Minutes
AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL(ATNP)
Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

I   Introduction

1.0   Meeting Information

1.1   The first meeting of ATNP Working Group 3 (WG3) took place on 24 to 28 October 1994 in San Diego, California. The meeting was hosted by the US Federal Aviation Administration.

1.2   The meeting was opened by Ron Jones, Rapporteur of Working Group 3.

1.3   A list of participants is presented in Attachment 1.

II   Minutes of the Meeting

1.0   Agenda Item 1: Approval of the Agenda

1.1   The proposed agenda was approved with a minor modification. Next the schedule of agenda items was determined, with the time allocated based on the anticipated number of working and information papers for each agenda item. The approved agenda and the schedule for the meeting are presented in Attachment 2.

1.2   Working papers and information papers intended for the meeting were then distributed and each paper was assigned to an agenda item. The list of working and information papers is presented in Attachment 3, together with the name of the presenter/author and the assigned agenda item. Information papers are identified with the suffix "(I)".

1.3   A summary of the list of the action items assigned during the meeting is presented in Attachment 4.

2.0   Agenda Item 2: Review of the WG3 work program, from ATNP/1 Report to Agenda Item 7

2.1   Ron Jones reviewed the work program for Working Group 3 as defined at ATNP/1 to verify that the agenda addressed all of the work items.

2.2   WP/34, 15 and 50 were presented and discussed together.

2.3   WP/34 was presented by Ron Jones. The paper proposed the creation of three drafting groups as follows:

1. ATM and System Applications SARPs and Guidance Material
2. ATN Upper Layers SARPs and Guidance Material
3. ATN Messaging Applications SARPs and Guidance Material.

The intent of this organization was to form one drafting group for each of the three major tasks assigned to the WG.

2.4	WP/15 was presented by Jean Marc Vacher. This paper proposed the creation of three subgroups as follows:

1. Ground-ground (including messaging applications over the ATN)
2. Air -ground applications
3. ATN upper Layers with a common architecture

The purpose of this organization was to ensure that all aspects of air-ground or ground-ground applications development would take place in the same subgroup.

2.5	WP/50 was presented by Bo Overgaauw. The paper supported the proposals of WP/15 in the formation of three subgroups as defined above in 2.4. It also proposed terms of reference for these subgroups. System application (directory and system management) should be handled as follows: Directory services should be handled separately by the air-ground and ground-ground subgroups for Package 1, since directory services are different for each set of applications. The system management task should be included with the upper layers work program.

2.6	The WG agreed that subgroups were needed to further the work defined in the terms of reference. A drafting group composed of the authors of the above three papers was then tasked to work out an agreed organization for the subgroups and present it to the WG under agenda item 4.4

### 3.0	Agenda Item 3: Development of SARPs and Guidance Material for the Technical Aspects of ATN applications

3.1	WG1 Flimsy 5 was presented by the Rapporteur This flimsy presented a list of applications to be developed for the CNS/ATM-1 package as defined by WG1 at the San Diego meeting as follows:

1. ATN Applications (Air-Ground And Ground-Ground)
2. ADS Contract Establishment and Position Reporting
3. Controller-Pilot Communications
4. Context Management
5. Flight Information Services
6. Message Handling Services
7. Inter-Center Coordination

This list defines the scope of applications to be developed by WG3. It was observed that the list may contain more applications than can be standardized in the time allotted for the development of Package 1.

3.2	WP/44 was presented by Ian Valentine. This working paper advised the WG of the need to plan for CNS/ATM packages beyond Package 1. Package 1 should be based largely on existing material. Package 2 is expected to be defined by ICAO (through work in ATNP WG1 and ADSP) by mid 1995. Package 3 is expected to contain data link applications supporting more advanced operational concepts. Contributions to ATNP WG1 and the ADSP are expected to be made in the 1996-97 time frame.

3.3	WP/5 was presented by Linda Boan. The paper advised the WG of the status of Minimum Operational Performance Standards (MOPS) for Aircraft Context Management Equipment (Document DO-233) being developed by the RTCA. A draft of this MOPS had previously been presented to the May meeting of the ADSP. The ADSP recommended that ICAO task an appropriate body to develop context management standards based on these industry-developed standards. The paper concluded with a recommendation that the ATNP take DO-233 into

consideration in the development of near-term context management requirements as recommended by the ADS Panel. Action on this recommendation was deferred until the WG considered a similar recommendation in WP/26. (See 3.5 for the action taken with respect to the proposal of WP/26). At the Rapporteur's request, Steve Van Trees presented a brief tutorial on the context management function. Ian Valentine pointed out that the US paper had draft 6 of the CM MOPS attached, while the ADS Report had the Proposed Final Draft (PFD) attached. He asked about the difference in the texts. After study, Steve Van Trees replied that the PFD was definitely the later draft. Both the state machine and the encoder of Draft 6 were later corrected. Steve Van Trees advised that parties refer to the ADS report or to RTCA DO-223, the published version of he MOPS.

3.4   WP/19(I) was presented by Linda Boan. This paper informed the WG of an interim context management (CM) functionality being implemented as part of the US FAA initial ATN data link capability. This interim CM makes use of a LOGON approach. The final CM approach will be based on the use of a directory service. In response to a question on where CM resides in the ATN architecture, Steve Van Trees indicated that CM should be viewed as an application service element (in the application layer) rather than as an application.

3.5   The portion of WP/26 that applies to CM was presented by Ian Valentine. This paper proposed that the initial CM developed by the ATNP be based upon RTCA DO-233. The final approach should be based upon a more general solution since concern was expressed on the fact that DO-233 was written as a standard for a piece of avionics equipment, rather than as an element of a communications system. The paper further proposed that the primary environment for CM be for use with the ATN internet (rather than near term solutions) and that this should dominate design trade-offs. However it must be consistent with the Package 1 services being developed by WG2. A final proposal was that the interim solution for CM be decoupled from the ATN transport service (e.g. using the "fast byte" mechanism). The subgroup developing CM should be tasked to consider how to migrate from the use of a short stack for Package 1 to the use of a full stack expected in Package 2. After discussion, the WG agreed to pass this material to the subgroup for further consideration. The subgroup may have to develop some of the security functions, but the main thrust in security will await input from WG1

3.6   WP/14(I) was presented by Linda Boan. This paper provides a description of a prototype CM application presently operating on the MITRE ACET facility. This implementation is based on the use of the X.500 directory service as provided by ISODE version 9.0. The X.500 directory service has been shown to be a very satisfactory solution to the CM application using off-the-shelf software.

3.7   The ADSP/3 Reports on Agenda Items 2, 4 and 5 were presented by the Rapporteur. Each recommendation from these reports was considered in detail to identify specific requirements relevant to ATNP application development. Since the recommendations included ATS interfacility data communication (AIDC), Gene White provided some insight into the AIDC implementations underway in several States. It was noted by the Rapporteur that the recommendations included the requirement for the development of CM, ATIS and PDC applications. The drafting group formed to determine the subgroup structure (under item 2.6) was further charged with the task of proposing the assignment of ADSP recommendations to the subgroup terms of reference.

3.8   The Rapporteur further noted that the ADSP reports addressed the need to allow for common activity between the ATNP and the ADSP on the development of data link applications SARPs. However, no formal mechanism was initiated by the ATNP. With the creation of a subgroup to develop application SARPs, the opportunity exists for the ATNP to solicit ADSP cooperation. ADSP input is vital in the specification of operational requirements for the application standards. One form of cooperation is via the DLARD with little active cooperation. A second

approach would be for active cooperation between ATNP and ADSP subgroups at a detailed level. After discussion, the WG agreed to ask ATNP members to consult informally with their ADSP members to determine if there is a need for closer cooperation.

3.9   The ADSP report on agenda item 2 contained an extensive list of applications identified for ATS use. The Rapporteur indicated that the WG should account for this list as applications standards are developed.

3.10   WP/7 was presented by Linda Boan. This paper advised the WG of Minimum Operation Performance Standards (MOPS) that are being developed by the RTCA for two way data link communications. This document (DO-219) contains communications requirements that are to be met in developing applications for controller pilot communications. A computer demonstration that illustrates the features of DO-219 was provided by MITRE and made available to the meeting participants. The paper proposed that the ATNP use DO–219 as the basis for defining the near-term application requirements.   It was noted that there is a discrepancy between DO-219 and the operational requirements defined by the ADSP. Mike Liggan informed the WG that there is an activity underway within RTCA SC-169 to align the MOPS with the ADSP requirements. After discussion, the WG agreed that DO-219 would be referred to the applications subgroup for their review and determination of whether this document can be used as the basis for defining the message coding and communication services needed to support the controller pilot communications (CPC) applications as part of the CNS/ATM-1 Package SARPs.

3.11   WP/22 was presented by Pierre Friez. The paper advised the WG of some ambiguities that exist in the ADSP/3 report material in respect to responses to multiple element messages, the specification of the closure response and overall message priority. The paper also contained possible solutions to these problems. The WG agreed to pursue the solution to this problem through informal contacts between ATNP and ADSP members. The resolution of the issues identified by this paper would be coordinated through the WG3 SARPs Subgroup for ATN applications.

3.12   WP/24 was presented by Ian Valentine. This paper made recommendations for the development of SARPs for direct controller-pilot communications (DCPC) in the CNS/ATM-1 Package time frame. The paper noted a constraint stated by the ADSP that DCPC only provide connection with one ATC facility. While this might be true for air traffic control of an aircraft, it may be too restrictive for other types of applications. The paper also made a number of recommendations for DCPC development with respect to a generic text interchange service, the usage of CPDLC messages, the use of ATN internet services, coding considerations and the structure of SARPs. The Rapporteur proposed that the recommendations be broken into classes. Classes identified included ADSP issues, SARPs subgroup issues and details relating to the use of ASN.1. It was agreed that the SARPs subgroup issues must be agreed by the WG before they are formulated as guidelines to the subgroup(s).

3.13   WP/55 was presented by Ian Valentine. The paper identified four categories for the recommendations of WP/24:

1. Additional guidance required from the ADSP

2. Additional guidance required from ATNP WG1

3. Immediate WG3 consensus before it can task a subgroup

4. Resolution by a SARPs subgroup

3.13.1 The WG then considered each of the recommendations in WP/24 within each of the above categories. These proposals have been extracted from WP/55 and are presented in Attachment 5. The agreement that was reached for the proposals of WP/24 was as follows: (Proposal numbers are those given in Attachment 5):

<u>Proposals Requesting Additional Guidance from the ADSP</u>

In respect to the proposals for number of connections (2.1), name of the service (2.2), usage of CPDLC messages (2.3) and CPC generic message structure (2.4), the WG agreed that informal coordination will be performed with the ADSP by ATNP members. Results will be passed to the appropriate subgroup. In addition, WG members should encourage ADSP participants to attend future ATNP WG meetings as a further means of resolving these questions.

<u>Proposals Requiring Immediate Resolution by WG3</u>

In respect to proposal 4.1, the WG agreed that the subgroup needs to address extensibility. This is needed in order to allow for the easy introduction of new message sets. The precise technique to be used should be decided by the subgroup, the generic CPC is only one approach to be considered.

In respect to proposal 4.2, the WG agreed that the Package 1 applications are intended to run over the Package 1 services being developed by WG2.

In respect to proposal 4.3, the WG agreed that WG3 is responsible for data definition and encoding.

The WG noted that recommendation 4.4 is included in recommendation 4.1

<u>Proposals for Resolution by SARPs Subgroups</u>

In response to the proposals in Attachment 5, para.. 3 and 5, the WG agreed to give the following guidance to the SARPs subgroups with respect to applications services supporting air-ground communications:

1. <u>Extensibility</u>

- Extensibility of existing message sets must be allowed for.

- Easy introduction of new message sets must be allowed for.

- The concept of a generic CPC message framework should be reviewed as one possible method to provide extensibility

2. <u>Encoding versus extensibility</u>

The subgroup is requested to reach a resolution on the recommendations made in WP/24, section 3.5 with respect to trade-offs between extensibility and bit efficiency.

3. <u>Security</u>

The subgroup is informed that ATNP WG1 has a work item to produce a security framework for ATN applications for both CNS/ATM-1 Package and beyond. Pending the outcome of that work, the subgroup should take into consideration the possible requirements for authentication and data integrity on an end-to-end message basis in the CNS/ATM-1 Package.

3.14   WP/23 was presented by Ian Valentine. The paper made a number of recommendations on the approach to be used in the development of SARPs for ADS in the CNS/ATM-1 Package time frame. This paper described the communications exchanges between ground-based ATM centers and aircraft using air-ground and ground-ground ATN communications. A number of issues were identified that need to be addressed by the SARPs subgroups. The following proposals were made in the paper:

a)   The primary technical environment for the ADS Application is for use in conjunction with the ATN Internet, (rather than near term tactical communication solutions) and this should dominate design trade-offs.

b)   The message semantics associated with agreement allocation and re-allocation in the ADS Manual should be used as the basis for SARPs.

c)   The message semantics associated with 4-D flight information in the ADS Manual should be used as the basis for SARPs for ADS applicability only.

d)   The message semantics associated with ADS reports in the ADS Manual should be used as the basis for SARPs.

e)   The message semantics associated with center-to-center coordination in the ADS Manual should be used as the basis for SARPs.

f)   The encoding of messages should result from applying efficient standardized encoding rules to the abstract syntax message definitions.

g)   The ASN.1 definitions in the ADS Manual need to be thoroughly reviewed for completeness and non-ambiguity before being incorporated into SARPs.

h)   Coding efficiency should not be allowed to dominate over future flexibility and extensibility in defining ADS message structures

The WG reached agreement on these proposals as follows:

a)   The WG noted that this had been agreed earlier in connection with the discussion of WP/50

b), c), d), e). The WG agreed that guidance is needed from the ADSP on early requirements for ADS implementation . A flimsy was produced to request this information from ADSP. This flimsy is presented in Attachment 6.

f), g),h) With a minor modification to recommendation f, the WG agreed to pass these recommendations to the SARPs subgroups.

Action 3-1. Tom Calow will incorporate the text of WG3 Flimsy 2 into a flimsy being prepared by WG1 for transmittal to the ADSP.

3.15   WP/42 was presented by Jean-Yves Piram. This working paper proposed the addition of ground-ground radar exchange to the initial CNS/ATM-1 Package. The working paper advised the WG of activities underway by a number of European States to improve the exchange of radar data. A concern was raised on whether the ATN was appropriate for this purpose. The WG was advised that a study had been performed by EUROCONTROL that concluded that it was feasible to use wide area networks for the exchange of radar data. The WG noted that this may be a potential future application for the ATNP, but this work needs to be motivated by operational requirements from the ADSP. The WG agreed to defer action on this item until more information is available and further agreed that States interested in pursuing this application should deal directly with the ADSP via their panel members.   The Rapporteur observed that resources may not exist in WG3 to include this application in Package 1, even if operational requirements are provided by the ADSP.

Action 3-2. Danny Van Roosbroek will present the results of the EUROCONTROL study on the feasibility of using wide area networks for the exchange of radar data to the next meeting of WG3.

3.16   The discussion of the previous papers highlighted the need for operational requirements. In this regard, the WG agreed that the ADSP should be the focal point for collecting and refining operational requirements for air-ground and ground-ground applications based on input from States and international organizations to the ADS Panel. ATNP WG3 and WG2 must account for these operational requirements when developing SARPs for the ATN applications and upper layers (WG3) and transport/internetwork layers (WG2) respectively. The WG further agreed that the development of SARPs by the AMCP should be based on technical requirements for ATN mobile subnetworks provided by WGs of the ATNP.

3.17   WP/43 was presented by Ian Valentine. The working paper identified the anticipated early applications and their likely requirements in terms of ATN internet functionality. It then described the transition from the current (non-ATN) situations towards and ATN-based network with the required functionality. The paper made a number of recommendations in regards to the functions to be included in the Package 1 ATN Internet services. The WG noted that the recommendations on security issues had previously been considered in conjunction with earlier working papers and that the issue of lower layer compression will be addressed by WG2. The WG further noted that the systems management issues identified in the paper are being considered by WG1 and WG2, so this topic will be deferred for now by WG3. The WG agreed to pass the remaining recommendations (dealing with applications requirements in 2.5) to the subgroups as a framework to be used for deriving required communications services from the operational requirements.

3.18   WP/4(I) was presented by Bob Grappel. This paper described an algorithm that can compress a graphical weather map image sufficiently to allow efficient transmission over bandwidth limited links. The WG was informed that a map image can be compressed by a factor of up to 100 to 1. The WG noted that this technique may find application in future CNS/ATM packages.

3.19   The application-related portion of WP/29 was presented by Danny Van Roosbroek.   This paper had been developed as part of the activity of the SICASP TULIP subgroup. The paper proposed a SARPs standardization framework for ATN applications and the supporting OSI upper layers.

3.20   WP/32 was presented by Danny Van Roosbroek. This working paper is a proposed revision/replacement for Standing Document 06 (i.e. the application related TULIP material) presented in WP/29. The WG was advised that this working paper brings together the material presented to SICASP/5 and ATNP/1 along with new relevant material from ISO and elsewhere into one consolidated description of the framework and process for SARPs development for ATN applications. The WG agreed that the material in WP/32 be passed to the subgroups as a proposal from one Member.

3.21   WP/10 was presented by Steve Van Trees. This paper working paper considered the role of ISO protocols in LOGON and Directory Service (LADS). The paper informed the WG of new work on directory configuration and ongoing ISO work directly related to ATN requirements. The paper recommended that a subgroup be formed as part of the upper layers activity to deal with directory development. This work would be applied to Package 2 and beyond. The WG agreed to pass this material to the appropriate subgroup as a proposal from one State.

3.22   WP/51 was presented by Marc Sather. This working paper provided the WG with a compilation of air traffic services communications (ATSC) applications and their corresponding attributes. This document represents an update to an earlier version that had been prepared by the SICASP TULIP Subgroup and was included in WP/29.

3.23   The WG agreed to pass the material included in Standing Document 06 (WP/29), WP/51 and related material from the ATNP/1 report to the subgroups where it will be used as a framework for ATN application standards development. The subgroups were further tasked to review the material in WP/32 and WP/10 to determine its applicability for inclusion in the framework for SARPs development. The subgroup responsible for ground applications was also tasked to determine the changes needed to make this material apply to ground-ground applications as well as air-ground applications.

3.24   WP/8(I) was presented by Leon Sayadian. The paper informed the WG of the approach that the US FAA is following to standardize the security features for the data communications architecture being used within the US National Airspace System (NAS) to achieve secure interworking between NAS end systems. It was presented as work in progress and will be further reported at subsequent WG meetings.

3.25   WP/31 was presented by Ian Valentine. The paper advised the WG of draft SARPs and guidance material that have been developed by EUROCONTROL for the ADS application. The WG agreed to pass this material to the appropriate subgroup as an example of an ADS application using the five-part application SARPs structure prepared by SICASP/5 and accepted by the ANC. The subgroup was further instructed to pay special attention to chapter 4 which contains the alignment of this document to other existing ADS material. WP/31 should be viewed as a proposal by one Member in the development of SARPs for the ADS application.

4.0   Agenda Item 4: Development of SARPs and Guidance Material for Messaging Applications over the ATN

4.1   The Rapporteur reminded the WG of the material approved at ATNP/1 and contained in Appendix A to the report on agenda item 5. This material will be passed to the subgroups to be used as the basis for the development of SARPs for the message handling over the ATN.

4.2   WP/12 was presented by Ed Dillon. This paper presents a proposal to provide tools and a process designed to manage the validation of the AFTN/ATN gateway draft standards. The process makes use of a database of manual changes, the use of validation through implementation at one or more sites, and data bases for requirements and issues/resolution. A

recommendation was made to adopt this proposal for the validation process and for States to volunteer to its implementation. The WG agreed that a validation process was necessary and that it should lead to a validation document that accompanies the SARPs at ATNP/2. The WG agreed to pass this proposal to the subgroup as a staring point for validation together with instructions that the subgroup may make modifications to this process as it deems necessary to refine the definition of the validation process.

4.3   WP/20(I) was presented by Ed Dillon. This paper informed the WG of planned changes to the US AFTN/ATN Gateway Prototype to prepare for a role in ATS message handling over the ATN. Modifications include upgraded to the X.400 software to bring it up to the 1988 standard and to the operating system software, as well as hardware upgrades to provide increased disk capacity.

4.4   WP/11(I) was presented by Ed Dillon. This paper informed the WG of the compilation of a listing of all of the commercial components used to construct the AFTN/ATN gateway prototype. This information is provided for guidance of any organization desiring to duplicate the US prototype for experimentation and validation. It was not intended to define the components of an operational implementation.

4.5   WP/3 was presented by Gene White. The paper advised the WG of the need for a protocol architecture that supports interactive data transfers. This protocol suite would be characterized by small data units and low response time requirements. The paper reported on the continuing work being accomplished to develop and test protocol procedures to support these requirements and proposed a protocol architecture to best support these data exchanges plus provide AFTN/ATN interoperability. The key issue is should interoperability be provided for AFTN users to access data bases that are attached to the ATN. Otherwise they would be isolated during transition. The protocol architecture would also work in the opposite direction, i.e. allow the ATN users to access data banks attached to the AFTN. After a detailed discussion, the WG agreed to seek guidance from the ADSP on this issue. Pending ADSP guidance, the WG agreed to pass this material to the ground applications subgroup as a proposal from one State on a technique to accomplish this access.

4.6   WP/9 was presented by Gene White. The paper was a continuation of the efforts undertaken at ATNP/1 to improve the contents of the Manual on ATS Message Handling over the ATN and to harmonize its provision with existing procedures of Annex 10. The material in this paper was presented to ATNP/1. The paper proposed passing this material to the ground application subgroup. The WG accepted this proposal.

4.7   WP/13 was presented by Ed Dillon. This paper addressed the problem of orderly release without loss of messages when operating an application directly over the OSI transport layer. This problem is not properly solved in the current version of the gateway manual. The paper reintroduced the problem and discussed some alternative solutions. It recommended that the WG accept the task to resolve this problem and that the solution be based on supplying the missing function by some additional means, rather than through the technique of timer adjustment using the current approach in the gateway manual. The WG agreed to pass this material to the ground application subgroup. The subgroup was further tasked to do an economic tradeoff to determine if Type A gateway is still viable from a cost standpoint. This cost tradeoff should consider the transition case where there is a mix of Type A and Type B gateways.

> *Rapporteur's Note: This note is provided to clarify the tasking to the ground applications subgroup and represents the WG-3 Rapporteur's understanding of the intent of the tasking. The economic tradeoff that has been tasked to the ground application subgroup is expected to identify economic factors associated with the use of the Type A and Type B gateways. This information will be made available to the ICAO member states to permit*

them to make their own economic assessment of the viability of the Type A gateway. Since the ultimate economic viability of the Type A gateway is dependent on the existing infrastructure within a given state and the economic factors associated with that infrastructure, only the effected state will be able to determine the viability of the Type A versus Type B gateway.

4.8   WP/16 was presented by Manfred Okle. This working paper discussed a conceptual approach for message tracing in the AFTN/AMHS environment. Message tracing refers to the activity of determining the status of a message delivery within a message handling system. Special emphasis was given to the aspect of message identification and the contents of log information to be retained in the ATS message server. The paper also provided a description of a conceptual approach to message tracing. Attachments to the paper provided relevant information on ISO MOTIS. In the discussion, the WG was informed of work underway in ISO and ITU to address this functionality via system management. The WG agreed to pass this information to the ground application SARPs subgroup for consideration in its work relating to message tracing. The subgroup was further tasked to consider relevant ISO and ITU material in the development of this function.

4.9   WP/17 was presented by Manfred Okle. This working paper presented the structure of ISO/IEC International Standardized Profiles (ISPs) relevant to the Message Transfer System (MTS) and the Interpersonal Messaging System (IPMS). The paper further identified those parts of the structure which should be taken into account for the development of the AMHS. The WG agreed to pass this material to the ground application SARPs subgroup for consideration in their work program.

4.10   WP/27 was presented by Ian Valentine. The working paper proposed a position on the Message Handling Applications, the requirements for which are identified in the report of ATNP/1. The paper addressed the approach to the development of SARPs for the use of Message Handling services, and gateway functions for interworking to the AFTN (telex) network, using the ground-ground communications services of the ATN. The paper contained the following recommendations:

a)   It is recommended that for CNS/ATM-1, effort should primarily be placed on producing validated draft SARPs for the ATS Message Service as currently defined with a limited service level, based on Protocol Stack Type B, allowing interworking with existing AFTN switches.

b)   It is recommended that the definition of the extended ATS Message Service should be started in parallel with the development of the initial service, with base requirements as indicated.

c)   The ICAO solution for Message Handling must be capable of inter working without technical restriction with public X.400 services and private X.400 networks.

d)   The ICAO solution for Message Handling must be able to fulfill the requirements currently handled by the Aeronautical Fixed Telecommunications Network (AFTN). This does not imply that the problems and limitations of the AFTN are to be exported to AMHS.

e)   The ICAO solution for Message Handling must be able to inter work with existing AFTN switches through an appropriate Gateway definition. This does not imply that the problems and limitations of the AFTN are to be exported to AMHS.

f)   ISO/IEC ISPs should be taken as the basis for ICAO Messaging profiles.

g) The ICAO solution for Message Handling should specify the minimum functional requirements of a directory, without delaying the implementation of the "first level" ATS Message Service. This should specify the requirements for address resolution, address mapping and routing. It may be appropriate to make recommendations upon storage of user capability information and distribution lists.

h) The ICAO solution for Message Handling must be able to handle the non time-critical requirements of the ADS manual, e.g. for distribution of flight plan information.

i) The ATNP WG3 must investigate whether the time-critical information distribution requirements of the ADS manual can be met by a store-and-forward solution, and if so, provide the appropriate parameters for the SARPs of the ICAO Message Handling solution.

j) The current errors in the Draft messaging Manual should be corrected and a more thorough application of the formal methods is encouraged.

The WG reached agreement on these proposals as follows:

a) The WG noted that this issue had already been addressed under WP/13.

b) The WG agreed to task the ground applications SARPs subgroup for this development with a target of completion by Package 2.

c) The WG (recognizing its relationship to item b) agreed to pass this recommendation to the ground application SARPs subgroup.

d) This recommendation was withdrawn.

e) The WG agreed to this recommendation.

f) The WG noted that this recommendation had already been addressed under WP/17.

g) The WG noted that this recommendation had already been identified as part of Package 2.

h) The WG agreed with this recommendation with the addition of "and existing ICAO documentation" after "ADS manual" In respect to this recommendation, the WG tasked the ground applications SARPs subgroup to make every attempt to cite the operational requirement for each developed application.

i) The WG agreed to investigate the operational requirements for time sensitive message/data exchange over the ATN, including transition requirements concerning the AFTN/ATN Gateway. This investigation should identify service goals/capabilities and expected transit delay times for message/data exchanges using store and forward protocols (including AMHS) and alternate upper layer protocol architectures supporting interactive data exchange.

j) The WG noted that this recommendation had already been addressed under WP12

4.11 WP/25 was presented by Tony Kerr. This paper proposed that a position be taken on inter-centre communications SARPs for the CNS/ATM-1 Package. That is, the approach to the development of SARPs for on-line data communication between ground-based ATM centres, using ground-ground communications services of the ATN. The paper contained the following recommendations:

a) It should be noted that the security requirements of the AIDC application are not well defined. Urgent attention should be given to defining appropriate security provisions for applications to be standardized for use over the ATN.

b) An active role should be taken in the transition from character-based inter-facility data interchange to bit-oriented AIDC message exchange.

c) The specification of message content should be kept separate from the encoding for interchange. The use of ASN.1 for abstract message definition should be supported, and an appropriate set of encoding rules applied to produce the interchange format.

d) The separation of service semantics from communications mechanism should be supported, and it should be ensured that nothing specific to the Transport Service provider appears in the SARPs for inter-centre communications.

e) It is recommended that MHS should be considered as an appropriate communications mechanism for CNS/ATM-1 for conveying the encoded ATS messages between ground centres. Strict requirements on the MHS service parameters must be defined and policed in operation, to ensure that operational service quality requirements are met.

The WG reached agreement on these proposals as follows:

a) The WG noted that this issue had already been addressed under an earlier agenda item.

b) The WG agreed that the ground application SARPs subgroup should address transition issues from character based to bit-oriented inter-facility data interchange.

c) The WG agreed to pass this recommendation to the ground application SARPs subgroup.

d) The WG agreed to accept this as a guideline for the ground application SARPs subgroup.

e) This recommendation was withdrawn, since it had been covered under a previous agenda item.

4.12 WP/21 was presented by Jean-Marc Vacher. This WP identified the work items that need to be addressed in regards to messaging applications for the purpose of drafting SARPs and Guidance material. The paper proposed a technical work program consisting of;

1. Refinement and completion of the Manual on Messaging Applications

2. Definition of the extended ATS Message Service

3. Validation and conformance testing.

The WG agreed to pass this proposal to the ground application SARPs subgroup for consideration in the development of its detailed work program

4.13 The rapporteur advised the WG of a proposed organization for the WG/3 subgroups with chairman nominated as follows:

SG1   Ground Subgroup, Chairman Jean-Yves Piram

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SG2   Air-Ground Subgroup, Chairman Mike Murphy

SG3   Architecture subgroup, Chairman Bo Overgaauw

4.14   The WG agreed to the subgroup organization as well as the to the nominated chairmen. The meeting participants were invited to join one of the subgroups and to meet with the chairmen to work out the terms of reference for the subgroup.

4.15   The chairmen of the subgroups reported the results of the organization meetings to the WG. The WG was advised of the proposed terms of reference and work plans for each subgroup. The WG was informed that the meeting plans for the SGs are as follows:

SG1 will meet on 18,19 and 20 January in Paris.

SG2 will meet on 13 to 15 December 1994 in Brussels and 31 January to 2 February 1995 in Ft. Lauderdale.

SG3 will meet on 6 to 10 February 1995 in Ft. Lauderdale.

The agreed terms of reference, list of participants and work plan for each of the subgroups is presented in Attachments 7, 8 and 9 for Subgroups 1 to 3 respectively.

4.16   The Rapporteur proposed that each SG prepare a list of products to be prepared by that SG. The WG agreed to this proposal.

Action 4-1. The subgroup chairmen will present to the next meeting of WG3 a list of all of the products that their subgroup intends to produce for acceptance at ATNP/2, as well as any products planned for completion subsequent to ATNP/2.

5.0   Agenda Item 5: Development of SARPs and Guidance Material for the ATN Upper Layers

5.1   The upper-layer portion of WP/29 was presented by Danny Van Roosbroek. The working paper advised the WG of the upper layer work accomplished by the TULIP subgroup of the SICAS Panel. The paper contains the latest version of the TULIP standing documents. A more detailed description of the standing documents(SD) was presented as follows:

SD05, Upper Layer Management Information - Tony Kerr

SD07, Upper layer architecture Considerations - Tony Kerr

SD08, Catalog of Application Requirements - Danny Van Roosbroek

SD09, Datagram Profile Service Description - Frederic Picard

SD10, Initial Example Dialog Profile - Bo Overgaauw

Steve Van Trees informed the WG of TULIP related activity that did not lead to standing documents.

The paper contained the following recommendations:

1) ATNP Working Group 3 should adopt and continue the development of the attached Standing Documents

2) The working group should ensure that the discussions and concepts in these Standing Documents are reflected in the draft SARPs and Guidance Material developed for the CNS/ATM-1 Package, and in the longer term plans for the development and standardization of ATN-user Applications and supporting ATN upper layer services and systems applications.

3) ATNP Working Group 3 should assess the relevance and if appropriate continue the development of the outline Standing Documents listed in section 4 of this paper.

The WG took the following actions with respect to these recommendations:

The WG agreed to direct SG3 to use the material in SD05 as the basis for their work in the management of the upper layers.

The WG agreed to pass the material in SD07 to SG3 for their consideration in the development of GM and as the basis for their consideration in the in upper layer development.

The WG agreed to pass the SD08 to SG3 for their information in the development of upper layers services. The WG further directed that ADSP requirements where available would take precedence over the SD material. It could be viewed as a place holder until formal operational requirements are provided by the ADSP.

The WG agreed to pass the SD09 to SG3 for information purposes.

The WG agreed to pass the SD10 to SG3 for information purposes.

5.2   WP/2, WP/49 and WP/28 were presented and discussed together.

5.2.1   WP/2 was presented by Steve Van Trees. The working paper advised the WG of the work the TULIP SG had performed in its catalog of upper layer architecture requirements. The paper presented initial application requirements and the proposed guidance material for A2CSE. The paper proposed that A2CSE be upgraded from an alternative proposal to a core proposal for the ATN upper layer architecture.

5.2.2   WP/49(I) was presented by Steve Van Trees. This paper informed the WG of the current ATN related activity in ISO/SC21 and ITU-T SG7 in support of the international standardization of an upper layer architecture that meets ATN requirements.

5.2.3   WP/28(I) was presented by Tony Kerr. The information paper summarized the current status of the international standardization for some of the topics relevant to the development of the ATN applications and upper layers. Particular emphasis was given to the status of the A2CSE proposal.

5.2.4   WG agreed that this was a topic requiring SG3 attention. The WG tasked SG3 to report to WG3 at the next meeting on (1) the status of ITU-T and ISO activities and (2) a SG3 recommendation on the proposal to use XALS/A2CSE/FB as the basis for the ATN upper layer architecture.

5.3   WP/54 was presented by Gene White. The working paper advised the WG of the ASP Panel WG conclusions for the mapping of ATS application protocols to the ATN priority values.

The paper presented an ASPP Rapporteur's Working Paper together with some modifications required conformance to the current work program of WG3. The WG agreed to pass this material to SG1 and SG3 for consideration in its work dealing with the mapping of priorities.

5.4   WP/33(I) was presented by Tony Kerr. This information paper considered a number of mechanisms which have been proposed as candidates to improve the efficiency of the OSI upper layers. The relevance of these mechanisms to an upper layer stack supporting the CNS/ATM-1 Package applications was also presented. The WG agreed to pass this material as an information paper to SG3.

5.5   WP/30 was presented by Tony Kerr. This paper advised the WG of the requirements for an initial upper layer stack to support the CNS/ATM-1 Package application. It also proposed an outline specification for this stack. The paper recommended that:

> (1) the WG adopt the material in this paper as a basis for the specification of non-operational requirements and the development of CNS/ATM-1 Upper Layer SARPs, and

> (2) SG3 investigate the following areas discussed in the paper, with a view to establishing a set of precise (non-operational) requirements:

> • Lower layer compression
> • Security
> • Graceful transport disconnect
> • Transport message priority
> • Quality of service
> • Traffic Type

With respect to the paper, WG agreed to the following general requirements for the development of an upper layer stack for the CNS/ATM-1 Package time frame:

> a)   It should centralize the common service requirements of Package 1 air-ground applications into a single specification,

> b)   It should minimize the bandwidth (the number of octets) required for A/G communications,

> c)   It should be easy to prototype and validate within the ATNP/2 time frame,

> d)   There should be a migration path to accommodate future upper layer stack definitions (including internationally standardized upper layer stack(s), if appropriate),

> e)   It should attempt to make efficient use of the ATN Internet,

> f)   It should facilitate application interworking (e.g. by identifying encodings and applications types and capabilities).

> g)   It should support version control (i.e. distinguish between different versions of the same application).

With respect to recommendation (1), the WG agreed that these requirements should be passed to SG3 for the development of upper layer considerations for Package 1. The WG further agreed to pass this material to SG3 as the basis for a framework of the development of UL SARPs

With respect to recommendation (2), the WG agreed that SG3 should investigate the items identified.

5.6   WP/45(I) was presented by Egon Koopman. This working paper advised the WG of interim results of a review of the OSI addressing framework applied to the ATN. The paper illustrated the use of logical versus physical addressing in the ATN and presented a set of assumed operational requirements considered relevant to the definition of an addressing concept for the ATN. The objective of the paper as to foster the development of an overall addressing concept that follows a top down and user (requirements) driven approach. The WG agreed to pass this material to SG3.

5.7   Working papers 35(I), 38(I), 39(I), 40(I) and 41(I) were presented and discussed together. All of these papers were presented by Steve Van Trees.

    WP/35(I) reported on advances in the standardization of the fast byte technique.

    WP/38(I) informed the WG of the ISO/SC21 actions that took place at the Southampton meeting in August 1994.

    WP/39(I) informed the WG of current A2CSE service element specification based on the actions taken at the ISO/SC21 meeting at Southampton.

    WP/40 informed the WG of current A2CSE connection mode-protocol specification based on the actions taken at the ISO/SC21 meeting at Southampton.

    WP/41(I) informed the WG of current A2CSE connectionless- mode protocol specification based on the actions taken at the ISO/SC21 meeting at Southampton.

The WG agreed to pass this material to SG3 as information papers.

5.8   WP/36(I) was presented by Steve Van Trees. This paper informed the WG of TULIP flimsy on connection mode/connectionless mode selection criteria. The WG agreed to pass this material to SG3 as an information paper.

5.9   WP/48 was presented by the Rapporteur. This paper made a high-level recommendation regarding the use of the ISO/IEC International Standardized Profiles (ISPs) as the basis for the profiling activities within the ATNP in order to ensure interoperability between systems based on the ISO/IEC, ISPs, IATA, AOP and ICAO SARPs. The WG agreed to pass this material to SG1 and SG3 as an input from one State.

5.10   WP/46 was presented by Tony Kerr. The paper considers some of the issues arising from the choice of data compression mechanisms available to data link applications to use over the ATN. The following recommendations were made by the paper:

1. Availability of compression in the ATN lower layers for CNS/ATM-1 needs urgent resolution. Link level compression on those sub-networks where bandwidth is limited is preferred.

2. The possibility of changing the ATN Manual to allow V.42bis compression to be applied to data which has already undergone ACA address compression should be investigated.

3. In order to arrive at definitive recommendations mandating the use of ATN compression in the air-ground subnetworks, tests of PER encoded data over compressed sub-network protocols should be performed urgently, and the results brought to meetings of the ATN Panel Working Groups. Comparative tests should be undertaken, for various lengths of typical application data, for each of the following cases:

    a) BER-encoded application data with no subnetwork compression (Fast Select not supported in the SNDCF) - i.e. no data compression.

    b) PER-encoded application data with no subnetwork compression (Fast Select not supported in the SNDCF) - i.e. compression at application level, simplest SNDCF.

    c) PER-encoded application data with ACA subnetwork compression negotiated

    d) PER-encoded application data with V.42bis subnetwork compression negotiated

    e) BER-encoded application data with V.42bis subnetwork compression negotiated.

Whilst it is recognized that data minimization at the application layer may be desirable in early implementations, it must be equally recognized that in the time scale for full roll-out of air-ground applications using the ATN Internet, data compression will become an ATN Internet function. It is therefore vital that data encoding efficiency at the message level is NOT the dominant consideration in choosing DLA encoding approaches to apply in the upper layers and applications. Implementations which apply optimization for early usage over simple (pre-existing) carrier services must be flexible to allow a more open and extensible encoding scheme when the full ATN Internet based services are available.

    4. Upper layer data encoding efficiency should not be allowed to dominate over future flexibility and extensibility in defining DLA message encoded structures.

The WG reached agreement on these proposals as follows:

    1. No action by WG3 since it applies to WG2.

    2. No action by WG3 since it applies to WG2.

    3. The WG encourage States and Organizations in ATNP to bring forward data on the performance of the various compression alternatives.

    4. This recommendation was withdrawn since it was covered in an earlier agenda item.

5.11   WP/52 was presented by Frederic Picard. This paper advised the WG of the results of study performed to investigate the effects of compression of CLNP PDUs containing transport PDUs with Basic Encoding Rules (BER) encoded or Packed Encoding Rules (PER) encoded application data of the CPDLC application. The most important conclusion was that the best results (smallest PDUs) were obtained with PER-encoded data. The paper contained the following recommendations:

    1. Simultaneous use of efficient encoding rules and compression techniques is recommended for air-ground applications in the ATN.

    2. The use of PER is preferred over the use of BER.

    3. It is recommended to use ASN.1 constraints when defining DLA message structures as much as possible.

    4. It is recommended that further studies by carried out.

The WG reached agreement on these recommendations as follows:

    1. The WG agreed to the use of efficient encoding rules and agreed to take action to advise WG2 of the benefits of these compression techniques.

2. The WG agreed to pass this recommendation to SG3.

3. The WG agreed to pass this recommendation as guidance to SG3.

4. The WG noted that this recommendation was addressed to States. SG3 can serve as a focal point for consolidating results related to the use of compression techniques as provided by the States.

Action 5-1. Frederic Picard will prepare a paper on compression efficiency for presentation to the Working Group of the Whole at the next ATNP working Group meetings.

5-12. WP/6(I) was presented by Steve Van Trees. This information paper presented the current ISO work in Managed Objects for the Upper Layers. It was noted that most of this information was contained in the TULIP material of WP/29. The WG agreed to pass the material in this WP to SG3 as an information paper.

5.13 WP/37(I) was presented by Steve Van Trees. This information presented the current ISO work in Open Distributed Management Architecture. The WG agreed to pass the material in this WP to SG3 as an information paper.

5.14 WP/47 was presented by Steve Van Trees. This working paper advised the WG that ICAO had object identifiers defined for network layer security parameters. The paper indicated that the registration hierarchy available for registration under the ICAO node on the global hierarchy may need to support Managed Object registration and registration needed for application names. The ICAO registration hierarchy structure should be optimized to support future needs and those needs should be understood as soon as possible. The WG agreed to pass this material to SG3 as an information paper.

5.15 WP/53 was presented by Tony Kerr. The paper was produced to initiate discussion of the ATN systems management communication requirements in particular the implications of selecting the standard AOM 11 profile rather than the AOM 12 profile. The WG agreed to pass this material to SG3.

6.0   Agenda Item 6: Any other business

6.1 The Rapporteur opened the meeting for a discussion on related data link activities underway in the States and Members that had not been reported in the previous agenda items.

7.0   Agenda Item 7: Arrangements for the next meeting

7.1 The arrangements for the next meeting were agreed during the meeting of the Working Group of the Whole. The second meeting of the ATNP Working Groups will be held in Toulouse France in March 1995. The specific dates are:

WG2 and WG3: March 13-17

WG of the Whole: March 20

WG1:   March 21 to 24

7.2 The table below outlines the tentative provisions for the remaining three meetings:

Location	Date	Contact
Banff, Alberta, Canada	October 1995	T. Calow
Jamaica	Jan/Feb 1996	W. Roberts
Munich, Germany	June 1996	K. Platz

ATTACHMENT 1

LIST OF PARTICIPANTS

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

NAME	AFFILIATION	STATE/MEMBER
Ron Jones	FAA	USA
Annette Bauman	FAA	USA
Michael Bigelow	ARINC	ARINC
Linda Boan	MITRE/CAASD	USA
Thomas Calow	Transport Canada	Canada
Alphonse Cascone	MITRE/CAASD	USA
Luiz A.F. Castro	DEPV-GEIV	Brazil
Brian Dennis	CAA	UK
Claude Desjardins	Transport Canada	Canada
Ed Dillon	MITRE/CAASD	USA
Pierre Friez	Thomson CSF	France
Domenico Giordano	AAAVTAG	Italy
Robert Grappel	MIT/Lincoln Laboratory	USA
Theo Hagenberg	NLR/ATC	Netherlands
Bhumisathit Jampathom	AEROTHAI	Thailand
Tony Kerr	Level 7	EUROCONTROL
Toshiaka Kojima	NEC	Japan
Egon Koopman	DFS	Germany
Christine Krause	MITRE/CAASD	USA
Michael Liggan	MITRE/CAASD	USA
Tadashi Majima	JCAB	Japan
Owen Marsh	CAA	Australia
James Moulton	NMSI	USA
Craig Morris	AMTECH	USA
Michael Murphy	Adsystech	USA
Manfried Okle	DFS/Dornier	Germany
Vincent Orlando	MIT/Lincoln Laboratory	USA
Boudewijn Overgaauw	NLR/ATC	Netherlands
Frederic Picard	CENA	France
Jean-Yves Piram	STNA	France
Melodie Price	Crown	USA
Jesus Cid Rodriguez	AENA	Spain
Somnuk Rongthong	AEROTHAI	Thailand
Fabrizio Sandrelli	Alenia-DRS	Italy
Harby Abdel Salam	ECAO	Egypt
Marc Sather	Boeing	IATA
Leon Sayadian	FAA	USA
Austin Snively	American Airlines	IATA

NAME	AFFILIATION	STATE/MEMBER
Rhonda Thomas	FAA	USA
Mamadou Traore	Telecommunications Direction Generale	ASCENA
Jean-Marc Vacher	ON-X	France
Ian Valentine	Level 7	EUROCONTROL
Danny Van Roosbroek	DIV DED1	EUROCONTROL
Steve Van Trees	STEL	USA
Gene White	NMSI	USA
Yoshiko Yamada	Mitsubishi Electric Corporation	Japan
Kenneth Zemrowski	ISN	USA

ATTACHMENT 2

AGENDA

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

1. Approval of the Agenda
      1.1 Distribution of working papers
      1.2 Assignment of working papers to agenda items

2. Review of the WG3 work program, from ATNP/1 Report to Agenda Item 7

3. Development of SARPs and Guidance Material for the technical aspects of ATN applications

      3.1 Review outcome of WG1 meeting for identification of initial applications set

      3.2 Requirements for ATN applications
            3.2.1 CNS/ATM-1 Package
                  • Mobile service applications (ADSP/3 report)
                  • Inter-centre applications (ADSP/3 report)
                  • System applications (e.g. directory service, context management)
            3.2.2 CNS/ATM-2/3 Package

      3.3 Review materials developed by SICASP (TULIP subgroup) on methodology for
            the development of ATN Application SARPs
            3.3.1 Identify the revisions needed to include fixed service applications as
                  well as mobile service applications

      3.4 Application security features with the framework of security concepts defined
            by WG1

      3.5 Review activities by ICAO states to develop ATN applications

      3.6 Assessment of activities to validate ATN applications

      3.7 CNS/ATM-1 draft SARPs
            3.7.1 Draft SARPs (format /content)
            3.7.2 Working approach to draft ATN Application SARPs and Guidance
                  Material, including the need to form a drafting group

4. Development of SARPs and Guidance Material for Messaging Applications over the
    ATN

      4.1 Review Appendix A to the Report on Agenda Item 5 to the ATNP/1 Report

      4.2 Requirements Validation
            4.2.1 Requirements tracking (e.g., requirements data base)
            4.2.2 Configuration management of requirements
            4.2.3 Assessment of validation activities

      4.3 Issues identified related to the draft SARPs material as approved at ATNP/1

4.4 Define a working approach to draft SARPs and Guidance Material
for Messaging Applications over the ATN, including the need to form a
drafting group

5. Development of SARPs and Guidance Material for the ATN Upper Layers

5.1 Review of Appendix B to the Report on Agenda Item 7 to the ATNP/1
Report

5.2 Review standing documents on ATN upper layers developed by TULIP and
forwarded by SICASP

5.3 Review the work of ASPP on the requirements for upper layers to supporting
aeronautical fixed services

5.4 ATN upper layer architecture supporting fixed and mobile services
5.4.1 Supporting CNS/ATM-1 Package
5.4.2 Supporting CNS/ATM-2/3 packages

5.5 ATN upper layer protocols and profiles
5.5.1 Supporting CNS/ATM-1 Package
5.5.2 Supporting CNS/ATM-2/3 packages

5.6 Encoding rules and data compression functions
5.6.1 Supporting CNS/ATM-1 Package
5.6.2 Supporting CNS/ATM-2/3 packages

5.7 Assessment of activities to validate ATN upper layers
5.7.1 Supporting CNS/ATM-1 Package
5.7.2 Supporting CNS/ATM-2/3 packages

5.8 ATN upper layer security features within the framework of security concepts
defined by WG1
5.8.1 Supporting CNS/ATM-1 Package
5.8.2 Supporting CNS/ATM-2/3 packages

5.9 ATN upper layer managed objects within the framework of system
management concepts defined by WG1
5.9.1 Supporting CNS/ATM-1 Package
5.9.2 Supporting CNS/ATM-2/3 packages

5.10 Upper Layer Standards
5.10.1 CNS/ATM-1 Package draft SARPs and GM
5.10.2 Draft material for ATN manual version 3
5.10.3 Working approach to draft SARPs, Guidance Material and ATN
Manual material for ATN Upper Layers including the need to form a
drafting group.

6.0 Any other business

7.0 Arrangements for the next meeting

MEETING SCHEDULE

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

Agenda Item	Topic	Date / Time
1	Agenda Approval & WP Distribution	24 Oct. / 09:00 - 10:30
2	Review of WG3 Work Program	24 Oct. / 11:00 - 12:00
3	SARPs & GM for ATN Applications	24 Oct. / 13:15 - 17:00 25 Oct. / 09:00 - 17:00
4	SARPs & GM for Messaging Applications	26 Oct. / 09:00 - 17:00 27 Oct. / 09:00 - 10:30
5	SARPs & GM for ATN Upper Layers	27 Oct. / 11:00 - 17:00 28 Oct. / 09:00 - 14:30
6	Any Other Business	28 Oct. / 14:30 - 16:30
7	Arrangements for the next meeting	28 Oct. / 16:30 - 17:00

ATTACHMENT 3

LIST OF MEETING PAPERS

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

WP NO.	AUTHOR	TITLE	AGENDA ITEM	
1	R. Jones	Working Group 3 Agenda	1.0	
2(I)	S. Van Trees	Upper Layer Architecture Requirements as Fulfilled by A2CSE		5.4
3	G. White	Upper Layer Requirements for Interactive Data Exchanges	4.3	
4(I)	R. Grappel	Graphical Weather-Map Compression for ATN Applications		3.2.2
5	L. Boan	Minimum Operational Performance Standards for Aircraft Context Management Equipment		3.2.1
6(I)	S. Van Trees	ISO Managed Objects for Upper Layers		5.9
7	L. Boan	Two Way Data Link Minimum Operational Performance Standards		3.2.1
8	L. Sayadian	Planned NAS OSI Security Architecture Protocols and Mechanisms		3.4
9	G. White E. Dillon	Harmonization and Documentation Improvements to AFTN/ATN Gateway Draft SARPs	4.3	
10	S. Van Trees	TWI8 (Logon and Directory Service)		3.2.1
11(I)	E. Dillon	Component List for the U.S. AFTN/ATN Gateway Prototype		4.2.3
12	E. Dillon	Validation Procedures for the Manual for "Air Traffic Services (ATS) Message Handling Over the ATN"	4.2	
13	E. Dillon	Additional Requirements for the Type A Protocol in the Manual for "Air Traffic Services (ATS) Message Handling Over the ATN"		4.3
14(I)	T.Signore	Context Management Using a Directory Based Service (IP)		3.2.2

15	J.Y. Piram J.M. Vacher	Working Approach for Working Group 3	3.7.2 4.4 5.10.3
16	M. Okle	Message Identification, Logging and Traceability in the AFTN AMHS Environment	4.3
17	M. Okle	Application of the ISO Profiles AMH1n and AMH2n to the AHMS	4.3
18		Number not used	
19(I)	T. Lehman	Initial Context Management Implementation (IP)	3.2.1
20(I)	E. Dillon	Current Developments in the Gateway Prototype to Support Validation of the Manual for "Air Traffic Services (ATS) Message Handling over the ATN"	4.2.3
21	J.Y. Piram J.M.Vacher	Elements for the Work Program on the ATS Messaging Applications	4.4
22	M. Sourimant	Comments about CPDLC	3.2.1
23	I.Valentine	Position Paper on SARPs for Automatic Dependent Surveillance (ADS) for CNS/ATM-1 Package	3.2.1
24	I.Valentine	Position Paper on SARPs for Direct Pilot-Controller Communications for CNS/ATM-1 Package	3.2.1
25	T.Kerr	Position Paper on SARPs for Inter-Centre Communications over ATN for CNS/ATM-1 Package	4.0
26	T.Kerr	Position Paper on SARPs for System Applications to support ATN for CNS/ATM-1 Package	3.2.1
27	I.Valentine R.Baker	Position Paper on SARPs for Message Handling Applications for CNS/ATM-1 Package	4.3
28(I)	T.Kerr	ATN Upper Layers - Status of Relevant Work in ISO/IEC	5.4
29	TULIP	Overview of the SICASP/WG3 TULIP Work	3.3 5.2
30	P.Cope	Proposed Initial Draft SARPs for Early ATN Upper Layers	5.4.1
31	T.Maude	Proposed Guidance Material and Draft SARPs for ADS Reporting	3.7.1
32	T.Kerr I.Valentine D. Van Roosbroek	Draft Replacement for Framework and Process for ATN Application SARPs Development	3.3
33	P.Cope	Discussion Paper on UL Efficiency Mechanisms	5.4

34	R. Jones	Proposal to Create SARPs Drafting Groups	3.7.2
			4.4
			5.10.3
35	S. Van Trees	ISO and ITU-T Fast Byte Proposal	5.5
36(I)	S. Van Trees	Connection Mode/Connectionless Mode Selection Criteria	5.5
37(I)	S. Van Trees	ISO Work in Open Distributed Management Architecture	5.9
38(I)	S. Van Trees	Methodology and Guidelines for the Development of Application Layer Standards	5.5
39(I)	J. Day	A2CSE Service Specification	5.5
40)I)	J. Day	A2CSE Connection-Mode Protocol Specification	5.5
41(I)	J. Day	A2CSE Connectionless-Mode Protocol Specification	5.5
42	J.-Y. Piram B. Gouvine	Ground-Ground Applications for Inclusion in the Initial CNS/ATM-1 Package (WG1/WP39)	3.2.1
43	I.Valentine T/Whyman	Requirements made by CNS/ATM-1 Package ATN Applications on the ATN Internet, & Consequent Transition Strategy (WG1/WP18)	3.2.1
44	I.Valentine	Proposal to ICAO ATNP WG1 on Scheduling of Applications for CNS/ATM-1 Package (WG1/WP17)	3.1
45	K-P Graf R.Hoffman	ATN Addressing (WG1/WP2)	5.4
46	T.Kerr	Upper Layer and Lower Layer Data Compression Considerations in ATN (WG1/WP16)	5.6
47	D. Sanford	ICAO Registration Requirements (WG1/WP23)	5.9
48	M. Pinelle	Proposal for Harmonization of ISO/IEC, IATA and ICAO Profiling Activities to Facilitate Interoperability between Systems Based Thereon (WG1/WP30)	5.5
49(I)	S. Van Trees	ATN Standards Activity in ISO and ITU-T Forums (WG1/WP26)	5.5
50	B.Overgaauw	Proposal for Terms of Reference for ATNP WG/3 Subgroups	3.7.2
			4.4
			5.10.3
51	M. Sather	Catalogue of Application Requirements	3.3
52	F. Picard	BER/PER Compression Efficiency in the ATN	5.6
53	T.Kerr	ATN Systems Management Communication Requirements for CNS/ATM-1 Package (WG1/WP14)	3.2

| 54 | G. White | AFS Priority Mapping Requirements | 5.3 |
| 55 | I. Valentine | Proposed Disposition of Recommendations for WG3/WP24 Controller-Pilot Communications for CNS/ATM-1 Package | 3.2.1 |

ATTACHMENT 4

LIST OF ACTION ITEMS

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

Action 3-1. Tom Calow will incorporate the text of WG3 Flimsy 2 into a flimsy being prepared by WG1 for transmittal to the ADSP.

Action 3-2. Danny Van Roosbroek will present the results of the EUROCONTROL study on the feasibility of using wide area networks for the exchange of radar data to the next meeting of WG3.

Action 4-1. The subgroup chairmen will present to the next meeting of WG3 a list of all of the products that their subgroup intends to produce for acceptance at ATNP/2, as well as any products planned for completion subsequent to ATNP/2.

Action 5-1. Frederic Picard will prepare a paper on compression efficiency for presentation to the Working Group of the Whole at the next ATNP working Group meetings.

ATTACHMENT 5

Proposals for SARPS for Direct Controller-Pilot Communications for Package 1

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

1 INTRODUCTION

Paper WG3/WP24 raises a large number of issues with respect to the development of SARPs and guidance material for the Controller-Pilot Communication application for CNS/ATM-1 Package. This paper attempts to simplify the decisions and recommendations required out of WG3 by categorizing the recommendations on the basis of:-

- those where additional guidance is required from the ADS panel

- those where additional guidance is required from ATNP WG1

- those on which WG3 itself must reach a consensus and direct an appropriate editing group

- those which can be passed to an appropriate editing group for discussion and resolution

In the following text, letters in square brackets [] relate the issue to the recommendation identification in section 4 of the working paper. [--] indicates a statement in the working paper which implies the need for action, but where no specific recommendation is made.

2 ADDITIONAL GUIDANCE FROM THE ADS PANEL

The following recommendations require liaison or additional guidance from the ADS panel, and an appropriate liaison request should be generated (informally, or formally by a flimsy)

2.1 Number of Connections [--]

The draft ADS Manual requires that only one ATC centre be in CPDLC contact with an aircraft at any given moment. A view is expressed in the working paper that although there is an operational requirement that only on ATC centre is controlling an aircraft at a time, this should not reflect through into a technical constraint that only allows messages from one centre to be received by the aircraft.

The issue of which messages come from the currently responsible controller should then be handled by operational procedures (possibly supported by the HCI factors indicating message source, and highlighting those from the current controller) The view of the ADS Panel is sought on this approach.

2.2 The Name of the Service [b]

Various names such as CPDLC, TWDL, DPCP are used to describe essentially similar or identical ground-air message exchange services. ATNP WG1 proposed the term `Controller-Pilot Communication' (CPC) as a generic name for this group of

message interchanges. It is suggested that the technical service be identified by name CPC, with message sets being defined for particular applicability (PDC, ATIS). The view of the ADS Panel is sought on this terminology.

2.3 Usage for CPDLC Messages [c]

The ADS Manual carries a set of message definitions that it is believed were developed in the context of oceanic (low density) air space. Concerns have been raised by member states at preparation meetings that this list may prove not to be sufficient for continental (high density) air space. A recommendation is therefore tabled that extensibility be built into the message encoding scheme to allow simple upwards extension without creating protocol violations for earlier implementations. Clarification is sought from the ADS Panel on:

- the completeness of the current message set

- the rate at which new messages may be identified and added

- the desirability for incremental extensibility (as compared with major version changes on a 2-3 year basis)

2.4 CPC Generic Message Structure [d]

The following characteristics are proposed in the working paper for a generic CPC service. Not all are traceable to an ADS Manual Operational Requirement, but there is an opinion behind the recommendation that some of these characteristics may have been assumed as implicit by ADSP members. Clarification is therefore sought as to which features are regarded as essential by ADSP for CNS/ATM-1 Package.

- Originator Identification

- Intended Recipient identification

- priority (16 values) (This is currently implicit except for text messages)

- importance (4 values) (this is currently implicit except for text messages)

- origination date/time

- message type

- response require (type) (this is currently implicit)

- security seal (to detect tampering and validate origin)

(On the security seal parameter, it should be noted that the ATN can give no assurance that a message originates from a valid ATN user. A hostile agent could therefore send bogus ATC instructions to a pilot which would be indistinguishable from genuine ATC instructions unless such a security seal is provided.)

3. ADDITIONAL GUIDANCE FROM ATNP WG1

The following recommendations require liaison or additional guidance from the ATNP WG1, and an appropriate liaison request should be generated (informally, or formally by a flimsy)

3.1 Security Considerations (for CPC Messages) [g]

A recommendation is made in the working paper that a security seal be included as a basic feature of the CPC generic message structure. To determine the feasibility of this for ATNP 2, WG3 needs guidance from WG1 on the security framework that is to be assumed for CNS/ATM-1 Package. ATNP WG1 is requested to provide guidance on the security framework, at least to the extent needed for applying a digital signature to short air-ground messages, by the March 1995 WG3 meeting date.

4. TO BE RESOLVED BY WG3 IMMEDIATELY

The following recommendations need to be resolved by WG3 at the October 1994 meeting, and appropriate direction given to the SARPs Drafting Group for Air-Ground Applications.

4.1 Nature of the CPC Service [a,e,f]

A recommendation is made in the working paper that the CPC be defined as a 'flexible extensible text information interchange service', that all the messages of the ADS Manual CPDLC be encoded using the generic message structure, and that allowance has to be made for the future definition of messages for related applications. WG3 must decide what this means in terms of directions to the Air-Ground SARPs Drafting Group.

- Is the concept of a generic CPC message frame work to be adopted?
- Is extensibility of existing message sets to be allowed for?
- Is easy introduction of new message sets to be allowed for?

This guidance needs to be given to the drafting group in advance from replies from ASP to the matters raised earlier, if any progress is to be made by the next WG3 meeting date.

4.2 Underlying Communications Service [h]

A recommendation is made in the working paper that the primary technical environment for the CPC application is the ATN Internet, rather than near term tactical communication solutions. ATNP WG3 needs to confirm this recommendation as a directive to the SARPs drafting group for Air-Ground applications.

4.3 Ownership of Data Definitions and Encoding [n]

A recommendation is made in the working paper that the ADS Panel should define the semantics of messages (the data definitions) for CPDLC and future related message sets, and that ATNP WG3 should be responsible for defining correct and efficient encoding. This implies that in producing the SARPs material for CPC, the drafting group be directed to apply good practice and technical precision in re-encoding the data definitions in the ADS Manual. WG3 needs to reach an agreement on this proposal and direct the SARPs drafting Group for Air-Ground applications accordingly.

A recommendation is made in the working paper that ATNP WG3 consider the means by which new messages and/or groups of messages can be added to a generic message structure definition, to facilitate certification but to allow incremental migration to new functionality. WG3 needs to give direction to the SARPs drafting group for Air-Ground applications as to how to proceed with respect to extensibility.

5. FOR RESOLUTION BY A SARPs DRAFTING GROUP [I,J,K,L,M]

The following recommendations with respect to coding considerations in the working paper are believed to be of a technical nature. ATNP WG3 should therefore request that the SARPs drafting group for Air-Ground applications consider the recommendations in their work and propose their resolution to the next meeting of WG3.

i) Unreasonable or unjustifiable value range constraints should be removed

j) Units of measure within messages should be rationalized to a single type per measurement class.

k) Integer types should be used correctly and not modified by notes.

l) Context specific tag values should normally be constrained to the range 0-31 to conform with good ASN.1 practice. The AUTOMATIC TAGS feature of the new revision of ASN.1 may be appropriate to implement this.

m) Coding efficiency should NOT be allowed to dominate over future flexibility and extensibility in defining DCPC message structures

ATTACHMENT 6

FLIMSY REQUESTING INFORMATION FROM THE ADSP

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

ATNP WG3 Flimsy 2.
(Revision 1)
94-10-26

ATNP WG1 indicated in its flimsy 3 its intention to base the initial ATN application SARPs for CNS/ATM-1 Package on the ADS manual as published as the appendix to the report of agenda item 5 of the ADS Panel meeting report (May 1994)

At the subsequent ATNP WG3 meeting, some delegates expressed an opinion that there are a number of proposed changes to the ADS manual material, which are to be discussed by the ADSP, and possibly incorporated into the manual.

ATNP WG3 would like to advise the ADSP that in order to complete the ATN SARPs for CNS/ATM-1 Package on time, the latest date for receiving any changes to the requirements is 1st June 1995. ADSP is requested to confirm that all the essential changes will have been processed by that date, and the resulting updates to the manual made available to ATNP WG3.

ATNP/WG3 discussed an architectural proposal related to the access of MET Data Banks attached to the ATN. The working group agreed that guidance should be sought from the ADS Panel on :

- the stated operational requirements for access to MET Data Banks, including other related data bank types, if possible; and
- the stated operational need to maintain interoperability between stations on the AFTN and data banks relocated or newly installed on the ATN.

Such operational requirements should be made available to ATNP/WG3 before 1st June 1995, to allow inclusion of the supporting communication solutions into the SARPs being developed as part of CNS/ATM-1 Package.

ATTACHMENT 7

TERMS OF REFERENCE AND PARTICIPANTS FOR THE GROUND SUBGROUP (SG1)

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

TERMS OF REFERENCE

The following terms of reference have been endorsed by Working Group 3 for the subgroup for the definition of the ATN functionality required to support CNS/ATM-1 Package ground applications (hereafter simply called the ground subgroup):

(1)   The ground subgroup is to produce the validated draft SARPs and Guidance Material for:

- the application's communications functions; and
- the upper layers stacks

on top of the ATN Internet, using stable international standards and profiles where available and consistent with guidance provided by the architecture (SG3) for the ground data communications of the following CNS/ATM-1 Package applications as selected by ATNP Working Group 1, currently agreed as agreed upon at this meeting :

- Message Handling Services;
- Inter-centre coordination;

to satisfy their operational requirements as documented by the ICAO sources identified by Working Group 1. The SARPs and Guidance Material for Message Handling Services will be based on the Manual on "ATS Message Handling over the ATN", as endorsed by ATNP/1.

(2)   The ground subgroup is to produce the validated draft SARPs and Guidance Material for any application which is required to perform the ground-ground information exchanges as identified by the air-ground subgroup in support of the air-ground applications for CNS/ATM-1 Package.

(3)   The ground subgroup is to produce the validated draft SARPs and Guidance Material for:

- any additional directory functions which are required by the aforementioned ground applications;
- any security functions which are required by the aforementioned ground applications;
- any managed objects of the application's communication functions and upper layers stacks for the aforementioned ground applications.

(4)   In case the ground subgroup produces draft SARPs and Guidance Material for the operations of the aforementioned ground applications in the context of CNS/ATM-2 Package, it is to document this material in a manner which is suitable for publication.

(5)   The ground subgroup is to monitor, evaluate, and provide guidance for the on-going activities supporting the validation of the aforementioned draft SARPs and Guidance Material. As

appropriate, the ground subgroup will serve as the focal point for the collection of deficiencies as identified by validation efforts, and will incorporate changes into the draft SARPs and Guidance Material.

(6)   Where stable international standards and profiles do not exist for the aforementioned upper layers stacks, directory functions, security functions and managed objects in support of the requirements identified for ground applications of CNS/ATM-1 Package, guidance should be sought from the architecture subgroup.

PARTICIPANTS

NAME	AFFILIATION
Jean Yves Piram (Chairman)	FRANCE CAA
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Brian Dennis	NATS
Claude Desjardins	TRANSPORT CANADA
Ed Dillon	MITRE
Egon Koopmann	DFS
Tadashi Majima	JCAB
Owen Marsh	CAA AUSTRALIA
Manfred Okle	DORNIER
Somnuk Rongthong	AEROTHAI
Dominick Thompson	NMSI
Mamadou Traore	ASECNA
Jean-Marc Vacher	ON-X
Danny Van Roosbroek	EUROCONTROL
Gene White	NMSI
Yoshihiko Yamada	MELCO

ATTACHMENT 8

TERMS OF REFERENCE AND PARTICIPANTS FOR THE AIR SUBGROUP (SG2)

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

TERMS OF REFERENCE

The following terms of reference have been endorsed by Working Group 3 for the subgroup for the definition of the air-ground data communications service functionality required to support CNS/ATM-1 Package (hereafter simply called the air subgroup)

(1)   The air subgroup is to produce the validated draft SARPs and Guidance Material for the air-ground data communications of the following CNS/ATM-1 Package applications in support of ADSP Operational Requirements, using the ATN Internet, as selected by ATNP WG 1:

- ADS Contract Establishment and Position Reporting
- Controller Pilot Communications
- Context Management
- Flight Information Services

The draft SARPs and Guidance Material will address:

- any additional directory functions which are required by the aforementioned air-ground applications;
- any security functions which are required by the aforementioned air-ground applications;
- any managed objects of the applications communication functions for the aforementioned air-ground applications.

(2)   The air subgroup will coordinate efforts with ATNP WG2 concerning CNS/ATM-1 Package application interface requirements with the lower layer ATN stacks and will coordinate efforts with the ATNP WG3 architecture subgroup concerning all package application interface requirements with the upper layer ATN stacks.

(3)   In case any air-ground applications require support by ground-ground information exchanges, the air subgroup is to express the requirements for these exchanges to the ground subgroup, in a time frame which allows the ground subgroup to develop validated draft SARPs and Guidance Material for the ground applications which will perform these exchanges.

(4)   In case the air subgroup produces draft SARPs and Guidance Material for the operations of any air-ground applications in the context of CNS/ATM-2 Package and beyond which is not yet suitable for CNS/ATM-1 Package, it is to document this material in a manner which is suitable for publication as (part of) an ICAO Manual.

(5)   The air subgroup is to monitor, evaluate, and provide guidance for the on-going activities supporting the validation of the aforementioned draft SARPs and Guidance Material. As appropriate, the air subgroup will serve as the focal point for the collection of deficiencies as

identified by validation efforts, and will incorporate changes into the draft SARPs and Guidance Material.

(6)   The air subgroup will keep a record of, and take into account, any directives, guidelines, or requests for resolution that are passed to it by WG3.

PARTICIPANTS

NAME	AFFILIATION
Mike Murphy (Chairman)	Adsystech
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Tim Maude	EUROCONTROL
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Domenico Giordano	AAAVTAG
TBA	Transport Canada
TBA	Australia CAA
TBA	France CAA
TBA	SITA
TBA	UK CAA

ATTACHMENT 9

TERMS OF REFERENCE AND PARTICIPANTS FOR THE ARCHITECTURE SUBGROUP (SG3)

ATNP Working Group 3 - Applications and Upper Layers
First Meeting
(San Diego, California 24 - 28 October, 1994)

TERMS OF REFERENCE

The following terms of reference have been endorsed by Working Group 3 for the subgroup for the definition of the ATN Upper Layers Architecture (hereafter simply called the architecture subgroup):

(1)   The architecture subgroup is to define the architectural framework for the ATN upper layers with a focus on the medium and long term (i.e. for CNS/ATM-2 Package and beyond) which satisfies the requirements expressed by the appropriate ICAO bodies for the medium and long term, to be documented in a manner which is suitable for publication as (part of) an ICAO Manual. In case such requirements have not yet been expressed by ICAO bodies, the present ideas of non-ICAO bodies concerning these requirements may be used as an initial basis. The architectural framework is to include the Quality Of Service (QOS) framework for the ATN upper layers.

(2)   The architecture subgroup is to define the CNS/ATM-1 Package upper layers architecture, and is to produce any service definitions and protocol specifications required by this architecture (excluding consideration of the use of MHS to support ground applications for Package 1), which requires the minimum functionality necessary to provide a transition path to the aforementioned ATN upper layers architectural framework for CNS/ATM-2 Package and beyond.

(3)   The architecture subgroup should ensure that the architectural solutions chosen by the air-ground and ground subgroups are compatible with the aforementioned CNS/ATM-1 Package upper layers architecture.

(4)   The architecture subgroup is to produce draft SARPs and Guidance Material for:

  • upper layers stacks for generic services;
  • security functions (within the framework for security produced by WG 1);
  • directory functions;
  • efficient encodings and encoding rules;
  • upper layers managed objects;

which satisfy the needs for the medium and long term (i.e. the needs of CNS/ATM-2 Package and beyond) for both air-ground and ground-ground data communications as expressed by the appropriate ICAO bodies for the medium and long term, to be documented in a manner which is suitable for publication as (part of) an ICAO Manual. In case such requirements have not yet been expressed by ICAO bodies, the present ideas of non-ICAO bodies concerning these requirements may be used as an initial basis.

(5)   The architecture subgroup is to produce the draft SARPs and Guidance Material for the System Management application and its supporting upper layers stack, within the framework for

System Management produced by Working Group 1, and in coordination with the work on System Management in Working Group 2.

(6)   The architecture subgroup is to monitor, evaluate, and provide guidance for the on-going activities supporting the validation of the aforementioned draft SARPs and Guidance Material. As appropriate, the architecture subgroup will serve as the focal point for the collection of deficiencies as identified by validation efforts, and will incorporate changes into the draft SARPs and Guidance Material.

PARTICIPANTS

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