ATNP WG2 – ICS Drafting Group (IDG)
Fourth Meeting
17-20 April 2000

1 Introduction.

The ATNP WG2 ICS Drafting Group (IDG) held its fourth meeting in Washington DC, USA on 17-20 April 2000. The attendee list is Attachment 1 to this report. Mr. Cardwell served as the IDG chairman.

The IDG reviewed and approved the agenda (WP1) proposed by Mr. Cardwell with a few minor additions (attachment 2 to this report).

The IDG reviewed 9 working papers and 3 flimsies (the list of WPs is provided as attachment 3 to this report).

2 Input from other groups.

Because ATNP/3 had occurred since the last IDG and WG2 meetings, there were no outstanding actions. The IDG meeting had been called to enable a joint meeting with AMCP VDL Mode 3 representatives, to address PDRs against Ed. 2 and Ed. 3 of the ICS SARPs, to progress the ICS Guidance Material, and to consider ICS validation material. High priority issues arose just before the IDG meeting that needed to be considered; this limited the time available to address all the items on the agenda to the depth required.

3 Frame Mode SNDCF Interface to VDL Mode 3.

3.1 Background

The AMCP draft Technical Manual for VDL Mode 3 includes a specification of an LREF compression algorithm similar to but not identical to the LREF compression algorithm specified in ICAO Doc 9705. The VDL3 specification also requires that all data passed to the VDL Mode 3 network is formatted as CLNP packets.

This approach raised concerns with ATNP/WG2 because:

1. There was potential duplication of both functionality and specification between the two SARPs.
2. Deflate compression was not allowed for.
3. WG2 recognised the need for support of Frame Mode air/ground communications services, but also noted that other air/ground networks may also require a similar service and that a common specification should be developed.
4. WG2 has prepared draft SARPs for a Frame Mode SNDCF which has been offered to the AMCP for use with VDL Mode 3, but which has yet to be accepted by the AMCP.

A joint meeting between ATNP WG2 and AMCP representatives was therefore held to resolve these concerns.

3.2 Summary of Joint Meeting

The current status of the Frame Mode VDL3 specification was presented by Ted Signore (FAA/Mitre) (WP8). It is understood that there is a strong motivation to position the interface to

the VDL3 Frame Mode Service as a CLNP interface. This is for implementation reasons and in particular to emphasise a simple implementation strategy for GA aircraft. This is to allow the entire VDL3 specification to be implemented in a software radio (on board an aircraft) with avionics provided by a simple End System using that radio.

After discussion, it was agreed that the goal should be to develop a common Frame Mode SNDCF for all such mobile subnetworks. For the short term, WG2 agreed to develop a variation of the LREF compression algorithm that would be suitable for operation over a Frame Mode service. The equivalent specification in the current VDL3 Technical Specification would then be replaced by a reference to this initial specification. A specific intention is for this version of the LREF specification to be a first step towards developing the common Frame Mode SNDCF.

3.3   Analysis

✈   ICAO Doc 9705 is not an implementation specification and does not specify the distribution of functionality in an aircraft. This is the responsibility of "Form and Fit" specifications such as ARINC 758 (the CMU) and ARINC 750 (the VHF Digital Radio). Currently, these specifications place most of the VDL Mode 2 functionality in the CMU with the VDR only concerned with the MAC layer functionality. However, an alternative specification that (e.g.) placed the data compression algorithms and VDL Mode 3 functionality in the VDR is not incompatible with ICAO Doc 9705.

✈   ICAO Doc 9705 also has a facility for the "Optional non-use of IDRP". This is really only suitable for aircraft that only support a single type of air/ground subnetwork, but GA aircraft will probably be in this category. When this facility is used, the airborne router becomes trivial and to all intents and purposes the airborne implementation is that of an End System. The current specification is thus compatible with the VDL3 Frame Mode objective of being able to support simple airborne systems.

✈   The current VDL3 Frame Mode Specification defines the subnetwork interface in terms of the transfer of CLNP packets. There is no such thing as a CLNP subnetwork – CLNP being the specification of an internetwork protocol. There are two possible architectural interpretations for the VDL3 approach.

1.   VDL3 is "seen" by the ATN subnetwork as a virtual subnetwork. That is CLNP packets are encapsulated within a VDL3 CLNP packet for transit through the VDL3 subnetwork. Such CLNP packets may be compressed by both LREF and Deflate before being encapsulated and passed to the VDL3 subnetwork.

2.   The VDL3 service is identical to the SN-UNITDATA service specified by ISO 8473 and effectively, the functionality of an SNDCF is included within the VDL3 specification.

As there is no apparent benefit from VDL3 being modelled as a virtual subnetwork, the latter model is thus assumed.

✈   The ATN ICS SARPs require that Join and Leave Events are provided by the mobile subnetwork, and are necessary to establish a set of routes to and from the aircraft and later to remove routes that are no longer available, in a timely manner. Even in the simplest case of an airborne system implementing the optional non-use of IDRP, a reaction to a Join Event is necessary to downlink the ISH PDU that identifies the aircraft and its use of the procedures for optional

non-use of IDRP. It is always necessary to provide such events to the Air/Ground Router.

A separate logical interface to the VDL3 subnetwork must therefore be specified and implemented to convey these events and must be separate from the CLNP interface.

✈ In order that the goal of a generic frame model SNDCF is realised a mechanism is required to enable this to be introduced in a backwards compatible manner. As with all SNDCFs, there will be no restriction on whether the SNDCF is implemented in (e.g.) a CMU or a VDR.

✈ The current draft generic Frame Mode SNDCF prepared by WG2 prefixes every packet by a short header identifying a logical channel, data priority and data length. Several packets with the same transmission priority and the same or different logical channel numbers can be concatenated together into the same transmission frame.

The purpose of the logical channels is to identify different data flows to which different semantics may be applied (e.g. one channel could be assigned to Deflate compressed data and another to uncompressed data). The scheme also allows for data types other than CLNP packets, compressed or uncompressed.

Channel zero is always assigned to a control protocol that is used to manage channel assignment, handoff and other data link management purposes. This control protocol includes an aircraft initiated exchange of information when the data link is established. The purpose of this is

1. to allow the negotiation of compression algorithms
2. to allow a Deflate dictionary to be chosen
3. to permit new compression algorithms and Deflate Dictionaries to be introduced in a backwards compatible manner.
4. To support handoff and retention of compression state information.

✈ The current draft generic Frame Mode SNDCF also supports the LREF Compression algorithm and broadcast operations (using pre-assigned logical channels).

✈ In VDL3 Frame Mode, the service is Ground Initiated. The Air/Ground Router responds to a Join Event which follows an XID exchange. Information exchange by the XID exchange determines the payload types (protocol stacks).

In the current specification, following the receipt of a Join Event, the Air/Ground Router uplinks an ISH PDU to the aircraft, which responds with its own ISH PDU. Both of these are sent as uncompressed CLNP packet types. If applicable an IDRP exchange may then take place.

CLNP data transfer may then take place with CLNP packets compressed using the LREF compression algorithm.

3.4 Proposed Approach

In order to resolve the differences between the two specifications, it is proposed to:

1. Provide an updated specification of the LREF compression algorithm suitable for use over a Frame Mode data link and which includes support for broadcast operations. This specification will be included in ICAO Doc 9705 and referenced from the VDL3 Technical Manual. It will support the CLNP interface to VDL3.

2. The updated LREF specification will mandate support of only a minimal level of functionality i.e. the default use of LREF compression without negotiation, and will follow the current approach to VDL3 Frame Mode.
3. A new VDL3 Payload Type will be defined for the generic Frame Mode SNDCF. Support of this SNDCF by an aircraft is signalled in the VDL3 XID exchange that precedes data link communications. When an Air/Ground Router receives a Join event that identifies an aircraft that supports this SNDCF it will respond using the procedures specified for this SNDCF.
4. Join and Leave event support will be included in the updated LREF specification.

> **Action IDG4-1:   ATNP to re-work the LREF compression SARPs to enable use of LREF over a Frame Mode Service and provide a CLNP interface to VDL3.**

> **Action IDG4-2: AMCP to replace LREF compression in VDL3 SARPs with reference to new ATNP LREF SARPs and add new Payload Identifier for 'Generic Frame Mode SNDCF'.**

3.5   Issues

1. It is not clear how handoff of compression state is accomplished in the VDL3 specification and this will need to be investigated for the minimal level of functionality.
2. Further analysis of the IDRP Handoff mechanism is also required as it appears that the approach in the VDL3 specification may need the semantics of the Join event to be extended in order to ensure correct update of the CLNP forwarding table in an Air/Ground Router.
3. The timescale for developing the goal SNDCF is to be agreed.

3.6   Use of Deflate

In discussion with AMCP representatives it was clear that further information about the performance of the Deflate algorithm will be beneficial. AMCP require the following data: packet/message type (e.g. ADS pos report, ADS met report, CPDLC message, FIS message), packet size in bits prior to and post Deflate compression. The chairman agreed to determine if this data could be deduced from Eurocontrol's previous work and if so, make it available to AMCP.

> **Action IDG4-3: Brian Cardwell to determine if more detailed Deflate performance data is available and, if so, to make it available to AMCP.**

4   Review of current SV5 PDRs

K-P Graf presented WP4, 'SME 5 Status Report'. Mr. Graf reminded the IDG that some editorial corrections had been made to SV5 at ATNP/3 (published in Addendum Corrigendum 1 to the Appendix of ATNP/3 WP7). These editorial changes had not been incorporated into SV5 at this stage but would be before ATNP WGW/4; the current working version of SV5 was the version agreed at WG2-20, Dec 99. One change to the changes agreed at ATNP/3 was made: Page V-193 Note 2 will now read 'The unsigned integer is encoded most significant byte first, in compliance with ISO/IEC 8473-1'. Each of the PDRs in WP4 was discussed and the conclusions are recorded below.

4.1   PDR M0040001 'Incorrect/Duplicated ATSC Class Security Tag Requirement'

Proposed amendment agreed and the PDR will go forward to the CCB as a change for the proposed Ed 3.

4.2   PDR M0040002 'Extended TP4 Checksum'.

This PDR had been widely circulated and commented on before the IDG meeting. The input to this subject was: WP7 'The addition of an Extended Transport Checksum to the ATN Internet SARPs', various e-mails from the ATNP distribution lists and IDG4 FLs #2 & #3. It was agreed that the title of the PDR was solution oriented rather than a description of the PDR.   A working title of 'Possible mis-delivery of CLNP packets' was used instead.

The IDG agreed that the validation of SV1 1.3.28 that was submitted with Doc 9705 Ed 1 was no longer valid because, while the validation work had validated the error-detection power of the checksum, it had missed the fact that the complete network address is not included in the transport data units. As a result it was agreed that there was a possibility greater than $1*10^{-8}$ that CLNP packets could be mis-delivered by the ATN ICS, thus there is a defect in the SARPs. The IDG would respond to the PDR on the `ccb_chair` mailing list indicating that the IDG believe the PDR should be accepted for resolution.

Further, it was agreed that there were three possible methods of resolution:
- Further validation material could be submitted which indicates that the risk of mis-delivery is less that $1*10^{-8}$. This was not thought to be possible, but it is a possible resolution to the PDR.
- Additional measures could be taken in the ATN applications to ensure that mis-delivered messages are not operated upon.
- Additional measures could be taken in the ATN ICS to discard mis-directed CLNP packets and initiate standard packet recovery mechanisms.

It was beyond the scope of the IDG to determine which method of resolution should be selected. However, because the time available for resolution is tight (an international baseline standard for implementation will be frozen at the end of May), the IDG developed a correction to the ICS SARPs to put forward as a possible resolution.

The agreed correction to the SARPs was basically that put forward as the proposed resolution in the original PDR – first, the CLNP source and destination addresses would be included in the checksum; secondly, an extended checksum (32 bits) would be provided for additional assurance against corruption. Further, the use of the 32 bit checksum would be negotiated at TP4 connection thus its use, like the 16 bit checksum, is optional.

In developing this proposed amendment to the ICS SARPs some variations were considered. First the proposal to include only the destination address was considered. This was considered on the basis that it is only necessary to determine whether the CLNP packet has arrived at the correct destination. It was concluded that this was insufficient because mis-delivery to an incorrect TP4 'socket' was also mis-delivery and needed to be prevented. Using only the destination address and the DST-REF was insufficient because DST_REF was not required to be unique in one transport entity, it is only required to be unique over particular source/destination pairs. Whilst

some implementations may have unique DST_REFs, it cannot be assumed that all implementations will do so thus the amendment that solves this problems for all ISO/IEC 8073 compliant TP4 protocols was adopted.

The changes to the SARPs that were proposed in the PDR, with some minor changes, would be the fix proposed by the IDG should the CCB decide that the PDR should be fixed in SV5 rather than the application SARPs.

> **Action IDG4-4: IDG input to ccb_chair list indicating that the PDR does describe a defect in the SARPs and should be accepted. Further, the proposed SARPs changes agreed by the IDG would be put forward as the changes that will be made to SV5 if the PDR is to be fixed with ICS changes.**

Note: All of the following P3DRs are against the proposed Edition 3 of SV5 and thus are under the control of the WG2 SDM and do not need to be approved by the ATNP CCB. All the PDRs had been submitted to the WG2-SDM e-mail list.

4.3   P3DR M0020010   Processing of received Deflate Maintenance Parameter

The proposed change circulated with this PDR was agreed and will be edited into the next version of SV5.

> **Action IDG4-5: SARPs Editor to update proposed SV5 Ed 3 with the agreed text.**

4.4   P3DR M0020011   Issues on the concept of Subnetwork Connection Group

This PDR covered two distinct potential defects. It was agreed that each potential defect will be re-submitted as separate PDRs for progression on the WG2-SDM list.

4.5   P3DR M0020012   Bit 0 of the ISH Data Link Capability Parameter

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4.6   P3DR M0020013   TP4 retrans timer on the first RTT sample

This PDR was agreed. Klaus-Peter Graf will propose the exact amendment text.

> **Action IDG4-6: Propose SARPs amendment text for P3DR M0020013**

4.7   P3DR M0020014   Valid/Invalid round trip time sample

This PDR was agreed. Stephane Tamalet will propose change text.

> **Action IDG4-7: – Propose SARPs amendments for P3DR M0020014**

4.8   P3DR M0020015   Error condition for deflate decompressor window

This PDR requires wider coordination. The IDG Chairman will promote coordination on this topic on the WG2-SDM list.

> **Action IDG4-8: – Promote discussion of PDR M0020015 on WG2-SDM list.**

4.9   P3DR M0020016   Use of received security info by A/G BIS

This PDR is a local processing issue i.e. how a router should respond to inputs to its tables. The proposed fix could impact on Ed1/2 implemetations. The agreed way forward was to generalise this area of the SARPs and to produce Guidance Material. Klaus-Peter Graf offered to try and complete this action.

> **Action IDG4-9: – P3DR M0020015 - Generalise SARPs and produce guidance material.**

4.10   P3DR M0020017   Interoperability Problem due to the suppression of ACA

The second proposed solution was adopted and will be edited into the next version of SV5 Ed 3.

4.11   P3DR M0020018   Interop. with a peer BIS that does not support type 2 auth.

PDR accepted but too complicated to develop a fix within the meeting. Tom McParland will develop draft guidance material on local policy areas and then, if necessary, new or modified shall statements will be incorporated.

4.12   P3DR M0020019   BIS behaviour in case of certificate path validation failure

Whilst it is sensible to re-attempt IDRP if it fails, it seems less sensible to do so if security authentication fails. It was agreed to change the note in 5.3.5.2.16.3.4 from '… is subnetwork dependent but …' to '… is a local matter.' It was agreed that Guidance Material will be required on this issue.

4.13   P3DR M0020020   A/G BIS access to a delivery service

PDR rejected. Discussion concluded that although it is feasible to retrieve an a/c certificate as soon as the 24-bit address is received, it is probably better to wait until the NET is received. No SARPs changes were required, the Security Guidance Material would include text on this subject.

4.14   P3DR M0020021   Encoding of Random Variable Parameter

> **Action IDG4-10: Tom McParland will check this offline and either indicate agreement with the proposed text change or provide replacement text.**

4.15   P3DR M0020022   Length of Certificate Path parameter

PDR agreed and fix discussed. The parameter would be encoded as a two-octet field, the SARPs will be modified accordingly.

> **Action IDG4-11: The exact length of the certificate would be determined during validation and supplied to Mr Graf in order that Fig 5.8-8 can be updated if required.**

4.16   WP6, 'A proposal for the total suppression of the re-advertisement of IDRP routes over the A/G links'.

This paper was prepared and presented by Stephane Tamalet. This paper explained that Ed 3 enhancement ICS3-08 has been implemented in the ProATN Router and that it had failed to suppress completely re-advertisement of routes. The presented problem description and proposed

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fix were agreed but the exact text needs very careful consideration. This problem would be submitted to the WG2-SDM list and progressed in that forum. Klaus-Peter Graf and Tony Whyman in particular would consider the proposed fix and comment via the e-mail list.

5   ARINC Issue – Discrepancy between SARPs and GM regarding mandatory encapsulation of IDRP data

ARINC presented WP9, 'Encapsulated Inter-Domain BISPDU', and explained their planned architecture for VDL2 sub-network deployment. The proposed architecture required IDRP support of encapsulation between RDs. The relevant sections of standards/SARPs/GM are:

- ISO/IEC 10747 – section 8.4 and PICS proforma A.4.8
- SARPs – 5.3.3.1.1 and 5.8.3.5.9
- GM – CAMAL 3.4.4.1.4

It was agreed that ARINC's proposed architecture was valid and that it is okay to encapsulate ATN CLNP within COTS CLNP to pass through routers that are not ATN compliant.

Action IDG4-13: ARINC will supply proposed Guidance Material to clarify this issue.

6   Guidance Material for ICS Enhancements and PDRs.

It was noted at ATNP/3 that the Ed 2 CAMAL will map to Ed 3 of Doc 9705. An update to the CAMAL is required to cover the enhancements to the ATN ICS in Ed 3 and to address the some of the ICS PDRs for Ed 1 and Ed 2. In particular Guidance Material for the ICS security mechanism is required and this should address the issues raised in the PDRs related to security. Mr Graf kindly offered to act as GM Editor for the next draft of the GM. The Chairman asked contributors to submit the proposed text in good time for WG2-21.

Action IDG4-14: The production of GM for ICS Enhancements was allocated thus:

Enhancement	GM Required ?	Who?
ICS3-01	Yes	Tony Whyman
ICS3-02	Yes	Brian Cardwell
ICS3-03	Yes	Stephane Tamalet
ICS3-04	Not implemented	--------------------
ICS3-05	No	--------------------
ICS3-06	Yes	Tom McParland
ICS3-07	Yes	Complete
ICS3-08	Yes	Tony Whyman – if time allows
ICS3-09	Yes (inc interoperability)	Tony Whyman – if time allows
ICS3-10	No	--------------------
ICS3-11	Probably	Stephane Tamalet
ICS3-12	No SARPs yet	Tony Whyman for initial changes
ICS3-13	Yes	Stephane Tamalet
ICS3-14	Yes	Stephane Tamalet
ICS3-15	PDR99100005	--------------------
ICS3-16	No (Post ATNP/3)	--------------------

Action IDG4-15: After the meeting the Chairman will review the ICS PDRs and determine where further GM is required. Tasks will be raised via the WG2 e-mail list and contributors sought.

7   Validation of ICS Enhancements and PDRs.

Because of the high priority issues that arose just prior to the IDG meeting the time allotted to validation activities was re-assigned. Validation will be discussed fully at WG2-21 and WG2 Validation activities should be reported to the Validation Coordinator, Christine Ricci, as soon as possible.

8   Action Items

See Attachment 3

9   DONM & AOB

There was no AOB. It was agreed that there would not be another IDG meeting before WG2-21 in July 2000. Next meeting WG2-21, Limerick, Ireland, 11-14 July 2000.

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=> Frame Mode SNDCF Item Only

* => 'Possible Mis-direction' Item Only

+ => Tunnelling of CLNP Item Only

IDG Fourth Meeting
Washington DC, USA
17-20 April 2000

1   Approval of the agenda

2   Collection of working papers

3   Review of the IDG3 report, WG2-20 Report and ANTP3 Report.

4   Frame Mode SNDCF

4.1   Status Report
4.2   Joint AMCP meeting planning
4.3   Joint AMCP meeting
4.4   Future Work

5   Review of current SV5 PDRs
    5.1   PDR M0040001   Incorrect/Duplicated ATSC Class Security Tag
    5.2   PDR M0040002   Potential Mis-direction of CLNP packets
    5.3   P3DR M0020010   Processing of received Deflate Maintenance Parameter
    5.4   P3DR M0020011   Issues on the concept of Subnetwork Connection Group
    5.5   P3DR M0020012   Bit 0 of the ISH Data Link Capability Parameter
    5.6   P3DR M0020013   TP4 retrans timer on the first RTT sample
    5.7   P3DR M0020014   Valid/Invalid round trip time sample
    5.8   P3DR M0020015   Error condition for deflate decompressor window
    5.9   P3DR M0020016   Use of received security info by A/G BIS
    5.10   P3DR M0020017   Interoperability Problem due to the suppression of ACA
    5.11   P3DR M0020018   Interop. with a peer BIS that does not support type 2 auth.
    5.12   P3DR M0020019   BIS behaviour in case of certificate path validation failure
    5.13   P3DR M0020020   A/G BIS access to a delivery service
    5.14   P3DR M0020021   Encoding of Random Variable Parameter
    5.15   P3DR M0020022   Length of Certificate Path parameter

6   ARINC Issue – Discrepancy between SARPs and GM regarding mandatory encapsulation of IDRP data.

7   Guidance Material for ICS Enhancements and PDRs

8   Validation of ICS Enhancements and PDRs

9   Action Items

10   Next meeting(s)

11   Any other business

ATNP WG2 IDG 3rd Meeting
03-05 November 1999
Gatwick, UK

LIST OF WORKING PAPERS

WP No.	Agenda Item	Presenter	WP Title
1	1	B. Cardwell	Proposed Agenda
2	4	AMCP	Draft Response from AMCP WG-D in response to the Frame Mode communiqué from ATNP WG2
3	4	AMCP	Extract of VDL3 SARPs (IDG1 FL#2)
4	5	K-P. Graf	SME 5 Status Report
5	4	ATNP/AMCP	Communiqués on VDL Mode 3 Frame Mode: WG2-18 FL#5;WG2-19 FL#4;WG2-19 FL#6.
6		S. Tamalet	A proposal for the total suppression of the re-advertisement of IDRP routes over the A/G links
7	5.1	T. Whyman	The addition of an Extended Transport Checksum to the ATN Internet SARPs
8	4	T.L. Signore	VDL Mode 3 Frame Mode
9	6	ARINC	Encapsulated Inter-Domain BISPDU
Flimsy No.			
1	4	T. Whyman	Co-ordination of VDL3 and ATN ICS SARPs
2	5.1	P. Hennig	E-mail – 18/03/2000 'fix both COTP & CLTP'
3	5.1	R. Mead	E-Mail – 18/03/2000 'that misdirected message requirement'

Action Items

		Action	Reference	Who	When
IDG4-1		ATNP to re-work the LREF compression SARPs to enable use of LREF over a Frame Mode Service and provide a CLNP interface to VDL3.	Para 3.4	T. Whyman	end of WG2-21
IDG4-2		AMCP to replace LREF compression in VDL3 SARPs with reference to new ATNP LREF SARPs and add new payload identifier for 'Generic Frame Mode SNDCF'.	Para 3.4	AMCP WG-D	asap
IDG4-3		Brian Cardwell to determine if more detailed Deflate performance data is available and, if so, to make it available to AMCP.		B. Cardwell	WG2-21
IDG4-4		IDG input to ccb_chair list indicating that the PDR does describe a defect in the SARPs and should be accepted. Further, the proposed SARPs changes agreed by the IDG would be put forward as the changes that will be made to SV5 if the PDR is to be fixed with ICS changes.	Para 4.2	B. Cardwell	ASAP
IDG4-5		Update proposed SV5 Ed 3 with the agreed P3DR M0020010 amendment text	Para 4.3	K-P Graf	WG2-21
IDG4-6		Propose SARPs amendment text for P3DR M0020013	Para 4.6	K-P Graf	WG2-21
IDG4-7		Propose SARPs amendments for P3DR M0020014	Para 4.8	S. Tamalet	WG2-21
IDG4-8		Promote discussion of PDR M0020015 on WG2-SDM list.	Para 4.8	B. Cardwell	WG2-21
IDG4-9		P3DR M0020015 - Generalise SARPs and produce guidance material.	Para 4.9	K-P Graf	WG2-21
IDG4-10		Check encoding of RVP and either indicate agreement with the proposed text change in P3DR M0020021 or provide replacement text	Para 4.14	T. McParland	WG2-21
IDG4-11		The exact length of the certificate would be determined during validation and supplied to Mr Graf in order that Fig 5.8-8 can be updated if required.	Para 4.15	T. McParland	WG2-21
IDG4-12		Submit WP6 as a P3DR on the Wg2-SDM list and progress amendment text	Para 4.16		WG2-21
IDG4-13		Supply proposed Guidance Material to clarify issue of tunnelling ATN CLNP through COTS routers.	Para 5	ARINC	WG2-21
IDG4-14		Develop GM and submit to GM Editor	Para 6	See table in para 6	WG2-21
IDG4-15		After the meeting the Chairman will review the PDRs and determine where further GM is required. Tasks will be raised via the WG2 e-mail list and contributors sought.	Para 6	B. Cardwell	WG2-21