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OPERATIONS AND QUALITY OF SERVICE

TELEGRAPH SERVICES

TELEGRAM RETRANSMISSION SYSTEM

ITU-T Recommendation F.31

(Extract from the *Blue Book*)

NOTES

1   ITU-T Recommendation F.31 was published in Fascicle II.4 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

Recommendation F.31

TELEGRAM RETRANSMISSION SYSTEM

(a) For the routing of telegram traffic, Administrations can use the *Telegram Retransmission System*. This system comprises a network of interconnected telegram retransmission centres, which carry out the switching and retransmission functions. The indications needed to route the telegram are included with the telegram when it enters the system and are retransmitted with the telegram from one centre to another.

(b) The offices where telegrams enter or leave the telegram retransmission system are linked to at least one retransmission centre; such offices are described as *linked* offices. In the case of a particular telegram, the linked office through which the telegram enters the system is known as the linked entry office; the linked office through which the telegram leaves the system is known as the linked exit office.

(c) The present Recommendation has been drawn up for fully automatic working, but may be used for semi-automatic and manual working.

(d) To facilitate world-wide operation of the telegram retransmission system, to simplify the transfer of telegrams between the retransmission network and other networks and to enable the switching and accounting equipment needed for the retransmission centres to be designed, the CCITT,

unanimously declares that

1 Each telegram must be treated independently, even if several telegrams for the same destination arrive in series at a linked entry office.

2 The format to be used in preparing the telegram for transmission shall be as follows:

2.1 The heading of the telegram shall start with the *numbering line* preceded by a carriage-return, a line-feed and a letter-shift. The numbering line consists of:

2.1.1 *The start-of-message signal (SOM)*

In accordance with Recommendation F.30 the start-of-message signal (SOM) is made up by the sequence of combinations Nos. 26, 3, 26, 3 of International Telegraph Alphabet No. 2 (**ZCZC**) followed by:

2.1.2 *The channel sequence number*

Telegrams transmitted over a channel shall be numbered according to a series of numbers for each channel. The channel sequence number will therefore be composed of three letters characteristic of the channel used (channel indicator) followed by a number showing the order of this telegram in the series sent over this channel. The channel sequence numbers shall be in sequence from **001** to **999** and change automatically from **999** to **001** at the end of a numbering cycle.

When the telegram passes from one channel to another in a network, each new channel sequence number shall be inserted immediately after the start-of-message signal. The channel sequence numbers will appear in the numbering line of the telegram in the opposite order to that in which the telegram passed through the network.

The channel sequence number shall be transmitted as:

– space;

– three letters constituting the channel indicator;

– figure-shift;

– three figures constituting the number in the series on the channel.

Service advices will be numbered in the channel series unless agreed otherwise by the Administrations concerned. The channel sequence number(s) is followed by:

2.1.3   *The telegram identification group (TIG)*

The telegram identification group enables the office of origin to recognize the telegram. This group must not exceed 15 printing characters, which may be composed of any combination of letters and/or figures. In the special case of a telegram from the gentex network to the telegram retransmission system, the telegram identification group will be the only reference in the numbering line and will consist of two letters identifying the originating country or a particular network therein (in accordance with Recommendation F.96), the call number of the gentex office followed by one or two letters identifying the gentex position and the serial number of the telegram which that position sends.

The telegram identification group shall be transmitted as:

− space;

− letter-shift (if necessary);

− not more than 15 printing characters;

followed by:

2.1.4   *End of line*

− carriage-return;

− line-feed;

which will mark the end of the numbering line, followed by:

2.2   The second line of the heading, the *pilot line,* which consists of*:*

2.2.1   *The destination indicator*

This indicator is extracted from the *List of Destination Indicators and Telex Network Identification Codes* [1], and consists of four letters; the first two characterize the destination country (or a particular network in the destination country) and the following two letters characterize an office of that country (see also § 4 below).

The destination indicator shall be transmitted as:

− letter-shift;

− four letters;

followed by:

2.2.2   *The priority and tariff indicator*

This indicator consists of two letters chosen in such a way that the priority letters of the indicator differ from each other by at least two unit elements and the same letter does not appear twice in the same indicator, thus reducing the possibilities of error.

2.2.2.1 The first letter will designate the priority of transmission according to the following table:

A −   Telegrams relating to safety of life **(SVH)**

B −   Telegrams relating to the application of the United Nations Charter **(ETATPRIORITE)**

−   Government telegrams with priority **(ETATPRIORITE)**

−   Meteorological telegrams **(OBS)**

−   Ordinary private telegrams with urgent transmission and delivery **(URGENT)**

−   **RCT** telegrams with urgent transmission and delivery **(URGENT RCT)**

−   Money orders and postal cheque telegrams with urgent transmission and delivery **(URGENT POSTFIN)**

C −   Government telegrams **(ETAT)**

−   Service telegrams **(A)**

−   Service advices **(A)**

–   Ordinary private telegrams

–   **RCT** telegrams **(RCT)**

–   Money orders and postal cheque telegrams **(POSTFIN)**

–   Telemessage

H   –   Letter telegrams (including government letter telegrams) **(LT, LTF)**

This table takes account of the order of transmission given in Recommmendation F.1, A136 to A144.

2.2.2.2 A telegram that has been abnormally delayed can be upgraded to a higher priority group. Such promotion can be effected only in the linked entry office; in this case, a category **H** telegram could be marked **C** and a category **C** telegram marked **B**, but a telegram with lower priority than **A** can never be promoted to category **A**.

2.2.2.3 The *second letter* will designate the tariff class to be used according to the following table*:*

F   Radiotelegrams routed via a foreign land station;

$\mathbf{J}^2$ **POSTFIN** telegrams[1];

K   Government telegrams where preferential rate is to be charged;

L   Letter telegrams;

M Meteorological telegrams;

N   Non-chargeable telegrams;

O   Ordinary private telegrams;

$\mathbf{Q}^2$ Telegrams involving special accounting features[1];

R   **RCT** telegrams;

T   Telemessages

U   Telegrams (other than **RCT** telegrams) with urgent transmission and delivery;

$\mathbf{V}^2$ Divided telegrams [1];

X   For use by transit offices when inserting the pilot line on transit telegrams;

Y   Government full-rate telegrams;

Z   Government letter-rate telegrams.

2.2.2.4 Letters **D, E, G, I, P, S** and **W** are available for assignment when required.[2]

The priority and tariff indicator shall be transmitted as:

–   space;

–   two letters;

followed by:

2.2.3   *The origin indicator*

The origin indicator consists of four letters; the first two will be the same as those used in the destination indicators for the originating Administration or network; the third and fourth will represent:

a)   a particular city or town within that country or network; or

b)   the office or department to which service correspondence regarding the telegram should be addressed.

_____

[1]   Where there is a choice tariff indicator the one marked with a [2] takes precedence.

[2]   Administrations may agree mutually to accept additional tariff indicators.

Administrations may select the last two letters to satisfy the requirements of their internal organization but where there is more than one entry point to a country or network from any station the choice of letter combinations must be negotiated with that station where they differ from the destination indicator for the office in question. Administrations that take advantage of this facility should notify the CCITT of the origin indicators in use in their system.

The origin indicator shall be transmitted as:

- space;

- four letters;

followed by:

2.2.4   *The number of chargeable words*

The number of chargeable words shall be transmitted in the form of a three-figure number (for example **009**) using the number of chargeable words shown in the preamble line for the telegram in question. For a non-chargeable telegram the number **000** will be shown.

The number of chargeable words shall be transmitted as:

- space;

- figure-shift;

- three figures;

followed by:

2.2.5   A *customer identification group* (optional): This group characterizes the customer for accounting purposes and can be composed of any combination of letters and/or figures. It will not be transmitted beyond the first retransmission centre. (See also Recommendation F.1 C108.)

The customer identification group shall be transmitted as:

- space;

- the customer identification group;

followed by:

2.2.6   *End of line*

- carriage-return;

- line-feed;

which will mark the end of the second line (pilot line), followed by:

2.3   The third line of the heading which is the *preamble line* and which shall be transmitted as shown in Recommendation F.1, A140 to A144, including any service instructions, followed by:

- carriage-return;

- three line-feeds;

followed by:

2.4   *The address part*[3)]

2.4.1   *The service indication line* (where required)

Any service indications should be placed on a separate line immediately before the address. Each indication shall be transmitted as one word. If there are several indications each will be separated by a space.

The service indication line is transmitted as:

- letter-shift (if necessary);

_____

[3)]   For postal addresses, the address part (including service indication line) should be composed of a maximum of six lines preferably not exceding 30 printing/ spacing characters. An address part of five lines of up to 43 printing/spacing characters each be accepted.

- the service indications;

- carriage-return;

- line-feed;

followed by:

2.4.2   *The address lines*

The address of a telegram shall be transmitted as:

- letter-shift (if necessary);

- the address;

- the name of the office of destination isolated in the last line (see Recommendation F.1, A39 to A100);

- carriage-return;

- three line-feeds;

followed by:

2.5   *The text part*

2.5.1   *The text* shall be transmitted as*:*

- letter-shift (if necessary);

- text;

- carriage-return;

- line-feed	or	- ten line-feeds
(if signature present)		(if no signature present).

2.5.2   *The signature* shall be transmitted as*:*

- minimum five spaces;

- signature;

- carriage-return;

- ten line-feeds.

2.6   *The end-of-message signal (EOM)*

In accordance with Recommendation F.30 the *end-of-message signal (EOM)* shall be transmitted as:

- letter-shift;

- **NNNN;**

- ten letter-shifts (except where not required).

2.7   *Format examples*

Annex A gives an example of the format of a typical ordinary private telegram showing all the functional signals. Formats of other telegrams will be found in Recommendation F.1.

3   Choice of destination indicator

3.1   The linked entry office of the telegram retransmission network selects the destination indicator to be entered in the pilot line of a telegram.

3.2   Apart from the exceptions given in §§ 4.3, 4.4 and 4.5 the destination indicator shall be selected from the *List of Destination Indicators and Telex Network Identification Codes* [1] (see Recommendation F.96) according to the rules in Table l/F.31.

3.3   Administrations wishing to do so may use the destination indicator *all others* (or one of the *all others* indicators) of the country of the office concerned for the telegrams to an office appearing in the *List of Indicators* [1], but not directly connected to the telegram retransmission network.

3.4   By private agreement between the Administrations concerned, the destination indicator to be used for each town of a country may be selected from any of the destination indicators for the country according to the internal routing of the country.

3.5   For return service advices, etc., relating to a telegram, the destination indicator shall be the origin indicator given in the telegram.

4   Routing

4.1   Within a telegram retransmission centre, a telegram shall be directed to the following channel in the chain of connections by the destination indicator shown on the pilot line of the telegram, in accordance with the traffic circulation scheme of the telegram retransmission centre.

4.2   If the appropriate subsequent route for the telegram is not connected with the telegram retransmission equipment, the destination indicator shall direct the telegram to a place in the centre where it can be handled and reforwarded.

TABLE 1/F.31

Rules for selecting the destination indicator

	A A single network in destination country	B	C
		Several networks in destination country	
		Telegram showing routing	Telegram not showing routing
1. Destination town directly connected with telegram retransmission system, or to which a destination indicator is allocated	Use destination indicator given in the *List* against the town concerned	Use destination indicator with the two letters for the netxork in the *List* followed by the two letters for the town in the *List*	Use destination indicator with the two letters for *unrouted* for the country concerned followed by the two letters for the town in the *List*
2. Other destinations	Use destination indicator *all others* given in the *List* for destination country	Use destination indicator with the two letters for the ntwork in the *List*, followed by the two letters corresponding to *all others* for the country concerned	Use destination indicator with the two letters for *unrouted* for the country concerned, followed by two letters for *all others* for the country

5   Tolerances as to the format and checking of format

5.1   Switching equipment shall tolerate*:*

a)   a space and letter-shift transposition or a space and figure-shift transposition in a sequence normally prescribed as having to be a space followed by a shift;

b)   the repetition of a function signal, except for the space between the destination indicator and the priority indicator;

c)   the reception of characters between successive end-of-message signals and start-of-message signals (for example: spurious signals, letter-shifts or other functional signals) without affecting the proper functioning of the equipment. (Any transmission from the sending end of a channel between an end-of-message signal and the subsequent start-of-message signal should be limited to those characters that have a function at the receiving end of the channel.)

5.2   If a repetition or a transposition in the sequence carriage-return, line-feed, letter-shift separating the numbering line from the pilot line cannot be tolerated by the switching equipment, the telegram affected by such a defect will be directed towards a manual service position.

5.3   Any deviation from the format that might be recognized by a centre and that goes beyond the acceptable tolerances as given herein shall as far as possible be corrected before retransmission to another switching centre.

5.4   If the operator in preparing a telegram detects an error in the set-up of the numbering line or the pilot line, he must destroy the part already set up and start preparation of his telegram again. But if the transmission of these two lines has already started, the operator shall send the code expression **ANUL** space **ANUL** followed by ten line-feeds and the end-of-message signal. Any telegram so terminated shall not, if possible, be retransmitted by the first switching equipment to receive it.

6   Protection against loss of telegrams

6.1   *Transmission*

6.1.1   Whenever a retransmission is made, a channel sequence number is sent, showing the channel used for retransmission and the sequence of the telegram on that channel.

6.1.2   During the retransmission, a telegram interrupted by the code expression **ANUL ANUL** followed by the EOM sequence is considered as not transmitted. This telegram must be retransmitted with its original channel sequence number without other indication.

6.1.3   A check must be made in every retransmission centre, either automatically or by an operator, to prove that every telegram received is retransmitted.

6.2   *Reception*

6.2.1   A check is made to verify the regular sequence of the channel numbers of telegrams received on each incomingchannel. Should there be any irregularity, an alarm will warn the supervisory staff.

6.2.2   During reception, a telegram interrupted by the code expression **ANUL ANUL** followed by the EOM sequence is considered as not received. This telegram must be received again in a complete way with its original channel sequence number without other indication.

6.3   *Mutilation*

6.3.1   If there is a mutilation of the text of a telegram, the incident will be dealt with by end-to-end servicing since the alteration will be noted in practice only at the linked exit office.

6.3.2   If there is a mutilation of a channel sequence number, which may be noted automatically when entering an office, a request for re-run, by service advice, as applicable, indicating the queried sequence number, will be sent to the preceding office on the channel chain, which will then re-run the telegram in question.

6.3.3   For enquiries about a telegram whose telegram identification group has been mutilated, investigation will be made by going back along the route from office to office and by identifying the telegram by means of operating information.

7   Starting of motors

7.1   In general the motors of terminal equipment will always be running, at least on intercontinental circuits.

7.2   However, the two Administrations concerned may agree to operate a channel with terminal equipment fitted with time-delay devices to start and stop the motor. They will agree mutually on arrangements for controlling the start of the motor. The provisions of Recommendation S.7 seem to be the most applicable.

8   Use of tape-printing equipment

8.1   Recommendation S.5 should be followed with regard to the use of tape-printing equipment in the telegram retransmission system.

9   Offices operated semi-automatically or manually

9.1   For offices that are connected to fully automatic systems, Administrations should follow as closely as possible the format recommended in this Recommendation.

9.2   Other offices should also follow the recommended format on any telegram that will enter the telegram retransmission system on a second or subsequent link.

10 Automatic service procedures

10.1 *Re-runs and Put-backs*

10.1.1 A re-run is the repetition, between two directly connected centres of offices, of one or more telegrams that have previously been sent.

10.1.2 A put-back ionvolves stopping a transmission on a channel, recommencing at a particular telegram previously transmitted and continuing from there.

10.1.3 Re-runs and Put-backs should only consist of information that was initially transmitted. Request for re-runs will only occur between the directly connected centres concerned. Telegrams so repeated shall be transmitted under their original channel sequence numbers only.

10.1.4 If a re-run of any telegram is given automatically by a telegram retransmission centre, such re-run should be restricted to that telegram retransmission centre or linked office to which the traffic was initially transmitted, or a centre or linked office to which the traffic has been diverted.

10.2 *Automatic service notes*

10.2.1 Automatic service notes are designed to initiate an automatic action at a telegram retransmission centre. They may or may not be generated automatically, but they shall be numbered in the normal sequence.

10.2.2 Automatic service notes should only be sent from stations that work directly to the distant automatic retransmission centre at which the action is to be taken.

10.2.3 Where automatic action is required, the numbering line may also be composed of:

<p style="text-align:center">ZCZC ABC000 or ZCZC XQ</p>

10.2.4 Automatic service notes shall contain a pilot line with a special destination indicator composed of the country code followed by **ZZ**; the **B** priority indicator must be used.

10.2.5 A preamble line may appear in these notes, but it may be in abbreviated form, e.g. a date and time group only.

10.2.6 The text must commence with a four-letter code designating the action required:

RRUN for re-run,

PUTB for put-back (retransmission of all the telegrams, starting from a given number),

BKBK for break,

SITU for situation,

GAGA for go ahead (after an interruption in the traffic).

10.2.7 Automatic service notes and responses shall conform to the layout in Annex A.

10.3 *Automatic re-runs and put-backs (commands **RRUN** and **PUTB**)*

10.3.1 Where a centre can automatically generate re-runs and put-backs, these should normally be available on request from another directly connected centre during the 24 hours following the original transmission of the telegrams in question.

10.3.2 Automatic re-run of a maximum of ten telegrams may be requested in a single service note.

10.3.3 Put-back of a maximum of 50 telegrams may be requested in a single service note (**PUTB**).

10.3.4 The telegrams referred to in a request for automatic re-run or put-back shall all bear the same original channel indicator.

10.3.5 Automatic re-runs and put-backs should take place over the channel used for the transmission of the original telegram(s). However, they may also be sent over the original route, but not necessarily over the original channel, if the two Administrations concerned have agreed to this course in advance.

10.3.6 Where automatic answer is not given immediately, the reply must be made manually subsequently.

10.3.7 The same format should also be used by centres that have access to automatic repetition facilities at a distant centre but that have to prepare failure notes manually.

10.4 *Automatic stoppages and re-starts of transmission (commands* **BKBK** *and* **GAGA***)*

10.4.1 Automatic stoppage and re-start of transmission should be available on request from any directly connected centre.

10.4.2 Both facilities should be possible, either stopping or re-starting on one specified channel or on all channels of a relation.

10.4.3 In the case of a general break command from a telegram retransmission centre, a service note including a numbering line consisting only of **ZCZC XQ** and having a special destination indicator **XQXQ** in the pilot line shall be used to notify all connected Administrations.

10.5 *Automatic situation requests (command* **SITU***)*

10.5.1 Where a Centre can automatically provide the channel sequence numbers of the last telegram received and the last telegram sent, this should normally be available on request from another directly connected Centre.

10.5.2 The information shall contain the time to which the situation refers.

10.5.3 The information given should include the situation for all channels on the same route.

10.6 *Automatic continuity checks* **(LRLS)**

10.6.1 Sixty minutes after the last message received or sent on a circuit, a continuity check message shall be sent.

10.6.2 The format of this message is identical to the reply **(LRLS)** to a situation request.

ANNEX A

(to Recommendation F.31)

Format examples

A.1 *Ordinary private telegram with service indication (showing all functional signals)*

```
        ◄ ≡
↓ ZCZC→AOE↑262→↓LDB↑814→↓PLD↑606 ◄ ≡
↓ AASD→CO→GBLD→↑018 ◄ ≡
↓ LONDON↑/↓LD→↑18/16→22→1430 ◄ ≡ ≡ ≡


↓ LX ◄ ≡
  HARRIS ◄ ≡
↑ 2462→↓SOUTHERNHIGHWAY ◄ ≡
  SYDNEY ◄ ≡ ≡ ≡


  CONGRATULATIONS→ON→YOUR→PROMOTION→AND ◄ ≡
  BEST→WISHES→FOR→THE→FUTURE ◄ ≡
  →→→→→JOHN ◄ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡


↓ NNNN↓↓↓↓↓↓↓↓↓
```

A.2.1   *Service note requesting automatic re-run of one message*

ZCZC ABC000 ⪯≡ (or ZCZC XQ)
DPZZ BN FRZZ 000 ⪯≡ (ZZ if request is generated automatically, XQ otherwise)
PARIS 21 0926 ⪯≡ ≡ ≡ (optional or abbreviated in case of request only)

RRUN BCA165 ⪯≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.2.2   *Service note requesting automatic re-run of several messages in a sequence (maximum ten messages)*

ZCZC XQ ⪯≡
DPZZ BN FRZZ 000 ⪯≡
PARIS 21 0926 ⪯≡ ≡ ≡

RRUN BCA286/293 ⪯≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.2.3   *Service note requesting automatic re-run of several non-consecutive messages (maximum five)*

3 first lines identical ⪯≡ ≡ ≡

RRUN BCA123 141 162 173 ⪯≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.3   *Service note requesting put-backs (maximum 50 messages)*

3 first lines identical ⪯≡ ≡ ≡

PUTB BCA123 ⪯≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.4.1   *Service note with break command on a specific circuit*

3 first lines identical ⪯≡ ≡ ≡

BKBK BCA ⪯≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.4.2 *Service note with break command on all circuits in a relation*

3 first lines identical ◄ ≡ ≡ ≡

BKBK ◄ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.4.3 *Service note with break command consecutive to a system failure*

ZCZC XQ ◄ ≡
XQXQ BN FRXQ 000 ◄ ≡
Preamble line optional ◄ ≡ ≡ ≡
BKBK ◄ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.5.1 *Service advice to restart the traffic on a specific circuit*

ZCZC ABC000 ◄ ≡
DPZZ BN FRZZ 000 ◄ ≡
Preamble line optional ◄ ≡ ≡ ≡
GAGA BCA ◄ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.5.2 *Service note to restart the traffic on all circuits of a relation*

ZCZC XQ ◄ ≡
DPZZ BN FRZZ 000 ◄ ≡
Preamble line optional ◄ ≡ ≡ ≡

GAGA ◄ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.6.1 *Service note for a situation request*

ZCZC LPA000 ◄ ≡
FRZZ BN GXZZ 000 ◄ ≡
LONDON 9 1027 ◄ ≡ ≡ ≡ (optional)

SITU ◄ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

NNNN

A.6.2 *Reply format to the § A.6.1 request*

    ZCZC PLA000 ◄≡

    GXZZ BN FRZZ 000 ◄≡

    PARIS 9 1031 ◄≡ ≡ ≡ (complete preamble compulsory)

    LRLS LPA074 PLA444 ◄≡

    LPB570 PLB009 ◄≡

    MISSING LPA040/043 ◄≡

    LPB551 554 560 ◄≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡ ≡

    NNNN

    References

[1]   *List of indicators for the telegram retransmission system and the telex network identfication codes*, ITU, Geneva.

[2]   *List of telegraph offices open for international service*, ITU, Geneva.