



ATNP/CCB/WP 9-02  
ATNP/WG3/WP 16-16  
12 May 1999

**AERONAUTICAL TELECOMMUNICATION NETWORK PANEL**

**WORKING GROUP 3 (APPLICATIONS AND UPPER LAYERS)**

Naples, Italy, 18 - 21 May 1999

**Agenda Item 6.3: ULCS Briefing on Package 1 maintenance**

**SME 4 (ATN Upper Layers) Status Report**

Presented by: Tony Kerr (Sub-Volume 4 SME)

**SUMMARY**

This paper provides a summary status of PDRs raised against the Sub-Volume 4 (Upper Layer Communications Service) ATN SARPs, and also shows the resulting changes proposed to ICAO Doc 9705.

The Working Group is invited to approve this report.

## 1. INTRODUCTION

The goal of this paper is to provide WG3 with the current status of the Proposed Defect Reports (PDRs) raised against Sub-Volume 4 (Upper Layer Communications Service) of the ATN SARPs, and to show the effect of RESOLVED PDRs on the text of ICAO Doc. 9705, first edition.

## 2. SUMMARY OF PDRs

The following table lists all PDRs raised against the ULCS SARPs (Sub-Volume 4) since their approval at the Phuket ATNP WGW/1 meeting in March 1997.

The PDRs referenced in this WP are available on the ATNP archive maintained by CENA.

PDR No.	Title	ASN.1 affected?	Status (CCB/9)	Comments
97060025	ULCS D-ABORT	n/a	REJECTED	
97060026	ULCS ACSE Abort	No	Adopted	Incl. in ICAO Doc. 9705
97060027	ULCS 1.1	No	Adopted	Incl. in ICAO Doc. 9705
97100030	ULCS ISO ULEFF Renumbering	No	Adopted	Incl. in ICAO Doc. 9705
97100031	ULCS Negative Session Response	No	Adopted	Incl. in ICAO Doc. 9705
97100035	ULCS CF State Table	No	Adopted	Incl. in ICAO Doc. 9705
97100041	ULCS D-Start Version Number	No	Adopted	Incl. in ICAO Doc. 9705
97110002	PER encodings should use full-encoding OCTET STRING choice	Yes	REJECTED CCB/5	CAMAL text added
97120001	Naming of multiple AEs	No	FORWARDED CCB/5	See separate WP
98030007	CTS AE-Qualifier registration	No	REJECTED CCB/6	
98090007	New AE-Qualifier for METAR	No	Resolved CCB/7	9705 Amd 1
98100006	Predicate missing in CF state table	No	Resolved CCB/8	9705 Amd 1
98100009	AARQ parameter support	No	Resolved CCB/8	9705 Amd 1
98100010	New AE-Qualifier for GACS AE	No	Resolved CCB/7	9705 Amd 1
99010002	Re-use of Transport	No	WITHDRAWN	Superseded by 99040003

99030004	Abort inconsistencies	No	PROPOSED	Attached
99040002	Address verification	No	REJECTED	
99040003	Re-use of Transport - 8327-1 defect	no	ACCEPTED	Attached
99050002	OID Base Reference Change	no	ACCEPTED	Attached

Statistics:

ADOPTED in 9705	6
RESOLVED in 9705/Amd 1	4
FORWARDED	1
PROPOSED	1
ACCEPTED	2
REJECTED	4
WITHDRAWN	1
SUBMITTED	0
TOTAL	19

There are also some editorial PDRs which apply to multiple Sub-Volumes, including Sub-Volume 4. These are summarised in the following table:

PDR No.	Title	ASN.1 affected?	Status (CCB/6)	Comments
97060001 (part)	Corrections to ICAO V2.0 produced by ICAO secretariat (see also UL-DR 106)	no	Adopted	Incl. in ICAO Doc. 9705
97110001 (part)	Corrections to ICAO V2.1 produced by ICAO secretariat	no	Adopted	Incl. in ICAO Doc. 9705
98040005 (part)	Corrections to ICAO V2.2 produced by ICAO secretariat	no	Adopted	Incl. in ICAO Doc. 9705

### 3. SUMMARY OF IMPACT ON SARPs

None of these PDR resolutions affect the ability of ULCS implementations to interwork. Thus, all versions of the ULCS SARPs produced since the Ninth meeting of WG3 in Phuket in March 1997 are compatible at the protocol level.

The changes to ICAO Doc 9705, first edition, resulting from the RESOLVED PDRs, are presented in Attachment B to this paper.

## **4. CONCLUSION**

The Working group is invited to note the information provided, in particular the fact that there are no compatibility problems to date since the ULCS SARPs were placed under configuration control in March 1997.

The open PDRs in Attachment A are for discussion in the CCB/9 meeting in Naples.

The change pages in Attachment B are proposed to be provided to the Panel secretary for inclusion in Amendment 1 to Doc. 9705.

## ATTACHMENT A – OPEN PDRs FOR CCB DISCUSSION

Title: ULCS - Abort inconsistencies  
PDR Reference: 99030004  
Originator Reference:  
SARPs Document Reference: Doc. 9705 Table 4.3-4, 4.3.3.4.5.1.1,  
4.3.3.6.3.1.1  
Status: PROPOSED  
Impact: C (Clarification)  
PDR Revision Date: 19/04/99 (ACCEPTED -> PROPOSED)  
09/04/99 (SUBMITTED -> ACCEPTED)  
PDR Submission Date: 26/03/99  
Submitting State/Organisation: Eurocontrol  
Submitting Author Name: Conor Molloy, Airtel ATN  
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Submitting Author Supplemental Contact Information:  
3, Haigh Terrace, Dun Laoghaire,  
Co. Dublin, Ireland  
Tel: +353-1-284-2821  
SARPs Date: First edition - 1998  
SARPs Language: English

### Summary of Defect:

There seems to be a conflict in V2.3 of the SARPs in Sub-volume IV

In 4.3.3.6.3.1.1 it states that P-U-ABORT indication can only be invoked when the CF is any state except RELEASE COLLISION. While Table 4.3-4 shows P-U-ABORT indication as a valid event in the RELEASE COLLISION state.

As the text takes precedence we are following the text. But this looks like a defect.

Assigned SME: SME 4 (A. Kerr)

### SME Analysis:

It appears that the state table is correct and the text is in error. Early drafts of the ULCS SARPs did allow (P-U-ABORT ind, STA4), both in the state table and also in the text. Then in Jul 96, a defect report (UL-DR 089) was raised as a result of GEODE modelling, saying that P-U-ABORT ind and the corresponding A-ABORT ind cannot validly occur in Release Collision state. The draft SARPs were modified to disallow P-U-ABORT, and also A-ABORT ind, when in STA4 in both the state table and also in the text. However, it seems that DR 089 was wrong - there must have been an error in the GEODE model, as it is easy to construct a scenario where P-U-ABORT can be received when in STA4. Somehow, mysteriously (there was no corresponding PDR), the state table got changed back for P-U-ABORT ind between Nov 96 and Mar 97, but the text did not. Also, the text and state table for (A-ABORT ind, STA4) never got changed back.

So, the following changes are proposed, which completely reverse UL-DR 089:

### Proposed SARPs amendment:

Table 4.3-4 (State Table)  
Cell (A-ABORT ind, STA4) to be changed from blank to (STA0, D-ABORT ind)

Change 4.3.3.4.5.1.1

from

<<Invocations of the A-ABORT Indication primitive by the ACPM shall be allowed when the CF is in any of the states ASSOCIATION PENDING, DATA TRANSFER, or RELEASE PENDING; if an invocation occurs when the CF is in any other state then an error has occurred (see 4.3.3.1.2.4).>>

to

<<Invocations of the A-ABORT Indication primitive by the ACPM shall be allowed when the CF is in any valid state, except the NULL state; if an invocation occurs when the CF is in the NULL state then an error has occurred (see 4.3.3.1.2.4).>>

Change 4.3.3.6.3.1.1

from

<<Invocations of the P-U-ABORT Indication primitive by the supporting service shall be allowed when the CF is in any valid state, except RELEASE COLLISION; if an invocation occurs when the CF is in the RELEASE COLLISION state then an error has occurred (see 4.3.3.1.2.4).>>

to

<<Invocations of the P-U-ABORT Indication primitive by the supporting service shall be allowed when the CF is in any valid state.>>

Impact on Interoperability:

There is no impact on interoperability, as the Dialogue is aborted anyway. If the proposed change is not applied, then a P-U-ABORT indication received when in the RELEASE COLLISION state would cause a false error to be logged and the error handling procedures to be invoked, i.e. an Abort indication to be given to the user. If the proposed change is applied, then an Abort indication will still be given to the user, but in a more orderly manner, and ACSE will be tidied up.

SME Recommendation to CCB:      Progress to RESOLVED

CCB Decision:                      (CCB-9, Naples)

Title: Re-Use of Transport - 8327-1 Defect  
PDR Reference: 99040003  
Originator Reference: ONS-SV4-02  
SARPs Document Reference: (ISO/IEC 8327-1)  
Status: ACCEPTED (WG3/SG3 April 99)  
Severity: D (minor)  
PDR Revision Date: 19/09/99 (SUBMITTED -> ACCEPTED)  
PDR Submission Date: 02/04/99  
Submitting State/Organization: USA  
Submitting Author Name: Moulton, James  
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USA  
SARPs Date: First edition - 1998  
SARPs Language: English

Summary of Defect:

The re-use of transport based upon the text in ISO/IEC 8327-1 fails due to improperly specified collision conditions.

The basic problem (referring to the state tables for ease of discussion) is in state STA01C. When one peer state machine is in STA01C, the peer on the other end of the transport connection is in STA01C.

Therefore, both peers may issue a SCON\_req which will cause an SCN\_TD (short connect pdu) to be issued by each peer. Each peer will also transition to STA02C.

At this point, each peer will be in STA02C and will receive an SCN-TD for which the incoming event is invalid (not covered in the specification.)

Hopefully, appropriate error recovery will require a T-DISC to be issued.

Another issue is how applications are bound to the connection. The transport connection is available for any application and therefore a priori knowledge must be in place as to which application will "service" the connect request.

Proper entries for TDISC-ind must be made in state STA01C and STA02C. Proper entries for SUAB-req and -ind must be made for both STA01C and STA02C. (Are these in table 16?)

At the present time, there is no way to get out of STA01C except by issuing an SCON\_req or receiving a short connect pdu.

The basic problem is that without procedures for managing who is allowed to issue a short connect on an open transport connection, there is no way to ensure proper operation.

Assigned SME: SME 4 (A. Kerr)

Proposed SARPs amendment:

Make re-use of transport NOT AVAILABLE.

SME Analysis: (See also PDR 99010002).

ISO/IEC 8327-1 states, in clause 6.2.4:

<<The transport connection may be kept for reuse provided that the transport expedited flow is not available, and either:

a) the SPM which established the TC requests retention of the transport connection by parameter in an ABORT SPDU or a FINISH SPDU, or

b) the SPM which established the TC receives a REFUSE SPDU or and ABORT SPDU which indicates by parameter that the TC is to be retained.

To avoid contention for a retained transport connection, only the TC initiator may reuse the TC by sending a CONNECT SPDU to establish a new session connection.>>

Therefore, there is no collision case to consider, and no defect in 8327-1.

Also, as ULCS uses the Short Connect/Null Encoding options, a TC once established can never be re-used, as there is no possibility of using ABORT, FINISH or REFUSE SPDUs (or their short-encoding equivalents). The only possibility of re-use is when the initial session connection establishment is refused. In such a case, it would indeed be necessary to keep track of the TC properties (QoS parameters and associated traffic type) and only assign the TC to a suitable application association. This is an implementation matter. It would be simpler for an implementation not to support re-use of a TC, and this is allowed by the current SARPs provisions.

WG3/SG3 Palo Alto April 1999: Base standard covers TC establishment collision correctly in text, but some doubt if the State Table reflects this correctly. Need to check whether base standard 8327-1 (as opposed to efficiency amendment) has a predicate in the State Table for the collision case. This would be a new meaning of Forwarded status - forwarded to ISO / ITU-T defect resolution process. Also additional GM required on re-use of transport connections.

On checking the State Table in ISO 8327-1, the collision case is handled by predicate p1, which means NOT (Vtca), where Vtca is a Boolean value set according to whether this SPM initiated the T-connection.

Also, the PDR is incorrect in the following respects:

SPM State Table does cover TDISC-ind in state STA01C and STA02C, in Table A.16.

SUAB-req is not valid in STA01C and is handled in STA02C, in Table A.16.

There is no SUAB-ind event. The AB events are handled in Table A.16.

There are numerous ways to get out of STA01C, as listed in Tables A.8 through A.16.

Impact on Interoperability: None.

SME Recommendation to CCB: REJECTED, add guidance on re-use of transport connections.

CCB Decision: (CCB-9, Naples)



Title: ULCS OID Base Reference Change  
"  
PDR Reference: 99050002  
"  
Originator Reference: X.660  
SARPs Document Reference: Doc. 9705, 4.3.2.1  
Status: ACCEPTED  
Severity: E (Editorial)  
PDR Revision Date: 12/5/99 (SUBMITTED -> ACCEPTED)  
PDR Submission Date: 7/5/99  
Submitting State/Org: ATNP WG3/SG3  
Submitting Author Name: Stephen Van Trees  
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SARPs Date: First edition - 1998  
SARPs Language: English

Summary of Defect:  
"

Sub Volume 4 includes a Note describing ISO OID root assignments.  
"

ISO have recently moved the material into another base standards document.  
"

"  
Doc 9705, Section 4.3.2.1 states:  
"

<Start italics> Note 2.- ISO/IEC 8824-1 specifies the top of the hierarchical  
OID name space. At the first level, provision is made for ISO, International  
Telecommunication Union - Telecommunication Standardisation Sector (ITU-T) and  
joint ISO/ITU-T sub-name spaces. The ISO name space is further subdivided  
into:

- a) standard (0)
  - b) registration-authority (1)
  - c) member-body (2)
  - d) identified-organisation (3)
- <end italics>

Assigned SME: Sub volume IV SME (A. J. Kerr)

Proposed SARPs amendment:

Change ISO/IEC 8824-1 to ISO/IEC 9834-1 | ITU-T X.660.

SME Analysis:

This is just an editorial nicety, which affects only a non-essential external  
reference in a Note. The ITU-T reference (X.660) should not be included, as  
Doc 9705 is based only on ISO/IEC standards.

Impact on Interoperability: Zero. Editorial change only.

SME Recommendation to CCB:           Progress to RESOLVED

CCB Decision:                               (CCB-9, Naples)

## **ATTACHMENT B – CHANGE PAGES FOR DOC. 9705**

The following pages show the effect of applying the RESOLVED PDRs to the first edition of ICAO Doc. 9705. Change bars in the margin indicate revisions.

These revisions are proposed as the Sub-Volume 4 contributions to Amendment 1 of Doc. 9705.

The following PDR resolutions are incorporated:

- 98090007 New AE-Qualifier for METAR
- 98100006 Predicate missing in CF state table
- 98100009 AARQ parameter support
- 98100010 New AE-Qualifier for GACS AE
- 99030004 Abort inconsistencies