INTERNATIONAL TELECOMMUNICATION UNION

ITU-T Q.474

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

SPECIFICATIONS OF SIGNALLING SYSTEM R2

SIGNALLING PROCEDURES

USE OF GROUP B SIGNALS

ITU-T Recommendation Q.474

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation Q.474 was published in Fascicle VI.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.

5.3.5 USE OF GROUP B SIGNALS

Group B signals are used to transmit information about the condition of switching equipment in the incoming exchange or the called subscriber's line, to the outgoing international R2 register, which can then take the necessary action.

The address-complete signal A-3 is sent by an incoming R2 register to announce changeover to sending Group B signals. In addition, signal A-3 indicates that the incoming R2 register has received all the Group I forward signals it requires from the outgoing international R2 register. On recognition of signal A-3 an outgoing R2 register sends a Group II signal. The incoming R2 register may interpret the Group II signal giving information about calling party's category, in order to control the switching operations accordingly (e.g. suppression of automatic ringing for operator initiated calls or to prevent subscriber access to data transmission terminals). Finally, a Group II forward signal is acknowledged by any Group B backward signal.

In cases where outgoing R2 registers are able to interpret all Group B signals there is generally no need to provide equipment at the incoming end able to send, in addition to Group B signals, the tones and/or announcements corresponding to those signals, except in the case of ringing tone.

In general, outgoing R2 registers must be equipped with devices permitting, after reception of signal A-3:

- the exchange of an additional cycle of interregister signals before the register is released;
- changeover from Group A to Group B meanings of backward signals.

Outgoing international R2 registers, however, must be able to interpret all Group B signals.

5.3.5.1 *Procedures to be followed by an outgoing international R2 register on receipt of Group B signals*

Signal B-1 is interpreted by an outgoing international R2 register as signal B-6: the register is released and the speech-path is through-connected. A subsequent answer signal initiates call charging.

Signal B-2 send special information tone is sent by the incoming R2 register:

- when the number of the called party has been changed,
- when the three following conditions are fulfilled together:
  - i) the called party's line condition does not fit with one of the meanings of the present Group B signals,
  - ii) it does not lead to setting up the speech path,
  - iii) it is not incompatible with return of special information tone to the calling party.

After recognizing signal B-2, the outgoing international R2 register clears forward and causes the transmission of only special information tone.

The subscriber's line busy signal B-3 is sent by the incoming register when the called subscriber's line is engaged. On recognition of this signal, the outgoing register releases the connection and causes transmission of the busy tone.

When the congestion condition is encountered following the changeover from Group A signals to Group B signals, the congestion signal B-4 shall be transmitted on the conditions specified for congestion signal A-4. In all cases recognition of the signal causes release of the call and transmission of congestion information.

After recognizing unallocated number signal B-5, the outgoing international R2 register clears the call and causes transmission of special information tone or a recorded announcement and special information tone, alternately, to the calling party.

After recognizing signal B-6, the outgoing international R2 register sets up speech conditions so that a caller may hear the ringing tone. In this case, a subsequent answer signal activates the call-charging mechanism.

After recognizing signal B-7 the outgoing international R2 register sets up speech conditions, so that a caller may hear the ringing tone. In this case, a subsequent answer signal does not activate the call-charging mechanism. However, in an outgoing international R2 register signal B-7 may be interpreted as B-6 if there is no international agreement on non-chargeable calls.

After recognizing signal B-8 subscriber's line out of order, the outgoing international R2 register clears forward and causes the transmission of a special information tone or recorded announcement and special information tone alternately to the calling party.

Receipt of signal B-9 or B-10 by an outgoing international R2 register causes release of the outgoing connection and return of special information tone to the calling subscriber, i.e. these signals should be interpreted as signal B-2.

If an outgoing international R2 register receives one of signals B-11 to B-15 the call should be released and indication of this returned to the calling subscriber or operator, i.e. this signal should be interpreted as signal B-4.

5.3.5.2 *Special procedures for national working*

Outgoing R2 registers in national exchanges may not be able to recognize and interpret Group B signals. In such networks it is essential that the equipment at the incoming end must transmit not only the Group B signals but also the corresponding tones and/or announcements, when the incoming R2 register does not know whether the outgoing R2 register is capable of interpreting Group B signals.

In the case where the incoming R2 register is able to make only two or three distinctions of conditions of the called subscriber's line the following procedure may be adopted: When the only distinction that can be made is between subscriber's line free and subscriber's line engaged,

i) signal B-3 is sent if the line is engaged;

ii) otherwise signal B-6, or signal A-6 alone is sent so the caller can hear the ringing tone sent by the incoming equipment.

In the case where outgoing R2 registers in national exchanges are only able to interpret a limited number of Group B signals or are indeed not able to interpret any, it is essential that such equipment be able to respond to signal A-3 in the specific manner and at least to recognize the next backward signal (which is a Group B signal) as indicating the end of interregister signalling.

5.3.5.3 *Possible application of signal B-1 in national working*

Signal B-1, for example, may be used to indicate that the call must remain under the control of the incoming equipment, insofar as this is possible (e.g. for maintenance reasons, to trace malicious calls, etc.). The incoming exchange sets up speech conditions, so that the calling subscriber can hear the ringing tone. At present such a use of signal B-1 in international working is not envisaged.