5i’

Recommendation S.20

AUTOMATIC CLEARING PROCEDURE FOR A TELEX TERMINAL

(Geneva, 1980; amended at Melbourne, 1988)

The CCITT,

considering

(a) that new equipment should be capable of automatic performance of functions that would normally require an operator;

(b) that those operator functions that involve repetitive work or idle waiting on the part of an operator should be considered most immediately for automation of a terminal;

(c) that one of the most straightforward operator functions that could benefit from automatic assistance is the clearing of a call;

(d) that conditions for automatic establishments of calls are laid down in Recommendation U.40 [1] whereas this Recommendation assumes that an operator is present to initiate the calling condition,

unanimously recommends

that the following procedure should be adopted for new equipment to assist operators by automatically providing a clearing down procedure following automatic transmission of a message.

1 The activation of this automatic procedure should be under the control of the operator, so that either manual control, or automatic control, can be selected according to the requirements of a particular call.

2 It is assumed that connection to the desired subscriber has already been established, and that the correctness of this connection has been confirmed by examination of the answer-back sequence received from the called subscriber.

3 It is also assumed that the message to be transmitted is ready for release to line via the automatic transmitter.

4 The subsequent procedure may be described as a series of steps as follows:

a) Operate the special control that initiates the following automatic transmission and clearing procedure.

b) (Optional, according to national requirements). The equipment transmits a WRU signal in order to obtain a sample of the answer-back sequence of the called subscriber. This sequence is stored for subsequent checking.

Note — If step b) is not implemented it may be desirable to modify the subsequent procedure. For example, step h) may also be eliminated, with corresponding changes to step g) and step k). Also, if this check procedure is not considered to be necessary, it may be desirable to reduce the period of alarm in step m) to less than 30 seconds before the terminal automatically clears the call.

c) Automatic transmission is started.

d) At any time, automatic transmission may be stopped by either the detection of incoming teleprinter signals or the forced clearing of the call. In the latter case an alarm should be given and then the call should be re-established by the operator. However, if the connection is still established but the automatic transmission has stopped, an alarm should be given to the operator. If the alarm is cleared by the operator within 30 seconds, proceed to step n) else step m). Automatic transmission may be resumed after a delay of 1 second. If the transmission includes a TDM system with loop back facilities, (refer to Recommendation R.101, § 3.6.2 b)), this condition may continue for a period of 5 to 7 seconds.

e) The end of automatic transmission is detected locally by the tape-out contacts of the tape reader, or by the recognition of the transmission of an end of message pattern or by other means arranged within the terminal.

f) The terminal then automatically transmits the combinations No. 30 (figure-shift) and No. 4 (WRU) and awaits reception of the called subscriber's answer-back.

g) If the called subscriber's answer-back is received in less than six seconds the terminal immediately follows it by step h), otherwise it proceeds to step k).

h) If the received answer-back code is the same as the stored answer-back (step b) the terminal makes step i), otherwise it proceeds to step l).

i) The terminal transmits its own answer-back signal.

j) A clearing signal is initiated, and maintained until a clear confirm signal is recognized. This is followed by assumption of the free line condition.

k) If the called subscriber's answer-back is not received within six seconds, or if it differs in more than one character from that stored in step b), then step f), the transmission of figure-shift and WRU is repeated once more. If this results in the reception of a called subscriber's answer-back that is identical with that stored in step b), then the terminal proceeds to step i), otherwise to step l).

l) An alarm is operated to attract an operator's attention. This alarm may be the same as that used for combination No. 10 (Bell) or it may be a separate alarm provided for the purpose.

m) If the operator does not cancel the alarm and restore manual control of the terminal functions within 30 seconds, the terminal moves to step i), sending its own answer-back and automatically clearing the call.

n) Having waited for a period of at least 7 seconds from the commencement of the alarm, the operator should send carriage return, line feed then a WRU signal. This delay is necessary to allow TDM systems with loop back to restore to normal or choose an alternative bearer (refer to Recommendation R.101, § 3.6.2 b)). If the called party's answer back is correctly received, the tape should be reset after giving a further carriage return and line feed.

Automatic transmission can again be started.

5 Clearing of a broadcast call shall be in accordance with Recommendation U.44.

Reference

[1] CCITT Recommendation *Reactions by automatic terminals connected to the telex network in the event of ineffective call attempts or signalling incidents* , Rec. U.40.

Recommendation S.21

USE OF DISPLAY SCREENS IN TELEX MACHINES

(Geneva, 1980)

The CCITT,

considering

(a) that any terminal machine connected to the telex network should meet the basic operational and technical requirements laid down in Recommendations F.60 [1], S.3, S.4, S.6, S.8 and S.9;

(b) that a visual display screen facilitates message preparation and automatic calling in the telex service;

(c) that it is important that the operator should not be interrupted in his work of preparing messages by an incoming call, except that the operator may need to be alerted if combination No. 10 in figure case in International Telegraph Alphabet No. 2 is received on the incoming line;

(d) that customer confidence in correct delivery of a telexed message requires that all signals sent or received by a telex terminal should be recorded in a permanent form,

unanimously declares the following views

1 Transmission of the answer-back should be in accordance with Recommendations S.6 and S.9.

2 It is essential that any telex terminal include a printer that records at least all the signals sent or received on the line. Such signals do not necessarily need to be presented on the display screen.

3 It should be possible to transmit a message prepared on the screen automatically to line and simultaneously to the local printer.

4 When a call is received, the operator should be able to prepare or to continue preparing a message by means of the keyboard, the display screen and, possibly, storage equipment. All characters received from or transmitted to line should be printed.

5 The format and content of the message appearing on the screen should be identical to those that will subsequently appear on the page copy of the calling and called subscriber's printers.

6 All the lines on the screen, except in a possible reserved area, should be available to display a message. This message may be

a) a message being prepared;

b) a message already stored in a memory;

c) a message incoming from the line.

Note 1 — In cases a) and b) the screen should constitute a *window* that the operator can move line by line over the message or the stored part of the message. It is highly desirable that the movement of the *window* over the message should stop automatically when there are no more stored characters, the last recorded line being visible at the top of the screen.

Note 2 — In case c) it is desirable that:

— the message received, apart from being printed, can be stored in the memory at the end of the call;

— that the operator can converse with his correspondent, all the characters transmitted or received being visible on the screen.

7 A reserved area of the screen, where the operator cannot write anything, may be set aside in order to warn the operator:

a) that the memory is almost exhausted; or

b) that the visible portion of the message does not include the beginning of the message.

8 The display screen and its memory should employ a line length of 69 printing characters.

Note — This number of characters may not be strictly equivalent to the number sent to line, because the code used in the memory may not be the one used in telex calls.

9 It is very important that it should be possible to erase the message only at the command of the operator and not automatically at the end of transmission, so that the operator can send the same message to other addressees.

Reference

[1] CCITT Recommendation *Operational provisions for the international telex service* , Rec. F.60.

Recommendation S.22

''CONVERSATION IMPOSSIBLE'' AND OR PRE-RECORDED MESSAGE IN RESPONSE TO J/BELL SIGNALS FROM A TELEX TERMINAL

(Geneva, 1980; amended at Melbourne, 1988)

The CCITT,

considering

(a) that conventional telex terminals incorporate a facility that allows an operator at one end of an established connection to attract the attention of an operator at the other end, this being achieved by transmitting J/BELL (combination No. 10 in International Telegraph Alphabet No. 2) in figure case;

(b) that technological developments and changing customer requirements have led to the introduction of the page-printing, receive-only, telex terminal , which, because of the absence of a keyboard, makes any conversational mode of operation impossible;

(c) that this limitation is not indicated to a calling station at the time the connection is established and may well result in wasted circuit time through attempts to establish contact with the called station via the J/BELL facility;

(d) that automatic calling and/or answering terminals employing data terminal equipment (DTE) and data circuit terminating equipment (DCE), in accordance with Recommendation S.16, are unlikely to have a conversational mode of operation;

(e) that technological developments and changing operational requirements may lead to the retention of messages in storage until a suitable opportunity to print-out arises;

(f) that it may be useful for called subscribers, who do not anticipate conversing with the calling subscriber, either because conversation is impossible or for any other reason, to answer by a pre-recorded message,

unanimously declares the following views

1 Where a telex terminal is incapable of a conversational mode of operation, either through the absence of a keyboard or for local operational reasons, or if the subscriber wishes to deliver a pre-recorded message, then it is highly desirable, at least in new equipment, that such a terminal be able to automatically return an appropriate service signal sequence and/or the pre-recorded message on receipt of one or more ITA2 combination No. 10 characters (i.e. BELL signals) when preceded by ITA2 combination No. 30 (i.e. figure-shift).

2 The recommended sequence of signals to be returned in such circumstances should incorporate the code expression.

CI
Conversation Impossible

in conformity with the Recommendation cited in [1].

3 The complete sequence incorporating the code expression **CI** should have a format that corresponds with the Recommendation cited in [2], concerning service signals for ineffective calls, except that it should not be followed by the clearing signal.

4 Where a pre-recorded message is to be returned, then it should follow the rules established in the Note of this Recommendation, and should not be followed by the clearing signal.

If conversation is impossible after the pre-recorded message is delivered, this message should start with the **CI** conversation impossible sequence of signals as specified in §§ 2 and 3.

5 As operators often key several repetitions of J/BELL (in figure-case) when attempting to contact a distant operator, a delay of 0.5-1.0 second should precede the transmission of the sequence described in §§ 2, 3 and 4 above, the delay to be measured from the stop element of the last J/BELL combination detected.

Note — The length of the pre-recorded message should be unlimited provided that a pause of 1 second minimum is included within the message after every (x) characters, (the number of characters are to be decided).

— When conversation is impossible, the mandatory code expression **CI** should precede and follow the pre-recorded message.

— No ''WRU'' signals should be contained within the pre-recorded message up to the last code expression **CI** . Triggering of the calling party's answerback could be initiated after the end of the pre-recorded message.

— No combination 32 signals should be contained within the pre-recorded message.

The terminal and/or the network emitting the pre-recorded message should interrupt transmission immediately, when detecting modulation in the opposite direction.

Every pre-recorded message is not necessarily sent to the calling party upon simple reception of the triggering signal provided in § 1 above. Measures can be taken at the called party to reserve it to some special correspondents. The callers that are not qualified to receive it will then receive only the **CI** signal provided for in § 2.

References

[1] CCITT Recommendation *Operational provisions for the international telex service* , Rec. F.60, § 4.1.

[2] CCITT Recommendation *Signalling conditions to be applied in the international telex service* , Rec. U.1, § 10.1.2.

Recommendation S.23

AUTOMATIC REQUEST OF THE ANSWERBACK OF THE TERMINAL OF THE CALLING PARTY, BY THE TELEX TERMINAL OF THE CALLED PARTY OR BY THE INTERNATIONAL NETWORK

(Melbourne, 1988)

The CCITT,

considering

(a) that a *telex automatic emitting device (TAED)* , store and forward unit (SFU) or conversion facility (CF) — when called — may automatically request the identification of the calling party's telex terminal, after having supplied its own answerback;

(b) that a mismatch of answerback may be detected by the calling party's terminal, or SFU or CF, if the ''Who are you'' from the called party's terminal immediately follows the called party's answerback at automatic speed;

(c) that the calling party's telex terminal, or equivalent, may commence text transmission on receipt of a valid answerback *without waiting for a possible ''Who are you'' from the distant network* ;

(d) that corruption of text may occur if the ''Who are you'' from the *distant network* is received when transmitting text;

(e) that automatic telex terminals, an SFU or CF may detect a mismatch between the initial answerback — with an integrated ''Who are you'' signal — and the answerback at the end of the message. In this case, the message may be delivered several times, but the calling party could be advised of an unsuccessful message delivery;

(f) that an Administration, or RPOA, may on an outgoing international call, request a second answerback, if unstandard characters, including an unexpected ''Who are you'' signal, are received at the time of call establishment;

(g) that an Administration or RPOA may not permit ‘‘Who are you’’ signals to be generated from any TAED under their control, but that future designs of TAEDs should be in a position to receive ‘‘Who are you’’ signals on originated international telex calls;

(h) that this Recommendation recognizes that currently implemented terminal devices are not required to conform to these provisions. However, there would be advantages if existing equipment complies with the requirement of this Recommendation,

unanimously declares the view

that the following procedures should be adopted as follows:

1 Originating telex terminals (TAED), store-and-forward units or conversion facilities, should use standard telex procedures, (e.g. those shown in Recommendation U.75) to identify the answerback of the called party from the string of characters sent from the network. Having verified this as being the expected answerback:

1.1 It should pause a minimum of 1.5 seconds.

1.2 If no ‘‘Who are you’’ signal is received during this period, it may send its own answerback and commence text transmission.

1.3 In this 1.5 second period, it should be prepared to respond to a ‘‘Who are you’’ signal by generating its own answerback.

1.4 If a ‘‘Who are you’’ signal is received, it should generate the answerback of the calling party within 150 milliseconds to 600 milliseconds of recognition of the ‘‘Who are you’’ signal (refer to Recommendation S.6). After the answerback has been sent, text transmission should be delayed for at least 1.5 seconds. This period is to allow the terminating network sufficient time to examine the answerback of the calling party, and to send a further ‘‘Who are you’’ signal, if necessary. After this delay, text transmission may commence, without having to repeat the answerback of the calling party.

However, if a second ‘‘Who are you’’ signal is received in this 1.5 second period, the terminal should send a further answerback and then commence text transmission.

1.5 If signals, other than a ‘‘Who are you’’ signal, are received within 1.5 seconds from the end of the answerback string of the called party, then the action to be taken is at the discretion of the calling party.

1.6 An Administration, or RPOA, may, as a national matter choose to request a second answerback from the distant network by generating a ‘‘Who are you’’ signal if:

a) the received character string (at automatic speed) consists of more than 20 characters and includes a ‘‘Who are you’’ signal;

b) a ‘‘Who are you’’ signal is received within a period less than 800 milliseconds from the end of the answerback string.

2 A terminating automatic terminal, store-and-forward unit (SFU), conversion facility (CF), maritime satellite switching centre (MSSC) or distant international network, when called, should react as follows:

2.1 The called terminal or network may return a WRU sequence to the calling party, 800 milliseconds after the return of the answerback string of the called party, provided that the forward path remains idle.

2.2 It is not permitted to return the WRU sequence once the text transmission from the calling party has commenced.

2.3 The WRU sequence may be repeated only once:

a) 2 seconds after the first WRU if a response to the first WRU was not received; or

b) 300 milliseconds after the receipt of a sequence which could not be identified as a valid answerback.

In any event, if the answerback of the calling party is not detected correctly after two WRU attempts, the call should not be cleared by the called party, or the distant network with the exception of called devices (such as a CF) which are required to capture the calling answerback for administration reasons.

2.4 Some Administrations or RPOAs may not allow WRU signals to be generated from terminals in their countries.

2.5 It is preferable that one uniform procedure be developed for the exchange of the called and calling party's answerback after the call connect signal. The mechanism for achieving this is for further study.

Recommendation S.30

STANDARDIZATION OF BASIC MODEL PAGE-PRINTING MACHINE

USING INTERNATIONAL ALPHABET No. 5

(Geneva, 1972; amended at Geneva, 1976)

The CCITT,

considering

(a) that the basic model page-printing machine is defined as having certain basic features for receiving (including printing) and/or transmitting;

(b) Recommendations T.50 [1], V.4 [2] and X.4 [3],

unanimously declares the view

1 The sets of graphics to be used should be either:

— a set of 95 characters consisting of columns 2 to 7 in the code table of International Alphabet No. 5 excluding the character DEL; or

— a smaller set of 64 characters consisting of columns 2 to 5 of the code table of International Alphabet No. 5.

If the machine is designed only for the smaller set of characters, the logic of the machine must be such that it prints the appropriate capital letters even when it receives a code combination for small letters.

Note — The interpretation, by 64-character machines, of other than alphabetic characters in columns 6 and 7 of the code table is at the discretion of Administrations for the time being.

2 The number of characters that the line of text of the basic model page-printing machine may contain should be fixed at 80.

3 To ensure the new-line function on direct printing machines:

— the transmitter must send at least n characters;

— the receiver must operate correctly on receipt of n characters.

For speeds up to and including 20 characters per second, $n = 4$. At 27.3 (corresponding to 300 bauds) and 30 characters per second, $n = 6$. The n characters consist of:

— one format effector CR (position 0/13 in International Alphabet No. 5);

— one format effector LF (position 0/10 in International Alphabet No. 5);

— the appropriate remaining number of non-printing and non-carriage moving characters (but the CR character is allowed);

4 The time elapsing between the application of power to the motor of a machine and the machine's running up to speed and being ready to receive or send characters should not exceed 600 ms. Where the machine is used in a switched network, this elapsed time shall start from the instant when an incoming call is received at the interface.

Note — Manufacturers should endeavour to minimize this time.

References

[1] CCITT Recommendation *International Alphabet No. 5* , Rec. T.50.

[2] CCITT Recommendation *General structure of signals of International Alphabet No. 5 code for data transmission over public telephone networks* , Rec. V.4.

[3] CCITT Recommendation *General structure of signals of International Alphabet No. 5 code for data transmission over public data networks* , Rec. X.4.

Recommendation S.31

TRANSMISSION CHARACTERISTICS FOR START-STOP DATA TERMINAL EQUIPMENT USING INTERNATIONAL ALPHABET No. 5

(Geneva, 1972; amended at Geneva, 1976)

The CCITT,

considering

(a) that taking into account Recommendations T.50 [1] and X.4 [2], this Recommendation applies to the characteristics, from the transmission point of view, at the interchange point between data circuit-terminating equipment and start-stop data terminal equipment using International Alphabet No. 5. Except where otherwise specified, *data terminal equipment* in this Recommendation should be understood to mean *start-stop apparatus* in the wide sense of the term, as defined in [3] i.e. it includes reperforators, service signals sent by switching equipment, signals from answer-back units, automatic transmitters, etc.;

(b) that, bearing in mind the definition of User Class of Service 1 in Recommendation X.1 [4], where it is specified that a signalling rate of 300 bit/s, a structure of 11 units per character and start-stop operation shall be used for address selection, call progress signals and data transfer;

(c) that the characteristics laid down below are those that should be evident in service conditions at the interchange point between data terminal equipment and data circuit-terminating equipment,

unanimously declares the view:

1 Equipment characteristics

1.1 The nominal modulation rate should be:

a) 300 bauds; or

b) 200 bauds.

1.2 The difference between the real mean modulation rate of the signals when in service and the nominal rate should not exceed ± | .1%.

1.3 The nominal duration of the transmitting cycle should be at least 11 units, the stop element lasting for at least 2 units.

1.4 The receiver must be able to translate correctly in service the signals coming from a source that appears to have a nominal transmit cycle equal to or greater than 10 units.

2 Transmitter characteristics

2.1 The degree of gross start-stop distortion of transmitted signals, measured at the interchange point between data terminal equipment and data circuit-terminating equipment, must not exceed 5%. This value applies to all working conditions of the equipment under consideration encountered during normal service, whether the signals are transmitted separately or whether they succeed one another at the maximum rate compatible with the modulation rate.

2.2 It is recommended that the measurement should be made with a start-stop distortion measuring set for two consecutive periods, each of about 15 seconds (corresponding to about 1200 transitions at 200 bauds or 1800 transitions at 300 bauds). Early distortion should be observed during one period and late distortion during the other.

3 Receiver characteristics

3.1 The effective net margin measured at the interchange point between data terminal equipment and data circuit-terminating equipment should not be less than 40% for signals corresponding to a nominal transmit cycle equal to or greater than 10 units.

3.2 It is recommended that the measurement should be made under the following conditions, in service:

— 11-unit cycle for the signals transmitted by the measuring apparatus;

— use of one of the signal trains specified in Recommendation S.33;

— first test with an identical distortion rate on all transitions of the signal train, obtained by lengthening the start element;

— a second test with the same rate of identical distortion on all the transitions of the signal train, but obtained in this case by shortening the start element;

— reading the margin when one error per test sentence is obtained (the margin is the lesser of the two values of the degree of distortion obtained from the two measurements);

— the length of the start element or of any data element must in no case be less than 50% of the theoretical unit element.

Note — It will be up to Administrations using some other measuring method to work out for their own use figures to give equivalent results to those which would have been obtained by the recommended method.

References

[1] CCITT Recommendation *International Alphabet No. 5* , Rec. T.50.

[2] CCITT Recommendation *General structure of signals of International Alphabet No. 5 code for data transmission over public data networks* , Rec. X.4.

[3] CCITT Definitions: *Start-stop apparatus* , Vol. X, Fascicle X.1 (Terms and Definitions).

[4] CCITT Recommendation *International user classes of service in public data networks* , Rec. X.1.

Recommendation S.32

ANSWER-BACK UNITS FOR 200- AND 300-BAUD START-STOP MACHINES

IN ACCORDANCE WITH RECOMMENDATION S.30

(Geneva, 1972; amended at Geneva, 1976)

The CCITT,

considering

(a) that start-stop machines are capable of receiving communications without the aid of an operator;

(b) that it may be necessary to verify the correct functioning of the line and of the distant terminal equipment, *unanimously declares the view*

that if the use of an automatic answer-back unit is requested, it would be advisable:

1) to effect the operation of the code transmitter by the control character ENQ, position 0/5 in the code table of International Alphabet No. 5 (Recommendation T.50 [1]);

2) to compose the code-emission by a series of 20 signals, as follows:

1 CR (position 0/13 in the code table),

1 LF (position 0/10 in the code table),

2 non-printing, non-carriage moving signals (but which may include CR),

16 signals chosen for the subscriber comprising the identification of the machine;

3) when the code signal does not comprise 16 characters, to distribute them by inserting at the beginning as many fill signals (such as DEL or NUL) as are necessary to make up the total of 16 signals;

4) that the answer-back signals follow Recommendations X.4 [2] and S.31;

5) that the delay between the reception of the beginning of the start unit of control character ENQ and the beginning of the start unit of the first signal of the answer-back sent by the machine should lie between one and four character periods.

References

[1] CCITT Recommendation *International Alphabet No. 5* , Rec. T.50.

[2] CCITT Recommendation *General structure of signals of International Alphabet No. 5 code for data transmission over public data networks* , Rec. X.4.

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SECTION 7

DEFINITIONS

Recommendation S.140

DEFINITIONS OF ESSENTIAL TECHNICAL TERMS

RELATING TO APPARATUS FOR ALPHABETIC TELEGRAPHY

The definitions given below have been identified as necessary for studies in the field of alphabetic telegraphy apparatus.

Sub-numbers in the 721.XX.YY range signify correspondence with definitions in the International Electrotechnical Vocabulary (IEV) of the International Electrotechnical Commission (IEC).

Sub-numbers in the 34.ZZ range signify definitions derived from the ITU List of Definitions of Essential Telecommunications Terms.

1 function control

F: commande de fonction

S: instrucci´on de funci´on (mando de funci´on)

Control of an elementary operation to be performed by a device other than recording or printing a letter, figure, punctuation mark or graphic symbol contained in a *message* or in *data* .
721.32.01

2 function signal

F: signal de fonction

S: señal de funci´on

A set of *signal elements* used to transmit a *function control* .
721.32.02

3 control character

F: caract`ere de commande

S: car´acter de control (car´acter de mando)

A *character* whose occurrence in a particular context, initiates, modifies or stops an operation.

Note 1 — A control character may be recorded for use in subsequent action.

Note 2 — A control character is not a graphic character but may have a graphic representation in some circumstances.

721.32.03 .bp

4 **translation** (in telegraphy and data transmission)

F: traduction (en t´el´egraphie et transmission de donn´ees)

S: traducci´on (en telegraf´ia y transmisi´on de datos)

Function of a telegraph receiver in reestablishing the text of a *message* from the received signal, including the recording of the text.
721.32.04

5 **selection** (in a telegraph receiver)

F: s´election (en r´eception t´el´egraphique)

S: selecci´on (en un receptor telegr´afico)

Primary operation of *translation* , by which the *control function* or the symbol to be printed or translated is chosen automatically or not, from the received signal.
721.32.05

6 **local record**

F: contr **|** *le local*

S: registro local

Display of a transmitted *message* made on a receiver associated with the transmitting apparatus.
721.32.06

7 **format effector**

F: commande de mise en page

S: determinante de formato

A *function control* used to insure a final lay-out of *characters* for printing or display.
721.32.07

8 carriage return

F: retour du chariot

S: retroceso del carro

A *format effector* that returns the printing or display position to the commencement point of the line.
721.32.09

9 case shift

F: inversion

S: cambio de posici´on (inversi´on)

The change over of the translating mechanism of a telegraph receiving apparatus from one case of *character* to the other case of character.
721.32.10

10 letters case

F: s´erie des lettres

S: posici´on letras

One of the cases into which the *characters* , predominantly letter characters and functions of a *telegraph code* with *case shift* are grouped.

721.32.11 .bp

11 letters shift

F: inversion-lettres

S: cambio de letras (inversi´on letras)

A *case shift* resulting in a *translation* of signals as primary *characters* predominantly letter characters, or functions of *letters case* .
721.32.12

12 letter-shift signal

F: signal d'inversion-lettres

S: señal de cambio a letras (señal de inversi´on letras)

The signal which conditions a telegraph receiver to translate all signals received as primary *characters* or functions or *letters case*
721.32.13

13 **figures case**

F: s´erie des chiffres

S: posici´on cifras

One of the cases into which the *characters* , predominantly numerals and signs, and functions of a *telegraph code* with *case shift* are grouped.
721.32.14

14 **figures shift**

F: inversion-chiffres

S: cambio a cifras (inversi´on cifras)

A *case shift* resulting in the *translation* of signals as secondary *characters* , predominantly figure characters, or functions of *figures case* .
721.32.15

15 **figure-shift signal**

F: signal d'inversion-chiffres

S: señal de cambio a cifras (señal de inversi´on cifras)

The signal which conditions a telegraph receiver to translate all signals received as secondary *characters* or functions of *figures case* .
721.32.16

16 **space signal**

F: signal d'espace

S: señal de espacio

Signal corresponding to a *code combination* which causes the printing position to be advanced by the character pitch without printing.
721.32.17

17 **erasure signal**

F: signal d'oblit´eration

S: señal de borrado

A signal used for the purpose of invalidating a previous signal.

721.32.19 .bp

18 **‘‘Who are you’’ signal** (function); **WRU signal**

F: signal <<qui est l`a>>

S: señal <<?con qui´en comunico?>>; señal WRU

Signal corresponding to a *code combination* which, when received by a *telegraph terminal* or *data station* causes an call-sign device to transmit an *call-sign* .

721.32.20

19 **call-sign; answer-back code**

F: signal d’identification; indicatif

S: distintivo de llamada; señal de identificaci´on; indicativo

Unique sequence of *characters* identifying a particular *telegraph terminal* or *data station* .

721.32.21

20 **identification request**

F: demande d’identification

S: petici´on de identificaci´on

A *transmission control* used as a request for a response from a remote terminal; the response may include the terminal identification, or the state of the terminal.

721.32.28

21 **device control**

F: commande d’appareil (auxiliaire)

S: instrucci´on de dispositivo (mando de dispositivo)

A *function control* designed to control certain ancillary equipments associated with a *terminal* used in particular to switch such equipments on or off.

721.32.35

22 **warning signal**

F: signal avertisseur

S: señal de aviso

A *function signal* which operates an audible or visual calling device with a view to attracting attention.
721.32.40

23 switching signal telex-data

F: signal de commutation t´elex-donn´ees

S: señal de conmutaci´on t´elex-datos

A signal which switches a *terminal* from the telex mode to the *data transmission* mode.
721.32.47

24 subscriber's installation

F: installation d'abonn´e

S: instalaci´on de abonado

The lines, the terminals and any extension, private exchange, control units and any other equipment located at the subscriber's premises.

721.34.01 .bp

25 (telegraph) **terminal**

F: terminal (t´el´egraphique)

S: terminal (telegr´afico)

Pertaining to or designating equipments connected to the end of the subscriber's line or telegraph circuit, which can either establish or receive calls, or store and retransmit signals, and which can be uniquely identified.
721.34.02

26 local end (with its termination)

F: ensemble terminal

S: extremo local | con su terminaci´on)

That part of a connection including the apparatus, lines, telegraph repeaters and any control units between the apparatus and the first, or last point in that connection where the transmission quality can be measured.

721.34.025

27 start-stop apparatus

F: *appareil arythmique*

S: *aparato arr´itmico*

Telegraph apparatus designed for a start-stop system.
721.34.14
34.14

28 **teleprinter; teletypewriter** (USA)

F: *t´el´eimprimeur; t´el´etype* (marque de fabrique, terme à proscrire), *t´el´escripteur* (terme à proscrire dans ce sens)

S: *teleimpresor*

A start-stop apparatus comprising an alphanumeric keyboard transmitter with a printing character receiver.
721.34.15
34.15

29 **page teleprinter**

F: *t´el´eimprimeur à (impression sur) page*

S: *teleimpresor en p´agina*

A teleprinter which prints characters in page formation.
721.34.16

30 **tape teleprinter**

F: *t´el´eimprimeur à (impression sur) bande*

S: *teleimpresor en cinta*

A teleprinter which prints characters in a single line on a continuous paper tape.
721.34.17

31 **alphanumeric keyboard**

F: *clavier alphanum´erique*

S: *teclado alfanum´erico*

A device comprising an assembly of alphanumeric keys and function keys the operation of which controls the transmitter of a telegraph apparatus.

721.34.18 .bp

32 **storage keyboard**

F: *clavier à enregistreur*

S: *teclado con almacenamiento*

An alphanumeric keyboard in which the combination set up by the depression of a key does not directly control the transmitter but is transferred to one or more sets of storage members for subsequent control of the transmitter.
721.34.21
34.51

33 **tape-reading head; tape-reader**

F: *lecteur de bande*

S: *lector de cinta*

A device which reads a recording tape and produces signals corresponding to the data recorded on the tape.
721.34.22
34.29

34 (teleprinter) **control unit**

F: *coffret de commande (d'un t´el´eimprimeur)*

S: *unidad de control (de un teleimpresor)*

Unit associated with a teleprinter and containing the necessary auxiliary equipment for operating this instrument on a switched network.
721.34.23

35 **direct printer**

F: *r´ecepteur traducteur imprimeur*

S: *impresor directo*

Telegraph printer used in systems employing unequal length codes such as morse-code, two-condition cable code, in which printing is performed directly from the incoming signals.
721.34.24

36 (tape) **perforator**

F: *perforateur (de bande); perforatrice*

S: *perforador (de cinta); perforadora*

An apparatus which records telegraph signals on a paper tape by combination of holes punched in accordance with a predetermined code.

721.34.25
34.35

37 **keyboard perforator**

F: *perforateur à clavier*

S: *perforador de teclado*

A perforator in which the punching is controlled by an alphanumeric keyboard.
721.34.26

34.34 .bp

38 **printing perforator**

F: *perforateur imprimeur*

S: *perforador impresor*

A tape perforator which, when perforating, also prints on the tape the corresponding character or the symbol representing the function control.
721.34.27
34.36

39 **reperforator; receiving perforator**

F: *r´ecepteur-perforateur*

S: *reperforador; receptor-perforador*

A receiver comprising essentially a tape perforator controlled by the received telegraph signals or data signals.
721.34.28
34.35

40 **printing-reperforator**

F: *r´ecepteur-perforateur imprimeur*

S: *reperforador impresor*

A reperforator which, when perforating, also prints on the tape the corresponding character or the symbol representing the function control.
721.34.29
34.37

41 **telegraph transmitter**

F: *´emetteur (t´el´egraphique); transmetteur* (terme d´econseill´e)

S: *transmisor telegr´afico*

A device for the transmitting telegraph signals over a telegraph channel.
72.34.33
34.23

42 keyboard transmitter

F: *´emetteur à clavier*

S: *transmisor de teclado*

A telegraph transmitter controlled by an alphanumeric keyboard.
721.34.34

43 automatic transmitter

F: ´emetteur automatique; transmetteur automatique (terme d´econseill´e)

S: *transmisor autom´atico*

Telegraph transmitter in which the forming of the signals is not controlled by any operator, but is actuated from a signal recording medium.
721.34.35

34.27 .bp

44 automatic numbering transmitter

F: *´emetteur à num´erotation automatique (des messages)*

S: *transmisor de numeraci´on autom´atica*

An automatic transmitter in which provision is made for automatically transmitting a serial number before each message.
721.34.36
34.30

45 automatic retransmitter

F: r´e´emetteur (t´el´egraphique); retransmetteur (terme d´econseill´e)

S: *retransmisor autom´atico*

An apparatus which automatically retransmits telegraph signals in accordance with recorded incoming signals.
721.34.37
34.42

46 **perforated-tape retransmitter**

F: r´e´emetteur à bande perfor´ee; retransmetteur à bande perfor´ee (terme d´econseill´e)

S: *retransmisor de cinta perforada*

An automatic retransmitter comprising a reperforator feeding a tape directly into an automatic transmitter.
721.34.38

47 **coupled reperforator and tape reader; fully automatic reperforator transmitter distributor** (USA) **(FXRD)**

F: *r´e´emetteur à bande perfor´ee (ὰ lecture compl`ete); r´e´emetteur FRXD*

S: *reperforador y lector de cinta acoplados*

A perforated tape retransmitter which ensures the retransmission of all the signals recorded by perforation including the last one.
721.34.39
34.39

48 **automatic retransmitter with controlled tape-feed mechanism**

F: *´emetteur automatique à commande par impulsions*

S: *retransmisor autom´atico controlado por impulsos*

An automatic transmitter in which the movement of the perforated tape is controlled by pulses from an external synchronizing device, for example in the case of a time-division multiplex system.
721.34.40
34.28

49 **answerback unit**

F: *´emetteur automatique d'indicatif*

S: *transmisor autom´atico de indicativo*

That part of a telegraph terminal which transmits automatically its answerback code on receipt of the ''Who are you'' signal.
721.34.41

34.26 .bp

50 **answerback unit simulator**

F: *simulateur d'´emetteur d'indicatif*

S: *simulador de transmisor autom´atico de indicativo*

A device or program routing, not a part of a teleprinter, but which performs the same function as the answerback unit on receipt of a specific ‘‘Who are you’’ signal.
721.34.42

51 tape printer

F: lecteur imprimeur

S: lector impresor

Apparatus which reads the signals recorded, for instance, on perforated tape and prints the corresponding characters on a paper tape or page without the intervention of transmission.

For exemple, a Morse printer or a five-unit printer.
721.34.43

52 half-duplex apparatus

F: appareil (fonctionnant) à l’alternat

S: aparato semidúplex

Apparatus comprising a transmitter and receiving part, the arrangement of which allows for transmission in both directions but not simultaneously.
721.34.49

53 code converter

F: transcodeur; convertisseur de code

S: convertidor de código; transcodificador

Equipment which accomplishes a code conversion.
721.34.52
32.08

54 telegraph modulator

F: modulateur télégraphique

S: modulador telegráfico

A modulator controlled by a telegraph signal.
721.34.53

55 telegraph demodulator

F: *d´emodulateur t´el´egraphique*

S: *demodulador telegr´afico*

A demodulator controlled by a telegraph signal.

721.34.54

56 **telegraph discriminator**

F: *discriminateur t´el´egraphique*

S: *discriminador telegr´afico*

A discriminator for converting frequency shift telegraphy signals into direct current transmission signals.

721.34.55 .bp

57 **telegraph radioconverter**

F: *convertisseur de signaux radiot´el´egraphiques* ; *d´etecteur de signaux (radiot´el´egraphiques)*

S: *convertidor de señales radiotelegr´aficas*

A device which accepts telegraph signals at audio frequency or intermediate frequency and converts them into signal elements capable of operating a telegraph recorder.

721.34.56

58 **margin** (of a receiver or terminal)

F: *marge (d'un r´ecepteur ou terminal)*

S: *margen (de un receptor o terminal)*

The maximum value of a degree of individual distortion compatible with correct translation by a printer receiver or terminal, when the signals arrive at the input under specified conditions.

721.26.22
34.03

59 **net margin**

F: *marge nette*

S: *margen neto*

The margin when the modulation rate at the input of the apparatus has its nominal value.

721.26.23
34.031

60 **effective margin** (of a given apparatus)

F: marge effective (d’un appareil donn´e)

S: margen efectivo (de un aparato dado)

The margin measured on a specified receiver under actual operating conditions.

721.26.24

34.04

61 **nominal margin** (of a type of apparatus)

F: marge nominale (d’un type d’appareil)

S: margen nominal (de un tipo de aparato)

The minimum value specified for the effective margin of equipment of a given type when working under standard operating and adjustment conditions.

721.26.25

34.05

62 **theoretical margin**

F: marge th´eorique

S: margen te´orico

The margin that could be evaluated from the manufacturing data of the equipment, assuming that it is working under perfect conditions.

721.26.26

34.06 .bp

63 **margin** (of a start-stop apparatus)

F: marge (d’un appareil arythmique)

S: margen (de un aparato arr´itmico)

The maximum value of the degree of gross start-stop distortion compatible with the correct translation by a start-stop apparatus of all the character signals appearing either singly, or at the maximum rapidity corresponding to the standard modulation rate.

721.26.27

34.07

64 **synchronous (start-stop) margin**

F: marge au synchronisme (d’un appareil arythmique)

S: *margen de sincronismo (de un aparato arr´itmico)*

The maximum value of the margin of a start-stop apparatus obtained by adjusting the modulation rate of the input signals to the most favourale value with respect to the time-base characteristics of the receiver.

721.26.28

34.09

65 margin of a synchronous receiver

F: *marge d'un r´ecepteur synchrone*

S: *margen de un receptor s´incrono*

The margin of a synchronous receiver determined by the degree of isochronous distortion.

721.26.29

34.091

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PART III

SUPPLEMENT TO THE

SERIES S RECOMMENDATIONS

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Supplement No. 1

MINIMAL SPECIFICATIONS FOR

THE BILINGUAL (ARABIC/LATIN) TELEPRINTER

1 Introduction

The bilingual (Arabic/Latin) teleprinter is an apparatus that, through applying the five unit code, can print, transmit and receive letters and characters in both Arabic and Latin on the international telex network using the International Alphabet No. 2 (See Tables 1 and 2).

In order to fulfil the requirements of printing Arabic text in its correct form and to ensure the necessary automatic control for the operation of such a teleprinter, its design should utilize the most up-to-date, latest technology such as having an intelligent element (micro-processor).

2 Modes of the bilingual teleprinter

The bilingual teleprinter has two modes:

a) *Latin mode*

The Latin mode is the same mode as the Latin teleprinter now in use.

b) *Arabic mode*

In order to transmit, receive and print the Arabic texts, figures and special signs, the direction of printing, contrary to the Latin mode, is from right to left.

The code combinations, formats and keys of the numerals, special signs and the seven functions are identical to those in the Latin teleprinter.

3 Home position

In the bilingual teleprinter, the home position is always Latin, i.e., on operating the teleprinter in the initial communication, it begins automatically with the Latin mode.

4 The seven functions

The combinations applied in the International Alphabet No. 2 for the seven functions in the Latin mode (WRU, bell, carriage return, line feed, letter-shift, figure-shift and space) and the single combination 32 are to be applied identically in the Arabic mode.

This equipment is used in countries in Arab Telecommunication Union (ATU) only.

5 Switching from Latin mode to Arabic mode and vice versa

To switch the bilingual teleprinter from mode to mode, the following groups of combinations are dedicated:

— From Latin to Arabic: 29-30-32-29

— From Arabic to Latin: 29-32-30-29

Each of these groups should have an individual key on the board. Pressing such a key causes automatically the generation and transmission of the relevant combinations as well as making the proper direction of the printing according to the mode.

6 Call initiation and termination

Regarding call initiation and termination, the principles applied in the bilingual teleprinter are identical to those applied in the Latin teleprinter.

Tableau 1, p.1

Tableau 2, p.2

7 Indicatif answerback

The bilingual teleprinter has two answerbacks. The first is to be applied in the Latin mode whilst the second is to be applied in the Arabic mode. Each answerback consists of 20 combinations.

8 Local position

A separate key should be provided to the bilingual teleprinter for local operation.

9 Line capacity

In any line, the number of printed positions (letters, figures or special signs) should not exceed 69 characters whether in Arabic mode or Latin mode.

If the ultimate capacity (69 characters) is attained, the carriage return and line feed should be automatically effected.

Upon reaching space No. 59, of the line, a signal should be given (visual and/or audible) to notify the user that only 10 spaces remain to be employed.

10 The Bell signal

As in actual procedure of the Latin teleprinter, the pressing of the bell key in both Arabic or Latin mode induces printing giving the appropriate sound signal and transmitting the character dedicated for it in the teleprinter.

11 The Keyboard — General specifications

a) The keyboard is of the 4 rows type.

b) Each letter (Latin or Arabic) regardless of the number of written shapes, has only one key.

c) The formats and keys dedicated for figures are identical irrespective of whether the teleprinter is in the Arabic or the Latin mode. Their distribution should be analogous to the keyboard of the Latin teleprinter.

d) Each of the combinations (27, 28, 30, 31, 32) should have an individual key. Such a key is to be used in both modes (Arabic and Latin).

e) There is no need to apply the high shift key (30) or the low shift key (29) upon moving from the letter shift to the figure shift and vice versa.

12 Distribution of the letters and signs on the keyboard

The distribution of the Arabic and Latin letters and signs on the keyboard should be done according to Table 1.

13 Distribution of the letters and signs on the combinations

a) The distribution of the Arabic and Latin letters and signs will be shown in Table 2.

b) Pressing the key of one of the letters and the combination No. 32 is automatically generated followed by the combination of the appropriate letter. These two combinations may be preceded automatically by combination 29 as described in item d) below.

c) If the teleprinter is in the letter shift low and it is required to get a letter or a character located in the temporary shift other than those mentioned in item b) above, the pressing of the key of the temporary level followed by pressing a key relevant to a letter or a character of the complementary group of the Arabic letters induces automatically the generation of the combination No. 32, followed by the combination of the relevant letter or character.

d) If the teleprinter is in the high shift, the application of the temporary shift induces at first switching to the low shift and then to the application of the combination of the temporary shift automatically.

e) The pressing of the key of the temporary shift by itself does not induce transmission of any combinations.

f) After effecting a letter or a character located on the temporary shift, the teleprinter comes back automatically to the letter shift (low).

g) When the teleprinter is in the Latin mode, the key of the temporary shift is not effective.

14 Requirements relevant to the intelligent element when the teleprinter is in the Arabic mode

a) The teleprinter prints the appropriate format of the Arabic letter according to its position in the word.

b) If the combination No. 11 (low) relevant to the Arabic letter (Alif) follows the combination No. 4 (low) relevant to the Arabic letter (Lam), the combined Arabic letter (γ) will be printed in two spaces and in its correct format.

c) Upon ending or interrupting the communication, the teleprinter goes back automatically to the home position, i.e., to the Latin mode.

d) In addition to using the sign (—), i.e., combination No. 1 in the high shift as a negative sign, it is used as a connecting sign for the Arabic letters when it is attached to them.

e) Actuating the keys relevant to the Arabic short vowels (Fat-hah, Dhammah, Kasrah, Shaddah) is done according to the following procedure:

1) Actuation of the key of the short vowel follows the actuation of the key of the letter to which the short vowel relates.

2) The transmission of the short vowel combination follows the transmission of the relating letter combination.

3) In the printed text, the short vowel apears in the space following the letter to which it relates.

15 Further specifications

Whenever no specific stipulation is mentioned within the items of these specifications, the CCITT Recommendations should be compulsory.

16 The single Arabic teleprinter

a) The specifications of the single Arabic teleprinter are identical to those of the bilingual teleprinter except for non-existence of the Latin letters, the direction of printing, and the format of the answerback.

b) The single Arabic teleprinter should be convenient to be operated on the same international telex network as the bilingual teleprinter and should also be convenient to exchange Arabic texts with a bilingual teleprinter in the Arabic mode.

c) The single Arabic teleprinter should have both Latin and Arabic answerback. The principles of design of these answerbacks are identical to those applied in the design of the answerbacks of the bilingual teleprinter, except for the sign (=) which is substituted by the sign (:) (combination No. 3 high).

d) At the beginning of the communication and before transmitting the combinations group of changing to Arabic, the Latin answerback is applied.

e) The single Arabic teleprinter uses the same combinations dedicated for changing from Latin to Arabic and vice versa. A separate key is dedicated for each. Pressing such a key induces automatically the generation, and transmission of the appropriate group.

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