



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

M.762

**MAINTENANCE: COMMON CHANNEL SIGNALLING
SYSTEMS**

**MAINTENANCE OF COMMON CHANNEL
SIGNALLING SYSTEM No. 6**

ITU-T Recommendation M.762

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation M.762 was published in Fascicle IV.1 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.

MAINTENANCE OF COMMON CHANNEL SIGNALLING SYSTEM No. 6

1 General

1.1 It is essential that a common channel signalling system perform with very high reliability over the long term. It is also desirable that maintenance staff perform at the highest practical efficiency. In order to achieve both of these objectives with regard to common channel signalling systems, maintenance responsibilities and actions must be clearly defined and controlled. Such objectives make it necessary, in some cases, to place limitations on the freedom of involved maintenance units in performing independent maintenance actions.

1.2 This Recommendation considers the signalling system as an integrated system. It is not intended to replace or impose upon any Recommendation or procedure (national network or otherwise) which might apply to specific components or sub-systems, for example a signalling terminal or the transfer link; rather, it proposes criteria regarding when and how such actions are to be initiated. Moreover, the general administration of the systems is considered and not the detailed interworking of its various equipments.

1.3 Various maintenance organizational units may have functional responsibility for individual sub-systems which comprise a common channel signalling system (for example signalling terminals, processors, etc.). As the activities of any of these units will have an effect on the overall operation of the signalling system, and because in some cases it may not be possible to independently determine a need for maintenance attention, one point should be designated as an overall signalling system control. This point is titled signalling system administrative control. The corresponding point at the distant terminal is known as the signalling system administrative sub-control.

2 Appointment of administrative control and sub-control

2.1 The appointment of administrative control and sub-control will be made by agreement between the Administrations involved. These two points must be assigned for each signalling system which is placed in operation. It is suggested that the most appropriate point to act as administrative control or sub-control is the maintenance unit having responsibility for the signalling terminal and processor. However, this matter is left to the discretion of the Administrations concerned.

2.2 In the case of multiple signalling systems between the same two points, it may be appropriate to divide control and sub-control assignments, therefore sharing the burden of control responsibility. This is a subject for agreement between the Administrations concerned; however, this assignment and that of the control station for the transfer link should be to the same Administration.

3 Functions and responsibilities of the administrative control

These responsibilities fall into four main areas:

- i) day-to-day maintenance of working systems;
- ii) history and long-term analysis;
- iii) operation under signal transfer point (STP) configurations;
- iv) implementing a new signalling system, or an existing signalling system modification.

3.1 *Day-to-day maintenance of signalling systems*

3.1.1 Except as noted in § 3.1.2, maintenance activity on any part of a common channel signalling system must only be undertaken with the agreement and knowledge of the administrative control. Such activities might relate to routine maintenance measurements of the transfer link, service affecting reconfigurations of transmission systems over which the transfer link is routed (i.e. planned outages), the temporary removal from service of a signalling terminal, etc.

3.1.2 In the event of total failure of a signalling system due to a malfunction of one of its parts, immediate steps should be taken to remedy the fault condition. As soon as possible, the administrative control should be informed so that the event can be correlated with other reported events or known signalling failures. An example of such a fault event might be the failure of a transmission system over which the transfer link is routed¹⁾.

3.1.3 Faults which are observable only at a signalling system terminal, for example intermittent failures resulting from an apparent high data bit error rate, must be analysed by the administrative control (and sub-control, depending on the direction of the indicated fault) in order to determine where maintenance attention is required. Such dynamic analysis might involve terminal diagnostic tests, error performance tests with the distant terminal, etc. The result of this dynamic analysis and tests will be corrective action, taken either by the administrative control or the sub-control if under either's jurisdiction, or the referral by the administrative control to the indicated part of the maintenance organization, for example the control station for the transfer link.

3.2 *History and long-term analysis*

3.2.1 The administrative control should maintain a record of all recognized or reported faults pertaining to each signalling system for which it is responsible.

This information includes (but is not limited to) the following:

- i) date and time a fault was reported or actually occurred;
- ii) the nature of the reported fault;
- iii) the reporting location;
- iv) the location of the fault, when found;
- v) the actual fault condition found and the corrective action taken.

This information should become a part of the history record maintained by the administrative control.

3.2.2 History records will enable long-term analysis to identify repeated faults of a signalling system. Such efforts should improve the long-term operation of a signalling system and therefore afford more economical maintenance.

It is suggested that historical records should be retained for at least 12 months. From the provision of a new signalling system, the history record should be initiated and continued until 12 months have passed. After analysis, each succeeding month will permit the discarding of records accrued during that same month of the previous year. Therefore, an administrative control can examine 13 months of (possible) events, which should be adequate to identify persistent faulty conditions.

3.3 *Operations under signal transfer point (STP) configurations*

3.3.1 With two or more signalling systems in tandem used to convey signalling information between two international centres, signal transfer point operation presents possible maintenance complications. Events which occur in one system can affect the functioning between centres which have no control or sub-control responsibility for the faulty signalling system. If an administrative control determines that a fault has occurred in its signalling system which is part of an STP configuration, it must apprise the administrative control of the signalling system not directly involved, that a fault exists that affects (or will affect) signalling processes. The advice should also include an estimate of the time necessary to correct the condition and, when appropriate, the time the condition was actually corrected.

3.3.2 When a condition affecting signalling via an STP warrants coordinated testing in order to determine the faulty part of either signalling system, the administrative control first involved in the fault report should coordinate testing efforts. Once the fault is localized, referrals can be made via normal procedures to achieve maintenance action.

When the fault is corrected, the administrative control for each of the signalling systems should be advised and the administrative control which was first involved should confirm proper signalling via the STP.

¹⁾ See Recommendation M.760, § 4 and Figure 2/M.760 which illustrate a possible series of events following the failure of a transfer link of the common channel Signalling System No. 6.

3.4 *Implementing a new signalling system*

3.4.1 The Administrations involved must reach all of the agreements necessary for the orderly provision of a common channel signalling system, such as label assignments, constitution of the transfer link routing, security arrangements, initial testing, etc. (see also Recommendation M.750).

3.4.2 The administrative control should receive and record for future reference the results of tests carried out prior to putting a new system into service. In the event of subsequent failures, a reference to these test results may be valuable to the fault location process and also a significant factor in assessing signalling system performance and fault occurrences over the long term.

4 Functions and responsibilities of the administrative sub-control

In general, the responsibilities of the administrative sub-control with respect to its own terminal are similar to those of the administrative control. Additionally, the administrative sub-control should:

- i) cooperate with the administrative control in fault localization and clearing activities as necessary;
- ii) respond with all relevant details of investigations and fault clearance activities to the administrative control;
- iii) advise the administrative control of any known present or future event likely to impact on the operation of the signalling system(s) for which it has responsibility.

5 Contact point information

It is essential that contact point information be exchanged between Administrations in order to minimize maintenance difficulties and speed fault localization and clearance activities, (see Recommendation M.93).