



International Civil Aviation Organization and the Directorate General of Air Communication, Indonesia

SIXTH MEETING OF AERONAUTICAL TELECOMMUNICATION NETWORK (ATN) TRANSITION TASK FORCE OF APANPIRG



Bali, Indonesia, 26-30 April 2004

Agenda Item 1: Report on other ICAO Working Group Activities

REPORT ON ACP WGN/02 MEETING SUB-GROUP SGN/01 AND SGN/02 ACTIVITIES

(Presented by the ATNTTF Working Group)

SUMMARY

This working paper summarises the activities of the Aeronautical Communications Panel (ACP) Working Group sub-groups SGN1 and SGN2 at their meetings held in conjunction with the ACP WGN/02 meeting in November 2003 in Bangkok, Thailand.

1. INTRODUCTION

The second meeting of the Aeronautical Communications Panel (ACP) Working Group N (WGN) was held in Bangkok, Thailand from 14–21 November 2003. The first meetings of WGN's sub-groups were held in conjunction with ACP WGN/02. This working paper summarises the first meetings of sub-groups SGN1 (Internet Communication Services: ICS) and SGN2 (air/ground applications).

2. DISCUSSION

2.1 Background

To rationalise its panels, the International Civil Aviation Organisation (ICAO) created the Aeronautical Communications Panel (ACP) to combine several previously separate panels dealing with aeronautical communications, including the Aeronautical Telecommunication Network Panel (ATNP) and the Aeronautical Mobile Communications Panel (AMCP). Several Working Groups have been created within ACP in order to carry out the assigned work, and the work of the former ATNP WG has largely been assumed by ACP WGN ("N" for "networking"), with mostly the same participants.

The ATNP working group had been tasked with creating the ATN technical provisions (ICAO Doc 9705) and guidance material (ICAO Doc 9739). With the publication of the third edition of ICAO Doc 9705 and the forthcoming publication of the second edition of ICAO Doc 9739, this work is complete. Maintenance of these documents has been charged to a separate working group (ACP WGM: "M" for "maintenance"), and the ATN itself can be considered as having moved from the standards development phase to the implementation and deployment phase.

However, although the ATN technical provisions are complete, further evolution is expected as operational requirements evolve and new requirements emerge, and the work of ACP WGN is to monitor such requirements and develop new standards and/or guidance material as required.

To divide the work of the WG, several sub-groups were created at the first meeting of ACP WGN in Montréal in 20–23 May 2003 along the lines of the former ATNP WG sub-groups, *viz.* SGN1 (Internet Communication Services: ICS), SGN2 (air/ground applications), SGN/3 (ground/ground applications) and SGN/4 (security services). These sub-groups held their first meetings in conjunction with the second meeting of ACP WGN in Bangkok in November 2003.

2.2 ACP WGN SG-N1/1 Meeting Summary

The report of the first meeting of SGN1 is appended to this working paper as Attachment 1.

Since the last meeting on ICS had been ATNP SG B1-5 in October 2002 (Toulouse), the first meeting of SGN1 was largely a “re-baselining” exercise: to review its tasks and outstanding work items inherited from ATNP sub-group B, and to chart a course for future work.

2.2.1 IP SNDCF

ATNP SGB1 had been developing a sub-network dependence conversion function (SND CF) for the ATN ICS that will allow Internet Protocol (IP) networks to be used as ATN sub-networks for relaying ISO/IEC 8473 Connectionless Network Protocol (CLNP) Protocol Data Units (PDUs). This will allow ATN devices to communicate over IP networks as well as ISO/IEC 8208 (X.25) circuits or packet-switched networks.

The final text for the technical provisions and guidance material (for inclusion in ICAO Doc 9705 and Doc 9739 respectively) has been completed and has been used as a basis for validation activities (including the development of test implementations) by Eurocontrol and STNA. An outstanding work item is to develop mappings between CLNP and IP priority levels so that the IP sub-network correctly prioritises the relay of different data types when the sub-network is used by several applications.

SGN1 aims to perform a final review of the proposed IP SND CF technical provisions and guidance material at its next meeting in May 2004, following which the materials are expected to be submitted for approval at the first ACP panel meeting (ACP/1) for incorporation into ICAO Doc 9705 and Doc 9739, either as an amendment to Edition 3 or in a new Edition 4.

2.2.2 Technical Provisions relating to the use of TCP/IP Protocols in Aeronautical Internetworking

SGN1 has been tasked to investigate the feasibility of the direct use of the IP protocol suite by aeronautical applications; that is, without using the ATN ICS. To this end, SGN1 is carrying out an investigation to determine whether TCP/IP should be used directly, by what applications and in what circumstances, by asking experts to submit working papers to the SGN1/2 meeting indicating the positions of their nominating States and Organisations.

Issues to be considered include:

- whether direct use of TCP/IP protocols is appropriate;
- whether it is appropriate only in certain environments;
- whether it should be restricted to intra-State use;
- whether SARPs should be developed for international use;

- if direct use of TCP/IP is recommended, what impact would that have on existing ATN applications and global interoperability;
- timescales when TCP/IP could/should be used;
- whether transition to a TCP/IP internetwork should be the long term objective of ICAO; and
- *etc.*

2.3 ACP WGN SGN2/1 Meeting Summary

The report of the first meeting of SGN2 is appended to this working paper as Attachment 2.

The meeting reviewed its Terms of Reference allocated by ACP WGN, and tasks to be completed. Since technical and guidance material for ATN air/ground applications is complete, the first meeting of SGN2 was largely concerned with tidying up maintenance related materials, and monitoring new and revised operational requirements emerging from operational bodies such as the OPLINK panel.

3. RECOMMENDATION

The meeting is invited to note the contents of this working paper.

AERONAUTICAL COMMUNICATION PANEL

Sub-Group N1 – ATN Internet Communication Services

1st Meeting
12 November 2003
Bangkok, Thailand

REPORT OF 1st MEETING OF SG N1

1. Meeting Organisational Issues

The first meeting of the ICAO Aeronautical Communications Panel, Working Group N, Sub-Group N1 was held in Bangkok, Thailand on the 12th November 2003. The meeting was chaired by Brian Cardwell and was attended by 12 experts. 6 Working Papers (WP) and 2 Information Papers (IP) were presented. A copy of the Agenda for the meeting is at Appendix A, the list of Working Papers is attached at Appendix B, the list of attendees is at Appendix C, and the Action List is contained in Appendix D.

AEROTHAI hosted the meeting on their premises in Bangkok.

2. Approval of the Agenda

As the Chairman had not expected to chair the meeting, a formal agenda had not been prepared. Instead, the Chairman presented WP102, "An Extract of the Report of the first meeting of ACP WG-N" and the SG worked through the Terms of Reference allocated to SG N1 by WG N. From this exercise WP101, "The Draft Agenda", was developed. The agreed agenda is reproduced in Appendix A.

It was apparent that this first meeting of SG N1 would be a re-baselining meeting as there had not been a meeting on the ATN ICS since ATNP SG B1-5 in October 2002. There were some new Working Papers available for discussion, but much of the work of the meeting proved to be development of a new Work Programme.

3. Review of Report of WG N First Meeting

The Chairman had presented WP102, "An Extract of the Report of the first meeting of ACP WG-N" under Agenda Item 2 and it was not discussed further.

Chairman's Note: The WG N report also allocated two other work items arising from WPs to WG N1 and although these were not formally discussed by SG N1, they were discharged during the meeting thus:

WG N-1 WP12, "Establishing Connectivity Awareness between ATN End Systems and IPv6 Subnetworks" was referred to a future SG N1 meeting. It was not submitted to this SG N1, but it could be expected at a future SG N1 meeting.

WG N-1 WP18, "Value of the NSAP address ADM field" recommended that the ADM field value be set to the 3-letters Airline code (Airline Id) for an ATN router owned by an airline. WG N-1 forwarded the paper for further technical investigation to SGN1 (ICS). Again, it was not discussed at this SG N1, but it is expected at a future SG N1.

4. Input to the Meeting from other Groups

There was no input from other groups other than the first WG N report already discussed.

5. Development of Guidance Material

5.1. GM for the IP SND CF

The Chairman referred to WP103, "Status of IP SND CF Technical Material and Guidance Material", prepared by Pierre Vabre (STNA). This paper stated that draft GM had been produced for the IP SND CF and provided a reference thus:

Doc ref: DIS/COM/ProATN_Sup/DCI/AW-120
Date: 04 Dec 2002
Rev. No.: Issue 1.0

This was circulated on the SG B1 e-mail list on 13 Dec 2003.

ACTION 1/1: Re-circulate the IP SND CF GM document to SG N1 for review. Discussion and agreement are expected at the next SG N1 meeting - Chairman - by 07 Dec 03

5.2. Completion of the "Merits of ATN ICS" Paper

As with the IP SDNCF GM, it was recalled that this paper had been progressed since the last ATNP SG B1 meeting. As with the IP SND CF GM, in accordance with the re-baselining purpose of this meeting, the Chairman agreed to locate the latest version of the paper and recirculate it for review and comment with the intent of agreeing it at the next SG N1 meeting.

ACTION 1/2: Re-circulate the "Merits of the ATN ICS" document to SG N1 for review. Discussion and agreement are expected at the next SG N1 meeting - Chairman - by 07/12/03

5.3. Review and Maintain the "Use of TCP/IP Policy Statement"

The policy statement was not presented for review in this meeting. However the meeting recalled that this document had been completed in ATNP WG B. As such, it is available to WG N and ICAO for their use.

5.4. Any other GM

This is a holding agenda item. No other ATN ICS GM was considered necessary at this time.

6. ATN CCB / PDR Review

The Chairman noted that two PDRs against SV5 remained open.

The first, PDR M210004 relates to the update of the ATN CLNP Priority table. In practice the work has been completed and acted upon by the ICAO Secretariat. However the PDR administration had not been completed. This needed to occur.

ACTION 1/3: Investigate CCB status of PDR M210004 "CLNP Priority table" and arrange completion of PDR process - Chairman - by next meeting

The second, PDR M211003 "IDRP Connection Recovery Problem" was still at the submitted stage. SME5 would need to advance this PDR through to an agreed outcome.

ACTION 1/4: Restart the work required to complete PDR M211003 "IDRP Connection Recovery Problem" - Action by WG M

7. Development of new technical material arising from any new/revised requirements

7.1. IP SND CF Priority Levels

It was not clear whether this technical task had been completed. Post the meeting, the Chairman checked the proposed IP SND CF and determined that the IP SND CF had defined a Priority Level mapping. Further investigation resulted in the original action - the issue here is that it is pointless setting CLNP <-> IP priority level mapping where the IP subnet is also used by other services e.g. surveillance data or voice. In order that the IP subnet prioritises correctly, all user data types should be prioritised, not just the ATN data types. It had been previously established that the IPAX task force had not mapped applications to priority levels and thus ACP should work with IPAX to set IP priority levels.

ACTION 1/5: Progress mapping of CLNP/IP Priority level mapping for all aeronautical applications - papers requested - by next meeting

The SG recalled that the final text of the IP SND CF had been updated and circulated after the final ATNP SG B1 meeting.

Doc ref: DIS/COM/ProATN_Sup/DCI/AW-116

Date: 18 Oct 2002

Rev. No.: Issue 1.3

This was circulated on the SG B1 e-mail list on 03 Dec 2003.

It was this text that had been used by Eurocontrol and STNA in their validation activities. In order that all experts were aware of the current position the Chairman agreed to recirculate the draft IP SND CF. The FAA representatives requested that a short paper be prepared that explained the final changes and the reasoning behind them.

ACTION 1/6: Re-circulate the IP SND CF document for SG N1 information and arrange a record of the final changes and the reasoning behind them - Chairman - by 19 Dec 03

7.2. Technical Provisions related to the use of TCP/IP protocols in aeronautical internetworking.

This task had been allocated to WG N during AMCP/8. WG N had allocated it to SG N1 to progress. The purpose of this task is to investigate the feasibility of direct use of TCP/IP protocols by aeronautical applications. It was noted that there are already aeronautical initiatives around the world that are planning to use TCP/IP protocols/internetworks directly rather than using the ATN ICS. SG N1 should determine if, where and how TCP/IP protocols could be used directly. Some attendees were concerned that this may further delay the deployment of the ATN ICS. However, as it was a task specifically allocated to WG N it should be progressed and a report submitted to ACP/1 via WG N.

To progress this task the Chairman asked that the experts nominated by States and Organisations submit WPs to the next SG N1 meeting that indicated their position on this work item. Issues to consider include:

- whether direct use of TCP/IP protocols is appropriate;
- whether it is appropriate only in certain environments;
- whether it should be restricted to intra-State use;
- whether SARPs should be developed for international use;

- if direct use of TCP/IP is recommended, what impact would that have on existing ATN applications and global interoperability;
- timescales when TCP/IP could/should be used;
- whether transition to a TCP/IP internetwork should be the long term objective of ICAO;
- etc.

ACTION 1/7: Submit WPs to next meeting stating position on if/where/how direct use of TCP/IP could be made - All attendees - by next meeting-3 weeks

Kelly Kitchens/Leon Sayadian presented IP101 "New US DoD Systems to use Internet Protocol Version 6 (IPv6)". This IP stated that the US DoD had issued a new policy in June 2003 mandating that all new assets in support of their Global Information Grid (GIG) should be IPv6 compatible and that the GIG Infrastructure should be fully migrated to IPv6 by 2008. This initiative was expected to result in much wider support and deployment of IPv6. The information was noted.

Kelly Kitchens/Leon Sayadian presented WP105 "Running ATN Applications over TCP/IPv6 Infrastructures" which recommended that the ATN community should begin to consider porting the ATN architecture to the TCP/UDP/IP Internet concept. This recommendation was considered to be in line with the direction of AMCP/8 to WG N to consider the use of TCP/IP in aeronautical internetworking. Action 1/7 would enable States and Organisations to declare their view of the need for and extent of migration/accommodation of TCP/IP in aeronautical internetworking.

There was a discussion regarding the use of IPv6 and IPSec. It was noted that IPv6 has inbuilt IPSec functionality whereas it is an optional extra with IPv4. Once again the subgroup revisited the statement that ATN Sec assumes inherently insecure subnets. Another view was that, as the ATN ICS begins to include connectionless IP subnets, additional subnet security might mitigate some security risks and prove valuable. As this issue had been discussed several times over recent meetings and had been passed back and forth between the ICS and Security subgroups, it was decided that a definitive decision was required. In order to progress this a WP was requested that included a problem statement, practical example of a risk scenario and the benefit that IPSec would bring.

ACTION 1/8: Submit WP to WG N stating security problem statement, practical example and benefit statement for IPSec - FAA - to WG N03

7.3. As directed by WG N

This item is a holding position on the agenda. A previous subject that had been considered was development of multicasting provisions. At this time there are no tasks delegated from WG N and no work is required under this agenda item.

8. Reports of New ICS Validation Activity/Operational Developments

There were no papers during the meeting that reported further validation initiatives or operational developments. However it was reported that both Eurocontrol and STNA had progressed the development of the IP SND CF.

[Post meeting note: Eurocontrol submitted a report on the status of their activity and this is included as Appendix E to this report.]

Further validation activities are planned but exact timing is not known at this time. It is expected that further validation activities and validation reports will be submitted to enable adoption of the IP SNDCF at, or before, ACP/1.

9. Development of List of Deliverables

The Chairman noted that the WG N report requested that SG N1 develop a list of deliverables to enable tracking of SG N1 activities. The Chairman developed this after the meeting closed and it is included as Appendix F.

10. Future work for next meeting – allocate actions

See Appendix D.

11. Output of SG-B1 to other Groups

- Development of a WP for a future WG N meeting stating the need for subnet security measures - FAA
- Development of List of Deliverables for WG N2 - Chairman

12. A.O.B.

Several papers were submitted on the subject of the System-wide Information Management (SWIM) Concept. Thien Ngo presented IP02 "Global Communication, Navigation and Surveillance Systems (GCNSS)". This IP provided a background to the title initiative and clearly separated the applications being investigated from the communication media that would be used in support of this initiative. The application involves coordination of many agencies involved in the air traffic management of aircraft and requires ground/ground and air/ground communications support. Kelly Kitchens/Leon Sayadian presented WP104 "System-wide Information Management (SWIM) Concept in the ATN Architecture". This paper also highlighted that SWIM initiatives were developing in several regions and that WG N should consider these initiatives and determine whether the ATN ICS is an adequate communication medium for these ATM developments.

After discussion the following conclusions were reached. The various SWIM initiatives are currently largely independent R&D activities and have not yet been brought forward to ICAO operational Panels. It is difficult to identify the comms requirements for these initiatives, as they are deliberately experimental activities at this time. However there may be enough information available within some organisations to carry out an initial assessment of the suitability of the ATN ICS for use in SWIM. Indeed the FAA SWIM programme has already produced a report on this subject that could be made available. It was agreed that States that are able to do so should review SWIM initiatives and identify potential deficiencies in the ATN ICS or ATN Apps that would prevent the ATN being used in support of SWIM.

*ACTION 1/9: Circulate the FAA review of the use of the ATN in support of SWIM - T. Ngo -
19 Dec 03*

*ACTION 1/10: Review SWIM initiatives and identify any aspects that the ATN would not be
able to meet - All interested attendees - by next meeting-2 weeks*

It was noted that ACP WG N and its subgroups will not be able to work on any ATN improvements identified via Action 1/10 that may be necessary until the SWIM concept is approved by an ICAO operational Panel and the ANC. To expedite this, States with SWIM programmes were encouraged to submit WPs to ICAO op Panels for discussion.

Appendix A

AERONAUTICAL COMMUNICATION PANEL

Sub-Group N1 – ATN Internet Communication Services

**1st Meeting
12 November 2003
Bangkok, Thailand**

Draft Agenda

1. Meeting Organisational Issues
2. Approval of the Agenda
3. Review of Report of WG N First Meeting
4. Input to the Meeting from other Groups
5. Development of Guidance Material
 - 5.1. GM for IP SND CF
 - 5.2. Completion of "Merits of ATN ICS" Paper
 - 5.3. Review and maintain the "Use of TCP/IP Policy Statement"
 - 5.4. Any other GM
6. ATN CCB / PDR Review
7. Development of new technical material arising from any new/revised requirements
 - 7.1. IP SND CF Priority levels
 - 7.2. Technical Provisions related to the use of TCP/IP Protocols in aeronautical internetworking.
 - 7.3. As directed by WG N - e.g. Multicast, QoS, New SND CFs?
8. Reports of New ICS Validation Activity / Operational Developments
9. Development of List of deliverables
10. Future work for next meeting - allocate actions
11. Output of SG-N1 to other Groups
12. A.O.B.

END

Appendix B

ACP Sub-Group N1 – ATN Internet Communication Services Working Paper List

First Meeting
Bangkok, Thailand
12th November 2003

WP N ^o	Agenda Item	Presenter	WP Title
WP100	1	Chairman	Working paper list for 1 st SG-N1 Meeting
WP101	2	Chairman	Agenda
WP102	2	Chairman	Report of 1 st WG N-B1 Meeting, (Montreal, May 2003)
WP103	5.1	P. Vabre	Status of IP SND CF Technical Material and Guidance Material
WP104		L. Sayadian/ K Kitchens	System Wide Information Management (SWIM) Concept in the ATN Architecture
WP105		L. Sayadian/K Kitchens	Running ATN Applications Services over TCP/IPv6 Infrastructures
IP101		L. Sayadian	New US DoD Systems to use IPv6
IP102		T. Ngo	Global Communication, Navigation and Surveillance Systems (GCNSS)

Appendix C

Attendee List

ICAO ATNP SG N1 - ATN Internetwork Communication Service: Meeting 1 - Bangkok, Thailand, 12 Nov. 2003

NAME	ORGANIZATION NAME	ADDRESS	PHONE / FAX	E-MAIL
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Appendix D

Action List

Number	Action	Who	When
1/1	<i>Re-circulate the IP SND CF GM document to SG N1 for review. Discussion and agreement are expected at the next SG N1 meeting</i>	<i>Chairman</i>	<i>07 Dec 03</i>
1/2	<i>Re-circulate the "Merits of the ATN ICS" document to SG N1 for review. Discussion and agreement are expected at the next SG N1 meeting</i>	<i>Chairman</i>	<i>07 Dec 03</i>
1/3	<i>Investigate CCB status of PDR M2100004 "CLNP Priority table" and arrange completion of PDR process</i>	<i>Chairman</i>	<i>by next meeting</i>
1/4	<i>Restart the work required to complete PDR M211003 "IDRP Connection Recovery Problem"</i>	<i>SME5</i>	<i>by next meeting</i>
1/5	<i>Progress mapping of CLNP/IP Priority level mapping for all aeronautical applications</i>	<i>papers requested</i>	<i>by next meeting</i>
1/6	<i>Re-circulate the IP SND CF document for SG N1 information and arrange a record of the final changes and the reasoning behind them</i>	<i>Chairman</i>	<i>19 Dec 03</i>
1/7	<i>Submit WPs to next meeting stating position on if/where/how direct use of TCP/IP could be made</i>	<i>All Attendees</i>	<i>3 weeks before next meeting</i>
1/8	<i>Submit WP to WG N stating security problem statement, practical example and benefit statement for IPSec</i>	<i>FAA</i>	<i>WG N03</i>
1/9	<i>Circulate the FAA review of the use of the ATN in support of SWIM</i>	<i>T. Ngo</i>	<i>19 Dec 03</i>
1/10	<i>Review SWIM initiatives and identify any aspects that the ATN would not be able to meet</i>	<i>All</i>	<i>2 weeks before next meeting</i>

Appendix E

Status of Eurocontrol IP SND CF Validation Activities

Introduction

Eurocontrol has supported the development of the ATN IP SND CF both by leading the development of the ICAO specification and implementing and testing the IP SND CF as part of the validation work. The IP SND CF is seen as an important function, enabling commercially available IP networks to be used as part of the Ground ATN, without destabilising existing implementations of the ICAO specification at ATC Centres or on board aircraft.

This is in fulfilment of the original ATN objectives which expected the use of Commercial Off The Shelf equipment wherever possible, whilst recognising that the product lifecycles of Avionics and Flight Data Processors are much longer than the product lifetimes of commercial networking equipment. ATN compliant Avionics and Flight Data Processors will have to work with many generations of commercial networking equipment and the IP SND CF is indicative of the strength of the ICAO specification demonstrating that a commercial product that was not foreseen when the ATN SARPs were first developed can be integrated into the ATN without affecting the industry specific components.

Implementation in TAR/TTS

In support of the validation of the IP SND CF, Eurocontrol sponsored a prototype implementation as an extension to the Trials ATN Router (TAR). During 2003, the prototype software was reviewed and consolidated into the TAR baseline release, and the updated version has now been delivered to the Eurocontrol Experimental Centre for Acceptance Testing. This is scheduled to take place before the end of the year.

The new release of the TAR/TTS baseline is an important investment for Eurocontrol preparing the software for use in supporting the Link2000+ Programme and, in particular, it will be used to test the Operational Systems prior to their use. However, it should be noted that the IP SND CF is currently a low priority activity within this programme. The Operational Networks are all X.25 based and there is no date set for use of IP Networks as part of the ground ATN Internet.

Interworking Tests with the STNA

Contact was made earlier this year with the STNA with a view to arranging interworking tests. These contacts will be resumed once the new software has been accepted and, assuming that the STNA is ready, it is hoped that interworking tests will be performed early next year.

Appendix F

List of Deliverables by ACP WG N SG N1 (ATN ICS)

Item	Deliverable	Purpose	Status	Expected Date
1	IP SND CF	for Doc 9705	Draft completed.	Complete
2	IP SND CF Validation report	Evidence for Item 1	Validation under way. Two organisations have developed the IP SND CF from the completed draft. Validation reports to be developed and agreed.	late 2004
3	IP SND CF Guidance Material	For Doc 9739	Draft completed. To be reviewed with intent to discuss and agree at next SG N1 meeting.	SG N1-2
4	Merits of ATN ICS paper	For WG N	Draft complete. To be reviewed with intent to discuss and agree at next SG N1 meeting.	SG N1-2
5	Use of TCP/IP Policy Statement	For WG N	Completed and doc already available by WG N and ICAO. Update may be necessary dependent on outcome of item 6.	Complete
6	Report on opportunity for direct use of TCP/IP internetworks by aeronautical applications	For ACP/1	Task scoped at SG N1-2. High-level inputs expected at next meeting. Ongoing work to develop report for WG N and ACP/1	late 2004

Notes: All items are for delivery to WG N.
It is expected that Items 1, 2, 3 and 6 will go forward to ACP/1.
Items 4 and 5 may go forward to ACP/1.

05/11/03

AERONAUTICAL COMMUNICATIONS PANEL

WORKING GROUP N

SUB GROUP N/2 – Air/Ground Applications – 1st Meeting
Bangkok, Thailand, November 12 – 13, 2003

WORKING GROUP N – Networking – 2nd Meeting
Bangkok, Thailand, November 14 – 19, 2003
Agenda Item 5.1 – Subgroup N2 progress report

Prepared by: F. Picard

Working Group N Subgroup N2 - Subgroup Report

Summary

This paper aims at reporting to the ACP Working Group N about the progress achieved by WGN/SGN2 in its Work Programme, since the 1st WGN meeting in Montreal.

1 INTRODUCTION

This paper aims at reporting to the ACP Working Group N about the progress achieved by WGN/SGN2 in its Work Program, since the 1st WGN meeting in Montreal.

2 MEETINGS

The subgroup has held its 1st meeting in Bangkok the 13th November, 2003.

3 WORK PROGRESS

The work progress is described against each of the tasks assigned to sub-group N2 in the TOR specified by WGN/1 in Montreal (Appendix A).

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

Deliverables	Progress	To / When	Comments
List of PDRs for inclusion in Amendment 1 to Edition 3 or Edition 4 Doc 9705.	100%	WG M / Nov 03	Join task with CCB. – 6 RESOLVED PDRs against Edition 3 (M2030002, M2030003, M2090001, M2090007, M2120001, M3020001) – 1 PROPOSED/RESOLVED PDRs (98040007) – 1 ACCEPTED PDR (M2030004)
Repository of new Operational Requirement for Air/Ground ATN Applications		WG N	This is a living document providing the list and the status of the work items of SGN/2.
Proposed Technical Provisions for Enhanced Air/Ground Application supporting new Operational Requirements	0%	WG N / ACP/2	Based on OPLINKP formally agreed operational requirements.
Proposed Enhanced Air/Ground Guidance Material	0%	WG N / ACP/2	
Proposed P/OICS for Enhanced Air/Ground Applications	0%	WG N / ACP/2	
Validation Report on Enhanced Air/Ground Applications	0%	WG N / ACP/2	

3.2 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.

New and/or revised ORs have been provided by ATNP, OPLINKP and EUROCAE/RTCA working groups. The status of all these ORs are monitored in the SGN/2 document "Potential Operational Requirements for Air/Ground ATN Applications".

3.2.1 Former ATNP

Several PDRs that have been raised against Doc 9705 have been considered by the ATNP CCB as enhancements to the current SARPs and not as actual defects. These PDRs are marked as FORWARDED. Concerning the Air/Ground ATN Applications, only two FORWARDED PDR propose real enhancements.

The 2 new ORs identified are :

- the support by the CPDLC application of VDLM3 frequencies (PDR M1030003). This issue is on standby, waiting formalisation of the requirement by OPLINKP.
- the capability of the DFIS application to uplink in a single FIS report both an arrival and a departure DATIS reports (PDR M2010001).

These two issues are now recorded with the other potential enhancements in document "Potential Operational Requirements for Air/Ground ATN Applications" (as a consequence, the associated PDRs are both progressed to status WITHDRAWN).

SGN/2 will start working on these issues when States and/or Organisations will provide input contribution.

3.2.2 OPLINKP

Since the ACP/1 Montreal meeting, one OPLINKP meetings was held from 27th October to 7th November 2003 in Annapolis, MD, USA.

All potential ORs discussed by OPLINKP have been identified and listed in document "Potential Operational Requirements for Air/Ground ATN Applications". In Montreal, the list and the status was reviewed with the OPLINKP Secretary. None of the OR was considered stable enough to be processed by ACP WGN SG2.

ORs identified so far are the following :

- Modification of the CPDLC message set: addition, deletion or message intent modification of CPDLC message elements ;
- Modification of the Departure Clearance message element : addition of new parameters, inclusion of a complete route information ;
- Definition of the ADS figure of merit.

SGN/2 will start working on these issues once the OPLINKP will have delivered the final specification of these operational requirements.

3.2.3 *EUROCAE WG-53 / RTCA SC-189*

EUROCAE WG-53 / RTCA SC-189 is about to finalise the specification of the operational, interoperability, performance and safety requirements for the initial set of data link services (DLIC, ACM, ACL, ACM, FLIPCY, CAP, DATIS, DSC and DCL) in the continental airspace. Both SPR (ED120-DOXXX) and INTEROP documents (ED110-DO280 REVA) will be put under the final review phase in December 2003 and are expected to be published early 2004.

During the development of interoperability requirements (ED110 REVA), several shortcomings of the current ATN SARPs have been detected. The proposals to solve these ATN interoperability issues pushed by EUROCAE/RTCA have been presented to OPLINKP at several meetings, but none has been formally approved by OPLINKP.

These issues, also documented in the document "Potential Operational Requirements for Air/Ground ATN Applications" are listed below :

- Identification of the C-ATSU systematically uplinked to the aircraft upon initial contact ;
- Standardisation of error free texts ;
- CPDLC capability ON/OFF per sector and per center ;
- Data link capability determination process ;
- Structure of the CPDLC version number.

EUROCAE/RTCA members have presented these enhancements to OPLINKP. SGN/2 will start working on these issues once the OPLINKP will have delivered the final specification of these operational requirements.

3.3 **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.**

Known operational implementation in operation are the FAA CPDLC Build I and the Link 2000+ Programme. The LIT (Link 2000+ Implementation Team) has set up a CCB group to trace defects against applicable ICAO and EUROCAE/RTCA standards. No defect against the Air/Ground ATN Applications SARPs have identified by these programs so far.

3.4 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.

Validation activities were started by the former ATNP on security integration in the air-ground applications. The validation encompasses issues such as passing security information via CM, encrypting initial logons, running other applications with or without security and encryption.

The validation activity on secured applications (FAA initiative) detects an error in Version 2 CM Application :

- **PDR M3020001** issued in February 2003 (CM - Invalid ASN.1 for Security Import) has been closed (RESOLVED) by email ballot in October 2003.

The validation activity on Version 2 FIS Application (CENA initiative) detects an error in the protocol specification :

- **PDR 98040007** (FIS) identified a bug in the FIS protocol specification (when the ground-user tries to cancel an update contract being established, the air-ASE aborts the connection because it does not expect to receive an update cancel contract PDU). The PDR has been re-open and discussed at the SGN2/1 meeting in Bangkok. The solution described in the initial PDR will be proposed to the CCB in order to close the PDR (RESOLVED).

Paper review activity allowed to fix editorial defects :

- **PDR M2030004** (Edition 3 - All SV – Editorials) was modified to propose editorial changes to the ATSMHS section and Air-Ground Applications section after a review performed by J-M. Vacher and Tony Kerr. The PDR will be maintained OPEN until the publication of the next Doc 9705 edition or amendment.

3.5 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.

Nothing to report.

3.6 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);

No common activity took place with subgroup N3.

- **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;

The way the initial CM Logon data can be encrypted is still an open issue to be discussed between N4 and N3. There is an action on N4 to select the best technical approach.

- **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;

On request of the WGN Rapporteur, in order to ease the hand-over from the ATNP CCB to the WG M, all outstanding PDRs (i.e. PROPOSED and FORWARDED PDRS) have been closed with the exception of the Editorial PDR (M2030004).

- **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.

No common activity took place with working group N.

4 FUTURE MEETINGS

The next SGN/2 meeting will be triggered by the release by OPLINKP of a list of mature new ORs or a revised Doc 9694 and/or immediately prior the next ACP WGN/3 meeting.

5 RECOMMENDATION

The working group is invited to note the progress achieved by the subgroup.

Appendix A: Terms of reference

5.1 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.

5.2 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.

*** END OF DOCUMENT ***