International Civil Aviation Organization (ICAO)

Aeronautical Telecommunication Network Panel (ATNP)

Fourth Meeting of the Working Group of the Whole (WGW/4)

Berlin, Germany
28-30 August 2000

1. Introduction

1.1 The fourth meeting of the ATNP Working Group of the Whole (ATNP WGW/4) was held in Berlin, Germany from 28 to 30 August 2000. The primary purpose of the meeting, as set out in the report of ATNP/3 (Montreal, 7 to 18 February 2000) was:

a) review final validation results and finalize the validation report on the proposed draft Third Edition of Doc 9705;

b) prepare a set of corrections to the proposed draft Third Edition of Doc 9705, to correct defects identified by a) above; and

c) prepare additional guidance material in support of new/enhanced functions contained in the proposed draft Third Edition of Doc 9705 for inclusion in the Second Edition of the Comprehensive ATN Manual (Doc 9739)

1.2 The meeting elected Mr Jim Lenz, the ATNP member from the United States, as the chairman. After the opening, the meeting was given a welcome address by Mr Klauspeter Hauf, the new panel member from Germany. In his welcome address, Mr Hauf also conveyed the greetings of Mr Klaus Platz, the former panel member from Germany who had chaired all meetings at panel and working group of the whole level until his recent retirement from service. The chairman also expressed appreciation, on behalf of all participants to Mr Platz for having served the panel so well and wished happy retirement. The chairman also thanked Deutsche Flugsicherung GmbH for hosting the meeting and excellent arrangements provided.

1.3 The agenda for the meeting was approved as below:

I. Election of the chairperson

II Approval of the agenda

III. Reports from the panel secretary, rapporteurs and the CCB Chairman

IV. Consideration of validation reports for new/enhanced ATN technical provisions

V. Review of the draft 3'rd edition of Doc 9705

VI. Review of guidance material (for inclusion in the 2nd edition of Doc 9739)

VII. Arrangements for future meetings

VIII. Other business

1.4 The meeting addressed all items in its agenda and agreed to the submission of draft 3rd edition of Doc 9705 - *Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN)* to the ICAO Secretariat for preparation for publication in mid 2001. Names and contact details of the meeting participants are listed in the appendix to this report. A brief overview of the subjects covered and agreements reached is given in the following sections.

2. Report by the panel secretary

2.1 The meeting was informed that pursuant to the review of the ATNP/3 Report by the Air Navigation Commission (ANC) on 1 June 2000, the following actions had taken place:

a) circulation of proposed amendment to Annex 10, Volume II (on AFS procedures) and Volume III (on ATN and CIDIN SARPs) (ATNP/3 Recommendations 3/1, 4/1 and 4/2 refer) to States and international organizations for comments, via State letters AN 7/1.3.78-00/50 and AN 7/1.3.79-00/51 (both dated 23 June 2000) respectively. Replies to these State letters are to reach Montreal by 30 September 2000. Those State letters also contained statements on encouraging States to support the maintenance of ATN base standards in ISO and the development of equivalent standards in ITU-T (ATNP/3 Recommendations 5/3 refers) and to continue their provision of staff and other resources to the ATNP CCB (ATNP/3 Report, Paragraph 2.5.1 refers);

b) initial contact with the Air Navigation Services Economic Panel (ANSEP) on the question on developing an ATN accounting principles (ATNP/3 Recommendation 5/2 refers);

c) approaching ITU-T regarding the registration of the administrative management domain (ADMD) "ICAO" under the "XX" country code (the request has recently been accepted by ITU-T); and

d) publication of The *Comprehensive ATN Manual* (Doc 9739 - AN/961) with the scheduled distribution date of 8 September 2000.

2.2 Concerning the question of ITU/ISO standards (mentioned in a) above), it was noted that for many ISO standards referred to in ATN provisions, equivalent ITU-T recommendations have already been developed and put in effect.

2.3 The meeting noted that an ICAO Website for ATNP had been set up. In this regard, it was agreed that requests for updating of the Website should be coordinated within working groups/CCB and be submitted to the panel secretary through rapporteurs/CCB Chairman.

2.4 The meeting further considered current ATN naming and addressing provisions and in that regard, agreed that for the time being, a section in the ATNP Website dedicated to naming and addressing issues could be considered a suitable ICAO mechanism. The aforementioned section will point to Sub-volume IX of Doc 9705 and will also contain allocated/registered ATN name/address entries (such as the one mentioned in c) above). It was noted that the process of registering names/addresses with ICAO would entail sending a letter to the Secretary General and identifying the allocated name/address element (s). After further consideration of this issue, the meeting developed the following recommendation:

Recommendation 3/1 - Follow-up on Recommendation 5/1 of ATNP/3

That the panel secretary, in his follow-up on the above-mentioned recommendation,:

a) use Figure 9-1 and Table 9-2 from Sub-volume IX instead of Figure 1 and Table 5.2 in 5.3 of the ATNP/3 report,

b) use Table 9-1 from Sub-volume IX instead of Table 5.1 in 5.3 of the ATNP/3 report,

c) note that the part of Recommendation 5/1 referring to "application entity (AE) qualifier values" is not required, and

d) co-ordinate within ICAO to inform other bodies that the ATN Panel is using identifiers from ICAO's internationally registered segment of the global naming tree for object identifiers. The aim is to avoid possible conflicts between object identifiers assigned by

other ICAO bodies."

3. Rapporteurs' reports

3.1 It was recalled that as agreed during ATNP/3, the old working structure of the panel, namely working groups 1,2 and 3 (and the CCB) had to be kept until WGW/4 and that the last round of meetings of those working groups had been held in the previous week (i.e. 21 to 25 August 2000).

3.2 Noting the above, the meeting was provided with reports by rapporteurs of the old three working groups outlining the work undertaken and products developed since ATNP/3 in February 2000. A summary of those reports is given below:

3.2.1 ATN Systems Planning and Concepts Working Group (WG1)

3.2.1.1 Working Group 1 has only convened one meeting since ATNP/3, however, several meetings have been held among the membership of the Security and System Management Sub Groups. The 18th and final meeting of WG1 was convened in Berlin, Germany 23-25 August 2000. The focus of the WG1 activities have been on:

i. the validation of the changes introduced with the draft 3rd edition of Doc 9705, Sub-Volumes I, VI and VIII;
ii documenting any necessary changes to the draft 3rd edition of Sub-volumes I, VI and VIII; and
iii. progressing guidance material associated with the Core, System Management and Security Services.

A brief description of the work done by WG1 on the preparation of the draft 3rd edition of Doc 9705 is given below:

Sub-volume I (System Level Requirements)

Updates have been made in a number of areas to achieve consistency with core ATN SARPs as finalized at ATNP/3 and with the updates to the other sub-volumes as proposed for the draft 3rd edition of Doc 9705. Specifically, a number of definitions have been amended and several new ones have been added, a number of references to base documents have been added and the general system requirements have been aligned with the changes to the core ATN SARPs as

finalized at ATNP/3.

A companion validation report was developed that presents the status of Sub-volume I validation. All but two of the validation objectives were reported as having been successfully passed. The two exceptions relate to system requirements impacted by enhancements introduced within Sub-volume V for which validation activities are ongoing and will not be completed until late 2000. Therefore the status for the validation of these two system level requirements were reported as being incomplete as of the date of the validation report.

Sub-volume VI (Systems Management)

This is a new sub-volume prepared for inclusion in the 3rd edition of Doc 9705, the provisions and validation reports for which were both available for , and accepted at ATNP/3. The complete Sub-volume I has already been reviewed at ATNP/3. Minor changes have been made as a result to recent validation activities. Stable guidance material has also been developed.

Sub-volume VIII (ATN Security Services)

This is again a new sub-volume prepared for inclusion in the 3rd edition o Doc 9705. The material has been updated based on the outcome of ATNP/3 and results of recent validation activities and forwarded to WGW/4 for finalization and forwarding to the ICAO Secretariat.

3.3 With respect to security provisions, it was reported to the meeting that a patent had recently been applied for on certain cryptographic aspects referenced in Sub-volume VIII which provide the advantage of reducing the air-ground bandwidth utilization associated with security. It was explained that during validation, it had been determined that commercially available products include these aspects. It was further explained that even if a patent was granted, two alternatives would be possible. The first would be to gain a commitment from the patent holder to make the technology available, at reasonable conditions, to all interested parties. The second one, albeit less efficient and potentially more costly, would be to replace those aspects with unencumbered material. The meeting agreed that the panel should be kept appraised of the status of this patent issue.

3.2.2 ATN Internetwork Working Group (WG2)

3.2.2.1 Working Group 2 has convened two meetings since ATNP/3. The 21st meeting of WG2 was convened in Limerick, Ireland 11-13 July 2000 and the 22nd and final meeting

of WG2 was convened in Berlin, Germany 21-23 August 2000. The focus of the WG2 activities have been on:

ι. the validation of the changes introduced with the draft 3rd edition of Doc 9705, Sub-volume V;

ιι documenting any necessary changes to the draft 3rd edition of Sub-volume V; and

ιιι progressing the guidance material associated with the Internet Communications Service.

3.2.2.2 Concerning the validation, a report has been prepared which indicates that with the exception of the new frame-mode SNDCF and the enhanced transport checksum, other enhancements/features introduced in Sub-volume V have been fully validated. The former is still being coordinated with the Aeronautical Mobile Communications Panel (AMCP) and results are expected by early 2001. The latter is close to resolution.

3.2.2.3 Concerning the documentation of proposed changes to the draft 3rd edition of Doc 9705, a redline/strikeout version (against the 2nd edition) has been produced, though some changes to frame-mode SNDCF and enhanced transport checksum are expected as a result of continuing validation/coordination work. Those changes are expected to be finalized in early 2001.

3.2.2.4 Finally, regarding the production of guidance material, a redline/strikeout version (against the draft document produced at WGW/3 in Tokyo in December 1999) has been produced. The document, which has to be re-aligned with the published Doc 9739 (1st edition), contains editorial updates, amendments (to track the 3rd edition of Doc 9705) and new material on:

a) dynamic adaption of the local retransmission time in the COTP;

b) enhanced provisions for the maintenance of the Deflate history window and the mechanism for negotiation of the use of the pre-stored dictionaries; and

c) interoperability and backward compatibility between ICS provisions of the 3rd and previous editions.

There are also several enhancements that have been introduced in Sub-volume V of the new draft

3rd edition of Doc 9705 for which no guidance material has yet been drafted.

3.2.3 Applications and upper layers (WG3)

3.2.3.1 Although Working Group 3 has only met once since ATNP/3, Sub-Group (SG) 2 (Air/Ground Applications) and 3 (Upper Layers Architecture) have had full meetings, and SG 1 (Ground/Ground Applications) has communicated electronically. The 19th and final meeting of WG3 was convened in Berlin, Germany 21-23 August 2000. The focus of the WG3 activities have been on:

i. the validation of the changes introduced with the draft 3rd edition of Doc 9705, Sub-volumes II, III, IV, VII and IX;

ii. documenting any necessary changes to the draft 3rd edition of Sub-volumes II , III, IV, and IX; and

iii. progressing the guidance material associated with the Sub-volumes outlined above.

3.2.3.2 Regarding validation (point i. above), the following was reported:

Sub-volume II (Air-Ground Applications)

WG3 has prepared a report that describe the activities undertaken and results obtained. The results of the validation indicate that the enhancements introduced with the 3rd edition of Doc 9705 Sub-volume II have been successfully validated. However, the ICAO is currently conducting, based on the output of the recent 5th meeting of the ADSP (now OPLINKP), a process of amendment to Annexes 1, 10, 11, PANS-OPS (Doc 8168) and PANS-RAC (Doc 4444) which could materially affect the SV II (and hence the validation results). In an effort to ensure that the relevant ATNP documentation remains consistent with the results of the aforementioned amendments, the final version of SV II, and the consequent validation, may not be completed until early 2001. Obviously, if there are no changes introduced by the results of the said amendment process, the material as presented here will be unchanged.

Sub-volume III (Ground-Ground Applications)

Concerning new/enhanced provisions on ground-ground applications, Working Group 3 has prepared a validation report related to AMHS that describes the activities undertaken and results obtained. The results of the validation indicate that the enhancements introduced with the 3rd edition of Sub-volume III have been successfully validated. As there have been no changes of significance to AIDC provisions, no additional material related to this application has been prepared.

Sub-volume IV (Upper Layers Architecture)

A validation report has been prepared that describes the activities undertaken and results obtained. The results of the validation indicate that the enhancements introduced with the 3rd edition of Sub-volume IV have been successfully validated.

Sub-volume VII (ATN Directory Services)

Sub-volume VII is a new sub-volume, prepared for inclusion in Doc 9705 Edition 3, the provisions for which were available in draft form for the first time at ATNP/3. A validation report prepared by WG 3 describe the activities undertaken and results obtained. The results of the validation indicate that the new Sub-volume VII has successfully met the validation objectives to the appropriate level.

Sub-volume IX (ATN Identifier and Registration)

Sub-volume IX is a new sub-volume, prepared for inclusion in Doc 9705 Edition 3, the provisions and validation reports for which were both available for, and approved by, ATNP/3. The complete Sub-volume IX has already been reviewed by ATNP/3. Minor changes have been made as a result of an early implementation – these do not affect the level of validation.

3.2.3.3. Concerning documenting changes to the 2nd edition of Doc 9705 (to be processed as the 3rd edition), the following was reported:

Sub-volume II (Air-Ground Applications)

A red-line/strikeout document has been prepared which contains a change control log tracking all changes from the 2nd edition baseline. There are however two outstanding issues associated with SV II - these relate to the provision of non Annex 5 units in DFIS (awaiting results of the amendment process mentioned in 3.2.3.2), and the need for Aircraft Identification in the Basic ADS position report (awaiting OPLINK clarification in September 2000).

Sub-volume III (Ground-Ground Applications)

A redline/strikeout document has been prepared which contains a change control log for the AMHS application tracking the changes introduced into the draft 3rd edition of Sub-volume III from the 2nd edition baseline. The proposed changes from the baseline were the result of the introduction of the enhancements as directed/agreed by ATNP/3, and corrections to the baseline provisions which have been identified in the course of early implementations. The changes to SV III, all relating to ATSMHS, concern the removal of material related to the ATSMHS Type A gateway and ATN Pass-Through Service, the specification of the Extended ATS Message Service and the addition of the CIDIN/AMHS gateway specification. AIDC provisions have not been changed.

Sub-volume IV (Upper Layers Architecture)

A redline/strikeout document has been prepared which contains a change control log tracking all changes. Such changes, which have been identified as a result of early implementations, include the removal of the IATA arc from the ATN Naming Hierarchy, changes to Secure Dialogue Service and optimization and canonical encoding where appropriate. There is a small amount of outstanding work on the Transport Checksum which still to be finalized.

Sub-volume VII (ATN Directory Services)

The complete Sub-volume VII has been reviewed on behalf of WG 3, and is submitted to this meeting for final approval and forwarding on behalf of the ATNP to ICAO for incorporation into Doc 9705, and adoption for configuration control by the CCB with effect from this meeting. The material was considerably enhanced as a result of discussion at ATNP/3, and by corrections which have been identified in the course of early implementation.

Sub-volume IX (ATN Identifier and Registration)

The complete Sub-volume IX has already been reviewed by ATNP/3. Minor changes have been made as a result of an early implementation – these do not affect the level of validation. There is therefore no requirement to re-submit SV IX to.

3.2.3.4 Status of the development of guidance material in support of new/enhanced provisions contained in the 3rd edition of Doc 9705 was discussed and is reflected in Section 6.1 of this report. Guidance material will be forwarded to the CCB as soon as they are developed.

3.2.4 Configuration Control Board (CCB)

3.2.4.1 There has been a general decline in the number of proposed defect reports (PDRs) submitted to the CCB for resolution. However, there are currently two major PDRs under active consideration which are:

a) some discrepancies in range/resolution of some MET parameters in Sub-volume II; and
b) the possibility of mis-delivering packets.

3.2.4.2 The point in a) above has been taken up by the CCB with the aim of producing a corrigendum to the 2nd edition of Doc 9705 (as reflected in the ATNP/3 Report). However, noting the extent of the work involved and the fact that the 3rd edition of the document is soon to be finalized and published, it was decided to concentrate the efforts towards aligning the new edition(s) with Annex 3.

3.2.4.3 The point in b) above has been addressed by the introduction of the enhanced Transport Checksum which incorporates the address of originator and recipient. Work in this area is close to conclusion.

3.2.4.4 The report of the CCB indicated that a communique had been received from WG2 asking whether PDRs may require validation statements. The CCB validation work was described including the filtering of PDRs to ensure that the CCB was not usurping the work of the WGs, and consultation with submitters and implementors to ensure that the solutions to major PDRs (A and B) had been implemented and validated prior to resolution as PDRs. The CCB agreed to include specific validation reports of major PDRs in future PDRs.

3.2.5 The meeting, after considering the above-mentioned reports, concluded that:

a) work in the Secretariat, old working groups and the CCB has satisfactorily progressed;

b) remaining work of old working groups will be carried out by new working groups A and B; and

c) the draft 3rd edition of Doc 9705 (redline/strikeout against the 2nd edition) has been sufficiently developed (and validated, though validation is the subject of the next agenda item).

4. Validation reports

4.1 It was recalled that at the ATNP/3, it had been stated that the then current validation activities would be completed in approximately six months. In that regard, the meeting was provided with a set of validation reports on all new/enhanced provisions contained in the draft 3rd edition of Doc 9705. It was further recalled that validation levels used by the ATNP had been designated as shown below:

a) Two or more independently developed interoperating implementations validated by two or more states/organizations.

b) Two or more independently developed interoperating implementations validated by one state/organization.

c) One implementation validated by more than one state/organization.

d) One implementation validated by one state/organization.

e) Partial implementation validated by one or more state/organization.

f) Simulation, analysis and inspection only (e.g., verify the ASN.1 compiles correctly, the use of modeling tools, etc.).

g) Analysis and/or Inspection only.

*Note: - items **a**) through **e**) above involve prototype implementations.*

A summary of validation reports provided to the meeting is given below.

Sub-volume I (System Level Requirements)

Revisions to this Sub-volume for the 3rd edition of Doc. 9705 include the definition of new and revised terms, referenced base documents as well as system-level requirements. These system-level requirements are supported by the detailed technical provisions within the other Sub-volumes of the third edition of Doc 9705.

All general and system-level requirements have successfully passed validation except for the enhancement for a "frame mode" mobile SNDCF in Sub-volume V as related to the system level requirement and the enhancement within Sub-volumes IV & V for extended transport checksum (needed to protect against mis-delivery of packets). Thus the validation of the requirement of paragraph 1.3.15 to provide support for Annex 10 mobile subnetworks and the validation of the data integrity requirement of paragraph 1.3.28 is reported as being incomplete. The results of the validation of these last remaining items of Sub-volume I is expected by 31 December 2000.

As the validation activities of the proposed 3rd edition of Doc 9705 are further progressed, the results will be reflected in the validation reports of Sub-volumes II through IX. Sub-volume I validation report will continue to be updated with the overall results of Sub-volumes II through IX validation reports.

Sub-volume II (Air-Ground Applications)

Enhancements in this Sub-volume focus on:

a) enhancement and new functionality (FIS/METAR, ADS, ARF, CM);

b) server facility for CM;

c) security mechanisms (FIS/METAR, ADS, ARF, CM, CPDLC); and

d) backwards compatibility issues (FIS/METAR, ADS,ARF, CM, CPDLC).

Validation results at the time of WGW/4 that had been achieved for all Sub-volume II enhancements and improvements are up to the following levels:

- Level d for enhancement and new functionality for FIS/METAR and ADS, ARF;
- Level g for security mechanisms for FIS/METAR and ADS, ARF;
- Level e for backwards compatibility issues in FIS/METAR and ADS, ARF;
- Level g for CM: enhancement and new functionality, server facility, security mechanisms and backwards compatibility issues; and

- Level g for CPDLC: security mechanisms and backwards compatibility issues.

At WGW/4, the following level of validation results were achieved:

- Level d for security mechanisms and backwards compatibility issues for FIS/METAR and ADS, ARF;
- Level d for CM: enhancement and new functionality, access to the directory, security mechanisms and backwards compatibility issues; and
- Level d for CPDLC: security mechanisms and backwards compatibility issues.

The results of the validation indicate that the enhancements introduced to the 3rd edition of Sub-volume II have been successfully validated. However, ICAO is currently conducting an amendment process, based on the output of the recent 5th meeting of the ADSP (now OPLINKP) to Annexes 1, 10, 11, PANS-OPS (Doc 8168) and PANS-RAC (Doc 4444). The results of those amendments could materially affect the SV II SARPs, and hence the validation results.

Sub-volume III (Ground-Ground Applications)

The ATN ground-ground applications are ATS Message Handling Services (ATSMHS) and the ATS Inter-facility Data Communications (AIDC). The AIDC application specification has only been subject to the correction of identified defects. Therefore, there was no need for further AIDC related validation activities.

The ATSMHS application specification has been subject to significant enhancements which are summarised as the Extended ATS Message Service. The enhancements comprise security features, provisions for systems management and use of directory services in an approach consistent which the overall ATN framework. ATSMHS specific enhancements address the conveyance of bit-oriented data and the use of standard MHS heading fields instead of the former (ATN-specific) ATS-Message-Header. The CIDIN/AMHS Gateway, as a new functional component of the ATS Message Handling System, allows interoperation with users of the CIDIN.

The functional enhancements to ATSMHS make use of ISO MHS standards and ISPs that are pre-validated, i.e. studied and approved by standardisation bodies and demonstrated by implementations. The CIDIN/AMHS Gateway is based on functional building blocks adapted from the AFTN/AMHS Gateway (approved at ATNP/2) and implemented concepts for interfacing the CIDIN for various user applications. Thus, there is no inherent technical risk for implementation of the Extended ATS Message Service.

At ATNP/3, Validation activities that had been completed were of the level g, i.e. analysis and inspection of the detailed technical specification. There were ongoing projects for replacements of national COM Centres which include the implementation of the Extended ATSMHS Services. In addition, an implementation of a prototype AMHS platform was expected to be used for validation of directory and security services, with results anticipated prior to the WGW/4 meeting in Berlin.

At WGW/4, although the achieved validation level is still at level g) only, i.e. inspection and analysis, there is a high degree of confidence that this validation level can be considered as sufficient for the Extended ATS Message Service. The report concludes that the technical provisions for the Extended ATS Message Service are sufficiently validated for inclusion in the draft 3rd edition of Doc 9705.

Sub-volume IV (Upper Layers Architecture)

The draft 3rd edition, Sub-volume IV enhancements and improvements focus on:

- Connectionless services for the upper layers;
- The definition of the Generic ATN Communication Services (GACS);
- Naming and addressing extensions in the upper layers; and
- Security mechanisms.

At ATNP/3, validation results had been achieved for all Sub-volume IV enhancements and improvements up to the following levels:

- Level a planned for Connectionless services for the upper layers;
- Level d for the definition of the Generic ATN Communication Services (GACS);
- Level a planned for the addressing extension in the upper layers; and
- Level g for the Security mechanisms.

At WGW/4, the validation report shows the following improvements::

- Level a achieved for the Connectionless Dialogue Service;
- Level a achieved for UL Naming/Addressing extensions; and
- Level d achieved for Secure Dialogue Service.

In addition, the report notes that with the exception of the Secure Dialogue Service, the technical enhancements to the Upper Layer Communications Service are stable and mature, and have required few changes since the ATNP/3 in February 2000; that implementations have been produced and testing has progressed favourably; that interoperability testing between independent implementations in two States has been achieved successfully for the Connectionless Dialogue Service and the enhanced Upper Layer Naming and Addressing provisions; and that, in the case of the Secure Dialogue Service, validation activities have made substantial progress. It should be noted that due to the complexity of the service, and the need to co-ordinate between multiple Sub-volumes, the technical provisions are less mature, but are now believed to be approaching stability. An implementation project has been tracking the changes and identifying any remaining problems in the Secure Dialogue Service. It also notes that interoperability testing between independent implementations of the Generic ATN Communications Service (GACS) and the Secure Dialogue Service is still required.

Sub-volume V (Internet Communications Service)

The draft 3rd edition of Doc 9705, Sub-volume V enhancements and improvements focus on mobile SNDCFs, the connection-oriented transport protocol and the introduction of IDRP security mechanisms.

At ATNP/3, validation results had been achieved for all Sub-volume V enhancements and improvements up to the following levels:

- Level g for IDRP security mechanisms;
- Level b for connection-oriented transport protocol improvements; and
- A range of levels from d through g for SNDCF enhancements.

At WGW/4, the validation reports shows the following achieved levels of validation :

- Level e for IDRP security mechanisms;
- Level b for connection-oriented transport protocol improvements; and
- A range of levels from a through g for SNDCF enhancements.

The validation report notes the successful validation at various levels of Sub-volume V by the US, UK and France. It notes, in general, that the 3rd Edition of Doc 9705 Sub-volume V was found to be complete, consistent and unambiguous. It was in particular reported that with the exception of the procedures for negotiation of air-ground authentication options, all the security related draft 3rd edition

enhancements have been implemented and tested, and that it has been verified that these enhancements do not compromise the correct execution of the baseline functions of the ATN systems (and that interoperability between ATN systems is maintained – No major deficiency has been identified). Furthermore, validation exercises provided verification that the changes introduced in the draft 3rd edition of Sub-volume V enhance the performance of the ATN Internet Communication Service, takes note of the fact that the procedures for the generation and verification of digital signatures have been standardized for the authentication of the IDRP routing information but have not been implemented nor tested in this initiative, and concludes by expressing its confidence regarding the quality and the validity of the Sub-volume V of the 3rd edition of Doc 9705.

Reports by UK NATS and STNA conclude that validation tests have clearly demonstrated backward interoperability between two different implementations and two different states, thus achieving level a) validation for the enhancements subject to this initiative. It states that UK NATS and STNA are in a good position to express their confidence regarding the 3rd edition of Sub-volume V of Doc 9705. The Sub-volume V validation report identifies future initiatives including the on-going Frame Mode SNDCF validation by Eurocontrol and FAA as well as a foreseen interoperability testing of IDRP security enhancements by the French DGAC and the FAA Technical Center.

Sub-volume VI (ATN Systems Management)

The new Sub-volume VI focuses on Systems Management. Validation efforts address:

- Standard CMIP profile over ATN;
- Efficient CMIP profile over ATN ULCS;
- Recommendations for intra-domain management;
- Security provisions;
- General event and log management;
- Cross-domain Management Information Base (XMIB); and
- Naming and Addressing.

At ATNP/3, the following Sub-volume VI validation results had been achieved:

- Level d for efficient CMIP profile over ATN ULCS;

- Level f for XMIB; and
- Level g for all the others in the above list.

At WGW/4, the following additional results have been achieved:

- Level b for Standard CMIP profile over ATN;
- Level d for intra-domain recommendations;
- Level b for general event and log management;
- Level e for XMIB; and
- Level e for Naming and Addressing.

The report states that as a result of validation that the technical provisions for ATN Systems Management are sufficiently mature for inclusion in the draft 3rd edition of Doc 9705.

The working paper states that it recognizes that the Cross-Domain MIB (XMIB) is likely to evolve in the light of operational experience and that future, backward-compatible extensions to Sub-volume VI are probable. The report identifies that future developments of a) security provisions for systems management and b) communications priority handling will be needed.

Sub-volume VII (ATN Directory Services)

The new Sub-volume VII focuses on Directory Services. Validation efforts address:

- the Directory Information Tree (DIT);
- the Directory Schema; and
- protocol profile selection for accessing information in the directory.

At ATNP/3, the following validation results had been achieved:

- Level f for the DIT;
- Level f for the Directory Schema; and

- Level e for the protocol profile.

At WGW/4, the following results were reported:

- Level b for the DIT;
- Level b for the Directory Schema; and
- Level d for the protocol profile.

The report states that as a result of validation that the technical provisions for ATN Directory Services are sufficiently mature for inclusion in the draft 3rd edition of Doc 9705.

Sub-volume VIII (ATN Security Services)

The new Sub-volume VIII focuses on Security and security requirements for the ATN. This Sub-volume also levies requirements to other Sub-volumes of Doc 9705. Validation efforts address:

- The ATN security primitives which consist of the cryptographic algorithms and the basic security scheme;
- The ATN Public Key Infrastructure (PKI) including key and certificate issuance, certificate revocation and key management and distribution; and
- The ATN security mechanisms (application of the two above items among the various entities of the ATN in support of IDRP, CM, CPDLC, etc.). *Note: Depends on the validation in other Sub-volumes.*

At ATNP/3, the following Sub-volume VIII validation results had been achieved:

- Level e for the ATN security primitives;
- Level e for the ATN Public Key Infrastructure; and
- Level f for the ATN Security mechanisms.

At WGW/4, the following results reported a better-than-expected level:

- Level b for the ATN security primitives;

- Level d for the ATN Public Key Infrastructure; and
- Level d for the ATN Security mechanisms.

The validation report indicates that Sub-volume VIII technical provisions are sufficiently validated for inclusion in the draft 3rd edition of Doc 9705. The report notes that validation activities continue, that work is in progress and that more is planned to develop test implementations of the incorporating ATN Security Services. In addition, the report identifies that Interoperability testing between independent implementations is now planned.

Sub-volume IX (ATN Identifier Registration)

The new Sub-volume IX is a central repository for common identifiers and application addresses used within the ATN domain. Common identifiers include object identifiers and application type identifiers used by various applications, and are defined to avoid duplication and conflicts within the ATN domain. Application addresses are also included in order to provide a common location for the listing of States' ATN addresses. The maximum validation level that is necessary and can be achieved in Sub-volume IX is level f, due to the nature of identifier registration.

At ATNP/3, the following Sub-volume IX validation results had been achieved:

- Level f - Inspection and transfer of common identifiers from Sub-volume IV; and
- Level f - Inspection and validation that common identifiers are unique and unambiguous.

The following result was expected to be achieved by WGW/4:

- Level g for ASN.1 compilation of object identifiers.

ASN.1 Compilation of object identifiers was successfully achieved during the time between ATN/3 and WGW/4, thus attaining level f.

4.2 After reviewing validation reports and noting the positive results obtained, the meeting concluded that while validation at higher levels will progress well into the year 2001, a satisfactory and successful level of validation had been achieved for new/enhanced provisions of the 3rd edition of Doc 9705.

5. Draft 3rd edition of Doc 9705

5.1 Having completed the consideration of validation reports, the meeting conducted a review of the newly drafted 3rd edition of Doc 9705 - *Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN).* It was recalled that salient points about new/enhanced provisions contained in the document had already been sufficiently explained (at WGW/3 and ATNP/3) and that results of recent validation work had caused relatively minor changes to the previous version considered at the last panel meeting.

5.2 In general, the meeting recognized that all validation work performed had been on ATS-related provisions and that no effort had been made by the panel to develop/validate any non-ATS (e.g. AOC, AAC and APC) provisions. It was understood that many such non-ATS applications would be transmitted over the ATN by the generic ATN communication Service (GACS).

5.3 The meeting considered the newly drafted 3rd edition of Doc 9705 sufficiently mature, with the understanding that some changes to provisions contained therein would be expected from ongoing validation work as well as work of other ICAO bodies. It was also agreed that from the conclusion of the meeting, the document should be placed under the charge of the CCB and all proposed changes thereto be handled by the CCB process. The following recommendation was therefore developed:

Recommendation 5/1 - Draft 3rd edition of Doc 9705

That the draft 3rd edition of Doc 9705, as presented to the meeting:

a) be forwarded to the panel secretary for further processing (for publication in mid 2001) with the understanding that some changes thereto will be forthcoming by March 2001; and

b) be placed under the control of the CCB.

6. Guidance material

6.1 The meeting recalled that although originally intended, a full set of guidance material in support of the draft 3rd edition of Doc 9705 could not be developed for its review. It was also recalled that a brief status of the development of the guidance material in question had already been provided under Agenda Item 3. However, for ease of reference, the following list was established for guidance material reflecting provisions of various existing/new sub-volumes of Doc 9705:

Sub-volume	**Status of guidance material**
I	to be developed
II	basically prepared - being updated to reflect recent changes
III	as above (for AMHS) - no new material required for AIDC
IV	substantially developed with the exception of material on Secure Dialogue Service and Extended Transport Checksum
V	substantially developed - will be aligned with the published Doc 9739 (1st edition) - quite a number of specific subjects needing additional guidance material have been identified

VI already developed (including Concept of Operations (CONOPS))

VII substantially developed (including a CONOPS)

VIII under development (including a CONOPS)

IX material to be developed

6.2 The meeting was also provided with an updated version of the ATNP Lexicon which will be placed in the next edition of Doc 9730.

6.3 The meeting stressed on the need to produce guidance material in support of the 3rd edition of Doc 9705 and determined that efforts should be made to complete the development of the draft 2nd edition of Doc 9739 - *The Comprehensive ATN Manual*, by the end of December 2000 so that planned working group meetings in March 2001 could review and forward the document to ICAO for publication.

7. Arrangements for future meetings

7.1 The meeting expressed desire for less frequent and shorter working group meetings and understood that newly formed working groups A and B would address that issue in their meetings. Noting the need to review final changes to the draft 3rd edition of Doc 9705 and the draft 2nd edition of Doc 9739 by March 2001, the meeting considered and accepted with appreciation, an invitation by the United States FAA to host the next round of meetings in Hawaii from 26 February to 9 March 2001. It was further agreed that the schedule would be determined jointly by working groups A and B which would have their first round of meetings immediately after WGW/4.

8. Other business

8.1 The meeting was informed that the ATNP archive and mailing list, which had kindly been provided by the French DGAC since 1995, would be maintained, though with some re-organization. The meeting noted the re-organization of those services and expressed its deep appreciation to the French DGAC for providing such valuable archive (a collection of documents produced by ATNP working groups) and mailing list (to promulgate material to all interested parties) and agreed that users of those services should comply with new procedures as described.

8.2 The meeting was provided with an update on ATN-related activities in Japan. In particular, it was noted that the Electronic Navigation Research Institute (ENRI) had successfully conducted tests on ATN router/connectivity and CPDLC and ADS applications with Eurocontrol and Airservices Australia. It was noted that ENRI was planning to carry out:

a) further tests on DFIS and AIDC in 2002 and conduct the next stage of modified CPDLC and ADS tests in 2003; and

b) tests for evaluating the performance of the MTSAT as an ATN subnetwork in the Asia-Pacific area in 2003.

*** THE END ***

Appendix to the report of ATNP WGW/4

Berlin, Germany

28-30 August 2000

Attendance list

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