ATNP/WG2/4/Report
30 May , 1995

AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL
Fair Oaks, Virginia, USA
15.5.95-19.5.95

Issue 1.0

ATN Internet Working Group 2 (WG2)

Fourth Meeting Report

1. Agenda Item 0 - Meeting Organisational Issues

At the initial ATNP-1 meeting held in Montreal 8-21 June 94, three working groups were created in order to further the work of the panel. This is a report of the fourth meeting of Working Group 2 (WG2) of the ATNP which took place in Fair Oaks, Washington (USA) in the period 15th - 19th May 1995.

17 experts from 8 countries and 3 international organisations attended the meeting. The list of attendees is attached to this report as Appendix A. The list of papers submitted for WG2 consideration at this meeting is attached to this report as Appendix B.

2. Agenda Item 1 - Approval of Agenda and Objectives

Mr. Sharma, Rapporteur of WG2 opened the meeting and drew the participants attention to the Working Papers that had been prepared for the meeting and, in particular, to WP/116 comprising the agenda, a list of all working papers, their assignment to agenda items, a list of meeting objectives, and a proposed schedule for the meeting. This had been prepared by Mr. Sharma in advance of the meeting.

The agenda and schedule were approved as proposed in WP/116.

3. Agenda Item 3 - Report of the CISEC on Issues Related to Air/Ground Application Requirements

3.1 WP/125 (Analysis of proposed modifications to the ATN Routing Architecture to meet ATNP/WG1 Routing Policy Requirements, CISEC Flimsy 1, Issue 1.0, May 1995) was presented by Mr. Colliver. The WP documented the conclusions of the CISEC which had met in the previous week in relation to solution satisfying the WG1 "traffic type policy" requirements as documented in Appendix D to the WG1 Toulouse meeting report (WP/118). The CISEC had developed three possible solutions referred to as "Option 1", "Option 4" and "Option 5" with each option being supported by at least one member of the CISEC. The CISEC could not therefore recommend any one of these three options and requested that the WG decide on the option to be adopted by the end of the meeting. It was, however, acknowledged by the CISEC that Option 4 was technically the best long-term solution albeit more complex that the other two options.

3.2 The "Option 5" proponent agreed to withdraw Option 5 if Option 4 was reduced in scope to preclude full IDRP route aggregation function. This was accepted by the Option 4 proponents and the reduced version of Option 4 was thereafter referred to as "Option 4 Lite". Each represented State/Organisation expressed an opinion on whether they supported "Option 4 Lite" or "Option "1 based on the presentations that had been made in WP/125 and its appendices. There was majority support for the Option 4 Lite primarily due to the fact that it was extensible and provided the best migration path for the longer term (indeed new user requirements for ATSC traffic types were identified by WG3 in their parallel meeting). It was also believed to be possible to validate this option within the CNS/ATM-1 Package timeframe, (at least two European representatives believed that it would be possible to implement the Option by the 4th quarter 95). It was therefore concluded that WG2 adopt "Option 4 Lite" as the basis for further SARPs and guidance material development.

3.3 WP/117 (Meeting Application Specific Routing Policy Requirements in CNS/ATM-1 Package) and , WP/126 (Analysis of Alternatives for CNS/ATM-1) were noted but not presented in detail since their contents had been taken into consideration by the CISEC in its development of WP/125.

4. Agenda Item 2 - Review of ATNP/1-WP59 (VDL Design Guidelines/Desirable Features)

4.1 WP/48 (Requirements and Desirable Features for a Future ATS Air-Ground Communications System; VHF Digital Link (VDL) Design Guidelines and Summary of VDL Mode 2 Performance Characteristics (ATNP/1-WP/59)) was introduced by Mr. Sharma. It was noted that the AMCP had requested that the ATNP review and comment on the material contained in WP/48. Mr. Sharma stated that the Panel Secretary (M Paydor) has

requested that the results of the WG2 review be faxed to the AMCP meeting in Martinique that was taking place concurrently with WG2.

4.2 WP/120 (Comments on ATNP/1-WP/59 (WG2/48)) was presented by Mr. Sharma. WP/120 proposed comments on WP/48 on a paragraph by paragraph basis. The WG reviewed and amended where appropriate the proposed comments and agreed that the resulting document should be forwarded as a part of the response to AMCP.

5. Agenda Item 4 - Joint Session with WG3 (Tuesday/Wednesday)

5.1 WP/118 (Appendix D to the 2nd Meeting Report of WG1 ("WG1 Flimsy #3") was jointly reviewed.

2.1 General Design Requirements

1. Transit Delay

It was noted that WG3 will specify transit delay (mean, 95 percentile and 99 percentile) values for each CNS/ATM-1 Application. It was agreed that there is no direct impact in the internet SARPs since these requirements will be satisfied through appropriate network design/dimensioning. It was further noted that WG3 is considering developing two performance levels where transit delay values would be specified for large and small messages.

2. Residual Error Rate

It was agreed that all CNS/ATM-1 applications will specify the same value of RER which, it is anticipated, will be satisfied by the communications service.

3. Service Loss Reporting

It was agreed that this requirement will be satisfied by the upper layers.

4. Availability

It was agreed that application availability requirements will be satisfied through appropriate network design.

5. Service Restoration time

It was noted that WG3 will specify service restoration times for each CNS/ATM-1 application and that these requirements will be satisfied through appropriate network design.

2.2 Message Sequencing

It was noted that the message sequencing requirement will be satisfied through use of the Connection Oriented Transport Protocol as defined in the ATN Manual. It was further noted that WG2 will also be defining the provisions for the Connectionless Transport Protocol in the CNS/ATM-1 internet SARPs, the use of which may be applicable to ground-ground applications.

2.3 Communication Service Termination

It was noted that this requirement would be satisfied through use of the ACSE in the upper layers.

2.4 Priority

There was considerable discussion on the priority requirement. The final conclusion of the joint meeting is documented in Appendix H. The requirements as documented in the WG1 Flimsy were accepted.

2.5.1 Routing Policy/QoS Policy

The feasibility of specifying dynamic QoS based routing within the CNS/ATM-1 Package was questionable since it was felt that further research in the subject was required. Furthermore it was pointed out that QoS based routing could only be applied on a local basis (i.e. not end-to-end) and may therefore result in routing decisions being made that are not optimal when viewed from a global perspective. It was noted, however, that the use of such dynamic routing policy may be defined in the CNS/ATM-2 Package should research efforts demonstrate tangible benefits. WG2 agreed to discuss the issue further under Agenda Item 5 of their meeting and to report back to the joint session.

2.5.2 Traffic Type Policy

WG2 reported that they had agreed on a solution ("Option 4 Lite") that would satisfy the Traffic Type Policy requirements.

Mr. Colliver noted that the ATSC related requirements would result in the possibility of a message being discarded should the required air/ground subnetwork preference not be available. Whilst this may be acceptable for AOC traffic it was agreed that an alternative approach should be investigated that may be more applicable to satisfy the needs of ATSC communications. A drafting group was established to consider alternative approaches.

5.2 WP/123 (Proposed High Level Structure of the CNS/ATM-1 Package SARPs & Guidance Material) was presented by Mr. Sharma. Following review of the proposals in the WP the joint meeting agreed the following high level structure for the CNS/ATM-1 SARPs **and** guidance material:

- Part 1 Introduction and System Level Requirements for the CNS/ATM-1 Package
- Part 2 CNS/ATM-1 Applications
- Part 3 CNS/ATM-1 Upper Layer
- Part 4 CNS/ATM-1 Internet

(Note: This structure was further refined later in the meeting - see Appendix I for the finally agreed structure)

Mr. Calow accepted that WG1 would be responsible for the development of Part 1. Mr. Sharma stated that WG2 would deliver a first draft of Part 1 to the October WG1 meeting since it would be derived from Chapters 1 to 4 of the current internet SARPs.

5.3 WP/129 (General Review of ICAO Annexes, Adaptation of Specifications Developed by Bodies other than ICAO into Annexes to the Convention or Advisory Material) was presented by Mr. Sharma as an information paper. The WP, recently received from the Panel Secretary, was an ANC paper that had been presented to the ICAO Council and it was understood that the proposals contained therein had yet to be approved. Mr. Sharma noted that the Panel Secretary had "urged" WG2/WG3 to apply the basic principles contained therein. The WP proposed, inter alia, a three layer approach to the development of standards material. The three layer approach comprised:

- Annexes to the Convention on International Civil Aviation (broad, high level material that should make references to the ICAO technical documents)
- ICAO technical documents (comprising detailed requirements to be published under the "Blue Cover")
- guidance material (to be published separately from Annex material).

The meeting noted that, based on the above proposals , it was currently developing the latter two i.e. ICAO technical documents and guidance material. It was agreed that the WG2/WG3 continue to develop their material as currently planned and, should the ANC proposal be adopted, then the material developed would be the "ICAO technical documents" and that WG1/WG2/WG3 would need to develop the "high level" Annexes (between the October '95 and February '96 meetings) that would make reference to the technical documents.

It was noted that the WP proposed that the "ICAO technical documents" would be published with a "Blue Cover", given this, it was therefore assumed that the material contained therein would require translation. The meeting then discussed the deadlines for submission of draft CNS/ATM-1 material to ICAO in order for it to be translated in time for ATNP/2, which it is assumed is scheduled for 4th quarter 1996. It was anticipated that the total amount of material that would be developed for the CNS/ATM-1 SARPs and guidance material would approximately be 1,000 pages. Mr. Sharma reported that following discussion with the Panel Secretary he had received a fax from him which stated that ICAO would be in a position to translate 1,000 pages of material providing that it was made available by June 1996 at the latest. The meeting concluded that should any part of the material be deemed to be stable at the February 1996 meeting then it should be submitted shortly thereafter with any changes being submitted at the June 1996 meeting. It was, however, recognised that the bulk of the material was unlikely to be validated and therefore mature before June 1996.

The meeting noted that the word processor being used to draft material was Microsoft Word 6.0 based and that a considerable amount of effort would be required to translate the material into the tool used by ICAO (WordPerfect 5.1). A flimsy was drafted (Appendix F) which requested ICAO to consider the use of Microsoft Word for processing of the draft ATNP material.

5.4 The meeting discussed the need to develop a document which would outline the requirements for the CNS/ATM-2 Package. It was agreed that input for the CNS/ATM-2 applications from the ADSP was required by the June '96 at the latest (preferably February '96) meeting so that it may be reviewed and the corresponding CNS/ATM-2 Package requirements presented to ATNP/2. A Flimsy (Appendix D) was drafted and will be submitted to the ADSP via the Panel Secretary. In the case of the internet a number of high level areas for the CNS/ATM-2 Package were discussed which included systems management, dynamic QoS based routing, security, QoS monitoring, support of other subnetworks and broadcast facilities. It was noted that WG1 had an agreed deliverable "CNS/ATM-2/3 Requirements" and that both WG3 and WG2 should deliver their CNS/ATM-2 Package requirements to WG1.

6. Agenda Item 2 - Review of ATNP/1-WP59 (VDL Design Guidelines/Desirable Features) (Continued)

6.1 WP/119 (ATNP/WG2 Review of the conformance of AMCP recommended VDL Design Guidelines to the ATN Manual requirements for mobile subnetworks) was presented by Ms Thulin. A number of detailed changes were agreed to and it was agreed that the modified comments would be included in the WG2 response to the AMCP. The lack of priority support was noted and brought to the attention of WG3 for consideration in relation to their performance requirements for the CNS/ATM-1 Applications.

6.2 WP/130 (AMCP/WG-C/7, Appendix A to the Report on Agenda Item 4) was presented by Ms. Thulin. The WP had been developed by the AMCP which was meeting concurrently in Martinique. The agreed WG2 comments on WP/119, 120 and 130 were forwarded to the AMCP before the conclusion of their Martinique meeting. *(Note: The response has also been mailed out to the atn-internet-technical mailing list).*

7. Agenda Item 5 - Review of Results of Joint Session

7.1 As tasked by the joint meeting WG2 reviewed the practicality of defining a dynamic QoS based routing mechanism within the CNS/ATM-1 internet SARPs. The WG concluded that it would not be feasible to define the mechanisms for the CNS/ATM-1 Package since further research in the subject was necessary given that a local decision may not necessarily be the optimal when the decision is viewed from a global perspective. It was, however, agreed that such mechanisms would be permitted on an intra-domain basis provided that there was no impact at the inter-domain level. It was agreed to report this decision back to the joint meeting (scheduled to take place on Friday) and the October WG1 meeting.

7.2 The WG reviewed the high level structure of the CNS/ATM-1 SARPs as agreed during the joint meeting. The WG agreed to submit draft material for "Part 1" (based on Chapters 1 to 4 of the draft internet SARPs) to the October WG1 meeting since it was agreed that WG1 would take on responsibility for the finalisation of Part 1 based on inputs from WG2 and WG3 on internet and application requirements respectively.

7.3 The WG reviewed the decision of the joint meeting to submit CNS/ATM-2 requirements to the October WG1 meeting. A number of subject areas were proposed for incorporation into the CNS/ATM-2 internet including security, dynamic QoS routing, systems management, support of emerging subnetworks, support of network layer broadcast facility. Mr. Crocker agreed to develop a WP for presentation to the October WG meetings providing a high level description of areas that are candidates for inclusion in the CNS/ATM-2 Package.

ACTION - 4/1 - US - TO DEVELOP HIGH LEVEL PROPOSALS FOR CNS/ATM-1 INTERNET REQUIREMENTS FOR PRESENTATION TO THE OCTOBER ATNP WG MEETINGS

7.4 The WG agreed on the need to agree on a Validation Report format at the July WG2 meeting. It was noted that the USA, EUROCONTROL, SITA, FRANCE, JAPAN, CANADA and the UK are currently/or plan to conduct validation activities the results of which would contribute to and be included to the extent possible in the WG2 Validation Report. Mr. Sharma agreed to propose a detailed format for the Validation Report at the Rome meeting based on the high level structure he had proposed at the Melbourne meeting. Eurocontrol agreed to assist Mr. Sharma in the development of the format.

ACTION - 4/2 - UK - TO DEVELOP DETAILED FORMAT FOR WG2 VALIDATION REPORT FOR PRESENTATION AT THE ROME MEETING

8. Agenda Item 6 - Development of internet SARPs and Guidance Material for CNS/ATM-1

8.1 The action list from the Toulouse WG meeting (replicated in WP/116) was reviewed and updated based on progress to date. The updated action list is at Appendix L.

8.2 Mr. Crenais (CISEC Chair) presented WP/124 (Report of CISEC Activities). The following WG2 decisions were made following his presentation:

- CISEC Deliverable D2 (Chapter/Appendix 5) was assigned to Mr. Sharma and Mr. Sandrelli
- CISEC Deliverable D4 (Chapter/Appendix 7) was assigned to Mr. Herber/Mr. Graf (subject to confirmation)
- CISEC Deliverable D8 (Chapter/Appendix 11) was assigned to Mr. Adnams/Mr. Whyman (subject to confirmation)
- The first draft of all CISEC Deliverables (except D3) is to be made available no later than 9th June.
- The first draft of CISEC Deliverable D3 (Chapter/Appendix 6) is to be made available no later than 23rd June.
- The first draft of CISEC Deliverable D7 (Chapter/Appendix 10) is to be made available no later than 27th May.
- Comments on all CISEC Deliverables (except D3) are to be made available no later than 23rd June.
- Comments on D3 (Chapter/Appendix 6) are to be made available no later than 30th June.
- Comments on D7 (Chapter/Appendix 10) are to be made available no later than 9th June.
- Priority should be given to the processing of Appendices over Chapters.
- Based on the above Draft 2.1 of the internet SARPs will be made available to WG2 members (via the atn-internet-technical mailing list) no later than 3rd July thereby providing two weeks review time prior to the Rome meeting. Consequently draft 2.1 will not be submitted to the CCB as originally planned at the Toulouse meeting.
- Draft 2.1 will be presented to the Rome meeting (with revision marks indicating differences from draft 2.0 where possible) as a Change Proposal in response to DR52.
- Following (or during if possible) the Rome meeting the draft 2.1 shall be enhanced to reflect agreed comments thereby creating draft 3.0, thereafter the CISEC shall cease to exist and draft 3.0 shall be placed under the CCB process.

- The support of the ACA compression algorithm will be retained as an optional feature in draft 2.1 (i.e CNS/ATM-1).

ACTION - 4/3 - US - SUPPORT MS. THULIN IN AMENDMENTS NECESSARY TO CHAPTER/APPENDIX 10 RELATED TO THE ACA.

- The support of the local reference compression algorithm will be mandatory for feature in draft 2.1 of the internet SARPs (i.e. in the CNS/ATM-1 Package)
- Eurocontrol will develop draft SARPs to support the "Option 4 Lite" solution as adopted under Agenda Item 3, and will liaise with the editors of other relevant deliverables (e.g. Chapter/Appendix 6,9,11) as appropriate.
- No congestion management will be specified in the CNS/ATM-1 Package unless the results of current Eurocontrol and/or USA validation/simulation activities demonstrate positive results from the adoption of any one strategy.

8.3 The WG reviewed and agreed with the priority requirement as documented in para. 2.4 of WP/118 (Toulouse WG1 Flimsy #3).

8.4 Mr. Colliver presented the results of the drafting group (Appendix G) that was established during the joint meeting to review the ATSC routing policy requirements that were documented in WP/118 (Toulouse WG1 Flimsy #3). The drafting group extended and replaced the ATSC routing policy requirements given in WP/118, specifying 8 new policies based on classes of transit delay. It was noted that the Option 4 Lite solution was extensible and could satisfy these requirements.

8.5 WP/121 (Congestion Management Strategies) was presented by Mr. Adnams. It was agreed that the different congestion management strategies outlined should be investigated further and where they demonstrate beneficial results then they should be considered for incorporation in the CNS/ATM-1 Package. The WP also identified a number of defects in the current draft 2.0 SARPs related to the area of congestion management and Mr. Adnams undertook to relay these to the appropriate CISEC Deliverable editor. Mr. Link reported that the US plan to conduct some simulation activities over the next month. Participants were encouraged to provide detailed comments on WP/121 to Eurocontrol.

ACTION - 4/4 - EUROCONTROL - TO SUBMIT DEFECTS ON CONGESTION MANAGEMENT MATERIAL IN DRAFT 2.0 TO RELEVANT CISEC EDITOR WHERE APPLICABLE

8.6 WP/127 (Simulation Study of the Hold Down Timer in the ATN) was presented by Mr. Link as an Information Paper. Mr. Link stated that, as yet, no changes are being proposed to the draft SARPs and that the subject is still under further investigation.

8.7 WP/128 (Issues Related to Meeting Operational Requirements for Routing) was presented by Mr. Link. The WP proposed two scenarios where the first due to local routing policy would not result in the highest preference air/ground subnetwork being used when it is actually available and the second indicated a situation where a routing loop might occur. After much discussion it was concluded that such situations should not arise and that additional guidance is required in Chapter 6.

ACTION - 4/5 - CENA - TO DEVELOP ADDITIONAL GUIDANCE IN CHAPTER 6 RELATED TO THE SCENARIOS IDENTIFIED IN WP/128 (ISSUES RELATED TO MEETING OPERATIONAL REQUIREMENTS FOR ROUTING)

8.8 WP/131 (Package 1 Requirement for Air-Ground Routing Exchange) was presented by Mr. Link. The paper revisited the decision of the Toulouse WG meeting that agreed that the support of IDRP in the CNS/ATM-1 Package would be "recommended" for implementation in mid 1999. WP/131 proposed that the "recommendation"

be amended to a "requirement" for implementation of IDRP by July 1999. Mr. Link reported that the US had contacted Mr. Henning (UAL) who it was stated had no objection to the proposal. The WG accepted the proposal in WP/131 and agreed that such a requirement would best be included in Appendix 5 of the draft 2.1 internet SARPS.

ACTION - 4/6 - UK - TO INCLUDE THE IDRP IMPLEMENTATION REQUIREMENT AS PER WP/131 IN APPENDIX 5

9. Agenda Item 4 - Joint Session with WG3 (Friday)

9.1 The meeting jointly reviewed the WG2 liaison regarding the lack of priority support in the VDL subnetwork. The conclusions of the meeting are documented in Appendix J which will be forwarded to the Panel Secretary for onward transmission to the AMCP.

9.2 The meeting reviewed and agreed the results of the drafting group (Appendix G) that was established during the first joint session to review the ATSC routing policy requirements. It was noted that the transit delay values for the 8 classes defined will be provided at the next WG3 meeting. It was further noted that the need for any additional classes was considered unlikely at this point in time. It was noted that the revised approach for ATSC would also be presented to IATA for consideration with respect to AOC routing policy though it was not clear whether such an approach would be acceptable to IATA It was accepted that the IATA traffic type requirements documented in WP/118 (Toulouse WG1 Flimsy #3) were to be considered stable for CNS/ATM-1 Package. WG3 reported that they had reviewed material related to ground/ground policy (Appendix E) which is being forwarded to the June meeting of WG3/SG1 (Ground) for consideration. The results of the SG1 review will be forwarded to the Rome WG2 meeting for consideration.

9.3 The meeting reviewed the updated priority flimsy, the final agreed text of which is in Appendix H. Mr. Jones undertook an action to review changes to the communications priority that are included in the proposed amendment to ICAO Annex 10 (amendment 70 - currently out for State comment) and to relate these to the draft CNS/ATM-1 list of priorities. (Note - The initial results of this action are included in Appendix K).

ACTION 4/7 - US - TO REVIEW AMENDMENT 70 WITH RESPECT TO CHANGES TO PROPOSED TO COMMUNICATIONS PRIORITIES AND RELATION TO CNS/ATM-2 SARPS

10. Agenda Item 7 - Any Other Business

10.1 No other business was raised.

11. Agenda Item 8 - Conclusions and Action List

11.1 The meeting noted the following high level conclusions:

- The "Option 4 Lite" solution was adopted to satisfy the traffic type policy requirements as defined in Toulouse WG1 Flimsy #3 (WP/118) as modified by the revised (WG2/WG3) adopted approach for handling ATCS routing policy requirements as documented in Appendix G;
- The VDL subnetwork, based on a detailed review of ATNP/1-WP/59 is compliant with the ATN internet SARPs;
- That priority handling is the CNS/ATM-1 Package is as per the priority requirements in the Toulouse WG1 Flimsy #3 as enhanced by Appendix H;
- That no dynamic QoS based routing will be defined in the CNS/ATM-1 internet in support of inter-domain routing;

- That a high level structure for the CNS/ATM-1 SARPs and guidance material was adopted as per Appendix I, with the internet material comprising Part 5;
- That WG2 will deliver the first draft of Part 1 of the CNS/ATM-1 SARPs to the October WG1 meeting;
- That the WG should aim to deliver stable material to ICAO following the February '96 meeting but no later than June 1996 in order to allow sufficient time for translation;
- That the joint meeting requested ICAO to consider the use of word to process ATNP delivered material;
- That WG2 will deliver a high level description of subjects to be addressed in the CNS/ATM-2 internet SARPs to the October WG1 meeting;
- That the joint meeting requested ADSP to provide CNS/ATM-2 operational requirements by June 1996 at the latest;
- That the WG will agree on the detailed layout of the Validation Report at the Rome WG2 meeting
- That the CISEC will deliver draft 2.1 (using revision marks where possible) of the internet SARPs by 3rd July at the latest;
- That, following review of draft 2.1 at the Rome meeting, the CISEC shall cease to exist and draft 3.0 shall be placed under the CCB process;
- That implementation of the local reference compression mechanism shall be mandatory for the CNS/ATM-1 Package and that implementation of the ACA mechanism shall be optional for CNS/ATM-1;
- That no congestion management will be defined for the CNS/ATM-1 internet unless current simulation activities result in solutions that demonstrate tangible benefits;
- That implementation of IDRP over the air/ground link will be mandatory (instead of recommended) from July 1999 onwards;

11.2 The next WG2 meeting will take place in Rome in the period 17th - 21st July.

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13. Appendix B List Of Working Papers

No.	Title	Presented By	Agenda Item	WP / IP
48	Requirements and Desirable Features for a Future ATS Air-Ground Communications System; VHF Digital Link (VDL) Design Guidelines and Summary of VDL Mode 2 Performance Characteristics (ATNP/1-WP/59)	A Sharma	2	WP
116	Proposed Objectives, Agenda and Planning	A Sharma	1, 6	WP
117	Meeting Application Specific Routing Policy Requirements in CNS/ATM-1 Package	F Colliver	3	WP
118	Appendix D to the 2nd Meeting Report of WG1 ("WG1 Flimsy #3")	T Callow	4	WP
119	ATNP/WG2 Review of the conformance of AMCP recommended VDL Design Guidelines to the ATN Manual requirements for mobile subnetworks	H Thulin	2	WP
120	Comments on ATNP/1-WP/59 (WG2/48)	A Sharma	2	WP
121	Congestion Management Strategies	M Adnams	6	WP
122	Comments on ICAO ATNP WG1/2 Report, Appendix D (Previously Flimsy 3)	M Adnams	4	WP
123	Proposed High Level Structure of the CNS/ATM-1 Package SARPs & Guidance Material	A Sharma	4	WP
124	Report of CISEC Activities	J Crenais	6	WP
125	CISEC (May 1995) Flimsy #1, Issue 1.0,	F Colliver	3	WP
126	Analysis of Alternatives for CNS/ATM-1	W Link	3	WP
127	Simulation Study of the Hold Down Timer in the ATN	W Link	6	IP
128	Issues Related to Meeting Operational Requirements for Routing	W Link	6	WP
129	General Review of ICAO Annexes, Adaptation of Specifications Developed by Bodies other than ICAO into Annexes to the Convention or Advisory Material	A Sharma	4	IP
130	AMCP/WG-C/7, Appendix A to the Report on Agenda Item 4	A Sharma	2	WP
131	Package 1 Requirement for Air-Ground Routing Exchange	W Link	6	WP
132	CNS/ATM-1 Operational & Technical Requirements*	F Colliver	6	IP
133	Assessment of BIS-BIS and Transport Connection Establishment Delays	R Jones	6	IP

*** Note WP/132 was only available in soft copy form and not presented to the meeting.**

14. Appendix C - Meeting Agenda

		WPs
0.	Meeting Organisational Issues - arrangements for joint WG2/3 session	
1.	Approval of Agenda and Objectives - Report of Toulouse WG2 Meeting	116
2.	Review of ATNP/1-WP59 (VDL Design Guidelines/Desirable Features)	48, 119, 120, 130
3.	Report of the CISEC on Issues Related to Air/Ground Application Requirements	125, 117, 126
4.	Joint Session with WG3	118, 122, 123, 129
5.	Review of Results of Joint Session	
6.	Development of internet SARPs and Guidance Material for CNS/ATM-1	116, 124, 121, 127, 128, 131, 132
7.	Any Other Business	
8.	Conclusions and Action List	

15. Appendix D - Request to the ADSP for operational requirements for the CNS/ATM-2 package

1. Introduction

In the report of the ATNP WG1/2 meeting, held from 21-24 March 95, a request was made to ADSP (Appendix E to ATNP WG1/2) which emphasized the needed co-ordination between the ADSP and the ATNP in order to support the development of the package 2/3 ATN/ATM requirements and the Operational scenario/concept and anticipated benefits for these packages. An outline of the ATNP understanding with respect to Package 2/3 was included in this request.

The WG1 request stated that the needed information from ADSP should be made available "at ATNP/2 scheduled to be held in the second half of 1996."

2. Discussion

In the joint WG 2/3 meeting in May 95, the members charged with the responsibility of drafting the ATN SARPs determined that if they were to be able to make ready Package 2/3 SARPs profiles for the ATNP/2 meeting in the fourth quarter of 1996, some lead time was required. They noted that there were three scheduled meetings of the Working Groups between this meeting and ATNP/2. If any reasonable input to ATNP/2 was to be expected, information from ADSP would be required, at the latest, by the final WG meeting before ATNP/2. ADSP is requested to provide preliminary information on operational requirements associated with the CNS/ATM-2 Package by the January 1996 Working Group meetings.

The three scheduled Working Group meetings are:

October 1995
January 1996
June 1996

3. Conclusions and Recommendation

The ADS Panel is invited to consider the contents of this materiel and to co-ordinate with the ATN Panel so as to allow receipt of the CNS/ATM-2 Package requirements in a timely manner.

16. Appendix E - GROUND-GROUND ATN COMMUNICATIONS OPERATIONAL REQUIREMENTS

1 Introduction

1.1 Appendix D to the ATNP WG1/2 meeting report contains requirements and implementations for A/G applications. Included in this document is information concerned with Traffic Type Policy for ATN Operational Communications (ATSC and AOC), ATN Administrative Communications, General Communications, and ATN Systems Management Communications.

1.2 To be effective Traffic Type routing needs to be completed for A/G ATSC possibilities, and G/G ATSC possibilities.

2. G/G Traffic Routing

2.1 The exchange of data over the ground portion of the ATN in support of ATSC communications shall route data to achieve, for example, one of the following Traffic Type policies:

a) Route traffic only via CAA routing domains.

b) Route traffic using ordered preference of CAA domains first, then airline domains, then communications service providers domains.

c) Route traffic using ordered preference of CAA domains first, then airline domains.

d) Route traffic using ordered preference of CAA domain first, the communications service provider domains, then airline domains.

e) Route traffic using ordered preference of CAA domain first, then communications service provider domains.

3. Proposed Action for Subgroup 1

3.1 The action for this meeting is to review the examples of traffic type routings in paragraph 2.1 and use this information as appropriate along with the Appendix D to ATNP WG1/2 Meeting, and Flimsy 4 (Attachment 8) from ATNP WG2/3 Meeting, as the basis for determining the appropriate use of traffic types to support the routing of ground applications traffic over the ATN.

17. Appendix F - Request to ICAO to Support Word

This flimsy expresses the concerns of ATNP working groups 2 and 3 regarding the ability of ICAO to support the electronic format of the SARPs being generated by the groups.

Background

Due to the complexity of the documents being generated by the ATNP working groups it has become necessary for the groups to adopt a word processing software package that meets the needs of the working groups in the generation of large complex technical documents.

In evaluating what software would be appropriate the working groups considered the following:

- The difficulties encounter during the development of the ATN manual, the ATS Messaging Service and the ADSP Guidance Material and the subsequent transfer of these documents to the word processing environment (WordPerfect 5.1) supported by ICAO;
- The ability of the software to support tables, graphics, multifile documents and complex referencing; and
- The availability of the software and its portability.

The resulting software chosen which is the PC based Word package has met the needs of the groups and is common use in other ICAO panels.

Present Work

The SARPs for the applications, upper layers and the internet are all presently in Word for windows and in an advanced state of development. The documents are large and complex and the advanced features of Word have been used in order that the documents are easily managed.

Given the time frame in which the working groups are attempting to produce the SARPs, it is imperative that no external process, such as document conversion, adds additional delays to their work.

Recommendation

In order for the ATNP working groups to meet the time frames set for the generation of the SARPs for ATNP/2, ICAO is invited to consider the support of documents generated by the Word software.

18. Appendix G - Routing Policy Requirements Placed on the ATN Communications Service by Air/Ground Applications

1. Scope and Purpose

1.1 This flimsy presents a summary of the routing policy requirements placed on the ATN communications service by air/ground applications as agreed at the ICAO ATNP Working Group 2/Working Group 3 joint meeting.

1.2 The purpose of this flimsy is to recommend changes to Working Group 2 and Working Group 3 in their development of SARPs and Guidance Material to meet these requirements.

2. Routing Policy

2.1 ATSC Routing Policy

Note: ATSC messages must only be routed using routes authorized to carry ATSC message traffic.

2.1.1 ATSC routing policy shall be applied on a "strong" basis.

Note: "Strong" ATSC routing policy means that routing decisions will be based upon the advertised capability of the route. If the route advertises the capability to provide the stated service, the route will be considered for use. "Strong" ATSC policy does not mean that a particular message will be "killed" if a particular route which advertises a particular capability does not actually provide that capability for a given message.

2.1.2 ATSC applications shall be able to specify that message traffic for a given association be routed according to a class of service based upon the following requirements:

Note: Transit delay values will be provided for each class of service at the next Working Group 3 meeting.

1. Class A, maximum expected transit delay of TBD.
2. Class B, maximum expected transit delay of TBD (value will be greater than for Class A).
3. Class C, maximum expected transit delay of TBD (value will be greater than for Class B).
4. Class D, maximum expected transit delay of TBD (value will be greater than for Class C).
5. Class E, maximum expected transit delay of TBD (value will be greater than for Class D).
6. Class F, maximum expected transit delay of TBD (value will be greater than for Class E).
7. Class G, maximum expected transit delay of TBD (value will be greater than for Class F).
8. Class H, no maximum expected transit delay.

2.1.3 For a given class of service, route selection shall be based upon the routes capability to meet or exceed the required level of service (e.g., if Class D is selected by the application, routes which provide Class A, B, C, or D service may be used). If multiple routes are available which meet or exceed the selected service, the route with the lowest relative cost shall be selected.

Note: For the CNS/ATM-1 Package, it is expected that subnetworks will be allocated a service class and a relative cost on a local basis for local routing policy decisions. It is expected that the delay allocation will only be enforced on the air/ground path selection for the CNS/ATM-1 package.

Note: Routes which advertise the capability to meet a designated service class are expected to deliver messages with an actual transit delay performance whereby 99% of messages are delivered in less than the route allocation of the maximum expected delay for that service class.

2.2 AOC Routing Policy

2.2.1 AOC routing policy shall be applied on a "strong" basis.

Note: "Strong" AOC routing policy means that air/ground path decisions will be based upon the stated policy. If applicable air/ground paths are not available at the time of message delivery, the particular message will be "killed".

2.2.2 AOC applications shall be able to specify that message traffic for a given association be routed according to a class of service based upon the following requirements:

Note: Airlines have a requirement that the mechanism defined for support of ATN policy routing be capable of allowing the inclusion of up to 20 traffic types for AOC traffic.

1. No Traffic Type Policy Preference.
2. Route Traffic only via Gatelink.
3. Route Traffic only via VHF Data Link.
4. Route Traffic only via Satellite Data Link.
5. Route Traffic only via HF Data Link.
6. Route Traffic only via Mode S Data Link.
7. Route Traffic using an ordered preference of Gatelink first, then VHF Data Link.
8. Route Traffic using an ordered preference of Gatelink first, then VHF Data Link, then Satellite Data Link.
9. Route Traffic using an ordered preference of Gatelink first, then VHF Data Link, then HF Data Link, then Satellite Data Link.

Note: Expect future traffic type routing policy for ATN Administrative Communications, General Communications, and ATN Systems Management Communications.

2.3 Local Routing Policy

2.3.1 Routers initiating connectivity with other routers shall provide the capability to implement local routing policies (e.g., avionics routers shall provide a mechanism to select a specific ground-based air/ground router based upon local policy, if necessary for operational purposes).

19. Appendix H - Handling of Priority in CNS/ATM-1 Package

An example of the CNS/ATM-1 Package Air-Ground Application Priorities is as follows (based upon ICAO ADSP requirements):

Application	ITU-R Category	CLNP Priority Value
ADS	Communications relating to Radio Direction Finding	11
CPDLC	Flight Safety Messages	10
FIS (ATIS Service only)	Flight Regularity Communication	8
CM	Flight Regularity Communication	8

Note -- Applications may dynamically specify priority.

The End System hosting the application shall optionally specify transport priority. The end system shall ensure by the appropriate mechanism that the "priority" field within the CLNP PDU is set according to the application SARPs, for each NPDU related to the application.

The relationship between transport and network priority shall be equivalent to Table A5-1 of the internet SARPs.

The network layer shall implement re-ordering of forwarding queues based on expressed priority.

The above information shall incorporate as appropriate Appendix D to the WG1/2 report.

Action Items

1. Mr. Pearce will provide a paper to the Australian ADSP member requesting application priority determination.

2. WG2 is asked to consider whether the black line denoting ATSC in Table A5-1 of the internet SARPs should be moved down one line below priority level 7.

20. Appendix I - Structure of CNS/ATM-1 Package SARPs and Guidance Material

	Title	Responsible WG
Part I	Introduction and System Level Requirements for CNS/ATM-1 Package	WG1 with inputs from WG2 and WG3
Part II	CNS/ATM-1 Air/Ground Applications	WG3
Part III	CNS/ATM-1 Ground/Ground Applications	WG3
Part IV	CNS/ATM-1 Upper Layer SARPs	WG3
Part V	CNS/ATM-1 Internet SARPs	WG2

21. Appendix J - Joint WG2/WG3 Statement on VDL Priority

This flimsy expresses the position of ATNP working groups 2 and 3 regarding the use of the initial VDL system to support ATS communications in the context of CNS/ATM-1 Package services over the ATN.

Background

The initial VDL SARPs defines a VHF data link subnetwork of the ATN that does not provide support for the use of priorities to support queue management. An issue was raised if this lack of priority handling within VDL would limit its applicability to support ATS Communications (ATSC). Working Groups 2 and 3 of the ATNP have considered this issue at a joint session held 19 May 1995 and have arrived at the conclusions stated below.

Conclusions

The CNS/ATM-1 Package application SARPs will specify the operational requirements of each service as well as the performance requirements that must be satisfied by the underlying ATN communication services. Additionally, each data unit associated with ATSC will identify the 'Traffic Type' of the data unit. These traffic types will be specified as the maximum allowable (at the 99% level) transit delay that must be satisfied by the air-ground subnetwork selected by the ATN routing infrastructure to delivery the ATSC traffic between airborne router and the associated ground router (air-to-ground and ground-to-air). The specific performance requirements and traffic type values associated with ATSC will be defined within the next several months by the WG3 of ATNP based on inputs received from the ADS Panel. If the VDL subnetwork can satisfy the operational and performance requirements defined for ATSC, as will be defined by the CNS/ATM-1 Package applications SARPs, and if the VDL subnetwork satisfies the maximum allowable transit delay requirement associated with ATSC traffic types, then VDL would be viable ATN subnetwork to handle ATSC traffic. This conclusion is from strictly a technical standpoint and other factors, such as spectrum management constraints would need to be satisfied by the local routing decisions. ATNP expects that the ability of the VDL to satisfy the operational and performance requirements associated with the CNS/ATM-1 Package services may be dependent local implementation decisions that are outside the scope of the VDL SARPs. Perhaps the AMCP should consider providing guidance material in this area.

22. Appendix K - Action 4/7 - Review of Amendment 70 Communications Priority

Priority definitions within Annex 10 and the relationship to the ATN SARPs

Prepared by: Ron Jones

Action: At the Friday morning session of the Joint ATNP WG2/WG3 meeting held 19 May 1995, I took an action item to review the changes to communication priorities that are included in the proposed amendment to ICAO Annex 10 (amendment 70 currently out for state comments) and to relate these to the draft ATN SARPs list of priorities. A copy of amendment 70 containing the proposed Annex 10 changes just arrived at our office during the ATNP WG meetings.

Background: The categories associated with the priority levels in the ATN Manual were modified at SICASP/5 to better align with what we were told was how Annex 10 was being revised for the definition of message priorities. I have looked over the proposed revisions to Annex 10 (amendment 70) and can report that the proposed changes do not exactly track with what is in the ATN Manual. Currently Annex 10, when taken along with ITU Radio Regulations Part 51, include three relevant sets of definitions related to message priority. First is for r.f. spectrum utilization for Aeronautical Mobile Service (ITU Part 51 - referenced in Annex 10, Chapter 5), the second if for Aeronautical Fixed Services (ICAO Annex 10, Chapter 4), and the third is for Aeronautical Mobile Services (ICAO Annex 10, Chapter 5). The proposed changes in amendment 70 to Annex 10 only address the fixed service communications. Note that Annex 10 is already not self-consistent where the use of priorities is concerned. This is clearly an area that needs to be corrected and perhaps the ATNP may want to proposed changes to Annex 10 at ATNP/2 to align all of the sections within annex 10 and to clarify the relation to ITU Radio Regulations, Part 51..

Summary of ICAO Annex 10 and ITU Radio Regulations material related to the definition of message categories and the assignment of priorities for aeronautical communications.

ITU Article 51 from 1990 edition of the 'Radio Regulations'

(Note that Category 1 is the highest priority)

1. Distress calls, distress messages and distress traffic
2. Communications proceeded by the urgency signal
3. Communications relating to radio direction finding
4. Flight safety messages
5. Meteorological messages
6. Flight regularity messages
7. Messages relating to the application of the United Nations Charter
8. Government messages for which priority has been expressly requested
8. Service communications relating to the working of the telecommunication service or to communications previously exchanged
10. Other aeronautical communications

Note the term *communications* is defined in Part 51 to include: Radiotelegrams, radiortelephone and radiotelex calls.

ICAO Annex 10 (Chapter 5 -Aeronautical Mobile Service)

From Para. 5.1.8, 'Categories of Messages'. Note that no categories, or priorities, are defined lower than 'flight regularity messages' for the Aeronautical Mobile Service.

(Note category 'a' is the highest priority)

a) Distress calls, distress messages and distress traffic
b) Urgency messages, including messages proceeded by the medical transports signal
c) Communications relating to direction finding
d) Flight safety messages
e) Meteorological messages
f) Flight regularity messages

Note that para. 5.1.8 includes a note that indicates NOTAMS may qualify for any of the categories or priorities c) to f) inclusive depending on the contents of the NOTAM.

Note that para. 5.1 references the ITU Radio Regulations.

ICAO Annex 10 (Chapter 4 - Aeronautical Fixed Services)

From Para. 4.4.1 'Categories of Messages' (over AFTN). The current Annex 10, para. 4.4.1 with the proposed changes from amendment 70 are shown below as strikeout and underline for text that amendment 70 proposes to delete (strikeout) or proposes to add (underline).

a) distress calls ~~and distress traffic~~
b) urgency messages
c) flight safety messages
d) meteorological messages
e) Flight regularity messages
~~f) aeronautical administrative messages~~
~~g) NOTAM - Class I distribution~~
~~h) reservation message~~
~~i) general aircraft operating agency messages~~
~~j) service messages~~
f) aeronautical information services (AIS) messages
g) aeronautical administrative messages
h) service messages

Unlike the ITU Radio Regulation or the ICAO Annex 10 Chapter 5 standards for Aeronautical Mobile Service, the above message categories are mapped into just 3 transmission priority levels (as per amendment 70), although the AFTN header will use 5 different priority indicators. Priority 1 (highest priority) includes message category a) only. Priority 2 includes message categories b) and c). Priority 3 includes message categories d), e), f) and g). Message category h) 'service messages' "shall take the same priority indicator as the category of the message being requested except where higher priority is warranted for flight safety."

Note even for the lowest category of message, for which a specific transmission priority level is specified (i.e., Aeronautical Administrative messages), appears to fall within the category of safety and regularity of flight since amendment 70 defines this category to include "messages regarding the operation or maintenance of facilities provided for the safety or regularity of aircraft operations ....."

Conclusions:

1. ICAO Annex 10 only defines message categories for Aeronautical Fixed or Mobile Services that support safety and regularity of flight. ITU Radio Regulations, Part 51, define lower priorities of aeronautical communications in addition to those supporting safety and regularity of flight.

2. ICAO has not defined the message categories and associated priorities such that they map one-for-one with the ITU message categories.

3. ICAO has in certain cases defined multiple categories of messages that fall within a single ITU category.

Recommendation:

ATNP prepare for ATNP/2 proposed changes against the Annex 10 Chapter 4 and Chapter 5 material to assure consistent definitions of message categories and the use of transmission priority. While this definition needs to be consistent with ITU Radio Regulations, this not mean there needs to be one-for-one mapping. For example Annex 10 could define multiple categories (with multiple priorities) that map into a single ITU category (as has been done with amendment 70, for example). It is proposed that ATNP WG2 review the above information and consider the use of the message categories and associated priorities, as currently defined in the ATNP Manual, with mapping to he ITU categories and the Annex 10, Chapter 4 priority categories. The ATN need not provide the same number of priorities as used today on AFTN nor as defined by ITU Radio Regulations. However we should be able to map the message categories between these three documents.

23. Appendix L - Action List

Ref	Deliverable	Status
WG2-4	Develop Network Operating Concept **EUROCONTROL*/GERMANY/SITA/FRANCE/USA /UK**	On-going
WG2-8	Review and agree ATN User Requirements, submit Defect Reports and supporting draft Change Proposals **EUROCONTROL*/ GERMANY/JAPAN/US/ UK**	On-going
WG2-16	Develop Defect Reports and draft Change Proposals to counter those Change Proposals produced in WG2-15 that are not considered relevant for draft SARPs **US**	On-going
WG2-24	Create a checklist of ATN Subnetwork Requirements and review and comment on draft VDL SARPs. **SITA*/ US**	Completed
	MELBOURNE WG	
2/26	To update the WG2 Work Plan to reflect WG2-x deliverables **UK**	On-going
2/29	Make Source Code of Unix Utilities available on CENA Server **France**	On-going
2/31	Make Proposals on Congestion Management. **All**	On-going
2/37	To derive procedures and Configuration Management Document from WP/66 **CCB Chair/VACM**	On-going
2/39	To begin coordination to automate VRCI Update Process **CCB Chair/VACM**	Complete
2/47	Review WP/68 and comment **ALL**	On-going
2/59	To provide results of Congestion Management Validation Activities **US**	On-going
2/63	To provide comments on Work Plan to Mr. Sharma **ALL**	Superceded
	TOULOUSE WG	
3/1	Submit Change Proposal based on draft proposal attached to DR95010051 **Eurocontrol/CISEC**	On-going
3/2	Send message to technical list announcing operation of new procedures **France**	On-going
3/3	Check current status of ATN Manual requirements related to CLNP priority handling **US**	Completed
3/4	Submit Operational Requirements **ALL**	On-going
3/5	Provide comments on WP/87 **ALL**	On-going

Ref	Deliverable	Status
3/6	Incorporate comments on WP/87 and consolidate requirements from other input Working Papers **EUROCONTROL**	On-going
3/7	To define the mechanisms necessary to support the optional non-use of IDRP. **CISEC**	On-going
3/8	Issue Defect Report on OPTIMISATION 5 in WP/96 **EUROCONTROL/CISEC**	On-going
3/9	Issue Defect Report on optimisations 1,2 and 3 in WP/96 **EUROCONTROL/CISEC**	On-going
3/10	Submit Defect Report & CP to mandate support of CLNP echo response function for CNS/ATM-1. **US/CISEC**	On-going
3/11	Following technical agreement submit Change Request and draft Change Proposal to support implementation of the Addressing Convention for CNS\ATM-1 internet SARPs. **EUROCONTROL/CISEC**	On-going
3/12	Submit WP/68 as Defect Report **EUROCONTROL/CISEC**	On-going
3/14	To make Version 2.0 of the Draft SARPs available on the CENA ATN Validation Archive **France**	Completed
3/15	Submit WP/79 following agreed amendments as a Defect Report/Change Proposal. **Germany/CISEC**	On-going
3/16	Submit Change Proposal to CCB as per material in WP/85. **EUROCONTROL/CISEC**	On-going
3/17	Submit Defect Report related to first & third issues in WP/78. **Germany/CISEC**	On-going
3/18	Submit consolidated ES-IS defect report and include draft CP as per WP/86. **EUROCONTROL/CISEC**	On-going
3/19	Submit Defect Report related to table A5-1 in Melbourne Flimsy #2. **Germany/CISEC**	On-going
3/20	Submit VRCI(s) contained in WP/97 relevant to CNS/ATM-1 to CCB. **Germany/CISEC**	On-going
3/21	To further detail proposed SARPs restructuring as documented in Flimsy 1 and its attachment. **EUROCONTROL**	On-going
	Fair Oaks	
Action - 4/1	To develop high level proposals for CNS/ATM-2 internet requirements for presentation to the october atnp wg meetings.	- US -
Action - 4/2	To develop detailed format for WG2 validation report for presentation at the Rome meeting.	- UK -
Action - 4/3	Support Ms. Thulin in amendements necessary to Chapter/Appendix 10 related to the ACA.	- US -

Ref	Deliverable	Status
Action - 4/4	To submit defects on congestion management material in draft 2.0 to relevant CISEC editor where applicable	- EUROCONTROL -
Action - 4/5	To develop additional guidance in chapter 6 related to the scenarios identified in WP/128 (issues related to meeting operational requirements for routing)	- CENA -
Action - 4/6	To include the IDRP implementation requirement as per WP/131 in appendix 5.	- UK -
Action - 4/7	To review amendment 70 with respect to changes to proposed to communications priorities and relation to CNS/ATM-1 SARPs	- US -