AMHS Support	AMHS Use
32 octets of user data in a CC TPDU ?	M	yes	yes
64 octets of user data in a DR TPDU ?	M	yes	yes
32 octets of user data in a CR TPDU ?	M	yes	yes

Table 18 Class Negotiation - Initiator

Feature	ATN Support	AMHS Support	AMHS Use
The preferred class in the CR TPDU may contain any of the classes supported by the implementation	Class 4	Class 4	Class 4

Table 19 The table below specifies valid alternative classes

Preferred class	ATN Support	AMHS Support	AMHS Use
Class 4 over CLNS	None	None	None

Table 20 Class negotiation - responder side

Preferred class	ATN Support	AMHS Support	AMHS Use
What classes can you respond with if CR proposes only class 4?	Class 4	Class 4	Class 4
What classes can you respond with if CR proposes class 4 as preferred class and the alternative class parameter is present?	Class 4	Class 4	Class 4

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 21 TPDU Size Negotiation

TPDU Size	ATN Support	AMHS Support	AMHS Use
If maximum TPDU size is proposed in a CR TPDU then the initiator shall support all TPDU sizes from 128 octets to the maximum proposed	M	yes	yes
If the preferred maximum TPDU size parameter is used in a CR TPDU then the initiator shall support all TPDU sizes, except 0, that are multiples of 128 octets up to the preferred maximum proposed	M	yes	yes
What is the largest value of the preferred maximum TPDU size parameter in a CR TPDU?	any multiple of 128 octets	any multiple of 128 octets	any multiple of 128 octets
What is the largest value of the preferred maximum TPDU size parameter in a CC TPDU?	any multiple of 128 octets	any multiple of 128 octets	any multiple of 128 octets
What is the largest value of the maximum TPDU size parameter in a CR TPDU with preferred class 4?	One of 128, 256, 512, 1024, 2048	One of 128, 256, 512, 1024, 2048	One of 128, 256, 512, 1024, 2048
What is the largest value of the maximum TPDU size parameter which may be sent in the CC TPDU when class 4 is selected?	128, 256, 512, 1024, 2048	128, 256, 512, 1024, 2048	128, 256, 512, 1024, 2048

Table 22 Use of Extended Format

Extended format	ATN Support	AMHS Support	AMHS Use
What formats can you propose in the CR TPDU in class 4?	normal, extended	extended	extended
What formats can you select in CC when extended has been proposed in CR in class 4?	normal, extended	extended	extended

NOTE: Extended format is needed to be selected for the use of the Data TPDU numbering (extended) (see the Table 5 in this Clause). The Data TPDU numbering (extended) is able to increase the throughput of messages between AMHS systems by increasing the number of the data which can be sent without waiting for the acknowledgement from the other AMHS system.

Table 23 Expedited data Transport service

Expedited data	ATN Support	AMHS Support	AMHS Use
Is the expedited data indication supported in CR and CC TPDU?	MO	yes	yes

Table 24 Non-use of Checksum

Non-use of checksum	ATN Support	AMHS Support	AMHS Use
What proposals can you make in the CR?	non-use, use	use	non-use
What proposals can you make in CC when non-use of checksum has been proposed in CR?	non-use, use	use	non-use

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 25 Use of selective acknowledgement

Selective Acknowledgement	ATN Support	AMHS Support	AMHS Use
Is use of selective acknowledgement proposed in CR TPDU's ?	O	no	no
Is use of selective acknowledgement selected in a CC when it has been proposed in a CR ?	O	no	no

Table 26 Use of Request Acknowledgement

Request of Acknowledgement	ATN Support	AMHS Support	AMHS Use
Is use of request of acknowledgement proposed in CR TPDU's ?	O	no	no
Is use of request of acknowledgement selected in a CC when it has been proposed in a CR ?	O	no	no

Table 27 Action on Detection of a Protocol Error

Item	ATN Support	AMHS Support	AMHS Use
Class 4 over CLNS	ER, DR, Discard	ER, DR, Discard	ER, DR, Discard

Table 28 Actions on receipt of an invalid or undefined parameter in a CR TPDU

Event	ATN Support	AMHS Support	AMHS Use
A parameter not defined in ISO/IEC 8073 shall be ignored	M	yes	yes
An invalid value in the alternative protocol class parameter shall be treated as a protocol error	M	yes	yes
An invalid value in the class and option parameter shall be treated as a protocol error	M	yes	yes
On receipt of the additional option selection parameter bits 8 to 7, and bits 6 to 1 if not meaningful for the proposed class, shall be ignored	M	yes	yes
On receipt of the class option parameter bits 4 to 1 if not meaningful for the proposed class shall be ignored	M	yes	yes
What action is supported on receipt of a parameter defined in ISO 8073 (other than those covered above) and having an invalid value ?	Ignore, Protocol Error	Ignore, Protocol Error	Ignore, Protocol Error

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 29 Actions on receipt of an invalid or undefined parameter in a TPDU other than a CR

Event	ATN Support	AMHS Support	AMHS Use
A parameter not defined in ISO/IEC 8073 shall be treated as a protocol error	M	yes	yes
A parameter which has an invalid value as defined in ISO/IEC 8073 shall be treated as a protocol error	M	yes	yes
A TPDU received with a checksum which does not satisfy the defined formula shall be discarded	M	yes	yes

Table 30 Class 4 Timers and Protocol Parameters

Parameters	ATN Support	AMHS Support	AMHS Use
T1 (Local Retransmission)	M	yes	yes
N (Maximum Transmission)	M	yes	yes
I _L (Local Inactivity Time)	M	yes	yes
W (Window Update)	M	yes	yes
L (Frozen Reference Time)	M	yes	yes
R (Persistence)	O	no	no
M _{LR} (NSDU Lifetime)	O	no	no
M _{RL} (NSDU Lifetime)	O	no	no
E _{LR} (Maximum Transit Delay)	O	no	no
E _{RL} (Maximum Transit Delay)	O	no	no
A _L (Acknowledgement Time)	M	yes	yes
A _R (Acknowledgement Time)	M	yes	yes
I _R (Remote Inactivity Time)	M	yes	yes
Does IUT support optional timer TS2 when operating in class 4?	O	no	no

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

2.4.2 Parameter values

2.4.2.1 The range of values set in the protocol layer 3 and 4 of AMHS are specified below. The actual values are to be determined through bilateral agreement on the AMHS systems connected each other.

2.4.2.2 The following table shows only the parameters, which may influence interoperability. Other parameters are also to be determined through the bilateral agreement.

Parameters set or set to the frame are shown in the following table.

Name	Lower	Upper
Local Retransmission Time(T1){COTP}[SEC]	12	300
Window Time(W){COTP}[SEC]	160	6000
Maximum Number of Transmissions(N){COTP}	1	10
Maximum size of TPDU{COTP}[OCTETS]	1024	1024
Lifetime{CLNS}[IN UNITS OF 500MSEC]	10	30
Reassembly Time{CLNS}[IN UNITS OF 500MSEC]	10	30

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

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Appendix: PICS of AMHS

This appendix specifies the PICS of AMHS for both AFTN/AMHS Gateway and ATS Message Server. When only ATS Message Server without AFTN/AMHS Gateway is implemented, the column “AMHS Action” in the tables can be ignored.

Followings are the contents included in this appendix.

CONTENTS

INTRODUCTION

1. Message Transfer Envelope for IPM

Table 1.1 Message Transfer Envelope (IPM)
Table 1.2 Common Data Types
Table 1.3 Extension Data Types

2. IPM

Table 2.1 IPM
Table 2.2 IPM Support of the Basic ATS Message Service

3. Message Transfer Envelope for IPN

Table 3.1 Message Transfer Envelope (IPN)
Table 3.2 Common Data Types
Table 3.3 Extension Data Types

4. IPN

Table 4.1 IPN
Table 4.2 OR Descriptor

5. Report Transfer Envelope

Table 5.1 Report Transfer Envelope
Table 5.2 Common Data Types

6. Probe Transfer Envelope

Table 6.1 Probe Transfer Envelope
Table 6.2 Common Data Types

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

INTRODUCTION

Description of each column in the table header is as follows;

"support" indicates the specification in the ISP and in the SARPs (ICAO ATN SARPs) respectively. The contents in the table are extracted from the ISP and the SARPs.

"AMHS-Action" indicates the specified action at Origination and at Reception in the SARPs. Please refer to the "Action" column in the SARPs. The contents in the table are extracted from the SARPs.

"AMHS-support" indicates the status of AMHS to be implemented.

"Detailed Action" indicates the detailed action specified in the SARPs, when it is described in the SARPs. The contents in the table are extracted from the SARPs.

"Origination" and "Reception" are also the terms described in the SARPs. They are abbreviated as "O" and "R" respectively in the column of "AMHS-Action" and "AMHS-support" in the table headings.

Definition of each support level and actions is specified in the table below :

support level and actions	Origination	Reception
M	The value is always set.	It is mandatory to set the value.
O	The value is set on conditions.	When the value is set, service is provided.
M-	-	Only the minimal support of this element. 1) allowed to set the value but no service provided 2) value is transparent when relayed
X	The value is not set.	When the value exists, it is considered to be an error.
T	Translated.	Translated.
G	Generated.	-
G1	Optionally generated.	-
G2	Conditionally generated.	-
D	-	Discarded.

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

1. Message Transfer Envelope for IPM

Table 1.1 Message Transfer Envelope

(Based on : ATSMHS SARPs Table 3.1.2-6 for O, Table 3.1.2-12 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	MessageTransferEnvelope	M	M	T	T	M	M	-			
1.1	per message fields										
1.1.1	message-identifier	M	M	G	D	M	M	-			See Table 2/1
1.1.2	originator-name	M	M	T	T	M	M	-			
1.1.3	original-encoded-information-types	O	M	G	D	M	M	-			
1.1.4	content-type	M	M	G	D	M	M	-	BuiltInContentType is set the abstract value "interpersonal-messaging-1984(2)"	If the value of BuiltInContentType is neither interpersonal-messaging-1984(2) nor interpersonal-messaging-1988(22), then generate NDR[NDRC=1,NDDC=15].	
1.1.5	content-identifier	O	M-	G	D	M	M-	<=16			"G"
1.1.6	priority	M	M	T	D	M	M	-			
1.1.7	per-message-indicators	M	M	G	D	M	M	-			See Table 1.2/4
1.1.8	deferred-delivery-time	O	M-	G	D	M	M-	-			
1.1.9	per-domain-bilateral-information	O	M-	X	D	X	M-	-			
1.1.10	trace-information	M	M	G	D	M	M	-			
1.1.11	extensions	M	M	G	D	M	O	-			In X.400, if the value doesn't exist, it is considered to be not selected.

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
	type	M	M	G	D	M	M	-			Only supports "standard-extension".
	criticality	M	M	G	D	M	M	-			In X.400, if the value doesn't exist, it is considered to be not selected.
	value	M	M	M	D	M	M	-	Set the value of "internal-trace-information"		
1.1.11.1	recipient-reassignment-prohibited	O	M-	X	D	X	M-	-			
1.1.11.2	dl-extension-prohibited	O	M-	X	D	X	M-	-			
1.1.11.3	conversion-with-loss-prohibited	O	M-	X	D	X	M-	-			
1.1.11.4	latest-delivery-time	O	M-	X	D	X	O	-		If this exists, and the current time exceeds the value, then generate NDR[NDRC=1,NDDC=5].	
1.1.11.5	originator-return-address	O	M-	X	D	X	M-	-			
1.1.11.6	originator-certificate	O	M-	X	X	X	M-/X	-		If the value is "CRITICAL FOR DELIVERY" then generate NDR[NDRC=1,NDDC=18].	
1.1.11.7	content-confidentiality-algorithm-identifier	O	M-	X	X	X	M-/X	-		If the value is "CRITICAL FOR DELIVERY" then generate NDR[NDRC=1,NDDC=18].	

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.1.11.8	message-origin-authentication-check	O	M-	X	X	X	M-/X	-		If the value is "CRITICAL FOR DELIVERY" then generate NDR[NDRC=1,NDDC=18].	
1.1.11.9	message-security-label	O	M-	X	X	X	M-/X	-		If the value is "CRITICAL FOR DELIVERY" then generate NDR[NDRC=1,NDDC=18].	
1.1.11.10	content-correlator	O	M-	X	D	X	M-	<= 512			
1.1.11.11	dl-expansion-history	O	M-	X	D	X	O	-			
1.1.11.12	internal-trace-information	O	M-	G	D	M	M-	-			See Table 3/5
1.2	per-recipient-fields	M	M	T	T	M	M	-		Support maximum of 21 parameters. (This number may be changed when negotiated.)	
1.2.1	recipient-name	M	M	T	T	M	M	-	Set the values of the recipient's MF (or XF) address.		
1.2.2	originally-specified-recipient-number	M	M	G	D	M	M	-	Set the value which comply with 12.2.1.1.1.5 of ISO/IEC 10021-4. (set continuous number from 1 to the first recipient)		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.2.3	per-recipient-indicators	M	M	G	D	M	M	-	Set following value : responsibility=responsible(1) originating-MTA-reportrequest=non-delivery-report(01) originator-report-request=non-delivery-report(01)	For the parameter "per-recipients-fields", only "responsibility=responsible (1)" is relayed or delivered. Reportrequest=delivery-request(10) is ignored.	BITSTRING
1.2.4	explicit-conversion	O	M-	X	D	X	M-	-			
1.2.5	extensions	M	M-	X	D	X	M	-			In X.400, if the value doesn't exist, it is considered to be not selected.
	type	M	M	-	D	X	M	-			Only supports "standard-extension".
	criticality	M	M	-	D	X	M	-		If the value does not exist, all bits are considered to be OFF.	BITSTRING for-submission(0) for-deliver(1) for-transfer(2)
	value	M	M	-	D	X	M	-			
1.2.5.1	originator-requested-alternate-recipient	O	M-	-	D	X	M-	-			
1.2.5.2	requested-delivery-method	O	M-	-	D	X	M-	-			
1.2.5.3	physical-forwarding-prohibited	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.2.5.4	physical-forwarding-address-request	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.5	physical-delivery-modes	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.6	registered-mail-type	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.7	recipient-number-for-address	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.8	physical-redirection-attributes	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.2.5.9	physical-delivery-report-request	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.10	message-token	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.11	content-integrity-check	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.12	proof-of-delivery-request	O	M-	-	X	X	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.13	redirection-history	O	M-	-	D	X	M-	-			
2	content	M	M	T	T	M	M	-	Set the generated IPM.		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 1.2 Common Data Types
(Based on : ATSMHS SARPs Table 3.1.2-6 for O, Table 3.1.2-12 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	MTS-Identifier										
1.1	global-domain-identifier	M	M	G	D	M	M	-			
1.2	local-identifier	M	M	G	D	M	M	<=32	Set the characters which identifies message in ia-5 characters.		
2	GlobalDomainIdentifier										
2.1	country-name	M	M	G	D	M	M	2 or 3	Set the country name of AMHS management domain.		
2.2	administration-domain-name	M	M	G	D	M	M	<=16	Set the AMHS management domain name.		
2.3	private-domain-identifier	O	M-	X	D	X	M-	<=16			The value of this parameter may be used in the future.
3	EncodedInformationTypes										
3.1	built-in-encoded-information-types	M	M	G	D	M	M	-	Set the value of "ia5-text(2)=1"		BITSTRING
3.2	non-basic parameters	O	M-	X	D	X	M-	-			
3.3	extended-encoded-information-types	O	M	X	D	X	O	-			
4.	PerMessageIndicators	M	M	G	D	M	M	-			BITSTRING In X.400, if the value doesn't exist, all bits are considered to be OFF.
4.1	disclosure-of-other-recipients(0)	M	M	G	D	M	M	-	Set the abstract value "disclosure-of-other-recipients-prohibited(0)"		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
4.2	implicit-conversion-prohibited(1)	M	M	G	D	M	M	-	Set the abstract value "implicit-conversion-prohibited(1)"		
4.3	alternate-recipient-allowed(2)	M	M	G	D	M	M	-	Set the abstract value "alternate-recipient-allowed(1)"		
4.4	content-return-request(3)	M	M	G	D	M	M	-	Set the abstract value "content-return-not-requested(0)"	Ignored and considered "content-return-not-requested(0)". However, if error occurs in the ATN component of AMHS and "content-return-request(1)" is set, it is impossible to restrain this service.	
5	PerDomainBilateralInformation	O	M-	X	D	X	M-	-			
6	TraceInformation										
6.1	TraceInformationElement	M	M	G	D	M	M	-			
6.1.1	global-domain-identifier	M	C1	X	D	X	M	-		If the last trace information of this parameter differs from the input MTA, then generate NDR.	
6.1.2	domain-supplied-information	M	M	G	D	M	M	-			
6.1.2.1	arrival-time	M	C2	G	D	M	M	-	Set the value of the time which AFTN/AMHS Gateway received the message.		
6.1.2.2	routing-action	M	M-	G	D	M	M	-	Set the abstract value of "relayed(0)".		
6.1.2.3	attempted-domain	O	M-	X	D	X	M-	-			
6.1.2.4	additional actions	O	M-	X	D	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
6.1.2.4.1	deferred-time	O	M-	X	D	X	M-	-			
6.1.2.4.2	converted-encode-infor mation-types	O	M-	X	D	X	O	-			
6.1.2.4.3	other-actions	O	M-	X	D	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 1.3 Extension Data Types
(Based on : ATSMHS SARPs Table 3.1.2-6 for O, Table 3.1.2-12 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
5	internal-trace-information	O	M-	G	D	M	M-	-			
5.1	global-domain-identifier	M	M	G	D	M	M	<=16	Set the value which identifies AMHS Management Domain.		
5.2	mta-name	M	M	G	D	M	M	<=32	Set the value of mta-name of AMHS.		
5.3	domain-supplied-information	M	M	G	D	M	M	-			
5.3.1	arrival-time	M	M	G	D	M	M	-	Set the value of the time which AFTN/AMHS Gateway received the message		
5.3.2	routing-action	M	M	G	D	M	M	-	Set the abstract value "relayed(0)"		
5.3.3	attempt-domain	O	C1	X	D	X	M-	-			
5.3.4	additional actions	O	C2	X	D	X	M-	-			
5.3.4.1	deferred-time	O	M-	X	D	X	M-	-			
5.3.4.2	converted-encoded-information-types	O	M-	X	D	X	O	-			
5.3.4.3	other-actions	O	M-	X	D	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

2. IPM

Table 2.1 IPM

(Based on : ATSMHS SARPs Table 3.1.2-5 for O, Table 3.1.2-11 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	Interpersonal message(IPM)	M	M	T	T	M	M	-			
1.1	heading	M	M	T	T	M	M	-			
1.1.1	this-IPM	M	M	T	D	M	M	-			
1.1.1.1	user	O	M	T	D	M	M-	-	Set the same value as the originator.		
1.1.1.2	user-relative-identifier	M	M	G	D	M	M	<=64			Set the value which identifies this IPM in less than 64 octets.
1.1.2	originator	O	M	T	D	M	M-		Set the originator XF address converted from AF address of AFTN message.		
1.1.3	authorizing-users	O	O	X	D	X	M-	-			
1.1.4	primary-recipients	O	M	T	D	M	O	-		At least one of the primary-recipients, copy-recipients, or blind-copy-recipients is mandatory.	
1.1.4.1	RecipientSpecifier	M	M	T	D	M	M	-			If the value of this parameter is as same as P1, then maximum number is 21.
1.1.4.2	recipient	M	M	T	D	M	M	-	Set the recipient XF address converted from AF address of AFTN message.		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS- Action		AMHS- support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.1.4.3	notification-requests	O	M	T	D	M	M	-	Set the bit of rn and nrn ON if and only if the value of ATS-priority-indicator is SS. (In other cases, both bits are not ON.)	If ATS-priority-indicator is SS, and value of notification of the element "primary-recipient", "copy-recipient", "blind-copy-recipient" is different from "rn", and the value of per-recipient-fields is "responsible", then it is logged as an error.	According to X.400, if this parameter does not exist, all bits are considered OFF.
1.1.4.3.1	rn(0)	O	O	T	D	M	O	-			
1.1.4.3.2	nrn(1)	O	M	T	D	M	M-	-		Ignored.	
1.1.4.3.3	ipm-return(2)	O	O	X	D	X	M-	-	Always set OFF.	Ignored.	
1.1.5	copy-recipients	O	M	X	D	X	O	-	Not set.	Processed as same as primary-recipients.	
1.1.6	blind-copy-recipients	O	M	X	D	X	O	-	Not set.	Processed as same as primary-recipients.	
1.1.7	replied-to-IPM	O	M	X	D	X	M-	-			
1.1.8	obsoleted-IPMs	O	M	X	D	X	M-	-			
1.1.9	related-IPMs	O	M	X	D	X	M-	-			
1.1.10	subject	O	M	G2	D	O	M-	<=12 8			
1.1.11	expiry-time	O	M	X	D	X	M-	-			
1.1.12	reply-time	O	M	X	D	X	M-	-			
1.1.13	reply-recipients	O	O	X	D	X	M-	-			
1.1.14	importance	O	O	X	D	X	M-	-			
1.1.15	sensitivity	O	O	X	D	X	M-	-			
1.1.16	auto-forwarded	O	O	X	D	X	M-	-			
1.1.17	extensions	O	O	X	D	X	M-	-			
1.1.17.1	incomplete-copy	O	O	X	D	X	M-	-			
1.1.17.2	langages	O	O	X	D	X	M-	-			
1.1.17.3	auto-submitted	O	O	X	D	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.2	IPM BODY	M	M	M	M	M	M	-		One of the ia5-text, ia5-text-body-part, or general-text-body-part has to be set.	
1.2.1	ia5-text	O	M	T	T	M	O	-			
1.2.1.1	parameters	M	M	G	D	M	M	-			
1.2.1.1.1	repertoire	M	M	G	D	M	M	-	Set the value IA5(5).		
1.2..1.2	data	M	M	T	T	M	M	-			
1.2.2	voice	I	X	X	X	X	X	-			
1.2.3	g3-facsimile	O	X	X	X	X	X	-			
1.2.4	g4-class-1	O	X	X	X	X	X	-			
1.2.5	teletex	O	X	X	X	X	X	-			
1.2.6	videotex	O	X	X	X	X	X	-			
1.2.7	encrypted	I	X	X	X	X	X	-			
1.2.8	message	O	X	X	X	X	X	-			
1.2.9	mixed-mode	O	X	X	X	X	X	-			
1.2.10	bilaterally-defined	O	X	X	X	X	X	-			
1.2.11	nationally-defined	O	X	X	X	X	X	-			
1.2.12	externally-defined	O	X	X	X	X	X	-			
1.3	Extended Body Part										
1.3.1	ia5-text-body-part	O	X	X	T	X	O	-			
1.3.2	g3-facsimile-body-part	O	X	X	X	X	X	-			
1.3.3	g4-class1-body-part	O	X	X	X	X	X	-			
1.3.4	teletex-body-part	O	X	X	X	X	X	-			
1.3.5	videotex-body-part	O	X	X	X	X	X	-			
1.3.6	encrypt-body-part	I	X	X	X	X	X	-			
1.3.7	message-body-part	O	X	X	X	X	X	-			
1.3.8	mixed-mode-body-part	O	X	X	X	X	X	-			
1.3.9	bilaterally-defined-body-part	O	X	X	X	X	X	-			
1.3.10	nationally-defined-body-part	O	X	X	X	X	X	-			
1.3.11	general-text-body-part	O	X	X	T	X	O	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS- Action		AMHS- support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.3.12	file-transfer-body-part	O	X	X	X	X	X	-			
1.3.13	voice-body-part	I	X	X	X	X	X	-			
1.3.14	oda-body-part	O	X	X	X	X	X	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 2.2 IPM Support of the Basic ATS Message Service
(Based on : ATSMHS SARPs Table 3.1.2-5 for O, Table 3.1.2-11 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	ATS-Message-Header	-	M	T	T	M	M	-			
1.1	start- of heading	-	M	G	-	M	M	-	Set (SOH)		
1.2	ATS-Message-Priority	-	M	T	T	M	M	-			
1.2.1	priority-prompt	-	M	G	-	M	M	-	Set the value "PRI:(single space)".		
1.2.2	priority-indicator	-	M	T	T	M	M	-			
1.2.3	priority-separater	-	M	G	-	M	M	-	Set (CR)(LF)		
1.3	ATS-Message-Filing-Time	-	M	T	T	M	M	-			
1.3.1	filing-time-prompt	-	M	G	-	M	M	-	Set the value "FT:(single space)".		
1.3.2	filing-time	-	M	T	T	M	M	-			
1.3.3	filing-time-separater	-	M	G	-	M	M	-	Set (CR)(LF)		
1.4	ATS-Message-Optional-Heading-Info	-	O	T1	T1	O	M	-			
1.4.1	OHI-prompt	-	M	G	-	M	M	-	Set the value "OHI:(single space)".		
1.4.2	optional-heading-information	-	M	T	T	M	M	-			
1.4.3	OHI-separater	-	M	G	-	M	M	-	Set (CR)(LF)		
1.5	end-of-heading-blank-line	-	M	G	-	M	M	-	Set (LF)		
1.6	start-of-text	-	M	G	-	M	M	-	Set (STX)		
2	ATS-Message-Text	-	M	T	T	M	M	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

3. Message Transfer Envelope for IPN**Table 3.1 Message Transfer Envelope (IPN)**

(Based on: ATSMHS SARPs Table 3.1.2-6 and Table 3.1.2-9 for O, Table 3.1.2-12 and Table 3.1.2-15 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	MessageTransferEnvelope	M	M	T	T	M	M	-			
1.1	per message fields	M	M					-			
1.1.1	message-identifier	M	M	G	D	M	M-	-			
1.1.2	originator-name	M	M	T	T	M	M	-	Set the originator XF address converted from AF address of AFTN acknowledgement message.		
1.1.3	original-encoded-information-types	O	M-	G	D	X	M-	-			
1.1.4	content-type	M	M	G	D	M	M	-	BuiltInContentType is set the abstract value "interpersonal-messaging-1984(2)"	If the value of BuiltInContentType is neither interpersonal-messaging-1984(2) nor interpersonal-messaging-1988(22), then generate NDR[NDRC=1,NDDC=15].	
1.1.5	content-identifier	O	M-	G	D	X	M-	<=16			
1.1.6	priority	M	M	G	D	M	M	-	Set "urgent".		
1.1.7	per-message-indicators	M	M	G	D	M	M	-			See Table 3.2/4
1.1.8	deferred-delivery-time	O	M-	X	D	M	M-	-			
1.1.9	per-domain-bilateral-information	O	M-	X	D	X	M-	-			
1.1.10	trace-information	M	M	G	D	M	M	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.1.11	extensions	M	M	G	D	M	M-	-			In X.400, if the value doesn't exist, it is considered to be not selected.
	type	M	M	G	D	M	M	-	Set the abstract value "internal-trace-information (38)".		Only supports "standard-extension".
	criticality	M	M	G	D	M	M	-			In X.400, if the value doesn't exist, it is considered to be not selected.
	value	M	M	M	D	M	M	-	Set the value of "internal-trace-information"		
1.1.11.1	recipient-reassignment-prohibited	O	M-	X	D	X	M-	-			
1.1.11.2	dl-extension-prohibited	O	M-	X	D	X	M-	-			
1.1.11.3	conversion-with-loss-prohibited	O	M-	X	D	X	M-	-			
1.1.11.4	latest-delivery-time	O	M-	X	D	X	M-	-		If this exists, and the current time exceeds the value, then generate NDR[NDRC=1,NDDC=5].	
1.1.11.5	originator-return-address	O	M-	X	D	X	M-	-			
1.1.11.6	originator-certificate	O	M-	X	X	X	X	-		If the value is "CRITICAL FOR DELIVERY" then generate NDR[NDRC=1,NDDC=18].	

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.1.11.7	content-confidentiality-algorithm-identifier	O	M-	X	X	X	X	-		If the value is "CRITICAL FOR DELIVERY" then generate NDR[NDRC=1,NDDC=19].	
1.1.11.8	message-origin-authentication-check	O	M-	X	X	X	X	-		If the value is "CRITICAL FOR DELIVERY" then generate NDR[NDRC=1,NDDC=20].	
1.1.11.9	message-security-label	O	M-	X	X	X	X	-		If the value is "CRITICAL FOR DELIVERY" then generate NDR[NDRC=1,NDDC=21].	
1.1.11.10	content-correlator	O	M-	X	D	X	M-	<= 512			
1.1.11.11	dl-expansion-history	O	M-	X	D	X	O	-			
1.1.11.12	internal-trace-information	O	M-	G	D	M	M-	-			
1.2	per-recipient-fields	M	M	T	D	M	M	-			Number of recipient is always one.
1.2.1	recipient-name	M	M	T	D	M	M	-	Set the MF address of the originator of the subject IPM.		
1.2.2	originally-specified-recipient-number	M	M	G	D	M	M	-	Set "1".		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.2.3	per-recipient-indicators	M	M	G	D	M	M	-	Set the following values : responsibility=responsible(1) originating-MTA-reportrequest=non-delivery-report(01) originator-report-request=non-delivery-report(00)		BITSTRING
1.2.4	explicit-conversion	O	M-	X	D	X	M-	-			
1.2.5	extensions	M	M-	X	D	X	M-	-			In X.400, if the value doesn't exist, it is considered to be not selected.
	type	M	M	-	D	-	M	-			Only supports "standard-extension".
	criticality	M	M	-	D	-	M	-			
	value	M	M	-	D	-	M	-			
1.2.5.1	originator-requested-alternate-recipient	O	M-	-	D	-	M-	-			
1.2.5.2	requested-delivery-method	O	M-	-	D	-	M-	-			
1.2.5.3	physical-forwarding-prohibited	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.4	physical-forwarding-address-request	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.2.5.5	physical-delivery-modes	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.6	registered-mail-type	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.7	recipient-number-for-advance	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.8	physical-redirection-attributes	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	
1.2.5.9	physical-delivery-report-request	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=3,NDDC=18].	

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.2.5.10	message-token	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=1,NDDC=18].	
1.2.5.11	content-integrity-check	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=1,NDDC=18].	
1.2.5.12	proof-of-delivery-request	O	M-	-	X	-	M-/X	-		If the criticality is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=1,NDDC=18].	
1.2.5.13	redirection-history	O	M-	-	D	-	M-	-			
2	content	M	M	T	T	M	M	-	Set the generated IPN.		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 3.2 Common Data Type

(Based on : ATSMHS SARPs Table 3.1.2-6 and Table 3.1.2-9 for O, Table 3.1.2-12 and Table 3.1.2-15 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	MTS-Identifier										
1.1	global-domain-identifier	M	M	G	D	M	M	<=16			
1.2	local-identifier	M	M	G	D	M	M	<=32	Set the characters which identifies message in ia-5 characters.		
2	GlobalDomainIdentifier										
2.1	country-name	M	M	G	D	M	M	2 or 3	Set the country name of AMHS management domain.		
2.2	administration-domain-name	M	M	G	D	M	M	<=16	Set the AMHS management domain name.		
2.3	private-domain-identifier	O	M-	X	D	X	M-	-			
3	EncodedInformationTypes										
3.1	built-in-encoded-information-types	M	M	G	D	X	M	-			BITSTRING
3.2	non-basic parameters	O	M-	X	D	X	M-	-			
3.3	extended-encoded-information-types	O	M	X	D	X	O	-			
4.	PerMessageIndicators	M	M	G	D	G	D	-			BITSTRING In X.400, if the value doesn't exist, all bits are considered to be OFF.
4.1	disclosure-of-other-recipients(0)	M	M	G	D	G	D	-	Set the abstract value "disclosure-of-other-recipients-prohibited(0)"		
4.2	implicit-conversion-prohibited(1)	M	M	G	D	G	D	-	Set the abstract value "implicit-conversion-prohibited(1)"		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
4.3	alternate-recipient-allowed(2)	M	M	G	D	G	D	-	Set the abstract value "alternate-recipient-allowed(1)"		
4.4	content-return-request(3)	M	M	G	D	G	D	-	Set the abstract value "content-return-not-requested(0)"	Ignored and considered "content-return-not-requested(0)". However, if error occurs in the ATN component of AMHS and "content-return-request(1)" is set, it is impossible to restrain this service.	
5	PerDomainBilateralInformation	O	M-	X	D	X	D	-			
6	TraceInformation										
6.1	TraceInformationElement	M	M	G	D	M	M	-			
6.1.1	global-domain-identifier	M	C1	X	D	M	M	-		If the last trace information of this parameter differs from the input MTA, then generate NDR.	
6.1.2	domain-supplied-information	M	M	G	D	M	M	-			
6.1.2.1	arrival-time	M	C2	G	D	M	M	-	Set the value of the time which AFTN/AMHS Gateway received the message		
6.1.2.2	routing-action	M	M-	G	D	M	M	-	Set the abstract value of "relayed(0)".		
6.1.2.3	attempt-domain	O	M-	X	D	X	M-	-			
6.1.2.4	additional actions	O	M-	X	D	X	M-	-			
6.1.2.4.1	deferred-time	O	M-	X	D	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
6.1.2.4.2	converted-encode-infor mation-types	O	M-	X	D	X	M-	-			
6.1.2.4.3	other-actions	O	M-	X	D	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 3.3 Extension Data Types

(Based on: ATSMHS SARPs Table 3.1.2-6 for O, Table 3.1.2-12 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
5	internal-trace-information	O	M-	G	D	M	M-	-			
5.1	global-domain-identifier	M	M	G	D	M	M	16	Set the value which identifies AMHS Management Domain.		
5.2	mta-name	M	M	G	D	M	M	32	Set the value of mta-name of AMHS.		
5.3	domain-supplied-information	M	M	G	D	M	M	-			
5.3.1	arrival-time	M	M	G	D	M	M	-	Set the value of the time which AFTN/AMHS Gateway received the message		
5.3.2	routing-action	M	M	G	D	M	M	-	Set the abstract value "relayed(0)"		
5.3.3	attempt-domain	O	C1	X	D	X	M-	-			
5.3.4	additional actions	O	C2	X	D	X	M-	-			
5.3.4.1	deferred-time	O	M-	X	D	X	M-	-			
5.3.4.2	converted-encoded-information-types	O	M-	X	D	X	O	-			
5.3.4.3	other-actions	O	M-	X	D	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

3. IPN

Table 4.1 IPN

(Based on: ATSMHS SARPs Table 3.1.2-8 for O, Table 3.1.2-14 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	Interpersonal Notification(IPN)	M	M	-	-	M	M	-			
1.1	Common-fields	M	M	-	-	M	M	-			
1.1.1	subject-ipm	M	M	G	D	M	M	-	Set the value of this-IPM of the subject IPM.		
1.1.2	ipn-originator	O	M	T	D	M	O	-	Set the originator XF address converted from AF address of AFTN message.		
1.1.3	ipm-preferred-recipient	O	M	G2	D	O	O	-	This parameter exists when the recipient indicated by subject IPM and the real recipient differs, and set the recipient which was on the subject IPM.		
1.1.4	conversion-eits	O	M	G2	D	O	O	-	If the originally-encoded-information-types of the subject IPM and encoded-information types at the reception differ, set the encoded-information-types at the reception.		
1.1.5	notification-extensions	O	M	X	D	X	M	-			
1.2	non-receipt-fields	M	M	X	D	X	O	-		Either non-receipt-field or receipt-field is mandatory.	

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.3	receipt-fields	M	M	T	T	M	M	-			
1.3.1	receipt-time	M	M	T	T	M	M	-	Convert the time to UTC-TIME format and set the value.	Convert to AFTN format.	UTC-TIME format is YYMMDDhhmm[ss]Z or YYMMDDhhmm[ss]+(or -) hhmm
1.3.2	acknowledgment-mode	O	O	G	D	M	M-	-	Set the abstract value "manual(0)"		The default value of this element is "manual", so it is not necessary to set the value.
1.3.3	suppl-receipt-info	O	O	X	D	X	M-	-			
1.3.4	rn-extension	O	I	X		X	M-	-			
1.3.5	other-notification-type-fields	O	I	X		X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 4.2 OR Descripor

(Based on: ATSMHS SARPs Table 3.1.2-8 for O, Table 3.1.2-14 for R)

NO.	element	support		AMHS- Action		AMHS- support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	ORDescriptor										
1.1	formal-name	M	M	T	-	M	M	-			
1.2	free-form-name	O	O	X	-	X	M-	<=64			
1.3	telephone-number	O	O	X	-	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

5. ReportTransferEnvelope

Table 5.1 Report Transfer Envelope

(Based on: ATSMHS SARPs Table 3.1.2-17 for O, Table 3.1.2-18 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	ReportTransferEnvelope	M	M	G	D	M	M	-			
1.1	report-identifier	M	M	G	D	M	M	-			
1.2	report-destination-name	M	M	G	T	M	M	-	If the subject message has the element "dl-expansion-history", and OR name of last element of dl-expansion-history does not exist, set the originator-name of the subject message.		
1.3	trace-information	M	M	G	D	M	M	-			
1.4	extensions	M	M	G	D	M	M	-			In X.400, if the value doesn't exist, it is considered to be not selected.
1.4.1	type	M	M	G	D	M	M	-			Only supports "standard-extension".
1.4.2	criticality	M	M	G	D	M	M	-			In X.400, if the value doesn't exist, it is considered to be not selected.
1.4.3	value	M	M	M	D	M	M	-	Set the value of "internal-trace-information".		
1.4.4	message-security-label	O	M-	X	D	X	D	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1.4.5	originator-and-DL-expansion-history	O	M-	G2	D	O	D	-	Only when the element "DL-expansion-history" exists in the subject message, set the value.		
1.4.6	reporting-DL-name	O	M-	X	D	X	M-	-			
1.4.7	reporting-MTA-certificate	O	M-	X	D	X	M-	-			
1.4.8	report-origin-authentication-check	O	M-	X	D	X	M-	-			
1.4.9	internal-trace-information	O	M-	G	D	M	M-	-			
1.4.9.1	global-domain-identifier	M	M	G	D	M	M	<=16	Set the value which identifies the AMHS management domain.		
1.4.9.2	domain-supplied-information	M	M	G	D	M	M	-			
1.4.9.3	arrival-time	M	M	G	D	M	M	-	Set the value of the time which AFTN/AMHS Gateway received the message		
1.4.9.4	routing-action	M	M	G	D	M	M	-	Set the abstract value "relayed(0)".		
1.4.9.5	attempt-domain	O	C1	X	D	X	M	-			
1.4.9.6	additional actions	O	C2	X	D	X	M	-			
1.4.9.7	deferred-time	O	M-	X	D	X	M	-			
1.4.9.8	converted-encoded-information-types	O	M-	X	D	X	M	-			
1.4.9.9	other-actions	O	M-	X	D	X	M	-			
2	ReportTransferContent	M	M			M	M	-			
2.1	per report fields							-			
2.1.1	subject-identifier	M	M	G	D	M	M	-	Set the value of the "message-identifier" of the subject message."	It is expected that the value of message-identifier of the subject message is set.	

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
2.1.2	subject-intermediate-trace-information	O	M	G2	D	O	M-	-	If the originating-MTA-report-request of the per-recipient-indicator of the recipient of the subject message per-recipient-indicator takes the value "audited-report", set the value of trace-information of the subject message.		
2.1.3	original-encoded-information-types	O	M	X	D	X	M-	-			
2.1.4	content-type	O	M	X	D	X	M-	-			
2.1.5	content-identifier	O	M	X	D	X	M-	-			
2.1.6	returned-content	O	M-	X	D	X	M-	-			
2.1.7	additional-information	O	M-	X	D	X	M-	-			
2.1.8	extensions	M	M	G2	D	O	M-	-			
2.1.8.1	content-correlator	O	M	G2	D	O	M-	-	If the element "content-correlator" exists in the subject message, the value of the element is set.		
2.2	per-recipient-fields	M	M	T	T	M	M	-			
2.2.1	actual-recipient-name	M	M	T	T	M	M	-	Set the recipient-name of the corresponding per-recipient field of the subject message.		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
2.2.2	originally-specified-recipient-number	M	M	G	D	M	M	-	Set the value of originally-specified recipient number of the corresponding per-recipient field of the subject message.		
2.2.3	per-recipient-indicators	M	M	G	D	M	M	-	Set the value of the corresponding per-recipient-indicator of the per-recipient-fields of the subject message.		BITSTRING
2.2.4	last-trace-information	M	M	G	D	M	M	-			
2.2.4.1	arrival-time	M	M	G	D	M	M	-	Set the value of the time which AFTN/AMHS Gateway received the message		
2.2.4.2	converted-encoded-information-types	O	M	G2	D	O	M-	-	If the original-EIT and the final EIT are different, set the value of the final EIT. In other cases, nothing is set.		
2.2.4.3	report-type	M	M	G	D	M	M	-			
2.2.4.3.1	delivery	M	M	G2	D	O	X	-	Set this value when the probe is successfully passed to AFTN Component.		
2.2.4.3.2	message-delivery-time	M	M	G	D	M	X	-	If the report is a delivery report, set the time at which the subject message has been successfully passed to AFTN Component.		
2.2.4.3.3	type-of-MTS-user	M	M	G	D	M	X	-	Set the abstract value "other(6)".		If this parameter is omitted, then set the value "public(0)".

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
2.2.4.3.2	non-delivery	M	M	G	D	M	M	-			
2.2.4.3.2.1	non-delivery-reason-code	M	M	G	D	M	M	-	Set the defined NDRC.	If NDRC=1 and NDDC=0, then generate unknown addressee AFTN service message.	
2.2.4.3.2.2	non-delivery-diagnostic-code	O	M	G	D	M	M	-	Set the defined NDDC.		
2.2.5	originally-intended-recipient-name	O	M-	G2	D	O	O	-	If there exists redirection-history element, set the first O/R name of the subject message.		
2.2.6	supplementary-information	O	M-	G2	D	O	O	<=256	a) If delivery report (probe), set the value "This report only indicates successful (potential) conversion to AFTN, not delivery to a recipient" b) If non-delivery report set the value defined in each error (if not defined, set nothing)		
2.2.7	extensions	M	M-	G2	D	O	O	-			In X.400, if the value doesn't exist, it is considered to be not selected.
2.2.7.1	type	M	M	G2	D	M	M	-			Only supports "standard-extension".
	criticality	M	M	G2	D	M	M	-			
	value	M	M	G2	D	M	M	-			
2.2.7.1.1	redirection-history	O	M-	G2	D	O	M-	-	If there exists the "redirection-history", set that value.		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
2.2.7.1.2	physical-forwarding-address	O	M-	X	X	X	X	-			
2.2.7.1.3	recipient-certificate	O	M-	X	X	X	X	-			
2.2.7.1.4	proof-of-delivery	O	M-	X	X	X	X	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 5.2 Common Data Types

(Based on: ATSMHS SARPs Table 3.1.2-17 for O, Table 3.1.2-18 for R)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
1	MTS-Identifier										
1.1	global-domain-identifier	M	M	G	D	M	M	<=16			
1.2	local-identifier	M	M	G	D	M	M	<=32	Set the value which identifies the report in ia-5 characters.		
2	GlobalDomainIdentifier										
2.1	country-name	M	M	G	D	M	M	2 or 3	Set the country name of the AMHS management domain.		
2.2	administration-domain-name	M	M	G	D	M	M	<=16	Set the name of the AMHS management domain.		
2.3	private-domain-identifier	O	M-	X	D	X	M-	<=16			
6	TraceInformation										
6.1	TraceInformationElement	M	M	G	D	M	M	-			
6.1.1	global-domain-identifier	M	C1	X	D	M	M	-		If the last trace information of the global-domain-identifier differs from input MTA, generate NDR.	
6.1.2	domain-supplied-information	M	M	G	D	M	M	-			
6.1.2.1	arrival-time	M	C2	G	D	M	M	-	Set the value of the time which AFTN/AMHS Gateway received the message.		
6.1.2.2	routing-action	M	M-	G	D	M	M	-	Set the abstract value "relayed(0)".		
6.1.2.3	attempt-domain	O	M-	X	D	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support		AMHS-Action		AMHS-support		size	Detailed Action		Note
		ISP	SARPs	O	R	O	R		Origination	Reception	
6.1.2.4	additional actions	O	M-	X	D	X	M-	-			
6.1.2.4.1	deferred-time	O	M-	X	D	X	M-	-			
6.1.2.4.2	converted-encode-information-types	O	M-	X	D	X	M-	-			
6.1.2.4.3	other-actions	O	M-	X	D	X	M-	-			

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

6. Probe Transfer Envelope

Table 6.1 Probe Transfer Envelope

NO.	element	support ISP	AMHS support	size	Detailed Action	Note
					Reception	
1	probeTransferEnvelope	M	M	-		
1.1	per message fields	M	M	-		
1.1.1	probe-identifier	M	M	-		
1.1.2	originator-name	M	M	-		
1.1.3	original-encoded-inform ation-types	O	M	-		
1.1.4	content-type	M	M	-	If the value of BuiltInContentType is neither interpersonal-messaging-1984(2) nor interpersonal-messaging-1988(22), then generate NDR[NDRC=1,NDDC=15].	
1.1.5	content-identifier	O	M-	<=1 6		It was agreed to be "X" in the TMC.
1.1.6	content-length	O	M-	-		
1.1.7	per-message-indicators	M	M	-		BITSTRING In X.400, if the value doesn't exist, all bits are considered to be OFF.
1.1.7.1	disclosure-of-other-recip ients(0)	M	M	-		
1.1.7.2	implicit-conversion-proh ibited(1)	M	M	-		
1.1.7.3	alternate-recipient-allow ed(2)	M	M	-		
1.1.7.4	content-return-request(3)	M	M	-		
1.1.8	per-domain-bilateral-inf ormation	O	M-	-		It was agreed to be "X" in the TMC."
1.1.9	trace-information	M	M	-		
1.1.10	extensions	M	M	-		In X.400, if the value doesn't exist, it is considered to be not selected.

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support ISP	AMHS support	size	Detailed Action	Note
					Reception	
	type	M	M	-		Only supports "standard-extension".
	criticality	M	M	-		In X.400, if the value doesn't exist, it is considered to be not selected.
	value	M	M	-		
1.1.10.1	recipient-reassignment-prohibited	O	M-	-		
1.1.10.2	dl-extension-prohibited	O	M-	-		
1.1.10.3	conversion-with-loss-prohibited	O	M-	-		
1.1.10.4	originator-certificate	O	M-/X	-	If the value is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=1,NDDC=18].	
1.1.10.5	message-security-label	O	M-/X	-	If the value is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=1,NDDC=21].	
1.1.10.6	content-correlator	O	M-	<=5 12		
1.1.10.7	probe-origin-authentication-check	O	M-	-		
1.1.10.8	internal-trace-information	O	M-	-		
1.1.10.8.1	global-domain-identifier	M	M	-		
1.1.10.8.2	mta-name	M	M	<=3 2	Set the value which identifies AMHS.	
1.1.10.8.3	mta-supplied-information	M	M	-		
1.1.10.8.3.1	arrival-time	M	M	-		
1.1.10.8.3.2	routing-action	M	M	-		
1.1.10.8.3.3	attempt-domain	O	M-	-		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support ISP	AMHS support	size	Detailed Action	Note
					Reception	
1.1.10.8.4	additional actions	O	M-	-		
1.1.10.8.4.1	deferred-time	O	M-	-		
1.1.10.8.4.2	converted-encoded-information-types	O	M-	-		
1.1.10.8.4.3	other-actions	O	M-	-		
1.2	per-recipient-fields	M	M	-		
1.2.1	recipient-name	M	M	-		
1.2.2	originally-specified-recipient-number	M	M	-		
1.2.3	per-recipient-indicators	M	M	-		BITSTRING
1.2.4	explicit-conversion	O	M-	-		
1.2.5	extensions	M	M-	-		In X.400, if the value doesn't exist, it is considered to be not selected.
	type	M	M	-		Only supports "standard-extension".
	criticality	M	M	-		
	value	M	M	-		
1.2.5.1	originator-requested-alternate-recipient	O	M-	-		
1.2.5.2	requested-delivery-method	O	M-	-		
1.2.5.3	physical-redirection-attributes	O	M-/X	-	If the value is "CRITICAL FOR DELIVERY", then generate NDR[NDRC=1,NDDC=18].	
1.2.5.4	redirection-history	O	O	-		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

Table 6.2 Common Data Type

NO.	element	support ISP	AMHS support	size	Action	Note
					Reception	
1.	MTS-Identifier					
1.1	global-domain-identifier	M	M	<=1 6		
1.2	local-identifier	M	M	<=3 2		
2	GlobalDomainIdentifier					
2.1	country-name	M	M	2 or 3		
2.2	administration-domain-name	M	M	<=1 6		
2.3	private-domain-identifier	O	M-	<=1 6		The value of this parameter may be used in the future.
3	EncodedInformationTypes					
3.1	built-in-encoded-information-types	M	M	-		BITSTRING
3.2	non-basic parameters	O	M-	-		
3.3	extended-encoded-information-types	O	O	-		
6	TraceInformation					
6.1	TraceInformationElement	M	M	-		
6.1.1	global-domain-identifier	M	M	-	If the last trace information of this parameter differs from the input MTA, then generate NDR.	
6.1.2	domain-supplied-information	M	M	-		
6.1.2.1	arrival-time	M	M	-		
6.1.2.2	routing-action	M	M	-		
6.1.2.3	attempt-domain	O	M-	-		
6.1.2.4	additional actions	O	M-	-		
6.1.2.4.1	deferred-time	O	M-	-		

INTERFACE CONTROL DOCUMENT FOR AMHS (APANPIRG)

NO.	element	support ISP	AMHS support	size	Action	Note
					Reception	
6.1.2.4.2	converted-encode-infor mation-types	O	M-	-		
6.1.2.4.3	other-actions	O	M-	-		

**Checklist for Implementation of Ground/Ground ATN Network Infrastructure¹
Phase I: Initial Network Deployment for Ground/Ground Applications**

No.	Items to check	References	Remarks
1.	Establish ATN Implementation Team (AIT). Designation of Programme/Project Manager and required staff. Secure funding support.		AIT membership may include representatives from: - CAA/ATS Service provider(s); - Operations and engineering units; - Industry; - Airlines; - Aeronautical communication service provider(s); - Telecommunication service providers
2.	State Plan. Develop a phase plan with target date for the implementation of ATN infrastructure based on the regional planning documents and the ATN Standards and Recommended Practices (SARPs) and Guidance Material. Secure budget to support: - Trials/demonstrations, - Phased implementation, - Human resources and training.	ANNEX 10 Vol. III - Doc. 9705-AN/956 <i>Manual of Technical Provisions for the ATN</i>; - Doc. 9739-AN/961 <i>Comprehensive Aeronautical Telecommunication Network Manual</i>; Table CNS –1B of ASIA/PAC FASID ASIA/PAC Region ATN Transition Plan.	Edition 2 of Doc. 9705.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix G to the Report

No.	Items to check	References	Remarks
3.	Determine network architecture, policy. Consider factors such as: (a) Redundancy (no single point of failure); (b) Status and position within the regional ATN network; (c) Number and type of intra-State facilities to be connected (ATS, AOC, <i>etc.</i>); (d) Site geographical locations; (e) Security, availability, integrity (Quality of Service) requirements (depending on application type); (f) Projected circuit loadings vs. capacity of existing circuits; (g) Router loading; which will determine: - network topology, type and media, - network infrastructure requirements, - intra-State routing domains (AOC, ATS <i>etc.</i>) and routing policies	Interface Control Documents (ICDs) for ATN End Systems. Asia/Pacific Regional ICD: ATN Ground-Ground BIS Router. Asia/Pacific ATN Routing Architecture Plan. Asia/Pacific ATN Addressing Plan Table CNS –1B of ASIA/PAC FASID ASIA/PAC Region ATN Transition Plan.	(a) May require multiple routers at each network node and divers connectivity between nodes. (b) Backbone sites have greater requirements for availability and throughput. (c) Will AOCs be permitted access to the ATN backbone through ATS routers? (d) Affects network topology, choice of subnetwork, physical communications medium/media. (e) QoS and Security issues influence use of communications service provider, public network/leased line vs. dedicated private connection, <i>etc.</i> (f) Determine bandwidth requirement, including growth capacity (g) Avoid “choke points” that place excessive load on a single node. Local network deployment may use ATN BIS, ATN IS or OSI IS routers. Choice of router type depends on cost, capability, suitability for application requirements (aeronautical grade vs. commercial communications grade) <i>etc.</i> Commercial network simulation packages can help analysis of network performance under normal and abnormal conditions
	Develop ATN address allocation plan. Designate responsible agent for administering address allocation and registration of addresses with ICAO.		

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix G to the Report

Appendix G - 3

No.	Items to check	References	Remarks
4.	Equipment Acquisition and Evaluation. Conduct laboratory tests with proposed BIS, IS and ES to ensure connectivity and performance. Begin deployment at different network sites as tests proceed, and pre-operational testing.	ICDs.	Equipment Protocol Implementation Conformance Statements (PICS) can help evaluation of equipment compatibility and can assist in creating ICDs. Verify network performance: throughput, effects of failures <i>etc.</i>
5.	Inter-State ATN router inter-connection. Coordination with States concerned for agreement on implementation of inter/intra regional connections including technical interface, routing policy and target dates. The following aspects should be considered: - Applications to be supported. - Capability to support air/ground applications. - Use of existing circuits. - Connectivity and integrity. - Security. - Alternate routing capability. - System reliability. - QoS. Capacity and predicted load demand.	Asia/Pacific Region ATN Transition Plan. Asia/Pacific ATN Routing Architecture Plan. Asia/Pacific ATN Addressing Plan Asia/Pacific Regional BIS Router ICD. Applicable ES ICDs.	For AMHS, there is no need to provide two separate physical lines to support existing AFTN service and to introduce new AMHS circuit, as both requirements can be satisfied using one physical link given adequate capacity and QoS.
6.	AMHS inter-connection. - Provide AMHS/AFTN gateway while transitioning between AFTN and AMHS; - Follow the ASIA/PAC AMHS naming convention, detail arrangements for AMHS naming plan for MF-Addressing and XF-Addressing Scheme; - Register all PRMDs with ICAO Regional Office; - Conduct close coordination with States concerned. Establish date for phasing out of AFTN connections, once sufficient route diversity has been established in ATN network.	- PRMD value shall be selected as prescribed in Doc. 9705.	Inter- and intra-regional connections should be based on bilateral agreements and in compliance with AMHS SARPs, technical specification and ICD.

List of Abbreviations:

AFTN	Aeronautical Fixed Telecommunication Network
AMHS (ATSMHS)	ATS Message Handling System
ATN	Aeronautical Telecommunication Network
ATS	Air Traffic Service
BIS	Boundary Intermediate System
ES	End System
FASID	
ICD	Interface Control Document
IS	Intermediate System
PICS	Protocol Implementation Conformance Statements
SARPs	Standards and Recommended Practices

List of References:

List of References:

[1]	ICAO Annex 10 Volume III, DOC. 9705-AN/956 <i>Manual of Technical Provisions for the Aeronautical Telecommunications Network</i>	Edition 2
[2]	ICAO Annex 10 Volume III, DOC. 9739-AN/961 <i>Comprehensive Aeronautical Telecommunication Network Manual</i>	
[3]	Asia/Pacific Regional Interface Control Document (ICD): ATN Ground-Ground Boundary Intermediate System (BIS) Router	Draft rev. 1.1 (not yet approved)
[4]	Asia/Pacific FASID	
[5]	Asia/Pacific Region ATN Transition Plan.	
[6]	Asia/Pacific ATN Addressing Plan	
[7]	ATN Routing Policy for Asia/Pacific Region.	Draft (not yet approved)
[8]	Asia/Pacific ATN Routing Architecture Plan.	
[9]	AMHS ICD in Asia/Pacific Region	Final Draft (To be approved at Mumbai ATNTTF)

¹ This document comprises a checklist for the deployment of an ATN Ground Network to support initial ground-ground ATN applications, notably ATSMHS/AMHS, based on the Standards and Recommended Practices (SARPs) specified by Edition 2 of ICAO Doc. 9705-AN/956.

TITLE AND TERMS OF REFERENCE

TITLE: ATN Transition Task Force

TERMS OF REFERENCE:

Plan for implementation of the Aeronautical Telecommunication Network (ATN) in the ASIA/PAC region to meet performance and capacity requirements of CNS/ATM Systems. The planning also addresses the ongoing development of the AFS including digital speech communication.

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix H to the Report

Subject/Tasks of the ATN Transition Task Force

No.	Ref.	Task	Priority	Action Proposed/In Progress	Target
1	RAN/3 C 10/12 C 10/11d	Subject: ATN Transition Guidance Material Task: Develop Regional ATN Transition Guidance Material.		1) Development of detailed guidance material.	Completed
2	RAN/3 C 10/11d	Subject: ATN Transition Plan Task: Develop an ATN Transition Plan to provide seamless transition to ATN.	A	1) Develop Ground Transition Plan taking into account Air-to-Ground aspects. 2) Develop a set of planning documents covering: i) ATN Regional Routing Architecture ii) ATN Naming and Addressing Conventions, and iii) Documentation of the Assigned ATN Names and Addresses.	Completed
3		Subject: ATN major elements. Task: Provide performance and functional requirements of ATN.	A	1) Develop ATN Technical Documents. - Security - Performance - System Management	2003 2003 2003 2003
4	RAN/3 C 10/11b	Subject: AFTN related issues Task: Review operation of AFTN.	B	1) Evaluate and review the effect of increases or decreases in capacity and network changes, on circuit loading. 2) Plan network changes for support of OPMET and AIS databases, automated VOLMET broadcast.	On-going 2003
5		Subject: Planning and implementation information in ANP. Task: Develop G/G part of the CNS FASID.	A	Development of detail description for the existing tables and Charts for the G/G part of the CNS FASID. 1) Table CNS 1B – ATN Router Plan 2) Table CNS 1C – ATS MHS 3) Table CNS 1D – AIDC Routing Plan	Completed 2002 2003 2002 2003

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix H to the Report

No.	Ref.	Task	Priority	Action Proposed/In Progress	Target
6		Subject: ATN Documentation Task: Development of ATN Routing Documentations and ICDs.	A	Development of ATN Documents: 1) A Router ICD 2) A Routing Policies (IDRP/MTA) 3) Directory of Service 4) An AMHS ICD 5) An AIDC ICD	2002-2003 2002-2003 2002-2003 Completed 2005-2004
7		Subject: Use of the public Internet Task: Develop guidance material for the use of the public internet technology to support AFTN, where required	A	Study the possibility of using the public Internet and develop guidance material for its use to support low speed AFTN stations, as an interim measure, with particular emphasis on security and reliability.	2003
8		Subject: Use of IP Task: Develop guidance material for the use of IP as a Sub-Network for ATN	B	In accordance with the work being performed by ATNP, develop guidance material for the support of IP as a Sub-Network of the ATN, with particular emphasis on system compatibility between adjacent centers and security	2005

**STRATEGY FOR THE PROVISION OF PRECISION APPROACH
AND LANDING GUIDANCE SYSTEMS**

Considering:

- a) that, in the ASIA/PAC Region, ILS is capable of meeting the majority of requirements for precision approach and landing;
- b) that, requirements for provision of terrestrial-based navigation facilities, non-precision and precision approach and landing have been implemented in most cases;
- c) ~~that~~, the availability of a proven and standardized MLS to meet all weather operations requirements;
- d) the availability of ~~initial~~ ICAO GNSS SARPs and guidance material;
- e) feasibility of GBAS systems to support category II and III operations in 2006;
- f) the development and deployment of multimode receivers;
- g) the definition of Required Navigation Performance for approach, landing and departure operations;
- h) the knowledge that GNSS without augmentation can support non-precision approaches and ~~the that~~ augmented GNSS- based systems will be available to support Category I operations from ~~end of the~~ year ~~2003~~ 2004;
- i) the need to maintain aircraft interoperability both within the region and between the ASIA/PAC region and other ICAO regions and to provide flexibility for future aircraft equipage.

The strategy for ASIA/PAC Region in the provision of precision approach and landing guidance is:

- a) ILS be retained as an ICAO standard system for as long as it is operationally acceptable and economically beneficial;
- b) Implement GNSS₇ with GBAS to support Category I operations where appropriate;
- c) Conduct studies for the implementation of GNSS ground- based augmentation systems and GNSS avionics equipment for Category II and III operations;
- d) Introduce ~~the~~ applicable Required Navigation Performance (RNP) for approach, landing and departure operations in accordance with ICAO provisions.

- e) Conduct necessary on-going GNSS and RNP education and training for operational personnel ~~in-using GNSS~~ to ensure safe operations.
- f) Implement MLS where operational requirements cannot be satisfied by implementation of ILS or GNSS.

**STRATEGY FOR THE IMPLEMENTATION OF
GNSS NAVIGATION CAPABILITY IN THE ASIA/PACIFIC REGION**

Considering that:

- 1) Safety is the highest priority;
- 2) Elements of Global Air Navigation Plan for CNS/ATM system on GNSS and requirements for the GNSS implementation have been incorporated into the CNS part of FASID;
- 3) GNSS ~~SARPs, Standards and Recommended Practices (SARPs)~~, PANS and guidance material for GNSS implementation are available;
- 4) The availability of avionics including limitations of some receiver designs; the ability of aircraft to achieve RNP requirements and the level of user equipment;
- 5) Development of GNSS systems including satellite constellations and improvement in system performance;
- 6) Airworthiness and operational approvals allowing the current GNSS to be ~~used~~**applied** for en-route and non precision approach phases of flight without the need for augmentation services external to the aircraft;
- 7) Development status of aircraft-based augmentation systems;
- 8) ~~Regional~~ augmentation systems include both satellite-based **(SBAS)** and ground-based systems ~~(GBAS (local and regional) augmentations)~~;
- 9) Human, environmental and economic factors will affect the implementation of GNSS.

The general strategy for the implementation of GNSS in the Asia/Pacific Region is detailed below. This strategy is based on the regional navigation requirements of:

- (a) RNP10 for en-route in remote/oceanic areas;
 - (b) RNP4 for en-route and terminal phases of flight;
 - (c) NPA/APV for approaches and departures; and
 - (d) Precision approaches at selected airports.
- 1) There should be an examination of the extent to which the GNSS system accessible in the Region can meet the navigational requirements of ATM service providers and aircraft operators in the Region;
 - 2) Evolutionary introduction of GNSS Navigation Capability should be consistent with the Global Air Navigation Plan for CNS/ATM Systems;
 - 3) Implementation shall be in full compliance with ICAO ~~SARPs Standards and Recommended Practices~~ and PANS;

- 4) Introduce the use of GNSS as primary means of navigation in remote/oceanic areas;
- 5) Introduce the use of GNSS as a supplementary means of en-route navigation and non-precision approach;
- 6) States are encouraged to implement future GNSS approvals based on TSO C145/146 receiver standards or equivalents;

~~Any external augmentation system deemed necessary for the implementation of GNSS for a particular flight phase in an area under consideration (SBAS/GBAS including ground-based regional augmentation system) should be implemented in full compliance with ICAO SARPs;~~
- 7) To the extent possible, States should work co-operatively on a multinational basis to implement GNSS augmentation systems in order to facilitate seamless and interoperable systems;
- 8) States consider segregating traffic according to navigation capability and granting preferred routes to aircraft with better navigation performance with the exception of State aircraft;
- 9) States undertake a co-coordinated R & D programme on GNSS implementation and operation;
- 10) ICAO and States should undertake education and training to provide necessary knowledge in GNSS theory and operational application, including RNP, and
- 11) States establish multidisciplinary GNSS implementation teams, using section 6.10.2 of ICAO Circular 267, Guidelines for the Introduction and Operational Approval of the GNSS, as a guide.

Note1: Identified SBAS systems are EGNOS, MSAS and WAAS. The MSAS is expected to be available for providing augmentation for the Asia/Pacific region;

ADS-B STUDY AND IMPLEMENTATION TASK FORCE

Terms of Reference

- Evaluate standardised ICAO technology for ADS-B and recommend the most suitable technology for selection as a preferred standard for the Asia/Pacific Region.
- Identify and quantify specific benefits enabled by the use of ADS-B such as reduced separation standards, optimum altitude and improved safety monitoring.
- Identify and quantify interoperability issues for interregional aircraft, civil and state aircraft, and aircraft categories.
- Make recommendations on a implementation plan including the determination of a mandatory equipage date for aircraft.
- Conduct a cost benefit analysis for the implementation of ADS-B.
- Encourage States in the adoption of the selected technology.

The Task Force is also expected to take into account of the following:

- Develop coordinated exemption recommendations(s) for aircraft operators unable to equip with the selected ADS-B link(s) by the regionally coordinated timeline (eg retiring aircraft) or requiring special handling due to infrequent operations in the region airspace (eg. State aircraft).
- Address technical and procedural methods to accommodate exempted aircraft
- Assess and identify potential operational impacts to both ATS and aircraft operators not equipped with the recommended ADS-B link by the coordinated timeline.

**FASID TABLE MET 7 – IMPLEMENTATION OF THE ISCS/2 AND
SADIS IN THE ASIA/PAC REGIONS**

International Satellite Communication System (ISCS/2)					
State/Territory	WAFS User	Location of VSAT	Access Approved	Equipment Installed	Equipment Operational
American Samoa (United States)		Information received from the US NWS, Honolulu via a dedicated circuit			
Australia	Bureau of Meteorology	Melbourne	X	X	X
China	China Meteorological Administration (CMA)	National MET Centre, Beijing	X		
	Civil Aviation Administration	Beijing Intl. Airport	X	X	X
	Civil Aviation Administration	Shanghai Intl. Airport	X	X	X
	Hong Kong Observatory	Hong Kong Intl. Airport	X	X	X
	Chinese Aeronautical Meteorology Association	Taipei	X		
Cook I.	Meteorological Service				
Fiji	Meteorological Service	Nadi Intl. Airport	X	X	X
French Polynesia (France)	Meteo France	Information received from France via satellite	X		
Indonesia	Meteorological and Geophysical Agency	Soekarno – Hatta International Airport	X	X	X
Japan	Japan Meteorological Agency	Kokusai Denshin Denwa Co.	X	X	X
Kiribati					
Malaysia			X		
Mongolia	Civil Aviation Authority	Ulaanbaatar	X		
Nauru					
New Caledonia (France)	Meteo France		X	X	X
New Zealand	MET Service of New Zealand, Ltd.	Auckland Wellington	X X	Backup only X	X
Niue					
Papua New Guinea	Meteorological Department	Port Moresby Intl. Airport	X	X	X
Philippines	Department of Meteorology	Manila	X	X	X
Republic of Korea	Meteorological Services	Seoul Intl. Airport	X	X	X
Samoa					
Singapore	Singapore MET Service	Singapore/Changi Intl. Airport	X	X	X
Thailand	Meteorological Department	Bangkok Intl. Airport	X		
Tonga					
Tuvalu					
Vanuatu	Meteorological Service	Port Vila	X		
Viet Nam	Meteorological Service	Hanoi City	X	X	X
United States	National Weather Service	Guam Hawaii	X X	X X	X X
Wallis I. (France)	Meteo France	Wallis	X	X	X

Satellite Distribution System (SADIS)					
State/Territory	WAFS User	Location of VSAT	Access Approved	Equipment Installed	Equipment Operational
Australia	Bureau of Meteorology	Perth	X	X	
Bangladesh	Department of Meteorology	Dhaka	X	X	X
Brunei	Department of Civil Aviation	Brunei Intl. Airport	X	X	X
China	China Meteorological Administration (CMA)	National MET Centre, Beijing	X		
	Civil Aviation Administration	Beijing Intl. Airport	X	X	X
	Civil Aviation Administration	Shanghai Intl. Airport	X	X	X
	Hong Kong Observatory	Hong Kong Intl. Airport	X	X	X
	Chinese Aeronautical Meteorology Association	Taipei	X		
	Civil Aviation Administration	Macau Intl. Airport	X	X	X
DPR of Korea	General Administration of Civil Aviation	Pyongyang Intl. Airport	X	X	X
India	Meteorological Department	New Delhi	X	X	X
Indonesia	Meteorological and Geophysical Agency	Headquarters	X	X	
Lao PDR	Department of Meteorology	Vientiane, Watty	X	X	X
Malaysia	Department of Meteorology	Kuala Lumpur Intl. Airport	X	X	X
Maldives	Department of Meteorology	Male Intl. Airport	X	X	X
Mongolia	Civil Aviation Authority	Ulaanbaatar Intl. Airport	X	X	X
Nepal	Department of Meteorology	Kathmandu Intl. Airport	X	X	X
Pakistan	Meteorological Department	Karachi Intl Airport	X	X	X
Republic of Korea	Korea Meteorological Administration	Incheon Intl. Airport	X	X	X
Singapore	Meteorological Service	Singapore/Changi Intl. Airport	X	X	X
Sri Lanka	Department of Meteorology	Colombo	X	X	X
Thailand	Thai Meteorological Department	Bangkok Intl. Airport	X	X	X
Vietnam	Civil Aviation Administration	Gialam Airport, Hanoi	X	X	X
	Civil Aviation Administration	Tan-Son-Nhat Intl. Airport, Ho Chi Minh	X	X	

SADIS STRATEGIC ASSESSMENT TABLES
CURRENT AND PROJECTED OPMET DATA VOLUMES 2002-2006

TABLE 1

ICAO REGION: ASIA

MAIN ROUTING(S): AFTN, Direct Line (GTS)

(E.G CAPSIN AND AFTN/GTS)

	Current 2002	Projected 2003	Projected 2004	Projected 2005	Projected 2006
ALPHANUMERIC OPMET DATA					
Number of FC bulletins issued per day	298	300	300	310	310
Average number of stations per FC bulletin	6	6	6	6	6
Number of FT bulletins issued per day **	372	375	375	380	380
Average number of stations per FT bulletin	6	6	6	6	6
Number of SA bulletins issued per day	1643	1650	1670	1700	1700
Average number of stations per SA bulletin	6	6	6	6	6
Number of SP bulletins issued per day	0	50	50	50	50
Number of SIGMET bulletins issued per day	16	50	50	50	50
(WS, WV and WC) for relevant FIRS					
OTHER OPMET DATA					
Number of other bulletins issued per day	-	-	-	-	-
(please specify header(s))					-
Average number of stations per bulletin	-	-	-	-	-
<i>TOTALS</i>					-
Total number of OPMET bulletins per day	2329	2425	2445	2490	2490
Average size of OPMET bulletin (bytes)	312	350	350	350	350
TOTAL ESTIMATED OPMET DATA VOLUME PER DAY (BYTES)	727K	849K	856K	872K	872K

CURRENT AND PROJECTED T4 FACSIMILE CHART VOLUMES 2002-2006

TABLE 2

ICAO REGION: ASIA
MAIN ROUTING(S):GTS

(E.G CAPSIN AND AFTN/GTS)

T4 FACSIMILE CHART INVENTORY	Current 2002	Projected 2003	Projected 2004	Projected 2005	Projected 2006
WMO Header/Chart name					
Time of issue of chart (UTC)	No Requirement	No Requirement	No Requirement	No Requirement	No Requirement
Average size of chart (bytes)					
Chart type (e.g. wind/temp/SIGWX)					
Chart level (FL range or medium/high level)					
Validity time of chart VT (UTC)					
WMO Header/Chart name					
Time of issue of chart (UTC)					
Average size of chart (bytes)					
Chart type (e.g. wind/temp/SIGWX)					
Chart level (FL range or medium/high level)					
Validity time of chart VT (UTC)					
TOTALS					
Total number of T4 charts issued per day					
Average size of each chart (bytes)					
TOTAL ESTIMATED T4 CHART DATA VOLUME PER DAY (BYTES)					

(Levels: medium FL 100-250, high>FL250)

(*1 octet = 8 byte = 1 character)

CURRENT AND PROJECTED BUFR DATA VOLUMES 2002 -2006
TABLE 3

ICAO REGION: ASIA

MAIN ROUTING(S):GTS

(E.G CAPSIN AND AFTN/GTS)

BUFR SIGWX MESSAGES	Current 2002	Projected 2003	Projected 2004	Projected 2005	Projected 2006
<i>WMO Header</i>					
Time(s) of issue of data (UTC)	No Requirement	No Requirement	0700, 1300, 1900, 0100	0700, 1300, 1900, 0100	0700, 1300, 1900, 0100
Average size of message (bytes)			15K	15K	15K
Data level (e.g. FL range or low/medium/high level)			SWL/SWM*	SWL/SWM*	SWL/SWM*
Validity time(s) of data VT (UTC)			1200, 1800, 0000, 0600	1200, 1800, 0000, 0600	1200, 1800, 0000, 0600
<i>WMO Header</i>					
Time(s) of issue of data (UTC)			0700, 1300, 1900, 0100	0700, 1300, 1900, 0100	0700, 1300, 1900, 0100
Average size of message (bytes)			15K	15K	15K
Data level (e.g. FL range or low/medium/high level)			SWL/SWM*	SWL/SWM*	SWL/SWM*
Validity time(s) of data VT (UTC)			1200, 1800, 0000, 0600	1200, 1800, 0000, 0600	1200, 1800, 0000, 0600
<i>WMO Header</i>					
Time(s) of issue of data (UTC)			0700, 1300, 1900, 0100	0700, 1300, 1900, 0100	0700, 1300, 1900, 0100
Average size of message (bytes)			15K	15K	15K
Data level (e.g. FL range or low/medium/high level)			SWL/SWM*	SWL/SWM*	SWL/SWM*
Validity time(s) of data VT (UTC)			1200,1800,0000, 0600	1200,1800,0000, 0600	1200,1800,0000, 0600
TOTALS					
Total number of BUFR messages per day			12	12	12
Average size of messages (bytes*)			15K	15K	15K
TOTAL ESTIMATED VOLUME OF BUFR MESSAGES PER DAY (BYTES)			180K	180K	180K

(*1 octet = 8 byte = 1 character) (low level <FL 100, medium level: FL100 – 250, high level. FL 250)

CURRENT AND PROJECTED AIS DATA VOLUMES 2002 – 2006(Subject to statement of an operational requirement)**ICAO REGION: ASIA****TABLE 4****MAIN ROUTING(S): AFTN**

(E.G CAPSIN AND AFTN/GTS)

AIS (Subject to statement of an operational requirement)	Current 2002	Projected 2003	Projected 2004	Projected 2005	Projected 2006
ALPHANUMERIC AIS DATA (e.g. NOTAMs)					
Bulletin type:	No requirement	No requirement	No requirement	No requirement	No requirement
Number of bulletins issued per day					
Average size of each bulletin (byte*)					
Bulletin type:					
Number of bulletins issued per day					
Average size of each bulletin (byte*)					
CHART AIS DATA (e.g. AIP CHARTS)					
Header number/Chart type (e.g. AIP)					
Time(S) of issue of chart (UTC)					
Average size of chart (bytes*)					
Validity time of chart VT(UTC)					
Header number/Chart type (e.g. AIP)					
Time(S) of issue of chart (UTC)					
Average size of chart (bytes*)					
Validity time of chart VT(UTC)					
TOTALS					
Total number of AIS bulletins per day					
Average size of AIS bulletin (bytes)					
Total number of AIS charts issued per day					
Average size of AIS chart (bytes)					
TOTAL ESTIMATED VOLUME OF AIS DATA PER DAY (bytes)					

Sixth Meeting of the CNS/MET Sub-Group of APANPIRG
Appendix N to the Report

WAFS Computer Workstation Vendors

Global Science & Technology, Inc. 9111 Edmonston Road Suite 202 Greenbelt, Maryland 20770 USA	Ron Boyd, Vice President, Commercial Services Phone 301 313-0164 Ext 209
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COROBOR Systemes 134 Rue Julian Grimau 94400 Vitry France	Michel Bourgues, Director Phone 33 1 45 73 60 60
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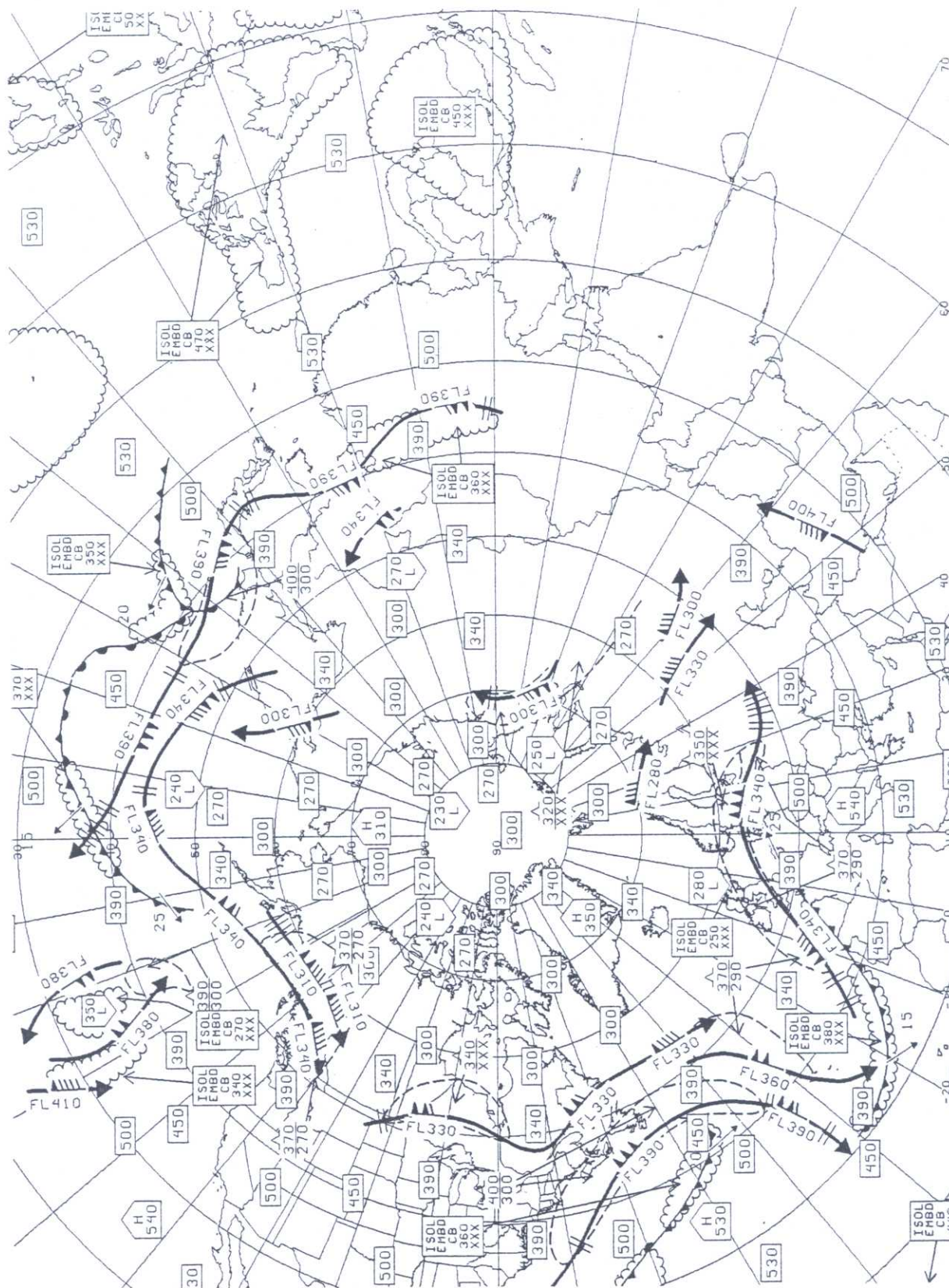
Info-Electronics Systems Inc. 1755 St-Regis Suite No. 100 Dollard-des-Ormeaux Quebec Canada H9B 2M9	Dr. Harinder Ahluwalia, President Phone 514 421-0767
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Netsys International (Pty) Ltd. P.O. Box 35798 Menlo Park 0102 South Africa	Ryn Bodde, Managing Director Phone 27 12 348-4246
--	--

Almos SIGMEX BV Landzichtweg 70 PO Box 422 4100 AK Culemborg The Netherlands	Alan Crisp, Sales and Marketing Phone 0345 54 40 80
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Sofreavia 3 Carrefour de Weiden 92441 Issy les Moulineaux Cedex France	Mr. T. Roy Phone 33 1 4123 4600
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Example of weather and geography depicted on Proposed Area L





ASIA/PAC WAFS Transition Plan and Procedures

45th Edition - July 2002~~1~~

ASIA/PAC WAFS Transition Plan and Procedures

~~45~~⁴th Edition - July 200~~21~~²⁴

Introduction

1. The Asia/Pacific WAFS Transition Plan and Procedures has been revised to take account of progress already made and in recognition of the impact of the final phase of WAFS.

The Final Phase of WAFS

2. This plan is based on the understanding that the Final Phase of WAFS, as it will apply to the Asia/Pacific Regions involves:

- a. Production and dissemination by the WAFCs of global forecast winds, temperatures, tropopause height, tropopause temperature and humidity in GRIB format. ~~The wind and temperature forecasts are now operational. Note: Humidity and forecast information for FL140 is expected to be introduced in November 2001 in response to user requirements, especially for ETOPS operations.~~
- b. The transfer of responsibility for the production for SWH from RAFCs to the two WAFCs, and hence the closing down of the RAFCs.
- c. The implementation of a communication system/s for the distribution of WAFS products in the Asia/Pacific Regions, to all the States that require the products in support of international air navigation. The final phase envisages this will be achieved via satellite broadcast (SADIS and ISCS/2). States may need to use an alternative distribution system.
- d. The production and distribution (via satellite broadcast) by the WAFCs, of Global, quality controlled SWH (FL 250 - 630) in BUFR format.
- e. The production and distribution (via satellite broadcast) by WAFC London of, and Global SWM in BUFR format (in raw form, i.e. not quality controlled except over limited geographical areas where required by PIRGS), and the production and distribution (via satellite broadcast) by WAFC Washington of quality controlled SWM in BUFR format over limited geographical areas where required by PIRGS.
- ef. The capability of States to convert BUFR and GRIB messages to graphical products on an operational basis.

SIGWX Charts

3. The table below shows the status of the SIGWX charts and responsible WAFCs.

Chart area & responsible WAFC	
G	London (SWH)

K	London (SWH)
D	London (SWH)
	<u>London</u> (Asia South medium & high)
J	Washington (SWH)
E	London (SWH)
F	Washington (SWH)
I	Washington (SWH)
M	Washington (SWH)

4. There will be an ongoing requirement for NMSs to monitor the quality of WAFC products, at least until the Final Phase of WAFS.

5. Action required to be taken by States to adhere to the provision of Annex 3 to ensure the relevant advisories for tropical cyclones, volcanic ash, the accidental release of radio active material and SIGMETs are made available to the WAFCs in a timely manner.

6. The SIGWX charts produced by WAFC Washington are also available on the US NWS Aviation Weather Center Internet site at: <http://www.awc-kenws.noaa.gov/awc/hilvl.html> ~~scs, with the exception of Area M.~~ All WAFC London products ~~are will be~~ available on an [password controlled](#) internet ~~-based FTP~~ site, together with appropriate GRIB and BUFR decoding facilities, ~~by the end of 2001.~~

7. States are encouraged to send comments to the WAFCs about the quality and accuracy of SIGWX on a frequent and regular basis during the transition period to the Final Phase. Contact details for comments are:

WAFC Washington

- i. NWS/Aviation Weather Center
Attention: Mr Ronald Olson
7220 NW 101st Terrace
Kansas City, Missouri
USA 64153-2371
- ii. E-mail addressed to: ronald.olson@noaa.gov
- iii. Fax number: 1 816 880 0650

WAFC London

- i. The Met. Office
Attention: Mr. ~~Neil Halsey~~ [Nigel Gait](#)
Civil Aviation Branch
Sutton House
London Road Bracknell
Berkshire RG12 2SY, United Kingdom

- ii. E-mail addressed to: neil.halseynigel.gait@metoffice.com
- iii. Fax number: +44 (1344) 854 156

Distribution of WAFS Products

8. Most States in the Asia/Pacific Regions are receiving wind, temperature ~~(and humidity in November 2001)~~ forecasts in GRIB, and SIGWX in T4 facsimile format from the two WAFCs by VSAT, either SADIS or ISCS/2. A range of WAFS products are available via the Internet and through bilateral arrangements with neighbouring national meteorological services.

9. In the ~~Final~~ ~~Phase~~ of WAFS, the two WAFCs will distribute by satellite broadcast Global, quality controlled, SWH, and ~~Global quality controlled~~ SWM ~~in raw form (with quality assurance for limited geographical areas (Note: WAFS London will also distribute by satellite broadcast SWM in raw form, i.e. not quality controlled, outside the limited geographical areas)).~~ Once suitable decoding and visualization software ~~is made available to~~ has been acquired by States in the Asia/Pacific Regions, to provide them with the ability to operationally construct graphical SIGWX from the BUFR messages, and graphical products from the GRIB messages, the T4 facsimile format charts will be eliminated from the satellite broadcasts.

~~The Production of Regional SWM Charts~~

~~10. The WAFCs may, where there is a regional requirement, produce as an interim arrangement (prior to the production of Global SWM in BUFR) SWM charts for limited areas of coverage.~~

~~The Production of National SWM Charts~~

~~11. The production and exchange of SIGWX in BUFR (i.e. when the final phase of WAFS is achieved) will add to the benefits derived from the WAFS by the States within the Asia/Pacific Regions.~~

Indicative Timetable for Achieving the Final Phase of WAFS

~~102.~~ The table given in Attachment 1 provides an indicative timetable for the implementation of the Final Phase of WAFS within the Asia/Pacific Regions.

Volcanic Ash Advisory Centres (VAACs)

~~113.~~ The VAACs will have an ongoing role of monitoring WAFS SIGWX charts that cover their areas of responsibility, and advising the appropriate WAFS to ensure the accurate inclusion of the volcanic ash symbol.

Tropical Cyclone Advisory Centres (TCAC)

~~124.~~ The TCACs will have an ongoing role of monitoring WAFS SIGWX charts that cover their areas of responsibility, and advising the appropriate WAFS to ensure the accurate inclusion of the tropical cyclone symbol.

ASIA/PAC WAFS Transition Plan and Procedures **Attachment 1**
Indicative Timetable for Achieving the Final Phase of WAFS

Item	Task/Stage of Implementation of WAFS	Anticipated Date
1	WAFS London products on access controlled internet site	late 2001 <u>completed</u>
2	The establishment of back-up distribution arrangements for WAFS products	late 2002 <u>completed</u>
3	Training in the operational conversion of GRIB forecasts to Wind / Temp charts	late 2002 (<u>SADIS</u>) <u>early 2004 (ISCS)</u>
4	All states that receive GRIB products capable of converting GRIB forecasts to Wind / Temp charts	early 2003 <u>mid 2004</u>
5	Removal of T4 Facsimile Wind / Temp charts from the satellite broadcast	mid 2003 <u>late 2004</u>
6	The provision to States in the Regions of suitable BUFR decoding software	mid 2002
76	Training in the operational conversion of BUFR to SIGWX charts	late 2003 (<u>SADIS</u>) <u>early 2004 (ISCS)</u>
87	States having the ability to operate the decoding software to convert BUFR SIGWX messages into graphical format	mid 2004
98	The satellite distribution by the two WAFCs of global SWH and <u>of SWM for limited geographical areas^(*)</u> in BUFR format	2003 (<u>SADIS</u>) <u>early 2004 (ISCS)</u>
109	Removal of T4 Facsimile SIGWX products from the satellite broadcast	late 2004

(*) WAFS London will also distribute by satellite broadcast SWM in raw form, i.e. not quality controlled, outside the limited geographical areas.

**Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix Q to the Report**

ASIA/PAC WAFS TRANSITION TASK FORCE

1. Terms of Reference

Expedite the implementation of the final phase of World Area Forecast System (WAFS) in the Asia and Pacific Regions and develop the transition plans.

2. Work Programme

The work to be addressed by the ASIA/PAC WAFS Transition Task Force includes:

- (a) Planning and coordinating the replacement of Wind/Temp charts in T4 facsimile format by GRIB encoded products.
- (b) Planning and coordinating the replacement of SIGWX charts in T4 facsimile format by BUFR encoded products.
- (c) Coordinating the provision of assistance to States to ensure the final phase of WAFS can be effectively implemented in the Asia and Pacific Regions.
- (d) Keeping the Asia/Pacific WAFS Transition Plan and Procedures up to date.

The work is expected to be carried out primarily by correspondence.

3. Composition

- (a) The Task Force is composed by experts from:

Australia; Hong Kong, China (Chairman); India; Japan; New Zealand; United Kingdom and United States.
- (b) IATA is invited to participate in the work of the Task Force.

ASIA/PAC OPMET EXCHANGE TASK FORCE (OPMET/E TF)

1. Terms of Reference

Review the OPMET exchange schemes in the ASIA/PAC Region and develop proposals for their optimization taking into account the current trends in the global OPMET exchange; update the regional guidance material related to OPMET exchange and develop monitoring and management procedures; liaise with similar groups in other ICAO Regions.

2. Work Programme

The work to be addressed by the ASIA/PAC OPMET Exchange Task Force includes:

- (a) to examine the existing requirements and any new requirements for the OPMET exchange in ASIA/PAC regions and to assess the feasibility of satisfying these requirements, taking into account the availability of the data;
- (b) to review the ROBEX scheme and other OPMET exchange schemes and based on this review to prepare proposal for updating and optimizing of the schemes;
- (c) to review and update the procedures for interregional exchange and for transmission of the regional OPMET data to the satellite broadcasts providers (ISCS and SADIS);
- (d) to review and amend the regional guidance materials on the OPMET exchange and to include procedures for the exchange of all required OPMET message types: SA, SP, FC, FT, WS, WC, WV, FK, FV, UA;
- (e) to develop procedures for monitoring and management of the OPMET information, based on the procedures used at the OPMET data banks; EUR OPMET update procedure to be used as the bases for development of similar procedure for the ASIA/PAC Regions.

3. Composition

- (a) The Task Force is composed by experts from:

Australia (Rapporteur), China, Fiji, Japan, Singapore, Thailand, United Kingdom and United States.
- (b) IATA is invited to participate in the work of the Task Force.

Sixth Meeting of the CNS/MET Sub-Group of APANPIRG
Appendix S to the Report

ASIA/PAC VOLCANIC ASH TASK FORCE (VA TF)

1. Terms of Reference

- (a) monitor the operational efficiencies of the IAVW within the ASIA/PAC regions.
- (b) continually seek ways to improve the operational efficiencies of the IAVW within the ASIA/PAC regions.

2. Work Programme

The work to be addressed by the ASIA/PAC Volcanic Ash Task Force includes:

- (a) review procedures for notification of volcanic activity from observing sources or aircraft to the ACCs, MWOs and VAACs in the region and to propose actions for their improvement;
- (b) investigate the deficiencies in the dissemination of the VA advisories, NOTAMs and SIGMETs and to propose actions for their improvement;.
- (c) investigate the need of the States for guidance and/or training related to the implementation of IAVW.
- (d) follow the development of the graphical warnings for VA and to coordinate the regional activities on this matter
- (e) report on its work to the CNS/MET SG/7.

The work is expected to be carried out primarily by correspondence.

3. Composition

- (a) The Task Force is composed by experts from:
Australia, Japan (Rapporteur), New Zealand, United Kingdom, United States.
- (b) IATA is invited to participate in the work of the Task Force.

**Sixth Meeting of CNS/MET/ Sub-Group of APANPIRG
Appendix T to the Report**

Appendix T - 1

List of Deficiencies in the CNS and MET Fields

Identification		Deficiencies				Corrective action			
Requirements	States/facilities	Description	Date first reported	Implementation status	Remarks	Description	Executing body	Target date for completion	Priority for action* *
VHF coverage to be provided in the Southern Part of Dhaka FIR and withdrawal of HF	Bangladesh	No requirement for HF except for smaller portion of FIR.HF used for ground-to-ground COM due to lack of ER VHF and reliable ATS DSCs.	1992	No change	HF air ground channels are used to exchange co-ordination messages causing frequency congestion	Survey of the installation sites for RCAG stations has been completed and other formalities are in progress.	Civil Aviation Authority of Bangladesh	Target date being changed each time the status was reviewed and currently established for June 2002.	A
Reliable AFS communications between Kolkata and Dhaka FIRs.	Bangladesh and India	Performance of the Kolkata/Dhaka HF RTT AFTN Circuit has been far below the required reliability of 97%. ATS DSC not implemented. IDD service used for ATS coordination not meeting operational requirement. Agartala/Dhaka and Dhaka/Guwahati. ATS DSCS not implemented.	ATS DSC 1993 AFTN 1995	No change	HF RTT circuit needs to be upgraded to LTT. Corrective action required to improve performance of the IDD services initially. A dedicated circuit should be established between Kolkata and Dhaka. IDD service to be provided for Agartala/Dhaka and Dhaka/Guwahati ATS DSC.	Action is being initiated to upgrade the HF RTT circuit and also to introduce Hotline IDD to enhance reliability pending, establishment of a dedicated circuit. Requirement for Agartala/Dhaka yet to be commissioned. Dhaka/Guwahati and Dhaka/Kolkata ATS DSCs. implemented on IDD. India is ready to upgrade the HF RTT circuit to LTT.	CAA Bangladesh and Airports Authority of India	10/01 06/02	A

Sixth Meeting of CNS/MET/ Sub-Group of APANPIRG
Appendix T to the Report

Identification		deficiencies				Corrective action			
Requirements	States/facilities	Description	Date first reported	Implementation status	Remarks	Description	Executing body	Target date for completion	Priority for action* *
Reliable HF/VHF and ATS direct speech circuits in India FIRs	India	RCAG VHF not reliable. HF congested. Some of the ATS DSCs use IDD and operational requirement is not met.	1999	Implementation Completed	Provision for a reliable link to RCAG stations is required to improve quality of VHF. Implementation of reliable ATS DSC is required to satisfy 15 second access time. HF congestion will be reduced upon improvement in coverage of VHF and availability of reliable of ATS DSCs.	VSAT progressively introduced for RCAG VHF stations. RCAG VHF stations at Porbandar and Agatti controlled from Mumbai is established in October 2001. RCAG VHF station at Vishakhapatnam controlled by both Chennai and Kolkata is established on 10 Oct. 2000. IDD Hotlines have been introduced for ATS DSC communication, satisfying requirements in most cases. HF congestion reduced due to enhancement in IDD communication and also to some extent due to the use of CPDLC.	Airports Authority of India	Implemented	A

**Sixth Meeting of CNS/MET/ Sub-Group of APANPIRG
Appendix T to the Report**

Appendix T - 3

Identification		deficiencies				Corrective action			
Requirements	States/facilities	Description	Date first reported	Implementation status	Remarks	Description	Executing body	Target date for completion	Priority for action* *
Adequate and reliable VHF COM	Myanmar	Quality and reliability of RCAG VHF inadequate and unavailability of required coverage	1998	No change	Improvements in the quality of link to RCAG stations and power supply system are required.	Action should be taken to provide reliable links between the RCAG stations and Yangon ACC. Power supply to the RCAG sites needs improvement.	DCA Myanmar	Established target date of end 1999 was not achieved. Revised target date is end of 2002	A

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix T to the Report

AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PACIFIC REGION

Identification		Deficiencies				Corrective action			
Requirements	States/ facilities	Description	Date first reported	Implementat ion status	Remarks	Description	Executing body	Target date for completion	Priority for action *
Meteorological observations and reports. Provision of Annex 3, Chapter 4	Solomon I.	Weather information is inadequate and not provided on a regular basis	1996	No Change	Reported by airlines operating to Solomon I.	Equipment to be upgraded and arrangements to be made for regular observations	Ministry of Transport, Works and Aviation, Solomon I.	To be determined	A
a) Requirements for forecasts to be provided. ASIA/PAC ANP, Part IV- Meteorology. Table MET 1A. b) Meteorological observations and reports. Provision of Annex 3, Chapter 4.	Kiribati	a) TAFs for Kiritimati not regularly provided by MET Centre of Fiji. b) MET observations from Kiribati not available on regular basis.	1998		Reported by the National Weather Service concerned during introduction of the new flight operations. Fiji reported that MET observations not regularly available due to communication problems.	a) Temporary arrangements have been made for the Honolulu MET Office to issue 18-hour TAFs during special flight operations. b) Communication between Kiribati and Fiji required to be considered. c) Fiji issues TAFs for Kiribati on a regular basis. d) MET observations in Kiribati in process of implementation.	Directorate of Civil Aviation, Kiribati. Civil Aviation Authority, Fiji CNS/MET SG	To be determined	A
a) Reporting of information on volcanic eruptions to civil aviation units. Provision of Annex 3. b) International airways volcano watch (IAVW) operational procedures.	Indonesia Philippines	Information on volcano activities not always reach civil aviation units due to lack of fixed communications with volcano observatories.	1995		a) Observed by States concerned. b) Reported at the WMO/ICAO Workshop on Volcanic Ash Hazards (Darwin, 1995)	a) MOU will be signed between Department of Transportation and Department of Mining and Energy, Indonesia b) Volcano observations and warnings will be made available on the Internet by Department of Mining and Energy. c) It is expected that MOU between Air	a) Volcanic Ash Warning Study Group (VAWSG) to develop proposal. b) ICAO Regional Office to monitor developments on this subject.	To be determined	A

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix T to the Report

Appendix T - 5

Identification		Deficiencies				Corrective action			
Requirements	States/ facilities	Description	Date first reported	Implementat ion status	Remarks	Description	Executing body	Target date for completion	Priority for action *
						Transportation Office and the Philippines Institute of Volcanology and Seismology will be considered. Office and the Philippines Institute of Volcanology and Seismology will be considered.			
a) Service for operators and flight crew members Provision of Annex 3, Chapter 9. b) Requirements for WAFS products for flight documentation. ASIA/PAC ANP, Table MET 1A.	Cambodia Myanmar Papua New Guinea PAC States	VSATs for reception of the ISCS and SADIS satellite broadcasts not installed.	1999		Expected lack of products for flight documentation due to forthcoming implementation of the final phase of WAFS and cease of RAFCs operations.	States consider urgent action to be taken for implementation of the ISCS and/or SADIS to install VSATs.	Civil Aviation Administrations in co-ordination with Met. Authorities of the States concerned. CNS/MET SG to monitor and coordinate.	To be determined	A
a) Aerodrome meteorological Office meteorological watch office Provisions of Annex 3, Chapter 3. Requirement for aerodrome meteorological office to be established ASIA/PAC ANP, Table MET 1A Requirements for meteorological watch office to be established ASIA/PAC ANP, Table MET 2A.	Cambodia	Requirements for Aerodrome meteorological office and meteorological watch office (WMO) to be established at Phnom-Penh international airport have not been met.	1992	No Change	Requirements have not been met due to staffing and funding problems. MET briefing and flight documentation for return flights provided by the MET offices of other aerodromes.	The Authority concerned to take urgent actions to meet requirements of ANP. If MWO is not able to meet all its obligations, proposal to be considered for temporary transfer of its responsibilities to another MWO and a NOTAM to be issued to indicate such a transfer.	State Secretariat of Civil Aviation, Cambodia.	To be determined	A

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix T to the Report

Identification		Deficiencies				Corrective action			
Requirements	States/ facilities	Description	Date first reported	Implementat ion status	Remarks	Description	Executing body	Target date for completion	Priority for action *
a) SIGMET information Provision of Annex 3, Chapter 7. b) Requirements for dissemination of SIGMETs, including SIGMETs for volcanic ash. ASIA/PAC ANP (FASID) Table MET 2A. c) International airways volcano watch (IAVW) operational procedures.	Bangladesh Cambodia India Indonesia Lao Malaysia Myanmar Nepal Papua New Guinea Philippines Sri Lanka	Requirements for issuance and proper dissemination of SIGMETs, including SIGMET for volcanic ash, have not been fully implement.	2000		a) Reported by airlines, b) Noted by Volcanic Ash Advisory Centres	a) ICAO to consider proposal for Special Implementation Project be established with the primary objective to improve implementation of SIGMET procedures. b) States to take urgent actions to implement the procedures.	a) ICAO to establish and implement the SIP. b) ICAO Regional Office to co- ordinate. c) Volcanic Ash Working Group to assist Secretariat with development of SIP and its implementation d) CNS/MET SG to monitor.	2003	A
METAR/TAF Provision of Annex 3, Chapters 4 and 6.	Nauru Solomon I. Papua New Guinea	Routine reports and aerodrome forecasts are issued using old WMO codes.	2001	⌀	Reported by airlines	a) Arrangements to be made for use of the new WMO codes. b) Training to be provided to staff as required.	Civil Aviation Administration in coordination with MET Services	To be determined	A

PART IV COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

1. INTRODUCTION

1.1 This part of the Asia and Pacific Basic Air Navigation Plan (ANP) contains elements of the existing system and the basic planning principles, operational requirements and planning criteria related to Communications, Navigation and Surveillance (CNS) system and are considered to be minimum necessary for effective planning of CNS facilities and services in the ASIA/PAC region. A detailed description of the facilities and services to be provided by States in order to fulfill the requirements of the Basic ANP is contained in the ASIA/PAC Facilities and Services Implementation Document (FASID). During the transition and pending full implementation of the CNS/ATM system, it is expected that the existing requirements will gradually be replaced by new CNS/ATM system requirements. Furthermore, it is expected that some elements of the CNS/ATM system will be subject to amendment, as necessary, on the basis of experience gained in their implementation.

1.2 This Standards, Recommended Practices and Procedures to be applied are contained in:

- a) Annex 10 – *Aeronautical Telecommunications and*
- b) *Regional Supplementary Procedures – Communications* (MID/ASIA and PAC SUPPS, Part 2 of Doc. 7030)

1.3 Background information which is of importance in the understanding and effective application of the plan, is contained in the Report of the Third Asia/Pacific Regional Air Navigation Meeting (Doc. 9614, ASIA/PAC/3 (1993)) on Agenda Items 10, 11 and 12.

1.4 Relevant Recommendations and/or Conclusions of ASIA/PAC/3 RAN Meeting and Regional Planning Groups, where applicable, are shown within brackets to indicate the source.

2. COMMUNICATIONS

2.1 General

2.1.1 The plan and details of the operational requirements for communications are contained in the Tables CNS-1A, CNS-1B, CNS-1C, CNS-1D, CNS-IE and CNS-2 and associated Charts of Part IV of ASIA/PAC FASID.

2.2 The Aeronautical Fixed Service comprises:

- a) the Aeronautical Fixed Telecommunication Network (AFTN);
- b) Ground elements of the Aeronautical Telecommunication Network (ATN). The data communications sub-networks and associated systems supporting the ground-ground applications of the aeronautical telecommunication network (ATN), namely the ATS message handling services (ATS MHS) and ATS Inter-Facility Data Communication (AIDC);
- c) gateways that will allow inter-operation between AFTN and ATS MHS.
- d) ATS direct speech circuits; and
- e) Meteorological operational circuits, networks and broadcast systems.

2.2.1 *Aeronautical Fixed Telecommunication Network (AFTN)*

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix U to the Report

Appendix U - 2

2.2.1.1 States should ensure that telecommunication agencies engaged in providing aeronautical circuits be impressed of the need for:

- a) high reliability terrestrial links connecting aeronautical facilities and common carrier terminals inclusive of priority restoration of service commensurate with the requirements of a safety service; and
- b) rapid restoration of circuits in the event of breakdown.

[ASIA/PAC/3, Conc. 10/1]

2.2.1.2 States operating AFTN circuits which do not function satisfactorily 97 per cent of the time during which the circuit is scheduled to be in operation, should exchange monthly circuit performance charts on the form provided in Appendix A of Agenda Item 10 of ICAO Doc. 9614, ASIA/PAC/3 (1993). Where a circuit consistently achieves 97 per cent reliability, the exchange of performance charts may cease. The circuit performance charts should be exchanged directly between the correspondent stations, with copies to the Administrations concerned and to the ICAO Regional Office. States should also identify the causes for inadequate circuit performance and take necessary remedial measures.

[ASIA/PAC/3, Con. 10/2]

2.2.1.3 States responsible for the operation of AFTN circuits which are not adequately meeting transit time requirements should record transit time statistics on the 23rd day of each third month (January, April, July and October) of each year, in accordance with the existing practices, for the AFTN circuits and terminals under their jurisdiction which do not meet the specified transit time criteria. The data recorded should be exchanged directly between the correspondent stations, with copies to Administration concerned and to the ICAO Regional Office.

[ASIA/PAC/3 Conc. 10/3]

2.2.1.4 States operating AFTN circuits should:

- a) record AFTN statistics in the form contained in Appendix B of Agenda Item 10 of ICAO Doc. 9614,

ASIA/PAC (1993) from 23 to 25 April and October each year;

- b) exchange the circuit loading data for each circuit with each correspondent station, provide a copy to ICAO Regional Office; and
- c) evaluate circuit loading and take appropriate remedial action when occupancy level exceeds permissible levels specified in the *Manual on the Planning and Engineering of the Aeronautical Fixed Telecommunications Network*, Doc. 8259-An/936)

[ASIA/PAC/3, Conc. 10/4]

2.2.1.5 States concerned should take positive measures to ensure system reliability and provide adequate management and supervision of facilities to eliminate system failure, and to ensure data integrity and timely delivery of messages.

[ASIA/PAC/3, Concl. 10/5]

2.2.1.6 The AFTN entry/exit points:

- a) between ASIA/PAC and AFI should be Brisbane and Mumbai;
- b) between ASIA/PAC and EUR should be Bangkok, Singapore and Tokyo;
- c) between ASIA/PAC and MID should be Karachi, Mumbai and Singapore;
- d) between ASIA/PAC and NAM should be Brisbane, Nadi and Tokyo;
- e) between ASIA/PAC and SAM should be Brisbane.

[[APANPIRG/11 Conc. 11/6](#)]

2.2.1.7 *Technical aspects of Aeronautical Fixed Telecommunications Network (AFTN) rationalization.*

2.2.1.7.1 The main trunk circuits interconnecting main AFTN communication centers should be

provided by LTT facilities, operate at a modulation rate commensurate with operational requirement, and employ international alphabet number 5 (IA-5) and character-oriented data link control procedures – system category B, or bit-oriented data link control procedures as defined in Annex 10, Volume III, Part I, Chapter 8.

2.2.1.7.2 Also the tributary circuits interconnecting tributary AFTN communication centers with main AFTN communication centers, with other tributary AFTN communication centers, or with AFTN stations should be provided with LTT facilities where available and feasible, and preferably operate at a modulation rate commensurate with operational requirement and employ IA-5 code and procedures and an appropriate controlled circuit protocol.

[ASIA/PAC AFS RPG/3, Rec. 3/1]

2.2.1.8 To support data communication requirements and to provide needed data integrity and minimal transit time, the CCITT X.25 protocol should be used between AFTN COM Centres and Main Tributary COM Centres in the ASIA/PAC Region.

[APANPIRG/4, Conc. 4/27 and

APANPIRG/7, Conc. 7/14]

2.2.1.9 States consider implementing digital communication networks or circuits in a co-ordinated manner in order to meet current and future Aeronautical Fixed Service (AFS) communication requirements for data/voice communications and to facilitate the introduction of ATN.
(APANPIRG Concl. 11/14)

2.2.2 ATN Infrastructure Transition and Implementation

2.2.2.1 The ATN Transition Plan outlines the requirements to increase bandwidth and upgrade protocols for those trunk circuits that will support main data flow of traffic in the ASIA/PAC region. The plan also provides target dates for implementation of Backbone Boundary Intermediate Systems (BBIS) and Boundary Intermediate System (BIS) in the ASIA/PAC region.
(APANPIRG, Concl. 12/14)

2.2.2.2 ATN development should be introduced in an evolutionary and cost-effective manner based on available ICAO SARPs materials and regional ATN technical and planning documents. The ATN infrastructure transition is expected to be implemented in three phases as follows:

- Phase 1, Upgrade of existing AFTN circuits where necessary to support the introduction of the ATN BBISs;
- Phase 2, Implementation of the ATN Regional BBISs; and
- Phase 3, Implementation of supporting ATN BISs.

2.2.3 ATS Direct Speech Circuits

2.2.3.1 ATS direct speech communications

[ASIA/PAC/3, Conc. 5/21]

States concerned should assign a high priority to the establishment, in accordance with Annex 11, 3.6.1.1, of efficient direct-speech communications between ATS units serving adjacent areas in order to permit proper use of air-ground frequencies and further implementation of the air traffic control service.

2.2.3.2 Voice switching centers should be provided at the following locations:

- | | |
|-------------|------------------|
| 1) Auckland | 2) Bangkok |
| 3) Beijing | 4) Mumbai |
| 5) Calcutta | 6) Guangzhou |
| 7) Jakarta | 8) Karachi |
| 9) Lahore | 10) Kuala Lumpur |
| 11) Chennai | 12) Nadi |
| 13) Tokyo | 14) Brisbane |

[ASIA/PAC/3, Rec. 10/15]

2.2.3.3 Dissemination of World Area Forecast System (WAFS) products in the ASIA/PAC region will be accomplished by satellite broadcast.

[ASIA/PAC/3, Rec. 10/19]

2.2.4 ATS Inter-facility Data Communication (AIDC) Circuits

Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix U to the Report

Appendix U - 4

State consider implementing the ATN application ATS Interfacility Data Communication (AIDC) in order to enable the exchange of ATS messages for active flights related to flight notification, flight coordination, transfer of control, surveillance data and free (unstructured) text data.

2.3 *Air/ground communications*

2.3.1 *Aeronautical Mobile Service and Aeronautical Mobile Satellite Service*

2.3.2 *Frequency utilization list*

2.3.2.1 States in the ASIA/PAC region should co-ordinate, as necessary, with the ICAO Asia and Pacific Regional Office all radio frequency assignments for both national and international facilities in the 190-526.50 kHz, 108-117.975 MHz, 960-1215 MHz and 117.975-137 MHz bands. The ICAO Asia and Pacific Regional Office, based on the information provided for this purpose by States, will issue, frequency lists No. 1, 2 and 3 at periodic intervals.

[ASIA/PAC/3, Conc. 11/4, 11/15 and 12/9]

2.3.3 *HF en-route communications*

2.3.3.1 States should be urged to co-ordinate on a national basis with the appropriate interested authorities, a programme directed towards achieving the elimination of the interference currently being experienced on some of the frequencies allocated to the Aeronautical Mobile (R) Service in the Region. When reviewing methods for developing such a national programme, consideration should be given to the procedures in Article S15 of the ITU Radio Regulations.

2.3.3.2 In the case of an unidentified interfering station, States should notify the Regional Office concerned, utilizing the procedure and the Report Form* developed by the Fifth Session of the Communications Division (1954) updated by the Communications Divisional Meeting (1978), Doc. 9239, Agenda Item 5. However, in the case of persistent harmful interference to an aeronautical service which may affect safety, it should be

immediately reported to ICAO, and to the ITU using the prescribed format, for appropriate action.

[ASIA/PAC/3, Concl. 11/6]

* The harmful Interference Report Form is provided in Attachment B to CNS part IV of FASID.

2.3.4 *Air-Ground elements of ATN*

2.3.4.1 With the implementation of the air-ground applications of ATN, it is important to ensure that transit response times are kept to a minimum level so as not to affect the overall response time that it takes for traffic such as ADS reports and CPDLC messages to be delivered to their final destination. This also reflects the need to ensure that critical ground links within the Region are capable of handling this information efficiently.

2.3.4.2 One important factor with air-ground traffic is the generation of routing information caused by aircraft that will move between various ATN routing domains. As aircraft move through various coverage media and FIR boundaries the ATN Routing Backbone will be notified of the changing routing data for each mobile aircraft in the region. To allow this routing information to be propagated within the region will require a minimum number of backbone routers to be implemented which protect all other ATN routers from being inundated with routing information.

[ASIA/PAC ATN Transition Plan]

3. **NAVIGATION**

3.1 *General*

3.1.1 The plan and details of operational requirements for radio navigation aids are contained in the Table CNS-3 and associated of Part IV of ASIA/PAC FASID.

3.1.2 States should continue to provide ICAO with information on their flight inspection activities for inclusion in the ASIA/PAC Catalogue of Flight Inspection Units and circulation to States in the Regions and to the ASIA/PAC Air Navigation Planning and Implementation Regional Group (APANPIRG).

[ASIA/PAC/3, Conc. 12/8]

3.1.3 The development of the radio navigation aids plan, and its subsequent documentation in relevant air navigation plan (ANP) publications, defines the respective radio navigation aid requirements at each location without reference to discrete frequency assignments. The ICAO Regional Office will continue to maintain its frequency selection and co-ordination role, including the maintenance and promulgation of Frequency List Nos. 1 and 2 in a timely and periodic manner. [ASIA/PAC/3, Conc. 12/9]

3.2 *Radio navigation aid requirements*

3.2.1 States which have not yet done so should install VHF omni directional radio range (VOR) supplemented by distance measuring equipment (DME) as the primary aid for en-route navigation and, except in specified circumstances, delete any parallel requirement for a non-directional radio beacon (NDB) from the air navigation plan. [ASIA/PAC/3, Rec. 5/22]

4. **SURVEILLANCE**

4.1 *General*

4.1.1 The plan and details of operational requirements for surveillance are contained in Table CNS 4 of ASIA/PAC FASID.

4.1.2 Surveillance systems for terminal and en-route air traffic control purposes should be installed, maintained and operated at those international aerodromes and en-route area control centers, whenever it is necessary to improve the safe and expeditious handling of air traffic and where the traffic density and associated complexity of operation, system delays, meteorological conditions and/or transition from oceanic to continental airspace would justify these installations. [ASIA/PAC/3, Rec. 5/28]

4.1.3 Where different systems are used for navigation and position determination within the same controlled airspace, the ground facilities involved should be collocated and/or oriented so as to provide compatible flight paths and to ensure, as far as practicable, a fully integrated air traffic control pattern. [ASIA/PAC, Rec. 7/14]

4.1.4 The Asia and Pacific region is characterized by use of:

- a) SSR Mode A/C and, in the near future, Mode S in some terminal and high density continental airspace;
- b) ADS in some parts of the region; and
- c) The diminishing use of primary radar.

4.1.5 Automatic Dependent Surveillance (ADS) is becoming available over the oceanic and continental airspace of the Asia and Pacific regions. SSR (augmented as necessary with Mode S) will continue to be used in terminal areas and in some high-density airspace.

4.2 *Automatic Dependent Surveillance (ADS)*

4.2.1 *Co-ordination of activities related to the implementation of ADS*

4.2.1.1 The introduction of air-ground data links, together with sufficiently accurate and reliable aircraft navigation systems, present the opportunity to provide surveillance services in areas which lack such services in the present infrastructure, in particular oceanic areas and other areas where the current systems prove difficult, uneconomic, or even impossible, to implement. ADS is a function for use by ATS in which aircraft automatically transmit, via a data link, data derived from on-board navigation systems. As a minimum, the data should include the four-dimensional position. Additional data may be provided as appropriate. The ADS data would be used by the automated ATC system to present information to the controller. In addition to areas which are at present devoid of traffic position information other than pilot provided position reports, ADS will find beneficial application in other areas, including high-density areas, where ADS may serve as an adjunct and/or back-up for secondary surveillance radar and thereby reduce the need for primary radar. Also, in some circumstance, it may even substitute for secondary radar in the future. As with current surveillance systems, the full benefit of ADS requires supporting complementary two-way pilot-controller data and/or voice communication

(voice for at least emergency and non-routine communication).

4.2.1.2 States should closely co-operate in the development of procedures for the implementation of ADS in the Region and participate to the extent possible in trials and demonstration related to the implementation of ADS.

[ASIA/PAC/3, Conc. 14/21]

4.3 *Secondary Surveillance Radar (SSR)*

4.3.1 *Implementation of surveillance systems*

4.3.1.1. Implementation of surveillance systems should be pursued as an enhancement to air traffic services where so required and the use of secondary surveillance radar (SSR) alone, in accordance with the *Regional Supplementary Procedures* (Doc. 7030), should be considered as a cost-effective alternative to primary surveillance radar.

[ASIA/PAC/3, Rec. 14/20]

PART IV COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS) SERVICES

INTRODUCTION

1. The standards, Recommended Practices and Procedures to be applied are listed in paragraph 1.2, Part IV – CNS of the ASIA/PAC Basic ANP. The material in this Part complements that contained in Part I – BORPC of the ASIA/PAC Basic ANP and should be taken into consideration in the overall planning process for the ASIA/PAC region.

2. This Part contains a detailed description/list of the facilities and/or services to be provided to fulfill the basic requirements of the Plan and are as agreed between the provider and user States concerned. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement (s) specified. The element of the ASIA/PAC Facilities and Services Implementation Document (FASID), in conjunction with the ASIA/PAC Basic ANP, is kept under constant review by the Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) in accordance with its schedule of management, in consultation with user and provider States and with the assistance of the ICAO Asia and Pacific Office.

AERONAUTICAL FIXED SERVICE (AFS) (FASID Tables CNS-1A, 1B, 1C, 1D and IE Charts CNS-1, 2 and 3)

3. Table CNS-1A, 1B and Charts CNS-1, CNS-2 show the requirements and implementation status for AFTN circuits and ATN Router connection [plan](#). ATS message handling system (AMHS) and ATS inter-facility data communication (AIDC) routing plans in the ASIA/PAC region are show in Table CNS-1C and 1D. The requirement and implementation status of ATS direct speech circuits is shown in Table CNS-1E and Chart CNS-3

3.1 Inter-regional and intra-regional routing of AFTN messages is contained in the ASIA/PAC AFTN Routing Directory. ICAO Asia and Pacific Office continues to maintain its coordinating role for amendments to the Directory and publish updated editions. States are required to co-ordinate any change in the routing with the ICAO Asia and Pacific Office well in advance to allow sufficient time to examine the proposal and finalize required details.

3.2 The regional Interface Control Documents (ICDs) are published by the ICAO Asia and Pacific Office, as required, to ensure standardization of controlled circuit protocols used for AFTN and ATS direct speech circuit signaling system. The ICDs published are as follows:

- 1) Character Oriented Data Link control Procedures System Category-B (APANPIRG, Concl. 5/14);
- 2) X.25 protocol for AFTN (APANPIRG, Concl. 7/14);
- 3) PSS1 Signaling System for digital ATS speech circuit network (APANPIRG, Concl. 8/17; [and](#)
- 4) Radar Data Exchanges (APANPIRG, Concl. 9/17);

[5\) AMHS ICD;](#)

[6\) Router ICD.](#)

3.3 Aeronautical Telecommunication Network

3.3.1 [The Guidance Material for ATN Transition adopted by APANPIRG provides technical guidance for regional transition planning, primarily focusing on ATN initial ground-to-ground applications.](#)

**Sixth Meeting of CNS/MET Sub-Group of APANPIRG
Appendix V to the Report**

Appendix V - 2

(APANPIRG, Concl. 10/11 and 11/18)

ATN Transition Plan

3.3.2 The ATN Transition Plan outlines the requirements to increase bandwidth and upgrade protocols for those trunk circuits that will support main data flow of traffic in the ASIA/PAC region. The plan also provides target dates for implementation of Backbone Boundary Intermediate Systems (BBIS) and Boundary Intermediate System (BIS) in the ASIA/PAC region.
(APANPIRG, Concl. 12/14)

Regional ATN Planning Documents

3.3.3 The ASIA/PAC ATN ATS Message Handling System Addressing Plan; ATN Network Service Access Point (NSAP); NSAP Address Registration Form and ATN Routing Architecture Plan provide guidance to States.
(APANPIRG, Concl. 12/13)

3.3.3.1 The ATN ATS Message Handling System Addressing Plan provides planning and technical guidance to States in the assignment and registration of addresses and names for transition of ground Aeronautical Fixed Telecommunication network (AFTN) services to the ATS Message Handling System (AMHS) within the ASIA/PAC region. The ASIA/PAC ATN AMHS Naming Plan aligns itself with the global AMHS naming scheme.

3.3.3.2 The ATN Network Service Access Point (NSAP) Addressing Plan and NSAP Address Registration Form provide guidance for States to assign regional NSAP addresses in a consistent manner within the ASIA/PAC region. Each field of the NSAP address is described with the recommended method of assigning value. This is important so that consistency in the use of NSAP addresses is obtained and efficiency in routing is maintained. Fields with purely local State matter are identified. ICAO ASIA/PAC Regional Office is the temporary allocation authority of the ADM field.

3.3.3.3 The regional ATN Routing Architecture is based upon the need for ground-ground infrastructure to eventually replace the existing AFTN infrastructure. For this reason, the routing

architecture uses the existing AFTN infrastructure as a guideline for the positioning of ATN equipment. The ATN routing architecture is designed primarily for the ground-ground environment. However, it is intended that the architecture will also be suitable as the routing architecture for the introduction of the air-ground communication requirements.

3.3.4 Until a formal registration authority is established within ICAO, the ICAO ASIA/PAC Regional Office will maintain a local register within the region for registering all Private Management Domains (PRMDs).

3.4 A Form for recording AFTN circuit loading statistics with the instruction for use of the Form, is provided in Attachment A (APANPIRG, Concl. 4/23)

**AERONAUTICAL MOBILE SERVICE (AMS)
AND AERONAUTICAL MOBILE SATELLITE
SERVICE (AMSS)**

(FASID Table CNS-2, Chart CNS-4)

4. Table CNS-2 shows the requirements and implementation status of aeronautical mobile services (AMS) and aeronautical mobile satellite service (AMSS) for HF VHF and satellite data links in the ASIA/PAC region. Chart CNS-4 shows radio telephony networks and the Appendix to Chart CNS-4 shows HF allotment areas and specific frequencies allocated to each network.

4.1 The ICAO Asia and Pacific Office continues to maintain its frequency selection and co-ordination role including the maintenance and promulgation of VHF frequency list (List No. 3) in the band 118 to 137 MHz, at appropriate periodic intervals. (ASIA/PAC/3 Concl. 11/4)

4.2 HF interference reporting Form specified in Conclusion 11/6 of ASIA/PAC/3RAN Meeting is provided in Attachment B.

4.3 A list of frequency designators to be included in HF air-ground communication log in accordance with provision of para 5.2.3.3 of Annex 10 Vol. II is provided in Attachment C.

**AERONAUTICAL RADIO
NAVIGATION SERVICE**

(FASID Table CNS-3, Charts CNS-5A, 5B,
6A and 6B)

5. Table CNS-3 lists, State-by-State in alphabetical order, requirements for ground based and satellite based radio navigation aids for various functions. Charts CNS-5A and CNS-5B provide locations where radio navigation aids are located in the Asia and Pacific regions, respectively. Chart CNS-6A and CNS-6B provide locations where radio navigation aids for final approach and landing functions are located in the Asia and Pacific regions, respectively.

5.1 The ICAO Asia and Pacific Office, continues to maintain its frequency selection and coordination role including maintenance and promulgation of frequencies in the bands 108 to 137 MHz and 960 –1215 MHz bands, assigned to national and international aeronautical radio navigation facilities. Updated Frequency Lists No. 1 and 2 of radio navigation aids are published at periodic intervals (ASIA/PAC/3, Concl. 11/5 and 12/9).

5.2 The detailed description of flight inspection units available in the ASIA/PAC region is contained in the Catalogue of Flight Inspection Units published by the ICAO Asia and Pacific Office.

SURVEILLANCE SERVICE
(FASID Table CNS-4)

6. Table CNS-4 contains information on the radar, facilities and ADS workstations that required for en-route and terminal surveillance in the ASIA/PAC region.
