

**Aeronautical Telecommunication Network Panel
Working Group 2**

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Priority Definitions within Annex 10 and the Relationship to the ATN SARPs

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This working paper was prepared in response WG2 action item 4-7 from the Joint ATNP WG2/WG3 meeting held 19 May 1995. The action item was to review the changes to communication priorities that are included in the proposed Amendment 70 to ICAO Annex 10 and to relate these to the draft ATN SARPs. This working paper presents the results of a review of Amendment 70 to ICAO Annex 10, as related to Chapter 4, as well as the existing Annex 10 Chapter 5, ITU Radio Regulations - Part 51, and the ATN Manual second edition definitions of message categories and communication priorities. Only the use of priorities associated with the physical through network layers are addressed by this working paper.

1.0 Background:

The categories associated with the priority levels in the ATN Manual, second edition, were modified at SICASP/5 in an attempt to better align with what we believed would eventually be included in Amendment 70 to Annex 10 for the definition of message priorities. I have looked over the proposed revisions to Annex 10 (Amendment 70) and can report that the proposed changes are related to the Aeronautical Fixed Service standards in Chapter 4 of Annex 10. The definitions in Amendment 70 do not track one-for-one with what is in the ATN Manual or what is defined for the Aeronautical Mobile Service in Chapter 5 of Annex 10. Currently Annex 10, when taken along with ITU Radio Regulations Part 51, include three relevant sets of definitions related to message priority. First is for r.f. spectrum utilization for Aeronautical Mobile Service (ITU Part 51 - referenced in Annex 10, Chapter 5), the second is the material included directly in Annex 10, Chapter 5 for the Aeronautical Mobile Services and the third is for the Aeronautical Fixed Services (ICAO Annex 10, Chapter 4). Note that Annex 10 is already not totally self-consistent where the definitions of message categories and priorities are concerned. This is clearly an area that needs to be reviewed by ATNP since the ATN will encompass both the aeronautical fixed and aeronautical mobile services

2.0 Discussion.

The following three tables describe the current definition of message categories and associated priorities from the ICAO Annex 10 and the ITU Radio Regulations.

Table 1 - Definitions from ITU Article 51 from 1990 edition of the ‘Radio Regulations’
(Note that Category 1 is the highest priority)

1. Distress calls, distress messages and distress traffic
2. Communications preceded by the urgency signal
3. Communications relating to radio direction finding
4. Flight safety messages
5. Meteorological messages
6. Flight regularity messages
7. Messages relating to the application of the United Nations Charter
8. Government messages for which priority has been expressly requested
9. Service communications relating to the working of the telecommunication service or to communications previously exchanged
10. Other aeronautical communications

Note the term *communications* is defined in Part 51 to include: Radiotelegrams, radiotelephone and radiotelex calls.

Table 2 - Definitions from ICAO Annex 10 (Chapter 5 -Aeronautical Mobile Service)

From Para. 5.1.8, ‘Categories of Messages’. Note that no categories, or priorities, are defined lower than ‘flight regularity messages’ for the Aeronautical Mobile Service.

(Note category ‘a’ is the highest priority)

- a) Distress calls, distress messages and distress traffic
- b) Urgency messages, including messages preceded by the medical transports signal
- c) Communications relating to direction finding
- d) Flight safety messages
- e) Meteorological messages
- f) Flight regularity messages

Note that para. 5.1.8 includes a note that indicates NOTAMS may qualify for any of the categories or priorities c) to f) inclusive depending on the contents of the NOTAM.

Note that para. 5.1 references the ITU Radio Regulations.

Table 3 - Definitions from ICAO Annex 10 (Chapter 4 - Aeronautical Fixed Services)

From Para. 4.4.1 ‘Categories of Messages’ (over AFTN). The current Annex 10, para. 4.4.1 with the proposed changes from Amendment 70 are shown below as ~~strikeout~~ and underline for text that Amendment 70 proposes to delete (~~strikeout~~) or proposes to add (underline).

- a) ~~distress calls and distress traffic~~
- b) urgency messages
- c) flight safety messages
- d) meteorological messages
- e) Flight regularity messages
- f) ~~aeronautical administrative messages~~
- g) ~~NOTAM – Class I distribution~~
- h) ~~reservation message~~
- i) ~~general aircraft operating agency messages~~
- j) ~~service messages~~
- f) aeronautical information services (AIS) messages
- g) aeronautical administrative messages
- h) service messages

Unlike the ITU Radio Regulation or the ICAO Annex 10 Chapter 5 standards for Aeronautical Mobile Service, the above message categories are mapped into just 3 transmission priority levels (as per the current Annex 10, Chapter 4 and remains unchanged with Amendment 70), although the AFTN header will use 5 different priority indicators to denote application priority. Transmission priority 1 (highest priority) includes message category a) only. Transmission priority 2 includes message categories b) and c). Transmission priority 3 includes message categories d), e), f) and g). Message category h) ‘service messages’ “shall take the same priority indicator as the category of the message being requested except where higher priority is warranted for flight safety.”

Note that even the lowest category of message, for which a specific transmission priority level is specified (i.e., Aeronautical Administrative messages), appears to include messages associated with safety and regularity of flight.

The following table provides a summary of the message categories and associated priorities as defined by ITU, ICAO Annex 10 (Chapter 4, with Amendment 70 and Chapter 5), and the ATN Manual Second Edition. Table 1 also shows a recommended mapping between the message categories defined by these documents.

Table 4 - Mapping of Message Categories and Associated Priority Levels

ITU Radio Regulations, Part 51 [Priority]	ICAO Annex 10, Chapter 5, Aeronautical Mobile Service [Priority]	ICAO Annex 10, Chapter 4, Aeronautical Fixed Service [Priority]	ICAO ATN Manual, Second Edition [CLNP Priority]
[1] Distress calls, distress messages and distress traffic	[a] Distress calls, distress messages and distress traffic	[1] Distress calls	[14] Network/Systems Management
as above	as above	as above	[13] Distress Communications
[2] Communications proceeded by the urgency signal	[b] Urgency messages, including messages proceeded by the medical transports signal	[2] Urgency messages	[12] Urgent Communications
[3] Communications relating to radio direction finding	[c] Communications relating to direction finding	Not Applicable	[11] Communications relating to radio direction finding
[4] Flight safety messages	[d] Flight safety messages	[2] Flight safety messages	[10] Flight safety messages
[5] Meteorological messages	[e] Meteorological messages	[3] Meteorological messages	[9] Meteorological communications
[6] Flight regularity messages	[f] Flight regularity messages	[3] Flight regularity messages	[8] Flight regularity communications
as above	as above	[3] Aeronautical information services	[7] Aeronautical information service messages
as above	as above	[3] Aeronautical administrative messages	[6] Network/Systems administration
as above	as above	[*] Service message *priority as appropriate	[5] Aeronautical administrative messages
as above	as above	Not Applicable	[4] Unassigned
[7] Messages relating to the application of the United Nations Charter	Not Applicable	Not Applicable	[3] Urgent priority administrative and U.N. Charter communications
[8] Government messages for which priority has been expressly requested	Not Applicable	Not Applicable	[2] High priority administrative and state/government communications
[9] Service communications relating to the working of the telecommunication service or to communications previously exchanged	Not Applicable	Not Applicable	Not Applicable
[10] Other aeronautical communications	Not Applicable	Not Applicable	[1] Normal priority administrative
as above	Not Applicable	Not Applicable	[0] Low priority administrative

3. Conclusions:

3.1 ICAO Annex 10 only defines message categories for Aeronautical Fixed or Mobile Services that support safety and regularity of flight. ITU Radio Regulations, Part 51, define lower priorities of aeronautical communications in addition to those supporting safety and regularity of flight.

3.2 ICAO has not defined the message categories and associated priorities such that they map one-for-one with the ITU message categories. For example, in the case of the aeronautical fixed services multiple categories of messages are mapped into the single overall ITU category of “flight regularity messages.”

3.3 Since the ATN will support communications traffic that falls into both mobile and fixed services and a single message may traverse both mobile and fixed service subnetworks, it is necessary for the ATNP to define a rational mapping between the ATN message categories (with associated communications priorities) and the message categories and communications priorities defined for aeronautical mobile and for aeronautical fixed services. Mapping should also be provided to the ITU Radio Regulations, Part 51 categories, as this is a controlling standard for the use of radio spectrum (i.e., the physical layer of the ATN mobile subnetworks).

3.4 The ATN Manual, second edition, Table A5-1 indicates that message categories with CLNP priority level 8 or greater correspond to communications associated with safety and regularity of flight. Likewise Table 10-1 indicates that CLNP priority levels less than 8 will not be mapped to a Mode S subnetwork priority level, because these categories were not considered to be associated with safety or regularity of flight communications.

3.5 After a review of the Annex 10, ITU Radio Regulations Part 51 and the ATN Manual definitions of message categories and associated priorities, it appears that ATN CLNP priority levels of 5 or greater should be associated with safety and regularity of flight. Specifically CLNP priority levels 5, 6, 7 and 8 are all associated with the single ITU category for regularity of flight communications.

4.0 Proposal

It is proposed that ATNP WG2 take the following actions:

4.1 Review the above information and consider the use of the message categories and associated priorities, as currently defined in the draft ATN SARPs, with mapping to the ITU categories and the Annex 10, Chapter 4 and Chapter 5 message categories and priorities. Agree that the ATN need not provide the same number of priorities as used today on AFTN nor as defined by ITU Radio Regulations. Agree that the mapping, as proposed in Table 4, with the modifications proposed in Table 5 below, would be provided as at least guidance material on how to map the

message categories between ATN and the aeronautical fixed and aeronautical mobile services as defined in Annex 10.

4.2 The ATN SARPs should be modified to reflect that message categories for CLNP priorities 5 or greater are associated with communications supporting safety and regularity of flight.

4.3 Since it is unlikely that radio direction finding will ever have any relationship to ATN communications it is proposed that this ITU level be shown as 'not applicable' to the ATN CLNP use of priorities and the ATN SARPs define CLNP priority 11 as being used for 'high priority safety communications' and define CLNP priority 10 as being for 'normal priority safety communications' as shown in Table 5 below, or alternatively define CLNP priority 11 as 'not assigned' and leave CLNP priority 10 as safety communications.

4.4 Table 10-1 from the ATN Manual (draft ATN guidance material) should be revised to show mapping of CLNP priorities 5, 6, 7, 8 and 9 to the low priority Mode S subnetwork connection. It does not appear that these proposed changes would have any impact on the AMSS or VDL (Mode 1 or Mode 2) SARPs but as indicated below this should be coordinated with the AMC Panel.

4.5 A flimsy should be prepared and forwarded to the SICAS Panel and the AMC Panel informing them of the decisions related to use of priority on the ATN and requesting their inputs related to the mapping by the SNDCF to subnetwork priority for the mobile subnetworks. Since the AMCP is now considering the need for the VDL Mode 3 (TDMA) subnetwork to support the use of priority, AMCP should be invited to provide inputs on this subject. A flimsy should be prepared and forwarded to ATNP WG3 informing them of the decisions related to use of priority on the ATN. This needs to be made available to subgroups 2 and 3 of WG3 at their meeting being held in early August 1995 in Australia.

Table 5 - Proposed Mapping of Message Categories and Associated Priority Levels

ITU Radio Regulations, Part 51 [Priority]	ICAO Annex 10, Chapter 5, Aeronautical Mobile Service [Priority]	ICAO Annex 10, Chapter 4, Aeronautical Fixed Service [Priority]	ATN
[1] Distress calls, distress messages and distress traffic	[a] Distress calls, distress messages and distress traffic	[1] Distress calls	[14] N
as above	as above	as above	[13] L
[2] Communications preceded by the urgency signal	[b] Urgency messages, including messages preceded by the medical transports signal	[2] Urgency messages	[12] U
[3] Communications relating to radio direction finding	[c] Communications relating to direction finding	Not Applicable	Not A
[4] Flight safety messages	[d] Flight safety messages	[2] Flight safety messages	[11] F
as above	as above	as above	[10] N
[5] Meteorological messages	[e] Meteorological messages	[3] Meteorological messages	[9] M
[6] Flight regularity messages	[f] Flight regularity messages	[3] Flight regularity messages	[8] Fli
as above	as above	[3] Aeronautical information services	[7] Ae
as above	as above	[3] Aeronautical administrative messages	[6] Ne
as above	as above	[*] Service message *priority as appropriate	[5] Ae
as above	as above	Not Applicable	[4] Ur
[7] Messages relating to the application of the United Nations Charter	Not Applicable	Not Applicable	[3] U Charte
[8] Government messages for which priority has been expressly requested	Not Applicable	Not Applicable	[2] state/g
[9] Service communications relating to the working of the telecommunication service or to communications previously exchanged	Not Applicable	Not Applicable	Not A
[10] Other aeronautical communications	Not Applicable	Not Applicable	[1] Ne
as above	Not Applicable	Not Applicable	[0] Lo