KEMENTERIAN PERHUBUNGAN  
DIREKTORAT JENDERAL PERHUBUNGAN UDARA  

PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA  

NOMOR : KP 281 TAHUN 2017  

TENTANG  

STANDAR TEKNIK DAN OPERASI BAGIAN 170-02 (MANUAL OF STANDARD CASR PART 170-02) PROSEDUR KOMUNIKASI PENERBANGAN (MANUAL ON AERONAUTICAL COMMUNICATION PROCEDURES)  

DENGAN RAHMAT TUHAN YANG MAHA ESA  

DIREKTUR JENDERAL PERHUBUNGAN UDARA,  


b. bahwa berdasarkan pertimbangan sebagaimana dimaksud pada huruf a, dipandang perlu menetapkan Peraturan Direktur Jenderal Perhubungan Udara tentang Standar Teknisi dan Operasi Bagian 170-02 (Manual of Standard CASR Part 170-02) Pedoman Komunikasi Penerbangan (Manual on Communication Procedures);  

Mengingat : 1. Undang-undang Nomor 1 Tahun 2009 tentang Penerbangan (Lembaran Negara Tahun 2009 Nomor 1 Tambahan Lembaran Negara Republik Indonesia Nomor 4956);
2. Peraturan Presiden Nomor 7 tahun 2015 tentang Organisasi Kementerian Negara (Lembaran Negara Republik Indonesia Tahun 2015 Nomor 5);

3. Peraturan Presiden Nomor 40 Tahun 2015 tentang Kementerian Perhubungan (Lembaran Negara Republik Indonesia Tahun 2015 Nomor 75);

4. Peraturan Pemerintah Nomor 77 Tahun 2012 tentang Perusahaan Umum (Perum) Lembaga Penyelenggara Pelayanan Navigasi Penerbangan Indonesia (Lembaran Negara Republik Indonesia Tahun 2012 Nomor 176);

5. Peraturan Menteri Perhubungan Nomor PM 49 Tahun 2011 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 172 (Civil Aviation Safety Regulation Part 172) tentang Penyelenggara Pelayanan Lalu Lintas Penerbangan (Air Traffic Service Provider);


8. Peraturan Menteri Perhubungan Nomor 60 Tahun 2015 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 175 (Civil Aviation Safety Regulation Part 175) tentang Pelayanan Informasi Aeronautika (Aeronautical Information Services);

9. Peraturan Menteri Perhubungan Nomor PM 65 Tahun 2017 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 170 (Civil Aviation Safety Regulation Part 170) tentang Peraturan Lalu Lintas Penerbangan (Air Traffic Rules);
MEMUTUSKAN:

Menetapkan: PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA TENTANG STANDAR TEKNIS DAN OPERASI BAGIAN 170-02 (MANUAL OF STANDARD CASR 170-02) PROSEDUR KOMUNIKASI PENERBANGAN (MANUAL ON AERONAUTICAL COMMUNICATION PROCEDURES).

Pasal 1


Pasal 2

Direktur Navigasi Penerbangan mengawasi pelaksanaan Peraturan ini

Pasal 3

Peraturan ini berlaku pada tanggal di tetapkan

Ditetapkan di Jakarta
Pada tanggal 5 OKTOBER 2015

DIREKTUR JENDERAL PERHUBUNGAN UDARA

ttd

Dr. Ir. AGUS SANTOSO, M.Sc

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MOS 170-02

Manual on Communication Procedures
CHAPTER 1
DEFINITIONS

1.1 SERVICES

Aeronautical broadcasting service. A broadcasting service intended for the transmission of information relating to air navigation.

Aeronautical fixed service (AFS). A telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.

Aeronautical fixed telecommunication network (AFTN). A worldwide system of aeronautical fixed circuits provided, as part of the aeronautical fixed service, for the exchange of messages and/or digital data between aeronautical fixed stations having the same or compatible communications characteristics.

Aeronautical mobile service (RR S1.32). A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies.

Aeronautical mobile (R)* service (RR S1.33). An aeronautical mobile service reserved for communications relating to safety and regularity of flight, primarily along national or international civil air routes.

Aeronautical mobile-satellite service (RR S1.35). A mobile-satellite service in which mobile earth stations are located on board aircraft; survival craft stations and emergency position-indicating radio beacon stations may also participate in this service.

Aeronautical mobile-satellite (R)* service (RR S1.36). An aeronautical mobile-satellite service reserved for communications relating to safety and regularity of flights, primarily along national or international civil air routes.

Aeronautical radio navigation service (RR S1.46). A radio navigation service intended for the benefit and for the safe operation of aircraft.

Note.—The following Radio Regulations are quoted for purposes of reference and/or clarity in understanding of the above definition of the aeronautical radio navigation service:

RR S1.10 Radio navigation: Radio determination used for the purpose of navigation, including obstruction warning.
RR S1.9 Radio determination: The determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves.

**Aeronautical telecommunication service.** A telecommunication service provided for any aeronautical purpose.

**International telecommunication service.** A telecommunication service between offices or stations of different States, or between mobile stations which are not in the same State, or are subject to different States.

### 1.2 STATIONS

**Aerodrome control radio station.** A station providing radio communication between an aerodrome control tower and aircraft or mobile aeronautical stations.

**Aeronautical fixed station.** A station in the aeronautical fixed service.

**Aeronautical station (RR S1.81).** A land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea.

**Aeronautical telecommunication station.** A station in the aeronautical telecommunication service.

**AFTN communication centre.** An AFTN station whose primary function is the relay or retransmission of AFTN traffic from (or to) a number of other AFTN stations connected to it.

**AFTN destination station.** An AFTN station to which messages and/or digital data are addressed for processing for delivery to the addressee.

**AFTN origin station.** An AFTN station where messages and/or digital data are accepted for transmission over the AFTN.

**AFTN station.** A station forming part of the aeronautical fixed telecommunication network (AFTN) and operating as such under the authority or control of a State.

**Air-ground control radio station.** An aeronautical telecommunication station having primary responsibility for handling communications pertaining to the operation and control of aircraft in a given area.

**Aircraft station (RR S1.83).** A mobile station in the aeronautical mobile service, other than a survival craft station, located on board an aircraft.
**Communication centre.** An aeronautical fixed station which relays or retransmits telecommunication traffic from (or to) a number of other aeronautical fixed stations directly connected to it.

**Mobile surface station.** A station in the aeronautical telecommunication service, other than an aircraft station, intended to be used while in motion or during halts at unspecified points.

**Network station.** An aeronautical station forming part of a radiotelephony network.

**Radio direction finding (RR S1.12).** Radio determination using the reception of radio waves for the purpose of determining the direction of a station or object.

**Radio direction-finding station (RR S1.91).** A radio determination station using radio direction finding.

*Note.— The aeronautical application of radio direction finding is in the aeronautical radio navigation service.*

**Regular station.** A station selected from those forming an en-route air-ground radiotelephony network to communicate with or to intercept communications from aircraft in normal conditions.

**Tributary station.** An aeronautical fixed station that may receive or transmit messages and/or digital data but which does not relay except for the purpose of serving similar stations connected through it to a communication centre.

### 1.3 COMMUNICATION METHODS

**Air-ground communication.** Two-way communication between aircraft and stations or locations on the surface of the earth.

**Air-to-ground communication.** One-way communication from aircraft to stations or locations on the surface of the earth

**Blind transmission.** A transmission from one station to another station in circumstances where two-way communication cannot be established but where it is believed that the called station is able to receive the transmission.

**Broadcast.** A transmission of information relating to air navigation that is not addressed to a specific station or stations.

**Duplex.** A method in which telecommunication between two stations can take place in both directions simultaneously.

**Ground-to-air communication.** One-way communication from stations or locations on the surface of the earth to aircraft.
Interpilot air-to-air communication. Two-way communication on the designated air-to-air channel to enable aircraft engaged in flights over remote and oceanic areas out of range of VHF ground stations to exchange necessary operational information and to facilitate the resolution of operational problems.

Non-network communications. Radiotelephony communications conducted by a station of the aeronautical mobile service, other than those conducted as part of a radiotelephony network.

Radiotelephony network. A group of radiotelephony aeronautical stations which operate on and guard frequencies from the same family and which support each other in a defined manner to ensure maximum dependability of air-ground communications and dissemination of air-ground traffic.

Readback. A procedure whereby the receiving station repeats a received message or an appropriate part thereof back to the transmitting station so as to obtain confirmation of correct reception.

Simplex. A method in which telecommunication between two stations takes place in one direction at a time.

Telecommunication (RR S1.3). Any transmission, emission, or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems.

1.4 TELETYPewriter SYSTEMS

Automatic relay installation. A teletypewriter installation where automatic equipment is used to transfer messages from incoming to outgoing circuits.

Note.— This term covers both fully automatic and semi-automatic installations.

Fully automatic relay installation. A teletypewriter installation where interpretation of the relaying responsibility in respect of an incoming message and the resultant setting-up of the connections required to effect the appropriate retransmissions is carried out automatically, as well as all other normal operations of relay, thus obviating the need for operator intervention, except for supervisory purposes.

Message field. An assigned area of a message containing specified elements of data.

Semi-automatic relay installation. A teletypewriter installation where interpretation of the relaying responsibility in respect of an incoming message and the resultant setting-up of the connections required to effect the
appropriate retransmissions require the intervention of an operator but where all other normal operations of relay are carried out automatically.

**Teletypewriter tape.** A tape on which signals are recorded in the 5-unit Start-Stop code by completely severed perforations (Chad Type) or by partially severed perforations (Chadless Type) for transmission over teletypewriter circuits.

**“Torn-tape” relay installation.** A teletypewriter installation where messages are received and relayed in teletypewriter tape form and where all operations of relay are performed as the result of operator intervention.

### 1.5 AGENCIES

**Aeronautical telecommunication agency.** An agency responsible for operating a station or stations in the aeronautical telecommunication service (Airnav Indonesia).

**Aircraft operating agency.** The person, organization or enterprise engaged in, or offering to engage in, an aircraft operation.

### 1.6 FREQUENCIES

**Primary frequency.** The radiotelephony frequency assigned to an aircraft as a first choice for air-ground communication in a radiotelephony network.

**Secondary frequency.** The radiotelephony frequency assigned to an aircraft as a second choice for air-ground communication in a radiotelephony network.

### 1.7 DATA LINK COMMUNICATIONS

**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.
Free text message element. A message element used to convey information not conforming to any standardized message element in the CPDLC message set.

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.

Pre-formatted free text message element. A free text message element that is stored within the aircraft system or ground system for selection.

Standardized free text message element. A message element that uses a defined free text message format, using specific words in a specific order.

Note.— Standardized free text message elements may be manually entered by the user or pre-formatted.

1.8 MISCELLANEOUS

Aeronautical fixed circuit. A circuit forming part of the aeronautical fixed service (AFS).

Aeronautical fixed telecommunication network circuit. A circuit forming part of the aeronautical fixed telecommunication network (APTN).

Aeronautical telecommunication log. A record of the activities of an aeronautical telecommunication station.

Air-report. A report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting.

Note.— Details of the AIREP form are given in PANS-ATM (Doc 4444). Advisory Circular 170-02 (AC 170-02)

Altitude. The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).

ATS direct speech circuit. An aeronautical fixed service (AFS) telephone circuit, for direct exchange of information between air traffic services (ATS) units.

Automatic telecommunication log. A record of the activities of an aeronautical telecommunication station recorded by electrical or mechanical means.

Flight level. A surface of constant atmospheric pressure which is related to a specific pressure datum, 1 013.2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals.
Note 1.— A pressure type altimeter calibrated in accordance with the standard atmosphere:

a) when set to a QNH altimeter setting, will indicate altitude;
b) when set to a QFE altimeter setting, will indicate height above the QFE reference datum;
c) when set to a pressure 1 013.2 hPa, may be used to indicate flight levels.

Note 2.— The terms “height” and “altitude”, used in Note 1 above, indicate altimetric rather than geometric heights and altitudes.

**Frequency channel.** A continuous portion of the frequency spectrum appropriate for a transmission utilizing a specified class of emission.

Note.— The classification of emissions and information relevant to the portion of the frequency spectrum appropriate for a given type of transmission (bandwidths) is specified in the ITU Radio Regulations, Article 52 and Appendix SI.

**Height.** The vertical distance of a level, a point or an object considered as a point, measured from a specified datum.

**Human performance.** Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

**Location indicator.** A four-letter code group formulated in accordance with rules prescribed by ICAO and assigned to the location of an aeronautical fixed station.

**Meteorological operational channel.** A channel of the aeronautical fixed service (AFS), for the exchange of aeronautical meteorological information.

**Meteorological operational telecommunication network.** An integrated system of meteorological operational channels, as part of the aeronautical fixed service (AFS), for the exchange of aeronautical meteorological information between the aeronautical fixed stations within the network.

Note.— “Integrated” is to be interpreted as a mode of operation necessary to ensure that the information can be transmitted and received by the stations within the network in accordance with pre-established schedules.

**NOTAM.** A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.
**Operational control communications.** Communications required for the exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of a flight.

*Note.— Such communications are normally required for the exchange of messages between aircraft and aircraft operating agencies.*

**Route segment.** A route or portion of route usually flown without an intermediate stop.

**Routing Directory.** A list in a communication centre indicating for each addressee the outgoing circuit to be used.

**SNOWTAM.** A special series NOTAM notifying the presence or removal of hazardous conditions due to snow, ice, slush or standing water associated with snow, slush and ice on the movement area, by means of a specific format
CHAPTER 2
ADMINISTRATIVE PROVISIONS RELATING TO THE INTERNATIONAL AERONAUTICAL TELECOMMUNICATION SERVICE

2.1 Division of service
The international aeronautical telecommunication service shall be divided into four parts:
1) aeronautical fixed service;
2) aeronautical mobile service;
3) aeronautical radio navigation service;
4) aeronautical broadcasting service.

2.2 Telecommunication — Access
All aeronautical telecommunication stations, including end systems and intermediate systems of the aeronautical telecommunication network (ATN), shall be protected from unauthorized direct or remote access.

2.3 Hours of service
2.3.1 All station and offices that provide international aeronautical telecommunication service shall give notification of the normal hours of service to the aeronautical telecommunication agencies designated to receive this information by other Administrations concerned.

2.3.2 Whenever necessary and practicable, station and offices that provide international aeronautical telecommunication service shall give notification of any change in the normal hours of service, before such a change is effected, to the aeronautical telecommunication agencies designated to receive this information by other Administrations concerned. Such changes shall also, whenever necessary, be promulgated in NOTAM.

2.3.3 If a station of the international aeronautical telecommunication service, or an aircraft operating agency, requests a change in the hours of service of another station, such change shall be requested as soon as possible after the need for change is known. The station or aircraft operating agency requesting the change shall be informed of the result of its request as soon as possible.

2.4 Supervision

2.4.1 DGCA is responsible for ensuring that the international aeronautical telecommunication service is conducted in accordance with the Procedures in this manual.

2.4.2 Occasional infringements of the Procedures contained herein, when not serious, may be dealt with by direct communication between the parties immediately interested either by correspondence or by personal contact.

2.4.3 When a station commits serious or repeated infringements, representations relating to them shall be made to DGCA.
2.4.4 DGCA may exchange information regarding the performance of systems of communication, radio navigation, operation and maintenance, unusual transmission phenomena, etc.

2.5 Superfluos transmissions

Station and offices that provide international aeronautical telecommunication services shall ensure that there is no willful transmission of unnecessary or anonymous signals, messages or data by any station within that State.

2.6 Interference

Before authorizing tests and experiments in any station, in order to avoid harmful interference, each station shall prescribe the taking of all possible precautions, such as the choice of frequency and of time, and the reduction or, if possible, the suppression of radiation. Any harmful interference resulting from tests and experiments shall be eliminated as soon as possible.
CHAPTER 3
GENERAL PROCEDURES FOR THE
INTERNATIONAL AERONAUTICAL TELECOMMUNICATION SERVICE

3.1 General
The procedures outlined in this chapter are general in character and shall be applied where appropriate to the other chapters contained in this manual.
Note.— Detailed procedures, with special application to the service concerned, are contained in Chapters 4, 5, 6, 7 and 8.

3.2 Extensions of service and closing down of stations

3.2.1 Stations of the international aeronautical telecommunication service shall extend their normal hours of service as required to provide for traffic necessary for flight operation.

3.2.2 Before closing down, a station shall notify its intention to all other stations with which it is in direct communication, confirm that an extension of service is not required and advise the time of re-opening if other than its normal hours of service.

3.2.3 When it is working regularly in a network on a common circuit, a station shall notify its intention of closing down either to the control station, if any, or to all stations in the network. It shall continue watch for two minutes and may then close down if it has received no call during this period.

3.2.4 Stations with other than continuous hours of operation, engaged in, or expected to become engaged in distress, urgency, unlawful interference, or interception traffic, shall extend their normal hours of service to provide the required support to those communications.

3.3 Acceptance, transmission and delivery of messages

3.3.1 Only those messages coming within the categories specified in 4.4.1.1 shall be accepted for transmission by the aeronautical telecommunication service.

3.3.1.1 The responsibility for determining the acceptability of a message shall rest with the station where the message is filed for transmission.

3.3.1.2 Once a message is deemed acceptable, it shall be transmitted, relayed and (or) delivered in accordance with the priority classification and without discrimination or undue delay.
3.3.1.3 The authority in control of any station through which a message is relayed, shall make representations at a later date to the authority in control of the accepting station regarding any message which is considered unacceptable.

3.3.2 Only messages for stations forming part of the aeronautical telecommunication service shall be accepted for transmission, except where special arrangements have been made with the telecommunication authority concerned.

3.3.2.1 Acceptance as a single message of a message intended for two or more addresses, whether at the same station or at different stations, shall be permitted subject, however, to the provisions prescribed in 4.4.3.1.2.3.

3.3.3 Messages handled for aircraft operating agencies shall be accepted only when handed in to the telecommunication station in the form prescribed herein and by an authorized representative of that agency, or when received from that agency over an authorized circuit.

3.3.4 For each station of the aeronautical telecommunication service from which messages are delivered to one or more aircraft operating agencies, a single office for each aircraft operating agency shall be designated by agreement between the aeronautical telecommunication agency and the aircraft operating agency concerned.

3.3.5 Stations of the international aeronautical telecommunication service shall be responsible for delivery of messages to addressee(s) located within the boundaries of the aerodrome(s) served by that station and beyond those boundaries only to such addressee(s) as may be agreed by special arrangements with the Administrations concerned.

3.3.6 Messages shall be delivered in the form of a written record, or other permanent means.

3.3.6.1 In cases where telephone or loudspeaker systems are used without recording facilities for the delivery of messages, a written copy shall be provided, as confirmation of delivery, as soon as possible.

3.3.7 Messages originated in the aeronautical mobile service by an aircraft in flight and which require transmission over the aeronautical fixed telecommunication network to effect delivery, shall be reprocessed by the aeronautical telecommunication station into the message format prescribed in 4.4.2 prior to transmission on the AFTN.

3.3.7.1 Messages originated in the aeronautical mobile service by an aircraft in flight and which require transmission over the aeronautical fixed service, other than on AFTN circuits, shall also be reprocessed by the aeronautical telecommunication station into the format prescribed in 4.4.2 except where, subject to the provisions of 3.3.5, prior and other arrangements have been made between the aeronautical telecommunication agency and the aircraft
operating agency concerned for predetermined distribution of messages from aircraft.

3.3.7.2 Messages (including air-reports) without specific address containing meteorological information received from an aircraft in flight shall be forwarded without delay to the meteorological office associated with the point of reception.

3.3.7.3 Messages (including air-reports) without specific address containing air traffic services information from aircraft in flight shall be forwarded without delay to the air traffic services unit associated with the communication station receiving the message.

3.3.7.4 PANS.— When recording the text of air-reports in AIREP form, the data conventions approved by ICAO for this purpose shall be used wherever possible. Note.— Provisions relating to the composition, including data conventions, of air-reports and to the order and form in which the elements of such reports are transmitted by the aircraft stations and recorded and retransmitted by the aeronautical stations, are contained in the Advisory Circular 170-02 (AC 170-02).

3.3.7.5 PANS.— When air-reports in AIREP form are to be retransmitted by telegraphy (including teletype writing), the text transmitted shall be as recorded in compliance with 3.3.7.4.

3.4 Time system

3.4.1 Universal Co-ordinated Time (UTC) shall be used by all stations in the aeronautical telecommunication service. Midnight shall be designated as 2400 for the end of the day and 0000 for the beginning of the day.

3.4.2 A date-time group shall consist of six figures, the first two figures representing the date of the month and the last four figures the hours and minutes in UTC.

3.5 Record of communications

3.5.1 General

3.5.1.1 A telecommunication log, written or automatic, shall be maintained in each station of the aeronautical telecommunication service except that an aircraft station, when using radiotelephony in direct communication with an aeronautical station, need not maintain a telecommunication log. Note.— The telecommunication log will serve as a protection, should the operator's watch activities be investigated. It may be required as legal evidence.

3.5.1.1.1 Aeronautical stations shall record messages at the time of their receipt, except that, if during an emergency the continued manual recording would result in delays in communication, the recording of messages may be temporarily interrupted and completed at the earliest opportunity. Note.— In the case of radiotelephony operation it would be desirable if voice recording were provided for use during interruption in manual recording.
3.5.1.1.2 When a record is maintained in an aircraft station, either in a radiotelephone log or elsewhere, concerning distress communications, harmful interference, or interruption to communications, such a record shall be associated with information concerning the time and the position, and altitude of the aircraft.

3.5.1.2 In written logs, entries shall be made only by operators on duty except that other persons having knowledge of facts pertinent to the entries may certify in the log the accuracy of operators’ entries.

3.5.1.3 All entries shall be complete, clear, correct and intelligible. Superfluous marks or notations shall not be made in the log.

3.5.1.4 In written logs, any necessary correction in the log shall be made only by the person making the initial entry. The correction shall be accomplished by drawing or typing a single line through the incorrect entry, initializing same, recording the time and date of correction. The correct entry shall be made on the next line after the last entry.

3.5.1.5 Telecommunication logs, written or automatic, shall be retained for a period of at least thirty days. When logs are pertinent to inquiries or investigations they shall be retained for longer periods until it is evident that they will be no longer required.

3.5.1.6 The following information shall be entered in written logs:

a) the name of the agency operating the station;
b) the identification of the station;
c) the date;
d) the time of opening and closing the station;
e) the signature of each operator, with the time the operator assumes and relinquishes a watch;
f) the frequencies being guarded and type of watch (continuous or scheduled) being maintained on each frequency;
g) except at intermediate mechanical relay stations where the provisions of this paragraph need not be complied with, a record of each communication, test transmission, or attempted communication showing text of communication, time communication completed, station(s) communicated with, and frequency used. The text of the communication may be omitted from the log when copies of the messages handled are available and form part of the log;
h) all distress communications and action thereon;
i) a brief description of communication conditions and difficulties, including harmful interference. Such entries should include, whenever practicable, the time at which interference was experienced, the character, radio frequency and identification of the interfering signal;
j) a brief description of interruption to communications due to equipment failure or other troubles, giving the duration of the interruption and action taken;
such additional information as may be considered by the operator to be of value as a part of the record of the station’s operations

3.6 Establishment of radio communication

3.6.1 All stations shall answer calls directed to them by other stations in the aeronautical telecommunication service and shall exchange communications on request.

3.6.2 All stations shall radiate the minimum power necessary to ensure a satisfactory service.

3.7 Use of abbreviations and codes

3.7.1 Abbreviations and codes shall be used in the international aeronautical telecommunication service whenever they are appropriate and their use will shorten or otherwise facilitate communication.

3.7.1.1 Where abbreviations and codes other than those approved by ICAO are contained in the text of messages, the originator shall, if so required by the aeronautical telecommunication station accepting the message for transmission, make available to that station a decode for the abbreviations and codes used.

Note.— The use of ICAO approved abbreviations and codes wherever appropriate — for example, those contained in PANS-ABC (Doc 8400) — obviates the need for application of the provisions of 3.7.1.1.

3.8 Cancellation of messages

Messages shall be cancelled by a telecommunication station only when cancellation is authorized by the message originator.
CHAPTER 4
AERONAUTICAL FIXED SERVICE (AFS)

4.1 General

4.1.1 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 air traffic services (ATS) message handling services; and
e) the inter-centre communications (ICC).

Note 1.— Provisions relating to ATS direct speech communications are contained in 4.2.

Note 2.— Provisions relating to meteorological operational channels and meteorological operational telecommunication networks are contained in 4.3.

Note 3.— The AFTN provides a store-and-forward messaging service for the conveyance of text messages in ITA-2 or IA-5 format, using character-oriented procedures. Provisions relating to the AFTN are contained in 4.4.

Note 4.— The ATS (air traffic services) message handling services (ATSMHS) application allows ATS messages to be exchanged between service users over the aeronautical telecommunication network (ATN) internet communication service (ICS). Procedural provisions relating to ATS message handling services are contained in 4.6.

Note 5.— The inter-centre communications applications enable the exchange of information between air traffic service units over the aeronautical telecommunication network (ATN) internet communication service (ICS), in support of notification, coordination, transfer of control, flight planning, airspace management and air traffic flow management. Procedural provisions relating to inter-centre communications are contained in 4.7.

Note 7.— The aeronautical telecommunication network through its ATSMHS and ICC applications enable the transition of existing AFTN and CIDIN users and systems into the ATN architecture.

4.1.2 Material permitted in AFS messages

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

4.1.2.1 The following characters are allowed in text messages:

Letters: ABCDEFGHIJKLMNOPQRSTUVWXYZ
Figures: 1 2 3 4 5 6 7 8 9 0
Other signs:
- (hyphen)
? (question mark)
: (colon)
( (open bracket)
) (close bracket)
. (full stop, period, or decimal point)
, (comma)
' (apostrophe)
= (double hyphen or equal sign)
/ (oblique)
+ (plus sign)

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

4.1.2.2 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.

Note 1.— “Letter case” and “figure case” are to be understood as the shift condition in which the equipment associated with the channel was positioned prior to the reception of the signal.

Note 2.— When using any of the above signals, account is to be taken of, amongst others, the provisions of 4.4.5.3.

Note 3.— The foregoing provisions of 4.1.2.2 are not intended to prevent the use of:
a) figure case of signals nos. 6, 7 and 8 after bilateral agreements between States having telecommunication stations directly connected to each other;
b) figure case of signal no. 10 as the priority alarm (see 4.4.4.3); and
c) figure case of signal no. 4 for operational purposes only and not as part of a message.

4.1.2.3 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.

Note.— The foregoing provisions of 4.1.2.3 are not intended to prevent the use of the full IA-5 after agreement between the Administrations concerned.

4.1.2.4 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.
4.1.2.5 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 4.4.2.1.1; 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 4.4.6.1.

4.1.2.6 Messages using IA-5 shall not contain:
1) character 0/1 (SOH) other than the one in the heading as prescribed in 4.4.15.1.1 a);
2) character 0/2 (STX) other than the one in the origin line as prescribed in 4.4.15.2.2.7;
3) character 0/3 (ETX) other than the one in the ending as prescribed in 4.4.15.3.12.1;
4) any uninterrupted sequence of characters 5/10, 4/3, 5/10, 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 (,,,).

4.1.2.7 The text of messages shall be drafted in plain language or in abbreviations and codes, as prescribed in 3.7. 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.

4.1.2.8 If the originator of a message wishes alignment functions [=*] to be transmitted at specific places in the text part of such message (see 4.4.5.3 and 4.4.15.3.6), the sequence [=*] shall be written on each of those places.

4.2 ATS direct speech circuits
Note.—Provisions relating to ATS direct speech communications are contained in Civil Aviation Safety Regulation (CASR) Part 170.

4.3 Meteorological operational channels and meteorological operational telecommunication networks
Meteorological operational channel procedures and meteorological operational communication network procedures shall be compatible with aeronautical fixed telecommunications network (AFTN) procedures.
Note.—“Compatible” is to be interpreted as a mode of operation ensuring that the information exchanged over the meteorological operational channels also can be exchanged over the aeronautical fixed telecommunication network without harmful effect on the operation of the aeronautical fixed telecommunication network and vice versa.
4.4 Aeronautical fixed telecommunication network (AFTN)

4.4.1 General

4.4.1.1 Categories of messages. Subject to the provisions of 3.3, the following categories of message shall be handled by the aeronautical fixed telecommunication network:
   a) distress messages;
   b) urgency messages;
   c) flight safety messages;
   d) meteorological messages;
   e) flight regularity messages;
   f) aeronautical information services (AIS) messages;
   g) aeronautical administrative messages;
   h) service messages.

4.4.1.1.1 Distress messages (priority indicator SS). This message category shall comprise those messages sent by mobile stations reporting that they are threatened by grave and imminent danger and all other messages relative to the immediate assistance required by the mobile station in distress.

4.4.1.1.2 Urgency messages (priority indicator DD). This category shall comprise messages concerning the safety of a ship, aircraft or other vehicles, or of some person on board or within sight.

4.4.1.1.3 Flight safety messages (priority indicator FF) shall comprise:
   a) movement and control messages as defined in Advisory Circular 170-02;
   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.

4.4.1.1.4 Meteorological messages (priority indicator GG) shall comprise:
   a) messages concerning forecasts, e.g. terminal aerodrome forecasts (TAFs), area and route forecasts;
   b) messages concerning observations and reports, e.g. METAR, SPECI

4.4.1.1.5 Flight regularity messages (priority indicator GG) shall comprise:
   a) aircraft load messages required for weight and balance computation;
   b) messages concerning changes in aircraft operating schedules;
   c) messages concerning aircraft servicing;
   d) messages concerning changes in collective requirements for passengers, crew and cargo covered by deviation from normal operating schedules;
   e) messages concerning non-routine landings;
   f) messages concerning pre-flight arrangements for air navigation services and operational servicing for non-scheduled aircraft operations, e.g. overflight clearance requests;
g) messages originated by aircraft operating agencies reporting an aircraft arrival or departure;
h) messages concerning parts and materials urgently required for the operation of aircraft.

4.4.1.1.6 Aeronautical information services (AIS) messages (priority indicator GG) shall comprise:
a) messages concerning NOTAMs;
b) messages concerning SNOWTAMs.

4.4.1.1.7 Aeronautical administrative messages (priority indicator KK) shall comprise:
a) messages regarding the operation or maintenance of facilities provided for the safety or regularity of aircraft operations;
b) messages concerning the functioning of aeronautical telecommunication services;
c) messages exchanged between civil aviation authorities relating to aeronautical services.

4.4.1.1.8 Messages requesting information shall take the same priority indicator as the category of message being requested except where a higher priority is warranted for flight safety.

4.4.1.1.9 Service messages (priority indicator as appropriate). This category shall comprise messages originated by aeronautical fixed stations to obtain information or verification concerning other messages which appear to have been transmitted incorrectly by the aeronautical fixed service, confirming channel-sequence numbers, etc.

4.4.1.1.9.1 Service messages shall be prepared in the format prescribed in 4.4.2 or 4.4.15. In applying the provisions of 4.4.3.1.2 or 4.4.15.2.1.3 to service messages addressed to an aeronautical fixed station identified only by a location indicator, this indicator shall be immediately followed by the ICAO three-letter designator YFY, followed by an appropriate 8th letter.

4.4.1.1.9.2 Service messages shall be assigned the appropriate priority indicator.

4.4.1.1.9.2.1 When service messages refer to messages previously transmitted, the priority indicator assigned should be that used for the message(s) to which they refer.

4.4.1.1.9.3 Service messages correcting errors in transmission shall be addressed to all the addressees that will have received the incorrect transmission.

4.4.1.1.9.4 A reply to a service message shall be addressed to the station which originated the initial service message.
4.4.1.1.9.5 The text of all service messages should be as concise as possible.

4.4.1.1.9.6 A service message, other than one acknowledging receipt of SS messages, shall be further identified by the use of the abbreviation SVC as the first item in the text.

4.4.1.1.9.7 When a service message refers to a message previously handled, reference to the previous message shall be made by use of the appropriate transmission identification (see 4.4.2.1.1 b) and 4.4.15.1.1 b)) or the filing time and originator indicator groups (see 4.4.4 and 4.4.15.2.2) identifying the reference message.

4.4.1.2 Order of priority

4.4.1.2.1 The order of priority for the transmission of messages in the aeronautical fixed telecommunication network shall be as follows:

\[
\begin{array}{ll}
\text{Transmission Priority} & \text{priority indicator} \\
1 & \text{SS} \\
2 & \text{DD FF} \\
3 & \text{GG KK} \\
\end{array}
\]

4.4.1.2.2 Messages having the same priority indicator should be transmitted in the order in which they are received for transmission.

4.4.1.3 Routing of messages

4.4.1.3.1 All communications shall be routed by the most expeditious route available to effect delivery to the addressee.

4.4.1.3.2 Predetermined diversion routing arrangements shall be made, when necessary, to expedite the movement of communication traffic. Each communication centre shall have the appropriate diversion routing lists, agreed to by the Administration(s) operating the communication centres affected and shall use them when necessary.

4.4.1.3.2.1 Diversion routing should be initiated:

1) in a fully automatic communication centre:
   a) immediately after detection of the circuit outage, when the traffic is to be diverted via a fully automatic communication centre;
   b) within a 10-minute period after detection of the circuit outage, when the traffic is to be diverted via a non-fully automatic communication centre;

2) in a non-fully automatic communication centre within a 10-minute period after detection of the circuit outage. Service message notification of the diversion requirement should be provided where no bilateral or multilateral prearranged agreements exist.
4.4.1.3.3 As soon as it is apparent that it will be impossible to dispose of traffic over the aeronautical fixed service within a reasonable period, and when the traffic is held at the station where it was filed, the originator shall be consulted regarding further action to be taken, unless:
a) otherwise agreed between the station concerned and the originator; or
b) arrangements exist whereby delayed traffic is automatically diverted to commercial telecommunication services without reference to the originator.

Note.— The expression “reasonable period” means a period of time such that it seems probable that the traffic will not be delivered to the addressee within any fixed transit period applicable to the category of traffic concerned, or, alternatively, any predetermined period agreed between originators and the telecommunication station concerned.

4.4.1.4 Supervision of message traffic

4.4.1.4.1 Continuity of message traffic. The receiving station shall check the transmission identification of incoming transmissions to ensure the correct sequence of channel sequence numbers of all messages received over that channel.

4.4.1.4.1.1 When the receiving station detects that one or more channel-sequence numbers are missing, it shall send a complete service message (see 4.4.1.1.9) to the previous station rejecting receipt of any message that may have been transmitted with such missing number(s). The text of this service message shall comprise the signal QTA, the procedure signal MIS followed by one or more missing transmission identification (see 4.4.2.1.1.3 and 4.4.15.1.1.4) and the end of text signal (see 4.4.5.6 and 4.4.15.3.12).

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) when one channel-sequence number is missing:
   SVC→QTA→MIS→ABC↑123↓1≤
2) when several channel-sequence numbers are missing:
   SVC→QTA→MIS→ABC↑123·126↓1≤

4.4.1.4.1.1 When the provisions of 4.4.1.4.1.1 are applied, the station notified of the missing message(s) condition by the service message shall reassume its responsibility for transmission of the message (or messages) that it had previously transmitted with the transmission identification concerned, and shall retransmit that message (or those messages) with a new (correct in sequence) transmission identification. The receiving station shall synchronize such that the next expected channel-sequence number is the last received channel-sequence number plus one.

4.4.1.4.1.2 When the receiving station detects that a message has a channel sequence number less than that expected, it should advise the previous station using a service message with a text comprising:
1) the abbreviation SVC;
2) the procedure signal LR followed by the transmission identification of the received message;
3) the procedure signal EXP followed by the transmission identification expected;
4) the end-of-text signal.

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

SVC→LR→ABC↑123→↓EXP→ABC↑135↓≤

4.4.1.4.1.2.1 When the provisions of 4.4.1.4.1.2 are applied, the station receiving the out-of sequence message should synchronize such that the next expected channel-sequence number is the last received channel-sequence number plus one. The previous station should check its outgoing channel-sequence numbers and, if necessary, correct the sequence.

4.4.1.4.2 Misrouted messages

Note.— A message is considered to have been misrouted when it contains no relaying instructions, expressed or implied, on which the receiving station can take action.

4.4.1.4.2.1 When the receiving station detects that a message has been misrouted to it, it shall either:
1) send a service message (see 4.4.1.1.9) to the previous station rejecting receipt of the misrouted message; or
2) itself assume responsibility for transmission of the message to all addressee indicators.

Note.— The procedure of 1) is preferable at stations using “torn-tape” relay methods or a semi-automatic relay technique with continuous tape. The procedure of 2) may be preferred at stations using fully automatic relay methods or a semi-automatic relay technique without continuous tape.

4.4.1.4.2.2 When the provisions of 4.4.1.4.2.1, 1) are applied, the text of the service message shall comprise the abbreviation SVC, the signal QTA, the procedure signal MSR followed by the transmission identification (see 4.4.2.1.1.3 and 4.4.15.1.1.4) of the misrouted message and the end-of-text signal (see 4.4.5.6 and 4.4.15.3.12).

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

SVC→QTA→MSR→ABC↑123↓≤

4.4.1.4.2.3 When, as a result of the provisions of 4.4.1.4.2.2, a sending station is notified of the misrouted message condition by service message, it shall reassert its responsibility for the message and shall retransmit as necessary on the correct outgoing channel or channels.

4.4.1.4.3 When a circuit becomes interrupted and alternative facilities exist, the last channel-sequence numbers sent and received shall be exchanged between the stations concerned. Such exchanges shall take the form of
complete service messages (see 4.4.1.1.9) with the text comprising the abbreviation SVC, the procedure signals LR and LS followed by the transmission identifications of the relevant messages and the end-of-text signal (see 4.4.5.6 and 4.4.15.3.12).

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

SVC→LR→ABC123↓→LS→BAC321↓≡

4.4.1.5 Failure of communications

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

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

4.4.1.5.2.1 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.

4.4.1.5.2.2 Where a radio circuit fails due to signal fadeout 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 [≡];
d) the letters RY repeated without separation for three lines of page copy;
e) the alignment function [≡];
f) end-of-message signal (NNNN).

The foregoing sequence shall be repeated as required.

4.4.1.5.2.3 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.

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

1) the abbreviation SVC;
2) the procedure signal QSP;
3) if required, the procedure signal RQ, NO or CNL to request, refuse or cancel a diversion;
4) identification of the routing areas, States, territories, locations, or stations for which the diversion applies;
5) the end-of-text signal.
Note.— The following examples illustrate application of the above-mentioned procedures:

a) to request a diversion:
   SVC→QSP→RQ→C→K→BG→BL↓=

b) to accept a diversion:
   SVC→QSP→C→K→BG→BL↓=

c) to refuse a diversion:
   SVC→QSP→NO→C→K→BG→BL↓=

d) to cancel a diversion:
   SVC→QSP→CNL→C→K→BG→BL↓=

4.4.1.6 Long-term retention of AFTN traffic records

4.4.1.6.1 Copies of all messages, in their entirety, transmitted by an AFTN origin station shall be retained for a period of at least 30 days.

Note.— The AFTN origin station, although responsible for ensuring that AFTN traffic is recorded, is not necessarily the unit where the records are made and retained. By local agreement the State concerned may permit the originators to perform those functions.

4.4.1.6.2 AFTN destination stations shall retain, for a period of at least 30 days, a record containing the information necessary to identify all messages received and the action taken thereon.

Note.— The provision for identification of messages mentioned in 4.4.1.6.2 may be obtained by recording the heading, address and origin parts of messages.

4.4.1.6.3 AFTN communication centres shall retain, for a period of at least 30 days, a record containing the information necessary to identify all messages relayed or retransmitted and the action taken thereon.

Note 1.— The provision for identification of messages mentioned in 4.4.1.6.3 may be obtained by recording the heading, address and origin parts of messages.

Note 2.— Provisions relating to short-term retention of AFTN traffic records in AFTN communication centres are contained in 4.4.1.7.

4.4.1.7 Short-term retention of AFTN traffic records

4.4.1.7.1 Except as provided in 4.4.1.7.2, AFTN communication centres shall retain, for a period of at least one hour, a copy of all messages, in their entirety, retransmitted or relayed by that communication centre.

4.4.1.7.2 In cases where acknowledgement is made between AFTN communication centres, a relay centre shall be considered as having no further responsibility for retransmission or repetition of a message for which it has received positive acknowledgement, and it may be deleted from its records.

Note.— Provisions relating to long-term retention of AFTN traffic records in AFTN communication centres are contained in 4.4.1.6.
4.4.1.8 Test procedures on AFTN channels

4.4.1.8.1 Test messages transmitted on AFTN channels for the purpose of testing and repairing lines should consist of the following:
1) the start-of-message signal;
2) the procedure signal QJH;
3) the originator indicator;
4) three page-copy lines of the sequence of characters RY in ITA-2 or U(5/5) *(2/10) in IA-5; and
5) the end-of-message signal.

4.4.2 Message format — International Telegraph Alphabet No. 2 (ITA-2)
All messages, other than those prescribed in 4.4.1.8 and 4.4.9.3, shall comprise the components specified in 4.4.2.1 to 4.4.6.1 inclusive.
Note 1.— An illustration of the ITA-2 message format is given in Figure 4-1.
Note 2.— In the subsequent Standards relative to message format the following symbols have been used in making reference to the functions assigned to certain signals in the International Telegraph Alphabet No. 2 (see Volume III, Part I, 8.2.1 and Table 8-1):

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Signification</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;</td>
<td>CARRIAGE RETURN (signal no. 27)</td>
</tr>
<tr>
<td>=</td>
<td>LINE FEED (signal no. 28)</td>
</tr>
<tr>
<td>↓</td>
<td>LETTER SHIFT (signal no. 29)</td>
</tr>
<tr>
<td>↑</td>
<td>FIGURE SHIFT (signal no. 30)</td>
</tr>
<tr>
<td>→</td>
<td>SPACE (signal no. 31)</td>
</tr>
</tbody>
</table>

4.4.2.1 Heading

4.4.2.1.1 The heading shall comprise:
(a) start-of-message signal, the characters ZCZC;
(b) transmission identification comprising:
   1) circuit identification;
   2) channel-sequence number.
(c) additional service information (if necessary) comprising:
   1) one SPACE;
   2) no more than ten characters.
(d) spacing signal.

4.4.2.1.1.1 The circuit identification shall consist of three letters selected and assigned by the transmitting station; the first letter identifying the transmitting, the second letter the receiving end of the circuit and the third letter to identify the channel; where there is only one channel between the transmitting and receiving stations, channel letter A shall be assigned; where more than one channel between stations is provided, the channels shall be identified as A, B, C, etc. in respective order.

4.4.2.1.1.2 Three-digit channel-sequence numbers from 001 to 000 (representing 1 000) shall be assigned sequentially by telecommunication stations to all messages transmitted directly from one station to another.
separate series of these numbers shall be assigned for each channel and a new series shall be started daily at 0000 hours.

4.4.2.1.1.2.1 The use of the 4-digit channel-sequence number, to preclude duplication of the same numbers during the 24-hour period, is permitted subject to agreement between the authorities responsible for the operation of the circuit.

4.4.2.1.1.3 The transmission identification shall be sent over the circuit in the following sequence:

a) SPACE [→];
b) transmitting-terminal letter;
c) receiving-terminal letter;
d) channel-identification letter;
e) FIGURE SHIFT [1];
f) channel-sequence number (3 digits).

<table>
<thead>
<tr>
<th>Message part (see 4.4.2.1)</th>
<th>Component of the message part</th>
<th>Element of the component</th>
<th>Teletypewriter signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEADING</td>
<td>Transmission Identification</td>
<td>a) One SPACE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Transmitting-terminal letter</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) Receiving-terminal letter</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) Channel-identification letter</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>e) One FIGURE SHIFT</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>f) Channel-sequence number (3 digits)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If necessary Service</td>
<td>a) One SPACE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indication</td>
<td>b) No more than 10 characters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spacing Signal</td>
<td>Five SPACES</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>One LETTER SHIFT</td>
<td></td>
</tr>
<tr>
<td>ADDRESS (see 4.4.3)</td>
<td>Alignment Function</td>
<td>One CARRIAGE RETURN, one LINE FEED</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Priority Indicator</td>
<td>The relevant 2-letter group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Addressee Indicator(s)</td>
<td>One SPACE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>given in sequence</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>An 8-letter group for each addressee</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Example EGLRZX=EGLLYKXEGLCAM)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alignment Function(s)</td>
<td>One CARRIAGE RETURN, one LINE FEED</td>
<td></td>
</tr>
<tr>
<td>ORIGIN (see 4.4.4)</td>
<td>Filing Time</td>
<td>One FIGURE SHIFT</td>
<td>↑ Attention ↓ Signal(s)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The 6-digit date-time group specifying when</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>the message was filed for transmission</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Originator Indicator</td>
<td>One SPACE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The 8-letter group identifying the message</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Priority Alarm (used only in teletypewriter operation for Distress Messages)</td>
<td>One FIGURE SHIFT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Optional Information</td>
<td>a) One SPACE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Additional data not to exceed the remainder of the line See 4.4.4.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alignment Function</td>
<td>One CARRIAGE RETURN, one LINE FEED</td>
<td></td>
</tr>
<tr>
<td>TEXT (see 4.4.5)</td>
<td>Beginning of the Text</td>
<td>Specific identification of Addressee(s) (if necessary) with each followed by one CARRIAGE RETURN, one LINE FEED (if necessary)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The English word PROM (if necessary) (see 4.4.5.2.3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specific identification of Originator (if necessary)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The English word STOP followed by one CARRIAGE RETURN, one LINE FEED (if necessary) (see 4.4.5.2.3); and/or Originator's reference (if used)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Message Text</td>
<td>Message Text with one CARRIAGE RETURN, one LINE FEED at the end of each printed line of the Text except for the last one (see 4.4.5.3)</td>
<td></td>
</tr>
</tbody>
</table>
4.4.2.1.2 In teletypewriter operation, the spacing signal, consisting of 5 SPACES [→→→→→] followed by 1 LETTER SHIFT [[]], 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 4.4.2.1.1 b) and 4.4.2.1.1.3):

Tape

Page-copy

GLB↑039→→→→→↓
GLB039

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

4.4.2.1.3 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.

4.4.2.1.4 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.

4.4.3 Address

4.4.3.1 The address shall comprise:
  a) alignment function [≤=];
  b) priority indicator;
  c) addressee indicator(s);
d) alignment function [*].

4.4.3.1.1 The priority indicator shall consist of the appropriate two-letter group assigned by the originator in accordance with the following:

<table>
<thead>
<tr>
<th>Message category</th>
<th>Priority indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>distress messages (see 4.4.1.1.1)</td>
<td>SS</td>
</tr>
<tr>
<td>urgency messages (see 4.4.1.1.2)</td>
<td>DD</td>
</tr>
<tr>
<td>flight safety messages (see 4.4.1.1.3)</td>
<td>FF</td>
</tr>
<tr>
<td>meteorological messages (see 4.4.1.1.4)</td>
<td>GG</td>
</tr>
<tr>
<td>flight regularity messages (see 4.4.1.1.5)</td>
<td>GG</td>
</tr>
<tr>
<td>aeronautical information services</td>
<td></td>
</tr>
<tr>
<td>messages (see 4.4.1.1.6)</td>
<td>GG</td>
</tr>
<tr>
<td>aeronautical administrative messages (see 4.4.1.1.7)</td>
<td>KK</td>
</tr>
<tr>
<td>service messages (see 4.4.1.1.9) (as appropriate)</td>
<td></td>
</tr>
</tbody>
</table>

4.4.3.1.2 An addressee indicator, which shall be immediately preceded by a SPACE, except when it is the first address indicator of the second or third line of address shall comprise:

a) the four-letter location indicator of the place of destination;

b) the three-letter designator identifying the organization/function (aeronautical authority, service or aircraft operating agency) addressed;

c) an additional letter, which shall represent a department, division or process within the organization/function addressed. The letter X shall be used to complete the address when explicit identification is not required.

*Note 1.*—The four-letter location indicators are listed in Doc 7910 — Location Indicators.

*Note 2.*—The three-letter designators are listed in Doc 8585 — Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

4.4.3.1.2.1 Where a message is to be addressed to an organization that has not been allocated an ICAO three-letter designator of the type prescribed in 4.4.3.1.2, the location indicator of the place of destination shall be followed by the ICAO three-letter designator YYY (or the ICAO three-letter designator YXY in the case of a military service or organization). The name of the addressee organization shall then be included in the first item of the text of the message. The eighth position letter following the ICAO three-letter designator YYY or YXY shall be the filler letter X.

4.4.3.1.2.2 Where a message is to be addressed to an aircraft in flight and, therefore, requires handling over the AFTN for part of its routing before retransmission over the aeronautical mobile service, the location indicator of the aeronautical station which is to relay the message to the aircraft shall be followed by the ICAO three-letter designator ZZZ. The identification of the aircraft shall then be included in the first item of the text of the message. The eighth position letter following the ICAO three-letter designator ZZZ shall be the filler letter X.
Note.— The following examples illustrate application of the Standards in 4.4.3.1.2.1 and 4.4.3.1.2.2:

1) address indicator (possible types):
   LGATZTZX aerodrome control tower (TZ) at LGAT
   LGATMYMF section (F) of the Meteorological Office (MY) at LGAT
   LGATKLMN department (N) of the aircraft operating agency KLM (KLM) at LGAT
   LGATYYYYX the aircraft operating agency whose name appears in the beginning of the message text and whose office location is served by LGAT
   LGATZZZX the aeronautical station (LGAT) is required to relay this message in the aeronautical mobile service to the aircraft whose identification appears in the beginning of the message text.

2) YYY ICAO three-letter designator:
   Example of a message addressed to (say) “Penguin Airlines” at NCRG by the PHNL office of the same aircraft operating agency. The Heading and Ending of the message are not shown in this example of teletypewriter page-copy form.
   (Address) GG NCRGYYYYX
   (Origin) 311521 PHNLYYYYX
   (Text) AIR PENGUIN FLIGHT 801
   CANCELLED

3) ZZZ ICAO three-letter designator:
   Example of a message addressed to aircraft GABCD via aeronautical station NZAA from Area Control Centre at NZCC. The Heading and Ending of the message are not shown in this example of teletypewriter page-copy form.
   (Address) FF NZAAZZZX
   (Origin) 031451 NZZZCZZZX
   (Text) GABCD CLR DES 5000FT HK NDB

4.4.3.1.2.3 The complete address shall be restricted to three lines of page-printing copy and, except as provided in 4.4.14, a separate address indicator shall be used for each addressee whether at the same or at different locations.

4.4.3.1.2.3.1 Where messages are offered in page-copy form for transmission and contain more address indicator than can be accommodated on three lines of a page-copy, such message shall be converted, before transmission, into two or more messages, each of which shall conform with the provisions of 4.4.3.1.2.3. During such conversion, the address indicator shall, 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.

4.4.3.1.2.3.2 On teletypewriter circuits, the completion of each line of address indicator groups in the address of a message shall be immediately followed by the alignment function [<=].
4.4.4 Origin
The origin shall comprise:
  a) filing time;
  b) originator indicator;
  c) priority alarm (when necessary);
  d) optional heading field;
  e) alignment function [<>].

4.4.4.1 The filing time shall comprise the 6-digit date time group indicating the
date and time of filing the message for transmission (see 3.4.2); in
teleprinter operation, the filing time shall be followed by one LETTER SHIFT
[1].

4.4.4.2 An originator indicator, which shall be immediately preceded by a
SPACE, shall comprise:
  a) the four-letter location indicator of the place at which the message is
     originated;
  b) the three-letter designator identifying the organization / function
     (aeronautical authority, service or aircraft operating agency) which
     originated the message;
  c) an additional letter which shall represent a department, division or process
     within the organization/function of the originator. The letter X shall be used
to complete the address when explicit identification is not required.

4.4.4.2.1 Where a message is originated by an organization that has not been
allocated an ICAO three-letter designator of the type prescribed in 4.4.4.2 b),
the location indicator of the place at which the message is originated shall be
followed immediately by the ICAO three-letter designator YYY followed by the
filler letter X (or the ICAO three-letter designator YXY followed by the filler letter
X in the case of a military service or organization). The name of the
organization (or military service) shall then be included in the first item in the
text of the message.

4.4.4.2.2 Where a message originated by an aircraft in flight requires handling
on the AFTN for part of its routing before delivery, the originator indicator shall
comprise the location indicator of the aeronautical station responsible for
transferring the message to the AFTN, followed immediately by the ICAO three-
letter designator ZZZ followed by the filler letter X. The identification of the
aircraft shall then be included in the first item in the text of the message.

4.4.4.2.3 Messages relayed over the AFTN that have been originated in other
networks shall use a valid AFTN originator indicator that has been agreed for
use by the relay or gateway function linking the AFTN with the external
network.

Note.— The following illustrates the application of 4.4.4.2.2 procedure as it
would appear with a message from aircraft KLM153 addressed to the Area
Control Centre at CZEG, the message being handled via aeronautical station
CYCB. The heading and ending of the message are not shown in this example of teletypewriter page-copy form:

(Address) FF CZEGZRXZ
(Origin) 031821 CYCBZZZX
(Text) KLM153 [remainder of text as received from aircraft]

4.4.4.3 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 [/];
b) FIVE transmissions of signal no. 10 (figure case);
c) LETTER SHIFT [i].

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.

4.4.4.4 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.

4.4.4.4.1 Recommendation.— 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 (.) 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.

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

4.4.4.5 The origin line shall be concluded by an alignment function [<<].

4.4.5 Text

4.4.5.1 The text of messages shall be drafted in accordance with 4.1.2.

4.4.5.2 When an originator’s reference is used, it shall appear at the beginning of the text, except as provided in 4.4.5.2.1 and 4.4.5.2.2.
4.4.5.2.1 When the ICAO three-letter designators YXY, YYY or ZZZ comprise the second element of the addressee indicator (see 4.4.3.1.2.1 and 4.4.3.1.2.2) and it, therefore, becomes necessary to identify in the text the specific addressee of the message, such identification group will precede the originator’s reference (if used) and become the first item of the text.

4.4.5.2.2 When the ICAO three-letter designators YXY, YYY or ZZZ comprise the second element of the originator indicator (see 4.4.4.2.1 and 4.4.4.2.2) and it thus becomes necessary to identify in the text the name of the organization (or military service), or the aircraft, which originated the message, such identification shall be inserted in the first item of the text of the message.

4.4.5.2.3 When applying the provisions of 4.4.5.2.1 and 4.4.5.2.2 to messages where the ICAO three-letter designator(s) YXY, YYY or ZZZ is (are) used to refer to two or more different organizations (or military services), the sequence of further identification in the text shall correspond to the complete sequence used in the address and origin of the message. In such instance, each addressee identification shall be followed immediately by an alignment function. The name of the (YXY, YYY or ZZZ) organization originating the message shall then be preceded with “FROM”. “STOP” followed by an alignment function shall then be included in the text at the end of these identifications to precede the remainder of the text wording.

4.4.5.3 An alignment function [<=] shall be transmitted at the end of each printed line of the text except for the last (see 4.4.5.6).

4.4.5.4 When it is desired to confirm a portion of the text of a message in teletype writer operation, such confirmation shall be separated from the last text group by an alignment function [<=], and shall be indicated by the abbreviation CFM followed by the portion being confirmed.

4.4.5.5 When it is discovered 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 [<=] in the case of teletypewriter circuits. This shall be followed by the abbreviation COR and the correction.

4.4.5.5.1 Stations shall make all indicated corrections on the page-copy prior to local delivery.

4.4.5.6 At the end of the text the following end-of-text signal shall be transmitted:

   1 LETTER SHIFT [], alignment function [<=].

4.4.5.7 The text of the messages entered by the AFTN origin station shall not exceed 1 800 characters in length.

Note 1.—Where it is desired that a communication with a text exceeding 1 800 characters be transmitted over the aeronautical fixed telecommunication network, 4.4.5.7 requires that such a communication be entered by the AFTN
origin station in the form of separate messages, each text of which does not exceed 1,800 characters. Guidance material for forming separate messages from a single long message is given in Attachment B to Volume II.

Note 2.—The character count includes all printing and non-printing characters in the message from, but not including, the alignment function preceding the beginning of the text to, but not including, the end-of-text signal.

4.4.6 Ending

4.4.6.1 The ending shall comprise:

a) the page-feed sequence consisting of 7 LINE FEEDS [======];
   
   Note.—This, together with the 1 LINE FEED of the preceding alignment function, will provide sufficient separation between messages when appearing in page copy form.

b) the end-of-message signal, consisting of the letter N (letter case of signal no. 14), appearing FOUR times in undivided sequence.
   
   Note.—This component, transmitted intact from the moment of the first transmission of the message until ultimate delivery, is required so that connections set up for cross-office transmission, at a semi-automatic or fully automatic relay installation, can be cleared for following message traffic.

And in addition, on message traffic transmitted to "torn-tape" relay stations only:

c) the message-separation signal, consisting of a LETTER SHIFT [l] transmitted 12 times in uninterrupted sequence.
   
   Note 1.—Nothing but letter shifts are to be transmitted in message traffic between the end-of-message signal of one message and the start-of-message signal of the next.

   Note 2.—The following illustrates the procedures specified in 4.4.2 to 4.4.6.1 inclusive for a message in page-copy form:

(Heading)  *ZCZC LPA183
(Address)  GG LGGG ZRXZ LGATKLMW
(Origin)   201838 EGLL KLMW
(Text)     As required
(Ending)   (Page feed)
           NNNN**

*Note 2A.—If this message had been one of a series and there had been no manual paper-feed action between messages by the operator attending the receiving page teletypewriter, the "NNNN" of the preceding message would have appeared here.

**Note 2B.—In the circumstances described in Note 2A, the heading of the next message received would be printed on page-copy at this position.

Note 2C.—In actual station practice, messages would be separated on page-copy by tearing through the page-feed sequence. The end-of-message signal would then appear to have become a component part of the next message. This apparent misplacement is, however, unlikely to give rise to any misunderstanding on the part of communicators or addressees since, in practice, the end-of-message signal has no significance on page-copy.
4.4.6.2 AFTN messages entered by the AFTN origin station shall 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-message signal (ZCZC) to and
including the end-of-message signal (NNNN).

4.4.7 Tape feed
4.4.7.1 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 tape feed 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.

4.4.7.1.1 When the provisions of 4.4.7.1 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 [↑] in addition to the components prescribed in 4.4.6.

4.4.8 Stripped address
When applying the provisions of 4.4.3 or 4.4.15.2.1, an AFTN communication
centre shall 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.

4.4.9 Teletypewriter operating procedure — general

4.4.9.1 End-of-line functions

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

4.4.9.1.2 One CARRIAGE RETURN [<] and one LINE FEED IMPULSES [=] shall
be transmitted between each printed page-line of the text of a message.

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

4.4.9.3 Channel-check transmissions. Except as provided in 4.4.9.3.3 and 4.4.9.3.5 the following periodic transmissions shall be sent on teletypewriter circuits:

1) heading (see 4.4.2.1.1);
2) alignment function [⇐=] ;
3) the procedure signal CH;
4) alignment function [⇐=] ;
5) end-of-message signal [NNNN];
6) message-separation signal [↓↓↓↓↓↓↓↓↓↓↓↓] (if required).

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.

4.4.9.3.1 Where a circuit is unoccupied, the transmission specified in 4.4.9.3 should be sent at H + 00, H + 20, H + 40.

4.4.9.3.2 If a periodic channel check transmission is not received within a tolerance agreed for that channel, a station shall send a service message to the station from which the transmission was expected. The text of this service message shall 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↓⇐=

4.4.9.3.3 When a teletypewriter channel is equipped with a system of controlled circuit protocol, and following agreement between the Administrations responsible, the transmission specified in 4.4.9.3 shall not be made.

4.4.9.3.4 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 radio teletypewriter channels may combine the station radio identification transmission with the channel-check transmission specified in 4.4.9.3. In this case the combined transmission shall be sent as follows:

1) heading (see 4.4.2.1.1);
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.

4.4.9.3.4.1 When multichannel radio teletypewriter 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.

4.4.9.3.5 When a teletypewriter circuit is associated with Automatic Error Correction (ARQ) equipment, and following agreement between the Administrations responsible, the transmissions specified in 4.4.9.3 need not be made: however stations employing radio teletypewriter channels on the AFTN for which the station radio identification is required, shall comply with the provisions of 4.4.9.3.4.

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.

4.4.10 Normal teletypewriter transmission procedures

4.4.10.1 Messages shall 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 4.4.1.3 and 4.4.1.5.2.3).

4.4.10.1.1 Arising from the responsibility agreements established under the provisions of 4.4.10.1, each station of the AFTN shall employ and, subject to the provisions of 4.4.10.1.1, adhere to a Routing Directory which consists of the Routing List.

4.4.10.1.1.1 When an incoming message contains only identical location indicators in the lines-following-the-heading the receiving station shall accept responsibility for further relay. If possible such relay shall 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 shall be used. When neither of these facilities is in operation, the message shall not be retransmitted over the circuit from which it was received, without prior service message (see 4.4.1.1.9) notification of this action being given to the station that had made the previous transmission.
4.4.10.1.2 An AFTN message originator not capable of handling service messages shall 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 4.4.4.4.2 and 4.4.4.4.2.1.

4.4.10.1.2 Form of transmission — teletypewriter operation.
All transmissions shall comprise in the following order (see Figure 4-2).

| STARTING PULSE (if necessary) | HEADING | ADDRESS | ORIGIN | TEXT | ENDING |

Figure 4-2. Form of transmission — teletypewriter operation (see 4.4.10.1.2)

4.4.10.1.2.1 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 [l], 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.

4.4.10.1.3 Message format. All messages shall be prepared in accordance with the provisions of 4.4.2 (ITA-2 format) or 4.4.15 (IA-5 format).

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

4.4.10.1.4 Reprocessing procedures

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

4.4.10.1.4.1.1 When applying the provisions of 4.4.10.1.4.1, transmission of the address part of the message shall commence at some point during the 5 SPACES, 1 LETTER SHIFT [←→←→←→] immediately preceding the first alignment function [<=].

4.4.10.1.4.1.2 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.

4.4.10.1.4.1.3 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.

4.4.10.1.4.2 At a “torn-tape” station the incoming tapes shall be torn at a position in the message-separation signal component (see 4.4.6.1 and 4.4.7.1) so that the preceding end of - message signal remains intact.

4.4.10.1.4.2.1 Following application of the provisions of 4.4.10.1.4.2 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 4.4.6.1 c).

4.4.10.1.5 When possible in “torn-tape” or semiautomatic 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.

4.4.10.1.6 Acknowledgement of receipt of messages. In teletypewriter operation and except as provided in 4.4.10.1.6.1, a receiving station shall not transmit acknowledgement of receipt of incoming messages. In lieu thereof the provisions of 4.4.1.4.1 shall be applied.

4.4.10.1.6.1 The receipt of distress messages (priority SS — see 4.4.1.1.1) shall be individually acknowledged by the AFTN destination station sending a service message (see 4.4.1.1.9) 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 4.4.4.3) 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 4.4.10.1.6.1 procedure:

\[
\begin{align*}
&\text{Heading (see 4.4.2.1.1)} \\
&<=\text{SS} \rightarrow \text{LECBZRZX} <= \\
&\uparrow121322 \rightarrow \text{EGLLYFYX (Priority Alarm)} <= \\
&R \rightarrow \uparrow121319 \rightarrow \text{LECBZRZX} <= \\
&\text{Ending (see 4.4.6)}
\end{align*}
\]

4.4.10.1.7 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.

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

4.4.11.1 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 shall send a service message (see 4.4.1.1.9) 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 CYULACAX*:
SVC→QTA→RPT→\uparrow141335\|→CYULACAX|<=
```

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

When the provisions of 4.4.11.1 are applied, the originator as identified by the originator indicator in the origin of the mutilated message shall reassume responsibility for the mutilated message, and shall comply with the provisions of 4.4.11.3.

4.4.11.3 Following application of the provisions of 4.4.11.2, the following reprocessing shall 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 4.4.6.1);
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 4.4.6 and 4.4.7), the LETTER SHIFTS [)] of the message-separation signal and tape feed.  

Note.— The example appearing in Figure 4-3 illustrates the application of this procedure.

![Figure 4-3. Example of application of 4.4.11.3 procedure](image)

4.4.11.4 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 shall send a service message (see 4.4.1.1.9) to the previous station rejecting the mutilated transmission and requesting a repetition of the incorrectly received message (or messages).  

Note 1.— 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.

4.4.11.5 When the provisions of 4.4.11.4 are applied, the station receiving the service message shall assume responsibility for the referenced message. It shall then retransmit the unmutilated copy of the referenced message with a new (i.e. correct in sequence) transmission identification (see 4.4.2.1.1 b)). If that station is not in possession of an unmutilated copy of the original message, it shall take the action prescribed in 4.4.11.1.

4.4.11.6 If, before retransmission is commenced, a relay station detects that a received message has a recognizable but mutilated end-of-message signal, it shall, 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.

4.4.11.7 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 shall:
1) cancel the transmission by inserting into the channel the sequence
   \[<\text{QTA}\rightarrow\text{QTA}>\] followed by a complete ending (see 4.4.6);
2) reassert responsibility for the message;
3) comply with the provisions of 4.4.11.1 or 4.4.11.4 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.

4.4.11.8 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 shall
transmit to all addressees concerned a service message with the following text,
if an unmuttilated copy of the message is available in the station:

\text{SVC CORRECTION (the origin of the incorrect message) STOP (followed by}
\text{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.

4.4.11.9 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 shall
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.

4.4.11.10 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 shall insert into the channel the following:

1) \[<\text{CHECK}\rightarrow\text{TEXT}=\]
   \[\text{NEW}\rightarrow\text{ENDING}\rightarrow\text{ADDED}->\]
2) its own station identification;
3) \[<\]
4) a proper ending as prescribed in 4.4.6.1.

\text{Note 1.— On tape copy, this insertion will appear as follows:}
\[<\text{CHECK}\rightarrow\text{TEXT}=\]
\[\text{NEW}\rightarrow\text{ENDING}\rightarrow\text{ADDED}\rightarrow\text{LOWWYFYX}<\]=
\[\text{AAAAAA}\text{N}\text{NNN}]+\ldots\]

\text{Note 2.— On page copy, this insertion will appear as follows:}
\text{CHECK}
\text{TEXT}
\text{NEW ENDING ADDED LOWWYFYX}
\text{N}\text{NNN}

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

\text{Note 4.— The FIGURE SHIFT \[\text{[ ]}\] 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.

4.4.11.11 Relay stations applying the procedural provisions of 4.4.11.9 or 4.4.11.10 should, 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.

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

4.4.11.12.1 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¡<=

4.4.11.12.2 The station receiving such a service message shall reassert responsibility for the referenced message, and shall retransmit the message with a corrected address line, and a new transmission identification.

4.4.11.13 If a relay station detects a received message with an invalid (i.e. length other than 8 letters) or unknown addressee indicator, it shall relay the message to those valid addresses for which it has relay responsibility using the stripped address procedure (see 4.4.8).

4.4.11.13.1 In addition, except as in 4.4.11.13.3, the station shall send a service message to the previous station requesting correction of the error. The text of this service message shall 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 4.4.11.13.1:

a) for an invalid addressee indicator:
   SVC→ADS→ABC↑123↓="
   GG→EGLLACAX→EGPKTYX→CYAAYFYX→
   CYQXACFX="CHECK→CYQXACFX↓="

b) for an unknown addressee indicator:
   SVC→ADS→ABC↑123↓="
   GG→EGLLACAX→EGEHTYTX→CYAAYFYX→
   CYQXACAX="UNKNOWN→EGEHTYTX↓="

4.4.11.13.2 A station receiving a service message as prescribed in 4.4.11.13.1 shall, if a correct addressee indicator is available, repeat the message to that addressee only using the stripped address procedure (see 4.4.8) or, if a correct addressee indicator is not available, act as prescribed in 4.4.11.13.1.

4.4.11.13.3 Where the procedure of 4.4.11.13 is applied in the case of an unknown addressee indicator, and if the origin of the message is without fault, the station shall send a service message to the originator. The text of this service message shall 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→EGEHTYTX→CYAAYFYX→
   CYQXACAX="UNKNOWN→EGEHTYTX↓="

4.4.11.13.4 A station receiving such a service message shall obtain a correct addressee indicator and shall repeat the message to the addressee using the stripped address procedure (see 4.4.8).

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

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

4.4.11.14.1 The text of this service message shall 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:

\[ \text{SVC} \rightarrow \text{QTA} \rightarrow \text{OGN} \rightarrow \text{ABC}123\downarrow \rightarrow \text{CORRUPT}\downarrow \leq \]

4.4.11.14.2 The station receiving a service message as prescribed in 4.4.11.14.1 shall reassert responsibility for the referenced message and shall retransmit the message with a correct origin line and a new transmission identification.

Note.— When applying the provisions of 4.4.11.14, 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.

4.4.11.15 When the first relay station detects that a message was received with an incorrect originator indicator, it shall:
  a) stop processing the message; and
  b) send a service message to the station from which the message was received.

4.4.11.15.1 The text of the service message shall 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 above-mentioned procedure:

\[ \text{SVC} \rightarrow \text{QTA} \rightarrow \text{OGN} \rightarrow \text{ABC}123\downarrow \rightarrow \text{INCORRECT}\downarrow \leq \]

4.4.11.15.2 The station receiving a service message as prescribed in 4.4.11.15.1 shall resume responsibility for the referenced message and shall retransmit the message with a correct originator indicator and, if applicable, a new transmission identification.

Note.— When applying the provisions of 4.4.11.15 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.

4.4.12 Correction of errors during tape preparation

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

4.4.12.2 Errors made ahead of the text of a message shall be corrected by discarding the incorrect tape and preparing a new one.
4.4.12.3 Where possible, errors made in the text of a message shall be corrected by back-spacing the tape and eliminating the error by operation of the LETTERS [\|] key over the undesired portion.

4.4.12.4 Where the action of 4.4.12.3 is not possible, correction to the text shall be made immediately after the error by making the error sign (→E→E→E→), transmitting the last correct word or group and then continuing with the tape preparation.

4.4.12.5 Where neither the action of 4.4.12.3 nor the action of 4.4.12.4 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 4.4.5.5.

4.4.12.6 The ending must be typed without error.

4.4.13 Correction of errors during message origination in cases where the message is flowing into the AFTN during preparation

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

4.4.13.2 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 4.4.6).

4.4.13.3 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.

4.4.13.4 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 4.4.5.5.

4.4.13.5 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 4.4.13.2.

4.4.14 Predetermined distribution system for AFTN messages

4.4.14.1 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.

4.4.14.2 The Predetermined Distribution Addressee Indicator (PDAI) shall 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 Annex 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.

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

4.4.14.4 AFTN messages carrying Predetermined Distribution Addressee
Indicators allocated by the State receiving the message shall be routed to the
addressees listed on the associated list of Addressee Indicators described in
4.4.14.5.

4.4.14.5 DGCA shall send 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.

4.4.14.5.1 The list of Addressee Indicators associated with a Predetermined
Distribution Addressee Indicator shall 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).

4.4.15 Message format — International Alphabet No. 5 (IA-5)
When it has been agreed between the Administrations concerned to use International Alphabet No. 5 (IA-5) the format described in 4.4.15 through 4.4.15.3 shall be used. It shall be the responsibility of Administrations using IA-5 to accommodate adjacent AFTN stations employing ITA-2 code in the format described in 4.4.2.

All messages, other than those prescribed in 4.4.1.8 and 4.4.9.3 shall comprise the components specified in 4.4.15.1 to 4.4.15.6 inclusive.

Note — In the subsequent standards relative to message format the following symbols have been used in making reference to the functions assigned to certain signals in IA-5. (See Volume III, Part I, 8.6.1 and Tables 8-2 and 8-3.)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Signification</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;</td>
<td>CARRIAGE RETURN (character position 0/13)</td>
</tr>
<tr>
<td>=</td>
<td>LINE FEED (character position 0/10)</td>
</tr>
<tr>
<td>→</td>
<td>SPACE (character position 2/0).</td>
</tr>
</tbody>
</table>

4.4.15.1 Heading

4.4.15.1.1 The heading shall comprise:

a) start-of-heading (SOH) character 0/1;

b) transmission identification comprising:
   1) circuit or link identification;
   2) channel-sequence number;

c) additional service information (if necessary) comprising:
   1) one SPACE;
   2) no more than 10 characters.

4.4.15.1.1.1 On point-to-point circuits or links, the identification shall consist of three letters selected and assigned by the transmitting station; the first letter identifying the transmitting, the second letter the receiving end of the circuit, and the third letter the channel. Where only one channel exists, the letter A shall be assigned. Where more than one channel between stations is provided, the channels shall be identified as A, B, C, etc., in respective order. On multipoint channels, the identification shall consist of three letters selected and assigned by the circuit control or master station.

4.4.15.1.1.2 Except as provided in 4.4.15.1.1.3 three-digit channel-sequence numbers from 001 to 000 (representing 1 000) shall be assigned sequentially by telecommunication stations to all messages transmitted directly from one station to another. A separate series of these numbers shall be assigned for each channel and a new series shall be started daily at 0000 hours.

4.4.15.1.1.3 The expansion of the channel-sequence number to preclude duplication of the same numbers during the 24-hour period should be permitted subject to agreement between the Authorities responsible for the operation of the circuit.
4.4.15.1.1.4 The transmission identification shall be sent over the circuit in the following sequence:
   a) transmitting-terminal letter;
   b) receiving-terminal letter;
   c) channel-identification letter;
   d) channel-sequence number.

4.4.15.1.1.5 Additional 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 10 characters inserted into the heading of message immediately following the last digit of the channel-sequence number and shall not contain any alignment functions. When no such additional service information is added the information in 4.4.15.1.1.4 shall be followed immediately by that of 4.4.15.2.

4.4.15.2 Address

4.4.15.2.1 The address shall comprise:
   a) alignment function [=];
   b) priority indicator;
   c) addressee indicator(s);
   d) alignment function [=].

4.4.15.2.1.1 The priority indicator shall consist of the appropriate two-letter group assigned by the originator in accordance with the following:

<table>
<thead>
<tr>
<th>Priority indicator</th>
<th>Message category</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>distress messages</td>
</tr>
<tr>
<td>DD</td>
<td>urgency messages (see 4.4.1.1.2)</td>
</tr>
<tr>
<td>FF</td>
<td>flight safety messages (see 4.4.1.1.3)</td>
</tr>
<tr>
<td>GG</td>
<td>meteorological messages (see 4.4.1.1.4)</td>
</tr>
<tr>
<td>GG</td>
<td>flight regularity messages (see 4.4.1.1.5)</td>
</tr>
<tr>
<td>GG</td>
<td>aeronautical information services messages (see 4.4.1.1.6)</td>
</tr>
<tr>
<td>KK</td>
<td>aeronautical administrative messages (see 4.4.1.1.7)</td>
</tr>
<tr>
<td>as appropriate</td>
<td>service messages (see 4.4.1.1.9)</td>
</tr>
</tbody>
</table>

4.4.15.2.1.2 The order of priority shall be the same as specified in 4.4.1.2.

4.4.15.2.1.3 An addressee indicator, which shall be immediately preceded by a SPACE, except when it is the first address indicator of the second or third line of addresses, shall comprise:
   a) the four-letter location indicator of the place of destination;
   b) the three-letter designator identifying the organization/ function (aeronautical authority, service or aircraft operating agency) addressed;
c) an additional letter, which shall represent a department, division or process within the organization/function addressed. The letter X shall be used to complete the address when explicit identification is not required.

4.4.15.2.1.3.1 Where a message is to be addressed to an organization that has not been allocated an ICAO three-letter designator of the type prescribed in 4.4.15.2.1.3 the location indicator of the place of destination shall be followed by the ICAO three-letter designator YYY (or the ICAO three-letter designator YXY in the case of a military service or organization). The name of the addressee organization shall then be included in the first item in the text of the message.

The eighth position letter following the ICAO three-letter designator YYY or YXY shall be the filler letter X.

4.4.15.2.1.3.2 Where a message is to be addressed to an aircraft in flight and, therefore, requires handling over the AFTN for part of its routing before retransmission over the Aeronautical Mobile Service, the location indicator of the aeronautical station which is to relay the message to the aircraft shall be followed by the ICAO three-letter designator ZZZ. The identification of the aircraft shall then be included in the first item of the text of the message. The eighth position letter following the ICAO three-letter designator ZZZ shall be the filler letter X.

4.4.15.2.1.4 The complete address shall be restricted to three lines of page-printing copy, and, except as provided in 4.4.16, a separate addressee indicator shall be used for each addressee whether at the same or different locations.

4.4.15.2.1.5 The completion of the addressee indicator group(s) in the address of a message shall be immediately followed by the alignment function.

4.4.15.2.1.6 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 messages shall be converted, before transmission, into two or more messages, each of which shall conform with the provisions of 4.4.15.2.1.5. During such conversion, the addressee indicators shall, 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.

4.4.15.2.2 Origin
The origin shall comprise:
   a) filing time;
   b) originator indicator;
   c) priority alarm (when necessary);
   d) optional heading information;
   e) alignment function [***];
   f) start-of-text character, character 0/2 (STX).
4.4.15.2.2.1 The filing time shall comprise the 6-digit date-time group indicating the date and time of filing the message for transmission (see 3.4.2).

4.4.15.2.2.2 The originator indicator, which shall be immediately preceded by a SPACE, shall comprise:
   a) the four-letter location indicator of the place at which the message is originated;
   b) the three-letter designator identifying the organization/function (aeronautical authority, service or aircraft operating agency) which originated the message;
   c) an additional letter which shall represent a department, division or process within the organization/function of the originator. The letter X shall be used to complete the address when explicit identification is not required.

4.4.15.2.2.3 Where a message is originated by an organization that has not been allocated an ICAO three-letter designator of the type prescribed in 4.4.15.2.2.2, the location indicator of the place at which the message is originated shall be followed immediately by the ICAO three-letter designator YYY followed by the filler letter X (or the ICAO three-letter designator YXY followed by the filler letter X in the case of a military service or organization). The name of the organization (or military service) shall then be included in the first item in the text of the message.

4.4.15.2.2.3.1 Messages relayed over the AFTN that have been originated in other networks shall use a valid AFTN originator indicator that has been agreed for use by the relay or gateway function linking the AFTN with the external network.

4.4.15.2.2.4 Where a message originated by an aircraft in flight requires handling on the AFTN for part of its routing before delivery, the originator indicator shall comprise the location indicator of the aeronautical station responsible for transferring the message to the AFTN, followed immediately by the ICAO three-letter designator ZZZ followed by the filler letter X. The identification of the aircraft shall then be included in the first item in the text of the message.

4.4.15.2.2.5 The priority alarm shall be used only for distress messages. When used it shall consist of five successive BEL (0/7) characters.

Note.—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.

4.4.15.2.2.6 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.
4.4.15.2.2.6.1 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 (.) 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.

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

4.4.15.2.2.7 The origin line shall be concluded by an alignment function [=] and the start-of-text (STX) (0/2) character.

4.4.15.3 Text

4.4.15.3.1 The text of messages shall be drafted in accordance with 4.1.2 and shall 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 PANS-ATM (Doc 4444), Administrations may make full use of the characters available in International Alphabet No. 5 (IA-5).*

4.4.15.3.2 When an originator’s reference is used, it shall appear at the beginning of the text, except as provided in 4.4.15.3.3 and 4.4.15.3.4.

4.4.15.3.3 When the ICAO three-letter designators YXY, YYY or ZZZ comprise the second element of the addressee indicator (see 4.4.15.2.1.3.1 and 4.4.15.2.1.3.2) and it, therefore, becomes necessary to identify in the text the specific addressee of the message, such identification group shall precede the originator’s reference (if used) and become the first item of the text.

4.4.15.3.4 When the ICAO three-letter designators YXY, YYY or ZZZ comprise the second element of the originator indicator (see 4.4.15.2.2.3 and 4.4.15.2.2.4) and it thus becomes necessary to identify in the text the name of the organization (or military service) or the aircraft which originated the message, such identification shall be inserted in the first item of the text of the message.

4.4.15.3.5 When applying the provisions of 4.4.15.3.3 and 4.4.15.3.4 to messages where the ICAO three-letter designator(s) YXY, YYY, ZZZ refer to two or more different organizations (or military services), the sequence of further identification in the text shall correspond to the complete sequence used in the address and originator indicator of the message. In such instance, each addressee identification shall be followed immediately by an alignment
function. The name of the (YXY, YYY or ZZZ) organization originating the message shall then be preceded with "FROM". "STOP" followed by an alignment function shall then be included in the text at the end of this identification and preceding the remainder of text.

4.4.15.3.6 An alignment function shall be transmitted at the end of each printed line of the text. When it is desired to confirm a portion of the text of a message in teletypewriter operation, such confirmation shall be separated from the last text group by an alignment function [←], and shall be indicated by the abbreviation CFM followed by the portion being confirmed.

4.4.15.3.7 Where messages are prepared off-line, e.g. by preparation of a paper tape, errors in the text shall be corrected by backspacing and replacing the character in error by character DEL (7/15).

4.4.15.3.8 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).

4.4.15.3.9 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 [←]. This shall be followed by the abbreviation COR and the correction.

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

4.4.15.3.11 The text of messages entered by the APTN origin station shall not exceed 1 800 characters in length. AFTN messages exceeding 1 800 characters shall 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 A. 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.

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

4.4.15.3.12 Ending

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

a) an alignment [←] function following the last line of text;
b) page-feed character, character 0/11 (VT);
c) end-of-text character 0/3 (ETX).
4.4.15.3.12.1.1 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).

4.4.15.3.12.1.2 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.

4.4.15.3.12.1.3 Messages entered by the AFTN origin station shall not exceed 2 100 characters in length.

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

4.4.15.4 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.

4.4.15.5 *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 4.4.15.1.1);

   S

2) alignment function T;

   X

3) the procedure signal CH;

   E

4) alignment function 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.

4.4.15.5.1 Where a circuit is unoccupied and uncontrolled, the transmission identified in 4.4.15.5 should be sent at H + 00, H + 20, H + 40.

4.4.15.6 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 4.4.1.1.9) 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 4.4.15.2.2.5), and shall have a text comprising:
1) the procedure signal R;
2) the origin line (see 4.4.15.2.2) without priority alarm, or optional heading information of the message being acknowledged;
3) the ending (see 4.4.15.3.12.1).

Note.— The following example illustrates the application of the 4.4.15.6 procedures:

```
Heading (see 4.4.15.1.1)
<= SS → LECBZRZX <=

121322 → EGLFYFX (Priority Alarm) <=

S
TR → 121319 → LECBZRZX <=
X
```

Ending (see 4.4.15.3.12.1).

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

4.4.16.1 On channels employing continuous control the mutilation detection and subsequent recovery shall be a function of the link control procedures and shall not require the subsequent sending of service or CHECK TEXT NEW ENDING ADDED messages.

4.4.16.2 On channels not employing continuous control the relay station shall employ the following procedures:

4.4.16.2.1 If, during the reception of a message a relay station detects that the message has been mutilated at some point ahead of the end-of-text character, it shall:
1) cancel the onward routing responsibility for the message;
2) send a service message to the transmitting station requesting a retransmission.

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:
SVC→QTA→RPT→ABC 123 (ending — see 4.4.15.3.12.1)

4.4.16.2.2 When the provisions of 4.4.16.2.1 are applied, the station receiving the service message shall resume responsibility for the referenced message with a new (i.e. correct in sequence) transmission identification (see 4.4.15.2.1). If that station is not in possession of an unmutilated copy of the
original message, it shall send a message to the originator as identified by the
indicator in the origin of the mutilated 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 CYULACAX":

SVC→QTA→RPT→141335→CYULACAX
(ending — see 4.4.15.3.12.1)

4.4.16.3 If, after transmission of the text material of a message, a relay station
can detect that there is no complete end-of-text character, but has no practical
means of discovering whether the irregularity has affected only the end-of-text
character, or whether it has also caused part of the original text to have been
lost, it shall insert into the channel the following:
1) <CHECK=TEXT=
    NEW→ENDING→ADDED
2) its own station identification;
3) (ending — see 4.4.15.3.12.1).

4.4.17 Transfer of AFTN messages over code and byte independent circuits and
networks
When AFTN messages are transferred across code and byte independent
circuits and networks of the AFS, the following shall apply.

4.4.17.1 Except as provided in 4.4.17.3 the heading line of the message shall
be omitted. The message shall start with an alignment function followed by the
address.

4.4.17.2 The message shall end with a complete ending.

4.4.17.3 For the purposes of technical supervision, entry centres should be
permitted to insert additional data preceding the first alignment function and/or following the ending of the message. Such data may be disregarded by
the receiving station.

4.4.17.3.1 When the provisions of 4.4.17.3 are applied, the data added shall
not include either carriage return or line feed characters or any of the
combinations listed in 4.1.2.4.

4.5 Common ICAO Data Interchange Network (CIDIN)
RESERVES
4.6 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 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 Electrotechnical 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) 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 4-1). Table 4-1. Communications between ATN end systems implementing ATS message handling services

<table>
<thead>
<tr>
<th>ATN End System 1</th>
<th>ATN End System 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATS Message Server</td>
<td>ATS Message Server</td>
</tr>
<tr>
<td>ATS Message Server</td>
<td>AFTN/AMHS Gateway</td>
</tr>
<tr>
<td>ATS Message Server</td>
<td>CIDIN/AMHS Gateway</td>
</tr>
<tr>
<td>ATS Message Server</td>
<td>ATS Message User Agent</td>
</tr>
<tr>
<td>AFTN/AMHS Gateway</td>
<td>AFTN/AMHS Gateway</td>
</tr>
</tbody>
</table>

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4.7 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 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 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).
CHAPTER 5
AERONAUTICAL MOBILE SERVICE — VOICE COMMUNICATIONS

5.1 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.

5.1.1 In all communications the highest standard of discipline shall be observed at all times.

5.1.1.1 ICAO standardized phraseology as prescribed at chapter 12 Advisory Circular (AC) 170-02 shall be used in all situations for which it has been specified. Only when standardized phraseology cannot serve an intended transmission, plain language shall be used.

Note.—Detailed language proficiency requirements appear in CASR Part 69

5.1.1.2 The transmission of messages, other than those specified in 5.1.8, on aeronautical mobile frequencies when the aeronautical fixed services are able to serve the intended purpose, shall be avoided.

5.1.1.3 In all communications, the consequences of human performance which could affect the accurate reception and comprehension of messages shall be taken into consideration.

5.1.2 Where it is necessary for an aircraft station to send signals for testing or adjustment which are liable to interfere with the working of a neighbouring aeronautical station, the consent of the station shall be obtained before such signals are sent. Such transmissions shall be kept to a minimum.

5.1.3 When it is necessary for a station in the aeronautical mobile service to make test signals, either for the adjustment of a transmitter before making a call or for the adjustment of a receiver, such signals shall not continue for more than 10 seconds and shall be composed of spoken numerals (ONE, TWO, THREE, etc.) in radiotelephony, followed by the radio call sign of the station transmitting the test signals. Such transmissions shall be kept to a minimum.

5.1.4 Except as otherwise provided, the responsibility of establishing communication shall rest with the station having traffic to transmit.

Note.—In certain cases when SELCAL is used the procedures respecting the establishment of communications are contained in 5.2.4.

5.1.5 After a call has been made to the aeronautical station, a period of at least 10 seconds should elapse before a second call is made. This should eliminate unnecessary transmissions while the aeronautical station is getting ready to reply to the initial call.
5.1.6 When an aeronautical station is called simultaneously by several aircraft stations, the aeronautical station shall decide the order in which aircraft shall communicate.

5.1.7 In communications between aircraft stations, the duration of communication shall be controlled by the aircraft station which is receiving, subject to the intervention of an aeronautical station. If such communications take place on an ATS frequency, prior permission of the aeronautical station shall be obtained. Such requests for permission are not required for brief exchanges.

5.1.8 Categories of messages
The categories of messages handled by the aeronautical mobile service and the order of priority in the establishment of communications and the transmission of messages shall be in accordance with the following:

<table>
<thead>
<tr>
<th>Message category and order of priority</th>
<th>Radiotelephony signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Distress calls, distress messages and distress traffic</td>
<td>MAYDAY</td>
</tr>
<tr>
<td>b) Urgency messages, including messages preceded by the medical transports signal</td>
<td>PAN, PAN or PAN, PAN MEDICAL</td>
</tr>
<tr>
<td>c) Communications relating to direction finding</td>
<td>—</td>
</tr>
<tr>
<td>d) Flight safety messages</td>
<td>—</td>
</tr>
<tr>
<td>e) Meteorological messages</td>
<td>—</td>
</tr>
<tr>
<td>f) Flight regularity messages</td>
<td>—</td>
</tr>
</tbody>
</table>

Note 1.— Messages concerning acts of unlawful interference constitute a case of exceptional circumstances which may preclude the use of recognized communication procedures used to determine message category and priority.

Note 2.— A NOTAM may qualify for any of the categories or priorities a) to f) inclusive. The decision as to which priority will depend on the contents of the NOTAM and its importance to the aircraft concerned.

5.1.8.1 Distress messages and distress traffic shall be handled in accordance with the provisions of 5.3.

5.1.8.2 Urgency messages and urgency traffic, including messages preceded by the medical transports signal, shall be handled in accordance with the provisions of 5.3.

Note.— The term “medical transports” is defined in the 1949 Geneva Conventions and Additional Protocols (see also RR S33 Section III) and refers to “any means of transportation by land, water, or air, whether military or civilian, permanent or temporary, assigned exclusively to medical transportation and under the control of a competent authority of a Party to the conflict”.

5.1.8.3 Communications shall be handled in accordance with Chapter 6.

5.1.8.4 Flight safety messages shall comprise the following:
1) movement and control messages [see AC 179-02];
2) messages originated by an aircraft operating agency or by an aircraft, of immediate concern to an aircraft in flight;
3) meteorological advice of immediate concern to an aircraft in flight or about to depart (individually communicated or for broadcast);
4) other messages concerning aircraft in flight or about to depart.

5.1.8.5 **Meteorological messages** shall comprise meteorological information to or from aircraft, other than those in 5.1.8.4, 3).

5.1.8.6 **Flight regularity messages** shall comprise the following:
1) messages regarding the operation or maintenance of facilities essential for the safety or regularity of aircraft operation;
2) messages concerning the servicing of aircraft;
3) instructions to aircraft operating agency representatives concerning changes in requirements for passengers and crew caused by unavoidable deviations from normal operating schedules. Individual requirements of passengers or crew shall not be admissible in this type of message;
4) messages concerning non-routine landings to be made by the aircraft;
5) messages concerning aircraft parts and materials urgently required;
6) messages concerning changes in aircraft operating schedules.

5.1.8.6.1 Air traffic services units using direct pilot controller communication channels shall only be required to handle flight regularity messages provided this can be achieved without interference with their primary role and no other channels are available for the handling of such messages.

*Note.— The messages at 5.1.8.4, 2) and 5.1.8.6, 1) to 6) typify some of the operational control communications defined in Chapter 1.*

5.1.8.7 Messages having the same priority should, in general, be transmitted in the order in which they are received for transmission.

5.1.8.8 Inter pilot air-to-air communication shall comprise messages related to any matter affecting safety and regularity of flight. The category and priority of these messages shall be determined on the basis of their content in accordance with 5.1.8.

5.1.9 Cancellation of messages

5.1.9.1 **Incomplete transmissions.** If a message has not been completely transmitted when instructions to cancel are received, the station transmitting the message shall instruct the receiving station to disregard the incomplete transmission. This shall be effected in radiotelephony by use of an appropriate phrase.

5.1.9.2 **Complete transmissions**
When a completed message transmission is being held pending correction and the receiving station is to be informed to take no forwarding action, or when delivery or onward relay cannot be accomplished, transmission should be
cancelled. This should be effected in radiotelephony by the use of an appropriate phrase.

5.1.9.3 The station cancelling a transmission shall be responsible for any further action required.

5.2 Radiotelephony procedures

*Note.*— When Selective Calling (SELCAL) equipment is used certain of the following procedures are superseded by those contained in 5.2.4.

5.2.1 General

5.2.1.1 **PANS.—** When a controller or pilot communicates via voice, the response should be via voice. Except as provided by 8.2.12.1, when a controller or pilot communicates via CPDLC, the response should be via CPDLC.

5.2.1.2 Language to be used

5.2.1.2.1 The air-ground radiotelephony communications shall be conducted in English language.

*Note 2.*— The level of language proficiency required for aeronautical radiotelephony communications is specified in the CASR Part 69

5.2.1.2.2 The English language shall be available, on request from any aircraft station, at all stations on the ground serving designated airports and routes used by international air services.

5.2.1.2.3 The languages available at a given station on the ground shall form part of the Aeronautical Information Publications and other published aeronautical information concerning such facilities.

5.2.1.3 *Word spelling in radiotelephony.* When proper names, service abbreviations and words of which the spelling is doubtful are spelled out in radiotelephony the alphabet in the following table shall be used.

<table>
<thead>
<tr>
<th>LETTER</th>
<th>WORD</th>
<th>PRONUNCIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Alfa</td>
<td>AL FAH</td>
</tr>
<tr>
<td>B</td>
<td>Bravo</td>
<td>BRAH VOH</td>
</tr>
<tr>
<td>C</td>
<td>Charlie</td>
<td>CHAR LEE or SHAR LEE</td>
</tr>
<tr>
<td>D</td>
<td>Delta</td>
<td>DELL TAH</td>
</tr>
<tr>
<td>E</td>
<td>Echo</td>
<td>ECK OH</td>
</tr>
<tr>
<td>F</td>
<td>Fox trot</td>
<td>FOKS TROT</td>
</tr>
<tr>
<td>G</td>
<td>Golf</td>
<td>GOLF</td>
</tr>
<tr>
<td>H</td>
<td>Hotel</td>
<td>HO TELL</td>
</tr>
<tr>
<td>I</td>
<td>India</td>
<td>IN DEE AH</td>
</tr>
<tr>
<td>J</td>
<td>Juliett</td>
<td>JEW LEE ETT</td>
</tr>
<tr>
<td>K</td>
<td>Kilo</td>
<td>KEY LOH</td>
</tr>
<tr>
<td>L</td>
<td>Lima</td>
<td>LEE MAH</td>
</tr>
<tr>
<td>M</td>
<td>Mike</td>
<td>MIKE</td>
</tr>
<tr>
<td>N</td>
<td>Nopember</td>
<td>NO VEM BER</td>
</tr>
<tr>
<td>O</td>
<td>Oscar</td>
<td>OSS CAH</td>
</tr>
<tr>
<td>----</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>P</td>
<td>Papa</td>
<td>PAH PAH</td>
</tr>
<tr>
<td>Q</td>
<td>Quebec</td>
<td>KEH BECK</td>
</tr>
<tr>
<td>R</td>
<td>Romeo</td>
<td>ROW ME OH</td>
</tr>
<tr>
<td>S</td>
<td>Sierra</td>
<td>SEE AIR RAH</td>
</tr>
<tr>
<td>T</td>
<td>Tango</td>
<td>TANG GO</td>
</tr>
<tr>
<td>U</td>
<td>Uniform</td>
<td>YOU NEE FORM or OO NEE FORM</td>
</tr>
<tr>
<td>V</td>
<td>Victor</td>
<td>VIK TAH</td>
</tr>
<tr>
<td>W</td>
<td>Whiskey</td>
<td>WISS KEY</td>
</tr>
<tr>
<td>X</td>
<td>X-ray</td>
<td>ECKS RAY</td>
</tr>
<tr>
<td>Y</td>
<td>Yankee</td>
<td>YANG KEY</td>
</tr>
<tr>
<td>Z</td>
<td>Zulu</td>
<td>ZOO LOO</td>
</tr>
</tbody>
</table>

Note.— The pronunciation of the words in the alphabet as well as numbers may vary according to the language habits of the speakers. In order to eliminate wide variations in pronunciation, posters illustrating the desired pronunciation are available from ICAO.

5.2.1.4 Transmission of numbers in radiotelephony

5.2.1.4.1 Transmission of numbers

5.2.1.4.1.1 All numbers, except as prescribed in 5.2.1.4.1.2, shall be transmitted by pronouncing each digit separately.

Note.— The following examples illustrate the application of this procedure (see 5.2.1.4.3.1 for pronunciation).

<table>
<thead>
<tr>
<th>Aircraft call signs</th>
<th>Transmitted as</th>
</tr>
</thead>
<tbody>
<tr>
<td>GIA 238</td>
<td>Indonesia two three eight</td>
</tr>
<tr>
<td>SIA 242</td>
<td>Singapore two four two</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flight levels</th>
<th>Transmitted as</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL 180</td>
<td>Flight level one eight zero</td>
</tr>
<tr>
<td>FL 200</td>
<td>Flight level two zero zero</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Headings</th>
<th>Transmitted as</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 degrees</td>
<td>Heading one zero zero</td>
</tr>
<tr>
<td>080 degrees</td>
<td>Heading zero eight zero</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wind direction and speed</th>
<th>Transmitted as</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 degrees 70 knots</td>
<td>Wind two zero zero degrees seven zero knots</td>
</tr>
<tr>
<td>160 degrees 18 knots</td>
<td>Wind one six zero degrees one eight knots</td>
</tr>
<tr>
<td>Gusting 30 knots</td>
<td>Gusting three zero knots</td>
</tr>
</tbody>
</table>

Transponder codes transmitted as

2 400 | squawk two four zero zero
4 203 | squawk four two zero three
Runway | transmitted as
27  | runway two seven
30  | runway three zero
5.2.1.4.1.2 All numbers used in the transmission of altitude, cloud height, visibility and runway visual range (RVR) information, which contain whole hundreds and whole thousands, shall be transmitted by pronouncing each digit in the number of hundreds or thousands followed by the word HUNDRED or THOUSAND as appropriate. Combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit in the number of thousands followed by the word THOUSAND followed by the number of hundreds followed by the word HUNDRED.

Note.— The following examples illustrate the application of this procedure (see 5.2.1.4.3.1 for pronunciation).

**altitude**

- 800 transmitted as eight hundred
- 3 400 transmitted as three thousand four hundred
- 12 000 transmitted as one two thousand

**cloud height**

- 2 200 transmitted as two thousand two hundred
- 4 300 transmitted as four thousand three hundred

**visibility**

- 1 000 transmitted as visibility one thousand
- 700 transmitted as visibility seven hundred

**runway visual range**

- 600 transmitted as RVR six hundred
- 1 700 transmitted as RVR one thousand seven hundred

5.2.1.4.1.3 Numbers containing a decimal point shall be transmitted as prescribed in 5.2.1.4.1.1 with the decimal point in appropriate sequence being indicated by the word DECIMAL.

*Note 1.— The following examples illustrate the application of this procedure:*

<table>
<thead>
<tr>
<th>Number</th>
<th>Transmitted as</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.3</td>
<td>ONE ZERO ZERO DECIMAL THREE</td>
</tr>
<tr>
<td>38 143.9</td>
<td>THREE EIGHT ONE FOUR THREE DECIMAL NINE</td>
</tr>
</tbody>
</table>

*Note 2.— For identification of VHF frequencies the number of digits used after the decimal point are determined on the basis of the channel spacing (5.2.1.7.3.4.3 refers to frequencies separated by 25 kHz, 5.2.1.7.3.4.4 refers to frequencies separated by 8.33 kHz).*
5.2.1.4.1.4 **PANS.**— When transmitting time, only the minutes of the hour should normally be required. Each digit should be pronounced separately. However, the hour should be included when any possibility of confusion is likely to result.

Note.—The following example illustrates the application of this procedure when applying the provisions of 5.2.1.2.2:

<table>
<thead>
<tr>
<th>Time</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>0920 (9:20 A.M.)</td>
<td>TOO ZE-RO or ZE-RO NIN-er TOO ZE-RO</td>
</tr>
<tr>
<td>1643 (4:43 P.M.)</td>
<td>FOW-er TREE or WUN SIX FOW-er TREE</td>
</tr>
</tbody>
</table>

5.2.1.4.2 Verification of numbers

5.2.1.4.2.1 When it is desired to verify the accurate reception of numbers the person transmitting the message shall request the person receiving the message to read back the numbers.

5.2.1.4.3 Pronunciation of numbers

5.2.1.4.3.1 When the language used for communication is English, numbers shall be transmitted using the following pronunciation:

<table>
<thead>
<tr>
<th>Numeral or numeral element</th>
<th>Pronunciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>ZE-RO</td>
</tr>
<tr>
<td>1</td>
<td>WUN</td>
</tr>
<tr>
<td>2</td>
<td>TOO</td>
</tr>
<tr>
<td>3</td>
<td>TREE</td>
</tr>
<tr>
<td>4</td>
<td>FOW-er</td>
</tr>
<tr>
<td>5</td>
<td>FIFE</td>
</tr>
<tr>
<td>6</td>
<td>SIX</td>
</tr>
<tr>
<td>7</td>
<td>SEV-en</td>
</tr>
<tr>
<td>8</td>
<td>AIT</td>
</tr>
<tr>
<td>9</td>
<td>NIN-er</td>
</tr>
<tr>
<td>Decimal</td>
<td>DAY-SEE-MAL</td>
</tr>
<tr>
<td>Hundred</td>
<td>HUN-dred</td>
</tr>
<tr>
<td>Thousand</td>
<td>TOU-SAND</td>
</tr>
</tbody>
</table>

Note.—The syllables printed in capital letters in the above list are to be stressed; for example, the two syllables in ZE-RO are given equal emphasis, whereas the first syllable of FOW-er is given primary emphasis.

5.2.1.5 Transmitting technique

5.2.1.5.1 **PANS.**—Each written message should be read prior to commencement of transmission in order to eliminate unnecessary delays in communications.

5.2.1.5.2 Transmissions shall be conducted concisely in a normal conversational tone.

Note.—See the language proficiency requirements in the CASR Part 69.
5.2.1.5.3 **PANS.**— Speech transmitting technique should be such that the highest possible intelligibility is incorporated in each transmission. Fulfilment of this aim requires that air crew and ground personnel should:
a) enunciate each word clearly and distinctly;
b) maintain an even rate of speech not exceeding 100 words per minute. When a message is transmitted to an aircraft and its contents need to be recorded the speaking rate should be at a slower rate to allow for the writing process. A slight pause preceding and following numerals makes them easier to understand;
c) maintain the speaking volume at a constant level;
d) be familiar with the microphone operating techniques particularly in relation to the maintenance of a constant distance from the microphone if a modulator with a constant level is not used;
e) suspend speech temporarily if it becomes necessary to turn the head away from the microphone.

5.2.1.5.4 Speech transmitting technique should be adapted to the prevailing communications conditions.

5.2.1.5.5 **PANS.**— Messages accepted for transmission should be transmitted in plain language or ICAO phraseologies without altering the sense of the message in any way. Approved ICAO abbreviations contained in the text of the message to be transmitted to aircraft should normally be converted into the unabbreviated words or phrases which these abbreviations represent in the language used, except for those which, owing to frequent and common practice, are generally understood by aeronautical personnel.

*Note.*— The abbreviations which constitute the exceptions mentioned in 5.2.1.5.5 are specifically identified in the abbreviation encode sections of the PANS-ABC (Doc 8400).

5.2.1.5.6 **PANS.**— To expedite communication, the use of phonetic spelling should be dispensed with, if there is no risk of this affecting correct reception and intelligibility of the message.

5.2.1.5.7 **PANS.**— The transmission of long messages should be interrupted momentarily from time to time to permit the transmitting operator to confirm that the frequency in use is clear and, if necessary, to permit the receiving operator to request repetition of parts not received.

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

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGE</td>
<td>“Let me know that you have received and understood this message.”</td>
</tr>
<tr>
<td>AFFIRM</td>
<td>“Yes.”</td>
</tr>
</tbody>
</table>
"Permission for proposed action granted."
"I hereby indicate the separation between portions of the message." *(To be used where there is no clear distinction between the text and other portions of the message.)*

"I hereby indicate the separation between messages transmitted to different aircraft in a very busy environment."

"Annul the previously transmitted clearance."
"Examine a system or procedure." *(Not to be used in any other context. No answer is normally expected.)*

"Authorized to proceed under the conditions specified."
"I request verification of: (clearance, instruction, action, information)."

"Establish communications with..."
"True" or "Accurate".

"An error has been made in this transmission (or message indicated). The correct version is..."
"Ignore."

"What is the readability of my transmission?" *(see 5.2.1.8.4.)*
"I repeat for clarity or emphasis."
"Continue in accordance with the condition(s) specified" or in its literal sense, e.g. "Maintain VFR."

"Listen out on (frequency)."
"No" or "Permission not granted" or "That is not correct" or "Not capable".

"My transmission is ended, and I expect a response from you."
*Note.— Not normally used in VHF communications.*

"This exchange of transmissions is ended and no response is expected."
*Note.— Not normally used in VHF communications.*

"Repeat all, or the specified part, of this message back to me exactly as received."

"A change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof."

"Pass me the following information..."
"I should like to know..." or "I wish to obtain..."
"I have received all of your last transmission."
*Note.— Under no circumstances to be used in reply to a question requiring "READ BACK" or a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE).*
SAY AGAIN  “Repeat all, or the following part, of your last transmission.”

SPEAK SLOWER  “Reduce your rate of speech.”

Note.— For normal rate of speech, see 5.2.1.5.3 b).

STANDBY  “Wait and I will call you.”

Note.— The caller would normally re-establish contact if the delay is lengthy. STANDBY is not an approval or denial.

UNABLE  “I cannot comply with your request, instruction, or clearance.”

Note.— UNABLE is normally followed by a reason.

WILCO ("will comply").  “I understand your message and will comply with it.”

WORDS TWICE  
a) As a request: “Communication is difficult. Please send every word, or group of words, twice.”

b) As information: “Since communication is difficult, every word, or group of words, in this message will be sent twice.”

5.2.1.6 Composition of messages

5.2.1.6.1 Messages handled entirely by the aeronautical mobile service shall comprise the following parts in the order stated:

a) call indicating the addressee and the originator (see 5.2.1.7.3);
b) text (see 5.2.1.6.2.1.1).

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

(call)  JAKARTA RADIO INDONESIA ONE ONE ZERO
(text)  REQUEST SELCAL CHECK

or

(call)  INDONESIA ONE ONE ZERO JAKARTA RADIO
(text)  CONTACT UJUNGPANDANG ON FIVE SIX

5.2.1.6.2 Messages requiring handling by the AFTN for part of their routing and similarly messages which are not handled in accordance with predetermined distribution arrangements (see 3.3.7.1) shall be composed as follows:

5.2.1.6.2.1 When originated in an aircraft:

1) call (see 5.2.1.7.3);
2) the word FOR;
3) the name of the organization addressed;
4) the name of the station of destination;
5) the text.

5.2.1.6.2.1.1 The text shall be as short as practicable to convey the necessary information; full use shall be made of ICAO phraseologies.
Note.— The following example illustrates the application of this procedure:

(call) UJUNG RADIO LION ONE TWO EIGHT
(address) FOR LIONAIR UJUNGPANDANG
(text) NUMBER ONE ENGINE CHANGE REQUIRED

5.2.1.6.2.2 When addressed to an aircraft. When a message, prepared in accordance with 4.4.2, is retransmitted by an aeronautical station to an aircraft in flight, the heading and address of the AFTN message format shall be omitted during the retransmission on the aeronautical mobile service.

5.2.1.6.2.2.1 When the provisions of 5.2.1.6.2.2 are applied, the aeronautical mobile service message transmission shall comprise:
a) the text [incorporating any corrections (COR) contained in the AFTN message];
b) the word FROM;
c) the name of the originating organization and its location (taken from the origin section of the AFTN message).

5.2.1.6.2.2.2 PANS.— When the text of a message to be transmitted by an aeronautical station to an aircraft in flight contains approved ICAO abbreviations, these abbreviations should normally be converted during the transmission of the message into the unabbreviated words or phrases which the abbreviations represent in the language used, except for those which, owing to frequent or common practice, are generally understood by aeronautical personnel.

Note.— The abbreviations which constitute the exceptions mentioned in 5.2.1.6.2.2.2 are specifically identified in the abbreviations encode sections of the PANS-ABC (Doc 8400).

5.2.1.7 Calling

5.2.1.7.1 Radiotelephony call signs for aeronautical stations
Note.— The formation of call signs as specified in ITU Radio Regulations S19 Section III and Section VII.

5.2.1.7.1.1 Aeronautical stations in the aeronautical mobile service shall be identified by:
a) the name of the location; and
b) the unit or service available.

5.2.1.7.1.2 The unit or service shall be identified in accordance with the table below except that the name of the location or the unit/service may be omitted provided satisfactory communication has been established.

<table>
<thead>
<tr>
<th>Unit/service available</th>
<th>Call sign suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>area control centre</td>
<td>CONTROL</td>
</tr>
<tr>
<td>approach control</td>
<td>APPROACH</td>
</tr>
<tr>
<td>approach control radar arrivals</td>
<td>ARRIVAL</td>
</tr>
</tbody>
</table>

69
approach control radar departures DEPARTURE
aerodrome control TOWER
surface movement control GROUND
radar (in general) RADAR
precision approach radar PRECISION
flight information service INFORMATION
clearance delivery DELIVERY
apron control APRON/company dispatch DISPATCH
aeronautical station RADIO

5.2.1.7.2 Radiotelephony call signs for aircraft

5.2.1.7.2.1 Full call signs

5.2.1.7.2.1.1 An aircraft radiotelephony call sign shall be one of the following types:
Type a) — the characters corresponding to the registration marking of the aircraft; or
Type b) — the telephony designator of the aircraft operating agency, followed by the last four characters of the registration marking of the aircraft;
Type c) — the telephony designator of the aircraft operating agency, followed by the flight identification.

Note 1.— The name of the aircraft manufacturer or of the aircraft model may be used as a radiotelephony prefix to the Type a) call sign (see Table 5-1).

<table>
<thead>
<tr>
<th>Full call sign</th>
<th>Type a)</th>
<th>Type b)</th>
<th>Type c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N 57826</td>
<td>*CESSNA</td>
<td>VARIG</td>
<td>SCANDINAVIAN</td>
</tr>
<tr>
<td></td>
<td>FABCD</td>
<td>PVMA</td>
<td>937</td>
</tr>
<tr>
<td>Abbreviated call sign</td>
<td>N26 or N826</td>
<td>CD or CD</td>
<td>VARIG or MA</td>
</tr>
<tr>
<td></td>
<td>*CITATION</td>
<td>or</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>FABCD</td>
<td>VARIG</td>
<td>(no abbreviated form)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PVMA</td>
<td></td>
</tr>
</tbody>
</table>

Note 2.— The telephony designators referred to in Types b) and c) are contained in Doc 8585 — Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.
Note 3.— Any of the foregoing call signs may be inserted in field 7 of the ICAO flight plan as the aircraft identification. Instructions on the completion of the flight plan form are contained in AC 170-02

5.2.1.7.2.2 Abbreviated call signs

5.2.1.7.2.2.1 The aircraft radiotelephony call signs shown in 5.2.1.7.2.1.1, with the exception of Type c), may be abbreviated in the circumstances prescribed in 5.2.1.7.3.3.1. Abbreviated call signs shall be in the following form:
Type a) — the first character of the registration and at least the last two characters of the call sign;
Type b) — the telephony designator of the aircraft operating agency, followed by at least the last two characters of the call sign;
Type c) — no abbreviated form.
Note.— Either the name of the aircraft manufacturer or of the aircraft model may be used in place of the first character in Type a).

5.2.1.7.3 Radiotelephony procedures

5.2.1.7.3.1 An aircraft shall not change the type of its radiotelephony call sign during flight, except temporarily on the instruction of an air traffic control unit in the interests of safety.

5.2.1.7.3.1.1 Except for reasons of safety no transmission shall be directed to an aircraft during take-off, during the last part of the final approach or during the landing roll.

5.2.1.7.3.2 Establishment of radiotelephony communications

5.2.1.7.3.2.1 Full radiotelephony call signs shall always be used when establishing communication. The calling procedure of an aircraft establishing communication shall be in accordance with Table 5-2.

Table 5-2. Radiotelephony calling procedure

<table>
<thead>
<tr>
<th>Designation of the station called</th>
<th>Type a)</th>
<th>Type b)</th>
<th>Type c)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NEW YORK RADIO</td>
<td>NEW YORK RADIO</td>
<td>NEW YORK RADIO</td>
</tr>
<tr>
<td>Designation of the station calling</td>
<td>GABCD**</td>
<td>SPEEDBIRD ABCD**</td>
<td>AEROFLOT 321**</td>
</tr>
</tbody>
</table>

* In certain cases where the call is initiated by the aeronautical station, the call may be effected by transmission of coded tone signals.
** With the exception of the telephony designators and the type of aircraft, each character in the call sign shall be spoken separately. When individual letters are spelled out, the radiotelephony spelling alphabet prescribed in 5.2.1.3 shall be used. Numbers are to be spoken in accordance with 5.2.1.4.

5.2.1.7.3.2.2 PANS.— Stations having a requirement to transmit information to all stations likely to intercept should preface such transmission by the general call ALL STATIONS, followed by the identification of the calling station.
Note.— No reply is expected to such general calls unless individual stations are subsequently called to acknowledge receipt.

5.2.1.7.3.2.3 The reply to the above calls shall be in accordance with Table 5-3. The use of the calling aeronautical station’s call sign followed by the answering aeronautical station’s call sign shall be considered the invitation to proceed with transmission by the station calling.

<table>
<thead>
<tr>
<th>Designation of the station called</th>
<th>Type a)</th>
<th>Type b)</th>
<th>Type c)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GABCD*</td>
<td>SPEEDBIRD ABCD*</td>
<td>AEROFLOT 321*</td>
</tr>
</tbody>
</table>
Designation of the answering station

* With the exception of the telephony designators and the type of aircraft, each character in the call sign shall be spoken separately. When individual letters are spelled out, the radiotelephony spelling alphabet prescribed in 5.2.1.3 shall be used. Numbers are to be spoken in accordance with 5.2.1.4..

5.2.1.7.3.2.4 **PANS.**— When a station is called but is uncertain of the identification of the calling station, it should reply by transmitting the following:

STATION CALLING . . . (station called) SAY AGAIN YOUR CALL SIGN

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

(JAKARTA station replying)

STATION CALLING JAKARTA (pause) SAY AGAIN YOUR CALL SIGN

5.2.1.7.3.2.5 Communications shall commence with a call and a reply when it is desired to establish contact, except that, when it is certain that the station called will receive the call, the calling station may transmit the message, without waiting for a reply from the station called.

5.2.1.7.3.2.6 Interpilot air-to-air communication shall be established on the air-to-air channel 123.45 MHz by either a directed call to a specific aircraft station or a general call, taking into account conditions pertaining to use of this channel.

5.2.1.7.3.2.6.1 **PANS.**— As the aircraft may be guarding more than one frequency, the initial call should include the distinctive channel identification "INTERPILOT".

Note.—The following examples illustrate the application of this calling procedure.

**INDONESIA 123 — LION 901 — INTERPILOT — DO YOU READ**
or

**ANY AIRCRAFT VICINITY OF 30 NORTH 160 EAST — INDONESIA 401 — INTERPILOT — OVER**

5.2.1.7.3.3 **Subsequent radiotelephony communications**

5.2.1.7.3.3.1 Abbreviated radiotelephony call signs, as prescribed in 5.2.1.7.2.2, shall be used only after satisfactory communication has been established and provided that no confusion is likely to arise. An aircraft station shall use its abbreviated call sign only after it has been addressed in this manner by the aeronautical station.

5.2.1.7.3.3.2 After contact has been established, continuous two-way communication shall be permitted without further identification or call until termination of the contact.
5.2.1.7.3.3 In order to avoid any possible confusion, when issuing ATC clearances and reading back such clearances, controllers and pilots shall always add the call sign of the aircraft to which the clearance applies.

5.2.1.7.3.4 Indication of transmitting channel

5.2.1.7.3.4.1 PANS.— As the aeronautical station operator generally guards more than one frequency, the call should be followed by an indication of the frequency used, unless other suitable means of identifying the frequency are known to exist.

5.2.1.7.3.4.2 PANS.— When no confusion is likely to arise, only the first two digits of the High Frequency (in kHz) need be used to identify the transmitting channel.

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

(PAA 325 calling Kingston on 8 871 kHz)
KINGSTON CLIPPER THREE TWO FIVE — ON EIGHT EIGHT

5.2.1.7.3.4.3 PANS.— Except as specified in 5.2.1.7.3.4.4 all six digits of the numerical designator should be used to identify the transmitting channel in VHF radiotelephony communications, except in the case of both the fifth and sixth digits being zeros, in which case only the first four digits should be used.

Note 1.— The following examples illustrate the application of the procedure in 5.2.1.7.3.4.3:

<table>
<thead>
<tr>
<th>Channel</th>
<th>Transmitted as</th>
</tr>
</thead>
<tbody>
<tr>
<td>118.000</td>
<td>ONE ONE EIGHT DECIMAL ZERO</td>
</tr>
<tr>
<td>118.005</td>
<td>ONE ONE EIGHT DECIMAL ZERO ZERO FIVE</td>
</tr>
<tr>
<td>118.010</td>
<td>ONE ONE EIGHT DECIMAL ZERO ONE ZERO</td>
</tr>
<tr>
<td>118.025</td>
<td>ONE ONE EIGHT DECIMAL ZERO TWO FIVE</td>
</tr>
<tr>
<td>118.050</td>
<td>ONE ONE EIGHT DECIMAL ZERO FIVE ZERO</td>
</tr>
<tr>
<td>118.100</td>
<td>ONE ONE EIGHT DECIMAL ONE</td>
</tr>
</tbody>
</table>

Note 2.— Caution must be exercised with respect to the indication of transmitting channels in VHF radiotelephony communications when all six digits of the numerical designator are used in airspace where communication channels are separated by 25 kHz, because on aircraft installations with a channel separation capability of 25 kHz or more, it is only possible to select the first five digits of the numerical designator on the radio management panel.

5.2.1.7.3.4.4 PANS.— In airspace where all VHF voice communications channels are separated by 25 kHz or more and the use of six digits as in 5.2.1.7.3.4.3 is not substantiated by the operational requirement determined by the appropriate authorities, the first five digits of the numerical designator should be used, except in the case of both the fifth and sixth digits being zeros, in which case only the first four digits should be used.
Note 1.— The following examples illustrate the application of the procedure in 5.2.1.7.3.4.4 and the associated settings of the aircraft radio management panel for communication equipment with channel separation capabilities of 25 kHz and 8.33/25 kHz:

Note 2.— Caution must be exercised with respect to the indication of transmitting channels in VHF radiotelephony communications when five digits of the numerical designator are used in airspace where aircraft are also operated with channel separation capabilities of 8.33/25 kHz. On aircraft installations with a channel separation capability of 8.33 kHz and more, it is possible to select six digits on the radio management panel. It should therefore be ensured that the fifth and sixth digits are set to 25 kHz channels (see Note 1).

5.2.1.8 Test procedures

5.2.1.8.1 PANS.— The form of test transmissions should be as follows:
   a) the identification of the station being called;
   b) the aircraft identification;
   c) the words “RADIO CHECK”;
   d) the frequency being used.

5.2.1.8.2 PANS.— The reply to a test transmission should be as follows:
   a) the identification of the aircraft;
   b) the identification of the aeronautical station replying;
   c) information regarding the readability of the aircraft transmission.

5.2.1.8.3 PANS.— The test transmission and reply thereto should be recorded at the aeronautical station.

5.2.1.8.4 PANS.— When the tests are made, the following readability scale should be used:

   Readability Scale
   1  Unreadable
   2  Readable now and then
   3  Readable but with difficulty
   4  Readable
   5  Perfectly readable

5.2.1.9 Exchange of communications

5.2.1.9.1 Communications shall be concise and unambiguous, using standard phrasology whenever available.

5.2.1.9.1.1 Recommendation.— Abbreviated procedures should only be used after initial contact has been established and where no confusion is likely to arise.

5.2.1.9.2 Acknowledgement of receipt. The receiving operator shall make certain that the message has been received correctly before acknowledging receipt.
Note.— Acknowledgement of receipt is not to be confused with acknowledgement of intercept in radiotelephony network operations.

5.2.1.9.2.1 When transmitted by an aircraft station, the acknowledgement of receipt of a message shall comprise the call sign of that aircraft.

5.2.1.9.2.2 PANS.— An aircraft station should acknowledge receipt of important air traffic control messages or parts thereof by reading them back and terminating the readback by its radio call sign.

Note 1.— Air traffic control clearances, instructions and information requiring readback are specified in AC 170-02

Note 2.— The following example illustrates the application of this procedure:

(Atlas clearance by network station to an aircraft)
Station:
   INDONESIA NINE SIX THREE JAKARTA
Aircraft:
   JAKARTA INDONESIA NINE SIX THREE
Station:
   INDONESIA NINE SIX THREE JAKARTA — ATC CLEARS INDONESIA NINE SIX THREE TO DESCEND TO NINE THOUSAND FEET
Aircraft (acknowledging):
   CLEARED TO DESCEND TO NINE THOUSAND FEET — INDONESIA NINE SIX THREE
Station (denoting accuracy of readback):
   JAKARTA

5.2.1.9.2.3 When acknowledgement of receipt is transmitted by an aeronautical station:
   1) to an aircraft station: it shall comprise the call sign of the aircraft, followed if considered necessary by the call sign of the aeronautical station;
   2) to another aeronautical station: it shall comprise the call sign of the aeronautical station that is acknowledging receipt.

5.2.1.9.2.3.1 PANS.— An aeronautical station should acknowledge position reports and other flight progress reports by reading back the report and terminating the readback by its call sign, except that the readback procedure may be suspended temporarily whenever it will alleviate congestion on the communication channel.

5.2.1.9.2.4 PANS.— It is permissible for verification for the receiving station to read back the message as an additional acknowledgement of receipt. In such instances, the station to which the information is read back should acknowledge the correctness of readback by transmitting its call sign.

5.2.1.9.2.5 PANS.— If both position report and other information — such as weather reports — are received in the same message, the information should be acknowledged with the words such as "WEATHER RECEIVED" after the position
report has been read back, except when intercept of the information is required by other network stations. Other messages should be acknowledged, the aeronautical station transmitting its call sign only.

5.2.1.9.3 End of conversation. A radiotelephone conversation shall be terminated by the receiving station using its own call sign.

5.2.1.9.4 Corrections and repetitions

5.2.1.9.4.1 When an error has been made in transmission, the word “CORRECTION” shall be spoken, the last correct group or phrase repeated, and then the correct version transmitted.

5.2.1.9.4.2 If a correction can best be made by repeating the entire message, the operator shall use the phrase “CORRECTION, I SAY AGAIN” before transmitting the message a second time.

5.2.1.9.4.3 Recommendation.— When an operator transmitting a message considers that reception is likely to be difficult, he should transmit the important elements of the message twice.

5.2.1.9.4.4 If the receiving operator is in doubt as to the correctness of the message received, he shall request repetition either in full or in part.

5.2.1.9.4.5 If repetition of an entire message is required, the words “SAY AGAIN” shall be spoken. If repetition of a portion of a message is required, the operator shall state: “SAY AGAIN ALL BEFORE...(first word satisfactorily received)”; or “SAY AGAIN...(word before missing portion) TO...(word after missing portion)”; or “SAY AGAIN ALL AFTER...(last word satisfactorily received)”.

5.2.1.9.4.6 Recommendation.— Specific items should be requested, as appropriate, such as “SAY AGAIN ALTIMETER”, “SAY AGAIN WIND”.

5.2.1.9.4.7 If, in checking the correctness of a readback, an operator notices incorrect items, he shall transmit the words “NEGATIVE I SAY AGAIN” at the conclusion of the readback followed by the correct version of the items concerned.

5.2.1.9.5 “Operations normal” reports

PANS.— When “operations normal” reports are transmitted by aircraft, they should consist of the prescribed call followed by the words “OPERATIONS NORMAL”.

5.2.2 Establishment and assurance of communications

5.2.2.1 Communications watch/Hours of service
5.2.2.1.1 During flight, aircraft stations shall maintain watch and shall not cease watch, except for reasons of safety, without informing the aeronautical station(s) concerned.

5.2.2.1.1.1 Aircraft on long over-water flights, or on flights over designated areas over which the carriage of an emergency locator transmitter (ELT) is required, shall continuously guard the VHF emergency frequency 121.5 MHz, except for those periods when aircraft are carrying out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.

5.2.2.1.1.2 Aircraft shall continuously guard the VHF emergency frequency 121.5 MHz in areas or over routes where the possibility of interception of aircraft or other hazardous situations exist.

5.2.2.1.1.3 Aircraft on flights other than those specified in 5.2.2.1.1.1 and 5.2.2.1.1.2 shall guard the emergency frequency 121.5 MHz to the extent possible.

5.2.2.1.1.4 The user of the air-to-air VHF communications channel shall ensure that adequate watch is maintained on designated ATS frequencies, the frequency of the aeronautical emergency channel, and any other mandatory watch frequencies.

5.2.2.1.2 Aeronautical stations shall maintain watch mandatory frequencies.

5.2.2.1.3 Aeronautical stations shall maintain a continuous listening watch on VHF emergency channel 121.5 MHz during the hours of service of the units at which it is installed.

5.2.2.1.4 When it is necessary for an aircraft station or aeronautical station to suspend operation for any reason, it shall, if possible, so inform other stations concerned, giving the time at which it is expected that operation will be resumed.

When operation is resumed, other stations concerned shall be so informed.

5.2.2.1.4.1 When it is necessary to suspend operation beyond the time specified in the original notice, a revised time of resumption of operation shall, if possible, be transmitted at or near the time first specified.

5.2.2.1.5 **Recommendation.**— When two or more ATS frequencies are being used by a controller, consideration shall be given to providing facilities to allow ATS and aircraft transmissions on any of the frequencies to be simultaneously retransmitted on the other frequencies in use thus permitting aircraft stations within range to hear all transmissions to and from the controller.

5.2.2.2 **Principles of network operation (HF communications)**

5.2.2.2.1 **PANS.**— The aeronautical stations of a radiotelephony network should assist each other in accordance with the following network principles, in order to
provide the air-ground communication service required of the network by aircraft flying on the air routes for which the network is responsible.

5.2.2.2.2 PANS.— When the network comprises a large number of stations, network communications for flights on any individual route segment should be provided by selected stations, termed “regular stations” for that segment.

Note 1.— The selection of stations to act as regular stations for a particular route segment will, where necessary, be undertaken by regional or local agreement, after consultation, if necessary, between the States responsible for the network.

Note 2.— In principle, the regular stations will be those serving the locations immediately concerned with flights on that route segment, i.e. points of take-off and landing, appropriate flight information centres or area control centres and, in some cases, additional suitably located stations required to complete the communication coverage or for intercept purposes.

Note 3.— In selecting the regular stations, account will be taken of the propagation characteristics of the frequencies used.

5.2.2.2.3 PANS.— In areas or on routes where radio conditions, length of flights or distance between aeronautical stations require additional measures to ensure continuity of air-ground communication throughout the route segment, the regular stations should share between them a responsibility of primary guard whereby each station will provide the primary guard for that portion of the flight during which the messages from the aircraft can be handled most effectively by that station.

5.2.2.2.4 PANS.— During its tenure of primary guard, each regular station should, among other things:

a) be responsible for designating suitable primary and secondary frequencies for its communications with the aircraft;

b) receive all position reports and handle other messages from and to the aircraft essential to the safe conduct of the flight;

c) be responsible for the action required in case of failure of communications (see 5.2.2.7.2).

5.2.2.2.5 PANS.— The transfer of primary guard from one station to the next will normally take place at the time of the traversing of flight information region or control area boundaries, this guard being provided at any time, as far as possible, by the station serving the flight information centre or area control centre in whose area the aircraft is flying. However, where communication conditions so demand, a station may be required to retain primary guard beyond such geographical boundaries or release its guard before the aircraft reaches the boundary, if appreciable improvement in air-ground communication can be effected thereby.

5.2.2.3 Frequencies to be used

5.2.2.3.1 Aircraft stations shall operate on the appropriate radio frequencies.
5.2.2.3.1.1 The air-ground control radio station shall designate the frequency(ies) to be used under normal conditions by aircraft stations operating under its control.

5.2.2.3.1.2 PANS.— In network operation, the initial designation of primary and secondary frequencies should be made by the network station with which the aircraft makes pre-flight check or its initial contact after take-off. This station should also ensure that other network stations are advised, as required, of the frequency(ies) designated.

5.2.2.3.2 An aeronautical station, when designating frequencies in accordance with 5.2.2.3.1.1 or 5.2.2.3.1.2, shall take into account the appropriate propagation data and distance over which communications are required.

5.2.2.3.3 If a frequency designated by an aeronautical station proves to be unsuitable, the aircraft station shall suggest an alternative frequency.

5.2.2.3.4 PANS.— When, notwithstanding the provisions of 5.1.1, air-ground frequencies are used for the exchange between network stations of messages essential for coordination and cooperation between the stations, such communication should, so far as possible, be effected over network frequencies not being used at that time for the bulk of the air-ground traffic. In all cases, the communication with aircraft stations should take priority over the inter-ground station communications.

5.2.2.4 Establishment of communications

5.2.2.4.1 Aircraft stations shall, if possible, communicate directly with the air-ground control radio station appropriate to the area in which the aircraft are flying. If unable to do so, aircraft stations shall use any relay means available and appropriate to transmit messages to the air-ground control radio station.

5.2.2.4.2 When normal communications from an aeronautical station to an aircraft station cannot be established, the aeronautical station shall use any relay means available and appropriate to transmit messages to the aircraft station. If these efforts fail, the originator shall be advised in accordance with procedures prescribed by the appropriate Authority.

5.2.2.4.3 PANS.— When, in network operation, communication between an aircraft station and a regular station has not been established after calls on the primary and secondary frequencies, aid should be rendered by one of the other regular stations for that flight, either by calling the attention of the station first called or, in the case of a call made by an aircraft station, by answering the call and taking the traffic.

5.2.2.4.3.1 PANS.— Other stations of the network should render assistance by taking similar action only if attempts to establish communications by the regular stations have proved unsuccessful.
5.2.2.4.4 **PANS.**— The provisions of 5.2.2.4.3 and 5.2.2.4.3.1 should also be applied:

a) on request of the air traffic services unit concerned;

b) when an expected communication from an aircraft has not been received within a time period such that the occurrence of a communication failure is suspected.

5.2.2.5 Transfer of HF communications

5.2.2.5.1 **PANS.**— An aircraft station should be advised by the appropriate aeronautical station to transfer from one radio frequency or network to another. In the absence of such advice, the aircraft station should notify the appropriate aeronautical station before such transfer takes place.

5.2.2.5.2 **PANS.**— In the case of transfer from one network to another, the transfer should preferably take place while the aircraft is in communication with a station operating in both networks to ensure continuity of communications. If, however, the change of network must take place concurrently with the transfer of communication to another network station, the transfer should be coordinated by the two network stations prior to advising or authorizing the frequency change. The aircraft should also be advised of the primary and secondary frequencies to be used after the transfer.

5.2.2.5.3 An aircraft station which has transferred communications watch from one radio frequency to another shall inform the aeronautical station concerned that communications watch has been established on the new frequency.

5.2.2.5.4 **PANS.**— When entering a network after takeoff, an aircraft station should transmit its take-off time or time over the last check-point, to the appropriate regular station.

5.2.2.5.5 **PANS.**— When entering a new network, an aircraft station should transmit the time over the last checkpoint, or of its last reported position, to the appropriate regular station.

5.2.2.5.6 **PANS.**— Before leaving the network, an aircraft station should in all cases advise the appropriate regular station of its intention to do so by transmitting one of the following phrases, as appropriate:

a) when transferring to a pilot-to-controller channel:
   Aircraft: CHANGING TO . . . (air traffic services unit concerned)

b) after landing:
   Aircraft: LANDED . . . (location) . . . (time)

5.2.2.6 Transfer of VHF communications

5.2.2.6.1 An aircraft shall be advised by the appropriate aeronautical station to transfer from one radio frequency to another in accordance with agreed procedures. In the absence of such advice, the aircraft station shall notify the appropriate aeronautical station before such a transfer takes place.
5.2.2.6.2 When establishing initial contact on, or when leaving, a VHF frequency, an aircraft station shall transmit that may be required by aeronautical station.

5.2.2.7 Voice communications failure

5.2.2.7.1 Air-ground

5.2.2.7.1.1 When an aircraft station fails to establish contact with the appropriate aeronautical station on the designated channel, it shall attempt to establish contact on the previous channel used and, if not successful, on another channel appropriate to the route. If these attempts fail, the aircraft station shall attempt to establish communication with the appropriate aeronautical station, other aeronautical stations or other aircraft using all available means and advise the aeronautical station that contact on the assigned channel could not be established. In addition, an aircraft operating within a network shall monitor the appropriate VHF channel for calls from nearby aircraft.

5.2.2.7.1.2 If the attempts specified under 5.2.2.7.1.1 fail, the aircraft station shall transmit its message twice on the designated channel(s), preceded by the phrase “TRANSMITTING BLIND” and, if necessary, include the addressee(s) for which the message is intended.

5.2.2.7.1.2.1 PANS.— In network operation, a message which is transmitted blind should be transmitted twice on both primary and secondary channels. Before changing channel, the aircraft station should announce the channel to which it is changing.

5.2.2.7.1.3 Receiver failure

5.2.2.7.1.3.1 When an aircraft station is unable to establish communication due to receiver failure, it shall transmit reports at the scheduled times, or positions, on the channel in use, preceded by the phrase “TRANSMITTING BLIND DUE TO RECEIVER FAILURE”. The aircraft station shall transmit the intended message, following this by a complete repetition. During this procedure, the aircraft shall also advise the time of its next intended transmission.

5.2.2.7.1.3.2 An aircraft which is provided with air traffic control or advisory service shall, in addition to complying with 5.2.2.7.1.3.1, transmit information regarding the intention of the pilot-in-command with respect to the continuation of the flight of the aircraft.

5.2.2.7.1.3.3 When an aircraft is unable to establish communication due to airborne equipment failure it shall, when so equipped, select the appropriate SSR code to indicate radio failure.
5.2.2.7.2 Ground-to-air

5.2.2.7.2.1 When an aeronautical station has been unable to establish contact with an aircraft station after calls on the frequencies on which the aircraft is believed to be listening, it shall:
a) request other aeronautical stations to render assistance by calling the aircraft and relaying traffic, if necessary;
b) request aircraft on the route to attempt to establish communication with the aircraft and relay traffic, if necessary.
5.2.2.7.2.2 The provisions of 5.2.2.7.2.1 shall also be applied:
a) on request of the air traffic services unit concerned;
b) when an expected communication from an aircraft has not been received within a time period such that the occurrence of a communication failure is suspected.

5.2.2.7.2.3 If the attempts specified in 5.2.2.7.2.1 fail, the aeronautical station shall transmit messages addressed to the aircraft, other than messages containing air traffic control clearances, by blind transmission on the frequency(ies) on which the aircraft is believed to be listening.

5.2.2.7.2.4 Blind transmission of air traffic control clearances shall not be made to aircraft, except at the specific request of the originator.

5.2.2.7.3 Notification of communications failure. The air-ground control radio station shall notify the appropriate air traffic services unit and the aircraft operating agency, as soon as possible, of any failure in air-ground communication.

5.2.3 HF message handling

5.2.3.1 General

5.2.3.1.1 PANS.— When operating within a network, an aircraft station should, in principle, whenever communications conditions so permit, transmit its messages to the stations of the network from which they can be most readily delivered to their ultimate destinations. In particular, aircraft reports required by air traffic services should be transmitted to the network station serving the flight information centre or area control centre in whose area the aircraft is flying. Conversely, messages to aircraft in flight should, whenever possible, be transmitted directly to the aircraft by the network station serving the location of the originator.

Note.— Exceptionally, an aircraft may need to communicate with an aeronautical station outside the network appropriate to its particular route segment. This is permissible, provided it can be done without interrupting the continuous watch with the communication network appropriate to the route segment, and provided it does not cause undue interference with the operation of other aeronautical stations.
5.2.3.1.2 **PANS.**— Messages passed from an aircraft to a network station should, whenever possible, be intercepted and acknowledged by other stations of the network, which serve locations where the information is also required.

**Note 1.**— Determination of the arrangements for dissemination of air-ground messages without address will be a matter for multilateral or local agreement.

**Note 2.**— In principle, the number of stations required to intercept are to be kept to a minimum consistent with the operational requirement.

5.2.3.1.2.1 **PANS.**— Acknowledgement of intercept should be made immediately after the acknowledgement of receipt by the station to which the message was passed.

5.2.3.1.2.2 **PANS.**— Acknowledgement of an intercept message should be made by transmitting the radio call sign of the station having intercepted the message, followed by the word ROGER, if desired, and the call sign of the station having transmitted the message.

5.2.3.1.2.3 **PANS.**— In the absence of acknowledgement of intercept within one minute, the station accepting the message from the aircraft should forward it, normally over the aeronautical fixed service, to the station(s) which have failed to acknowledge intercept.

5.2.3.1.2.3.1 **PANS.**— If, in abnormal circumstances, forwarding is necessary using the air-ground channels, the provisions of 5.2.2.3.4 should be observed.

5.2.3.1.2.4 **PANS.**— When such forwarding is done over the aeronautical fixed telecommunication network, the messages should be addressed to the network station(s) concerned.

5.2.3.1.2.5 **PANS.**— The station(s) to which the messages have been forwarded should carry out local distribution of them in the same way as if they had been received directly from the aircraft over the air-ground channel.

5.2.3.1.2.6 The aeronautical station receiving an air report or a message containing meteorological information transmitted by an aircraft in flight shall forward the message without delay:
1) to the air traffic services unit and meteorological offices associated with the station;
2) to the aircraft operating agency concerned or its representative when that agency has made a specific request to receive such messages.

5.2.3.1.3 **PANS.**— The provisions of 5.2.3.1.2 should also be applied, if practicable, in non-network operation.

5.2.3.1.4 When a message addressed to an aircraft in flight is received by the aeronautical station included in the address, and when that station is not able to establish communication with the aircraft to which the message is addressed, the message shall be forwarded to those aeronautical stations on the route which may be able to establish communication with the aircraft.
Note.— This does not preclude the transmission by the forwarding aeronautical station, of the original message to the aircraft addressed, if the forwarding station is later able to communicate with that aircraft.

5.2.3.1.4.1 If the aeronautical station to which the message is addressed is unable to dispose of the message in accordance with 5.2.3.1.4, the station of origin shall be advised.

5.2.3.1.4.2 The aeronautical station forwarding the message shall amend the address thereof, by substituting for its own location indicator the location indicator of the aeronautical station to which the message is being forwarded.

5.2.3.2 Transmission of ATS messages to aircraft

5.2.3.2.1 PANS.— If it is not possible to deliver an ATS message to the aircraft within the time specified by ATS, the aeronautical station should notify the originator. Thereafter, it should take no further action with respect to this message unless specifically instructed by ATS.

5.2.3.2.2 PANS.— If delivery of an ATS message is uncertain because of inability to secure an acknowledgement, the aeronautical station should assume that the message has not been received by the aircraft and should advise the originator immediately that, although the message has been transmitted, it has not been acknowledged.

5.2.3.2.3 PANS.— The aeronautical station, having received the message from ATS, should not delegate to another station the responsibility for delivery of the message to the aircraft. However, in case of communication difficulties, other stations should assist, when requested, in relaying the message to the aircraft. In this case, the station having received the message from ATS should obtain without delay definite assurance that the aircraft has correctly acknowledged the message.

5.2.3.3 Recording of air-ground communications on teletypewriter

5.2.3.3.1 PANS.— When recording on teletypewriter, the following procedure should be used:
   a) each line should begin at the left margin;
   b) a new line should be used for each transmission;
   c) each communication should contain some or all of the following items in the order shown:
      1) call sign of the calling station;
      2) text of the message;
      3) call sign of the station called or the receiving station, followed by the appropriate abbreviation to indicate “Received”, “Readback”, or “No reply heard”;
      4) call sign of station(s) acknowledging intercept followed by appropriate abbreviation to indicate “Received”;
5) designation of frequency used;
6) time in UTC of the communication;
d) missing parts of the message text should be indicated by typing the three periods (space . space . space . space) or three letters M (space M space M space M space);
e) correction of typing errors should be made by keyboard manipulation (space E space E space E space), followed by the correct information. Errors detected after the completion of the entry should be corrected after the last entry, using the abbreviation COR, followed by the correct information.

5.2.4 SELCAL procedures
Note.— The procedures contained in 5.2.4 are applicable when SELCAL is used and replace certain of the procedures related to calling contained in 5.2.1.

5.2.4.1 General

5.2.4.1.1 PANS.— With the selective calling system known as SELCAL, the voice calling is replaced by the transmission of coded tones to the aircraft over the radiotelephony channels. A single selective call consists of a combination of four pre-selected audio tones whose transmission requires approximately 2 seconds. The tones are generated in the aeronautical station coder and are received by a decoder connected to the audio output of the airborne receiver. Receipt of the assigned tone code (SELCAL code) activates a cockpit call system in the form of light and/or chime signals.
Note.— Due to the limited number of SELCAL codes, similar code assignments to multiple aircraft may be expected. Therefore, the use of correct radiotelephony (RTF) procedures contained in this chapter is emphasized when establishing communications via SELCAL.

5.2.4.1.2 PANS.— SELCAL should be utilized by suitably equipped stations for ground-to-air selective calling on the en-route HF and VHF radio channels.

5.2.4.1.3 PANS.— On aircraft equipped with SELCAL, the pilot is still able to keep a conventional listening watch if required.

5.2.4.2 Notification to aeronautical stations of aircraft SELCAL codes

5.2.4.2.1 PANS.— It is the responsibility of the aircraft operating agency and the aircraft to ensure that all aeronautical stations, with which the aircraft would normally communicate during a particular flight, know the SELCAL code associated with its radiotelephony call sign.

5.2.4.2.2 PANS.— When practicable, the aircraft operating agency should disseminate to all aeronautical stations concerned, at regular intervals, a list of SELCAL codes assigned to its aircraft or flights.

5.2.4.2.3 PANS.— The aircraft should:
a) include the SELCAL code in the flight plan submitted to the appropriate air traffic services unit; and
b) ensure that the HF aeronautical station has the correct SELCAL code
information by establishing communications temporarily with the HF
aeronautical station while still within VHF coverage.
Note.— Provisions regarding completion of the flight plan are set forth in the AC
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5.2.4.3 Pre-flight check

5.2.4.3.1 PANS.— The aircraft station should contact the appropriate
aeronautical station and request a pre-flight SELCAL check and, if necessary,
give its SELCAL code.

5.2.4.3.2 PANS.— When primary and secondary frequencies are assigned, a
SELCAL check should normally be made first on the secondary frequency and
then on the primary frequency. The aircraft station would then be ready for
continued communication on the primary frequency.

5.2.4.3.3 PANS.— Should the pre-flight check reveal that either the ground or
airborne SELCAL installation is inoperative, the aircraft should maintain a
continuous listening watch on its subsequent flight until SELCAL again becomes
available.

5.2.4.4 Establishment of communications

5.2.4.4.1 PANS.— When an aeronautical station initiates a call by SELCAL, the
aircraft replies with its radio call sign, followed by the phrase “GO AHEAD”.

5.2.4.5 En-route procedures

5.2.4.5.1 PANS.— Aircraft stations should ensure that the appropriate
aeronautical station(s) are aware that SELCAL watch is being established or
maintained.

5.2.4.5.2 PANS.— When so prescribed on the basis of regional air navigation
agreements, calls for scheduled reports from aircraft may be initiated by an
aeronautical station by means of SELCAL.

5.2.4.5.3 PANS.— Once SELCAL watch has been established by a particular
aircraft station, aeronautical stations should employ SELCAL whenever they
require to call aircraft.

5.2.4.5.4 PANS.— In the event the SELCAL signal remains unanswered after
two calls on the primary frequency and two calls on the secondary frequency, the
aeronautical station should revert to voice calling.

5.2.4.5.5 PANS.— Stations in a network should keep each other immediately
advised when malfunctioning occurs in a SELCAL installation on the ground or in
the air. Likewise, the aircraft should ensure that the aeronautical stations
concerned with its flight are immediately made aware of any malfunctioning of its SELCAL installation, and that voice calling is necessary.

5.2.4.5.6 PANS.— All stations should be advised when the SELCAL installation is again functioning normally.

5.2.4.6 SELCAL code assignment to aircraft

5.2.4.6.1 PANS.— In principle, the SELCAL code in the aircraft should be associated with the radiotelephony call sign, i.e. where the flight number (service number) is employed in the radio call sign, the SELCAL code in the aircraft should be listed against the flight number. In all other cases, the SELCAL code in the aircraft should be listed against the aircraft registration.

Note.— The use of aircraft radio call signs, consisting of the airline abbreviation followed by the flight service number, is increasing among aircraft operators throughout the world. The SELCAL equipment in aircraft should, therefore, be of a type which permits a particular code being associated with a particular flight number, i.e. equipment which is capable of adjustment in code combinations. At this stage, however, many aircraft still carry SELCAL equipment of the single code type, satisfy the principle set out above. This should not militate against use of the flight number type of radio call sign by an aircraft so equipped if it wishes to apply this type of call sign, but it is essential when a single code airborne equipment is used in conjunction with a flight number type radio call sign that the ground stations be advised in connection with each flight of the SELCAL code available in the aircraft.

5.3 Distress and urgency radiotelephony communication procedures

5.3.1 General

Note.— The distress and urgency procedures contained in 5.3 relate to the use of radiotelephony. The provisions of Article S30 and Appendix S13 of the ITU Radio Regulations are generally applicable, except that S30.9 permits other procedures to be employed where special arrangements between governments exist, and are also applicable to radiotelephony communications between aircraft stations and stations in the maritime mobile service.

5.3.1.1 Distress and urgency traffic shall comprise all radiotelephony messages relative to the distress and urgency conditions respectively. Distress and urgency conditions are defined as:

a) Distress: a condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

b) Urgency: a condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but which does not require immediate assistance.
5.3.1.2 The radiotelephony distress signal MAYDAY and the radiotelephony urgency signal PAN PAN shall be used at the commencement of the first distress and urgency communication respectively.

5.3.1.2.1 At the commencement of any subsequent communication in distress and urgency traffic, it shall be permissible to use the radiotelephony distress and urgency signals.

5.3.1.3 The originator of messages addressed to an aircraft in distress or urgency condition shall restrict to the minimum the number and volume and content of such messages as required by the condition.

5.3.1.4 If no acknowledgement of the distress or urgency message is made by the station addressed by the aircraft, other stations shall render assistance, as prescribed in 5.3.2.2 and 5.3.3.2 respectively.

Note.— “Other stations” is intended to refer to any other station which has received the distress or urgency message and has become aware that it has not been acknowledged by the station addressed.

5.3.1.5 Distress and urgency traffic shall normally be maintained on the frequency on which such traffic was initiated until it is considered that better assistance can be provided by transferring that traffic to another frequency.

Note.— 121.5 MHz or alternative available VHF or HF frequencies may be used as appropriate.

5.3.1.6 In cases of distress and urgency communications, in general, the transmissions by radiotelephony shall be made slowly and distinctly, each word being clearly pronounced to facilitate transcription.

5.3.2 Radiotelephony distress communications

5.3.2.1 Action by the aircraft in distress

5.3.2.1.1 In addition to being preceded by the radiotelephony distress signal MAYDAY (see 5.3.1.2), preferably spoken three times, the distress message to be sent by an aircraft in distress shall:

a) be on the air-ground frequency in use at the time;

b) consist of as many as possible of the following elements spoken distinctly and, if possible, in the following order:

1) name of the station addressed (time and circumstances permitting);
2) the identification of the aircraft;
3) the nature of the distress condition;
4) intention of the person in command;
5) present position, level (i.e. flight level, altitude, etc., as appropriate) and heading.

Note 1.— The foregoing provisions may be supplemented by the following measures:

a) the distress message of an aircraft in distress being made on the emergency frequency 121.5 MHz or another aeronautical mobile frequency, if
considered necessary or desirable. Not all aeronautical stations maintain a continuous guard on the emergency frequency;
b) the distress message of an aircraft in distress being broadcast, if time and circumstances make this course preferable;
c) the aircraft transmitting on the maritime mobile service radiotelephony calling frequencies;
d) the aircraft using any means at its disposal to attract attention and make known its conditions (including the activation of the appropriate SSR mode and code);
e) any station taking any means at its disposal to assist an aircraft in distress;
f) any variation on the elements listed under 5.3.2.1.1 b), when the transmitting station is not itself in distress, provided that such circumstance is clearly stated in the distress message.

Note 2.— The station addressed will normally be that station communicating with the aircraft or in whose area of responsibility the aircraft is operating.

5.3.2.2 Action by the station addressed or first station acknowledging the distress message

5.3.2.2.1 The station addressed by aircraft in distress, or first station acknowledging the distress message, shall:
a) immediately acknowledge the distress message;
b) take control of the communications or specifically and clearly transfer that responsibility, advising the aircraft if a transfer is made;
c) take immediate action to ensure that all necessary information is made available, as soon as possible, to:
   1) the ATS unit concerned;
   2) the aircraft operating agency concerned, or its representative, in accordance with pre-established arrangements;
      Note.— The requirement to inform the aircraft operating agency concerned does not have priority over any other action which involves the safety of the flight in distress, or of any other flight in the area, or which might affect the progress of expected flights in the area.
d) warn other stations, as appropriate, in order to prevent the transfer of traffic to the frequency of the distress communication.

5.3.2.3 Imposition of silence

5.3.2.3.1 The station in distress, or the station in control of distress traffic, shall be permitted to impose silence, either on all stations of the mobile service in the area or on any station which interferes with the distress traffic. It shall address these instructions “to all stations”, or to one station only, according to circumstances. In either case, it shall use:
— STOP TRANSMITTING;
— the radiotelephony distress signal MAYDAY.

5.3.2.3.2 The use of the signals specified in 5.3.2.3.1 shall be reserved for the aircraft station in distress and for the station controlling the distress traffic.
5.3.2.4 Action by all other stations

5.3.2.4.1 The distress communications have absolute priority over all other communications, and a station aware of them shall not transmit on the frequency concerned, unless:
   a) the distress is cancelled or the distress traffic is terminated;
   b) all distress traffic has been transferred to other frequencies;
   c) the station controlling communications gives permission;
   d) it has itself to render assistance.

5.3.2.4.2 Any station which has knowledge of distress traffic, and which cannot itself assist the station in distress, shall nevertheless continue listening to such traffic until it is evident that assistance is being provided.

5.3.2.5 Termination of distress communications and of silence

5.3.2.5.1 When an aircraft is no longer in distress, it shall transmit a message cancelling the distress condition.

5.3.2.5.2 When the station which has controlled the distress communication traffic becomes aware that the distress condition is ended, it shall take immediate action to ensure that this information is made available, as soon as possible, to:
   1) the ATS unit concerned;
   2) the aircraft operating agency concerned, or its representative, in accordance with pre-established arrangements.

5.3.2.5.3 The distress communication and silence conditions shall be terminated by transmitting a message, including the words “DISTRESS TRAFFIC ENDED”, on the frequency or frequencies being used for the distress traffic. This message shall be originated only by the station controlling the communications when, after the reception of the message prescribed in 5.3.2.5.1.

5.3.3 Radiotelephony urgency communications

5.3.3.1 Action by the aircraft reporting an urgency condition except as indicated in 5.3.3.4

5.3.3.1.1 In addition to being preceded by the radiotelephony urgency signal PAN PAN (see 5.3.1.2), preferably spoken three times and each word of the group pronounced as the French word “panne”, the urgency message to be sent by an aircraft reporting an urgency condition shall:
   a) be on the air-ground frequency in use at the time;
   b) consist of as many as required of the following elements spoken distinctly and, if possible, in the following order:
      1) the name of the station addressed;
      2) the identification of the aircraft;
      3) the nature of the urgency condition;
4) the intention of the person in command;
5) present position, level (i.e. flight level, altitude, etc., as appropriate) and heading;
6) any other useful information.

Note 1.— The foregoing provisions of 5.3.3.1.1 are not intended to prevent an aircraft broadcasting an urgency message, if time and circumstances make this course preferable.

Note 2.— The station addressed will normally be that station communicating with the aircraft or in whose area of responsibility the aircraft is operating.

5.3.3.2 Action by the station addressed or first station acknowledging the urgency message

5.3.3.2.1 The station addressed by an aircraft reporting an urgency condition, or first station acknowledging the urgency message, shall:
   a) acknowledge the urgency message;
   b) take immediate action to ensure that all necessary information is made available, as soon as possible, to:
      1) the ATS unit concerned;
      2) the aircraft operating agency concerned, or its representative, in accordance with pre-established arrangements;

Note.— The requirement to inform the aircraft operating agency concerned does not have priority over any other action which involves the safety of the flight in distress, or of any other flight in the area, or which might affect the progress of expected flights in the area.
   c) if necessary, exercise control of communications.

5.3.3.3 Action by all other stations

5.3.3.3.1 The urgency communications have priority over all other communications, except distress, and all stations shall take care not to interfere with the transmission of urgency traffic.

5.3.3.4 Action by an aircraft used for medical transports

5.3.3.4.1 The use of the signal described in 5.3.3.4.2 shall indicate that the message which follows concerns a protected medical transport pursuant to the 1949 Geneva Conventions and Additional Protocols.

5.3.3.4.2 For the purpose of announcing and identifying aircraft used for medical transports, a transmission of the radiotelephony urgency signal PAN PAN, preferably spoken three times, and each word of the group pronounced as the French word “panne”, shall be followed by the radiotelephony signal for medical transports MAY-DEE-CAL, pronounced as in the French “medical”. The use of the signals described above indicates that the message which follows concerns a protected medical transport. The message shall convey the following data:
   a) the call sign or other recognized means of identification of the medical transports;
b) position of the medical transports;
c) number and type of medical transports;
d) intended route;
e) estimated time en route and of departure and arrival, as appropriate; and
f) any other information such as flight altitude, radio frequencies guarded, languages used, and secondary surveillance radar modes and codes.

5.3.3.5 Action by the station addressed or by other stations receiving a medical transports message

5.3.3.5.1 The provisions of 5.3.3.2 and 5.3.3.3 shall apply as appropriate to stations receiving a medical transports message.

5.4 Communications related to acts of unlawful interference

The station addressed by an aircraft being subjected to an act of unlawful interference, or first station acknowledging a call from such aircraft, shall render all possible assistance, including notification of appropriate ATS units as well as any other station, agency or person in a position to facilitate the flight.
CHAPTER 6
AERONAUTICAL RADIO NAVIGATION SERVICE

6.1 General

6.1.1 The aeronautical radio navigation service shall comprise all types and systems of radio navigation aids in the international aeronautical service.

6.1.2 An aeronautical radio navigation aid which is not in continuous operation shall, if practicable, be put into operation on receipt of a request from an aircraft, any controlling authority on the ground, or an authorized representative of an aircraft operating agency.

6.1.2.1 Requests from aircraft shall be made to the aeronautical station concerned on the air-ground frequency normally in use.

6.1.3 Arrangements shall be made for the local aeronautical information service unit to receive without delay essential information about changes in the operational status of non-visual aids as required for pre-flight briefing and dissemination in accordance with the provisions of CASR Part 175
CHAPTER 7
AERONAUTICAL BROADCASTING SERVICE

7.1 General

7.1.1 Broadcast material. The text of broadcast material shall be prepared by the originator in the form desired for transmission.

7.1.2 Frequencies and schedules

7.1.2.1 Broadcasts shall be made on specified frequencies and at specified times.

7.1.2.2 Schedules and frequencies of all broadcasts shall be publicized in appropriate documents. Any change in frequencies or times shall be publicized by NOTAM at least two weeks in advance of the change.* Additionally, any such change shall, if practicable, be announced on all regular broadcasts for 48 hours preceding the change and shall be transmitted once at the beginning and once at the end of each broadcast.

*Note.— This does not prevent an emergency change of frequency when required in circumstances which do not permit the promulgation of a NOTAM at least two weeks in advance of the change.

7.1.2.3 Scheduled broadcasts (other than sequential collective type broadcasts), shall be started at the scheduled time by the general call. If a broadcast must be delayed, a short notice shall be transmitted at the scheduled time advising recipients to “stand by” and stating the approximate number of minutes of delay.

7.1.2.3.1 After definite advice has been given to stand by for a certain period, the broadcast shall not be started until the end of the standby period.

7.1.2.4 Where broadcasts are conducted on a time allotment basis, transmission shall be terminated by each station promptly at the end of the allotted time period whether or not transmission of all material has been completed.

7.1.2.4.1 In sequential collective type broadcasts each station shall be ready to commence its broadcasts at the designated time. If for any reason a station does not commence its broadcast at the designated time, the station immediately following in sequence shall wait and then commence its broadcast at its own designated time.

7.1.3 Interruption of service. In the event of interruption of service at the station responsible for a broadcast, the broadcast shall, if possible, be made by another station until normal service is resumed. If this is not possible, and the broadcast is of the type intended for interception by fixed stations, the stations
which are required to copy the broadcasts shall continue to listen on the specified frequencies until normal service is resumed.

7.2 Radiotelephone broadcast procedures

7.2.1 Broadcast technique

7.2.1.1 Transmissions by radiotelephone shall be as natural, short and concise as practicable consistent with clarity.

7.2.1.2 Rate of speech on radiotelephone broadcasts shall not exceed 100 words per minute.

7.2.2 Preamble of the general call
The preamble of each radiotelephone broadcast shall consist of the general call, station name, and optionally the time of broadcast (UTC).

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

<table>
<thead>
<tr>
<th>(general call)</th>
<th>ALL STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(the words THIS IS)</td>
<td>THIS IS</td>
</tr>
<tr>
<td>(station name)</td>
<td>JAKARTA RADIO</td>
</tr>
<tr>
<td>(time of broadcast)</td>
<td>TIME, ZERO ZERO FOUR FIVE</td>
</tr>
</tbody>
</table>

DIRECTOR GENERAL OF CIVIL AVIATION

signed

Dr.Ir. AGUS SANTOSO, M.Sc

[Signature]

Salinan sesuai aslinya
KEPALA BAGIAN HUKUM

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