ATNP/WG 3

WG316w06

AERONAUTICAL TELECOMMUNICATIONS NETWORK (ATN)

WG3 - (ATN Applications and Upper Layers) Sixteenth Meeting

Naples, Italy

18 – 21 May 1999

Agenda Item 4.1: Air Ground Applications – Subgroup 2 Report

Report of Subgroup 2 Activities

(Presented by M J Asbury)

1. INTRODUCTION

1.1 The activities of Subgroup 2 since the last ATNP WG 3 meeting are related to the discussions at, and outcome of, the 20th Meeting of WG3/SG2 (Air/Ground communications) held, courtesy of Eurocontrol, in the Eurocontrol HQ, Brussels, from 1 – 5 March 1999.

Present:

Mike Asbury (MA)	NATS UK (Chairman)
Jane Hamelink (JH)	Adsystech/FAA
Frederic Picard (FP)	STNA
Greg Saccone (GS)	ONS/FAA
Ian Valentine (IV)	Eurocontrol /ECSoft
Paul Camus (PC)	Aerospatiale
Mike Harcourt (MH)	Eurocontrol/ECSoft

1.2 The Agenda is at Appendix A, and a list of Working Papers is at Appendix B.

2. AGENDA ITEM 1 - NOTES, BRIEFING AND OUTCOME OF RELEVANT MEETINGS -

i. 19th WG3/SG2 Meeting, Albuquerque, 8 – 11 December 1998

WP 3 – Notes of the 19th Meeting of WG3/SG2

2.1 The report of the Albuquerque meeting was reviewed. There were no changes required.

2.2 The actions arising were considered (numbers in parenthesis relate to the paragraphs in the notes of the meeting). Unless noted below, actions were complete.

(2.6) *VDL Mode 4 SG* - JH noted that ADSP had taken an action to find out States' ADS-B programmes – this was allied to VDL Mode 4. Also, the AMCP VDL Mode 4 SG met in Honolulu, and spent most of their time in trying to define the format – the sticking point is 'time' – should it be relative or absolute. No conclusion was reached there – the next meeting was scheduled for Eurocontrol HQ next week (8 – 12 March) – but JH doubted whether a conclusion will be reached even then. The problem was that SARPs were trying to be written for two systems which already existed, and there were hidden agendas all over the place. JH had prepared a list for the FAA of about 30 issues that needed to be sorted – e.g. the modulation scheme. She thought there may be the beginnings of a consensus between SICASP and AMCP– in that there may be some recognition that may have to be different SARPs for different technologies applicable in different environments – this would take the heat out of the STDMA/Mode S squitter rivalry. The VDL/4 SG was a very emotional subgroup - unlike the ATNP SGs, who had to develop SARPs from virtually a clean sheet, the VDL Mode 4 SARPs were closer to documenting what has already been done. JH said we would be well to remember the words of the German ADSP member, Heribert Lafferton, who said that as yet no one has said we must have ADS–B.

(2.7) *CLNP* – Noting that the SARPs for the upper layers CLNP had been all but completed, IV agreed that it could possibly solve the problem of delayed/missing messages. But, in order to conform to the ADSP WGs confirmation that messages must be delivered in the order sent, maintenance and protection of this requirement will be the responsibility of this SG. IV asked where the user requirement for CLNP was coming from – if there was no requirement we should not be wasting our time developing the application SARPs. However, if the use of CLNP enabled us to meet the higher performance ADSP targets, then perhaps it needed looking into.

PC commented on the CLNP developments. Aerospatiale was looking at AOC communications using the ATN. PC thought we currently could not discriminate between AOC and ATS currently, and we should be able to do this at the addressing level. Aerospatiale have in mind that if ATS and AOC are both using TP4 we could have different addresses – given a common NSAP, we could discriminate at the Transport address level – carried out by the transport selector. If AOC applications used a CLNP, in that case we would have to discriminate the address at the NSAP level. If AOC was using CLNP, and ATS was using connected, then we had the need to provide different NSAPs at the network addressing level.

In addition, there was a need to confirm Subnetwork connections – was there one and only one unique point of contact with NSAP. Also, PC wanted to know who would be responsible for allocation of field elements in the NSAP – was it ICAO, IATA or what? There seemed to be no definite answer to this, but MA would check this up with Tony Whyman, of WG 2.

(3.6) *Remove CPDLC Tables from Chapter 7* – This point had been brought up at the WG 3 meetings recently – and they were firmly of the opinion that the tables should not be removed from Ch 7. JH said firmly that this was quite the wrong decision - the table may end up in multiple documents, and would have been far better to have one source of reference, probably Doc 4444. The message set was not, and should not ever be – technology dependent.

(13.3) *AEEC Work* – PC reported from the notes of the recent SC 189 meeting that AEEC ARINC 637 will not be used in the ATN interoperability document – ATNSI PICS will be used instead. Also Doc 638A (edited by GS) did not solve CM interoperability problems, and would continue to be monitored by 189/SG1.

ii 15th Meeting of ATNP WG 3, Honolulu, 18 – 21 January 1999

WP 4 - Report of the 15th Meeting

2.3 With the exception of IV and MH, all members of the SG had been present at the meeting, and IV and MH had had the report of the meeting and an earlier briefing from Tony Kerr (ECSoft and SG 3). MA briefly reviewed the outcome of the meetings, and the joint WG2/3 meeting including briefings on system and security matters.

iii ADSP WG A & B Meetings, Adelaide, 1 – 12 February 1999

WP 5 – Brief Report of the ADSP WG A Meeting, Adelaide, 1 – 5 February 1999

WP 6 – Brief Report of the ADSP WG B Meeting, Adelaide, 8 – 12 February 1999

2.4 MA gave a brief resume of the work of the two groups at their last meetings. The bulk of the work had involved the redrafting of material for Doc 4444 (ADS) and Annex 10 (CPDLC). Neither MA nor JH could understand why the information was going into different documents, but the ICAO Secretariat had been adamant that this was the best means of propagating the information. In addition, WG A had been responsible for setting up a postal (e-mail) drafting group for reviewing the ADS-B operational requirements, and WG B had prepared a draft of the Concept of Required Communications Performance Manual. This latter activity impinged on the work of this SG, through its possible effect on system performance. The ADSP Manual still hadn't been published, and there was no indication of a possible date – the ICAO publishing department is apparently a law unto itself.

2.5 PC asked about the baseline documents outlining the current tasks of implementers. They needed source documentation, somewhat better than an ICAO draft. Drastic changes of design definitions were difficult to cope with – there was a need to have formal firm definitions, both operational and technical. Doc 9705 was OK, but he needed to see a baseline version of operational procedures from ADSP. Also the implementers wanted a baseline version of the ADSP Manual for basic operational requirements. There should be acceptance of draft material only if there were new systems being developed, otherwise it should be firm. MA said that he also wanted to see firm editions of the ADSP Manual on the streets – there were copies of the early revised draft available, but this could not be referenced. The Annex 10 and Doc 4444 material – specially the former – would have to be approved by a Panel meeting, currently scheduled for October 1999, and then would have to be reviewed by the ANC. It would not come out as a formal amendment for possible another 18months from now. PC was less than enthusiastic with this reply.

iv RTCA SC189/Eurocae WG 53

2.6 IV gave a verbal report on the two recent meetings – at Torrance, CA, and Toulouse. The Committee was firmly committed to sorting out interoperability on ATN systems – they were looking at CM, ADS and CPDLC. They were dealing with many of the problem areas, including initiation and start-up operations, and what was required. They were very interested in the PICS/OICS concept, and were looking to this SG to come up with finalised heading for PICS, generic proformas and possible outline profiles soonest. They also were looking at needs for baselining. Programmes being developed included Eurocontrol 2000+, tied in with the FAA build 1/1a. 189/53 was unhappy with the concept of Partial Implementation – there was a view that they were developing complete implementations – and there was just more complete and less complete! The theory was that that all implementations are full – just the responses were different.

2.7 IV also reviewed some aspects of PETAL Implementation Trials (PIT) operations and development. The PIT team had chosen to send an 'Error' message when either end user did not support a parameter of a message, or a particular range and resolution of a parameter. In addition they would send an error message when the next message was on the way before the first message had been closed or if messages crossed in transit.. MA said this was wrong in principle – if the operations were SARPs conformant, an error message should not be sent – this was a travesty. An error message had been visualised as a system reply to a technical error, not as a general blunderbuss approach to be used when a system couldn't cope with a particular operation. 'Service Unavailable' was the correct message that should be used. JH was most unhappy that PETAL trails solutions were being suggested as possible future legacy implementations – the ADSP did not anticipate the 'Error' message being used in this way. IV said that PIT going to add free text to the error message in order to give the end user more information as to the reason for the error – JH said they could just as well add free text to 'Service Unavailable'.

2.8 PC agreed – this was an operational problem. There was a need to find a solution for all options, not just for initial level operations. The PIT use of 'Error' was not SARPs intent compliant. IV

said that the PIT team felt they were unable to interpret how things had been visualised or intended by other groups – if there wasn't a 'shall' statement to cover a procedure or operation, they felt free to interpret the functionality as they wished.

2.9 GS suggested that the proper concept of the use of the Error message could be folded into the PICS/OICS. JH re-emphasised that if you didn't handle the message the correct reply was 'Service Unavailable'. PIT was making far-reaching, non-standard decisions. PC said that we were looking for multilingual dialogues, and we should be seeking to standardise pilot operations globally. We should not be required to specify regional procedures.

2.10 The PIT team leader, Rob Mead, was invited to address the SG on the PIT reasons for their decisions. Rob said that the PIT work was based on the PETAL II implementation, which had certain operating limitations, partly related to what Maastricht could and could not currently support. It was also based on Version 1.1 of the SARPs (Phuket, 1997), although the next phase, IIE, is Doc 9705 compliant, with a few additional PDRs taken into account. The use of the 'Error' message was based on the fact that it could be applied both as an up or a downlink message, which 'Service Unavailable' was not. Anyway, pilots and controllers hated the 'Service Unavailable' message – to them it meant that the whole application was unavailable, not just the message, procedure or functionality. In addition, they were not prepared to use 'Unable' as a downlink message to indicate when they could not conform with a particular message or procedure. Free text would be appended to the error message to give the users more information regarding the cause of the error.

2.11 MA said that the SG were not in disagreement with the concept of giving the end user more information, but that free text could equally well be applied to the 'Service Unavailable' message. Pilot /controller dislike of a message was no reason not to use it – they has never voiced a dislike of this over the last seven years of development, and why start now? Should we have to develop a whole range of 'designer' messages, which the pilots and controllers might like, in preference to those already available? MA was also concerned that the PIT implementation, having already started to diverge from both the intent and the operation of the SARPs, would continue to diverge, and destroy all chances of interoperability. Rob Mead said that he saw the PIT work as being ATN SARPs compliant, but restricted by the facilities currently available, for which compromises had to be made. He didn't propose to change anything on the basis of the SG verbal comments – if they had any disagreements with the words, there were opportunities to present their case, but the Specifications had now reached Version 3, which was to be the baseline, and they were not about to change them. In fact the incorporation of any PDR now carried an assessable risk, and they would be most reluctant to incorporate any changes which were not strongly safety-related.

2.12 Rob said that he could appreciate the SG position, but PIT members were quite adamant in their views. The next meeting of the PIT was in Geneva in April, and SG members were welcome to attend. SG members agreed that the outcome of this presentation was not SARPs compliant, and action should be taken to re-enforce the need for maintenance of global interoperability. JH said that a possible amendment to the SARPs to meet the PIT requirement could take the form of a new Chapter 7 requirement – use of the 'Service Unavailable' if the parameters were not supported, and if something was not supported, then a reason should be given.

v. AEEC Update

2.13 GS reported that 638 work would now be done by RTCA along with other work they are doing for ADS and CPDLC. This is because the FAA does not recognise AEEC as a standard making body. GS was now funded by FAA through ONS, but didn't know whether he would continue with his 638A editorship.

3. AGENDA ITEM 2 - SARPS AND GM FOR VERSION 1 APPLICATIONS: MAINTENANCE

2.0 General - Discussion on SARPs P-1 maintenance procedures

3.1 GS asked about the handling of updates for the Guidance Material (GM). MA said that they should be in ATNP-ready format for the November meeting of WG3 (or WGW), but they should have

been reviewed by the SG before then. He suggested that any amendments/updates should be available for initial consideration at the next SG meeting, and the information would be included in the SG report to WG 3 in September in Spain.

2.1 Accepted & Forwarded PDRs for CM, ADS, CPDLC & FIS

WP 7 - SME 2 Status Report

3.2 FP reported that 4 PDRs relating to QOS had been submitted and have to be discussed, and potential solutions developed. The PDRs are all similar, just relating to the different air/ground applications, and had been originated by ATNSI. FP proposed that the SG should review the CPDLC PDR 98120009 – the solutions would be common to all. The SG reviewed the PDR, recognised the three errors, but felt that the solutions were over complicated. JH would review the sample PDR off line, and check with FP concerning a simpler solution as a counter proposal to that offered.

3.3 FP also appended a short list of possible issues and editorial PDRs relating to Chapter 7 of the CPDLC SARPs. JH had reviewed all the editing errors that were then accepted. Of the four issues that were raised, A was an editorial, B was rejected, C was acceptable if slightly modified, and D was the result of an omission – an amendment would be made to para 2.3.7.4.1.2.1, and a new user requirement – 2.3.7.5.12.8 - would be proposed.

WP 8 – Three PIT-related PDRs

3.4 IV had taken an action at the recent PIT meeting to check whether certain error conditions were covered in the CPDLC SARPs, and if not, to raise new PDRs. He had taken the wise precaution of bringing the material to the SG before raising a formal PDR. The first problem related to allowing an 'Error' message to be sent in response to an 'Error' message with an invalid reference number. PIT thought this had the potential for being self-perpetuating. JH explained that this was not the case – the second error message would not have a reference number to be invalid. Thus the dialogue would die after the second message.

3.5 The second problem concerned misuse of CPDLC, whereby a pilot attempted to pass a message to a controller through the current data authority before the controller was in charge of the aircraft, even though the CDA link had been set up earlier. This should result in a smacked wrist for the pilot, but was not a technical problem. This was an ADSP matter, and MA would raise it at the next meeting.

3.6 PIT proposed to add free text reasons to the 'Error' message to provide meaningful information. They wished to add a new reason code in the ErrorInformation ASN.1, to indicate that there was a free text reason attached, possibly making use of the extensibility markers to introduce this enhancement. The SG were most unhappy with three concepts – use of the error message in this context, the somewhat cavalier assumption that the extensibility markers were there to allow anyone to tack on whatever they wanted, and development of use of unstructured free text. In addition any amendment to ASN.1 would result in a change to bits on the line, and might well incur the wrath of the CCB. IV was asked to discourage the PIT team from submitting this or any similar PDRs.

4. AGENDA ITEM 3 – CM – DEVELOPMENT OF FUTURE LOGON PROCEDURES

WP 18 – CM Server in Package II Enhancements

4.1 GS introduced this paper, which was an overview of the red-lined SARPs version presented at the Honolulu meeting, updated to take into account the WG 3 comments. The concept was not a true 'server' concept, but did allow an aircraft to get information for up to four other ground facilities from the called facility. There was no version negotiation – the objective was to keep it simple where possible. The operation assumed that a standard Logon procedure had taken place first, and version numbers had been established at that stage. Timescales of implementation did not seem to be critical – perhaps we may wish to hold off until the X500 directory work had been completed.

4.2 MH had reviewed the whole WG 3 paper. He asked why had GS set a limit at four – he noted the outline given in WP 18 – but thought that a larger number could be put in to allow for enhancements. In addition, was it right to call it a Logon service, when it was more than that – we should perhaps rename it – say to CMServerQuery and CMServerUpdate. GS and JH agreed that renaming the service would be a good idea – there would be less risk if confusion of functionality. With regard to the number of facilities, GS agreed that the 4 was kind of arbitrary. MA suggested 10 – double the number you first thought of, and add 50% - but if we were looking for a convenient binary number, 16 might be acceptable, and allow for all reasonable expansion. GS would investigate for the next meeting.

4.3 There was discussion on the implementation of updates – Package II – and whether they would be compatible with Package I. There was general agreement that any package II implementation should be capable of dealing with a Package I operation. In reply to a question by PC, GS agreed that at present his new update would not work with a Package 2 aircraft and a Package 1 ground system – he would look into this, but it was possible that the ground would have to be dual package fitted, to be determined at the initial logon.

4.4 IV suggested that the server development might be a new 'mini-application'. This would get over the problem of version negotiation in CM, which would also be version 1, and the server application might be another set of addresses to be passed. This lateral thinking caused a sharp intake of breath. GS agreed that this would simplify CM, which would really only become an address passing facility, which was what was originally intended. FP was not wildly enthusiastic about the idea. There was a considerable level of brainstorming concerning the idea, with arguments being made for and against the concept, and the affect it would have on the work of other groups, particularly SG3. There would be a whole new ASE, and addressing branch. MA emphasised that we were not going to make a five-minute decision – and FP was relieved about that. FP said that there would have to be a technical analysis of the two solutions, and this was agreed.

4.5 As a first stage, SG 3 should be approached to look at the ramifications of a new application. FP would talk to Gerard Mittaux Biron, and IV to Tony Kerr. GS would review the technical implications of a new application, to be available for the next meeting of the SG, and in the mean time would prepare an updated red-line version of the server concept for the next WG 3 meeting in Milan.

WP 19 – Security

4.6 IV presented this paper, which was a very high level outline of how the implementation of security would affect the air-ground applications. This paper reflected the quantum changes that had occurred at the Honolulu meeting of the Security Subgroup – the paper was indicative, but not qualitative. It was anticipated that CM would be the main vehicle for the exchange of security information – session keys (allowing one time logon use) would be exchanged through CM. This would get round the French problem of not allowing data encryption in messages. The meeting agreed that CM was the best vehicle for the passing of information, and IV would take this back to the SSG for development.

4.7 MA was not sure how security information would be passed from CDA to NDA, where different session keys may be required for successive data authorities. JH said that the CM function was designed for passing addresses, and that there would be much more use made of the CM Forward and Contact functionalities. There may be more ground initiation. PC had been looking forward to a single CM logon per trip environment – if the implementation of Security was going to jeopardise this, he was not very happy. MA said that there could be procedural problems involved, and that perhaps ADSP should be involved. JH said the ADSP had made it clear that they wanted security, and how it was done was our problem - they should only be presented with a 'done deal' report (if that!) However, she agreed that there would have to be guidance material (GM) available soonest – MA asked IV to take back a request to the SSG that GM should be available co-incidentally with the SARPs or revised concept statements.

5. AGENDA ITEM 4 – ADS – DEVELOPEMNT OF FUTURE ENHANCEMENTS

5.1 MA noted that there were no papers for this item. The loss of Tim Maude as editor of the ADS SARPs limited the update work being progresses. The work on incorporation of the Mode 7500 had to be progresses – Tim had done the majority of the work before he had to quit, but it needed to be taken further. MA would look into the progressing of the ADS work, prior to the next SG meeting.

6. AGENDA ITEM 5 - CPDLC

WP 17 - CPDLC Permitted Responses

6.1 JH had taken an action from the Albuquerque meeting to prepare a list of permitted CPDLC responses as preparatory work for a PICS review. She presented this paper, which was a proposed list of responses permitted to a calling message with a 'Y' attribute (i.e. a reply was required, which would, close the dialogue, unless a STANDBY or REQUEST DEFERRED message was sent.) JH reported that Downlink message pairing was pretty straightforward, and was based on earlier work which she and Dung Nuygen had done on the FANS message set as part of the ADSP transition work. The permitted uplink responses to downlink requests were not so easy, and had taken much more work.

6.2 There were really only two major queries on the responses to uplink requests – these related to requests to report a future event (e.g. Report Passing [..]), and the reply to Request Flight Plan. After little discussion the SG agreed that in the case of the four messages reporting a future event, 'Y' was the wrong response, and it should be 'W/U'. It would be bad operational procedure to keep a dialogue open for an indeterminate time.

6.3 The response to the flight plan request was more difficult. The SG didn't know how much of a flight plan was being requested – was it the current route, the full ICAO plan, the contents of the FMS, or a simple form, e.g. destination and ETA, current requested route, height and speed. JH would seek clarification at the next ADSP meeting.

6.4 In addition to operation downlink responses given, Error, LACK, Not CDA, and Not NDA were also valid downlink responses at any time, depending on circumstance.

6.5 Introducing the responses to downlink requests, JH said that there were some general rules she had followed in developing this list. Firstly, there was a core of replies which could be sent to almost all requests, namely Unable, Due To [traffic type] Traffic, Due to Airspace Restriction, Standby, Request Deferred, Request Forwarded, Request Already Received and Service Unavailable. Secondly, 'Expect' responses were only paired with 'Expect' requests, and finally only reasonable operational replies were included in the permissible responses (i.e. a change of speed was not an operationally sensible reply to a 'Request [level]'). In general during the initial stages of the preparation of the SARPs, JH had tried to ensure that there were paired messages, but she had identified at least one Downlink Message (DM) without a pair, namely DM 19 – 'Request [speed] to [speed]'. this could be met with combination of Uplink Messages 110 and 222, but this was rather clumsy. The SG felt that this could be a relatively rarely used request, and that it was not worth raising a PDR to generate a new message, but the ADSP would be informed, and their advice sought.

6.6 During their consideration of the responses, the SG felt that it would be good operational practice that, where a controller could not agree a request, whether it was simply a parameter or a whole clearance, 'Unable' should be used, thus – 'Request FL350'…'Unable FL350' 'MaintainFL310'.

6.7 JH had identified that there were not nearly enough specific replies to the 'Request [clearance type] Clearance' message – there were about ten optional parameters, and only two replies. A pre-formatted free text message with the correct attributes (UM196) would have to be the preferred way for handling such clearance requests (e.g. Startup, Pushback) in Package 1. JH said that this was a functional enhancement, with no PDR possible, and was perhaps the first real need in the SARPs for free text for package 1.

6.8 MA said that DMs 55 to 61 were all pilot declarations of intent due to emergency or distress situations, and that 'Y' was not the appropriate answer. The controller could not refuse the action, and in fact all he could do was accept it, and move other possible conflicting traffic. At the point of declaration all he/she could do was acknowledge the message. A 'Roger' response was the only acceptable reply - Service Unavailable was clearly unhelpful! It may be courtesy to inform the ADSP that we were going to propose a change. PC said this was just common sense, and there should be no need to make a formal approach to ADSP at all.

6.9 JH was at a loss to know what the proper operational response should be to DM69 – 'Request VMC Descent' - MA contacted Phil Simmons, who said that this was an implicit cancellation of an IFR clearance, and the only real reply was 'Roger' – this was similar to DM103 'Cancelling IFR'.

6.10 Finally, in her review of the responses, JH proposed that DM101 – 'Request End Service' should be withdrawn, and become a reserved number. MA argued that flexibility would be maintained by retaining the message. JH accepted this with good grace, and the message would be retained *pro tem.*

6.11 IV and MH welcomed this work, which strongly supported MH's PICS work. He said that it seemed to him that these responses fell into three categories – Errors, Permitted and Preferred. MA suggested that perhaps we could make things a bit stronger by making the preferred messages a Recommendation. IV said we would be wasting our time – if his experience was anything to go by, implementers totally ignored recommendations, and only reluctantly paid grudging lip service to 'shall' statements. MA said he saw the messages as the good, the bad and the ugly. FP said that the PICS should contain all the good and ugly responses, but not the bad. MA suggested that the PICS proforma could go as Chapter 9 of the SARPs, by this was totally vetoed by FP instantaneously. He did not want the PICS in the SARPs – they were implicit 'shall' statements, and he didn't like these at all. In addition, the CCB load would be terrific, if a PDR had to be raised for every table entry change.

6.12 FP said that all replies were optional, but at least one should be supported. GS suggested that all we put in the table would be the 'good' messages, where there was a tight coupling between the request and the response. All that would be permitted in addition to these would be system messages. PC said that the Aerospatiale avionics system would support all the messages, and could therefore cope with all PICS user profiles. This was what he meant by global interoperability.

6.13 JH suggested that we could put something into Chapter 7 to use only the paired responses to reflect the need to maintain interoperability (specifically directed at PIT, but not saying so!) FP was not very happy about this – we were looking to develop the PICS – for which this paper was a first step, and now we looked like ending up rewriting SARPs -this did not seem right. PC liked the work – they (Aerospatiale) would have had to do it anyway, but it was nice to have it standardises – this would be a great help to industry. But he wanted to minimise the use of free text – we should not find ourselves advising this as a solution unless there was no other possible. GS said that indicating 'correct' messages was not rewriting SARPs – we could use a single high level shall, and a table or two.

6.14 JH thought that putting in something in the SARPs was a good idea, but said that we had to have a paragraph saying what should be done if the recommendations were not followed. PC agreed – he would like to see a statement that use of any message outside the set would be non-SARPs compliant. But he would wish to distinguish between a technical error (which might cause an abort) and an operational error, which could just cause the message to be returned to the sender, but would not close down the system. IV agreed – this would be a reset, rather than an abort – but this concept would be Package 2 work. There was some discussion as to whether such an error should be shown to the pilot – he had made a request, but had not received a response, due to the system having detected an error, and turned the message round. FP thought that the question of if the error should be shown, but flagged, was a local issue – as far as he was concerned it was HMI plus implementation. MA agreed that it was outside the scope of the SG – perhaps an ADSP matter, and he would leave the matter with them.

6.15 PC said that Aerospatiale strongly supported the ATN OICS/PICS concept developed by the SG, because it gave flexibility at the service/functional level subsetting, while maintaining technical interoperability.

6.15 Finally, JH asked whether the message instructions should be amended to reflect that only 'approved' messages could be closure messages – any other message might leave the dialogue open, if only for clarification. This was though to be not a bad idea, but MA proposed that this idea be sidelined for further consideration later – it may be that a non-native English speaking user may find other messages appropriate, and not feel bound by semantics.

7. AGENDA ITEM 6 – FIS – NEW FIS SERVICES

7.1 FP had not updated his METAR paper because he had not yet had any feedback from Jean Francois Grout concerning comments on the proposed ICAO liaison work with the METLINK group. MA briefed the SG from the basis of his own notes – not the official report of the meeting. JH said that the FAA were still reviewing the proposed parameters, ranges and resolutions – as far as thet were concerned the METAR requirements had not yet been finalised.

7.2 MA expanded on Don McLean's suggestion to the ADSP that the METAR information could just be sent as a free text string, since it only came from one source, and Met data bases were already in existence (London, Brussels and Vienna in Europe). The pilot had METARs presented to him as a 'text string' at briefing, and was used to the format and notation. FP was highly sceptical, to say the least. Even if the text string was less than 256 characters long (the permitted free text length in CPDLC), string forwarding was expensive in bits on the line, security was a problem and even limited intelligence checking (parameters in range etc.) would not be possible. Somewhat sarcastically he suggested that if we were going along this path, we could just add a new CPDLC message 'Request METAR [icao facility designator]', and send it all free text. FP clearly did not approve.

7.3 However, FP did suggest that it might be possible to develop a new service in FIS – String Exchange Service – which would allow for the exchange of strings of information. This could be used for METARs, NOTAMs etc. It might be similar in operation to the GACS (Generic ATN Communications Service) being investigated by WG 3 for Package 2 enhancements. MA thought this was an excellent idea, well worth further investigation. JH agreed – there was no automation involved in the use of the METAR information, and PC agreed that it was not safety critical. FP, a trifle surprised by the enthusiastic way his (perhaps off the cuff) suggestion had been accepted, was still very cool, saying that ATN was designed to be more than a data transfer service – it was a higher level communications service, and this would not be taking full advantage of its capabilities. MA asked FP to investigate the trade-off for using either a string service or a free text string for the METAR service, as distinct from developing a structured service, with its relative inflexibility to change at the whim of the World Met Organisation.

8. AGENDA ITEM 7 – PICS AND INTEROPERABILITY

WP 9 – CM PICS/OICS Proforma - Airborne ASE
WP 10 - CM PICS/OICS Proforma - Ground ASE

8.1 MH, introducing the topic, said that the concept of PICS (Protocol Implementation Conformance Statements) for air/ground applications had arisen about 9 months ago as a result of a Eurocontrol initiative, having found that two implementations of CPDLC, ostensibly prepared to the same standards, were not interoperable. The ISO had developed PICS for ISO services, e.g. for X400 interoperability, and it had been proposed that PICS be developed for the SARPs, using the OSI implementation as a model. FP had done much early FIS related work, and this had enabled MH to develop a fairly advanced model for the other applications. He was grateful for FP's work and advice. Also at the Albuquerque SG 2 meeting, the concept of an operational PICS (OICS) had been developed, and this was a very useful addition to the model. MH had sought to develop a common format across all the applications, in a way that would readily allow a comparison of completed

proformas/profiles by automation. He had used an Excel format, which was internationally acceptable.

8.2 There were some general queries concerning the format, and FP said that there would have to be some concurrent Guidance Material available to aid the appreciation of the PICS. MH already had this in hand – he had drafted some material, which would be available for presentation to the Milan meeting, along with re-drafted PICS in the light of comments from this meeting. JH thought that it would e likely that in the review of the material some general rules would develop, and they would have to be included in any guidance. IV said that this was already being done – for example if something was mandatory in the SARPs, it was noted as mandatory in the current PICS. MA thought that this would not indicate minimum permissible installations – which should only mandate what we thought absolutely had to be mandated. JH did not want information copied slavishly from the SARPs – there would be no added value in the PICS if this was all that we did.

8.3 IV re-emphasised how interested RTCA was in this work – although they were also looking beyond the technical towards the operational and implementation aspects. They were very interested in the OICS development. FP said that what we were developing here was a generic PICS, and idid we really want to do this? It was agreed that this was not really what we wanted - we should be developing a PICS proforma, and it was up to others to develop profiles for appropriate activities, e.g. manufacturer, user, service provider, ATS provider etc. Users and providers would have to compare and agree interoperability if interoperability was to be possible.

8.4 MA said that the SG would carry out a line by line review of the PICS. Depending on how far we got, the work would be presented to WG 3 in Milan, either in draft or final draft format.

8.5 PC was worried that alternative interpretations of the PICS columns may jeopardise the acceptability of the SARPs – non-compliance with mandatory requirements could lead to a 'bending' of the SARPs, and a deviation from intent. We should make it clear that where a proposed profile deviated from any mandatory requirements, authors should substantiate the differences with reasons appended to the PICS profiles. This was strongly agreed by the SG, and would be highlighted in the Guidance Material.

8.6 These notes do not attempt to indicate the line by line considerations, comments and changes which arose from the discussion of the papers. There were some possible PDRs that arose from consideration of the information, and these were noted by FP, in his role as SME and CCB member. MH explained that where he put 'Other', that related to the fact that there were applicable extensibility markers in that part of the ASN.1. The SG agreed that, since these PICS/OICS were for Package 1, anything beyond that should be not allowed, and an 'X' would be put in the appropriate columns to indicate this. Therefore, if anyone chose to implement any 'Other', reasons in writing would be called for. JH suggested that an additional paragraph could be put in the Exception Handling section of the SARPs to reflect this.

8.7 There was considerable discussion on the final format of the Tables, and some heading changes were agreed. MH said that to an extent information was constrained by the size of the paper, if we were trying to contain all relevant information on the one page. PC was strongly in favour of minimising the number of pages and the amount of documentation. Relating to constraints, it was accepted that ranges and resolutions were not constraints as such in the proforma, but would be noted in the 'Protocol Element' part of the Table. Any user filling in a profile would have to list their constraints if they could not meet the full range. Thus a B747 operator would not have to meet the full range of Concorde type Mach Numbers, but would have to say so. It was also agreed that where a table entry indicated 'Conditional' (C), a full indication of the conditions would be given, but the condition would only be related to the next highest level up as appropriate (i.e. relational rather than absolute.) IV emphasised that the conditions in a 'Conditional' entry had to be communications protocol related, and testable. In addition, if an element was not conditional on anything, was generally optional, but was mandatory 'no matter what' in even one case, then it would be mandatory (M). There were also cases where all entries under a reference were optional (e.g. Event Contract) but at least one had to be implemented if an Event contract was being used. An annotation in the tables to this effect would be made.

8.8. The CM PICS/OICS were reviewed, and a revised draft will be prepared by MH and circulated soonest.

WP 11 – ADS PICS/OICS Proforma - Airborne ASE
WP 12 – ADS PICS/OICS Proforma - Ground ASE

8.9 MH, introducing the ADS proformas (), said that these had been prepared only for the air/ground element of the ADS. The SG discussed the need for PICS for the ground/ground element, and agreed that they needed to be prepared, but that there wasn't the same level of urgency. JH said that another two documents would be required, in line with the existing format. MH said that he would prepare a draft, in line with any comments received on the air/ground versions, and would hopefully have them available for Naples, but definitely for the next SG meeting.

8.10 As before, these notes will not pick up on the line by line review discussion, but hopefully will cover generic points that arose during the review.

8.11 Almost as soon the review of the ADS OICS/PICS stared there was prolonged discussion on the interpretation of the word 'supported', in the sense of 'A (xxx) service was *supported*'. FP emphasised that, technically, a service was supported if the PDU was recognised, and a reply made, even if the reply was only a 'non-compliance' message. MA and IV thought that this was not proper support – the service could not be used operationally. PC said he had tried to highlight this difference between technical and operational support in his paper to the SG in Albuquerque. There was a general acknowledgement that when the ASDSP had said 'supported' in the manual, the intent was that a service could be used operationally, with connections made, end users in the loop, messages being passed etc. But this apparently was not the technical interpretation of 'supported' – this tended more towards 'recognised'. MH would attempt to clarify this difference in the PICS/OICS by changing the PICS 'Decoding' column heading to indicate an understanding or comprehension.

8.12 IV thought that the PIT team would not be using any current PICS, but RTCA will, particularly for their FAA work related to Build 1/1A/2. PC thought that RTCA would be developing their own PICS – IV said that they would certainly develop their own profiles, but hopefully they would be based on our PICS – that was the message he would be taking to them.

8.13 There was considerable emotion generated in consideration of emergency procedures, and whether they should be made mandatory or not. MA thought that from the moral point of view, the ground should always support an ADS emergency contract, provided all other caveats were in place. JH said that this wasn't necessary – if the ground service said that emergency messages should be sent by voice, it should be under no obligation to accept an emergency data link. If a pilot sent it, the PDU would be recognised by the ground, consigned to the bit-bucket and the end user need never know it had been sent. This was what PIT and build 1/1A were going to do. MA had expected another outburst from PC about how we were being led by a trial implementation, but surprisingly PC agreed – if the pilots were informed that emergency procedure were voice generated, then they would not use the facility, even if it was installed. (Collapse of MA's unsupported protest!)

8.14 JH questioned the need for all types of contract to be supported by the aircraft. The operational requirements in the ADS Manual indicated that an aircraft should support at least one demand, periodic and event contract. On the basis of this, the SG had earlier prepared Table 4 of Chapter 8 (Subsetting Rules) indicating that there should not be any subsets of the Air ASE. JH was now querying whether this was the correct interpretation of the ORs, or indeed the correct operating /implementation philosophy anyway. What ever the intention of the compilers was, the Manual did not say specifically that each aircraft had to maintain all types of the contracts or that they all had to be maintained at the same time. Therefore at the purest technical level, the aircraft would be supporting ADS if all it did was recognise the PDU in a contract type request, and send back a Non-Compliance Notification (NCN). Therefore the only Mandatory requirement for an PICS/OICS at the highest level was the ability to return an NCN. FP agreed completely. MA was 'deeply disappointed' (=frankly horrified) that this was the case – it had not been the intent of the ADSP to permit such a minimalist approach. JH agreed that this was an operationally inept implementation, but if we were looking at

minimum technical interoperability levels commensurate with 'supporting' an ADS application (whatever that now meant), an NCN (and of course an Abort capability) were the only mandatory PDUs which needed to be operationally supported at this level.

8.15 There was prolonged and heated discussion over this interpretation of both the use of the PICS/OICS and the intent of the ADSP. To GS and MA at least, and PC to an extent, it seemed totally outwith the spirit of the intended operational implementation of the ADS. JH and FP were completely uncompromising – this was the way the PICS had to be prepared. As Experts, IV and MH agreed that JH's approach was correct from the point of development of the PICS/OICS, and this was what we were here to do. Eventually MA had to back down yet again – the operational heart had to give way to the logical head. To MA, this sort of implementation guidance seemed spectacularly unhelpful, but engineering-wise he was assured that this was just what was needed. It was generally agreed that the looser the Operational Requirements were written, the tighter had to be the PICS/OICS, and the more difficult their preparation became. Because ICAO did not allow any 'shall' statements in the Manual, no operational requirements were seen as mandatory.

8.16 There were significant consequences to this decision. JH said that this would mean that each State (or possibly region) would have to indicate what services they supported in their area of responsibility. MA thought that this would mean they would have to publish their PICS/OICS profiles in Regional Plans. The SG agreed that in order to achieve true interoperability this would probably be the case. MA queried whether ICAO would be prepared to go to this level of technical detail in what was essentially an operational document. MA would highlight this to the appropriate ADSP WG in the first instance.

8.17 In addition, FP would have to rewrite Chapter 8 to take account of the now possible air subsets. MA suggested that there were going to be so many subsets in the chapter it was going to the unrealistic, and therefore should it be withdrawn? PC argued strongly against this – the subsets would help in the recognised standard implementations, and should be retained. The SG agreed that there would be nothing to be gained from their withdrawal, but much from their retention. FP would amend as appropriate, and prepare a PDR.

8.18 The same argument did not apply to the ground – the need for subsets had always been recognised, and they were comprehensively detailed. They may have to be reviewed, particularly relating to the aspects of the Emergency Contract, but the general principles were there. PC suggested that the ADSP should be asked to define operational subsets – GS agreed, but did not expect this to be done. We should concentrate in ensuring that any two implementations of the same subset were truly interoperable. MA said that there could be changes in the CM subsets, based on the policy we had derived for ADS. GS would investigate, and FP said that there could be one large PDR for chapter 8 amendments, covering all applications.

WP 20 – Draft Revised ADS Air/Ground Chapter 8.

8.19 FP had reviewed chapter 8 of the ADS SARPs overnight. He agreed that it was wrong, in that it did not allow the flexibility of implementation reflected in the PICS. He recognised that the Air ASE had to handle all types of contracts, but it was up to the user to reject a contract – it was the option of the user – not the ASE. IV asked if 'handle' was another of these nebulous words, like 'support', and perhaps in any final version of the chapter, we would have to be more specific. FP said that the ASE had to support a contract, if only to reject it – this we had agreed earlier. He saw the Emergency Contract (in Package 1) as an option of the Event or Periodic implementation – it was a user option, and our configuration (subsetting) tables should reflect this. Since there was no good reason to counter this argument, FP would amend his draft accordingly. In addition, FP would look at removing the second page of his draft.

8.20 JH thought that basically there were three questions which would be asked relating to interoperability – (a) What contract type(s) were supported? (b) Was Emergency Mode supported? and (c) What messages were supported?. We should be able to ensure that our PICS/OICS could enable these questions to be answered properly. FP said that the PICS would virtually allow anyone to do anything that wanted. PC was irate and incensed – we needed rules of the game; if PICS were

optional, we had to ensure that the ground and air sides implemented the same options. This also meant that industry need not implement software where it was not needed – this would reduce costs, testing requirements ands scope for technical and operating error. There was a basic Airbus philosophy – treat the pilot as gently as possible, and keep the interface simple.

8.21 PC was also afraid that there would be a dichotomy between the 'shalls' of the SARPs, and the 'options' of the PICS – we needed to ensure consistency. JH generally agreed, but did not want the PICS/OICS simply to replicate the SARPs - there was no added value in the PICS if that was to be the case. PC also wanted to ensure that use of 'Service Unavailable' was minimised, and he needed confirmation that CM would still be used for negotiation. GS said that it was never the intention that CM should be used for subset negotiation, unless that was related directly to version negotiation.

8.22 In order to make the use of subsets clear, FP would rewrite chapter eight in plain operational English – the interoperability at PDU level would be covered in the PICS. It was generally agreed that 'support' was the wrong word – FP would try not to include it if possible. JH and GS were looking for basic rules to cover basic services – i.e. rules for what you must support, and rules for when you did not need to. The SG investigated the use of a matrix presentation to try and define operational interoperability – initial attempts were inconclusive. PC said that it should be firmly stated in chapter 8 that technical interoperability did not imply operational interoperability – either way, interoperability implied a 'no-crash' situation. He felt that the SARPs gave the necessary technical interoperability – he would expect that there would be full implementation of chapters 3, 4 and 5 by both air and ground. These should be a given. As a general rule, JH said that we should consider that anything initiated by the air user should be optional to the air user, and anything initiated by the ground user should be optional to the ground user.

8.23 A detailed review of the draft PICS/OICS relating to the air/ground element of ADS as prepared by MH was successfully completed. During this review, it was noted that in the SARPs, the three elements which constituted the 'air vector' and the three for the 'ground vector' were indicated as 'Optional' in the ASN.1. MA said this was not the case – in order for the air vector to be a complete vector it had to include all elements – the same with the ground. He would raise a PDR to cover this.

[Post Meeting Note:-This will be a package 2 enhancement, not a PDR].

8.24 MH agreed to prepare a revised draft for the Naples meeting, but which would be circulated earlier to the SG members. He had some early guidance material, largely based on papers which Danny van Roosbroek had presented earlier, outlining the need for a PICS – he would update this, and relate it to the work done at this meeting. IV had a report to make to the next RTCA meeting – he wanted to present them with the work that we had done so far. MA thought that the revised ADS would be OK, but queried whether it was wise to show the CPDLC – he did not want the RTCA jumping to conclusions, and rushing off with half completed work, or changing what we had already done, without knowing the whole story behind the decisions. IV expected that RTCA would, if anything, offer constructive counter-proposals, which could be beneficial. IV would report back to SG on the outcome of the RTCA meeting. In addition, he would welcome support at the PIT meeting in Geneva in April.

9. AGENDA ITEM 8 – NEW SARPS FOR VERSION 2 APPLICATIONS

9.1 The only new SARPs produced for this meeting related to CM, and were discussed under agenda Item 3 above.

10. AGENDA ITEM 9 – CONSEQUENT SARPS AMENDMENTS AND VERSION CONFIRMATION

10.1 There were no papers introduced against this agenda item, and no discussion on the topic.

11. AGENDA ITEM 10 – INPUT TO WORKING GROUP 3 MEETING, NAPLES, MAY 1999

11.1 These notes would be that basis for the report of this meeting to WG 3.

11.2 GS will prepare a revised redline version of the CM Server SARPs.

11.3 JH will prepare an updated version of her CPDLC 'Permitted Responses' Paper, framed as a proposed amendment to CPDLC SARPs chapter seven.

11.4 FP will prepare a revised ADS SARPs chapter eight.

11.5 GS will review the CM chapter eight, and submit a revised version if he considers it necessary.

11.6 MH will prepare revised PICS for CM, ADS taking into account the general comments, format changes, and detailed revision carried out at this meeting, and revised CPDLC PICS taking into account JH's paired responses paper and the format changes.

11.7 FP will revise his draft FIS PICS in the light of the general comments and format changes, and prepare a revised version.

11.8 MH will, if time permits, prepare an updated guidance to PICS/OICS procedures. If this was not possible, he would revise Danny van Roosbroek's paper outlining the PICS procedures presented at a previous meeting.

12. AGENDA ITEM 11 - AOB

12.1 PC said that Aerospatiale were very supportive of the PICS/OICS work, and would like a statement included in the notes to reflect this. He proposed a form of words which have been included in the notes to Agenda Item seven above.

13. AGENDA ITEM 12 – DATE AND PLACE OF NEXT MEETING

13.1 The next meeting will be held from 12 – 16 July 1999 in Vancouver, Canada. GS agreed to make the necessary arrangements, and inform the SG members as soon as possible.

13.2 The meeting closed on Friday 5 March 1999.

Appendix A

AGENDA

for

THE 20th MEETING OF ATNP WG3/SG2 (Air/Ground Subgroup)

in

Eurocontrol HQ, Brussels, Belgium

1 – 5 March 1999

1. Notes, Briefing and out come of -

   i. 19th WG3/SG2 Meeting, Albuquerque, 8 – 11 December 1998

   ii. ATNP WG3 and WGW Meeting, Honolulu, 18 - 28th January 1999

   iii ADSP WG A & B Meetings, Adelaide, February 1999

   iv RTCA SC189 Meetings, Torrance CA, and Toulouse

   v AEEC Meetings, Orlando, Florida

2. SARPs and GM for Version 1 Applications: maintenance

   2.0 General - Discussion on SARPs P-1 maintenance procedures

   2.1 Accepted & Forwarded PDRs for CM, ADS, CPDLC & FIS

3. CM - Detailed development of future DLIC/logon procedures

4 ADS - Development of future a/g enhancements, including security, pilot interface, inputs for Emergencies, differences between Emergency and Urgency.

5. CPDLC

6. FIS - New FIS services?

7. PICS and Interoperability

8. New SARPs for Version 2 Applications

9. Consequent SARPs Amendments & Version Confirmation

10. Input to Working Group 3 Meeting, Naples, May 1999

12. AOB

13. Date and Place of next Meeting (Washington/Vancouver July 1999)

Appendix B

LIST OF WORKING PAPERS

ATNP WG3/SG2

Twentieth Meeting

Eurocontrol HQ, Brussels, Belgium

1 – 5 March 1999

Paper Number	Agenda Item	Presenter	Title
1	1	M Asbury	Agenda
2	1	M Asbury	Working Paper List
3	1	M Asbury	Report of 19th SG 2 Meeting, Alberquerque
4	1	M Asbury	Report of WG3 Meeting, Honolulu
5	1	M Asbury	Brief Report of ADSP WG A Meeting, Adelaide
6	1	M Asbury	Brief Report of ADSP WG B Meeting, Adelaide
7	2	F Picard	SME 2 Status Report
8	2	F Picard/Ian Valentine	PDRs arising from SC 189 Meeting
9	7	M Harcourt	CM PICS/OICS Proforma – Airborne ASE
10	7	M Harcourt	CM PICS – Ground Element
11	7	M Harcourt	ADS PICS – Air Element
12	7	M Harcourt	ADS PICS – Ground Element
13	7	M Harcourt	CPDLC PICS – Air Element
14	7	M Harcourt	CPDLC PICS – Ground Element
15	7	F Picard	FIS PICS – Air Element
16	7	F Picard	FIS PICS – Ground Element
17	7	J Hamelink	Paired Messages
18	3	G Saccone	CM Server Service in Package 2 enhancements
19	3	I Valentine	Security
20	7	F Picard	Revised ADSP SARPs Chapter Eight