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STANDARDIZATION SECTOR
OF ITU

M.710

**MAINTENANCE:
INTERNATIONAL TELEPHONE CIRCUITS**

**PERFORMANCE MONITORING ON
INTERNATIONAL TRANSMISSION
SYSTEMS AND EQUIPMENT**

ITU-T Recommendation M.710

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation M.710 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.

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**GENERAL MAINTENANCE ORGANIZATION¹⁾ FOR THE INTERNATIONAL
AUTOMATIC AND SEMI-AUTOMATIC TELEPHONE SERVICE**

1 General

To ensure satisfactory service quality in the international automatic and semi-automatic telephone service, it is necessary to have an organization which can use the techniques recommended for achieving this. The organizational elements defined in § 2 below relate to the maintenance of the different component parts of the international automatic network and are intended to cover wholly analogue networks and networks provided by a mixture of analogue and digital systems (switching and transmission). Administrations are requested to apply these recommendations in order to obtain satisfactory service quality.

The organization for international network management is specified in Recommendation E.413 [1], but it has been recognized that many common points exist between maintenance and network management activities. Therefore, it must be noted that, although the general maintenance organization and the network management organization are separately specified, it is not intended that separate organizations be established unless so desired by Administrations.

2 Maintenance organization

2.1 Basic elements and their functions

Cooperation in the maintenance of the international automatic and semi-automatic telephone service should be based on an organization which comprises all of the following basic elements in each country - each element representing a set of functions:

2.1.1 *Fault report point (circuit)*, which accepts and assigns for clearance all faults relating to one, or more, specifically identified circuits.

2.1.2 *Fault report point (network)²⁾*, which accepts and assigns for clearance all faults that, when reported, are not identified with specific circuits or a specific international centre. This should include all switching difficulties.

2.1.3 *Testing point (transmission)*, which performs transmission testing on international circuits for lining-up purposes, on a routine basis, and in case of reported faults.

2.1.4 *Testing point (line signalling)*, which performs testing of line signalling on international circuits, employing channel associated signalling, for setting-up purposes, on a routine basis, and in case of reported faults.

Note – Testing line signalling is not relevant to Signalling System No. 6. Maintenance organization aspects of Signalling System No. 6 are dealt with in Recommendation M.762 while signalling tests are dealt with in Recommendation M.732.

2.1.5 *Testing point (switching and interregister signalling)*, which performs testing of switching and interregister signalling on international equipment for setting-up purposes, on a routine basis, or in case of reported faults.

2.1.6 *Network analysis point²⁾*, which receives information on service quality, and faults not identified with specific circuits. It carries out the analysis of this information to investigate the problems involved. It acts as a single point of contact for general enquiries concerning the maintenance of the international telephone network.

2.1.7 *System availability information point*, which collects and disseminates information concerning the non-availability of telecommunications systems affecting the international automatic and semi-automatic telephone service.

2.1.8 *Circuit control station*, which is responsible for the satisfactory operation of the international circuits that it controls.

¹⁾ The phrase *general maintenance organization* does not necessarily relate to a specific organizational structure in any particular Administration.

²⁾ The use of the word *network* in this and subsequent Recommendations, refers to the public telephone network. This does not restrict the combination of any element with other maintenance units which have functions dedicated to services not noted herein.

2.1.9 *Circuit sub-control station*, which is responsible for the satisfactory operation of the international circuit sections that it controls. It will assist the circuit control station in its work to ensure the satisfactory operation of the entire circuit.

2.1.10 *Restoration control point*, which initiates and coordinates the restoration activities in case of failures or planned outages of transmission systems.

The detailed responsibilities and functions as well as the facilities needed for the elements in §§ 2.1.1-2.1.10 above are described in Recommendations M.715 to M.725.

2.2 *Grouping of basic elements*

It is left to the Administration concerned to decide whether to keep these elements separate or to combine them into one or more maintenance units to suit the particular situation in the country. However, the functions of an individual element should not be divided up between two or more maintenance units.

The elements in § 2.1 above should be grouped in the manner most suitable for a given Administration. The simplest form would combine all the elements into one maintenance unit capable of carrying out all the specified functions. Such an arrangement may be appropriate for those countries where international automatic circuits are few in number. For countries that support larger numbers of international automatic circuits, the functional grouping should be based on the following considerations:

- a) the location of testing and measuring facilities;
- b) the physical environment of the existing circuit, switching and other equipment;
- c) the location of records of circuits, fault reports and service quality;
- d) the location and availability of communication facilities;
- e) the existence of comparable national functions which might be expanded to include international aspects;
- f) the location of national system availability and traffic flow information which should be related to the international automatic network;
- g) the level of coordination that is anticipated between elements within the Administration;
- h) the staff workload that is anticipated for each element and the potential efficiencies involved in combining elements;
- i) the anticipated ability to provide the necessary staff expertise and language facility where needed;
- j) the arguments for and against centralization of a given element for an Administration;
- k) the availability of supervisory and surveillance facilities at potential maintenance locations;
- l) the existence of maintenance units for other services, e.g. leased circuits, having similar maintenance functions;
- m) the expected growth in international automatic and semi-automatic services in the country concerned;
- n) the expected evolution of the international network;
- o) the maintenance requirements and maintenance organization for Signalling System No. 6.

Illustrative examples of possible groupings of maintenance elements are given in Annex A.

Note – The maintenance organization described in this Recommendation does not preclude the use of the terms: international transmission maintenance centre (ITMC), international switching maintenance centre (ISMC) and international service coordination centre (ISCC). Administrations have the freedom to give names to their maintenance units which suit their situation and requirements.

2.3 *Cooperation between maintenance elements*

2.3.1 *Cooperation between maintenance elements within an Administration*

Elements should normally be free to contact each other as required except for any restrictions placed on such contacts by the Administration itself for reasons of efficiency or organization. The information paths and interactions between elements will be influenced by any grouping of elements which an Administration may decide upon – see § 2.2 above.

2.3.2 Cooperation between maintenance elements in different Administrations

2.3.2.1 Maintenance elements should primarily communicate with their corresponding elements in other countries. Other channels of communication may also appear necessary or useful under certain circumstances. Figure 1/M.710 illustrates in a matrix, probable communication paths from an originating country to a distant country. It demonstrates the possibility of fault reports, for example, from a number of elements to the distant fault report point (circuit).

Originating country		Distant country									
		FRP (N)	NAP	SAIP	FRP (C)	TP (T)	TP (LS)	TP (SIS)	CSCS	CCS	RCP
Fault report point (network)	FRP (N)	X									
Network analysis point	NAP	0	X		0						
System availability information point	SAIP			X							0
Fault report point (circuit)	FRP (C)	0			X					0	
Testing point (transmission)	TP (T)				0	X				0	
Testing point (line signalling)	TP (LS)				0		X	0		0	
Testing point (switching and interregister signalling)	TP (SIS)				0		0	X		0	
Circuit control station	CCS				0	0	0	0	X		
Circuit sub-control station	CSCS				0					X	
Restoration control point	RCP			0							X

X — Primary intercommunication symbol is indicated for communication paths between corresponding elements.
Note that the corresponding element for CCS is CSCS.

0 — This symbol represents other intercommunications that may be necessary or useful under certain circumstances.

d01-sc

FIGURE 1/M.710

An illustration of the matrix of probable communication paths between elements of the maintenance organizations of two countries

2.3.2.2 Each fault report received by a fault report point should be identified (to include the date and the hour if possible) for reference by all concerned during fault clearance and for informing the reporting element of the disposition of the faults. Fault reports should be accepted by any element performing tests with a distant maintenance element. The element which accepts the report should always forward it to its appropriate fault report point. The fault report point should give priority to receiving fault reports and initiating fault clearances over all other duties.

2.3.2.3 In addition to the requirements of technical and operational knowledge, the staff responsible for the functions listed in § 2.1 above should be selected and trained with a view to avoiding language difficulties.

The attention of Administrations is also drawn to the benefit that may be derived from enabling staff in the international telephone service who work in corresponding units in different countries to meet and discuss their work.

3 Examples of cooperation between elements

The examples of cooperation indicated in Figures 2/M.710 and 3/M.710 show only simple cases of cooperation between elements.

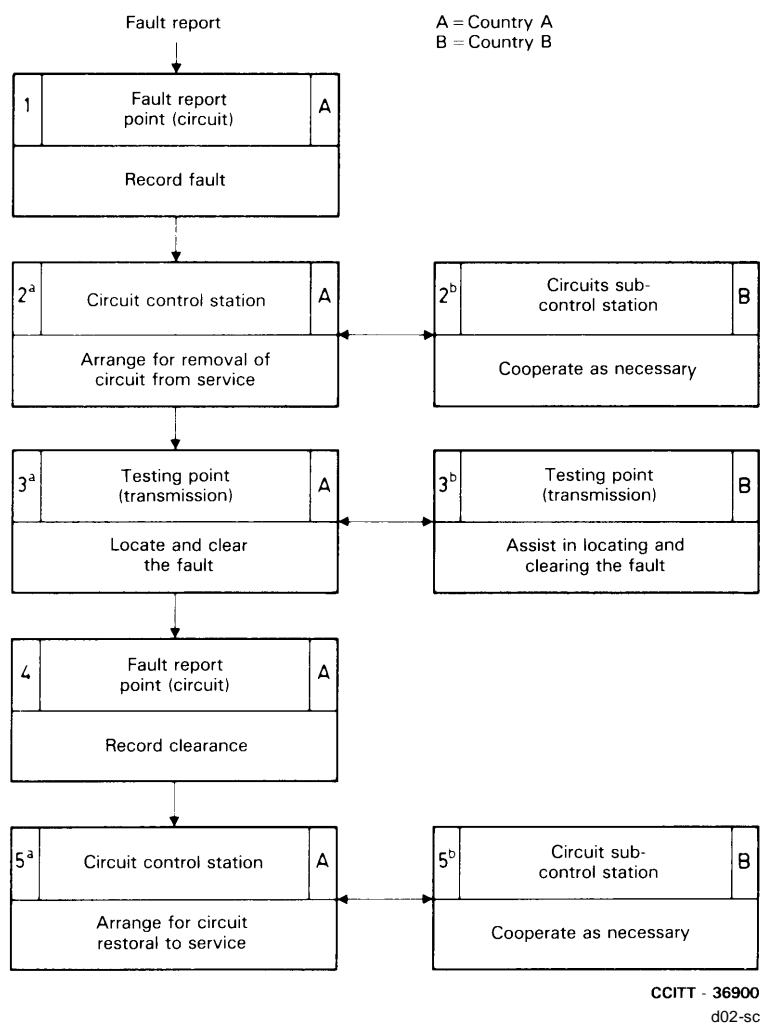


FIGURE 2/M.710
General procedure in acting upon the report of a circuit transmission fault

4 Cooperation between maintenance elements and network management elements

Within an Administration, considerable benefits can be obtained from close cooperation and coordination between maintenance elements and network management elements³⁾. In particular, close liaison between the fault report point (network) and the network management implementation and control point should be ensured.

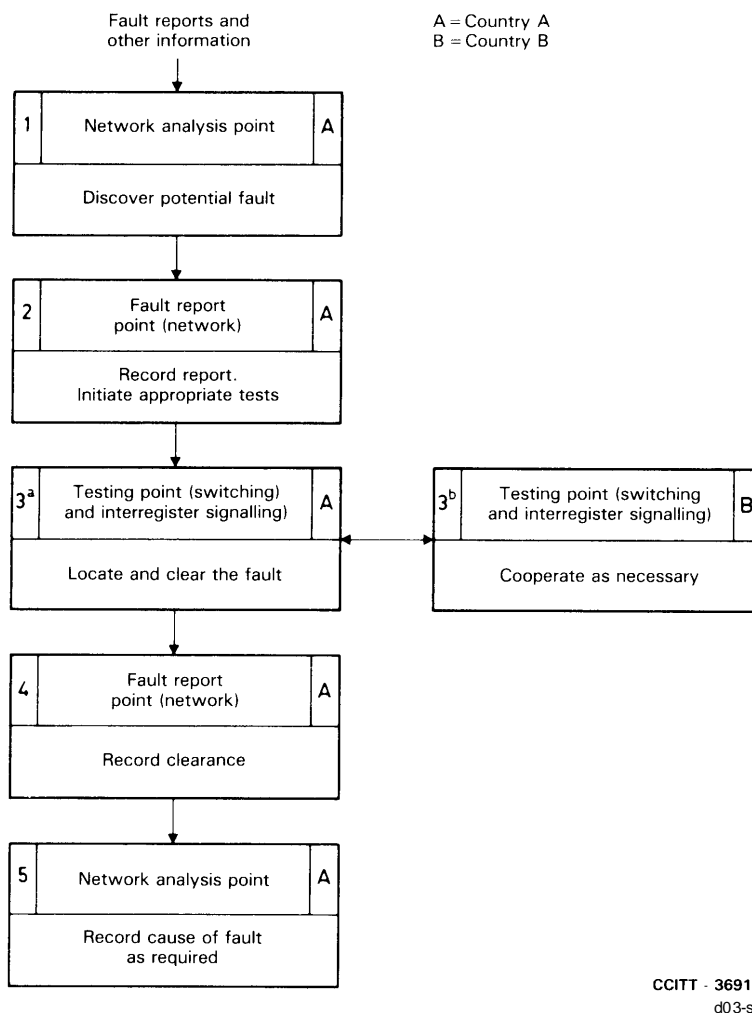


FIGURE 3/M.710

General procedure in acting upon indications of potential faults revealed by the network analysis point

5 Exchange of contact point information

The most important benefit to be derived from defining the maintenance organization as consisting of a number of basic elements is to establish the means whereby those responsible for such elements may be contacted.

For efficient cooperation between maintenance elements in different countries, it is essential that Administrations frequently exchange appropriate contact point information (for example: telephone numbers, telex numbers, service hours, etc.). Reference should be made to Recommendation M.93.

³⁾ For definitions of these terms, refer to Recommendation E.413 [1].

ANNEX A

(to Recommendation M.710)

Illustrative groupings of elements into maintenance units

Note – Network management elements, as defined in Recommendation E.413 [1] may be combined with any of the illustrative maintenance units mentioned in §§ A.1 to A.3 below.

A.1 All maintenance functions performed by a single maintenance unit (see Figure A-1/M.710).

Testing point (transmission)	Network analysis point
Testing point (switching and interregister signalling)	Fault report point (network)
Testing point (line signalling)	System availability information point
Fault report point (circuit)	Restoration control point
Circuit control and circuit sub-control	

FIGURE A-1/M.710

A.2 All circuit and equipment testing facilities are at one location (maintenance unit A), while all network and system maintenance aspects are the responsibility of a separate unit (maintenance unit B) (see Figure A-2/M.710).

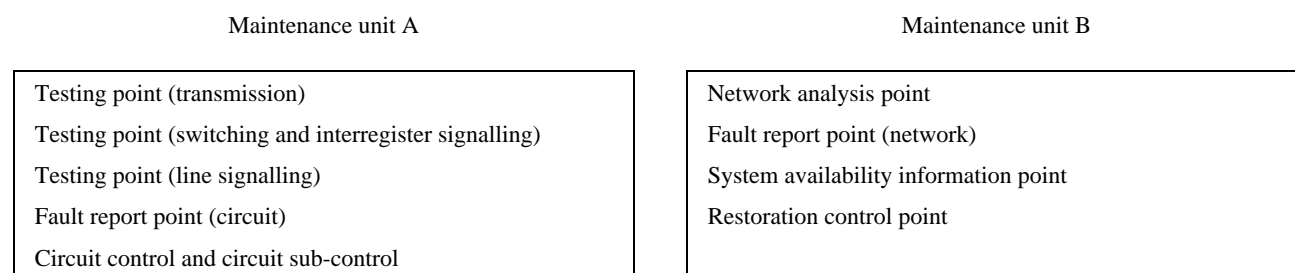
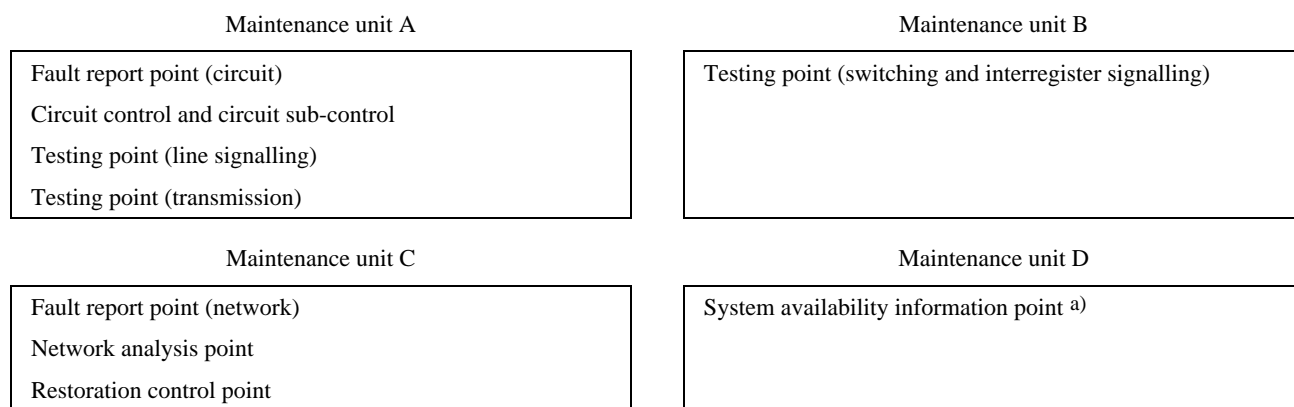


FIGURE A-2/M.710

A.3 All circuit matters are the responsibility of a single unit (maintenance unit A), while testing of switching and interregister signalling is performed by staff in the international exchange (maintenance unit B). A separate group of staff have responsibility for network analysis, network fault reports and service restoration (maintenance unit C). System availability functions for the international network are carried out at a location which has similar responsibilities for the national network (maintenance unit D) (see Figure A-3/M.710).



a) Where similar national functions are fulfilled.

FIGURE A-3/M.710

Reference

- [1] CCITT Recommendation *International network management-Planning*, Vol. II, Rec. E.413.