# EMERGENCY ACTION PROCEDURES

# DESCRIPTION

# NO. 3 ELECTRONIC SWITCHING SYSTEM

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## 1. GENERAL

### INTRODUCTION

**1.01** This section describes the emergency action facilities available for manual control in a No. 3 Electronic Switching System (ESS) office. Information concerning the automatic response of the system to emergency situations also is included.

**1.02** This section is being reissued to describe the Remote Recorded Overload Announcement feature (paragraph 2.28 through 2.31) and to add Fig. 7 and 8. Revision arrows are used to indicate the changed areas. These changes do not affect the Equipment Test Lists.

**1.03** Two system controls (SYC 0 and SYC 1) are associated with a No. 3 ESS office, each capable of handling call processing activities. An SYC is a dedicated grouping of equipment consisting of a control unit (CU) and associated frame input/output controller (FIOC), peripheral pulse distributor (PPD), scanner controller (SC), and network controller (NWC) (Fig. 1). The CU (Fig. 2) consists of a 3A CC, main store (MAS), and the system status panel (SSP). When an SYC is in the active state, as indicated on the SSP, it is handling call processing responsibility. The SYC can be placed in other states, also displayed on the SSP. The standby state indicates that the SYC is capable of handling call processing activity when requested. The out-of-service state indicates that some equipment associated with the SYC has been removed from service. An SYC is out of service if any one of its associated components is out of service. Recovery capabilities are available when the SYC is out of service. The unavailable state indicates that the SYC cannot be controlled by automatic recovery. An SYC is unavailable if any one of its components is unavailable, eg, power has been removed. This restricts call processing capability to only one SYC. The SSP will indicate only the most serious condition.

### SYSTEM EMERGENCY CONTROL

**1.04** SYSTEM EMERGENCY MANUAL CONTROL status lamps and control keys are provided across the upper portion of the SSP. Additional system status can be obtained by observing other lamps on the SSP (Fig. 3), 3A CC control panel (Fig. 4), peripheral control unit power panel (Fig. 5), and ringing and tone power control panel (Fig. 6). Maintenance teletypewriter (TTY) output messages are relied on for specific information. ***Manual emergency action facilities are used only when the system fails to automatically recover from a fault condition.***

**1.05** A remotely located switching control center (SCC), when included as part of the system, will be equipped to enable its personnel to do routine maintenance and exercise emergency control.

**1.06** The SCC communicates with the SSP to control the various key functions via E2A telemetry and to monitor the available displays. This in conjunction with TTY input/output message capability provides most of the remote maintenance access for an unattended No. 3 ESS office.

## 2. DESCRIPTION

### AUTOMATIC EMERGENCY ACTION

#### A. Initialization

**2.01** Under automatic emergency action conditions, the system goes into initialization. The levels of initialization are as follows:

(a) Level 1—Partial clear

(b) Level 2—Partial clear

(c) Level 3—Partial clear

(d) Level 4—Transient clear

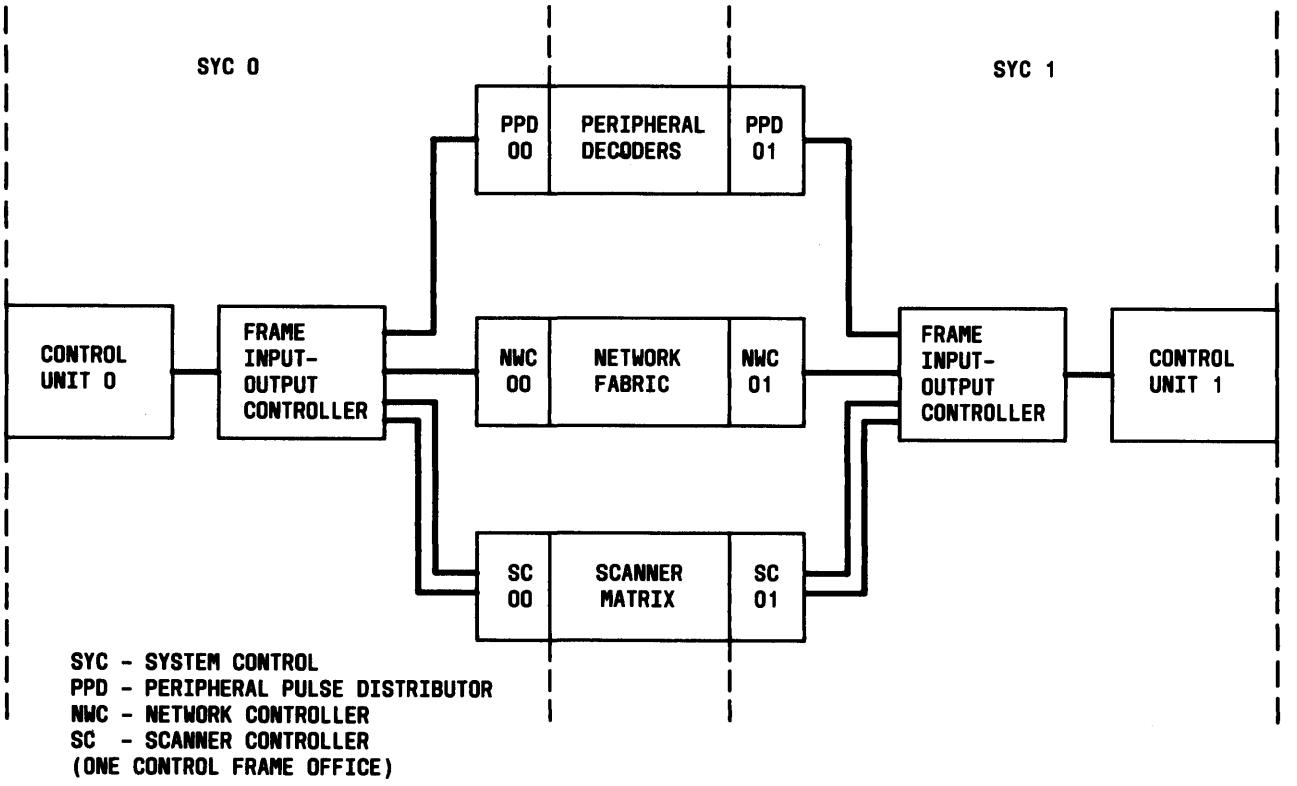



**Fig. 1—SYC 0 and SYC 1**

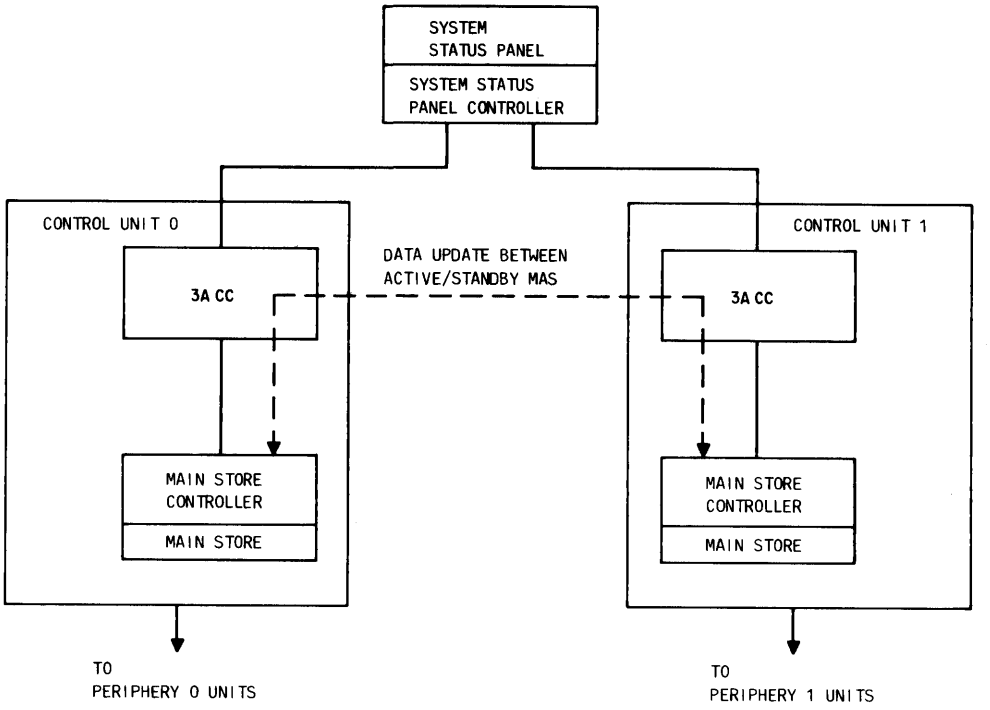



**Fig. 2—CU 0 and CU 1**

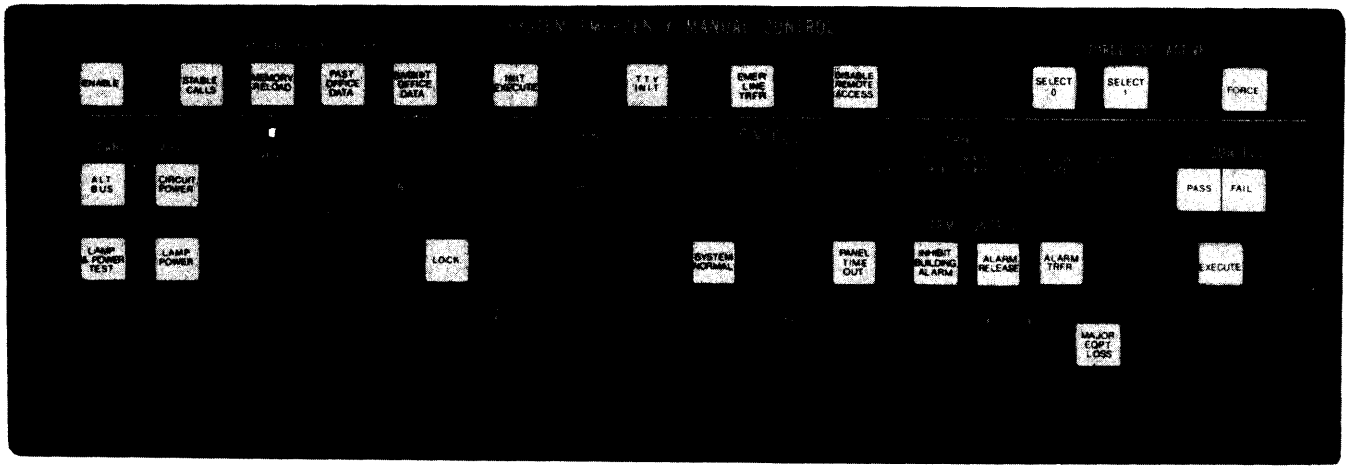



Fig. 3—System Status Panel

Fig. 4—3A CC Control Panel

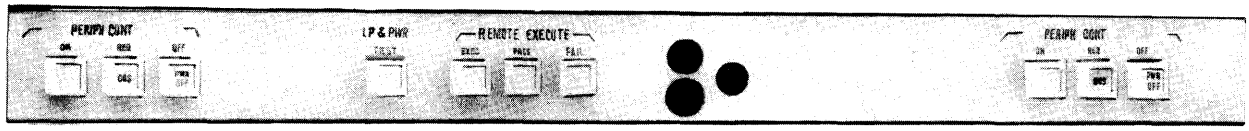



**Fig. 5—J3H001CB Control Panel**

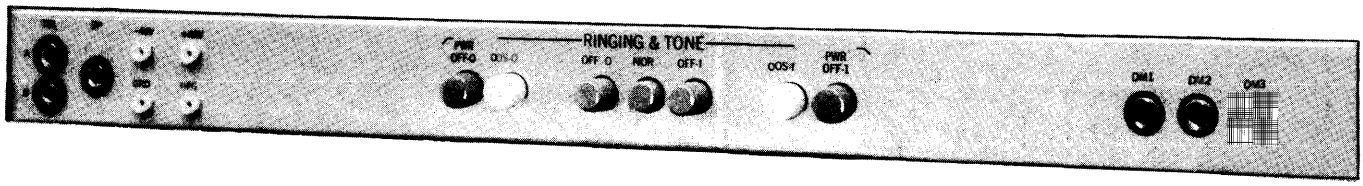



**Fig. 6—Ringing and Tone Power Control Panel**

(e) Level 5—Stable clear.

**Level 1**

**2.02** Partial clear cannot be implemented manually but occurs when:

(a) The initialization level is 1.

(b) No SYSTEM EMERGENCY MANUAL CONTROL keys are operated.

(c) A good copy of temporary store is available.

**Level 2 or 3**

**2.03** A partial clear cannot be initiated manually. It occurs as follows:

(a) Initialization level is 2 or 3.

(b) No SYSTEM EMERGENCY MANUAL CONTROL keys are operated.

(c) A good copy of temporary store is available.

***Note:*** Level 3 initialization will cause the off-line SYC peripheral controllers to be removed from service.

**Level 4**

**2.04** A transient clear initialization can be initiated manually by operating the ENABLE and INIT EXECUTE keys on the SSP (Table A). If a level 4 initialization is reached, a transient clear is initiated automatically. Transient clear will remove all transient network connections and idle all circuits not associated with stable calls. The initialization level is then set to zero causing the next initialization, if required, to be level 1. This ensures that a stable clear is not invoked automatically via initialization level count.

**Level 5**

**2.05** A stable clear initialization can be initiated manually at the SSP by operating the ENABLE, STABLE CALLS, and INIT EXECUTE keys as indicated in Table A or by operating the ENABLE, MEMORY RELOAD, and INIT EXECUTE keys. Stable clear may also occur automatically under very low probability conditions as noted in 2.06(b).

**2.06** A stable clear may be initiated for the following reasons:

(a) SYSTEM EMERGENCY MANUAL CONTROL keys on the SSP are operated.

(b) If a processor switch occurs when the on-line processor has an out-of-date store and no access is available to the other processor store, stable clear occurs automatically because all the temporary store is lost. In addition, the remainder of the stable clear zeros all peripheral pulse distributor relays, opens all first-stage network

TABLE A

MANUAL EXECUTION OF SYSTEM INITIALIZATION

| TRANSIENT CLEAR – LEVEL 4 | | |
|---|---|---|
| SSP KEY DEPRESSED | LAMP STATUS | REMARKS |
| ENABLE | ON | |
| INIT EXECUTE | ON/OFF | Lower level initialization is complete.<br>Level 4 is executed (TTY status printout and postmortem dump). |
| ENABLE | OFF | INIT EXECUTE key is depressed. |
| **STABLE CLEAR – LEVEL 5** | | |
| SSP KEY DEPRESSED | LAMP STATUS | REMARKS |
| ENABLE | ON | |
| STABLE CALLS | ON | |
| INIT EXECUTE | ON | Lower level initialization is complete.<br>Level 5 is executed (TTY status printout and postmortem dump). |
| ENABLE AND STABLE CALLS | OFF | INIT EXECUTE key is depressed. |
| INIT EXECUTE | OFF | During initialization sequence. |

crosspoints, opens all line cutoffs, and then closes cutoffs on assigned lines.

### B. Execution Times

**2.07** Approximate execution times for the initialization levels are as follows:

(a) Partial clear (levels 1, 2, and 3)—30 milliseconds each

(b) Transient clear (level 4)—20 seconds/network for up to a maximum of 8 networks

(c) Stable clear (level 5)—20 seconds/network for up to a maximum of 8 networks (approximately 2 minutes 40 seconds).

### C. Probable Causes of Critical Alarms

**2.08** The automatic emergency action functions are initiated as a result of one of the following conditions:

(a) ***Panel Time-Out:*** The PANEL TIME OUT lamp is lighted when the autonomous hardware timer in the SSP times out. It must be reset every 2 seconds by program to prevent a time-out from occurring. The PANEL TIME OUT lamp indicates that the system is not

functioning correctly and is incapable of resetting the panel timer. The PANEL TIME OUT lamp is lighted when communication between the SSP and the 3A CC stops due to a fault. Conditions resulting in loss of communication can be caused by faulty software or hardware or both. Examples are as follows:

(1) Circuit problems in the system status panel controller (SSPC)

(2) Loose cable terminations (input/output channel)

(3) Major problem in software (Note).

***Note:*** When the 3A CC program timer times out, the SSP PANEL TIME OUT lamp is not lighted immediately. A time interval (approximately 3.25 seconds) transpires indicating a major software problem has occurred, and the SSP PANEL TIME OUT lamp is lighted. Call processing may or may not be affected when the PANEL TIME OUT Lamp is lighted. Functioning call processing can be verified by making a test call. (Refer to Task Oriented Practices [TOP] Trouble Analysis Procedures.)

(b) ***Known Fault List:*** A known fault list is used to hold entries denoting the occurrence of scan matrix row failures, scan matrix column failures, and peripheral decoder point failures (nonduplicated portion of peripheral controllers). The automatic recovery program uses the full list condition to prevent automatic recovery from continuously switching from one SYC to the other. This keeps the system as sane as possible. The known fault list is also used to distinguish between controller faults and matrix faults. Immediate action is required by a craftsperson if the known fault list is full because this indicates excessive faults in the nonduplicated portion of the peripheral controllers. A critical alarm accompanies the full known fault list TTY printout.

(c) ***Multiple Faults:*** A critical condition arises when one or more peripheral controllers or CUs on both SYCs are faulty. This situation can occur when an SYC switch has initially been caused by faulty CUs and/or peripheral controllers which consequently have been marked out of service. The system is constantly monitored for a multiple fault condition. If the CU or peripheral controllers on the active SYC develop a fault and the condition causing the switch has not been corrected, the system has a multiple fault condition. The faulty units (CU, NWC, etc) are marked out of service. Software causes an initialization after a prescribed time delay to ensure that a multiple fault condition exists; if one does exist, a critical alarm sounds.

(d) ***Building Alarm (Critical, Fire):*** The fire scan point is activated upon the detection of fire, smoke, or fire alarm failure. This causes the critical alarm to sound, the BLDG (building) status lamp on the SSP to light, and a TTY message to print. Appropriate action must be taken immediately.

**2.09** The automatic emergency recovery action attempts to correct and/or localize the situation causing initialization. The results of this action may not correct the cause of the alarm indication. The SSP and TTY provide the necessary indications to determine if automatic recovery procedures have corrected the condition causing initialization. If automatic initialization is in progress, it should be given a chance to complete before manual initialization is attempted.

### D. TTY Outputs

**2.10** Certain TTY messages are printed under automatic control. A detailed explanation of each message is in the No. 3 ESS Output Message Manual (OM-3H300-01). A thorough understanding of these TTY messages provides the basis for efficient manual emergency action. Messages printed on the maintenance TTY may indicate that a fault condition is in the nonduplicated portion of the peripheral controllers (full known fault list) or that peripheral controllers and/or CUs have been removed from service due to possible fault conditions.

**2.11** The TTY messages associated with the nonduplicated portions of the peripheral controllers also provide identifiers to aid the craftsperson in locating fault conditions. When a fault condition is cleared and diagnostics indicate all tests pass (ATP), a restore-to-service request must be entered by TTY. A "cleared" message is also printed by the TTY when the fault in the nonduplicated portions of the peripheral controllers is corrected. To aid in understanding emergency action procedures, Tables B and C provide examples of operation and response by the No. 3 ESS to a

variety of situations, including failure of duplicated controllers and failure in the nonduplicated area.

### E. Postmortem Dump

**2.12** When an initialization (nonforced condition) has successfully returned the system to call processing, a postmortem dump will be printed by the TTY. The postmortem dump occurs approximately two minutes after the system has returned to call processing. The OM-3H300-01 gives a detailed explanation of the postmortem dump fields (OP POSTMORT).

### F. System Status Report

**2.13** A status report is printed on the maintenance TTY each hour which includes the general status of the system. The OM-3H300-01 gives a detailed explanation of the status report fields (OPSTAT).

## MANUAL EMERGENCY ACTION

**2.14** When the PANEL TIME OUT lamp and associated lamps (MAJOR EQPT LOSS, CU, NWC, SC, PPD, CRITICAL) remain lighted, the system may not be capable of restoring itself to a call processing state. Lack of recovery may be due to a hardware problem that cannot be detected by the fault recognition programs. The procedures to be followed in eliminating the fault condition are given in the TOP document. The SSP keys which may have to be operated and the lamps which must be observed during emergency action are shown in Tables D and E. When a solution to the problem cannot be found by maintenance personnel using TOP procedures, assistance in accordance with local policies should be requested.

### A. Manual Facilities

**2.15** The SSP is supplemented by other display and control panels as follows:

(a) 3A CC control panel

(b) Peripheral control unit power panel

(c) Ringing and Tone power control panel.

### B. 3A CC Control Panel

**2.16** The 3A CC control panel provides manual control of the 3A CC/MAS for maintenance purposes by qualified personnel (Fig. 4).

***The 3A CC control panel should be used only in an off-line system, or if the system is inoperative.***

**2.17** The 3A CC control panel includes the following items:

(a) Status indicator lamps and switches

(b) Light emitting diodes (LEDs) which display the data or address of the memory or registers

(c) Register select switches for loading or displaying purposes

(d) Switches for selecting a particular manual function.

*Note:* Items (a), (b), and (c) are optional. When the craftsperson suspects problems internal to the 3A CC/MAS area, assistance of qualified personnel should be requested.

### C. 3A CC and MAS Power Removal and Restoral

**2.18** Power can be manually removed from the off-line 3A CC and MAS by first depressing the manual key on the 3A CC panel. On the SSP the lock key must be depressed. Power can now be removed by depressing the power key on the 3A CC panel. Circuit packs can now be removed from their respective units associated with the 3A CC and MAS. Power restoral can be accomplished by reversing the above steps.

### D. Peripheral Control Unit Power Panel

**2.19** The peripheral control unit power control panel allows manual power control of the peripheral controllers. Power can be removed in order to replace a suspected faulty circuit pack identified with a peripheral controller. A suspected faulty peripheral controller is identified by recovery software and automatically removed from service. An indication of the peripheral controller that is faulty is given on the SSP. The associated SYC will indicate an out-of-service condition. Diagnostics must be manually requested. The procedures to

## TABLE B

### EXAMPLES OF DUPLICATED PERIPHERAL CONTROLLER FAILURES

| RESTORING THE CONTROLLERS VIA REQ KEY | | | |
|---|---|---|---|
| **MANUAL** | **SSP** | **TTY** | **ACTIONS** |
| X | | | Depress REQ key (J3H001CB Control Panel)<br>(Diagnostics are run on each controller) |
| | | X | M RST SC 00 COMPL |
| | | X | DGN SC 00 ATP |
| | X | | SC lamp is extinguished |
| | | X | M RST NWC 00 COMPL |
| | | X | DGN NWC 00 ATP |
| | X | | NWC lamp is extinguished |
| | | X | M RST PPD 00 COMPL |
| | | X | DGN PPD 00 ATP |
| | X | | PPD lamp is extinguished |

| MANUAL RESTORAL OF PERIPHERAL CONTROL FRAME 00 POWER | | | |
|---|---|---|---|
| **MANUAL** | **SSP** | **TTY** | **ACTIONS** |
| X | | | Depress ON key for PCF 00 (J3H001CB Control Panel) |
| | | | PWR OFF lamp for PCF 00 is extinguished |
| | | X | M RST PWR PCF 00 |
| | X | | SYC 0 UNAVAILABLE lamp is extinguished<br>and OOS lamp is lighted |
| | X | | FORCE lamp is extinguished |

TABLE B (Contd)

EXAMPLES OF DUPLICATED PERIPHERAL CONTROLLER FAILURES

| SC 00 FAILURE – SWITCH TO SYC 1 VIA TTY | | | |
|---|---|---|---|
| MANUAL | SSP | TTY | ACTIONS |
| | | | Scanner control fails (SC 00) |
| | | | Switch to SYC 1 |
| | | X | REPT SYC 1 ACT |
| | | X | ** RMV SC 00 xxxx |
| | X | | MAJOR ALARM lamp is lighted |
| | X | | SC lamp is lighted |
| | X | | MAJOR EQPT LOSS lamp is lighted |
| | X | | SYSTEM NORMAL lamp is extinguished |
| | X | | SYC 1 ACTIVE lamp is lighted; SYC 0 00S lamp is lighted |
| | X | | 00S lamp on PCF 00 is lighted (enables PWR OFF key) |

| RESTORING THE CONTROLLERS VIA THE TTY | | | |
|---|---|---|---|
| MANUAL | SSP | TTY | ACTIONS |
| X | | X | RST:SC 00 ! IP |
| | | X | DGN SC 00 ATP |
| | | X | M RST SC 00 COMPL |
| | X | | SC lamp is extinguished |
| X | | X | RST:NWC 00;UCL! IP |
| | | X | M RST NWC 00 COMPL |
| | X | | NWC lamp is extinguished |
| X | | X | RST:PPD 00;UCL! IP |
| | | X | M RST PPD 00 COMPL |
| | X | | PPD lamp is extinguished |

TABLE B (Contd)

EXAMPLES OF DUPLICATED PERIPHERAL CONTROLLER FAILURES

| REQUEST FOR CONTROLLER DIAGNOSTICS VIA TTY | | | |
|---|---|---|---|
| MANUAL | SSP | TTY | ACTIONS |
| X | X | | Depress ALARM RELEASE key |
| | X | | MAJOR ALARM lamp is extinguished (audible alarm stops) |
| X | | X | DGN: SC 00! IP |
| | | X | tt DGN SC 00 STF<br>pp-tttt-oo a bbbb bbbb bbbb bbbb |
| X | | | Go to TLM |
| X | | | Depress OFF key for PCF 00 |
| | | X | M RMV NWC 00 0000 |
| | | X | M RMV PPD 00 0000 |
| | | X | M RMV PWR PCF 00 |
| | X | | NWC and PPD lamps are lighted |
| | X | | SYC 0 UNAVAILABLE lamp is lighted |
| | X | | FORCE lamp is lighted |
| | | | PWR OFF lamp for PCF 00 is lighted |
| X | | | Replace the faulty pack |

be followed in eliminating the fault condition are given in the TOP document. The resultant TTY printout can be interpreted by referring to the Trouble Locating Manual (TLM). Manual power control must now be exercised in conjunction with repair procedures.

**2.20** The OOS lamp located on the power control panel is lighted when the peripheral controller is removed from service. When the OOS lamp is lighted, power can be removed from the peripheral controllers. Peripheral controllers removed from service via manual power control are placed in the unavailable state. The associated SYC will indicate the unavailable condition on the SSP. The peripheral controllers removed from service must be manually restored via TTY message.

### E. Peripheral Controller Power Removal and Restoral

**2.21** Power can be manually removed or restored to the peripheral controllers by operating nonlocking keys located on the power control panel of the peripheral control frame (PCF) (Fig. 5).

TABLE C

EXAMPLES OF NONDUPLICATED FAILURES

| FAULTY PPD 00 REMOVED FROM SERVICE – SYC 0 OUT OF SERVICE – DIAGNOSTICS REQUESTED VIA TTY | | | |
|---|---|---|---|
| MANUAL | SSP | TTY | ACTIONS |
| X | X | | Depress ALARM RELEASE key |
| | X | | MINOR ALARM lamp is extinguished |
| X | | X | RMV:PPD 00 ! IP |
| | | X | M RMV PPD 00 COMPL |
| | X | | PPD lamp is lighted |
| | X | | SYC 0 STANDBY lamp is extinguished; OOS lamp is lighted |
| | X | | SYSTEM NORMAL lamp is extinguished |
| | X | | MAJOR EQPT LOSS lamp is lighted |
| | | | PCF 00 00S lamp is lighted (enables OFF key) |
| X | | X | DGN:PPD 00 ! IP |
| | | X | DGN PPD 00 STF<br>pp-tttt-oo a bbbb bbbb bbbb bbbb |
| X | | | Go to TLM |
| X | | | Replace the faulty pack |

| PPD RESTORED – REPORT TROUBLE IN PPD VIA TTY | | | |
|---|---|---|---|
| MANUAL | SSP | TTY | ACTIONS |
| | | X | RST:PPD 00 ! IP |
| | X | | M RST PPD 00 COMPL |
| | X | | PPD lamp is extinguished |
| | X | | SYC 0 00S lamp is extinguished; STANDBY lamp is lighted |
| | X | | M REPT TRBL PD 0 PR 201 TRBL CLR |

Table F describes the operations and functions. Power removal from all duplicated peripheral controllers is requested by depressing the REQ OOS key of peripheral control unit 0 or 1. Peripheral control units servicing the active SYC will not respond to the request. The standby SYC will respond by lighting the OOS lamp. The PWR OFF (power off) key can now be depressed. The PWR OFF lamp is lighted, and the OOS lamp remains lighted. When the TLM designated circuit

TABLE C (Contd)

EXAMPLES OF NONDUPLICATED FAILURES

| PERIPHERAL DECODER (PD) FAILURE VIA TTY | | | |
|---|---|---|---|
| MANUAL | SSP | TTY | ACTIONS |
| | | | PD 0 PT 201 fails |
| | | | REPT SYC 1 ACT |
| | X | | SYC 0 STANDBY lamp is lighted; SYC 1 ACTIVE lamp is lighted |
| | | X | *REPT PD 0 PT 201 TRBL |
| | X | | MINOR ALARM lamp is lighted |

packs in the associated peripheral controllers are replaced, power can be restored by depressing the ON key (PWR OFF lamp is extinguished). Diagnostics should be manually reinitiated on the suspected faulty peripheral controller. If diagnostics indicate an ATP, the peripheral controllers can be manually restored to service. The OOS lamp is extinguished when the peripheral controllers are restored to service.

### F. Ringing and Tone Plant

**2.22** The generating functions of the ringing and tone (RT) plant are duplicated. The halves of the RT plant are completely independent of the SYC (RT0 can be used with SYC 1; RT1 can be used with SYC 0) with each containing ringing, tone, and interrupter generators. Dedicated scan points for RT0 and RT1 serve as indicators under software control to determine the current status of duplicated portions of the RT plant. The RT plants can be controlled manually from the control panel or by TTY. The procedures to be followed in the event of an RT plant fault are given in the TOP document.

### G. Ringing and Tone Power Control Panel

**2.23** The RT plant power can be manually controlled from the RT power control panel (Fig. 5). Keys associated with power control are software-monitored to determine whether a key has been depressed. If a PWR OFF (power off) key is depressed, the appropriate RT plant becomes unavailable. A power removal message is printed by the TTY. If the NOR (normal) key is depressed, the status of the associated RT is changed from unavailable to out of service and a power restoral output message is printed by the TTY. No diagnostics are executed. An example of RT plant failure and TLM use are shown in Table G.

**2.24** If both RT plants become out of service, a critical alarm is sounded. Software will automatically switch to the better RT plant. The RT plant is dedicated to a bus which transmits required tones to each network frame. This transmission is software-checked each time an RT plant switch is performed or a failure is detected.

### H. Switching of Ringing and Tone Plants

**2.25** A request to change the active-standby status of the RT plant is initiated by a TTY input message. (Refer to the input manual.) RT plant status is software-checked to determine whether switching is allowed. When the RT plant requested to switch to active is out of service or unavailable, an NG (no good) message is printed following the request switch message.

TABLE D

SYSTEM EMERGENCY MANUAL CONTROL KEYS AND LAMPS

| KEY/LAMP DESIGNATION | LAMP COLOR | INDICATION OR FUNCTION |
|---|---|---|
| ENABLE (Key/Lamp) | Red | When operated, allows initialization to be made by operation of any, none, or all of the SYSTEM INITIALIZATION keys and the INIT EXECUTE key. |
| STABLE CALLS (Key/Lamp) (Note) | Red | When operated, causes a zeroing (clearing) of all stable data and transient data in temporary store. |
| MEMORY RELOAD (Key/Lamp) (Note) | Red | When operated, causes a reloading of main memory from the tape system. |
| PAST OFFICE DATA (Key/Lamp) (Note) | Red | When operated, causes the more current of the two back-up copies of office data to be loaded from tape into main memory. |
| BACKDT OFFICE DATA (Key/Lamp) (Note) | Red | When operated, causes the older copy of office data to be loaded from tape into main memory. |
| INIT EXECUTE (Key/Lamp) | Red | When operated, will generate a single MRF pulse to both CCs. ENABLE key must be activated before this key. |
| TTY INIT (Key/Lamp) | Red | When operated, causes the clearing of the TTY memory area via programmed routine. |
| EMER LINE TRFR (Key/Lamp) | Red | When operated, provides designated customer lines temporary manual service under emergency conditions. The lines are terminated directly to an operator position. |
| DISABLE REMOTE ACCESS Key/Lamp | Red | When operated, prevents control from remote office. The remote office still gets visual display of system status but does not exercise control. |
| SELECT 0 (Key/Lamp) | Red | When operated, SYC 0 may be forced on-line. |
| SELECT 1 (Key/Lamp) | Red | When operated, SYC 1 may be forced on-line. |
| FORCE (Key/Lamp) | Red | When operated, will force the selected SYC on-line. When released, restores system to software. |

*Note:* Execution occurs only after INIT EXECUTE (Key/Lamp) is operated.

## TABLE E

## SYSTEM STATUS AND CONTROL KEYS, LAMPS, AND LIGHT EMITTING DIODES

| SUBAREA GROUPING | KEY/LAMP DESIGNATION | LAMP COLOR | INDICATION OR FUNCTION |
|---|---|---|---|
| PANEL POWER | ALT BUS (Key/Lamp) | Red | Two buses, A and B, provide voltage inputs (+24 volts and −48 volts) between the maintenance frame power unit and the system status relay unit. Under normal conditions, the +24 volt A and −48 volt A are the primary voltage buses. When ALT BUS relay is operated by a power loss, the voltage inputs are supplied by the alternate buses (+24 volt B and −48 volt B) and the lamp lights. When the key is operated and the lamp lights, power is available at the alternate bus. |
| | CIRCUIT POWER (Key/Lamp) | Green | When operated, removes power (+3 volts) from the logic packs associated with the panel. |
| | LAMP POWER (Key/Lamp) | Green | On-off switch used to supply 24 volts to the panel power lamp/LED circuitry. When operated, power is reduced to a level that lamps/LEDs will not operate. |
| | LAMP & POWER TEST (Key) | | When operated, causes all lamps/LEDs to light. |
| SYC 0 or SYC 1 Status | LOCK (Key/Lamp) | Red | Prevents the off-line SYC from placing itself on-line or the on-line SYC from placing itself off-line. |
| | ACTIVE (LED) | Green | Gives visual indication of which SYC is on-line and processing. |
| | STANDBY (LED) | Green | Gives visual indication of which SYC is off-line and that the SYC is capable of being switched on-line (circuits working and temporary store is up to date). |
| | OUT OF SERVICE (LED) | Red | Gives visual indication that SYC is off-line for some maintenance or diagnostic purpose. Can be switched on-line but ***only under emergency conditions.*** (Temporary store is not up to date.) |

TABLE E (Contd)

SYSTEM STATUS AND CONTROL KEYS, LAMPS, AND LIGHT EMITTING DIODES

| SUBAREA GROUPING | KEY/LAMP DESIGNATION | LAMP COLOR | INDICATION OR FUNCTION |
|---|---|---|---|
| | UNAVAILABLE (LED) | Red | Gives visual indication that SYC is off-line and cannot be switched on-line without manual effort onsite or at SCC. |
| ALARMS | CRITICAL (LED) | Red | A visual indication of a total system loss or that a major portion or feature of the system is lost. *Emergency response or craft action is required.* |
| | MAJOR (LED) | Red | A visual indication of a partial loss of the system capability or a failure that could result in a critical condition. Immediate response or craft action is required. |
| | MINOR (LED) | Amber | A visual indication of a minor loss of the system capability or some condition requiring the attention of maintenance personnel (but not immediately). |
| | MAJOR POWER (LED) | Red | A visual indication of a major failure in the power equipment. Immediate response or craft action is required. |
| | MINOR POWER (LED) | Amber | A visual indication of a minor failure in the power equipment. Attention required but not immediately. |
| | FUSE (LED) | Red | A visual indication that a fuse has operated. |
| | ALARM CIRCUIT (LED) | Red | A visual indication of a failure within the office alarm circuit or battery supply. |
| | SERVICE LOSS (EM ACT) | Red | Indicates a manual or automatic initialization occurrence. Reset in 2 minutes if not set by another initialization pulse. |
| ALARM CONTROL | INHIBIT BUILDING ALARM (Key/Lamp) | Red | When set, inhibits all but the building fire alarm. |
| | ALARM RELEASE (Key/Lamp) | Red | Requests restoration of critical, major, and minor alarm conditions to normal. |

TABLE E (Contd)

SYSTEM STATUS AND CONTROL KEYS, LAMPS, AND LIGHT EMITTING DIODES

| SUBAREA GROUPING | KEY/LAMP DESIGNATION | LAMP COLOR | INDICATION OR FUNCTION |
|---|---|---|---|
| | ALARM TRFR (Key/ Lamp) | White | Causes alarms to be transferred to a remote location or indicates that certain alarms are being transferred. |
| TEST CONTROL | EXECUTE (Key/Lamp) | White | Used to control the execution of repetitive or step functions entered via a TTY input message. |
| | PASS (Lamp) | Green | Indicates a test pass condition. |
| | FAIL (Lamp) | Red | Indicates a test failure condition. |
| MISCELLANEOUS LEDS and Lamps | SYSTEM NORMAL (Lamp) | Green | Indicates that all critical functions are normal. |
| | PANEL TIME OUT (Lamp) | Red | Indicates that the panel timer has timed out. A time-out (approximately 3 seconds) results in a critical alarm. Timer is usually reset by message from 3A CC every 100 msec. |
| | MAJOR EQPT LOSS (Lamp) | Red | Visual indication of equipment trouble or failure associated with one of the next seven LEDs. |
| | AMA (LED) | Red | Automatic message accounting trouble. |
| | MISC (LED) | Red | Unassigned Function. |
| | RT (LED) | Red | Ringing and tone plant trouble. |
| | PPD (LED) | Red | Peripheral pulse decoder trouble. |
| | SC (LED) | Red | Scanner controller trouble. |
| | NWC (LED) | Red | Network controller trouble. |
| | CU (LED) | Red | Control unit trouble. |
| | FORCED (LED) | Amber | A unit of equipment has manually been placed off-line. |
| | BLDG (LED) | Amber | Building alarm is present. |
| | DSP (LED) | Amber | Dynamic service protection is in effect. |

TABLE E (Contd)

SYSTEM STATUS AND CONTROL KEYS, LAMPS, AND LIGHT EMITTING DIODES

| SUBAREA GROUPING | KEY/LAMP DESIGNATION | LAMP COLOR | INDICATION OR FUNCTION |
|---|---|---|---|
| | OVLD ANN (LED) | Amber | Announcement given instead of reorder tone when on overload condition exists and proper TTY input message has been entered. |
| | SPARE (NRP ACT) | Amber | Nonresident program active. |
| | TDC (LED) | Red | Tape/data controller trouble. |
| | TTYC (LED) | Red | Teletypewriter controller trouble. |
| | SVC LIM (LED) | Red | Number of service circuits taken out of service has exceeded acceptable limit. |
| | TRK LIM (LED) | Red | Number of trunks taken out of service has exceeded acceptable limit. |
| | 0 through 23 (LEDs) | Green | Visual means for display for memory words and scanner rows. |

**2.26** When the TTY message requesting an RT switch includes an unconditional (UCL), the RT plant will switch, ignoring the current status of the RT plant that is switching to active.

### I. SSP Diagnostic Aid

**2.27** When diagnostics are being run, the phase and test(s) associated with that phase are displayed by the SSP buffer lamps (in binary). The first 16 lamps indicate test information. The next 5 lamps indicate the current phase.

### J. ▶Remote Recorded Overload Announcement Feature

**2.28** The remote recorded overload announcement feature (RROANN) is manually invoked whenever unusual circumstances (weather, emergencies, etc) interrupt normal call processing. This feature is used only to check or record an overload announcement used to inform customers of the overload condition (Fig. 7). This feature can be used with 7A or 13A announcement sets.

**2.29** When the craftsperson needs to monitor the current overload announcement, a call is made from the remote location to the No. 3 ESS office via autoconnect. A special telephone number is recognized by the system as a trigger number. Autoconnect will initiate routing the call to either a busy condition or a high tone. If busy tone is returned to the remote location, the call must be attempted again until high tone is returned. After receiving high tone indicating completion, the remote location is then to go on-hook within 30 seconds of the completion but not less than 10 seconds of receiving high tone. (Call may fail if user goes on-hook before 10 seconds after receiving high tone). Autoconnect via normal call processing originates a call to the remote location completing the security sequence. If callback is not completed within 2 minutes, another attempt by the craftsperson at the remote location should be made (Fig. 8).

TABLE F

PERIPHERAL CONTROL PANEL POWER KEYS

| KEY DEPRESSED | STATUS OF ANY PERIPHERAL CONTROLLER ASSOCIATED WITH KEY | OOS LAMP | PWR OFF LAMP | SYSTEM ACTION |
|---|---|---|---|---|
| ON | Active | Off | Off | None |
| REQ | Active | Off | Off | None |
| OFF | Active | Off | Off | None |
| ON | Standby | Off | Off | None |
| REQ | Standby | Off | Off | Associated controllers are marked out of service. Turn on OOS lamp. PWR OFF key is enabled. |
| OFF | Standby | Off | Off | None |
| ON | Out of service | On | Off | None |
| REQ | Out of service | On | Off | Diagnostics are run on any peripheral controller marked out of service on this PCF. Any peripheral controller which passes diagnostics will be restored to service. If all diagnostics pass, the OOS lamp is extinguished. |
| OFF | Out of service | On | Off | Power is turned off. The PWR OFF lamp is lighted. The associated SYC is marked unavailable. |
| ON | Unavailable | On | On | Power is turned on. The PWR OFF lamp is extinguished. The associated SYC becomes out of service. |
| REQ | Unavailable | On | On | None |
| OFF | Unavailable | On | On | None |
| REQ and OFF | Active | Off | Off | Do not perform this action. |
| REQ and OFF | Standby | Off | Off | A major alarm sounds. Associated peripheral controllers are marked out of service. OOS lamp is lighted. PWR OFF lamp is lighted. Power is turned off. The associated SYC is marked unavailable. |

TABLE G

EXAMPLE OF RINGING AND TONE PLANT FAILURE

| MANUAL | SSP | TTY | SYSTEM ACTIONS |
|---|---|---|---|
| | | | RT 0 fuse blown |
| | | X | REPT RT 1 ACT |
| | | X | ** RMV RT 0 xxxx |
| | X | | RT lamp is lighted |
| | X | | MAJOR ALARM lamp is lighted |
| | | | Miscellaneous power frame OOS-0 lamp is lighted |
| X | | | Depress ALARM RELEASE key |
| | X | | MAJOR ALARM lamp is extinguished |
| X | | X | DGN:RT 0! IP |
| | | X | tt DGN RT 0 STF<br>01-0001-01 0 0001 0000 0000 |
| X | | | Refer to the Trouble Locating Manual (Note) |
| X | | | Replace blown fuse |
| X | | X | RST:RT 0! |
| | | X | DGN RT 0 ATP |
| | | X | REPT RT 0 ACT |
| | | X | M RST RT 0 COMPL |
| X | | | RT lamp is extinguished |
| | | | Miscellaneous power frame OOS-0 lamp is extinguished |

*Note:* A ringing and tone plant Trouble Locating Manual example is as follows:

| | |
|---|---|
| 01 0001 | Fuse Check |
| 01 0001 01 | 0 0001 00000000 0000 Fuses for RT0 Blown Power Fuse |

**2.30** After callback has been completed, the current overload announcement is played back to the craftsperson (Fig. 8). If the announcement is acceptable the remote location goes on-hook during the abandon interval. If a new overload announcement is to be recorded, the craftsperson remains off-hook during a silent interval, the beginning of which starts a timing interval. It is during this period that the remote location has the opportunity to abandon the wording attempt by going on-hook,

therefore not changing the overload announcement. By remaining off-hook the current overload announcement is erased.

**2.31** Upon entering the erase mode, a reorder tone is transmitted to the remote location signaling the start of the announcement erase operation. A minimum of 5 seconds of reorder tone precedes the actual erasing so the announcement machine (7A or 13A) can return to the beginning of the recording. When reorder tone is removed, the remote location has 12 seconds in which to record a new overload announcement. If the remote location goes on-hook before the overload announcement is recorded, the overload announcement is blank. After the 12-second record interval a time-out occurs and the talk path is disconnected. To monitor the new overload announcement the procedure must be repeated at the remote location by the craftsperson.◀

## 3. REFERENCES

**3.01** The following is a list of sections which are relative to this section:

**TOP**

| SECTION | TITLE |
|---|---|
| 233-142-100 | (Section 095 Trouble Indicator List.... and others) |

**HARDWARE**

| SECTION | TITLE |
|---|---|
| 233-110-000 | Control Complex Description, No. 3 ESS |
| 233-110-200 | Control Complex Theory of Operation, No. 3 ESS |
| 254-300-110 | ▶3A Central Control Description, 3A Common Systems |
| 254-300-120 | 3A Central Control Theory of Operation, 3A Common Systems |
| 254-300-180 | System Status Panel and System Status Panel Controller, Description and Theory of Operation, 3A Common Systems◀ |

**SOFTWARE**

| SECTION | TITLE |
|---|---|
| 233-150-100 | General Description, No. 3 ESS Software Subsystem Description |
| 233-151-105 | Call Processing, No 3 ESS Software Subsystem Description |
| 233-153-105 | ▶Programmed Maintenance Aids, No. 3 ESS Software Subsystem Description◀ |
| 233-153-130 | Initialization and Processor Fault Recovery, No. 3 ESS Software Subsystem Description |
| 233-153-140 | Peripheral Unit Fault Recovery, No. 3 ESS Software Subsystem Description |

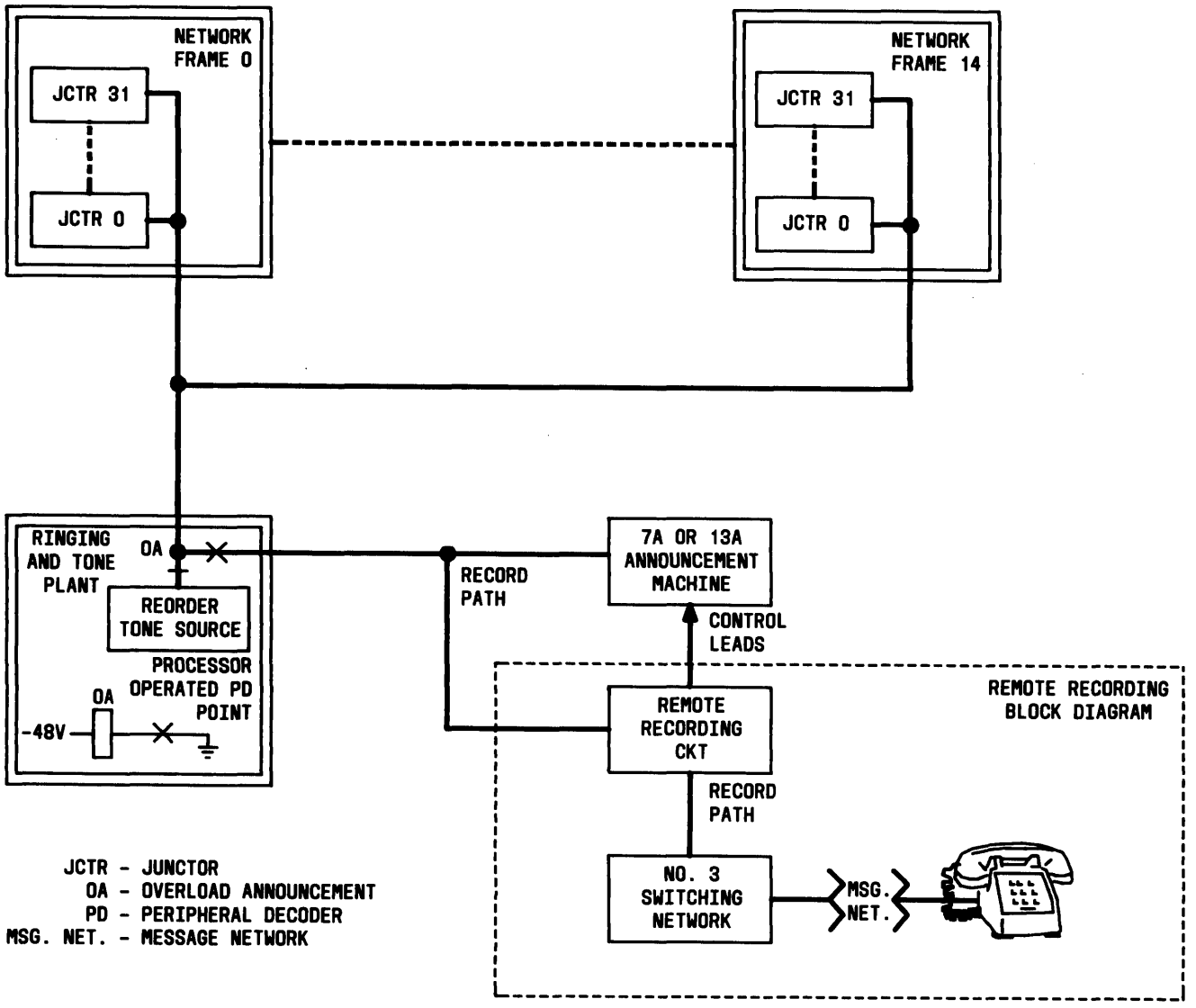
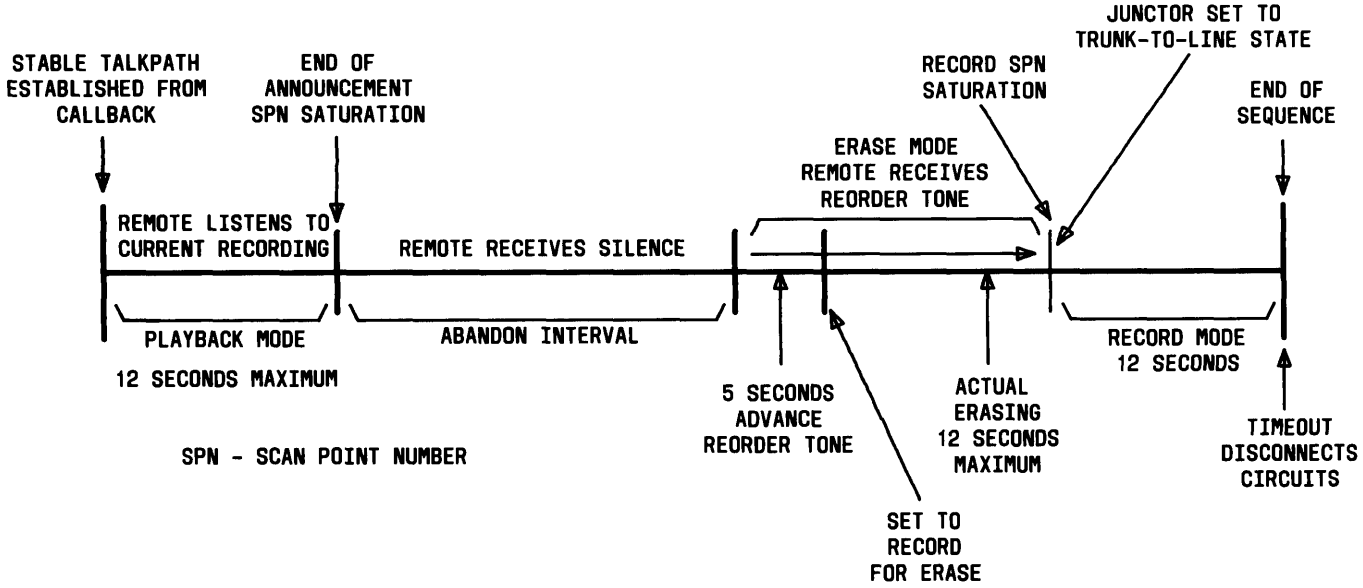



Fig. 7—Block Diagram for Recorded Overload Announcement Feature




NOTE: OVERLOAD ANNOUNCEMENT MUST BE DISABLED TO PERMIT OPERATION BEYOND THE PLAYBACK MODE.

**Fig. 8—RROANN Operational Sequence**