CENTREX DATA LINK AND ATTENDANT

CONSOLE MAINTENANCE PROCEDURE USING MAINTENANCE

TELETYPEWRITER

NO. 2 ELECTRONIC SWITCHING SYSTEM

1. GENERAL

1.01 This section describes techniques available for controlling maintenance program activity on centrex data links and centrex attendant consoles in the No. 2 Electronic Switching System (ESS).

1.02 Maintenance personnel in a centrex office have available through the use of the maintenance teletypewriter (TTY) a variety of features for controlling the data link and associated attendant consoles. These features, which are provided by the attendant maintenance program, are as follows:

(a) the ability to unconditionally restore or remove a data link from service,

(b) the ability to initiate or abort the diagnosis of a specified data link,

(c) the ability to determine the status of all data links and consoles,

(d) the ability to remove from or restore to service single attendant console,

(e) the ability to initiate or abort the centrex console lamp and key demand exercise routine to aid in console maintenance,

(f) the ability to diagnose an attendant trunk or loop.

1.03 This section gives an explanation of the centrex data link states, the centrex console states, and the various TTY input messages used to control these states. Explanations of the use of related TTY messages for diagnostic and demand exercises are included.

1.04 Reference should be made to the input and output message manuals (IM and OM-2H200) for exact details on the formats and use of all TTY messages included in this section.

2. DATA LINK STATES

A. Normal In-Service State

2.01 This state is the normal state in which an office will be operating. The link is in normal service and fault recognition will be performed. An all-seems-well (ASW) failure will be recognized in this state and a retry of the message that caused the failure will be performed. If the retry succeeds, a transient failure printout will occur, if it fails, an attempt will be made to switch control units. If the switch is made, the message is retried once again and a failure printout is made. If automatic emergency actions do not restore the system to a normal working mode, manual repair actions will have to be taken.

B. Normal In-Service/Diagnostic State

2.02 The diagnostic program may be initiated by a manual TTY request or by a program request when a failure is detected.

2.03 The diagnostic bit is set only while the system is diagnosing a link. After completing diagnostics the system will printout the results.

2.04 If trouble is suspected on a link, a diagnosis of the specified link may be requested by typing the following message on the maintenance TTY (refer to LM-2H200):

Ma AL:DGN: fg hi!

a = omitted, for normal execution of function

= P, for low priority to bypass false printouts.

= R, repeat

= S, step

= L, lights

fg = two digit decimal equipment number of the attendant link frame of interest (00-03).

h = attendant data link frame's data link of interest (0-7).

i = control unit of interest

= -, for on-line control unit

= 0, use control unit 0

= 1, use control unit 1.

If the link is busy, the system will respond with a repeat later (RL) message (refer to OM-2H200). If the busy state is the suspected trouble, the link will need to be removed from service for repairing.

C. Out-of-Service State

2.05 To remove a data link from service type the following message on the maintenance TTY:

Ma AL:RMV: fg hi!

a = H, for high priority remove regardless of console states.

fg = two digit decimal equipment number of the attendant data link frame of interest (00-03).

h = Attendant data link frame's data link of interest (0-7).

i = -, for control unit which is on-line.

= 0, for control unit 0 in off-line mode.

= 1, for control unit 1 in off-line mode.

If the system responds with a MR AL RMV message, the link was successfully removed from service. However, all consoles on that data link must be out of service or a MR AL DGN fg hi REJ G message will result and the data link status will not change.

2.06 If all consoles in a centrex group are taken out of service due to a data link being removed from service, the centrex group is placed in *emergency night service.*

2.07 *Night Service* is the assigning of a particular telephone to receive all calls coming into the attendant console normally during the night hours when the console has no one attending it.

2.08 When a problem has been found and corrected, the link should be restored to the normal in-service state. This can be achieved by entering the following message on the maintenance TTY.

Ma AL:RST: fg h-!

a = omitted, for normal execution of function.

= H, for high priority to restore a data link to service.

fg = two digit decimal equipment number of the attendant data link frame of interest (00-03).

h = attendant data link frame's data link of interest (0-7)

The system will automatically diagnose and return the link to the normal in-service state after an all-tests-passed (ATP) has been received. If the diagnostic fails, the link will remain in the state it was in before the request was made. If the high priority request was made, the link will be returned to the normal in-service state without performing diagnostics.

Caution: The high priority request will restore a data link to service unconditionally.

GENERAL MAINTENANCE CONTROL PROCEDURES

2.09 The following procedures and their associated messages are useful when general information affecting maintenance activity on all data links is desired. Since the requests are of a general nature, the states of individual links have no bearing on when the messages may be used; that is, they may be used at any time.

2.10 *Determining the Status of All Data Links:* If the state of all data links in the central office is desired, type the following message on the maintenance TTY:

M PU:SI!

Note: This message requests a printout of all out-of-service peripheral units, all entries in the bad access, bad address, and scanner column fault lists.

2.11 *Diagnosing All Available Data Links:* If a general diagnosis of all available data links (that is, those links, that are not busy or have not been taken out of service) is desired, type the following message on the maintenance TTY:

M AL:EX:1 i!

i = -, for control unit which is on-line.

= 0, for control unit 0 from the off-line mode.

= 1, for control unit 1 from the off-line mode.

3. CONSOLE MAINTENANCE

3.01 The ability to remove from service and to restore to service individual consoles is provided in the program. The console state exists independently of the data link state. Therefore, if a link is restored to service and a given console on that link is out of service, that particular console would not be usable for calls. Similarly, if an out-of-service console is restored on an out-of-service link, the console is not actually put into service although its out-of-service bit is reset.

CONSOLE STATES

3.02 The centrex customer console may be placed in either of two states; the in-service state or the out-of-service state. Both of these states are attained by typing in the appropriate message on the maintenance TTY.

A. Removing a Console from Service

Caution: All calls on a console are lost when it is removed from service by a high priority request.

3.03 To remove a console from service, type the following message on the maintenance TTY:

Ma AC:RMV: f d c!

a = Blank, remove the console from service if there are no calls on any of the loops.

= H, release any calls on the console's loop and remove console from service.

f = data link frame number (0-3).

d = data link number (0-7).

c = console number (0-3).

The console must be properly restored to service when maintenance is completed as explained in 3.04.

B. Restoring a Console to Service

3.04 To restore a console to service, type the following message on the maintenance TTY:

M AC:RST: f d c!

f = frame number (0-3)

d = link number (0-7)

c = console number (0-3)

DETERMINING CONSOLE STATUS

3.05 To determine the status of the attendant consoles in the system, type the following message on the maintenance TTY:

M AC:SI: f d!

f = Data link frame number (0-3)

= blank, do all frames.

d = Data link number (0-7)

= blank, do all data links on frame F.

CENTREX DATA LINK AND CONSOLE LAMP AND KEY DEMAND EXERCISE ROUTINE

3.06 The centrex data link and console lamp and key demand exercise routine is available to facilitate maintenance on centrex control consoles and attendant consoles. The routine can be initiated from the maintenance TTY or the attendant console on the customer's premises (not all options can be specified from the console) and is used to identify faults in units that have been placed in an out-of-service state. The associated data link must be in service and the console must be out of service.

3.07 If a fault is detected and a lamp and key exercise is necessary for aid in locating the problem, refer to Section 232-202-302 or Section 540-576-304 for this exercise procedure.