International Civil Aviation Organization

Fifth Meeting of Aeronautical Telecommunication Network (ATN) Transition Task Force

Phuket, Thailand, 9-13 June 2003

Agenda Item 1: Review the latest developments in the ATN Panel and the Aeronautical Mobile Communication Panel

REPORT OF THE FIRST MEETING OF ACP WG-N

SUMMARY

This paper presents the report of the First Meeting of ACP Working Group N, which had been held in Montréal, Canada during 20-23 May 2003.

This paper also provides additional and supplementary information to IP/02 and IP/03 of this Task Force meeting.

(Prepared by Japan)

1. Introduction

1.1 The 8th meeting of the Aeronautical Mobile Communications Panel (AMCP) was held at ICAO Headquarters in Montréal from 4th to 13th February 2003, and eventually came to the conclusions presented in information paper ATNTTF/5 IP/02.

1.2 According to the conclusions of the AMCP/8 meeting, the first meeting of the Aeronautical Communications Panel (ACP) Working Group N (WG-N) was also held at ICAO Headquarters from 20th to 23rd May 2003.

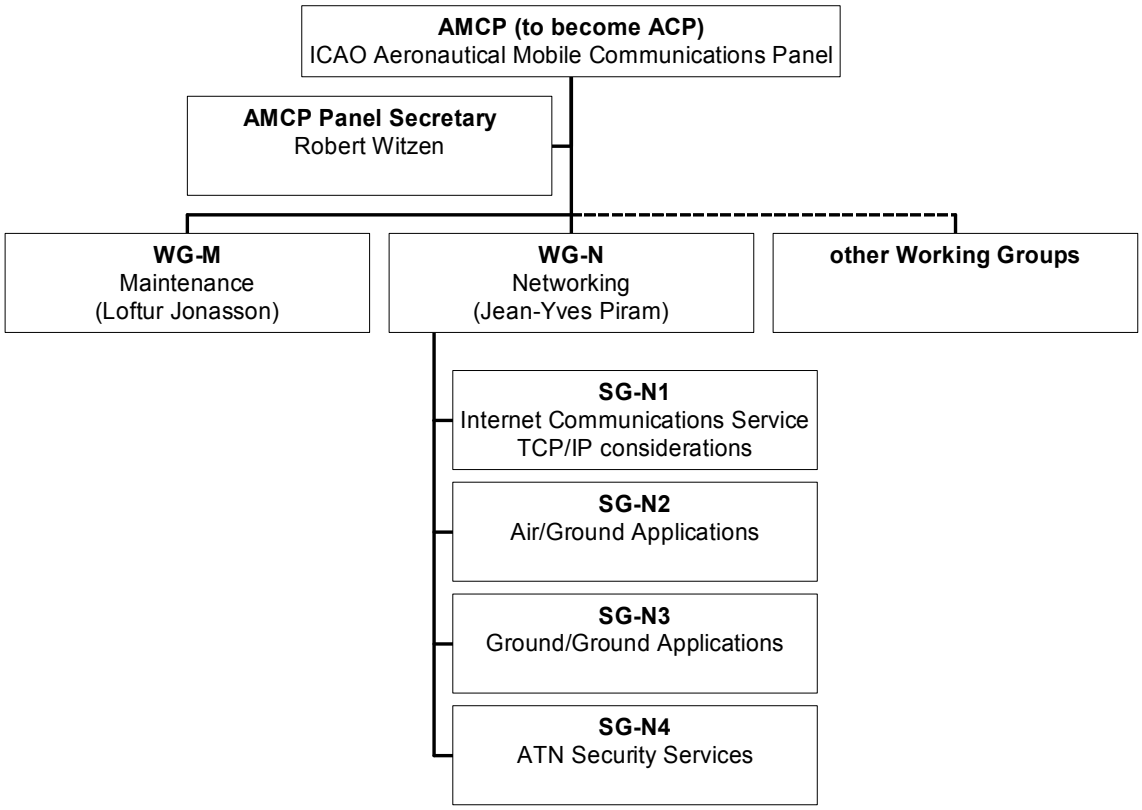
2. Topics of the First meeting of ACP WG-N

2.1 Working Organization, Subgroups and nominated Chairpersons of each subgroup

The meeting decided upon the following structure of subgroups of WG-N.

- Subgroup N1 : Internet Communication Service, and TCP/IP considerations (Nominated Chairperson: Brian Cardwell)
- Subgroup N2 : Air/Ground Applications (Nominated Chairperson: Greg Saccone)
- Subgroup N3 : Ground/Ground Applications (Nominated Chairperson: Jean-Marc Vacher)
- Subgroup N4 : Security (Nominated Chairperson: Tom McParland)

This Working Organization is shown in the following figure.



2.2 Work Programme of each Subgroup

2.2.1 The activities assigned to WG-N by the ACMP/8 meeting were divided among the subgroups as follows.

Activity	SG N1	SG N2	SG N3	SG N4
general task: Develop new ATN SARPs or technical provisions, including the completion of the following functions and enhancements to existing SARPs or technical provisions;	Yes	Yes	Yes	Yes
assess requirements for incorporation of new features in ATN like multicast and encryption and develop and validate appropriate technical provisions as necessary;	Yes			Yes
monitor the development of new operational requirements and of new fixed or mobile sub-networks and develop appropriate technical provisions	Yes	Yes	Yes	
enhancement of current applications to support new OPLINKP operational requirements;		Yes	Yes	
specification of an SNDCF for IP sub-networks;	Yes			

enhance AMHS security, as required;			Yes	Yes
consider the use of TCP/IP protocols in the provision of aeronautical internetworking;	Yes	Potential contribution of subgroups		
develop technical provisions for system management and directory services; and	Possible contribution of all subgroups			
study the institutional implication of the ATN.	Possible contribution of all subgroups			

2.2.2 In addition, the meeting considered the channels of communication and means of coordination with other ICAO panels and working groups, and with organisations external to ICAO.

2.3 The next WG-N meeting will be held during 13-21 November 2003 in Bangkok. This meeting will include a joint meeting of WG-N and WG-M on 20th to 21st November. Prior to joint meeting, a communication implementation seminar will be held at the same location during 17-19 November.

2.4 The report of the WGN/01 meeting is attached to this document.

3. Action by the meeting

The meeting is invited to note the information presented in this document.

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ACP WGN01-Rpt

23/05/03

AERONAUTICAL COMMUNICATIONS PANEL (ACP)

WG N – NETWORKING – 1ST MEETING

Montréal, 20th – 23rd May 2003

Report of ACP WGN-01 meeting

Presented by Jean-Yves Piram

Summary

This document is the approved ACP WGN-01 meeting report.

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1. AGENDA ITEM 1: MEETING ORGANIZATIONAL ISSUES

1.1 The Working Group Rapporteur, Jean-Yves Piram, welcomed the participants to the 1st meeting of Working Group N. The list of participants is included as Attachment B to this report. Apologies were received from AMCP and ATNP experts and advisors from Air Services Australia, Arinc, DFS, Eurocontrol, FAA and NATS.

1.2 The Panel Secretary, Robert Witzen, said that the Air Navigation Commission would meet on the same day to perform the final review of the AMCP/8 meeting, and particularly concerning Agenda Item 7 (future work). Upon approval of this report, the Aeronautical Communications Panel (ACP) would be formally created.

Rapporteur's Note: the creation of the ACP was confirmed during the course of the WGN meeting.

1.3 Jean-Yves Piram said that the main focus of the meeting should be to give a clear view of "where we are concerning ATN activities", and to derive an appropriate work programme and working organization.

1.4 The Rapporteur thanked ICAO for the facilities offered to host this meeting.

2. AGENDA ITEM 2: APPROVAL OF AGENDA

2.1 Jean-Yves Piram presented WP01, which was the agenda of the meeting. Saleh Al-Ghamdi noted that there should be an agenda item for implementation activities. This was agreed and the agenda was approved with the addition of a sub-agenda item "implementation issues" under agenda item 7. The agenda is included as Attachment A to this report.

3. AGENDA ITEM 3: STATUS OF ATN-RELATED WORK

3.1. ICS

3.1.1 Stéphane Tamalet presented WP06 ("Progress on ATN IP and proposals for future work programme"), on behalf of Brian Cardwell, who could not attend the meeting. A major point was that the technical provisions for the IP SNDCF had been completed since the last SG B1 meeting in Toulouse (October 2002). However validation was still in progress. Coordination with AEEC had been started, to emphasize the merits of the ATN ICS, whilst AEEC was initially intending to replicate the ATN A/G ICS with a Mobile IP equivalent. Al Burgemeister had been in the AEEC meeting where these issues were discussed. He reported informally that the dialogue should develop between AEEC and the ICAO Panels. An action formerly requested by the ATNP Secretary was still open, concerning the establishment of a list of ATN deviations from ISO base standards. The status of this request was to be investigated. A "Use of TCP/IP Policy Statement" had been produced by the ATNP SGB1 and endorsed by the last Joint Working Group A and B meeting. In terms of work items, the AMCP/8 meeting had placed a specific item to address the use of TCP/IP in aeronautical networking. There was some discussion within the group about the intent and potential impact of this item. Leon Sayadian also raised the issue of IPv4 vs. IPv6. It was agreed that this should be further discussed during the meeting, since the Working Group had to work on the subject.

3.2. ULCS

3.2.1 There was no formal presentation nor working paper about the status of ULCS. Because the subjects were discussed in the same subgroup in the ATNP (SGB2), Jim Moulton gave a report about the status of ATN Directory. He said that Directory Services had been included in Edition 3 and were still recent. They still needed further expansion, e.g. using simplified DUAs based on LDAP, some changes to the scheme would also be needed. Kelly Kitchens suggested that the impact of migrating ATN Directory Services over TCP/IP be studied by the Working Group in the future.

3.3. Security

3.3.1 Tom McParland presented WP09 ("Progress on Security Issues and proposal for future Work Programme"). This was presented as an outcome of the work of the former ATNP Security Subgroup (ATNP SGB3). The paper included 8 tasks related to ATN Security Services, that would need to be performed. Tasks 1 and 2 were related to maintenance of existing documentation. It was highlighted that this would need to be co-ordinated with WG M to determine an appropriate working method. Task 3 was the main item in the list, with the identification of several areas in which enhancements to ATN Security were needed. AMHS security issues, specifically requested at AMCP/8, was among the identified areas. Task 4 was a new task related to PKI architecture, needed for ATN Security implementation. Task 5 was "security institutional issues", expanding from the initial sunset date issue to incorporate more general issues of an institutional nature, based in particular on discussion held in Toulouse. Task 6 envisaged amendments to ICAO Annexes other than Annex 10. Finally Tasks 7 and 8 were coordination tasks. Some of the listed work items were currently on hold, or not yet started, awaiting for either confirmation of requirements or contributions/support by States.

3.3.2 The notions of sunset date and of transition to ATN security were discussed by the group. Robert Witzen asked whether the introduction of security in ATN operations could be a phased introduction. Tom McParland said that technically the ATN Technical Provisions did allow for transition towards secure ATN applications. Masoud Paydar asked what would be the earliest date at which secure services can start, i.e. the "Sunrise" date for ATN Security. He said that the "sunset date" should be renamed "sunset date for no security". Robert Witzen also asked whether all tasks listed in the paper had to be completed before ATN Security could be started. Hoang Tran asked about the status of work about general IT security within ICAO. Tom McParland said that risk analysis would need to be conducted at a Regional level. Some key questions which arose from the discussion were "What is the extent of security needed to implement ATN ?" and "What are the most likely implementation scenarios as far as security is concerned ?". Tom McParland explained that to get the critical security needed for air/ground applications operating over VDL2, the confidentiality and PKI tasks should be completed. He estimated this work to last approximately twelve months, but of course it would also depend on allocated resources. Concerning the recognition of IT security issues by ICAO, Masoud Paydar said that there is an Aviation Security Panel in ICAO. They had identified information technology as a threat area, but not a major one among other more critical.

3.3.3 Concerning the security implications on ATN upper layers, Tom McParland said that a close relationship with the ULCS technical experts would also be needed to complete the work listed in the paper.

3.4. Air-Ground applications

3.4.1 Frédéric Picard presented WP07 ("Proposal for Future Work Program of Air-Ground Subgroup"), which had been prepared by Greg Saccone, who was the former chairman of the ATNP SG A2 on Air-Ground applications. Before going into the paper, Frédéric Picard recalled the scope of work of the former air-ground applications subgroup. The main work items were the development of technical provisions for CM, CPDLC, ADS and FIS applications, and of Guidance Material concerning these applications. This work had been completed. Details were given about the main enhancements developed between Edition 2 and Edition 3 of Document 9705, with equivalent elements included in Edition 2 of Document 9739. The development of P/OICS for applications was another work item for the subgroup. The subgroup's work also

included support to the CCB for PDR resolution, and liaison with the OPLINK Panel. These last work items would need to be continued as part of Working Group N activities.

3.4.2 WP07 identified a number of areas for future work, including the completion of application security provisions in relation with confidentiality requirements. There was also a need to address how to add the VDL Mode 3 frequencies to the CPDLC message set, as well as other OPLINKP agreed changes to the CPDLC message set, that had not yet been incorporated in ATN technical provisions. Frédéric Picard also presented the benefits of keeping an air-ground subgroup active, as emphasized in WP07. The Rapporteur stressed the importance of the OPLINK Panel co-ordination work item, because they were the main source of new operational requirements and amendments. With this respect, Robert Witzen suggested to have a co-ordination session with the OPLINK Panel Secretary, Chris Dalton.

3.5. Ground-ground Applications

3.5.1 Jean-Marc Vacher presented WP08 ("Status of ground applications and proposals for future work programme"). The paper summarized the status of work that was reached within ATNP and its SG A3 concerning ground-ground applications, ATSMHS and AIDC. This was performed from both an ICAO documentation viewpoint, and from an implementation perspective. There were several projects underway for AMHS implementation. The paper also proposed elements of a future work programme about the same subject, to be handled by Working Group N. These elements were structured in accordance with the task list allocated to Working Group N in the AMCP/8 meeting. The main new item was the study of co-existence and interworking between AMHS and SMTP-based messaging, as part of the task of considering the use of TCP/IP protocols in the provision of aeronautical internetworking.

3.5.2 Further information was provided about AMHS implementation. Hoang Tran announced that AMHS would be in operation in parallel with AFTN between the U.S. and Japan in March 2004, and AFTN would be stopped in September 2004. An AMHS connection to Fiji would also be implemented by the end of 2004. Jim Moulton announced that an operational AMHS system would be installed in Hong Kong by the end of 2003.

3.5.3 Masoud Paydar said that this group should provide information and advice concerning obsolescence of X.25. If this is a global issue, then guidance should be provided to Member States with this respect, e.g. concerning States that have implemented AFTN over X.25, or AIDC over X.25. Kelly Kitchens thought that maintaining X.25 was also holding on the development of applications. Hoang Tran confirmed that X.25 services were being phased out by providers. However, concerning equipment, this could still be maintained for some years. Leon Sayadian asked about the lifecycle of CIDIN. Jean-Yves Piram replied that CIDIN was based on X.25, so it was getting obsolete at the same time. This was one of the driving factors for the IPAX Task Force. Jim Moulton emphasized the difference between X.25 networks, as implemented in Europe, and the use of X.25 interfaces e.g. for a point-to-point circuit. Only X.25 services and networks were being phased out at present. The meeting agreed that Guidance Material should be developed concerning this issue as part of the WG N future work programme.

4. AGENDA ITEM 4: FUTURE WORK PROGRAMME

4.1. Outstanding tasks from ATNP WGA and WGB

4.1.1 These tasks had already been identified as part of Agenda Item 3, and the sub-item was closed.

4.2. Tasks from AMCP/8

4.2.1 The Rapporteur said that this sub-agenda item was partly overlapping with Agenda Items 3 and 5. Furthermore, there was no specific working paper submitted under this Agenda Item. So it was agreed to complete this agenda item jointly with Agenda Item 5.

5. AGENDA ITEM 5: WORKING ORGANIZATION

5.1. Proposed Subgroups to address work programme items

5.1.1 Jean-Yves Piram presented WP05 ("Proposed organization of Working Group N"). The paper proposed the creation of four subgroups in charge of the subjects of ICS, A/G applications, ground applications, and Security, respectively. Other subjects would be addressed directly by the working group. Al Burgemeister asked whether the ULCS work was considered sufficiently mature to be addressed directly at WG level. Jean-Yves Piram said that this was one of the underlying ideas to the paper. However, if in the course of WGN activities, it would appear that some significant work was needed is this area, then a dedicated Task Force could be formed for a limited duration. Leon Sayadian asked whether this would apply to only data, or also to voice. Alessandro Capretti said that the Manual developed by the AVSSSG would be maintained by WGM. If new subjects were to be investigated for voice (or voice and data) networking, then this could allocated to WGN. However there was no such subject identified at this stage. Alessandro Capretti also said that in general the Secretariat would not participate in subgroup meetings, except in case of subgroup meetings co-located with WG meetings. Jean-Marc Vacher and Frédéric Picard noted that in Appendix B, possible contributions by subgroups should be added to two work items. Frédéric Picard asked whether the former notions of SARPs Editor and SME that existed in the ATNP would be maintained. Jean-Yves Piram said that this was relevant to the organization of maintenance, to be discussed between WGM and WGN. Stéphane Tamalet asked about the continuation of the work item related to monitoring of implementations.

5.1.2 The working organization proposed in WP05 was approved by the meeting.

5.2. Nomination of Subgroup Chairpersons

5.2.1 The Rapporteur proposed the nomination of the following persons as chairpersons of the agreed subgroups, based on their passed experience in the ATNP working structure:

- § Subgroup N1 (Internet Communication Services): Brian Cardwell;
- § Subgroup N2 (Air-Ground applications): Greg Saccone;
- § Subgroup N3 (Ground-Ground applications): Jean-Marc Vacher;
- § Subgroup N4 (Security services): Tom McParland.

5.2.2 These nominations were approved by the meeting. The meeting expressed the strong desire that these activities be conducted by these people, based on their past ATNP experience. The Rapporteur took the action to report about this request to the organizations for which these persons participate to the Working Group. This intention was supported by the meeting.

5.3. Subgroups' terms of reference

5.3.1 Jean-Yves Piram presented WP19 ("Proposed terms of reference for subgroups of WGN"). The proposed terms of reference for the four WGN subgroups were examined and amended by the meeting. The main

change was based on a comment by Frédéric Picard, that upper layer communication services (ULCS) were not referred to in the document. It was agreed to allocate the responsibility for ULCS to Subgroup N4.

5.3.2 After this review, the meeting agreed with these amended terms of reference., which are included in this Report as Appendix D.

5.4. Co-ordination with other ACP Working Groups

5.4.1 The Rapporteur explained that with the high number of Working Groups in the ACP, there would be a need for co-ordination between these Working Groups. This was particularly expected concerning WGM (Maintenance) and WGN (Networking), since the maintenance of ICAO ATN documentation had been allocated to WGM by the Air Navigation Commission after the AMCP/8 meeting.

5.4.2 Robert Witzen hoped that a combined meeting of WGM and WGN would be possible for the next meeting, and for future ones. He also explained that combined meetings were however more difficult to organize, so if other means could be found to perform such co-ordination, this might be appropriate.

5.4.3 Robert Witzen explained that there was always a need within a Panel to co-ordinate certain activities between WGs. In principle, the co-ordination between WGs should take place through the Secretary of the Panel, and, if this allowed increasing the efficiency of co-ordination, between the Rapporteurs of WGs. Co-ordination should only address issues which were in the domain of a working group, but which required an input from, or were of interest to another working group, to progress the work. ICAO further encouraged informal co-ordination between States that have experts working in the same working groups, however such informal co-ordination was out of the scope of the current discussion.

5.4.4 It was noted that Robert Witzen was the appointed ACP Secretary, and that he would be assisted by Mr Alessandro Capretti.

5.4.5 Robert Witzen talked about subgroups. He said that there was clearly a grey area where it was uncertain whether work was maintenance or enhancement of SARPs and technical provisions. In such cases this should be discussed between WG Rapporteurs to determine the best place for the task to be performed. The example of ATN Security was taken; in a first stage it was considered more appropriate to have this done in WGN, however in the future it could be moved to WGM. Robert Witzen also discussed the specific case of the subgroup performing maintenance of ATN technical provisions, within WGM. This subgroup was not formed yet. In the future, joint meetings of that subgroup with WGN subgroups could be possible. Kelly Kitchens asked for a formal definition of the notions of maintenance and enhancement. Robert Witzen thought that the maintenance of the existing ICAO documents primarily related to experience gained during the implementation and operation of the system, that was the main role of WGM. Particular enhancements could be placed in one group or another; new subjects clearly belonging to WGN. Kelly Kitchens explained that for accountability purposes, there was a need to clearly distinguish maintenance from new work. Jim Moulton asked who would have the final responsibility of Edition 4 of Document 9705, with inputs coming from two sources. Al Burgemeister noted that this would be an ACP delivery. Robert Witzen explained that the Secretariat preferred to have two working groups, so as to better identify the deliverables of each WG. Jean-Marc Vacher said from a practical viewpoint, it would be the same people that had the technical expertise for both maintenance and enhancements, and that it would be resource-consuming to attend two groups for these people. Tom McParland thought that this would not be an issue if WG meetings were combined, he added that the former ATNP working groups had always been capable of distinguishing maintenance and enhancements, so this should not be an issue in the future. The main goal of Robert Witzen for the present meeting was to know what would be the future tasks to be performed with regard to the ATN, so as to determine whether it would be a task of this WG, or a task for another group.

5.4.6 Concerning maintenance, Robert Witzen suggested that the details should be organized in conjunction with Working Group M, in the next combined WGM+WGN meeting, in which WGM would be able to set up

the foreseen ATN maintenance subgroup. In the meantime, maintenance activities, if needed, would be performed by WGN. This short-term way of working and intended co-ordination were agreed by the meeting.

5.5. Co-ordination with the OPLINK Panel

5.4.1 The Rapporteur reported that an informal co-ordination session had taken place between Chris Dalton (the OPLINK Panel Secretary), Robert Witzen, Frédéric Picard and himself. The main scope of discussion had been the need for an advance view of operational requirements under discussion at the OPLINK Panel. The session had also allowed to exchange views concerning the future work. Chris Dalton provided as written comments to WP11 the status of the new operational requirements currently discussed by the OPLINK Panel. He took the action to provide WGN with a more comprehensive list of the open discussion items.

6. AGENDA ITEM 6: TECHNICAL DISCUSSIONS

6.1. ICS

6.1.1 Kelly Kitchens presented WP12 ("Establishing Connectivity Awareness between ATN End Systems and IPv6 Subnetworks"). This working paper responded to Action 5/3 of the ATNP SGB1 meeting in Toulouse, October 2002. This action had requested an investigation of IPv6 for its applicability in establishing "path liveliness" (e.g. emulating ESH and ISH with ICMPv6 messaging). In the context of prior ATN SG B1 analyses of particular issues for interfacing ATN end systems with IPv6 sub-networks, the paper recommended the use of IPv6-inherent Neighbor Discovery Protocol for informing contiguous hosts and routers of their mutual connectivity. The question of the connectivity scenario envisaged in the paper was asked. Leon Sayadian clarified that the paper applied to exchanges between an End System and the first IPv6 router. Tom McParland noted that other options were available in the context of the SNDCF, such as encapsulating ES-IS PDUs. The meeting agreed to forward the paper for further technical investigation to SGN1 (ICS).

6.1.2 Henry Lam presented WP17 ("Issues related to the Implementation of IPv6-based ATN and applications"). The paper presented some issues that could arise in the context of some States considering to implement IPv6 as an alternative protocol for ATN network and ATN applications, such as AMHS. The IP SNDCF being referred to in the paper, the question of its current status was asked. It was clarified that the specification was completed but not yet fully validated, nor approved by a Panel meeting. The meeting was informed that an updated paper would be produced for a later meeting, taking into account the positive level of progress of the IP SNDCF.

6.1.3 Stéphane Tamalet presented WP18 ("Value of the NSAP address ADM field"). The paper was based on implementation experience of the airborne router, as part of the dual-stack ACARS+ATN router built in the context of the AFAS project. The paper explained that the ADM field of the router NSAP must be entered by pilots or operators, and that it identifies the Airline Administrative domain. The paper recommended that the ADM field value be set to the 3-letters Airline code (Airline Id) for an ATN router owned by an airline. The meeting agreed to forward the paper for further technical investigation to SGN1 (ICS).

6.2. ULCS

6.2.1 In the absence of working papers, there was no specific work under this sub-item.

6.3. Security

6.3.1 Simon Blake-Wilson presented WP16 ("ATN Security Presentation to AEEC"). The presentation emphasized that most open issues were procedural, e.g. "how CA public keys are loaded". It had been given to AEEC during the week before the WGN meeting. AEEC would be going ahead and form an ad-hoc group where all security issues would be discussed. The presentation included elements of IP07 ("AEEC security procedures development") that were presented at the same time.

6.3.2 Al Burgemeister presented WP13 ("Procedural Security Planning"). The paper explained that the work of defining the technical details for ATN security was only a small part of the total effort required to implement secure ATN. The much larger task involved the procedural and institutional issues of key management and governmental approval. He considered that it was necessary for the ACP to clearly define the requirements so the appropriate bodies could proceed with their work to enable secure ATN. Robert Witzen commented that the role of ICAO was mainly to provide guidance to ICAO Member States, rather than to the industry. The meeting agreed to pass this paper to the security subgroup for further work about the subject.

6.3.3 Hoang Tran was concerned with the status of security for ground-ground communications. He asked when the requirement for ground-ground security would be considered as validated. Tom McParland said that Document 9705 Edition 3 was technically complete and sufficient to support secure AMHS communications. The question was mostly a matter of decision, the question of the "sunrise date" discussed earlier. Simon Blake-Wilson said that the decision could be made on a national, or regional basis, based on a risk analysis. Jim Moulton said that initial deployment should be without security, with addition of security at some point in time. JMV *Jean-Marc Vacher* referred to the SPACE recommendation, not to implement security in the first instance when deploying AMHS, but forming a Security Forum that would prepare for the future deployment of AMHS security internationally, at a European level. However this recommendation would need to be endorsed by the General Management of involved ATSOs. Robert Witzen requested that a paper be produced for ICAO including the status of security, and explaining what could or should be done by ICAO. Tom McParland agreed that the Security Subgroup take over this task.

6.3.4 Al Burgemeister presented WP15 ("ATN security in the real world"). The paper highlighted the impact of both airborne and ground system architectures on the way security could be implemented. He invited the Security subgroup to address the issues listed in the paper. The meeting agreed with this recommendation.

6.3.5 Concerning the cost of on-board software, Stéphane Tamalet said that the cost was related to the level of DO-178B certification against which the software had to be certified. This was derived from the safety impact associated with each part of the software. He thought this was an area to be investigated by the ACP for the benefit of the community, to reduce development costs and hence facilitate ATN security implementation. The Rapporteur suggested that this could become a work item to be handled jointly with the Security subgroup. Tom McParland thought that this could fit into the "Security institutional issues" work item, as a task for the Forum for Development of Security Procedural Scenarios. This was agreed by the meeting.

6.3.6 Kelly Kitchens presented WP14 ("Implementation of Internet Protocol Security for ATN Subnetworks"). This paper responded to an action item of the former ATNP SG B1, defined during the Toulouse meeting in October 2002. The action item requested further material on potential uses for Internet Protocol Security (IPSec) services. In the paper it was considered that significant potential exists for using IPSec to secure user access to the ground subnetworks. Kelly Kitchens suggested that this be further studied either within the ICS subgroup or within the security subgroup. Stéphane Tamalet considered that this could be seen as Guidance Material in the context of the IP SNDCF. It was agreed that this should also be further studied by the Security subgroup.

6.3.7 A discussion took place about the potential scope of this paper concerning IP not only as a subnetwork, but also as an alternative to CLNP. Kelly Kitchens thought that the new terms of reference of the Working

Group allowed to consider such aspects. Jim Moulton said that the main issue to be studied concerning TCP/IP as an alternative to the CLNP architecture, would be inter-domain routing using policy-based techniques, rather than end-to-end security. It was generally agreed that the study of IP as an alternative to CLNP should be started based on more general considerations than only IPSec. Masoud Paydar asked whether this IPSec architecture for an IP subnetwork could be a replacement for ATN Security as previously defined. It was clarified that it would only contribute to lower layers security, and that application layer security as defined in Document 9705 would still be needed. It was agreed that this subject should be further investigated jointly by the ICS subgroup, with the goal of developing Guidance Material for securing IP subnetworks. Further use of this solution in a broader context would be studied at a later stage, if appropriate.

6.4. Ground-ground applications

6.4.1 Jim Nesbitt presented IP06 ("Aeronautical Information System Replacement (AIS-R) over TCP/IP"). This information paper discussed the background, development and implementation of the Aeronautical Information System Replacement (AIS-R) using TCP/IP to communicate with various military and FAA facilities. The meeting noted the information provided.

6.4.2 Jean-Yves Piram presented WP10 ("Completion of the SPACE project"). The paper aimed at reporting about the successful completion of the project at the end of 2002. The project was a master plan studying the deployment of AMHS in Europe, with the primary intention of replacing the AFTN/CIDIN environment. It had been presented at several opportunities to ATNP Working Groups. The project phases were related to the definition of an European AMHS addressing plan (since then endorsed by ATNP as the Common AMHS Addressing Scheme – CAAS), to a technical design for the European AMHS, and to the establishment of an overall implementation plan including the definition of the transition strategy. The project final report and CD-ROM had been distributed to States represented at the ICAO AFSG/6 meeting in Paris, April 2003. The same documents would also be available soon on the STNA web site. Saleh-al-Ghamdi asked if implementation guidance was produced on this basis for ICAO Member States. Jean-Yves Piram said that a EUR AMHS Manual was being developed by the Future Planning Group (FPG), which was a subgroup of the AFSG, making a wide use of the SPACE material. This document could be obtained from either Giorgio Vagni, the FPG Chairman, or Robert Kruger, head of the COM section at the ICAO Regional Office in Paris.

6.4.3 Jean-Yves Piram then presented IP04 ("EATMP Communication Gateway"), on behalf of Claude Leclerc, from Eurocontrol, who could not participate in the meeting. The purpose of the paper was to inform WGN of the successful completion of the main phase of the EATMP Communication Project managed by Eurocontrol and of the availability of the product to ease the deployment of AMHS. The two independently developed ECG core software packages for use by the ATM community had been delivered, and they were both demonstrated at the Maastricht 2003 ATC Exhibition. The meeting noted the information provided.

6.5. Air-ground applications

6.5.1 Frederic Picard presented WP11 ("Repository of potential Operational Requirements for Air/ground applications"). The paper contains the list of identified potential operational requirements developed by the OPLINK Panel or by the RTCA/EUROCAE, that could have to be supported by future versions of the air-ground application technical provisions.

7. AGENDA ITEM 7: NON-TECHNICAL ISSUES

7.1. ICAO COM Implementation Seminar

7.1.1 Robert Witzen said that ICAO was organizing a three-day communication implementation seminar, that would take place in Bangkok on 17th-19th November 2003. This would address non-technical issues for ground-ground and air-ground communications.

7.2. Implementation activities

7.2.1 This sub-item had already addressed in Agenda Items 3 and 6.

8. AGENDA ITEM 8: ANY OTHER BUSINESS

8.1 During the course of the meeting, Robert Witzen had informed the Group that the ANC had approved the creation of the ACP, and that letters would be sent by the ICAO Secretary General inviting to nominate or to transfer panel member nominations of their former AMC and ATN panel members. Thailand and ICCAIA had already transferred member nominations to the ACP.

8.2 The Rapporteur informed with sadness the meeting about the death of Bernard Ramsey, who had been actively involved in past ATNP security activities. The meeting participants expressed their sympathy to the family and FAA colleagues of Bernard.

8.3 The next round of WGM and WGN meetings would take place in Bangkok in November 2003. It was agreed that WGN would meet from 13th to 21st November, while WGM had already agreed to meet from 20th to 28th November. The combined WGM+WGN meeting could take place on 20 and 21 November would enable WGM to complete the discussion of all ATN-related considerations by November, 21st.

8.4 The Rapporteur thanked the meeting participants for their attendance. He invited them to meet again in Bangkok next November, and the meeting ended with these considerations.

9. ATTACHMENT A : AGENDA AS APPROVED BY THE MEETING

1. Meeting organizational issues
2. Approval of the agenda
3. Status of ATN-related work
   - 3.1 ICS
   - 3.2 ULCS
   - 3.3 Security
   - 3.4 Ground-Ground applications
   - 3.5 Air-Ground Applications
   - 3.6 Non-technical issues
4. Future Work Programme
   - 4.1 Outstanding tasks from ATNP WGA and WGB
   - 4.2 Tasks from AMCP/8
5. Working Organization
   - 5.1 Proposed Subgroups and/or Task Forces to address Work Programme items
   - 5.2 Subgroup / Task Force(s) terms of reference
   - 5.3 Nomination of Subgroup / Task Force(s) Chairpersons
   - 5.4 Coordination with other AMCP Working Groups
   - 5.5 Coordination with other bodies (OPLINKP, PIRGs, etc.)
6. Technical discussions
   - 6.1 ICS
   - 6.2 ULCS
   - 6.3 Security
   - 6.4 Ground-Ground applications
   - 6.5 Air-Ground Applications
7. Non technical Issues
   - 7.1 Implementation activities
8. A.O.B

10. ATTACHMENT B : LIST OF PARTICIPANTS

NAME	TITLE/ORGANIZATION NAME	ADDRESS	CITY/STATE/ZIP COUNTRY	PHONE	FAX	E-MAIL
AL-GHAMDI, Saleh H	PCA, Airways Engineering	SED/AEB PO Box 15441	Jeddah 21444, SAUDI ARABIA	+966 2671 7717	+966 2671 9041	dc97sha@hotmail.com
BHARJ, Danny	SITA	770 Sherbrooke West	Montréal, Canada H3A 161	+514 847 3331	+514 847 3350	danny.bharj@sita.aero
BLAKE-WILSON, Simon	BCI/FAA ACB 250	96 Spadina Ave, Unit 606	Toronto, Ontario M6G2TG CANADA	+1 416 214 5961		sblakewilson@bcisse.com
BROWN, Mark	OKI Electric	4-10-3 Shibaura, Minato-Ku	Tokyo, JAPAN	+81 3 3798 7623	+81 3 3798 7623	mark667@oki.com
BURGEMEISTER, Alvin	B-Twelve Associates, ICCAIA	1103, W Meeker St	Kent, WA 9832, USA	+253 859 0515	+253 852 4732	al@b12assoc.com
CAPRETTI, Alessandro	ICAO	999, Rue de l'Université	Montréal, Quebec Canada H3C 5H7	+ 1 514954 8219 Ext 8210	+ 1 514954 81 78	acapretti@icao.int
HALAWANI, Fayez O	PCA, Airways Engineering	SED/AEB	PO Box 15441Jeddah 21444, SAUDI ARABIA	+966 2671 7717	+966 2671 9041	fh19@hotmail.com
KITCHENS, Kelly	FAA/Trioes Associates	2216 N. Harrison St.	Arlington, VA 22205 USA	+202 646 5931		kelly.kitchens@baesystems.com

LAM, Henry	FAA / ITT Industries	600 Maryland Ave SW, Suite 305E	Washington D.C. 20024, USA	+202 314 4579	+202 863 7333	henry.ctr.lam@faa.gov
MAHARA, Tadashi	JCAB	2 –1-3 Kasumigaseki, Chiyoda-leu	Tokyo, JAPAN	+81 3 52 53 1663	+81 3 52 53 8739	mahara-t2fs@mlit.go.jp
MAIOLLA, Vaughn	SITA	770 Sheerbrooke West	Montréal, Canada H3A 161	+514 982 3636	+514 847 3350	vaughn.maiolla@sita.aero
Mc PARLAND, Tom	BCI/FAA ACB 250	7612 Washington Ave.	Egg Harbour TWP 08234, USA	609 641 9698	609 641 0203	tmcparland@bcisse.com
McCONNELL, Jack	FAA/Cerebus	901 D St SW, Suite 222	Washington DC, 20024, USA	+1 202 314 5953	+1 202 214 3410	jack.ctr.mcconnell@faa.gov
MOULTON, Jim	ONS	22636 Glenn Dr., Suite 305	Sterling, VA20164 USA	+1703 481 9590	+1703 481 9509	moulton@ons.com
NESBITT, James	FAA/SAIC	400 Maryland Ave, SW, Suite 760	Washington D.C. 20024, USA	+202 479 6915	+202 479 6917	nesbittjr@saic.com
PATEL, Vic	FAA/ACB 250	FAA Technical Center, Atlantic Intern. Airport	Atlantic City NJ08405, USA	609 485 5046		vidyut.patel@faa.gov
PAYDAR, Masoud	ICAO	999, Rue de l'Université	Montréal, Quebec Canada H3C 5H7	+ 1 514954 8219 Ext 8210	+ 1 514954 6759	mpaydar@icao.int
PICARD, Frederic	Sofréavia/STNA	1 Avenue du Docteur Maurice Grynfogel - BP 1084	31035 Toulouse Cedex, FRANCE	33-5-62-14-55-33	33-5-62-14-54-01	picardf@tlse.sofreavia.fr
PIRAM, Jean-Yves	STNA Chef Subdivision Messagerie Ops	1 Avenue du Docteur Maurice Grynfogel - BP 1084,	31035 Toulouse Cedex, FRANCE	33-5-62-14-54-70	33-5-62-14-54-01	jean-yves.piram@aviation-civile.gouv.fr
ROBINSON David	FAA/Air 130 Cert.	800 Independence Ave.	Washington D.C. 20591, USA	+202 385 4650		david.w.robinson@faa.gov

SAYADIAN, Albert	FAA/AIR-130 Certification	800 Independence Ave.SW	Washington D.C. 20591, USA	+202 385 4652		albert.sayadian@faa.gov
SAYADIAN, Leon	FANS/ASD 130	800 Independence Ave. SW	Washington D.C. 20097, USA	+ 202 385 7238	+202 385 7249	leon.sayadian@faa.gov
TAMALET, Stéphane	AIRBUS-France	316 Route de Bayonne PO BOX M3031	31060 Toulouse Cedex 03 FRANCE	33 561 930 648	33 561 185 155	stephane.tamalet@airbus.com
TRAN, Hoang	FAA / AOS-900	800 Independence Ave, SW	Washington, DC 20591 USA	1 202 385 4846		hoang.tran@faa.gov
VACHER, Jean-Marc	ON-X Consulting/STNA	56, Boulevard de l'Embouchure	31200 Toulouse, FRANCE	33-5-62-14-54-74	33-5-62-14-54-01	jean-marc.vacher@regis-dgac.net
WITZEN, Robert	ICAO	999, Rue de l'Université	Montréal, Quebec Canada H3C 5H7	+ 1 514954 8219 Ext 8210	+ 1 514954 67 14	

11. ATTACHMENT C : LIST OF WORKING, INFORMATION AND DISCUSSION PAPERS

Paper Number	Agenda Item	Presenter	Title
WGN01-WP01	1	J.Y. Piram	Draft Agenda
02	1	J.Y. Piram	List of Working Papers
03	1	J.Y. Piram	List of Attendees
04	3	R. Witzen/ M. Paydar / A. Capretti	Update from Panel Secretary (Verbal)
05	5	J.Y. Piram	Organization of WGN
06	4	B. Cardwell	Progress on ATN IP and proposals for future Work Programme
07	4	G. Saccone	Proposal for future work programme of air/ground Subgroup.
08	4	J. M. Vacher	Progress on Ground / Ground material and proposals for future Work Programme
09	4	T. Mc. Parland	Progress on security issues and proposals for future Work Programme
10	3	J.Y Piram	Completion of the SPACE Programme (Study and Planning of AMHS Communications in Europe)
11	6.5	F. Picard	Repository of potential ops requirements for air/ground applications
12	6.1	L. Sayadian K. Kitchens	Establishing Connectivity Awareness Between ATN End Systems and IPv6 Subnetworks
13	6.3	A. Burgemeister	Procedural security planning
14	6	L. Sayadian K. Kitchens	Implementation of Internet Protocol Security for ATN Subnetworks
15	6	A. Burgemeister	ATN security in the real world
16	6	S. Blake-Wilson	ATN Security Presentation to AEEC
17	6	J. McConnell	Issues related to the implementation of IPv6 based ATN and applications
18	6.1	S. Tamalet	Value of the NSAP address ADM field
19	5.2	J.Y. Piram	Proposed terms of reference for WGN subgroups
WGN01-Rpt		J.Y. Piram	WGN-01st Meeting Report from Montréal

WGN01-IP01		J.Y. Piram	Report of 4th ATN / P – WGA Meeting, Toulouse
02		B. Cardwell	Report of 4th ATN / P - WGB Meeting, Toulouse
03		J.Y. Piram / B. Cardwell	Report of 4th ATN / P WGA+B Meeting, Toulouse
04	3	C. Leclerc	EATMP Communication Gateway
05			Withdrawn
06	6	J.B. Nesbitt, Jr	Aeronautical information system replacement (AIS-R) over TCP/IP
07	6	V. Patel	AEEC security procedures development

12. ATTACHMENT D : AGREED TERMS OF REFERENCE FOR THE WGN SUBGROUPS

12.1. Terms common to all subgroups

1. All four subgroups will report to Working Group N.

2. All four subgroups will, as a first task, establish a list of deliverables to WGN.

3. All four subgroups will co-ordinate with other ICAO bodies external to ACP, and with non-ICAO bodies, through the Working Group N Rapporteur and/or the Panel Secretary, as and when appropriate, subject to compliance with the ICAO guidelines for Panel activities .

4. All four subgroups will take into account any directives, guidelines, or requests for resolution that are passed to them by Working Group N.

12.2. Terms of reference specific to Subgroup N1 "Internet Communication Services"

1. The Internet Communication Services Subgroup N1 will complete the development of guidance material, to be included in Edition 3 of ICAO Document 9739, for ATN Internet Communication Services as will be defined in Edition 4 of ICAO Document 9705. This will include notably:

   - GM for the IP SNDCF,

   - Completion of the “Merits of the ATN ICS” Paper,

   - Review and maintain the Use of TCP/IP Policy Statement,

   - Any other GM required in association with new or updated technical provisions.

2. Subgroup N1 will develop additional technical provisions and guidance material in response to new and/or revised Internet Communication Services requirements received by Working group N from States or Organisations, and as selected by Working Group N. This will/may include:

   - Completion of the technical provisions for the IP SNDCF – notably work with Regional groups, e.g. IPAX in EUR, to standardise priority levels in IPv6 Subnets (State IPv6 subnets will be used for Surveillance, VoIP, Admin data, etc. as well as ATN),

   - Technical provisions related to new features in ATN ICS (e.g. multicast) when selected by WG N,

   - Technical provisions related to the use of TCP/IP protocols in the provision of aeronautical internetworking, in response to requirements received from States or Organizations, and acknowledged by Working Group N,

   - Technical provisions and GM related to SNDCF for other fixed or mobile sub-network technologies, as appropriate.

3. Subgroup N1 will develop enhancements to existing ATN provisions (technical provisions and/or guidance material) for Internet Communication Services, based on implementation experience as reported by States and organisations and validated by Working Group N.

4. Subgroup N1 will monitor any validation activities concerning new, revised and/or enhanced ATN Internet Communication Services, and it will report about these in a form consistent with the framework adopted for the validation of Edition 1, 2 and 3 of ICAO Document 9705.

5. Subgroup N1 will provide expert advice on ATN Internet Communication Services Issues, as and when appropriate.

6. Subgroup N1 will provide contributions to Working Group N, as required, concerning the study of institutional issues related to ATN.

7. Subgroup N1 will co-ordinate with any other ACP subgroup as appropriate, and in particular with:

   - Working Group N for all requirements concerning the interface between the ICS and ATN Upper layers,

   - Subgroup N3 (Ground-ground Applications) for the provision of expert advice with regard to the use of ATN ICS and TCP/IP protocols services,

   - Subgroup N4 (ATN Security Services) for all requirements concerning the security at internetwork, transport, and routing protocols level,

   - Working M to provide, when requested, expertise in the ATN ICS domain to support the SARPs, Doc 9705 SV-V and Doc 9739 maintenance activity.

12.3. Terms of reference specific to Subgroup N2 "Air-Ground applications"

1. The air-ground applications Subgroup N2 will monitor the development of new and/or revised air-ground application user operational requirements in operational bodies (e.g. OPLINKP) and develop for those selected by Working Group N additional technical provisions, guidance material and P/OICS proforma.

2. Subgroup N2 will develop application enhancements to existing ATN provisions (technical provisions and/or guidance material and/or P/OICS proforma) for air-ground applications, based on implementation experience as reported to Working Group N.

3. Subgroup N2 will monitor any validation activities concerning new, revised and/or enhanced ATN air-ground applications, and it will report about these in a form consistent with the framework adopted for the validation of Editions 1, 2 and 3 of ICAO Document 9705.

4. Subgroup N2 will provide expert advice on ATN air-ground application implementation issues, as and when appropriate, and in particular as identified by Working Group N in the course of its ATN implementation monitoring activities.

5. Subgroup N2 will co-ordinate with any other ACP working group and/or subgroup as appropriate, and in particular with :

   - Subgroup N3 (ground-ground applications) for all subjects relevant to ground-forwarding of air-ground application data and for subjects of commonality between air-ground and ground-ground applications (e.g. CPDLC and AIDC);

   - Subgroup N4 (Security) for all requirements concerning the use of ATN Security Services by ATN air-ground applications and subjects relevant to the interface with ULCS;

- Working M (Maintenance) to provide, when requested, expertise in the air-ground ATN application domain to support the SARPs, Doc 9705 SV-II, Doc 9739 and P/OICS proforma maintenance activity;

- Working N (Networking) to support development of technical provisions for upper layers communication services, system management services and directory services pertaining to the air-ground applications.

12.4. Terms of reference specific to Subgroup N3 "Ground-ground applications"

1. The ground-ground applications subgroup (N3) will monitor the development of new and/or revised ground-ground application user operational requirements in operational bodies (e.g. OPLINKP) and develop for those selected by Working Group N additional technical provisions, guidance material and P/OICS proforma, as appropriate.

2. Subgroup N3 will develop application enhancements to existing ATN provisions (technical provisions and/or guidance material and/or P/OICS proforma) for ground applications, based on implementation experience as reported to Working Group N.

3. Subgroup N3 will monitor any validation activities concerning new, revised and/or enhanced ATN ground-ground applications, and it will report about these in a form consistent with the framework adopted for the validation of Editions 1, 2 and 3 of ICAO Document 9705.

4. Subgroup N3 will provide expert advice on ATN ground-ground application implementation issues, as and when appropriate, and in particular as identified by Working Group N in the course of its ATN implementation monitoring activities.

5. Subgroup N3 in co-operation with the security subgroup (N4) will develop additional technical provisions to enhance AMHS security, as required.

6. Subgroup N3 will study the co-existence and interworking of AMHS with messaging protocols of the IETF list of Internet Official Protocol Standards (SMTP-based messaging).

7. Subgroup N3 will provide contributions to Working Group N, as required, concerning Systems Management for ground-ground applications and concerning the use of ATN Directory Services.

8. Subgroup N3 will provide contributions to Working Group N, as required, concerning the study of institutional issues related to AMHS.

9. Subgroup N3 will provide an input to be handled by Working Group M for the editorial update of Document 9705 concerning terminology and CIDIN references.

10. Subgroup N3 will co-ordinate with any other ACP working group and/or subgroup as appropriate, and in particular with :

    - Subgroup N1 (ICS and TCP/IP considerations) for the study of interfacing application protocols with lower layers ATN and IP protocols;

    - Subgroup N2 (air-ground applications) for all subjects relevant to ground-forwarding of air-ground application data and for subjects of commonality between air-ground and ground-ground applications (e.g. CPDLC and AIDC);

- Subgroup N4 (Security) for all requirements concerning the use of ATN Security Services by ATN ground-ground applications, and specifically for the enhancement of AMHS Security;

- Working M (maintenance) to provide, when requested, expertise in the ground ATN application domain to support the SARPs, Doc 9705 SV-II, Doc 9739 and P/OICS proforma maintenance activity.

12.5. Terms of reference specific to Subgroup N4 "Security services"

1. The security services subgroup (N4) will act as the focal point for reporting implementation initiatives and identified issues related to security and ULCS.

2. Subgroup N4 will develop recommendations (to Working Group M) for updates to Edition 2 of ICAO Document 9739 based on implementation experience, reported PDRs, or to otherwise clarify material related to security services.

3. Subgroup N4 will develop recommendations (to Working Group M) for updates to Edition 3 of ICAO Document 9705 based on reported PDRs.

4. Subgroup N4 will develop technical provisions and guidance material to add Confidentiality as a security service.

5. Subgroup N4 will develop technical provisions and guidance material related to ULCS for the support of new security services.

6. Subgroup N4 will develop guidance material for Public Key Infrastructure (PKI) implementation including guidance on PKI architectural options in support of Authentication and Confidentiality services as well as sample Certificate Policy Statements and Certificate Practice Statements.

7. Subgroup N4 will assess new requirements for security features received by Working Group N and when required develop additional technical provisions and guidance material in response to new and/or revised requirements, for example, secure multicast, secure connectionless transport, and secure Generic Application Communications Service (GACS).

8. Subgroup N4 will monitor and assess validation activities concerning new, revised, and/or enhanced security provisions, and it will document the validation in a form consistent with the framework adopted for validation of prior editions of ICAO Document 9705.

9. Subgroup N4 will develop recommendations for updates to Annex 10 and other Annexes for security related items.

10. Subgroup N4 will monitor the development of new operational requirements and of new fixed or mobile subnetworks and develop appropriate security technical provisions.

11. Subgroup N4 will provide technical contributions related to the use of the Internet Protocol Stack (including TCP/IP protocols) in aeronautical internetworking.

12. Subgroup N4 will develop recommendations, communiqué, or policy statements on security institutional issues including:

    a. Establishing sunset date(s) for non-use of security;

b. Operational/procedural considerations for using security;

c. Security incident response handling;

d. Security certification and accreditation.

13. Subgroup N4 will co-ordinate with other working groups and/or subgroups as and when appropriate, for issues related to security and ULCS.