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TELEGRAPH SWITCHING

INTERNATIONAL TELEX SERVICE

THE INTERNATIONAL TELEX SERVICE – INTERWORKING WITH THE INMARSAT C SYSTEM USING ONE-STAGE SELECTION

ITU-T Recommendation U.208

(Previously “CCITT Recommendation”)

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation U.208 was prepared by the ITU-T Study Group IX (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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THE INTERNATIONAL TELEX SERVICE – INTERWORKING WITH THE INMARSAT C SYSTEM USING ONE-STAGE SELECTION

(Helsinki, 1993)

1 Introduction

1.1 With the establishment of the INMARSAT C system, there are benefits to be obtained if a standardized procedure is developed which will enable subscribers of the international telex service send messages to mobile earth stations (MES) participating in that system.

1.2 This Recommendation is one of a set of related Recommendations dealing with this subject, as follows:

F.120 Ship station identification for VHF/UHF and maritime mobile-satellite services

F.125 Telex numbering plan for mobile-satellite services of Inmarsat

F.126 Selection procedures for the Inmarsat mobile-satellite telex service

F.127 Operational procedures for interworking between the international telex service and the service offered by the INMARSAT C system

F.130 Maritime answerback codes

F.131 Radiotelex service codes

F.60 Operational provisions for the international telex service

F.68 Establishment of an automatic intercontinental telex service

F.69 Plan for telex destination codes

F.72 The international telex service – General principles and operational aspects of a store and forward facility

F.74 Intermediate storage devices accessed from the international telex network using single stage selection: answerback format

U.60 General requirements to be met in interfacing the international telex network with maritime satellite systems

U.61 Detailed requirements to be met in interfacing the international telex network with maritime satellite systems

1.3 The definitions of the specific terms used in this Recommendation in relation to the mobile-satellite service are contained in the referenced F.120-Series Recommendations.

2 Scope

2.1 The outline description of the INMARSAT C system and the services it may support is contained in Supplement No. 3 to Fascicle II.4 of the *Blue Book* (Melbourne 1998). It is a feature of the service offered by the INMARSAT C system that access to and from the international telex service is to be supported by the service provider, the originating telex subscriber using either one- or two-stage selection depending on the particular MSSFU implementation.

2.2 This Recommendation limits its application to one-stage access from the originating telex subscriber. Access using a two-stage selection procedure shall be in accordance with Recommendations F.72 and U.80. Administrations may provide either or both modes of operation.

2.3 Access to the INMARSAT C system may be provided via the international telex network across international boundaries on a bilateral basis.

3 Methods of interworking

3.1 The characteristics of the INMARSAT C system are such that messages are forwarded on a store-and-forward basis throughout the system when interworking with the international telex service. Thus, conversational telex calls are not supported.

3.2 Interworking with the international telex service is effected by the use of a Mobile Satellite Store-and-Forward Unit (MSSFU) which is the functional interface between the international telex service and the INMARSAT C system. It provides the following functions:

- interworking between the signalling systems used in the mobile satellite message transmission system and the international telex service;
- interworking between the signalling systems used in the maritime satellite message transmission system and the public telex network;
- routing and call control for calls between a subscriber of the international telex service and a MES;
- message transfer on a store-and-forward basis between a subscriber of the international telex service and a MES;
- charging within the INMARSAT system.

3.3 The general model for interworking between the international telex service and the INMARSAT C system shall therefore be as shown in Figure 1 where the international telex service stops at the boundary with the MSSFU. The provisions of this Recommendation relate to the events which take place across that boundary.

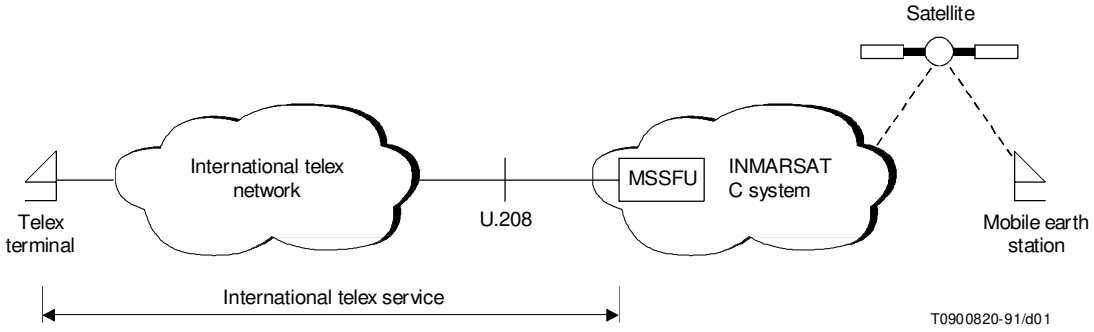


FIGURE 1/U.208

General model for interworking between the international telex service and the INMARSAT C system

4 Access procedures from the international telex service

The MES will be addressed by an originating telex subscriber using the numbering sequence (excluding any prefix) 58S4X_1 ----------X_8, where

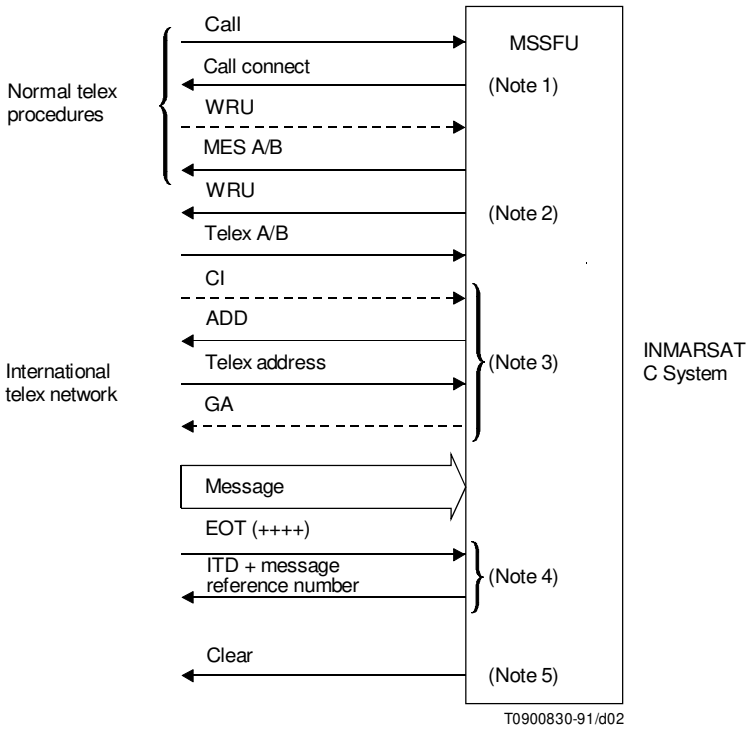
58S is the telex destination code in accordance with Recommendation F.69 (S = 1-4)

4 is the T-digit in accordance with Recommendation F.125

or end of selection signal

X_1 ----------X_8 are part of the MES identity in accordance with Recommendation F.125

Figure 2 shows the recommended access procedures.



NOTES

1 These procedures are a national matter.

2 See 4.2.1.

3 The ADD prompt is only sent if the return telex address cannot be determined from the received telex answerback (see 4.2). The calling telex address may be preceded by a CI signal to indicate an automatic terminal. The CI may precede the calling telex address as voluntarily submitted by the caller without any MSSFU generated prompt, as follows:
a) CI
ADD 50032266
b) ADD (from MSSU, see 4.2.3)
CI
50032266 or

4 EOT/ITD procedure, see 6.3.

5 See 6.5.

FIGURE 2/U.208

Call set-up from the international telex service to an MES

4.1 Call establishment

4.1.1 The originating telex subscriber will select the MES using normal telex procedures.

4.1.2 The procedures for call establishment between the terminating telex network and the MSSFU are a national matter.

4.1.3 The selection information received by the MSSFU from the telex network will be verified by the MSSFU as being proper to an MES currently logged into the satellite region covered by it. The method of effecting this verification is not the subject of international standardization. If the verification fails, the call attempt shall be cleared backwards by the MSSFU with the appropriate service signal in accordance with Recommendation F.131.

4.1.4 If the result is positive, the MSSFU shall return the call connect signal to the originating telex subscriber using normal telex signalling procedures.

4.1.5 The MES answerback returned by the MSSFU shall conform to Recommendation F.74.

4.1.6 If the call originates from a telex automatic emitting device, the calling telex subscriber should indicate this by commencing the procedure with non-interactive service request (CI).

4.2 Determination of the calling telex address

4.2.1 Following the transmission of the MES answerback, the MSSFU shall capture the answerback of the originating telex subscriber in accordance with Recommendation S.23.

4.2.2 The MSSFU shall determine the calling telex address from the received telex answerback in accordance with the rules laid down in Recommendation U.74.

4.2.3 *Otherwise* the MSSFU shall wait three seconds from the end of the calling telex answerback to enable the telex subscriber to input the calling telex address. At the end of this period and if the calling telex address cannot be determined from the received telex answerback, the MSSFU shall return the prompt signal ADD.

4.2.4 If the calling telex address is not received within 15 seconds of the ADD prompt, another prompt signal shall be returned. If another 15 seconds elapse without the receipt of the calling telex address, the connection shall be cleared by the MSSFU. However, the call may be accepted by the MSSFU, and the GA prompt returned, where, in the event of non-delivery of an accepted message, alternative arrangements are in place to provide a non-delivery notification message to the originating telex subscriber, for example, spill out to an assistance position.

4.2.5 The calling telex address shall be input by the telex subscriber in the following format:

↑	F.69 code	National telex number	←	≡	←	≡

The calling telex address may optionally be preceded by ADD.

4.2.6 The GA prompt shall be sent by the MSSFU if text input has not commenced within five seconds of the receipt of the calling telex address.

5 Message deposit

5.1 Message input by the originating telex subscriber may commence immediately following:

a) forwarding of processable telex answerback; or

b) input of telex address; or

c) receipt of GA prompt.

5.2 The provisions of Recommendation F.60 regarding message length should be applied in principle. Any abnormal conditions encountered during message deposit shall be handled in accordance with clause 7.

5.3 The MSSFU shall be transparent to the receipt of the End-Of-Message signal (NNNN) from the originating telex subscriber.

6 Clearing

6.1 The preferred method of clearing to be applied by the originating telex subscriber is by the use of the EOT signal, four times combination 26 in figures case (++++).

6.2 Clearing without EOT will be treated as an abnormal condition and handled in accordance with clause 7.

6.3 The reaction of the MSSFU to receipt of the EOT sequence shall be as follows:

a) if the call originated from a manual terminal, the MSSFU shall monitor for the receipt of a WRU signal for a maximum of two seconds. If a WRU signal is received, the MSSFU shall return the answerback of the MES; followed immediately by the ITD sequence on a separate line. If a WRU sequence is not received within the two second period, the MSSFU shall return the ITD sequence;

b) if the call originated from an automatic terminal, the MSSFU shall return the ITD sequence as soon as possible;

c) the ITD sequence and associated message reference information must be returned by the MSSFU within a maximum of five seconds from receipt of the EOT signal.

6.4 The ITD signal should be followed by the date and time and message reference number, as follows:

ITD YY-MM-DD/HH-MM

X_1----------X_n

where X_1----------X_n is a message reference assigned by the MSSFU. It should be noted that, as the originating telex subscriber may not be aware of the location of the MSSFU handling his call, the time stamp provided may be different from the local time of the originating telex subscriber. The use of Universal Coordinated Time, in accordance with Recommendation B.11 is therefore preferred.

6.5 The MSSFU should wait three seconds following transmission of the ITD sequence before clearing backwards to allow the originating telex subscriber clear in accordance with Recommendation S.20.

7 Reaction of MSSFU to abnormal conditions during message input

7.1 Receipt of non-processable answerback

Where arrangements are in place which would allow receipt of a message from a calling telex subscriber with a non-processable answerback who fails to input his international telex address (see 4.2.4), the message shall, however, be accepted and forwarded to the addressed MES. It should be noted, however, that the MES and the MSSFU assistance position may not be in a position to identify the recall address of the message originator.

7.2 Pause during input of message text

After a period of 30 seconds of idle condition, the MSSFU shall return the prompt signal GA to request continuation of input. Should a further 30 seconds elapse without input of text having resumed, or the EOT signal having been received, the MSSFU shall clear the connection with the service code BK and forward the text received to the addressed MES with the following text appended to the message:

"This message may be incomplete"

7.3 Receipt of WRU signal during text input

If the MSSFU receives a WRU signal during input of text, it shall return the MES answerback, formatted in accordance with Recommendation F.74. The received WRU signal shall not be stored as part of the message.

If the WRU signal is followed by text, message input is suspended and resumed following transmission of the MES answerback to the originating telex subscriber.

If the WRU signal is followed by a clearing signal, the MSSFU shall proceed as in 7.7.

If the WRU signal is followed by an idle condition, the MSSFU shall proceed as in 7.2.

7.4 Receipt of national variants of telex characters (Combinations 6, 7, 8 in figures case)

If ITA2 combinations 6, 7 or 8, in the figures case, are received by the MSSFU, these shall be forwarded to the MES as received.

7.5 Receipt of ITA2 combination 10 in figures case (Bell signal)

Receipt of a bell signal shall be handled in accordance with Recommendation S.22.

7.6 Lack of storage capacity during message input

The MSSFU shall be so dimensioned as to guarantee a message length of at least 24.000 characters (see 5.2), taking into account the expected calling rate, the offered Grade of Service, and the rate of message delivery into the INMARSAT C system. The method of achieving this is a national matter.

If, during call establishment, the minimum storage cannot be guaranteed, the procedures to be followed shall be in accordance with Recommendation U.45.

Any message which exceeds the guaranteed, minimum length will continue to be accepted while storage is available, to meet the requirements of Recommendation F.60.

If, during message input, storage capacity becomes exhausted, the MSSFU shall clear the connection following the procedures specified in Recommendation U.45. Any received text will be forwarded to the addressed MES with the following text appended:

"This message may be incomplete"

7.7 Clear by the telex subscriber without the EOT signal

If a clearing signal is received by the MSSFU without having first received the EOT signal, the MSSFU shall forward the received text to the addressed MES with the following text appended:

"This message may be incomplete"

7.8 Receipt of characters after the EOT signal

Any character received after the EOT signal will be discarded by the MSSFU and not stored as part of the message. The MSSFU shall attempt to interrupt the transmission from the telex subscriber in accordance with Recommendation U.46. If the transmission is successfully stopped, the MSSFU shall send the ITD sequence and clear in accordance with clause 6.

7.9 Receipt of clear signal after the EOT signal but before the ITD sequence

The message shall be forwarded to the MES in the normal way.

7.10 Service provided by the INMARSAT C system unavailable

If the INMARSAT C system is unavailable to deliver messages from the international telex service to a MES, any incoming call attempts from the international telex network to the MSSFU shall not be accepted. The procedures to be followed shall be in accordance with Recommendation U.45.

8 Message delivery

8.1 Delivery of the message from the MSSFU to the addressed MES will only commence when the complete message has been received in the MSSFU. Delivery methods within the INMARSAT Standard-C system are not the subject of international standardization.

8.2 The message may be held within the MSSFU for a maximum of 24 hours from its receipt while delivery is being attempted.

9 Delivery notifications

9.1 Non-delivery notification

There may be cases within the INMARSAT C system where the message cannot be delivered to the addressed MES. In these cases, a non-delivery notification (NDN) shall be sent to the originating telex subscriber across the international telex network or by using the procedures described in 4.2.4. The call shall be established using normal telex procedures.

The format of the NDN shall be as shown in Figure 3.

MES Telexaddress	(Note 1)
ITD YY-MM-DD HH-MM X_2 ----------X_n	(Note 2)
NOT DELIVERED	
Reason for non-delivery	(Note 3)

NOTES

1 As received by the MSSFU at message deposit.

2 As supplied by MSSFU following EOT clearing procedure at message deposit.

3 Service signal in accordance with Recommendation F.131.

FIGURE 3/U.208

Format of non-delivery notification sent by MSSFU to international telex subscriber

10 Calls from MES to a subscriber of the international telex service

10.1 It is an Inmarsat requirement of a service provider operating an INMARSAT C system to permit messages from an MES to be sent via the MSSFU to subscribers of the international telex service.

10.2 The procedures for call establishment and message delivery to the addressed telex subscriber shall be in accordance with normal telex procedures where the MSSFU provides the one-stage access procedure on the telex side. The answerback sent to the called telex subscriber shall be that of the calling MES formatted in accordance with Recommendation F.74.

11 MES-to-MES calls utilizing the international telex service

11.1 Subscribers to the mobile-satellite service provided by the INMARSAT C system may send messages to another MES.

11.2 Where the call is to an MES in another satellite region and the call is carried by the international telex service, the procedure to be followed should be in accordance with clause 10. The provision of an NDN in this particular case is for further study.

The procedures to be adopted where the destination MSSFU does not support a one-stage selection method on calls from the international telex service are for further study.

11.3 The procedures for calls between MESs in the same satellite region, or in satellite regions served by the same land earth station are not the subject for international standardization.