Recommendation U.22

SIGNALS INDICATING DELAY IN TRANSMISSION ON CALLS SET UP BY MEANS OF SYNCHRONOUS SYSTEMS WITH AUTOMATIC ERROR CORRECTION BY REPETITION

(New Delhi, 1960; amended at Geneva, 1964)

The CCITT,

considering

(a) that traffic observations on radio telex channels have shown that the possible delay in the reception of text transmitted by one subscriber to another is a drawback from the operating point of view. The delay may be caused by repetitions and/or difference in the modulation rate of the teleprinters (traffic from Europe to the USA). In case of such delays a subscriber is left in doubt whether he simply has to await transmission of his message over the radio path or whether the delay is due to the tardy answering of his correspondent, for which he will have to pay. Furthermore, in the case of delays due to long repetition periods a receiving subscriber may be tempted to answer prematurely, which causes garbling of the text;

(b) that to a certain extent this drawback can be offset by the application of a strict operating procedure (**+?** signal to invite the correspondent to transmit). However, supplementary technical measures have proved to be desirable;

(c) that a good technical solution of this problem is to use combinations No. 32 as a delay signal in the following manner:

i) combinations No. 32 are returned to the transmitting subscriber at the rate of one every 5 seconds if he stops transmission during an interval of 10 seconds and the local storage device still contains untransmitted tape;

ii) combinations No. 32 are sent to a subscriber at the rate of one every 1.2 seconds if transmission is delayed by repetitions whenever condition i) does not apply;

(d) that the slow delay signals inform a sending subscriber that his message has not yet been received by his correspondent. The rapid delay signals inform a receiving subscriber that the received message is not yet complete and that he should not cut in;

(e) that in the case of cypher messages where combinations No. 32 may result from the coding procedure, delay signals should not be used. Also in the case of full duplex working, waiting signals cannot be used. Furthermore, it is desirable not to transmit waiting signals during the setting—up of semi— or fully—automatic calls, since interpolated waiting signals would complicate the discrimination of the selection signals and the call—connected signals. Therefore, the best solution seems to be to put the switching on and off of the delay signal facility under the control of the subscribers: four consecutive combinations No. 8 or No. 14 could be used for this purpose;

(f) that the transmission of these delay signals can obviously not be imposed on an Administration that makes an international connection by a landline and radio channel,

unanimously declares the view

(1) That, when the Administrations concerned agree that it is necessary to signal to telex subscribers about a delay in transmission over the radio telex channel, delay signals shall be used having the following characteristics:

i) combinations No. 32 at the rate of one every 5 seconds, returned to a sending subscriber when he has stopped transmission for a period of 10 seconds and if there is still text stored;

ii) combinations No. 32 at the rate of one every 1.2 seconds sent to a subscriber whenever transmission over the radio channel is delayed by repetitions and condition i) above does not apply.

(2) Sending of combinations No. 32 is cut off as soon as the subscriber starts to transmit again.

(3) No delay signal will be transmitted while the call is being put through.

(4) The calling and also the called subscribers can suppress sending of the waiting signal at the two ends of the radio circuit by transmitting four successive combinations No. 8. The waiting signal can also be started off again by transmitting four successive combinations No. 14.

(5) The delay signal should be switched off upon reception of four consecutive combinations No. 19 (signal for transfer to data) for the duration of the call.

Note — Administrations must take precautions to ensure that the reception of combinations No. 32 should not cause spacing of the paper on page—printing or tape—printing apparatus.