



**MEMORANDUM CIRCULAR NO.:** 014-17

**TO :** ALL CONCERNED

**FROM :** THE DIRECTOR GENERAL

**SUBJECT :** AMENDMENT TO PHILIPPINE CIVIL AVIATION REGULATIONS - AIR NAVIGATION SERVICES (CAR-ANS) PART 2 INCORPORATING AMENDMENT 90 TO ICAO ANNEX 10 VOLUME II

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**REFERENCE:**

1. Philippine Civil Aviation Regulations- Air Navigation Services Part 2, Communication Procedures Including Those with PANS Status
2. ICAO Annex 10 Volume II; Amendment 90
3. Regulations Amendment Procedures (RAP)
4. Board Resolution No. 2012-054 dated 28 September 2012

Pursuant to the powers vested in me under the Republic Act 9497, otherwise known as the Civil Aviation Authority Act of 2008 and in accordance with the Board Resolution No.: 2012-054 dated 28 September 2012, I hereby approve the incorporation of ICAO Annex 10 Volume II Amendment No. 90 to the Philippine Civil Aviation Regulations – Air Navigation Services (CAR-ANS) Part 2.

**ORIGINAL REGULATIONS:**

**CAR-ANS PART 2**

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**2.4. DEFINITIONS**

When the following terms are used in this publication, they have the meaning prescribed in this Sub – Part:

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**2.4.8 Data Link Communication**

***Controller-pilot data link communications (CPDLC).*** A means of communication between controller and pilot, using data link for ATC communications.

***Current data authority.*** The designated ground system through which a CPDLC dialogue between a pilot and a controller currently responsible for the flight is permitted to take place.

***Downstream data authority.*** A designated ground system, different from the current data authority, through which the pilot can contact an appropriate ATC unit for the purposes of receiving a downstream clearance.

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## **2.7 AERONAUTICAL FIXED SERVICE**

### **2.7.1 General**

2.7.1.1 The Manila Aeronautical Fixed Service comprises the following systems and applications that are used for ground-ground communications in the aeronautical telecommunication service:

- a) Air Traffic Service (ATS) direct speech circuits and networks;
- b) meteorological operational circuits, networks and broadcast systems;
- c) the aeronautical fixed telecommunications network (AFTN);
- d) the air traffic services (ATS) message handling services; and
- e) the inter-centre communications (ICC).

#### 2.7.1.2 Material permitted in AFS messages

2.7.1.2.1 The following characters are allowed in text messages:

Letters:

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Characters other than those listed above are not be used in messages unless absolutely necessary for understanding of the text. When used, they must be spelled out in full.

Example: The symbol “<” must be spelled out as less than.

2.7.1.2.2 The use of Roman numerals is not allowed. If the originator of a message wishes the addressee to be informed that roman figures are intended, the Arabic figure or figures must be written and preceded by the word ROMAN.

2.7.1.2.3 Messages using the ITA-2 code must not contain:

- 1) any uninterrupted sequence ZCZC
- 2) Any uninterrupted sequence of NNNN

2.7.1.2.4 Messages using IA-5 must not contain:

- 1) character 0/1 (SOH) other than the one in the heading as prescribed in 2.7.4.15.1.1 a);
- 2) character 0/2 (STX) other than the one in the origin line as prescribed in 2.7.4.15.2.2.7;
- 3) character 0/3 (ETX) other than the one in the ending as prescribed in 2.7.4.15.3.12.1;
- 4) any uninterrupted sequence of characters 5/10, 4/3, /10, 4/3 in this order (ZCZC);
- 5) any uninterrupted sequence of characters 2/11, 3/10, 2/11, 3/10 in this order (+:+:);
- 6) any uninterrupted sequence of four times character 4/14(NNNN); and
- 7) any uninterrupted sequence of four times character 2/12 (,,,,).

2.7.1.2.5 The text of messages must be drafted in plain language or in abbreviations and codes, as prescribed in 2.5.7. The originator must avoid the use of plain language when reduction in the length of the text by appropriate abbreviations and codes is practicable.

Words and phrases which are not essential, such as expressions of politeness, must not be used.

2.7.1.2.6 If the originator of a message wishes alignment functions [ $\llbracket$ ] to be transmitted at specific places in the text part of such message (see 2.7.4.5.3 and 2.7.4.15.3.6), the sequence [ $\llbracket$ ] must be written on each of those places.

## 2.7.2 ATS Direct Speech Circuits

*Note.*— Provisions relating to ATS direct speech communications are contained in Chapter 6 of Annex 11.

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## 2.7.4 Aeronautical Fixed Telecommunication Network (AFTN)

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2.7.4.1.1 Categories of messages. Subject to the provisions of 6.3, the following categories of message are handled by the aeronautical fixed telecommunication network:

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2.7.4.1.1.3 Flight safety messages (priority indicator FF) comprise:

- a) movement and control messages as defined in PANS-ATM (Doc 4444), Chapter 10;
- b) messages originated by an aircraft operating agency of immediate concern to aircraft in flight or preparing to depart;
- c) meteorological messages restricted to SIGMET information, special air-reports, AIRMET messages, volcanic ash and tropical cyclone advisory information and amended forecasts.

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2.7.4.1.4.2.2 When the provisions of 2.7.4.1.4.2.1, 1) are applied, the text of the service message must comprise the abbreviation SVC, the signal QTA, the procedure signal MSR followed by the transmission identification (see 2.7.4.2.1.1.3 and 2.7.4.15.1.1.4) of the misrouted message and the end-of-text signal (see 2.7.4.5.6 and 2.7.4.15.3.12).

*Note.*— The following example illustrates application of the above-mentioned procedure:

SVC QTA MSR ABC123

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### 2.7.4.1.5 Failure of communications

2.7.4.1.5.1 Should communication on any fixed service circuit fail, the station concerned must attempt to re-establish contact as soon as possible.

2.7.4.1.5.2 If contact cannot be re-established within a reasonable period on the normal fixed service circuit, an appropriate alternative circuit must be used. If possible, attempts must be made to establish communication on any authorized fixed service circuit available.

2.7.4.1.5.3 Where diverted traffic will not be accepted automatically or where a predetermined diversion routing has not been agreed, a temporary diversion routing must be established by the exchange of service messages. The text of such service messages must comprise:

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2.7.4.2.1.1.3 The transmission identification must all be sent over the circuit in the following sequence:

- a) SPACE [→];
- b) transmitting-terminal letter;
- c) receiving-terminal letter;
- d) channel-identification letter;
- e) channel-sequence number (3 digits).

...

2.7.4.3.1.2.3.1 Where messages are offered in page-copy form for transmission and contain more addressee indicators than can be accommodated on three lines of a page-copy, such message must be converted, before transmission, into two or more messages, each of which must conform with the provisions of 2.7.4.3.1.2.3. During such conversion, the addressee indicators must, in so far as practicable, be positioned in the sequence which will ensure that the minimum number of retransmissions will be required at subsequent communication centres.

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2.7.4.4.3 The priority alarm must be used only for distress messages.

*Note 1.— Use of the priority SS alarm will actuate a bell(attention) signal at the receiving teletypewriter station, other than at those fully automatic stations which may provide a similar alarm on receipt of priority indicator SS, thereby alerting supervisory personnel at relay centres and operators at tributary stations, so that immediate attention may be given to the message.*

2.7.4.4.4 The inclusion of optional data in the origin line is permitted provided a total of 69 characters is not exceeded and subject to agreement between the authorities concerned.

2.7.4.4.4.1 The presence of the optional data field should be indicated by one occurrence of the space character and terminated by the alignment function.

2.7.4.4.4.2 When additional addressing information in a message needs to be exchanged between source and destination addresses, it should be conveyed in the optional data field (ODF), using the following specific format:

- a) characters one and full stop (1.) to indicate the parameter code for the additional address function;
- b) three modifier characters, followed by an equal sign [=] and the assigned 8-character ICAO address; and
- c) the character hyphen (-) to terminate the additional address parameter field.

2.7.4.4.4.2.1 When a separate address for service messages or inquiries is different from the originator indicator, the modifier SVC should be used.

2.7.4.4.5 The origin line must be concluded by an alignment function [≡].

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2.7.4.5.3 An alignment function must be transmitted at the end of each printed line of the text except for the last (see 2.7.4.5.6).

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#### 2.7.4.7 Stripped address

When applying the provisions of 2.7.4.3 or 2.7.4.15.2.1, an AFTN communication centre must omit from the address all the addressee indicators not required for:

- a) onward transmission by the AFTN communication centre to which the message is transmitted;
- b) local delivery to the addressee(s) by the AFTN destination station;
- c) onward transmission or local delivery by the aggregate of stations on a multi-point circuit.

#### 2.7.4.8 Teletypewriter operating procedure — general

##### 2.7.4.8.1 End-of-line functions

2.7.4.8.1.1 A single line of page-copy must not contain more than a total of 69 characters and/or spaces.

2.7.4.8.1.2 One CARRIAGE RETURN [ $\llcorner$ ] and one LINE FEED IMPULSES [ $\equiv$ ] must be transmitted between each printed page-line of the text of a message.

2.7.4.8.2 Duration of transmissions. For simplex circuits, the transmission of a series of messages in a single transmission must not continue for longer than approximately five minutes. Action must be taken to deliver or relay each message correctly received without waiting for the end of the series.

2.7.4.8.3 Channel-check transmissions. Except as provided in 2.7.4.9.3.3 and 2.7.4.9.3.5 the following periodic transmissions must be sent on teletypewriter circuits:

- 1) heading (see 2.7.4.2.1.1);
- 2) alignment function [ $\llcorner\equiv$ ];
- 3) the procedure signal CH;
- 4) alignment function [ $\llcorner\equiv$ ];
- 5) end-of-message signal [NNNN];
- 6) message-separation signal [ $\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow$ ] (if required).

The receiving station must then check the transmission identification of this incoming transmission to ensure its correct sequence in respect of all messages, received over that incoming channel.

*Note.— Application of this procedure provides some measure of assurance that channel continuity is maintained.*

2.7.4.8.3.1 Where a circuit is unoccupied, the transmission specified in 2.7.4.9.3 must be sent at H + 00, H + 20, H + 40.

2.7.4.8.3.2 If a periodic channel check transmission is not received within a tolerance agreed for that channel, a station must send a service message to the station from which the transmission was expected. The text of this service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal MIS;
- 3) the procedure signal CH;
- 4) (optionally) the time at which the transmission was expected;
- 5) the procedure signal LR;
- 6) the transmission identification of the last message received;
- 7) the end-of-text signal.

*Note.*— *The following example illustrates application of the above-mentioned procedure:*

SVC→MIS→CH→[↑1220↓→]LR→ABC↑123↓<≡

2.7.4.8.3.3 When a teletypewriter channel is equipped with a system of controlled circuit protocol, and following agreement between the Administrations responsible, the transmission specified in 2.7.4.9.3 must not be made.

2.7.4.8.3.4 Channel-check transmissions and station radio-identifications. In order to satisfy the requirements of ITU regarding periodic transmission of the station radio identification, those AFTN stations using radio teletypewriter channels may combine the station radio identification transmission with the channel-check transmission specified in 2.7.4.9.3. In this case the combined transmission must be sent as follows:

- 1) heading (see 2.7.4.2.1.1);
- 2) alignment function [<≡];
- 3) the procedure signal CH;
- 4) alignment function [<≡];
- 5) the procedure signal DE followed by one SPACE [→] and the assigned ITU radio call sign;
- 6) alignment function [<≡];
- 7) end-of-message signal [NNNN];
- 8) message-separation signal [↓↓↓↓↓↓↓↓↓↓] (if required).

*Note.*— *Application of this format will permit this special transmission to be handled by fully automatic switching centres without the intervention of supervisory personnel.*

2.7.4.8.3.5 When a teletypewriter circuit is associated with Automatic Error Correction (ARQ) equipment, and following agreement between the Administrations responsible, the transmissions specified in 2.7.4.9.3 need not be made: however, stations employing radio teletypewriter channels on the AFTN for which the station radio identification is required, must comply with the provisions of 2.7.4.9.3.4.

*Note.*— *The foregoing is not to be interpreted as implying any ICAO requirement necessitating the installation of Automatic Error Correction (ARQ) equipment on international aeronautical fixed circuits.*

## 2.7.4.9 Normal teletypewriter transmission procedures

2.7.4.9.1 Messages must be transmitted in accordance with predetermined responsibility for onward relay as agreed between the Administrations responsible for the operation of directly connected stations (see also 2.7.4.1.3 and 2.7.4.1.5.2.3).

2.7.4.9.1.1 Arising from the responsibility agreements established under the provisions of 2.7.4.9.1, each station of the AFTN must employ and, subject to the provisions of 2.7.4.9.1.1.1, adhere to a Routing Directory which consists of the Routing List.

2.7.4.9.1.1.1 When an incoming message contains only identical location indicators in the lines-following-the-heading the receiving station must accept responsibility for further relay. If possible such relay must be effected on the normal outgoing circuit to the place of destination of the message; if it is not possible to use the normal circuit, an appropriate alternative outgoing circuit must be used. When neither of these facilities is in operation, the message must not be retransmitted over the circuit from which it was received, without prior service message (see 2.7.4.1.1.9) notification of this action being given to the station that had made the previous transmission.

2.7.4.9.1.2 Form of transmission — teletypewriter operation.

All transmissions must comprise in the following order (see Figure 2.7-2).

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2.7.4.9.1.2.1 Starting pulse. When the receiving station uses equipment fitted with a time-switch to stop the teletypewriter machine motor when the channel is idle, a 20-30 millisecond SPACING IMPULSE must be transmitted when the to elapse before the transmission of the heading.

*Note 1.— This is equivalent to the transmission of a LETTER SHIFT [↓], followed by a pause (i.e. a continuous MARKING IMPULSE) of at least 1.37 seconds.*

*Note 2.— Application of this procedure will allow the receiving equipment to reach synchronization before transmission of the heading is commenced.*

2.7.4.9.1.3 Message format. All messages must be prepared in accordance with the provisions of 2.7.4.2 (ITA-2 format) or 2.7.4.15 (IA-5 format).

2.7.4.9.1.3.1 The Heading Line, with the exception of the SOH character, must be omitted on circuits employing one of the data link control procedures contained in 8.6.3 and 8.6.4 of ICAO Annex 10, Volume III.8.6.3

2.7.4.9.1.4 Reprocessing procedures

2.7.4.9.1.4.1 A message requiring retransmission must have its previous heading deleted by the station which received such message for relay. The retransmission must commence with the new heading using the transmission identification for the outgoing channel.

2.7.4.9.1.4.1.1 When applying the provisions of 2.7.4.10.1.4.1, transmission of the address part of the message must commence at some point during the 5 SPACES, 1 LETTER SHIFT [→→→→→↓] immediately preceding the first alignment function [≡].

2.7.4.9.1.5 Acknowledgment of receipt of messages. In teletypewriter operation and except as provided in 2.7.4.9.1.5.1, a receiving station must not transmit acknowledgment of receipt of incoming messages. In lieu thereof the provisions of 2.7.4.1.4.1 must be applied.

2.7.4.9.1.5.1 The receipt of distress messages (priority SS— see 2.7.4.1.1.1) must be individually acknowledged by the AFTN destination station sending a service message (see 2.7.4.1.1.9) to the AFTN origin station. Such acknowledgment of receipt must take the format of a complete message addressed to the AFTN origin station, must be assigned priority indicator SS and the associated priority alarm (see 2.7.4.4.3) and must have a text comprising:

- 1) the procedure signal R;
- 2) the origin (see 2.7.4.4), without priority alarm, or optional heading information of the message being acknowledged;
- 3) the end-of-text signal [↓<≡].

*Note.— The following example illustrates the application of 2.7.4.10.1.6.1 procedure:*

Heading (see 2.7.4.2.1.1)  
<≡SS→RPLPYMYX<≡  
↑121322↓→RPLLYFYX (Priority Alarm) <≡  
R→↑121319↓→RPLPYMYX↓<≡  
Ending (see 2.7.4.6)

2.7.4.9.1.6 In cases where an addressee of a multi-address message requests a repetition of the message from the origin station, the origin station must address the repeat of the message only to the addressee requesting the repeat. Under these conditions the procedure signal DUPE must not be included.

2.7.4.10 Action on mutilated or improperly formatted messages detected in teletypewriter relay stations.

2.7.4.10.1 If, before retransmission is commenced, a relay station detects that a message has been mutilated or improperly formatted at some point ahead of the end-of-message signal, and it has reason to believe that this mutilation had occurred before the message had been received by the previous station, it must send a service message (see 2.7.4.1.1.9) to the originator as identified by the originator indicator in the origin of the mutilated or improperly formatted message, requesting repetition of the incorrectly received message.

*Note.— The following example illustrates a typical text of a service message in which the foregoing procedure has been applied in respect of a mutilated message having as its origin.*

“141335 RPLLYFYX”:  
SVC→QTA→RPT→↑141335↓→RPLLMYX↓<≡

2.7.4.10.2 When the provisions of 2.7.4.10.1 are applied, the originator as identified by the originator indicator in the origin of the mutilated message must re-assume responsibility for the mutilated message, and must comply with the provisions of 2.7.4.10.3.

2.7.4.10.3 Following application of the provisions of 2.7.4.10.2, the following reprocessing must be accomplished before the unmutilated version of the message is transmitted for the second time towards the same addressee or addressees:

- 1) insert a new heading;
- 2) remove the ending of the message (see 2.7.4.6.1);
- 3) insert in lieu thereof the procedure signal DUPE, preceded by at least 1 LETTER SHIFT [↓] and followed by 1 CARRIAGE RETURN, 8 LINE FEEDS, end-of-message signal and, if necessary (see 2.7.4.6), the LETTER SHIFTS [↓] of the message-separation signal and tape feed.

*Note.— The example appearing in Figure 2.7-3 illustrates the application of this procedure.*

2.7.4.10.4 If, before retransmission is commenced, a relay station detects that one or more messages have been mutilated at some point ahead of the end-of-message signal, and it has reason to believe that this mutilation had occurred during or subsequent to its transmission from the previous station, it must send a service message (see 2.7.4.1.1.9) to the previous station rejecting the mutilated transmission and requesting a repetition of the incorrectly received message (or messages).

*Note.— The following examples illustrate application of the above-mentioned procedure. In example 2) the hyphen (-) separator is understood to mean “through” in plain language.*

- 1) in respect of a single mutilated message:

SVC→QTA→RPT→ABC↑123↓<≡

- 2) in respect of several mutilated messages:

SVC→QTA→RPT→ABC→123-126↓<≡

2.7.4.10.5 When the provisions of 2.7.4.10.4 are applied, the station receiving the service message must re-assume responsibility for the referenced message. It must then retransmit the unmutated copy of the referenced message with a new (i.e. correct in sequence) transmission identification (see 2.7.4.2.1.1 b)). If that station is not in possession of an unmutated copy of the original message, it must take the action prescribed in 2.7.4.10.1.

2.7.4.10.6 If, before retransmission is commenced, a relay station detects that a received message has a recognizable but mutilated end-of-message signal, it must, where necessary, repair this mutilation before retransmission.

2.7.4.10.7 If, during retransmission of a message, a relay station detects that the message has been mutilated at some point ahead of the end-of-message signal and is able to take action before a correct end-of-message signal has been transmitted, it must:

- 1) cancel the transmission by inserting into the channel the sequence ↓<≡QTA→QTA↓<≡ followed by a complete ending (see 2.7.4.6);
- 2) re-assume responsibility for the message;
- 3) comply with the provisions of 2.7.4.11.1 or 2.7.4.11.4 as appropriate.

2.7.4.10.8 If, after a message has been transmitted in toto, a station detects that the text or the origin of the message was mutilated or incomplete, it must transmit to all addressees concerned a service message with the following text, if an unmutated copy of the message is available in the station:

SVC CORRECTION (the origin of the incorrect message) STOP (followed by the correct text).

2.7.4.10.9 If, after transmission of the text of a message, a relay station detects that the message has an obviously mutilated end-of-message signal, it must insert a proper end-of-message signal into the channel.

2.7.4.10.10 If, after transmission of the text material of a message, a relay station can detect that there is no complete end-of-message signal, but has no practicable means of discovering whether the irregularity has affected only the end-of-message signal or whether it may have also caused part of the original text to have been lost, it must insert into the channel the following:

- 1) ↓<≡CHECK≡TEXT≡  
NEW→ENDING→ADDED→
- 2) its own station identification;
- 3) ↓<≡
- 4) a proper ending as prescribed in 2.7.4.6.1.

CHECK  
TEXT  
NEW ENDING ADDED RPLLPALX  
NNNN

*Note 1.— The staggered presentation on copy is prescribed to ensure that the attention of the addressee is drawn immediately to the insertion.*

*Note 2.— The FIGURE SHIFT [↑] is included to ensure proper functioning where First Line Monitoring Equipment is used, where the presence of the FIGURE SHIFT in the origin is used to cause disconnection of this equipment and where the missing part of the message includes this FIGURE SHIFT.*

*Note 3.— This circumstance of detection of a mutilation may only be relevant to fully automatic stations or stations using semi-automatic methods without continuous-tape.*

2.7.4.10.11 Relay stations applying the procedural provisions of 2.7.4.10.9 or 2.7.4.10.10 must, if practicable, ensure that the appropriate material therein prescribed is inserted prior to the transmission of a complete start-of-message signal associated with any following message.

2.7.4.10.12 If a relay station detects that a message was received with a completely mutilated address line, it must send a service message to the previous station rejecting the mutilated transmission.

2.7.4.10.12.1 The text of this service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal QTA;
- 3) the procedure signal ADS;
- 4) the transmission identification of the message rejected;
- 5) the indication CORRUPT;
- 6) the end-of-text signal.

*Note.* — *The following example illustrates application of the above-mentioned procedure:*

SVC→QTA→ADS→ABC↑123↓→CORRUPT↓<≡

2.7.4.10.12.2 The station receiving such a service message must re-assume responsibility for the referenced message, and must retransmit the message with a corrected address line, and a new transmission identification.

2.7.4.10.13 If a relay station detects a received message with an invalid (i.e. length other than 8 letters) or unknown addressee indicator, it must relay the message to those valid addresses for which it has relay responsibility using the stripped address procedure (see 2.7.4.8).

2.7.4.10.13.1 In addition, except as in 2.7.4.10.13.3, the station must send a service message to the previous station requesting correction of the error. The text of this service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal ADS;
- 3) the transmission identification of the message in error;
- 4) an alignment function;
- 5) the first address line of the message as received;
- 6) an alignment function;
- 7) either:
  - a) for an invalid addressee indicator: the indication CHECK;
  - b) for an unknown addressee indicator: the indication UNKNOWN;
- 8) the invalid or unknown addressee indicator(s);
- 9) the end-of-text signal.

*Note.*— *The following examples illustrate the application of the procedure of 2.7.4.10.13.1:*

- a) for an invalid addressee indicator:

SVC→ADS→ABC↑123↓<≡  
GG→EGLLACAX→EGPKYTYX→CYAAYFYX→  
CYQXAFX<≡CHECK→CYQXAFX↓<≡

- b) for an unknown addressee indicator:

SVC→ADS→ABC↑123↓<≡  
GG→EGLLACAX→EGEHYTYX→CYAAYFYX→  
CYQXACAX<≡UNKNOWN→EGEHYTYX↓<≡

2.7.4.10.13.2 A station receiving a service message as prescribed in 2.7.4.11.13.1 must, if a correct addressee indicator is available, repeat the message to that addressee only using the stripped address procedure (see 2.7.4.8) or, if a correct addressee indicator is not available, act as prescribed in 2.7.4.11.13.1.

2.7.4.10.13.3 Where the procedure of 2.7.4.11.13 is applied in the case of an unknown addressee indicator, and if the origin of the message is without fault, the station must send a service message to the originator. The text of this service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal ADS;

- 3) the origin of the message in error;
- 4) an alignment function;
- 5) the first address line of the message as received;
- 6) an alignment function;
- 7) the indication UNKNOWN;
- 8) the unknown addressee indicator(s);
- 9) the end-of-text signal.

*Note. — The following example illustrates application of the above-mentioned procedure:*

SVC→ADS→↑141335↓→CYULACAX<≡  
 GG→EGLLACAX→EGEHYTYX→CYAAYFYX→  
 CYQXACAX<≡UNKNOWN→EGEHYTYX↓<≡

2.7.4.10.13.4 A station receiving such a service message must obtain a correct addressee indicator and must repeat the message to the addressee using the stripped address procedure (see 2.7.4.8).

2.7.4.10.14 When the first relay station detects that a message was received with a mutilated origin line or without any origin, it must:

- a) stop processing the message;
- b) send a service message to the station from which the message was received.

2.7.4.10.14.1 The text of this service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal QTA;
- 3) the procedure signal OGN;
- 4) the transmission identification of the message rejected;
- 5) the indication CORRUPT;
- 6) the end-of-text signal.

*Note. — The following example illustrates application of the above-mentioned procedure:*

SVC→QTA→OGN→ABC↑123↓→CORRUPT↓<≡

2.7.4.10.14.2 The station receiving a service message as prescribed in 2.7.4.10.14.1 must re-assume responsibility for the referenced message and must retransmit the message with a correct origin line and a new transmission identification.

*Note. — When applying the provisions of 2.7.4.10.14, the minimum requirements for processing the origin of AFTN messages are:*

- 1) the date-time group consisting of six numeric characters;
- 2) the originator indicator consisting of eight alpha characters.

2.7.4.10.15 When the first relay station detects that a message was received with an incorrect originator indicator, it must:

- a) stop processing the message; and
- b) send a service message to the station from which the message was received.

2.7.4.10.15.1 The text of the service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal QTA;
- 3) the procedure signal OGN;
- 4) the transmission identification of the message rejected;
- 5) the indicator INCORRECT; and
- 6) the end-of-text signal.

*Note.— The following ITA-2 example illustrates application of the abovementioned procedure:*

SVC→QTA→OGN→ABC↑123↓→INCORRECT↓<≡

2.7.4.10.15.2 The station receiving a service message as prescribed in 2.7.4.10.15.1 must resume responsibility for the referenced message and must retransmit the message with a correct originator indicator and, if applicable, a new transmission identification.

*Note.— When applying the provisions of 2.7.4.10.15 the relay centre requirement is as a minimum the first character of the originator indicator verified as the first character of the location indicator of the place at which the message is originated.*

#### 2.7.4.11 Predetermined distribution system for AFTN messages

2.7.4.11.1 When it has been agreed between the Administrations concerned to make use of a predetermined distribution system for AFTN messages, the system described below shall be used.

2.7.4.11.2 The Predetermined Distribution Addressee Indicator (PDAI) must be constructed as follows:

a) The first and second letters:

The first two letters of the Location Indicator of the communications centre of the State which has agreed to implement the system and which receives messages over a circuit for which it has a predetermined routing responsibility;

b) The third and fourth letters:

The letters ZZ, indicating a requirement for special distribution;

c) The fifth, sixth and seventh letters:

1) The fifth, sixth and seventh letters taken from the series A to Z and denoting the national and/or international distribution list(s) to be used by the receiving AFTN centre;

2) “N” and “S”, as the fifth letter, are reserved for NOTAM and SNOWTAM respectively (see Appendix 5 to Annex15);

d) The eighth letter:

Either the filler letter “X” or a letter taken from the series A to Z to further define the national and/or international distribution list(s) to be used by the receiving AFTN centre.

*Note 1.— To avoid conflict with the AFTN start-of message signal, combinations with ZC or CZ will not be used.*

*Note 2.— To avoid conflict with the AFTN end-of-message signal, combinations with NN will not be used.*

2.7.4.11.3 Predetermined Distribution Addressee Indicators (PDAIs) must be used whenever possible on AFTN messages between States which have agreed to make use of the predetermined distribution system.

2.7.4.11.4 AFTN messages carrying Predetermined Distribution Addressee Indicators allocated by the State receiving the message must be routed to the addressees listed on the associated list of Addressee Indicators described in 2.7.4.11.5.

2.7.4.11.5 States must send their list of selected Predetermined Distribution Addressee Indicators together with the associated lists of Addressee Indicators to:

- a) the States from which they will receive AFTN messages for predetermined distribution, to assure correct routing; and
- b) the States which will originate AFTN messages for predetermined distribution to facilitate the treatment of requests for retransmission and to assist originators in using the Predetermined Distribution Addressee Indicators correctly.

2.7.4.11.5.1 The list of Addressee Indicators associated with a Predetermined Distribution Addressee Indicator must include either:

- a) Addressee Indicators for national distribution; or
- b) Addressee Indicators for international distribution; or
- c) Predetermined Distribution Addressee Indicators for international distribution; or
- d) any combination of a), b) and c).

2.7.4.12 Message format — International Alphabet No. 5 (IA-5)

...

2.7.4.12.1 Heading

...

2.7.4.12.2 Address

2.7.4.12.2.1 The address must comprise:

- a) alignment function [ $\leq$ ];
- b) alignment function [ $\leq$ ];
- c) addressee indicator(s);
- d) alignment function [ $\leq$ ].

...

2.7.4.12.2.2 Origin

...

2.7.4.12.2.2.6 The inclusion of optional data in the origin line must be permitted provided a total of 69 characters is not exceeded and subject to agreement between the Administrations concerned.

2.7.4.12.2.2.6.1 The presence of the optional data field must be indicated by one occurrence of the space character and terminated by the alignment function.

2.7.4.12.2.2.6.2 When additional addressing information in a message needs to be exchanged between source and destination addresses, it must be conveyed in the optional data field (ODF), using the following specific format:

- a) characters one and full stop (1.) to indicate the parameter code for the additional address function;
- b) three modifier characters, followed by an equal sign (=) and the assigned 8-character ICAO address; and
- c) the character hyphen (-) to terminate the additional address parameter field.

2.7.4.12.2.2.6.2.1 When a separate address for service messages or inquiries is different from the originator indicator, the modifier SVC must be used.

2.7.4.12.2.2.7 The origin line must be concluded by an alignment function [ $\leq$ ] and the start-of-text (STX) (0/2) character.

### 2.7.4.12.3. Text

2.7.4.12.3.1 The text of messages must be drafted in accordance with 2.7.1.2 and must consist of all data between STX and ETX.

*Note.— When message texts do not require conversion to the ITA-2 code and format and do not conflict with ICAO message types or formats in ICAO PANSATM (ICAO Doc 4444), Administrations may make full use of the characters available in International Alphabet No. 5 (IA-5).*

...

2.7.4.12.3.7 Where messages are prepared off-line, e.g. by message preparation, errors in the text must be corrected by backspacing and replacing the character in error by character DEL (7/15).

2.7.4.12.3.8 Stations must make all indicated corrections on the page-copy prior to local delivery or a transfer to a manually operated circuit.

2.7.4.12.3.9 The text of messages entered by the AFTN origin station must not exceed 1 800 characters in length. AFTN messages exceeding 1,800 characters must be entered by the AFTN origin station in the form of separate messages. Guidance material for forming separate messages from a single long message is given in Attachment B to CAR ANS Part 2. When messages or data are transmitted only on medium or high speed circuits the text may be increased to a length that exceeds 1,800 characters as long as performance characteristics of the network or link are not diminished and subject to agreement between the Administrations concerned.

...

### 2.7.4.12.3.10 Ending

2.7.4.12.3.10.1 The ending of a message must comprise the following in the order stated:

- a) an alignment [ $\leq$ ] function following the last line of text;
- b) page-feed character, character 0/11 (VT);
- c) end-of-text character 0/3 (ETX).

2.7.4.12.3.10.1.1 Station terminal equipment (page printers) on the International Alphabet Number 5 (IA-5) must be provided with a capability to generate sufficient line feed functions for local station use upon the reception of a VERTICAL TAB character (0/11).

2.7.4.12.3.10.1.2 When the message does not transit ITA-2 portions of the AFTN, or where Administrations have made provisions to add automatically the second carriage return before transmission to an ITA-2 circuit, one carriage return in the alignment function and end of-line function must be permitted subject to agreement between the Administrations concerned.

2.7.4.12.3.10.1.3 Messages entered by the AFTN origin station must not exceed 2,100 characters in length.

*Note.— The character count includes all printing and non-printing characters in the message from and including the start-of-heading character (SOH) to and including the end-of-text character.*

2.7.4.12.4 Except as provided in 2.7.4.12.5 to 2.7.4.12.6 and 2.7.4.13, the procedures of 2.7.4.7 and 2.7.4.7 to 2.7.4.11 must be used for messages using IA-5 code.

2.7.4.12.5 Channel-check transmissions. In the case where continuous control of channel condition is not provided the following periodic transmissions must be sent on teletypewriter circuits:

1) heading line (see 2.7.4.15.1.1);

2) alignment function    S  
                                  T ;  
                                  X

3) the procedure signal CH;

4) alignment function    E  
                                  T  
                                  X

The receiving station must then check the transmission identification of this incoming transmission to ensure its correct sequence in respect of all messages received over that incoming channel.

*Note.— Application of this procedure provides some measure of assurance that channel continuity is maintained; however, a continuously controlled channel is much more preferable in that data integrity can also be improved.*

2.7.4.12.5.1 Where a circuit is unoccupied and uncontrolled, the transmission identified in 2.7.4.12.5 must be sent at H + 00, H + 20, H + 40.

2.7.4.12.6 The receipt of distress messages (priority indicator SS, see 2.7.4.1.1.1) must be individually acknowledged by the AFTN destination station by sending a service message (see 2.7.4.1.1.9) to the AFTN origin station. Such acknowledgment of receipt must take the format of a complete message addressed to the AFTN origin station, must be assigned priority indicator SS and the associated priority alarm (see 2.7.4.12.2.2.5), and must have a text comprising:

...

2.7.4.13 Action taken on mutilated messages in IA-5 detected in computerized AFTN relay stations.

...

2.7.4.14 Transfer of AFTN messages over code and byte independent circuits and networks.

...

## **2.7.5 Common ICAO Data Interchange Network (CIDIN)**

...

## **2.7.6 ATS Message Handling Services (ATSMHS)**

The ATS message service of the ATS (air traffic services) message handling service (ATSMHS) application must be used to exchange ATS messages between users over the aeronautical telecommunication network (ATN) internet.

*Note 1.— The ATS message service comprised in the ATS message handling service application aims at providing generic message services over the ATN internet communication service (ICS). It may, in turn, be used as a communication system by user-applications communicating over the ATN. This may be achieved, for example, by means of application programme interfaces to the ATS message service.*

*Note 2.— The detailed specification of the ATS message handling service application is included in the Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN) (Doc 9705), Sub-volume III.*

*Note 3.— The ATS message service is provided by the implementation over the ATN internet communication service of the message handling systems specified in ISO/IEC (International Organization for Standardization/International Electro technical Commission) 10021 and ITU-T (International Telecommunication Union — Telecommunication Standardization Sector) X.400 and complemented by the additional requirements specified in the Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN) (Doc 9705). The two sets of documents, the ISO/IEC MOTIS (Message-Oriented Text Interchange System) International Standards and the ITU-T X.400 Series of Recommendations (1988 or later) are, in principle, aligned with each other. However, there are a small number of differences. In the above-mentioned document, reference is made to the relevant ISO International Standards and International Standardized Profiles (ISP), where applicable. Where necessary, e.g. for reasons of interworking or to point out differences, reference is also made to the relevant X.400 Recommendations.*

*Note 4.— The following types of ATN end systems performing ATS message handling services are defined in the Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN) (Doc 9705), Sub-volume III:*

- 1) an ATS message server;*
- 2) an ATS message user agent;*
- 3) an AFTN/AMHS gateway (aeronautical fixed telecommunication network/ATS message handling system); and*
- 4) a CIDIN/AMHS gateway (common ICAO data interchange network/ATS message handling system). Connections may be established over the internet communications service between any pair constituted of these ATN end systems (see Table 2.7-1).*

**Table 2.7-1. Communications between ATN and systems implementing ATS message handling services**

ATN End System 1	ATN End System 2
ATS Message Server	ATS Message Server
ATS Message Server	AFTN/AMHS Gateway
ATS Message Server	CIDIN/AMHS Gateway
ATS Message Server	ATS Message User Agent
AFTN/AMHS Gateway	AFTN/AMHS Gateway
CIDIN/AMHS Gateway	CIDIN/AMHS Gateway
CIDIN/AMHS Gateway	AFTN/AMHS Gateway

### 2.7.7 Inter-Centre Communications (ICC)

The inter-centre communications (ICC) applications set must be used to exchange ATS messages between air traffic service users over the ATN internet.

*Note 1.— The ICC applications set enables the exchange of information in support of the following operational services:*

- a) flight notification;*
- b) flight coordination;*
- c) transfer of control and communications;*
- d) flight planning;*
- e) airspace management; and*
- f) air traffic flow management.*

*Note 2.— The first of the applications developed for the ICC set is the ATS interfacility data communication (AIDC).*

*Note 3.— The AIDC application exchanges information between ATS units (ATSUs) for support of critical air traffic control (ATC) functions, such as notification of flights approaching a flight information region (FIR) boundary, coordination of boundary conditions and transfer of control and communications authority.*

*Note 4.— The detailed specification of the AIDC application is included in the Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN) (Doc 9705), Sub-volume III.*

*Note 5.— The AIDC application is strictly an ATC application for exchanging tactical control information between ATS units. It does not support the exchange of information with other offices or facilities.*

*Note 6.— The AIDC application supports the following operational services:*

- a) flight notification;*
- b) flight coordination;*
- c) transfer of executive control;*
- d) transfer of communications; and*
- e) transfer of general information (flight-related data or free text messages, i.e. unstructured).*

## 2.8 AERONAUTICAL MOBILE SERVICE VOICE COMMUNICATIONS

### 2.8.1 General

*Note.— For the purposes of these provisions, the communication procedures applicable to the aeronautical mobile service, as appropriate, also apply to the aeronautical mobile satellite service.*

...

#### 2.8.1.8 Categories of Messages

...

<i>Message category and order of priority</i>	<i>Radiotelephony signal</i>
a) Distress calls, distress messages and distress traffic	MAYDAY
b) Urgency messages, including PAN, PAN messages preceded by <i>or</i> PAN, PAN medical transports signal	MEDICAL

...

2.8.1.8.4 *Flight safety messages* shall comprise the following:

1) movement and control messages [see PANS-ATM (ICAO Doc 4444)];

...

### 2.8.2 Radiotelephony Procedures

...

#### 2.8.2.1.5 Transmitting technique

...

2.8.2.1.5.8 The following words and phrases shall be used in radiotelephony communications as appropriate and shall have the meaning ascribed hereunder:

...

*Phrase*      *Meaning*

...

OVER      “My transmission is ended, and I expect a response from you.”

*Note.— Not normally used in VHF communications.*

OUT      “This exchange of transmissions is ended and no response is expected.”

*Note.— Not normally used in VHF communications.*

...

## 2.11 AERONAUTICAL MOBILE SERVICE –DATA LINK COMMUNICATIONS

### 2.11.1 General

...

#### 2.11.1.1 Composition of data link messages

2.11.1.1.1 The text of messages shall be composed in standard message format (e.g. CPDLC message set), in plain language or in abbreviations and codes, as prescribed in 3.7. Plain

language shall be avoided when the length of the text can be reduced by using appropriate abbreviations and codes. Non-essential words and phrases, such as expressions of politeness, shall not be used.

2.11.1.1.2 The following characters are allowed in the composition of messages:

...

2.11.1.2 Display of data link messages

...

## 2.11.2 CPDLC Procedures

...

2.11.2.6 The pilot and the controller shall be provided with the capability to exchange messages which do not conform to defined formats (i.e. free text messages).

...

2.11.2.9 Exchange of operational CPDLC messages

2.11.2.9.1 Controllers and pilots shall construct CPDLC messages using the defined message set, a free text message or a combination of both.

2.11.2.9.1.1 When CPDLC is being used, and the intent of the message is included in the CPDLC message set contained in the ICAO PANS-ATM, Appendix 5, the associated message shall be used.

...

2.11.2.9.3 CPDLC ground systems and airborne systems shall be capable of using the CPDLC message urgency and alert attributes to alter presentations in order to draw attention to higher priority messages.

*Note.— Message attributes dictate certain message handling requirements for the CPDLC user receiving a message. Each CPDLC message has three attributes: urgency, alert and response attributes. When a message contains multiple message elements, the highest precedence message element attribute type becomes the attribute type for the entire message.*

2.11.2.9.3.1 The urgency attribute shall delineate the queuing requirements for received messages that are displayed to the end-user. Urgency types are presented in Table 2.11-1.

2.11.2.9.3.2 The alert attribute shall delineate the type of alerting required upon message receipt. Alert types are presented in Table 2.11-2.

...

**Table 2.11-1. Urgency Attribute (Uplink and Downlink)**

<i>Type</i>	<i>Description</i>	<i>Procedure</i>
D	Distress	1
U	Urgent	2
N	Normal	3
L	Low	4

**Table 2.11-2 Alert Attribute (Uplink and Downlink)**

...

**Table 2.11-3 Response Attribute (Uplink)**

...

**Table 2.11 – 4 Response Attribute (Downlink)**

<i>Type</i>	<i>Response Required</i>	<i>Valid Response</i>	<i>Precedence</i>
Y	Yes	Any CPDLC uplink message, LOGICAL ACKNOWLEDGEMENT (only if required)	1
N	No, unless logical acknowledgement required	LOGICAL ACKNOWLEDGEMENT (only if required), SERVICE UNAVAILABLE, FLIGHT PLAN NOT HELD, ERROR	2

...

2.11.2.9.3.3.1 When a multi-element message requires a response, and the response is in the form of a single message element, the response shall apply to all message elements.

*Note.— For example, a multi-element message containing CLIMB TO FL310 MAINTAIN MACH.84, a WILCO response applies to, and indicates compliance with, both elements of the message.*

...

2.11.2.9.5 The appropriate ATS authority shall select those message elements contained in ICAO PANS-ATM, Appendix 5 that support operations in their airspace. Should an ATS authority choose to select a subset of the message elements, and a received message does not belong to this subset, the ATC unit shall respond by uplinking the message element SERVICE UNAVAILABLE.

...

2.11.2.9.5.1 Only the uplink messages appropriate to a particular control sector's operations should be provided to the controller.

*Note.— The CPDLC message set contained in ICAO PANS-ATM, Appendix 5 was developed to encompass different air traffic management environments.*

2.11.2.9.5.2 When considered necessary by the appropriate ATS authority, additional preformatted free text messages shall be made available to the controller for those occasions where the CPDLC message set contained in the PANS-ATM does not provide for specific requirements. In such cases, a list of pre-formatted free text messages shall be established by the appropriate ATS authority, in consultation with operators and other ATS authorities that may be concerned.

2.11.2.9.5.3 Information concerning CPDLC message element subsets utilized and, if applicable, any additional preformatted free text messages, shall be published in aeronautical information publications.

...

2.11.2.11 Free text messages

2.11.2.11.1 The use of free text messages by controllers or pilots, other than preformatted free text messages referred to in paragraph 2.11.2.9.5.2, should be avoided.

*Note.— Whilst it is recognized that non-routine and emergency situations may necessitate the use of free text, particularly when voice communication has failed, the avoidance of utilizing free text messages is intended to reduce the possibility of misinterpretation and ambiguity.*

2.11.2.12 Emergencies, hazards and equipment failure procedures

...

2.11.2.12.2 When responding via CPDLC to a report indicating unlawful interference, uplink message ROGER 7500 shall be used.

2.11.2.12.3 When responding via CPDLC to all other emergency or urgency messages, uplink message ROGER shall be used.

...

2.11.2.12.5 Failure of CPDLC

2.11.2.12.5.1 A CPDLC failure shall be detected in a timely manner.

...

2.11.2.12.8 Discontinuation of the use of CPDLC

...

2.11.2.13 Where the testing of CPDLC with an aircraft could affect the air traffic services being provided to the aircraft, coordination shall be effected prior to such testing.

2.11.2.14 Downstream clearance delivery service

*(This section to be deleted in its entirety in accordance with Amendment 90 to ICAO Annex 10 Volume II.)*

...

## **AMENDED REGULATIONS:**

### **CAR-ANS PART 2:**

...

## **2.4. DEFINITIONS**

When the following terms are used in this publication, they have the meaning prescribed in this Sub – Part:

...

### **2.4.8 Data Link Communication**

**Controller-pilot data link communications (CPDLC).** A means of communication between controller and pilot, using data link for ATC communications.

**CPDLC message.** Information exchanged between an airborne system and its ground counterpart. A CPDLC message consists of a single message element or a combination of message elements conveyed in a single transmission by the initiator.

**CPDLC message set.** A list of standard message elements and free text message elements.

**Current data authority.** The designated ground system through which a CPDLC dialogue between a pilot and a controller currently responsible for the flight is permitted to take place.

**Free text message element.** Part of a message that does not conform to any standard message element in the MOS-ATS.

**Next data authority.** The ground system so designated by the current data authority through which an onward transfer of communications and control can take place.

**Logon address.** A specified code used for data link logon to an ATS unit.

**Standard message element.** Part of a message defined in the MOS-ATS in terms of display format, intended use and attributes.

## 2.4.9 Miscellaneous

...

## 2.7 AERONAUTICAL FIXED SERVICE

### 2.7.1 GENERAL

2.7.1.1 The aeronautical fixed service shall comprise the following systems and applications that are used for ground-ground (i.e. point-to-point and/or point-to-multipoint) communications in the international aeronautical telecommunication service:

- a) ATS direct speech circuits and networks;
- b) meteorological operational circuits, networks and broadcast systems;
- c) the aeronautical fixed telecommunications network (AFTN);
- d) the common ICAO data interchange network (CIDIN);
- e) the air traffic services (ATS) message handling services; and
- f) the inter-centre communications (ICC).

2.7.1.2 Material permitted in AFS messages

*Note.— The provisions contained in 4.1.2 do not apply to ATS voice communications.*

2.7.1.2.1 The following characters are allowed in text messages:

Letters:

...

Characters other than those listed above are not be used in messages unless absolutely necessary for understanding of the text. When used, they must be spelled out in full.

2.7.1.2.2 For the exchange of messages over the teletypewriter circuits, the following signals of the International Telegraph Alphabet No. 2 (ITA-2) shall be permitted:

- |                     |                                 |
|---------------------|---------------------------------|
| signals nos. 1 to 3 | — in letter and in figure case; |
| signal no. 4        | — in letter case only;          |
| signal no. 5        | — in letter and in figure case; |

- signals nos. 6 to 8 — in letter case only;
- signal no. 9 — in letter and in figure case;
- signal no. 10 — in letter case only; and
- signals nos. 11 to 31 — in letter and figure case.

2.7.1.2.3 For the exchange of messages over the teletypewriter circuits, the following characters of International Alphabet No. 5 (IA-5) shall be permitted:

- characters 0/1 to 0/3, 0/7 — in the priority alarm (see 4.4.15.2.2.5), 0/10, 0/11 — in the ending sequence (see 4.4.15.3.12.1), 0/13;
- characters 2/0, 2/7 to 2/9, 2/11 to 2/15;
- characters 3/0 to 3/10, 3/13, 3/15;
- characters 4/1 to 4/15;
- characters 5/0 to 5/10; and
- character 7/15.

2.7.1.2.3.1 The exchange of messages using the full IA-5 shall be subject to agreement between the Administrations concerned.

2.7.1.2.4 Roman numerals shall not be employed. If the originator of a message wishes the addressee to be informed that roman figures are intended, the Arabic figure or figures shall be written and preceded by the word ROMAN.

2.7.1.2.5 Messages using the ITA-2 code shall not contain:

- 1) any uninterrupted sequence of signals nos. 26, 3, 26 and 3 (letter case and figure case) in this order, other than the one in the heading as prescribed in 2.7.4.2.1.1; and
- 2) any uninterrupted sequence of four times signal no. 14 (letter case and figure case) other than the one in the ending as prescribed in 2.7.4.6.1.

2.7.1.2.6 Messages using IA-5 must not contain:

- 1) character 0/1 (SOH) other than the one in the heading as prescribed in 2.7.4.15.1.1 a);
- 2) character 0/2 (STX) other than the one in the origin line as prescribed in 2.7.4.15.2.2.7;
- 3) character 0/3 (ETX) other than the one in the ending as prescribed in 2.7.4.15.3.12.1;
- 4) any uninterrupted sequence of characters 5/10, 4/3, /10, 4/3 in this order (ZCZC);
- 5) any uninterrupted sequence of characters 2/11, 3/10, 2/11, 3/10 in this order (+:+:);
- 6) any uninterrupted sequence of four times character 4/14(NNNN); and
- 7) any uninterrupted sequence of four times character 2/12 (,,,,).

2.7.1.2.7 The text of messages shall be drafted in plain language or in abbreviations and codes, as prescribed in 2.6.7. The originator shall avoid the use of plain language when reduction in the length of the text by appropriate abbreviations and codes is practicable. Words and phrases which are not essential, such as expressions of politeness, shall not be used.

2.7.1.2.8 If the originator of a message wishes alignment functions [ $\llcorner$ ] to be transmitted at specific places in the text part of such message (see 2.7.4.5.3 and 2.7.4.15.3.6), the sequence [ $\llcorner$ ] shall be written on each of those places.

## 2.7.2 ATS Direct Speech Circuits

*Note.— Provisions relating to ATS direct speech communications are contained in CAR-ANS Part 11, 11.6.*

...

## 2.7.4 Aeronautical Fixed Telecommunication Network (AFTN)

...

2.7.4.1.1 Categories of messages. Subject to the provisions of 2.6.3, the following categories of message are handled by the aeronautical fixed telecommunication network:

...

2.7.4.1.1.3 Flight safety messages (priority indicator FF) comprise:

- a) movement and control messages as defined in MOS-ATS, Chapter 10;
- b) messages originated by an aircraft operating agency of immediate concern to aircraft in flight or preparing to depart;
- c) meteorological messages restricted to SIGMET information, special air-reports, AIRMET messages, volcanic ash and tropical cyclone advisory information and amended forecasts.

...

2.7.4.1.4.2.2 When the provisions of 2.7.4.1.4.2.1, 1) are applied, the text of the service message must comprise the abbreviation SVC, the signal QTA, the procedure signal MSR followed by the transmission identification (see 2.7.4.2.1.1.3 and 2.7.4.15.1.1.4) of the misrouted message and the end-of-text signal (see 2.7.4.5.6 and 2.7.4.15.3.12).

*Note.— The following example illustrates application of the above-mentioned procedure:*

SVC→QTA→MSR→ABC↑123↓ $\llcorner$

...

### 2.7.4.1.5 Failure of communications

2.7.4.1.5.1 Should communication on any fixed service circuit fail, the station concerned must attempt to re-establish contact as soon as possible.

2.7.4.1.5.2 If contact cannot be re-established within a reasonable period on the normal fixed service circuit, an appropriate alternative circuit must be used. If possible, attempts must be made to establish communication on any authorized fixed service circuit available.

2.7.4.1.5.2.1 If these attempts fail, use of any available air-ground frequency shall be permitted only as an exceptional and temporary measure when no interference to aircraft in flight is ensured.

2.7.4.1.5.2.2 Where a radio circuit fails due to signal fade-out or adverse propagation conditions, a receiving watch shall be maintained on the regular fixed service frequency

normally in use. In order to re-establish contact on this frequency as soon as possible there shall be transmitted:

- a) the procedure signal DE;
- b) the identification of the transmitting station transmitted three times;
- c) the alignment function [ $\lll$ ];
- d) the letters RY repeated without separation for three lines of page copy;
- e) the alignment function [ $\lll$ ];
- f) end-of-message signal (NNNN).

The foregoing sequence shall be repeated as required.

2.7.4.1.5.2.3 A station experiencing a circuit or equipment failure shall promptly notify other stations with which it is in direct communication if the failure will affect traffic routing by those stations. Restoration to normal shall also be notified to the same stations.

2.7.4.1.5.3 Where diverted traffic will not be accepted automatically or where a predetermined diversion routing has not been agreed, a temporary diversion routing must be established by the exchange of service messages. The text of such service messages must comprise:

...

2.7.4.2.1.1.3 The transmission identification must all be sent over the circuit in the following sequence:

- a) SPACE [ $\rightarrow$ ];
- b) transmitting-terminal letter;
- c) receiving-terminal letter;
- d) channel-identification letter;
- e) FIGURE SHIFT [ $\uparrow$ ];
- f) channel-sequence number (3 digits).

2.7.4.2.1.2 In teletypewriter operation, the spacing signal, consisting of 5 SPACES [ $\rightarrow\rightarrow\rightarrow\rightarrow\rightarrow$ ] followed by 1 LETTER SHIFT [ $\downarrow$ ], shall be transmitted immediately following the transmission identification prescribed in 4.4.2.1.1.3.

*Note.— The examples appearing below illustrate the application of the transmission identification Standard (see 2.7.4.2.1.1 b) and 2.7.4.2.1.1.3):*

Tape	Page copy
$\rightarrow$ GLB $\uparrow$ 039 $\rightarrow\rightarrow\rightarrow\rightarrow\rightarrow\downarrow$	GLB039

*(This indicates the 39th message of the day transmitted on Channel B of the circuit from Station G to Station L.)*

2.7.4.2.1.3 Optional service information shall be permitted to be inserted following the transmission identification subject to agreement between the authorities responsible for the operation of the circuit. Such additional service information shall be preceded by a SPACE followed by not more than ten characters and shall not contain any alignment functions.

2.7.4.2.1.4 To avoid any misinterpretation of the diversion indicator especially when considering the possibility of a partly mutilated heading, the sequence of two consecutive signals no. 22 (in the letter case or in the figure case) should not appear in any other component of the heading.

...

2.7.4.3.1.2.3.1 Where messages are offered in page-copy form for transmission and contain more addressee indicators than can be accommodated on three lines of a page-copy, such message must be converted, before transmission, into two or more messages, each of which must conform with the provisions of 2.7.4.3.1.2.3. During such conversion, the addressee indicators must, in so far as practicable, be positioned in the sequence which will ensure that the minimum number of retransmissions will be required at subsequent communication centres.

2.7.4.3.1.2.3.2 On teletypewriter circuits, the completion of each line of addressee indicator groups in the address of a message shall be immediately followed by the alignment function [ $\Leftarrow$ ].

...

2.7.4.4.3 The priority alarm shall be used only for distress messages. When used, it shall consist of the following, in the order stated:

- a) FIGURE SHIFT [ $\Uparrow$ ];
- b) FIVE transmissions of signal no. 10 (figure case);
- c) LETTER SHIFT [ $\Downarrow$ ].

*Note 1. — The figure case of signal no. 10 of the International Telegraph Alphabet No. 2 generally corresponds to the figure case of J of teletypewriter equipment in use on aeronautical fixed service circuits.*

*Note 2. — Use of the priority alarm will actuate a bell (attention) signal at the receiving teletypewriter station, other than at those fully automatic stations which may provide a similar alarm on receipt of priority indicator SS, thereby alerting supervisory personnel at relay centres and operators at tributary stations, so that immediate attention may be given to the message.*

2.7.4.4.4 The inclusion of optional data in the origin line shall be permitted provided a total of 69 characters is not exceeded and subject to agreement between the authorities concerned. The presence of the optional data field shall be indicated by one occurrence of the SPACE character immediately preceding optional data.

2.7.4.4.4.1 When additional addressing information in a message needs to be exchanged between source and destination addresses, it should be conveyed in the optional data field (ODF), using the following specific format:

- a) characters one and full stop (1.) to indicate the parameter code for the additional address function;
- b) three modifier characters, followed by an equal sign [=] and the assigned 8-character ICAO address; and
- c) the character hyphen (-) to terminate the additional address parameter field.

2.7.4.4.4.1.1 When a separate address for service messages or inquiries is different from the originator indicator, the modifier SVC should be used.

2.7.4.4.5 The origin line must be concluded by an alignment function [ $\lll$ ].

...

2.7.4.5.3 An alignment function [ $\lll$ ] must be transmitted at the end of each printed line of the text except for the last (see 2.7.4.5.6).

...

#### 2.7.4.7 Tape feed

2.7.4.7.1 In “torn-tape” installations, and in “semi-automatic” installations using continuous tape technique, when signals additional to those prescribed in 4.4.6.1 are required to ensure that the tape is adequately advanced from the reperforator at the receiving stations, when the ending of one message is not followed immediately by the start-of-message signal of another message, local arrangements should be made at the receiving station to avoid the need for transmission of these signals by the transmitting station.

*Note.— In “torn-tape” stations, a facility is normally necessary whereby the tape can be fed from the receiving reperforator to an extent that permits the receiving operator to tear through the message-separation signal at the correct point, on occasions when the operator is ready to tear the tape but there has been no following message to cause this tapefeed to take place. In semi-automatic stations using continuous-tape techniques, a similar process may be necessary in similar circumstances to advance the tape to an extent that permits the end-of-message signal to reach the transmitter.*

2.7.4.7.1.1 When the provisions of 2.7.4.7.1 cannot be applied, arrangements shall be made with the transmitting station for the latter to send, at the end of a single message, or following the last message of a series, an agreed number of LETTER SHIFTS [ $\downarrow$ ] in addition to the components prescribed in 2.7.4.6.

#### 2.7.4.8 Stripped address

When applying the provisions of 2.7.4.3 or 2.7.4.15.2.1, an AFTN communication centre must omit from the address all the addressee indicators not required for:

- a) onward transmission by the AFTN communication centre to which the message is transmitted;
- b) local delivery to the addressee(s) by the AFTN destination station;
- c) onward transmission or local delivery by the aggregate of stations on a multi-point circuit.

#### 2.7.4.9 Teletypewriter operating procedure — general

##### 2.7.4.9.1 End-of-line functions

2.7.4.9.1.1 A single line of page-copy must not contain more than a total of 69 characters and/or spaces.

2.7.4.9.1.2 One CARRIAGE RETURN [ $\ll$ ] and one LINE FEED IMPULSES [ $\lll$ ] must be transmitted between each printed page-line of the text of a message.

2.7.4.9.2 *Duration of transmissions.* For simplex circuits, the transmission of a series of messages in a single transmission must not continue for longer than approximately five minutes. Action must be taken to deliver or relay each message correctly received without waiting for the end of the series.

2.7.4.9.3 *Channel-check transmissions.* Except as provided in 2.7.4.9.3.3 and 2.7.4.9.3.5 the following periodic transmissions must be sent on teletypewriter circuits:

- 1) heading (see 2.7.4.2.1.1);
- 2) alignment function [ $\leq$ ];
- 3) the procedure signal CH;
- 4) alignment function [ $\leq$ ];
- 5) end-of-message signal [NNNN];
- 6) message-separation signal [↓↓↓↓↓↓↓↓↓↓↓↓] (if required).

The receiving station must then check the transmission identification of this incoming transmission to ensure its correct sequence in respect of all messages, received over that incoming channel.

*Note.— Application of this procedure provides some measure of assurance that channel continuity is maintained.*

2.7.4.9.3.1 Where a circuit is unoccupied, the transmission specified in 2.7.4.9.3 must be sent at H + 00, H + 20, H + 40.

2.7.4.9.3.2 If a periodic channel check transmission is not received within a tolerance agreed for that channel, a station must send a service message to the station from which the transmission was expected. The text of this service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal MIS;
- 3) the procedure signal CH;
- 4) (optionally) the time at which the transmission was expected;
- 5) the procedure signal LR;
- 6) the transmission identification of the last message received;
- 7) the end-of-text signal.

*Note.— The following example illustrates application of the above-mentioned procedure:*

SVC→MIS→CH→[↑1220↓→]LR→ABC↑123↓<≡

2.7.4.9.3.3 When a teletypewriter channel is equipped with a system of controlled circuit protocol, and following agreement between the Administrations responsible, the transmission specified in 2.7.4.9.3 must not be made.

2.7.4.9.3.4 *Channel-check transmissions and station radio-identifications.* In order to satisfy the requirements of ITU regarding periodic transmission of the station radio identification, those AFTN stations using radioteletypewriter channels may combine the station radio identification transmission with the channel-check transmission specified in 2.7.4.9.3. In this case the combined transmission must be sent as follows:

- 1) heading (see 2.7.4.2.1.1);
- 2) alignment function [ $\leq$ ];

- 3) the procedure signal CH;
- 4) alignment function [ $\leq$ ];
- 5) the procedure signal DE followed by one SPACE [ $\rightarrow$ ] and the assigned ITU radio call sign;
- 6) alignment function [ $\leq$ ];
- 7) end-of-message signal [NNNN];
- 8) message-separation signal [ $\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow\downarrow$ ] (if required).

*Note.— Application of this format will permit this special transmission to be handled by fully automatic switching centres without the intervention of supervisory personnel.*

2.7.4.9.3.4.1 When multichannel radioteletypewriter circuits are used (e.g. MET and AFTN) the station radio call sign transmission should be sent on only one channel of the circuit. The channel chosen should be the one which is the most convenient for this purpose with the identification transmission being sent in conformance with the format used on that channel. When an AFTN channel is chosen the identification transmission should be combined with the channel-check transmission.

2.7.4.9.3.5 When a teletypewriter circuit is associated with Automatic Error Correction (ARQ) equipment, and following agreement between the Administrations responsible, the transmissions specified in 2.7.4.9.3 need not be made: however, stations employing radio teletypewriter channels on the AFTN for which the station radio identification is required, must comply with the provisions of 2.7.4.9.3.4.

*Note.— The foregoing is not to be interpreted as implying any ICAO requirement necessitating the installation of Automatic Error Correction (ARQ) equipment on international aeronautical fixed circuits.*

#### 2.7.4.10 Normal teletypewriter transmission procedures

2.7.4.10.1 Messages must be transmitted in accordance with predetermined responsibility for onward relay as agreed between the Administrations responsible for the operation of directly connected stations (see also 2.7.4.1.3 and 2.7.4.1.5.2.3).

2.7.4.10.1.1 Arising from the responsibility agreements established under the provisions of 2.7.4.9.1, each station of the AFTN must employ and, subject to the provisions of 2.7.4.9.1.1.1, adhere to a Routing Directory which consists of the Routing List.

2.7.4.10.1.1.1 When an incoming message contains only identical location indicators in the lines-following-the-heading the receiving station must accept responsibility for further relay. If possible such relay must be effected on the normal outgoing circuit to the place of destination of the message; if it is not possible to use the normal circuit, an appropriate alternative outgoing circuit must be used. When neither of these facilities is in operation, the message must not be retransmitted over the circuit from which it was received, without prior service message (see 2.7.4.1.1.9) notification of this action being given to the station that had made the previous transmission.

2.7.4.10.1.1.2 An AFTN message originator not capable of handling service messages should agree with the AFTN centre it is connected to on a method of exchanging service messages.

*Note.— A method of specifying service address in the optional data field is shown in 2.7.4.4.4.1 and 2.7.4.4.4.1.1.*

#### 2.7.4.10.1.2 *Form of transmission — teletypewriter operation.*

All transmissions must comprise in the following order (see Figure 2.7-2).

...

2.7.4.10.1.2.1 *Starting pulse.* When the receiving station uses equipment fitted with a time-switch to stop the teletypewriter machine motor when the channel is idle, a 20-30 millisecond SPACING IMPULSE shall be transmitted when the channel has been at rest for 30 seconds or more and at least 1.5 seconds shall be permitted to elapse before the transmission of the heading.

*Note 1.— This is equivalent to the transmission of a LETTER SHIFT [↓], followed by a pause (i.e. a continuous MARKING IMPULSE) of at least 1.37 seconds.*

*Note 2.— Application of this procedure will allow the receiving equipment to reach synchronization before transmission of the heading is commenced.*

2.7.4.10.1.3 *Message format.* All messages must be prepared in accordance with the provisions of 2.7.4.2 (ITA-2 format) or 2.7.4.15 (IA-5 format).

2.7.4.10.1.3.1 The Heading Line, with the exception of the SOH character, must be omitted on circuits employing one of the data link control procedures contained in CAR-ANS Part 7, 7.8.6.3 and 7.8.6.4.

#### 2.7.4.10.1.4 Reprocessing procedures

2.7.4.10.1.4.1 A message requiring retransmission must have its previous heading deleted by the station which received such message for relay. The retransmission must commence with the new heading using the transmission identification for the outgoing channel.

2.7.4.10.1.4.1.1 When applying the provisions of 2.7.4.10.1.4.1, transmission of the address part of the message must commence at some point during the 5 SPACES, 1 LETTER SHIFT [→→→→→↓] immediately preceding the first alignment function [<≡].

2.7.4.10.1.4.1.2 At tributary and “torn-tape” relay stations not equipped with automatic numbering machine devices and hence where it is necessary for a small number of additional teletypewriter characters to be perforated on a tape before the start-of-message signal to preclude risk of mutilation of the latter signal during retransmission, such additional characters, as required, shall consist of LETTER SHIFTS [↓]. Subsequent transmission on the outgoing channel shall then commence at a point as close as practicable to the start-of-message signal.

2.7.4.10.1.4.1.3 At stations where the heading of a message is originated by automatic equipment at the point of and time of transmission on the outgoing channel, but where preparation of the other parts of a message is by the perforation of a tape and where, therefore, it is necessary for a small number of additional teletypewriter characters to be perforated before the alignment function [<≡] at the commencement of the address so as to preclude risk of mutilation of this alignment function, such additional characters, as required, shall consist of LETTER SHIFTS [↓] or SPACES [→]. Subsequent transmission on the outgoing channel shall then commence at a point as close as practicable to the first alignment function [<≡] of the message.

2.7.4.10.1.4.2 At a “torn-tape” station, the incoming tapes shall be torn at a position in the message-separation signal component (see 2.7.4.6.1 and 2.7.4.7.1) so that the preceding end-of-message signal remains intact.

2.7.4.10.1.4.2.1 Following application of the provisions of 2.7.4.10.1.4.2, the shortened (i.e. less than 12 LETTER SHIFTS [↓]) message-separation signal remaining on the message tape shall be deleted, if necessary by electronic methods, before retransmission to an automatic relay installation. If the retransmission is to another “torn-tape” station then:

- 1) the shortened message-separation signal shall be reformed to a complete [↓↓↓↓↓↓↓↓↓↓↓↓] signal by transmission of the necessary number of additional LETTER SHIFTS [↓]; or
- 2) the shortened message-separation signal remaining on the tape shall be removed and a new and complete message separation signal shall be added to the message in the process of retransmission in accordance with the provisions of 2.7.4.6.1 c).

2.7.4.10.1.5 When possible in “torn-tape” or semi-automatic installations, a correct tape shall be obtained prior to onward relay; when tape is illegible or mutilated the station shall not relay the message unless good judgement indicates that this is not likely to result in malfunctioning of equipment at subsequent relay stations.

2.7.4.10.1.6 Acknowledgment of receipt of messages. In teletypewriter operation and except as provided in 2.7.4.9.1.5.1, a receiving station must not transmit acknowledgment of receipt of incoming messages. In lieu thereof the provisions of 2.7.4.1.4.1 must be applied.

2.7.4.10.1.6.1 The receipt of distress messages (priority SS — see 2.7.4.1.1.1) shall be individually acknowledged by the AFTN destination station sending a service message (see 2.7.4.1.1.9) to the AFTN origin station. Such acknowledgement of receipt shall take the format of a complete message addressed to the AFTN origin station, shall be assigned priority indicator SS and the associated priority alarm (see 2.7.4.4.3) and shall have a text comprising:

- 1) the procedure signal R;
- 2) the origin (see 4.4.4), without priority alarm, or optional heading information of the message being acknowledged;
- 3) the end-of-text signal [↓<≡].

*Note.— The following example illustrates the application of 2.7.4.10.1.6.1 procedure:*

Heading (see 2.7.4.2.1.1)  
<≡SS→ RPLPYMYX <≡  
↑121322↓→ RPLLYMYX (Priority Alarm) <≡  
R→↑121319↓→ RPLLYMYX ↓<≡  
Ending (see 2.7.4.6)

2.7.4.10.1.7 In cases where an addressee of a multi-address message requests a repetition of the message from the origin station, the origin station shall address the repeat of the message only to the addressee requesting the repeat. Under these conditions the procedure signal DUPE shall not be included.

2.7.4.11 Action on mutilated or improperly formatted messages detected in teletypewriter relay stations.

2.7.4.11.1 If, before retransmission is commenced, a relay station detects that a message has been mutilated or improperly formatted at some point ahead of the end-of-message signal, and it has reason to believe that this mutilation had occurred before the message had been received by the previous station, it must send a service message (see 2.7.4.1.1.9) to the originator as identified by the originator indicator in the origin of the mutilated or improperly formatted message, requesting repetition of the incorrectly received message.

*Note 1.— The following example illustrates a typical text of a service message in which the foregoing procedure has been applied in respect of a mutilated message having as its origin “141335 RPLLYFYX”:*

SVC→QTA→RPT→↑141335↓→RPLLMYX↓<≡

*Note 2.— This circumstance of detection of a mutilation may only be possible at “torn-tape” relay stations.*

2.7.4.11.2 When the provisions of 2.7.4.11.1 are applied, the originator as identified by the originator indicator in the origin of the mutilated message must re-assume responsibility for the mutilated message, and must comply with the provisions of 2.7.4.11.3.

2.7.4.11.3 Following application of the provisions of 2.7.4.11.2, the following reprocessing must be accomplished before the un-mutilated version of the message is transmitted for the second time towards the same addressee or addressees:

- 1) insert a new heading;
- 2) remove the ending of the message (see 2.7.4.6.1);
- 3) insert in lieu thereof the procedure signal DUPE, preceded by at least 1 LETTER SHIFT [↓] and followed by 1 CARRIAGE RETURN, 8 LINE FEEDS, end-of-message signal and, if necessary (see 2.7.4.6), the LETTER SHIFTS [↓] of the message-separation signal and tape feed.

*Note.— The example appearing in Figure 2.7-3 illustrates the application of this procedure.*

2.7.4.11.4 If, before retransmission is commenced, a relay station detects that one or more messages have been mutilated at some point ahead of the end-of-message signal, and it has reason to believe that this mutilation had occurred during or subsequent to its transmission from the previous station, it must send a service message (see 2.7.4.1.1.9) to the previous station rejecting the mutilated transmission and requesting a repetition of the incorrectly received message (or messages).

*Note.— The following examples illustrate application of the above-mentioned procedure. In example 2) the hyphen (-) separator is understood to mean “through” in plain language.*

- 1) in respect of a single mutilated message:

SVC→QTA→RPT→ABC↑123↓<≡

- 2) in respect of several mutilated messages:

SVC→QTA→RPT→ABC→123-126↓<≡

*Note 2.— This circumstance of detection of a mutilation may only be possible at “torn-tape” relay stations.*

2.7.4.11.5 When the provisions of 2.7.4.11.4 are applied, the station receiving the service message must re-assume responsibility for the referenced message. It must then retransmit the un-mutilated copy of the referenced message with a new (i.e. correct in sequence)

transmission identification (see 2.7.4.2.1.1 b)). If that station is not in possession of an unmutated copy of the original message, it must take the action prescribed in 2.7.4.11.1.

2.7.4.11.6 If, before retransmission is commenced, a relay station detects that a received message has a recognizable but mutilated end-of-message signal, it must, where necessary, repair this mutilation before retransmission.

*Note.— This circumstance of detection of a mutilation may only be possible at “torn-tape” relay stations and the action prescribed will be essential where messages are being transmitted to a semi-automatic or fully automatic station.*

2.7.4.11.7 If, during retransmission of a message, a relay station detects that the message has been mutilated at some point ahead of the end-of-message signal and is able to take action before a correct end-of-message signal has been transmitted, it must:

- 1) cancel the transmission by inserting into the channel the sequence  $\downarrow\langle\equiv\text{QTA}\rightarrow\text{QTA}\downarrow\langle\equiv$  followed by a complete ending (see 2.7.4.6);
- 2) re-assume responsibility for the message;
- 3) comply with the provisions of 2.7.4.11.1 or 2.7.4.11.4 as appropriate.

*Note.— This circumstance of detection of a mutilation may only be possible at “torn-tape” relay stations or at semiautomatic stations using continuous-tape.*

2.7.4.11.8 If, after a message has been transmitted in toto, a station detects that the text or the origin of the message was mutilated or incomplete, it must transmit to all addressees concerned a service message with the following text, if an unmutated copy of the message is available in the station:

SVC CORRECTION (*the origin of the incorrect message*)  
STOP (*followed by the correct text*).

*Note.— This circumstance of detection of a mutilation or incomplete message may only be possible at “torn-tape” relay stations or at semi-automatic stations using continuous-tape.*

2.7.4.11.9 If, after transmission of the text of a message, a relay station detects that the message has an obviously mutilated end-of-message signal, it must insert a proper end-of-message signal into the channel.

*Note.— This circumstance of detection of a mutilation may only be possible at “torn-tape” relay stations or at semiautomatic stations using continuous-tape.*

2.7.4.11.10 If, after transmission of the text material of a message, a relay station can detect that there is no complete end-of-message signal, but has no practicable means of discovering whether the irregularity has affected only the end-of-message signal or whether it may have also caused part of the original text to have been lost, it must insert into the channel the following:

- 1)  $\downarrow\langle\equiv\text{CHECK}\equiv\text{TEXT}\equiv$   
 $\text{NEW}\rightarrow\text{ENDING}\rightarrow\text{ADDED}\rightarrow$
- 2) its own station identification;
- 3)  $\downarrow\langle\equiv$
- 4) a proper ending as prescribed in 2.7.4.6.1.

*Note 1. — On tape copy, this insertion will appear as follows:*

↓<≡CHECK≡TEXT≡  
NEW→ENDING→ADDED→RPLLPALX↓<≡  
NEW ENDING ADDED RPLLPALX  
≡≡≡≡≡NNNN↓↓↓ . . .

*Note 2.— On page copy, this insertion will appear as follows:*

CHECK  
TEXT  
NEW ENDING ADDED RPLLPALX  
NNNN

*Note 3.— The staggered presentation on copy is prescribed to ensure that the attention of the addressee is drawn immediately to the insertion.*

*Note 4.— The FIGURE SHIFT [↑] is included to ensure proper functioning where First Line Monitoring Equipment is used, where the presence of the FIGURE SHIFT in the origin is used to cause disconnection of this equipment and where the missing part of the message includes this FIGURE SHIFT.*

*Note 5.— This circumstance of detection of a mutilation may only be relevant to fully automatic stations or stations using semi-automatic methods without continuous-tape.*

2.7.4.11.11 Relay stations applying the procedural provisions of 2.7.4.10.9 or 2.7.4.10.10 must, if practicable, ensure that the appropriate material therein prescribed is inserted prior to the transmission of a complete start-of-message signal associated with any following message.

2.7.4.11.12 If a relay station detects that a message was received with a completely mutilated address line, it must send a service message to the previous station rejecting the mutilated transmission.

2.7.4.11.12.1 The text of this service message shall comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal QTA;
- 3) the procedure signal ADS;
- 4) the transmission identification of the message rejected;
- 5) the indication CORRUPT;
- 6) the end-of-text signal.

*Note. — The following example illustrates application of the above- mentioned procedure:*

SVC→QTA→ADS→ABC↑123↓→CORRUPT↓<≡

2.7.4.11.12.2 The station receiving such a service message must re-assume responsibility for the referenced message, and must retransmit the message with a corrected address line, and a new transmission identification.

2.7.4.11.13 If a relay station detects a received message with an invalid (i.e. length other than 8 letters) or unknown addressee indicator, it must relay the message to those valid addressees for which it has relay responsibility using the stripped address procedure (see 2.7.4.8).

2.7.4.11.13.1 In addition, except as in 2.7.4.11.13.3, the station must send a service message to the previous station requesting correction of the error. The text of this service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal ADS;
- 3) the transmission identification of the message in error;
- 4) an alignment function;
- 5) the first address line of the message as received;
- 6) an alignment function;
- 7) either:
  - a) for an invalid addressee indicator: the indication CHECK;
  - b) for an unknown addressee indicator: the indication UNKNOWN;
- 8) the invalid or unknown addressee indicator(s);
- 9) the end-of-text signal.

*Note.— The following examples illustrate the application of the procedure of 2.7.4.11.13.1:*

*a) for an invalid addressee indicator:*

SVC→ADS→ABC↑123↓<≡  
GG→EGLLACAX→EGPKYTYX→CYAAYFYX→  
CYQXAFX<≡CHECK→CYQXAFX↓<≡

*b) for an unknown addressee indicator:*

SVC→ADS→ABC↑123↓<≡  
GG→EGLLACAX→EGEHYTYX→CYAAYFYX→  
CYQXACAX<≡UNKNOWN→EGEHYTYX↓<≡

2.7.4.11.13.2 A station receiving a service message as prescribed in 2.7.4.11.13.1 must, if a correct addressee indicator is available, repeat the message to that addressee only using the stripped address procedure (see 2.7.4.8) or, if a correct addressee indicator is not available, act as prescribed in 2.7.4.11.13.1.

2.7.4.11.13.3 Where the procedure of 2.7.4.11.13 is applied in the case of an unknown addressee indicator, and if the origin of the message is without fault, the station must send a service message to the originator. The text of this service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal ADS;
- 3) the origin of the message in error;
- 4) an alignment function;
- 5) the first address line of the message as received;
- 6) an alignment function;
- 7) the indication UNKNOWN;
- 8) the unknown addressee indicator(s);
- 9) the end-of-text signal.

*Note. — The following example illustrates application of the above-mentioned procedure:*

SVC→ADS→↑141335↓→CYULACAX<≡  
GG→EGLLACAX→EGEHYTYX→CYAAYFYX→  
CYQXACAX<≡UNKNOWN→EGEHYTYX↓<≡

2.7.4.11.13.4 A station receiving such a service message must obtain a correct addressee indicator and must repeat the message to the addressee using the stripped address procedure (see 2.7.4.8).

2.7.4.11.14 When the first relay station detects that a message was received with a mutilated origin line or without any origin, it must:

- a) stop processing the message;
- b) send a service message to the station from which the message was received.

2.7.4.11.14.1 The text of this service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal QTA;
- 3) the procedure signal OGN;
- 4) the transmission identification of the message rejected;
- 5) the indication CORRUPT;
- 6) the end-of-text signal.

*Note.— The following example illustrates application of the above-mentioned procedure:*

SVC→QTA→OGN→ABC↑123↓→CORRUPT↓<≡

2.7.4.11.14.2 The station receiving a service message as prescribed in 2.7.4.11.14.1 shall re-assume responsibility for the referenced message and must retransmit the message with a correct origin line and a new transmission identification.

*Note. — When applying the provisions of 2.7.4.11.14, the minimum requirements for processing the origin of AFTN messages are:*

- 1) the date-time group consisting of six numeric characters;
- 2) the originator indicator consisting of eight alpha characters.

2.7.4.11.15 When the first relay station detects that a message was received with an incorrect originator indicator, it must:

- a) stop processing the message; and
- b) send a service message to the station from which the message was received.

2.7.4.11.15.1 The text of the service message must comprise:

- 1) the abbreviation SVC;
- 2) the procedure signal QTA;
- 3) the procedure signal OGN;
- 4) the transmission identification of the message rejected;
- 5) the indicator INCORRECT; and
- 6) the end-of-text signal.

*Note.— The following ITA-2 example illustrates application of the abovementioned procedure:*

*SVC*→*QTA*→*OGN*→*ABC*↑*123*↓→*INCORRECT*↓<≡

2.7.4.11.15.2 The station receiving a service message as prescribed in 2.7.4.11.15.1 shall resume responsibility for the referenced message and must retransmit the message with a correct originator indicator and, if applicable, a new transmission identification.

*Note.*— *When applying the provisions of 2.7.4.11.15 the relay centre requirement is as a minimum the first character of the originator indicator verified as the first character of the location indicator of the place at which the message is originated.*

#### **2.7.4.12 Correction of errors during tape preparation**

2.7.4.12.1 Messages for which tapes are prepared at the origin station shall not be allowed to flow into the AFTN with known uncorrected errors.

2.7.4.12.2 Errors made ahead of the text of a message shall be corrected by discarding the incorrect tape and preparing a new one.

2.7.4.12.3 Where possible, errors made in the text of a message shall be corrected by backspacing the tape and eliminating the error by operation of the LETTERS [↓] key over the undesired portion.

2.7.4.12.4 Where the action of 2.7.4.12.3 is not possible, correction to the text shall be made immediately after the error by making the error sign (→E→E→E→E), transmitting the last correct word or group and then continuing with the tape preparation.

2.7.4.12.5 Where neither the action of 2.7.4.12.3 nor the action of 2.7.4.12.4 is possible because the error in the text is not noticed until later in the preparation process (but before the end-of-message signal has been added) the station shall comply with the provisions of 2.7.4.5.5.

2.7.4.12.6 The ending must be typed without error.

#### **2.7.4.13 Correction of errors during message origination in cases where the message is flowing into the AFTN during preparation**

2.7.4.13.1 Messages flowing into the AFTN during preparation shall not be terminated with an end-of-message signal if they contain known uncorrected errors.

2.7.4.13.2 Where an error is made, in this circumstance, in any part of the message which precedes the text, the unfinished message shall be cancelled by sending the sequence ↓<≡*QTA*→*QTA*↓<≡ followed by a complete ending (see 2.7.4.6).

2.7.4.13.3 Errors made in the text and noticed immediately shall be corrected by making the error sign (→E→E→E→), transmitting the last correct word or group and then continuing with the message.

2.7.4.13.4 In cases where errors are made in the text and not noticed until later in the origination process, the station shall comply with the provisions of 2.7.4.5.5.

2.7.4.13.5 In cases where it becomes obvious, during the origination of the text, that the message should be cancelled, the station shall take the action described in 2.7.4.13.2.

#### **2.7.4.14 Predetermined distribution system for AFTN messages**

2.7.4.14.1 When it has been agreed between the Administrations concerned to make use of a predetermined distribution system for AFTN messages, the system described below shall be used.

2.7.4.14.2 The Predetermined Distribution Addressee Indicator (PDAI) must be constructed as follows:

a) The first and second letters:

The first two letters of the Location Indicator of the communications centre of the State which has agreed to implement the system and which receives messages over a circuit for which it has a predetermined routing responsibility;

b) The third and fourth letters:

The letters ZZ, indicating a requirement for special distribution;

c) The fifth, sixth and seventh letters:

1) The fifth, sixth and seventh letters taken from the series A to Z and denoting the national and/or international distribution list(s) to be used by the receiving AFTN centre;

2) “N” and “S”, as the fifth letter, are reserved for NOTAM and SNOWTAM respectively (see Appendix 15D to CAR-ANS Part 15);

d) The eighth letter:

Either the filler letter “X” or a letter taken from the series A to Z to further define the national and/or international distribution list(s) to be used by the receiving AFTN centre.

*Note 1. — To avoid conflict with the AFTN start-of-message signal, combinations with ZC or CZ will not be used.*

*Note 2. — To avoid conflict with the AFTN end-of-message signal, combinations with NN will not be used.*

2.7.4.14.3 Predetermined Distribution Addressee Indicators (PDAIs) must be used whenever possible on AFTN messages between States which have agreed to make use of the predetermined distribution system.

2.7.4.14.4 AFTN messages carrying Predetermined Distribution Addressee Indicators allocated by the State receiving the message must be routed to the addressees listed on the associated list of Addressee Indicators described in 2.7.4.11.5.

2.7.4.14.5 States shall send their list of selected Predetermined Distribution Addressee Indicators together with the associated lists of Addressee Indicators to:

a) the States from which they will receive AFTN messages for predetermined distribution, to assure correct routing; and

b) the States which will originate AFTN messages for predetermined distribution to facilitate the treatment of requests for retransmission and to assist originators in using the Predetermined Distribution Addressee Indicators correctly.

2.7.4.14.5.1 The list of Addressee Indicators associated with a Predetermined Distribution Addressee Indicator must include either:

- a) Addressee Indicators for national distribution; or
- b) Addressee Indicators for international distribution; or
- c) Predetermined Distribution Addressee Indicators for international distribution; or
- d) any combination of a), b) and c).

2.7.4.15 Message format — International Alphabet No. 5 (IA-5)

...

2.7.4.15.1 Heading

...

2.7.4.15.2 Address

2.7.4.15.2.1 The address must comprise:

- a) alignment function [ $\llcorner$ ];
- b) priority indicator;
- c) addressee indicator(s);
- d) alignment function [ $\llcorner$ ].

...

2.7.4.15.2.2 Origin

...

2.7.4.15.2.2.6 The inclusion of optional data in the origin line shall be permitted provided a total of 69 characters is not exceeded and subject to agreement between the Administrations concerned. The presence of the optional data field shall be indicated by one occurrence of the SPACE character immediately preceding optional data.

2.7.4.15.2.2.6.1 When additional addressing information in a message needs to be exchanged between source and destination addresses, it should be conveyed in the optional data field (ODF), using the following specific format:

- a) characters one and full stop (1.) to indicate the parameter code for the additional address function;
- b) three modifier characters, followed by an equal sign (=) and the assigned 8-character ICAO address; and
- c) the character hyphen (-) to terminate the additional address parameter field.

2.7.4.15.2.2.6.1.1 When a separate address for service messages or inquiries is different from the originator indicator, the modifier SVC should be used.

2.7.4.15.2.2.7 The origin line must be concluded by an alignment function [ $\llcorner$ ] and the start-of-text (STX) (0/2) character.

2.7.4.15.3. Text

2.7.4.15.3.1 The text of messages must be drafted in accordance with 2.7.1.2 and must consist of all data between STX and ETX.

*Note.— When message texts do not require conversion to the ITA-2 code and format and do not conflict with ICAO message types or formats in the MOS-ATS, Administrations may make full use of the characters available in International Alphabet No. 5 (IA-5).*

...

2.7.4.15.3.7 Where messages are prepared off-line, e.g. by message preparation, errors in the text must be corrected by backspacing and replacing the character in error by character DEL (7/15).

2.7.4.15.3.8 Corrections to textual errors made in on-line operations shall be corrected by inserting →E→E→E→ following the error, then retyping the last correct word (or group).

2.7.4.15.3.9 When it is not discovered until later in the origination process that an error has been made in the text, the correction shall be separated from the last text group, or confirmation, if any, by an alignment function [ $\leq$ ]. This shall be followed by the abbreviation COR and the correction.

2.7.4.15.3.10 Stations shall make all indicated corrections on the page-copy prior to local delivery or a transfer to a manually operated circuit.

2.7.4.15.3.11 When messages are transmitted only on low-speed circuits, the text of messages entered by the AFTN origin station shall not exceed 1800 characters in length. AFTN messages exceeding 1800 characters shall be entered by the AFTN origin station in the form of separate messages.

*Note 1.— Low-speed circuits operate at 300 bits per second or less.*

*Note 2.— Guidance material for forming separate messages from a single long message is given in Attachment C to this Sub-part.*

*Note 3.— The character count includes all printing and non-printing characters in the message from, but not including, the start-of-text signal to, but not including, the first alignment function of the ending.*

2.7.4.15.3.11.1 The transmission on medium- or high-speed circuits of AFTN messages with text exceeding 1 800 characters that have not been entered by the AFTN origin station in the form of separate messages shall be subject to agreement between the Administrations concerned and not diminish the performance characteristics of the network or link.

*Note 1.— Medium-speed circuits operate at speeds in the range between 300 and 3000 bits per second. High-speed circuits operate at speeds in excess of 3000 bits per second.*

*Note 2.— Guidance material for forming separate messages from a single long message is given in Attachment B to this Sub-part.*

*Note 3.— The character count includes all printing and non-printing characters in the text from, but not including, the start-of-text signal to, but not including, the first alignment function of the ending.*

2.7.4.15.3.12 Ending

2.7.4.15.3.12.1 The ending of a message shall comprise the following in the order stated:

- a) an alignment [ $\leq$ ] function following the last line of text;
- b) page-feed character, character 0/11 (VT);

c) end-of-text character 0/3 (ETX).

2.7.4.15.3.12.1.1 Station terminal equipment (page printers) on the International Alphabet Number 5 (IA-5) shall be provided with a capability to generate sufficient line feed functions for local station use upon the reception of a VERTICAL TAB character (0/11).

2.7.4.15.3.12.1.2 When the message does not transit ITA-2 portions of the AFTN, or where Administrations have made provisions to add automatically the second carriage return before transmission to an ITA-2 circuit, one carriage return in the alignment function and end-of-line function should be permitted subject to agreement between the Administrations concerned.

2.7.4.15.3.12.1.3 When messages are transmitted only on low-speed circuits, messages entered by the AFTN origin station shall not exceed 2 100 characters in length.

*Note 1.— Low-speed circuits operate at 300 bits per second or less.*

*Note 2.— The character count includes all printing and non-printing characters in the message from and including the start-of-heading character (SOH) to and including the end-of-text character.*

2.7.4.15.3.12.1.4 The transmission on medium- or high-speed circuits of AFTN messages exceeding 2 100 characters that have not been entered by the AFTN origin station in the form of separate messages shall be subject to agreement between the Administrations concerned and not diminish the performance characteristics of the network or link.

*Note 1.— Medium-speed circuits operate at speeds in the range between 300 and 3000 bits per second. High-speed circuits operate at speeds in excess of 3000 bits per second.*

*Note 2.— The character count includes all printing and non-printing characters in the message from and including the start-of-heading character (SOH) to and including the end-of-text character.*

2.7.4.15.4 Except as provided in 4.4.15.5 to 4.4.15.6 and 4.4.16, the procedures of 4.4.8 and 4.4.9 to 4.4.13 shall be used for messages using IA-5 code.

2.7.4.15.4.1 The transmission of message texts that do not require conversion to the IA-2 code and format and with message lines containing more than 69 printable and non-printable characters shall be subject to agreement between the Administrations concerned.

2.7.4.15.5 *Channel-check transmissions.* In the case where continuous control of channel condition is not provided the following periodic transmissions shall be sent on teletypewriter circuits:

1) heading line (see 2.7.4.15.1.1);

2) alignment function    S  
                                  T;  
                                  X

3) the procedure signal CH;

4) alignment function    E  
                                  T.  
                                  X

The receiving station shall then check the transmission identification of this incoming transmission to ensure its correct sequence in respect of all messages received over that incoming channel.

*Note.— Application of this procedure provides some measure of assurance that channel continuity is maintained; however, a continuously controlled channel is much more preferable in that data integrity can also be improved.*

2.7.4.15.5.1 Where a circuit is unoccupied and uncontrolled, the transmission identified in 2.7.4.15.5 must be sent at H + 00, H + 20, H + 40.

2.7.4.15.6 The receipt of distress messages (priority indicator SS, see 4.4.1.1.1) shall be individually acknowledged by the AFTN destination station by sending a service message (see 2.7.4.1.1.9) to the AFTN origin station. Such acknowledgement of receipt shall take the format of a complete message addressed to the AFTN origin station, shall be assigned priority indicator SS and the associated priority alarm (see 2.7.4.15.2.2.5), and shall have a text comprising:

...

2.7.4.16 Action taken on mutilated messages in IA-5 detected in computerized AFTN relay stations

...

2.7.4.17 Transfer of AFTN messages over code and byte independent circuits and networks

...

## **2.7.5 Common ICAO Data Interchange Network (CIDIN)**

...

## **2.7.6 ATS Message Handling Services (ATSMHS)**

The ATS message service of the ATS (air traffic services) message handling service (ATSMHS) application shall be used to exchange ATS messages between users over the aeronautical telecommunication network (ATN) internet.

*Note 1.— The ATS message service comprised in the ATS message handling service application aims at providing generic message services over the ATN internet communication service (ICS). It may, in turn, be used as a communication system by user-applications communicating over the ATN. This may be achieved, for example, by means of application programme interfaces to the ATS message service.*

*Note 2.— The detailed specification of the ATS message handling service application is included in the Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols (Doc 9880), Part II.*

*Note 3.— The ATS message service is provided by the implementation over the ATN internet communication service of the message handling systems specified in ISO/IEC (International Organization for Standardization/International Electrotechnical Commission) 10021 and ITU-T (International Telecommunication Union — Telecommunication Standardization Sector) X.400 and complemented by the additional requirements specified in the Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols (Doc 9880), Part II. The two sets of documents, the ISO/IEC MOTIS (Message-Oriented Text Interchange System) International of Recommendations (1988 or later) are, in principle, aligned with each other. However, there*

are a small number of differences. In the above-mentioned document, reference is made to the relevant ISO International Standards and International Standardized Profiles (ISP), where applicable. Where necessary, e.g. for reasons of interworking or to point out differences, reference is also made to the relevant X.400 Recommendations.

Note 4.— The following types of ATN end systems performing ATS message handling services are defined in the Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols (Doc 9880), Part II:

- 1) an ATS message server;
- 2) an ATS message user agent;
- 3) an AFTN/AMHS gateway (aeronautical fixed telecommunication network/ATS message handling system); and

Connections may be established over the internet communications service between any pair constituted of these ATN end systems (see Table 2.7-1).

**Table 2.7-1. Communications between ATN and systems implementing ATS message handling services**

ATN End System 1	ATN End System 2
ATS Message Server	ATS Message Server
ATS Message Server	AFTN/AMHS Gateway
ATS Message Server	ATS Message User Agent
AFTN/AMHS Gateway	AFTN/AMHS Gateway

### 2.7.7 Inter-Centre Communications (ICC)

The inter-centre communications (ICC) applications set shall be used to exchange ATS messages between air traffic service users over the ATN internet.

Note 1.— The ICC applications set enables the exchange of information in support of the following operational services:

- a) flight notification;
- b) flight coordination;
- c) transfer of control and communications;
- d) flight planning;
- e) airspace management; and
- f) air traffic flow management.

Note 2.— The first of the applications developed for the ICC set is the ATS interfacility data communications (AIDC).

Note 3.— The AIDC application exchanges information between ATS units (ATSUs) for support of critical aircraft control (ATC) functions such as notification of flights approaching a flight information region (FIR) boundary, coordination of boundary conditions and transfer of control and communications authority.

## 2.8 AERONAUTICAL MOBILE SERVICE VOICE COMMUNICATIONS

### 2.8.1 General

Note 1.— For the purposes of these provisions, the communication procedures applicable to the aeronautical mobile service, as appropriate, also apply to the aeronautical mobile satellite service.

Note 2.— Guidance material for the implementation of the aeronautical mobile satellite service is contained in the Manual on the Aeronautical Mobile Satellite (Route) Service (Doc 9925). Additional guidance for satellite voice communications (SATVOICE) is contained in the Satellite Voice Operations Manual (Doc 10038) and the Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

...

#### 2.8.1.8 Categories of Messages

...

<i>Message category and order of priority</i>	<i>Radiotelephony signal</i>
a) Distress calls, distress messages and distress traffic	MAYDAY
b) Urgency messages, including messages preceded by the medical transports signal	PAN, PAN or PAN, PAN MEDICAL

...

2.8.1.8.4 *Flight safety messages* shall comprise the following:

1) *movement and control messages* [see MOS-ATS];

...

### **2.8.2 Radiotelephony Procedures**

...

#### 2.8.2.1.5 Transmitting technique

...

2.8.2.1.5.8 The following words and phrases shall be used in radiotelephony communications as appropriate and shall have the meaning ascribed hereunder:

...

*Phrase*      *Meaning*

...

OVER      “My transmission is ended, and I expect a response from you.”

*Note.— Not normally used in VHF or satellite voice communications.*

OUT      “This exchange of transmissions is ended and no response is expected.”

*Note.— Not normally used in VHF or satellite voice communications.*

...

#### 2.8.2.1.7.2.1 Full call signs

2.8.2.1.7.2.1.1 An aircraft radiotelephony call sign shall be one of the following types:

...

## **2.11 AERONAUTICAL MOBILE SERVICE –DATA LINK COMMUNICATIONS**

### **2.11.1 General**

...

*Note 3. —Guidance material relating to CPDLC, ADS-C, and related data link initiation capability (DLIC), can be found in the Global Operational Data Link (GOLD) Manual (Doc 10037).*

#### 2.11.1.1 Data link initiation capability (DLIC)

##### 2.11.1.1.1 General

2.11.1.1.1.1 Before entering an airspace where data link applications are used by the ATS unit, data link communications shall be initiated between the aircraft and the ATS unit in order to register the aircraft and, when necessary, allow the start of a data link application. This shall be initiated by the aircraft, either automatically or by the pilot, or by the ATS unit on address forwarding.

2.11.1.1.1.2 The logon address associated with an ATS unit shall be published in Aeronautical Information Publications in accordance with CAR-ANS Part 15.

*Note.— A given FIR may have multiple logon addresses; and more than one FIR may share the same logon address.*

##### 2.11.1.1.2 Aircraft initiation

On receipt of a valid data link initiation request from an aircraft approaching or within a data link service area, the ATS unit shall accept the request and, if able to correlate it with a flight plan, shall establish a connection with the aircraft.

##### 2.11.1.1.3 ATS unit forwarding

The ground system initially contacted by the aircraft shall provide to the next ATS unit any relevant updated aircraft information in sufficient time to permit the establishment of data link communications.

##### 2.11.1.1.4 Failure

2.11.1.1.4.1 In the case of a data link initiation failure, the data link system shall provide an indication of the failure to the appropriate ATS unit(s). The data link system shall also provide an indication of the failure to the flight crew when a data link initiation failure results from a logon initiated by the flight crew.

*Note.— When the aircraft's logon request results from responding to a contact request by a transferring ATS unit, then both ATS units will receive the indication.*

2.11.1.1.4.2 The ATS unit shall establish procedures to resolve, as soon as practicable, data link initiation failures. Procedures shall include, as a minimum, verifying that the aircraft is initiating a data link request with the appropriate ATS unit (i.e. the aircraft is approaching or within the ATS unit's control area); and if so:

- a) when a flight plan is available, verify that the aircraft identification, aircraft registration, or aircraft address and other details contained in the data link initiation request correspond with details in the flight plan, and where differences are detected verify the correct information and then make the necessary changes; or

- b) when a flight plan is not available, create a flight plan with sufficient information in the flight data processing system, to achieve a successful data link initiation; then
- c) arrange for the re-initiation of the data link.

2.11.1.1.4.3 The aircraft operator shall establish procedures to resolve, as soon as practicable, data link initiation failures. Procedures shall include, as a minimum, that the pilot:

- a) verify the correctness and consistency of the flight plan information available in the FMS or equipment from which data link is initiated, and where differences are detected make the necessary changes; and
- b) verify the correct address of the ATS unit; then
- c) re-initiate data link.

#### 2.11.1.2 Composition of data link messages

2.11.1.2.1 The text of messages shall be composed in standard message format (e.g. CPDLC message set), in plain language or in abbreviations and codes, as prescribed in 2.6.7. Plain language shall be avoided when the length of the text can be reduced by using appropriate abbreviations and codes. Non-essential words and phrases, such as expressions of politeness, shall not be used.

2.11.1.2.2 The following characters are allowed in the composition of messages:

...

#### 2.11.1.3 Display of data link messages

...

### 2.11.2 CPDLC Procedures

...

2.11.2.6 The pilot and the controller shall be provided with the capability to exchange messages which include standard message elements, free text message elements or a combination of both.

...

#### 2.11.2.9 Exchange of operational CPDLC messages

2.11.2.9.1 Controllers and pilots shall construct CPDLC messages using standard message elements, free text message elements or a combination of both.

2.11.2.9.1.1 When CPDLC is being used, and the intent of the message is included in the CPDLC message set contained in the MOS-ATS, Appendix 5, the associated standard message elements shall be used.

...

2.11.2.9.3 CPDLC ground systems and airborne systems shall be capable of using the CPDLC message alert attributes in order to draw attention to higher priority messages.

*Note.— Message attributes dictate certain message handling requirements for the CPDLC user receiving a message. Each CPDLC message has two attributes: alert and response attributes. When a message contains multiple message elements, the highest precedence message element attribute type becomes the attribute type for the entire message.*

2.11.2.9.3.1 The alert attribute shall delineate the type of alerting required upon message receipt. Alert types are presented in Table 8-1.

2.11.2.9.3.2 The response attribute shall delineate valid responses for a given message element. Response types are presented in Table 8-2 for uplink messages and Table 8-3 for downlink messages.

...

**Table 2.11-1 Alert Attribute (Uplink and Downlink)**

...

**Table 2.11-2 Response Attribute (Uplink)**

...

**Table 2.11 – 3 Response Attribute (Downlink)**

<i>Type</i>	<i>Response Required</i>	<i>Valid Response</i>	<i>Precedence</i>
Y	Yes	Any CPDLC uplink message, LOGICAL ACKNOWLEDGEMENT (only if required)	1
N	No, unless logical acknowledgement required	LOGICAL ACKNOWLEDGEMENT (only if required), MESSAGE NOT SUPPORTED BY THIS ATC UNIT, ERROR	2

2.11.2.9.3.3.1 When a multi-element message requires a response, the response shall apply to all message elements.

*Note.— For example, a multi-element message containing CLIMB TO FL310 MAINTAIN MACH.84, a WILCO response applies to, and indicates compliance with, both elements of the message.*

...

2.11.2.9.5 The appropriate ATS authority shall select those message elements contained in PANSATM, Appendix 5 that support operations in their airspace. Should an ATS authority choose to select a subset of the message elements, and a received message does not belong to this subset, the ATC unit shall respond by uplinking the message element MESSAGE NOT SUPPORTED BY THIS ATC UNIT.

...

2.11.2.9.5.1 Only the uplink messages appropriate to a particular control sector’s operations should be provided to the controller.

*Note.— The CPDLC message set contained in ICAO PANS-ATM, Appendix 5 was developed to encompass different air traffic management environments.*

2.11.2.9.5.2 Information concerning CPDLC message elements subset utilized shall be published in the Aeronautical Information Publications (AIPs).

2.11.2.9.6 Transfer of CPDLC

...

2.11.2.11 Free text message elements

2.11.2.11.1 The use of free text message elements by controllers or pilots, should be avoided.

*Note.— Whilst it is recognized that non-routine and emergency situations may necessitate the use of free text, particularly when voice communication has failed, the avoidance of utilizing free text messages is intended to reduce the possibility of misinterpretation and ambiguity.*

2.11.2.11.2 When the CPDLC message set contained in the MOS-ATS does not provide for specific circumstances, the appropriate ATS authority may determine that it is acceptable to use free text message elements. In such cases, the appropriate ATS authority, in consultation with operators and other ATS authorities that may be concerned, shall define display format, intended use and attributes for each free text message element and publish them with relevant procedures in the AIPs.

2.11.2.11.3 Free text message elements should be stored for selection within the aircraft or ground system to facilitate their use.

...

2.11.2.12 Emergencies, hazards and equipment failure procedures

...

2.11.2.12.2 When responding via CPDLC to all other emergency or urgency messages, uplink message ROGER shall be used.

2.11.2.12.3 When a CPDLC message requires a logical acknowledgement and/or an operational response, and such a response is not received, the pilot or controller, as appropriate, shall be alerted.

2.11.2.12.4 Failure of CPDLC

*Note 1.— Action to be taken in the event of a data link initiation failure is covered in 2.11.1.1.4.*

*Note 2.— Action to be taken in the event of the failure of a single CPDLC message is covered in 2.11.2.12.7.*

2.11.2.12.4.1 A CPDLC failure shall be detected in a timely manner.

...

2.11.2.12.5 Intentional shutdown of CPDLC

...

2.11.2.12.7 Discontinuation of the use of CPDLC Pilot Requests

...

2.11.2.12.7.2 The resumption of the normal use of CPDLC shall be advised by using the following phrase:

(call sign) or (ALL STATIONS) RESUME NORMAL CPDLC OPERATIONS

2.11.2.13 Where the testing of CPDLC with an aircraft could affect the air traffic services being provided to the aircraft, coordination shall be effected prior to such testing.

( — END of CAR-ANS Part 2— )

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**EFFECTIVITY CLAUSE:**

This amendment shall be added to the PCAR-ANS Part 2 and shall take effect immediately and shall supersede any other memoranda, regulations, and directives in conflict with this provision after compliance with the requisite single newspaper publication and a copy was filed with the U.P. Law Center – Office of the National Administrative register.

So ordered. Signed this 09 day of MAY 2017, CAAP, Pasay City.

  
CAPT. JIM C. SYDIONGCO