NO. 2 SWITCHING CONTROL CENTER SYSTEM
NO. 1 ELECTRONIC SWITCHING SYSTEM APPLICATION
EMERGENCY ACTION PROCEDURES

CONTENTS PAGE

1. GENERAL

1.01 This section describes the emergency action procedures used for a No. 2 Switching Control Center System (SCCS) to recover a No. 1 Electronic Switching System (ESS) from critical hardware and software failures.

1.02 This section has been reissued for the following reasons:

(a) To add instructions for retiring the audible critical alarm (Fig. 2, Sheet 1)

(b) To move instructions for entering monitor mode and full access mode from preliminary procedures to Fig. 2, Sheet 2

(c) To change the MONITOR input message to ONLINE

(d) To add the central office selector and junction unit (COSJU)

(e) To move the procedure for zeroing the RC area

(f) To make minor editorial changes.

Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The following abbreviations are used in this section:

CC	Central control
CI	Critical indicator
CIP	Critical indicator panel
CO	Central office
COSU	Central office select unit
COSJU	Central office selector and junction unit
CRT	Cathode ray tube in workstation
CSB	Call store bus
EA	Emergency action
EM	Emergency
ESS	Electronic switching system
INT	Interrupt
MCC	Master control center
PH	Phase
PSB	Program store bus
PWR	Power
RC	Recent change
SCC	Switching control center

SCCS	Switching control center system
SP	Signal processor
TTY	Teletypewriter

2. DESCRIPTION

2.01 Manual emergency action procedures may be performed from a No. 2 SCCS by using a No. 1 ESS SCC console, a cathode ray tube (CRT), and a keyboard. The console is effectively a remote, partial MCC alarm display and control panel. The CRT and keyboard are effectively a remote maintenance TTY.

2.02 No. 1 ESS faults may be either equipment (hardware) or program (software) problems. When No. 1 ESS faults cause maintenance interrupts, the system automatically executes maintenance fault recognition programs which try to switch out any faulty unit and reconfigure an operable system. If fault recognition programs fail to recover the system, a hardware problem could exist and prevent the fault recognition programs from being executed successfully. Such faults can be corrected by emergency action performed at a No. 2 SCCS. Software troubles may result in repeated maintenance interrupts, repeated attempts by one or more audits to correct the problem, or attempts to initiate complete regeneration of large areas of call store. This memory regeneration is called reinitialization and is done in progressive stages called phases. Each phase performs actions which are more drastic than those of the previous phase.

2.03 When the repeated time out (RPTD T OUT) lamp on the No. 1 ESS SCC console is lighted, the system may not be capable of regenerating memory or restoring itself to a call processing state. Continual phasing without recovery may be caused by a hardware problem that cannot be detected by the fault recognition program. No. 2 SCCS personnel must reconfigure the equipment manually until a working configuration is established as indicated by the RPTD T OUT lamp being extinguished. The keys which may have to be operated and the lamps which must be observed during the following emergency action procedures are explained in Section 190-113-110.

2.04 No. 2 SCCS personnel are alerted to system problems by audible alarms. Upon hearing an alarm, personnel should check the alarm video monitor or the critical indicator panel (CIP) to see which office is in trouble. Abnormal message indications on the alarm video monitor or a lighted SYS EMER lamp on the CIP indicates that severe system faults are being experienced by the No. 1 ESS office. TTY messages from the office may give additional information. Manual emergency action procedures are used only when a No. 1 ESS being served by a No. 2 SCCS fails to automatically assemble a working configuration after a previously working configuration has failed.

2.05 The procedures in this section are similar to the emergency action and system reinitialization procedures for No. 1 ESS in Sections 231-111-301 and 231-113-301. These procedures differ because they must be performed from a remote location, the SCC.

2.06 The basic plan of the emergency action procedure is shown in the abbreviated flowchart, Fig. 1, and outlined in the following steps. (Detailed procedures that will be used for emergency action recovery are in Fig. 2.)

(1) Check telemetry.

(2) Request next higher phase. Repeat through phase 7.

(3) If the repeated time out lamp on the No. 1 ESS SCC console is lighted, perform step 4. If extinguished, go to step 5.

(4) Try to isolate the trouble and configure an operational system by switching CCs, stopping the active SPs, and turning off the PS and CS buses selectively. If an operational configuration cannot be found, request a phase 7. If the system does not recover, continue to step 5. (If step 5 has already been performed, go to step 6).

(5) Deactivate the RC area and request another phase 7. If this step does not recover the system, perform step 4. (If step 4 has already been performed, continue to step 6).

(6) Operate EA DIS T OUT and repeat step 4 (and no other steps) one time and continue to step 7.

(7) Request a phase to zero all of the RC area. Maintenance interrupts may be left inhibited

or uninhibited as selected. If the system does not recover, dispatch personnel to the CO.

2.07 Procedures in this section require that the CRT keyboard and the No. 1 ESS SCC console be used to remotely control a No. 1 ESS MCC. The system must be in monitor mode for the CRT keyboard to be used and in full access mode for the No. 1 ESS SCC console to be used. The monitor mode is entered before full access mode to allow the user to observe central office TTY messages before connecting the No. 1 ESS SCC console. The procedures for entering both modes are included in Fig. 2; the procedures for leaving both modes are given in the SCC restoral procedure, Part 5.

3. PRELIMINARY PROCEDURES AND PRECAUTIONS

3.01 ***In monitor mode, the workstation CRT and keyboard are effectively a remote TTY with direct, 2-way, real-time communication with the selected No. 1 ESS TTY channel. Use messages from the No. 1 ESS input message manual, not from the SCCS input message manual.***

3.02 ***In full access mode, the No. 1 ESS SCC console is effectively a remote partial MCC alarm display and control panel, and its operation controls the selected No. 1 ESS office.***

3.03 If the minicomputer is out of service, the CRT cannot access the TTY channel. In this case a workstation TTY has to be connected to the COSJU or junction box. In the A equipment cabinet, the ASCC/BSCC switch on the AR745 (or AR745B) driver pack for the selected channel must be set to BSCC. After a No. 1 ESS SCC control console is attached and the full access (FA) key is depressed, the workstation TTY has full transmit and receive capabilities for the selected No. 1 ESS office.

3.04 If information on the alarm video monitor, workstation CRT, or No. 1 ESS SCC console indicates that the trouble is in the central office, the SCC may elect to dispatch personnel to the office concurrently with restoral efforts in the SCC to help reduce or avoid possible periods of system outage.

4. EMERGENCY ACTION PROCEDURES

4.01 To perform emergency action procedures, perform the steps in the detailed flowchart, Fig. 2.

5. SCC RESTORAL PROCEDURE

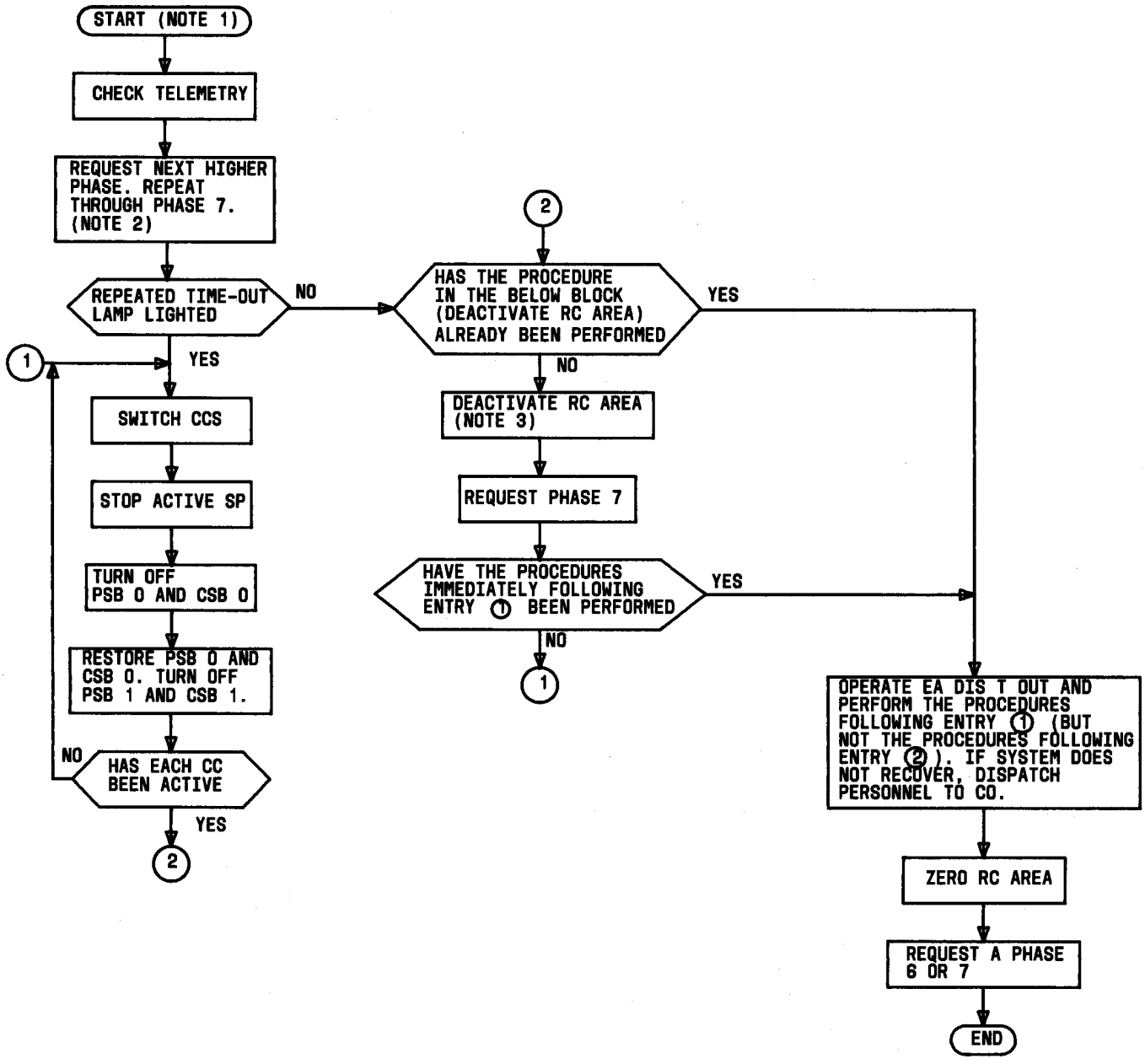
5.01 To leave the monitor mode, press special character key RUBOUT or DEL on the CRT keyboard. The CRT keyboard will no longer control the No. 1 ESS TTY but will return to the SCCS browse mode. Any subsequent characters typed on the CRT keyboard will be processed as new SCCS input messages.

> ***Note:*** The No. 2 SCCS returns to browse mode instead of monitor mode after the RUBOUT or DEL key is pressed because the procedure in this section uses the ONLINE! message to enter the monitor mode from the browse mode.

5.02 To leave the full access mode, operate the power switch on the No. 1 ESS SCC console to the OFF position and operate the CHAN RLS key on the central office selector junction unit (COSJU). The FA key and the lighted dial indicator lamps should extinguish. The SCC console will no longer change the configuration on the alarm, display, and control panel on the No. 1 ESS MCC. However, any keys that are left operated will cause the E2A telemetry remote unit to maintain the configuration that was previously selected on the console.

5.03 To disconnect the No. 1 ESS SCC console from the workstation, make sure that the console power switch is set to the OFF position and disconnect the console plug from the COSJU.

> ***Note:*** Some offices may be equipped with a central office select unit (COSU) and a cable junction unit instead of the COSJU.



NOTE 1: STEPS ARE SHOWN WITH THE ASSUMPTION THAT THE SYSTEM DOES NOT RECOVER EXCEPT AS NOTED. SYSTEM RECOVERY NORMALLY LEADS TO AN END OF PROCEDURE.

NOTE 2: IF SYSTEM RECOVERS, RESTORE FLIP-FLOPS THAT WERE SET TO INHIBIT INTERRUPT LEVELS D, E, AND F.

NOTE 3: IF SYSTEM RECOVERS, RC ERROR MUST BE CORRECTED BEFORE RC AREA IS REACTIVATED.

CAUTION: THIS IS AN ABBREVIATED FLOWCHART THAT SHOWS A SIMPLIFIED VIEW OF EMERGENCY ACTION PROCEDURES. DETAILED PROCEDURES ARE GIVEN IN FIG. 2.

Fig. 1—Abbreviated Flowchart

NOTES:
1. START THE FOLLOWING PROCEDURE IF THE CRITICAL ALARM IS SOUNDING, THE CRITICAL AND SYS EMER INDICATORS ON THE CIP ARE LIGHTED, OR A CRITICAL INDICATION IS ON THE ALARM VIDEO MONITOR. THIS PROCEDURE ASSUMES THAT THE TELEMETRY AUDIBLE ALARM IS INHIBITED.
2. ALARM HISTORY IS DISPLAYED AS RESULT OF RETIRE MESSAGE. DISPLAY CAN BE ENDED EARLY BY DEPRESSING RUBOUT KEY.

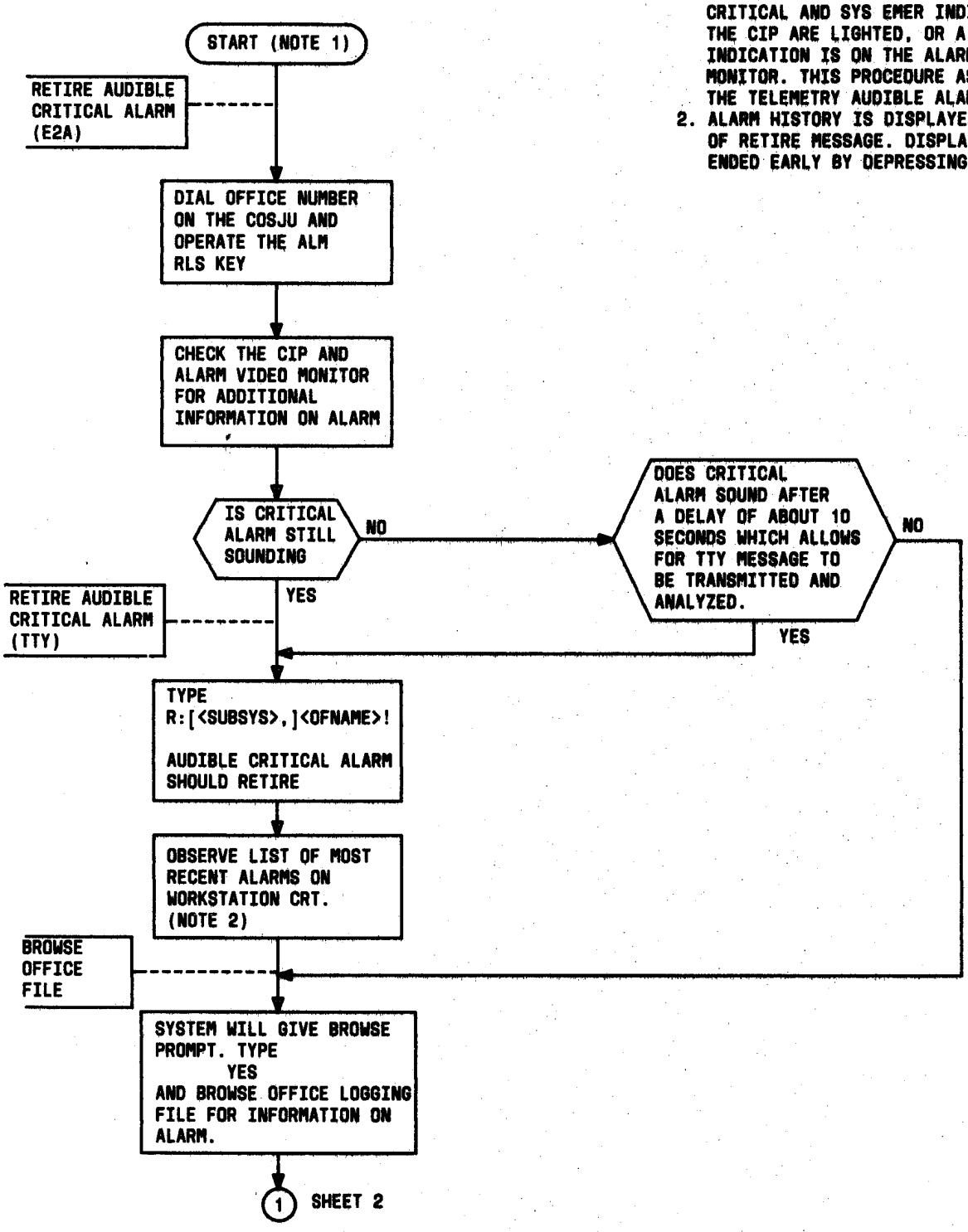


Fig. 2—Emergency Action Flowchart (Sheet 1)

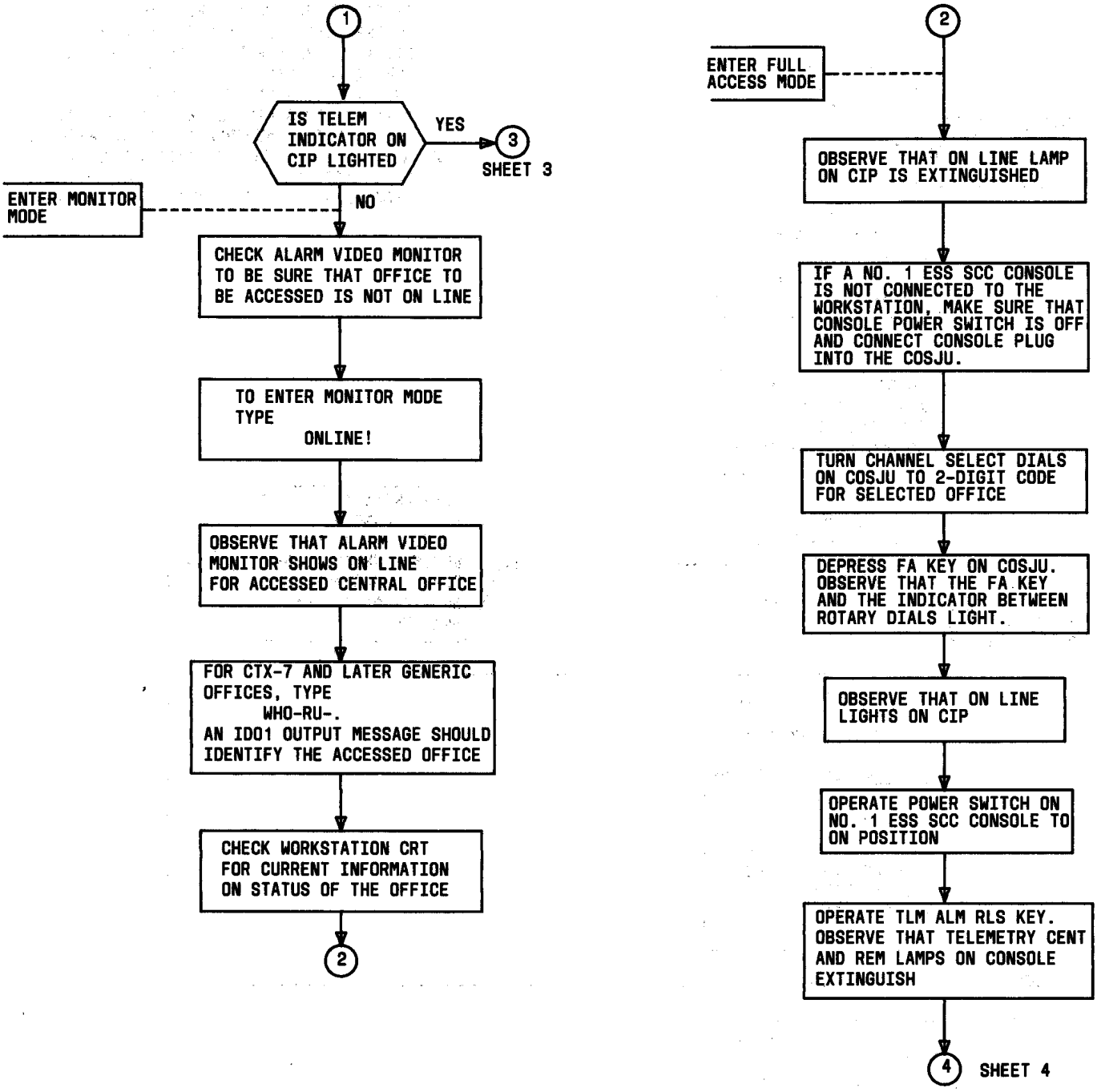
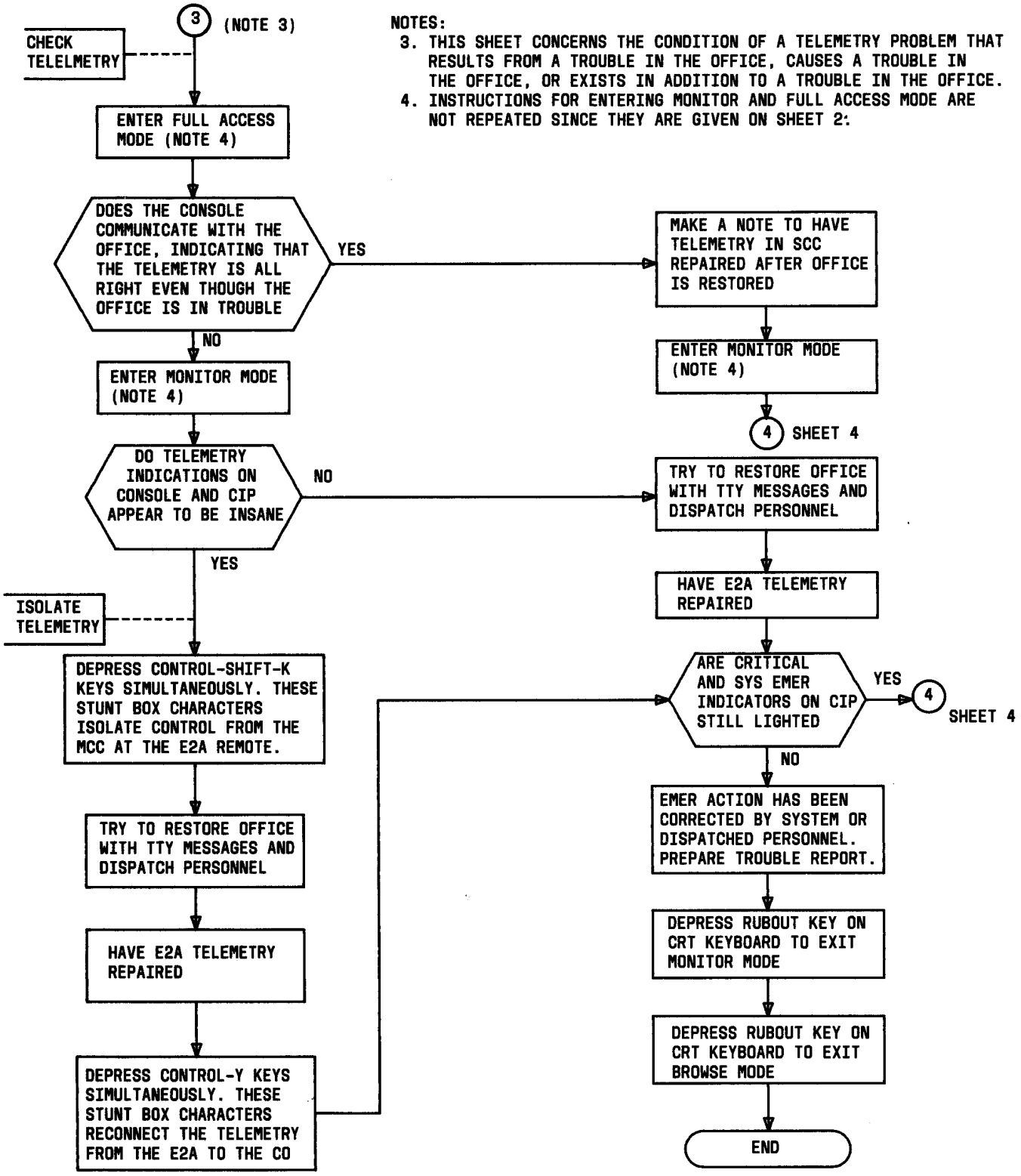


Fig. 2—Emergency Action Flowchart (Sheet 2)



NOTES:
3. THIS SHEET CONCERNS THE CONDITION OF A TELEMETRY PROBLEM THAT RESULTS FROM A TROUBLE IN THE OFFICE, CAUSES A TROUBLE IN THE OFFICE, OR EXISTS IN ADDITION TO A TROUBLE IN THE OFFICE.
4. INSTRUCTIONS FOR ENTERING MONITOR AND FULL ACCESS MODE ARE NOT REPEATED SINCE THEY ARE GIVEN ON SHEET 2.

Fig. 2—Emergency Action Flowchart (Sheet 3)

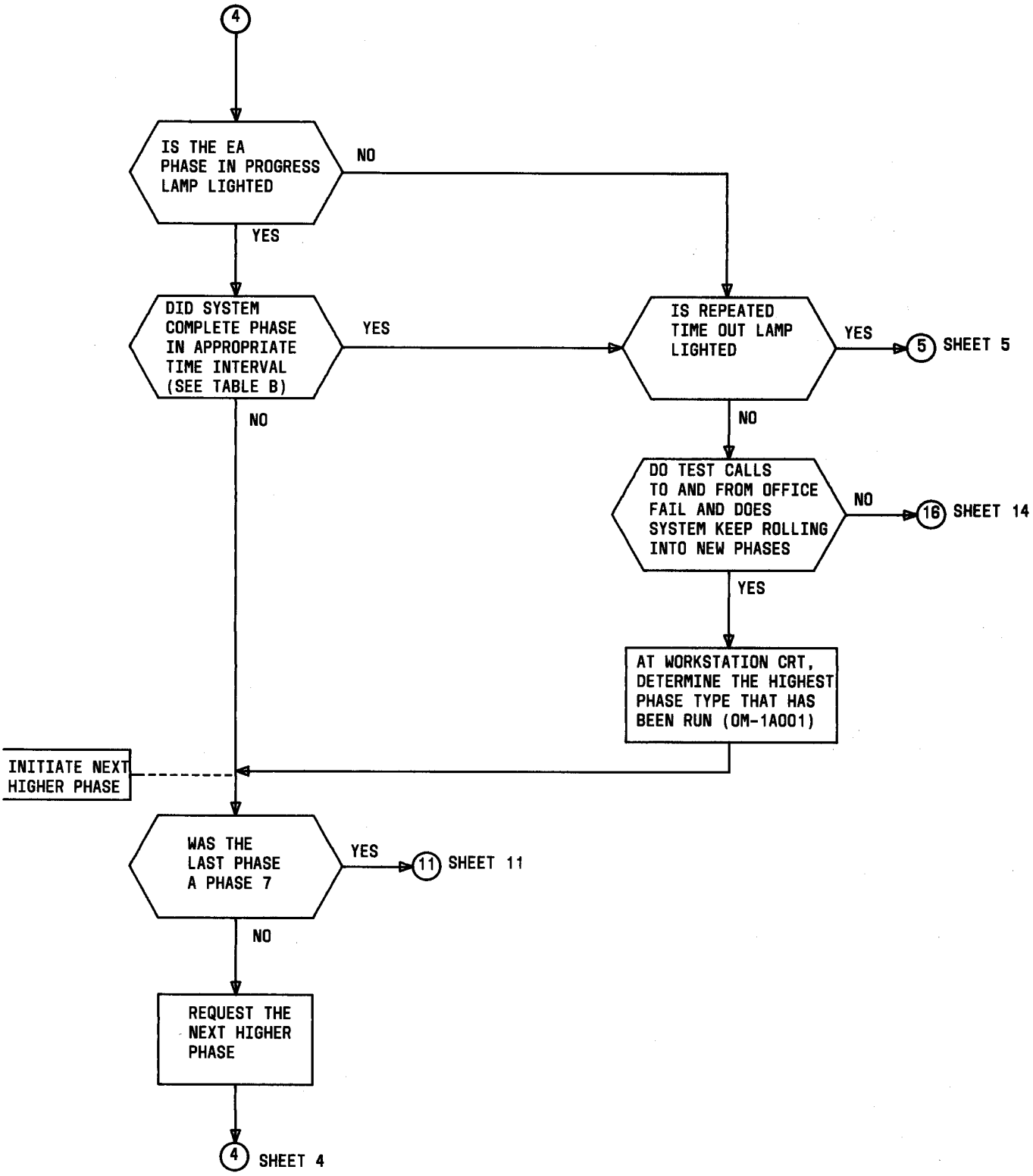


Fig. 2—Emergency Action Flowchart (Sheet 4)

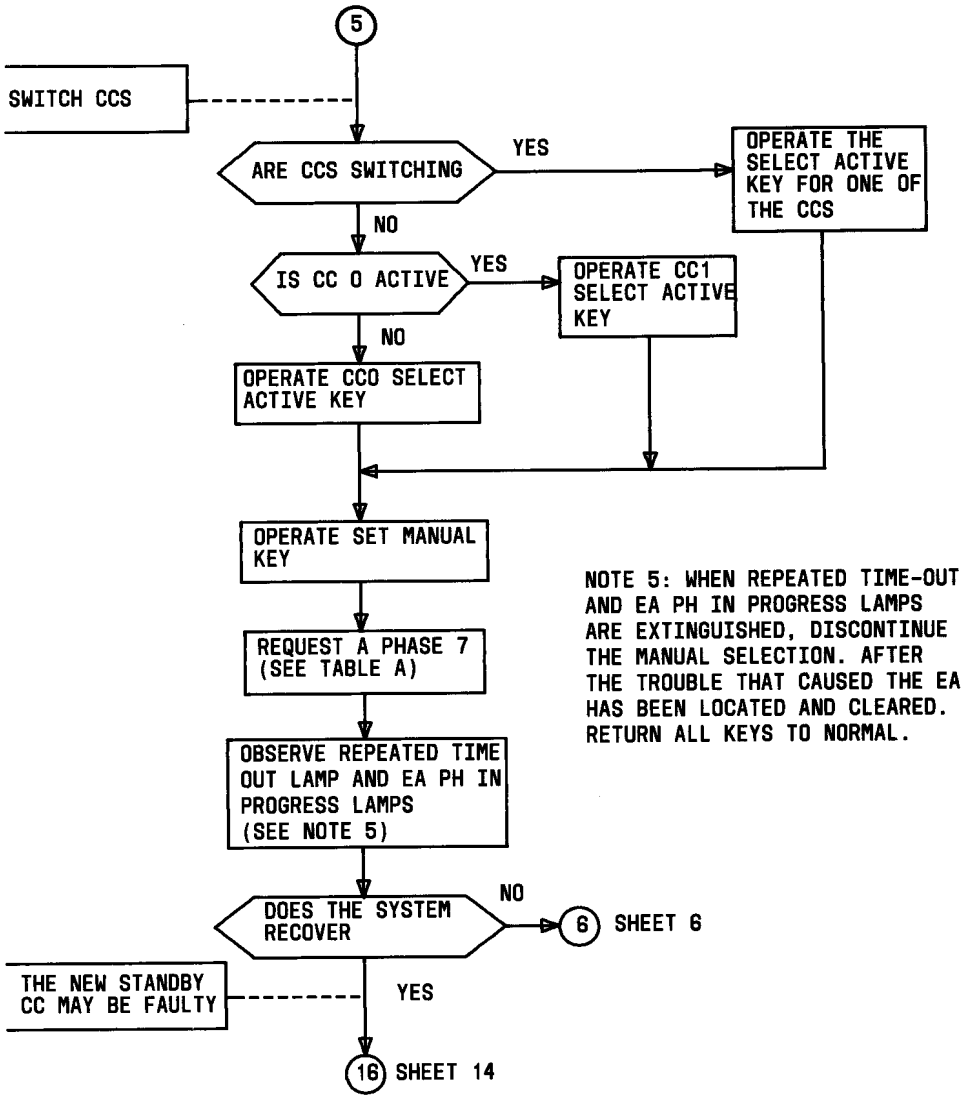


Fig. 2—Emergency Action Flowchart (Sheet 5)

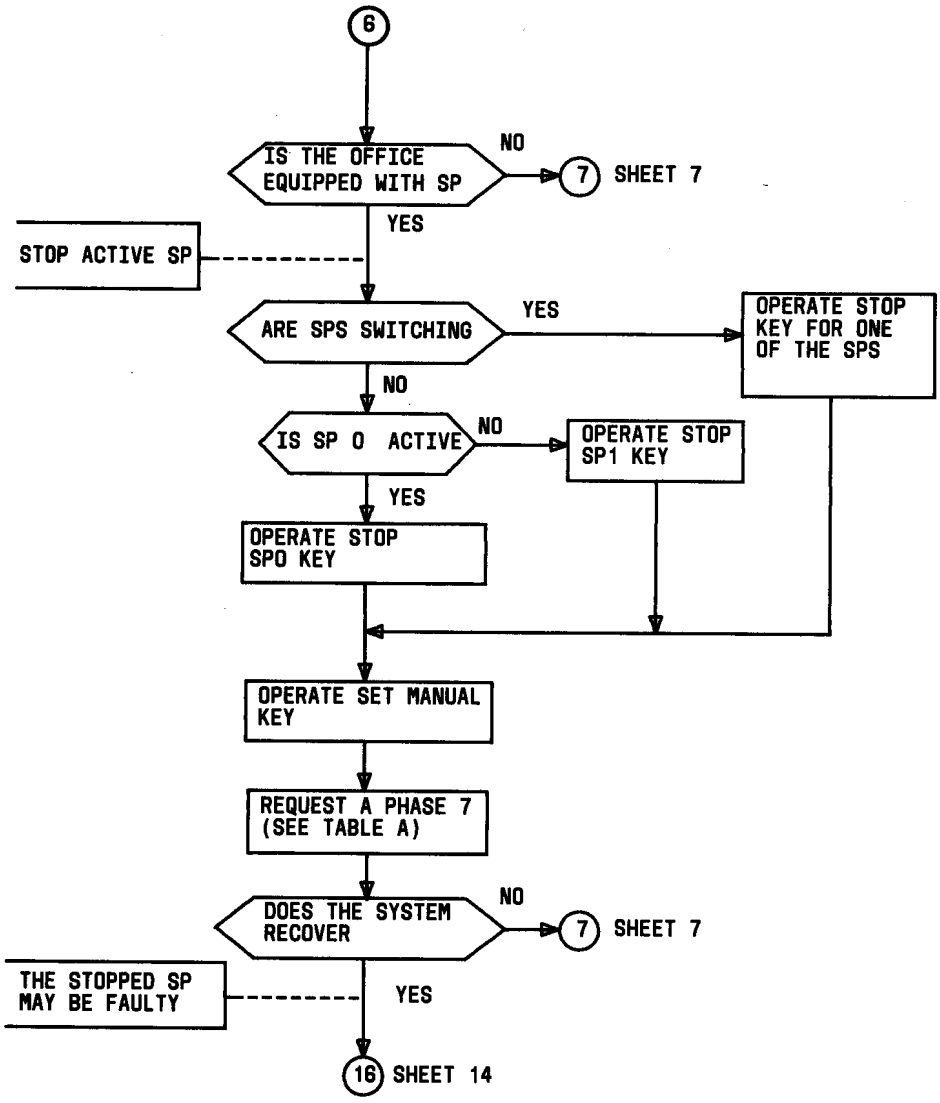


Fig. 2—Emergency Action Flowchart (Sheet 6)

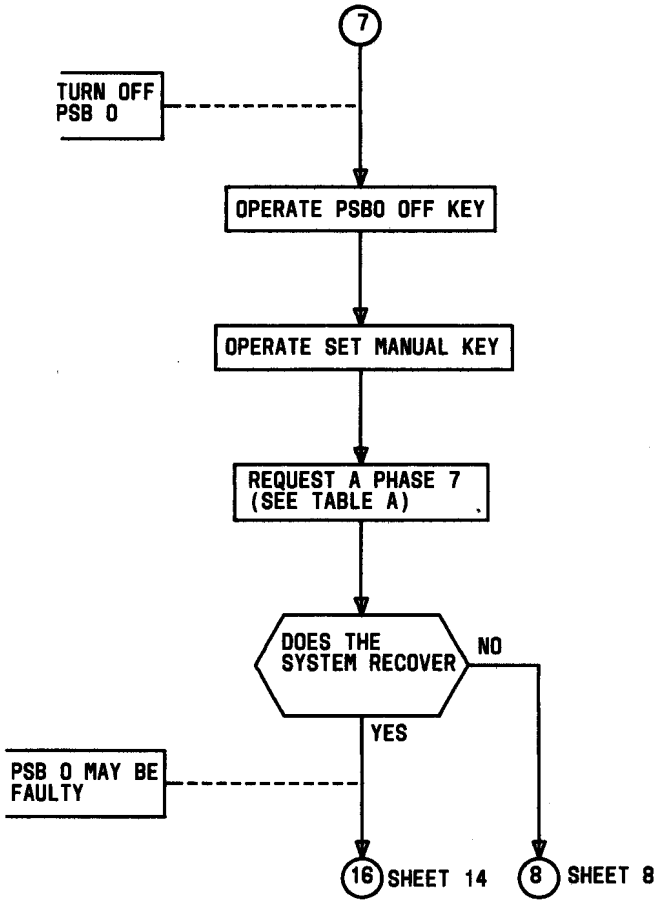


Fig. 2—Emergency Action Flowchart (Sheet 7)

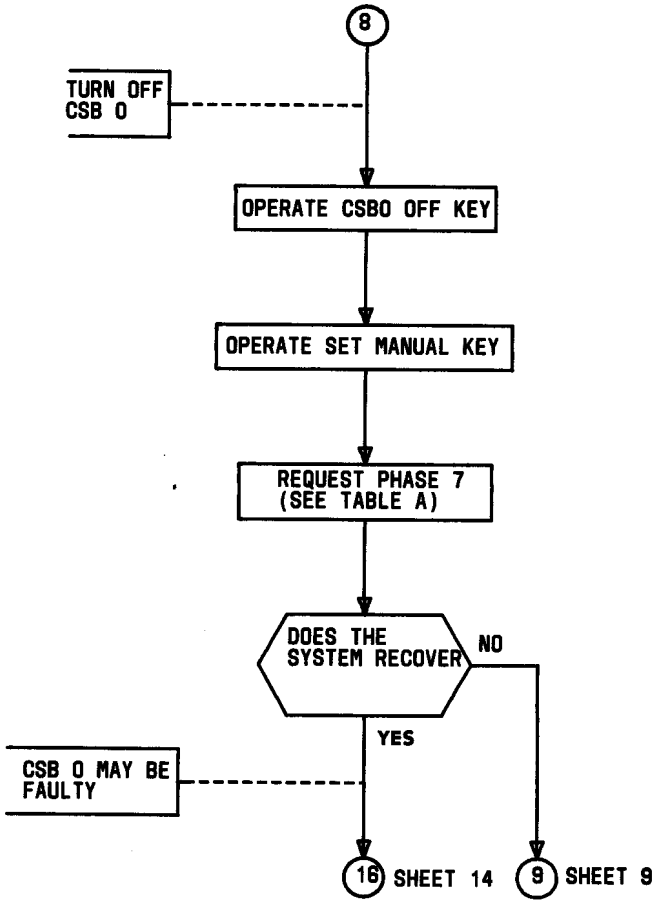


Fig. 2—Emergency Action Flowchart (Sheet 8)

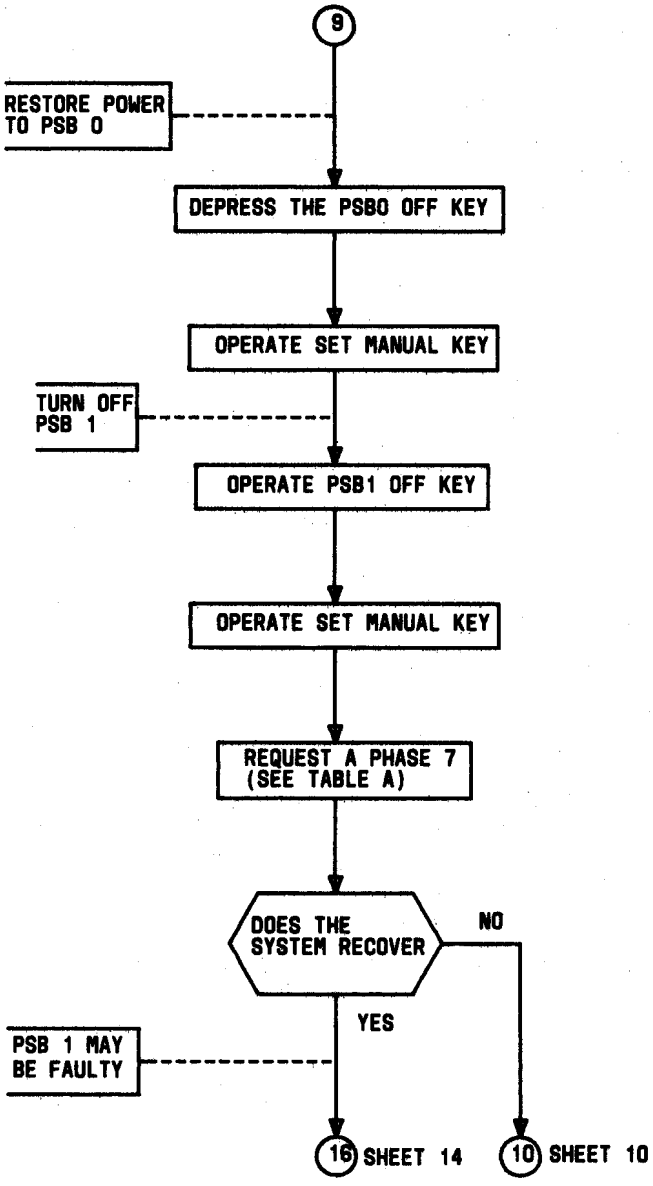
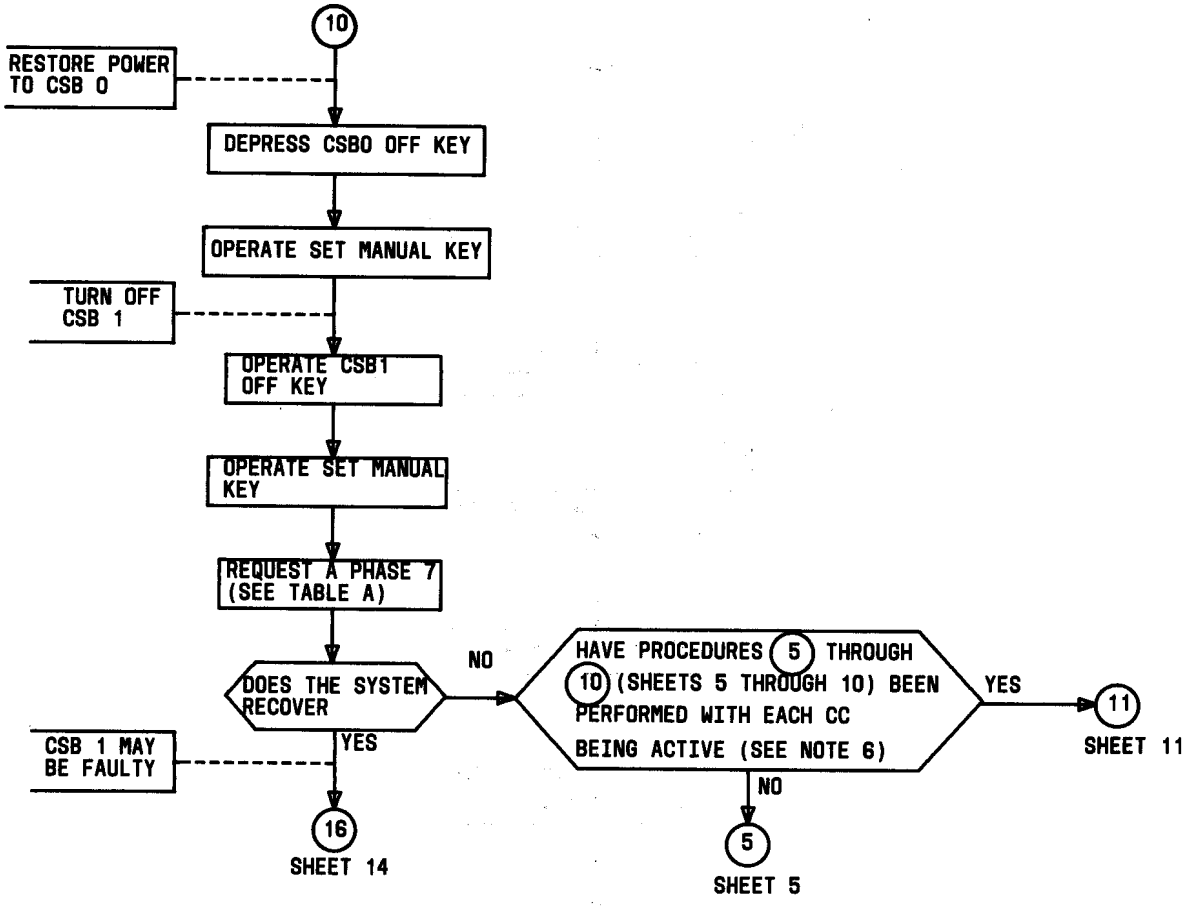


Fig. 2—Emergency Action Flowchart (Sheet 9)



NOTE 6: IT IS POSSIBLE TO REACH THIS DECISION 4 TIMES IF THE SYSTEM HAD THE REPEATED TIME OUT LAMP LIGHTED INITIALLY.

Fig. 2—Emergency Action Flowchart (Sheet 10)

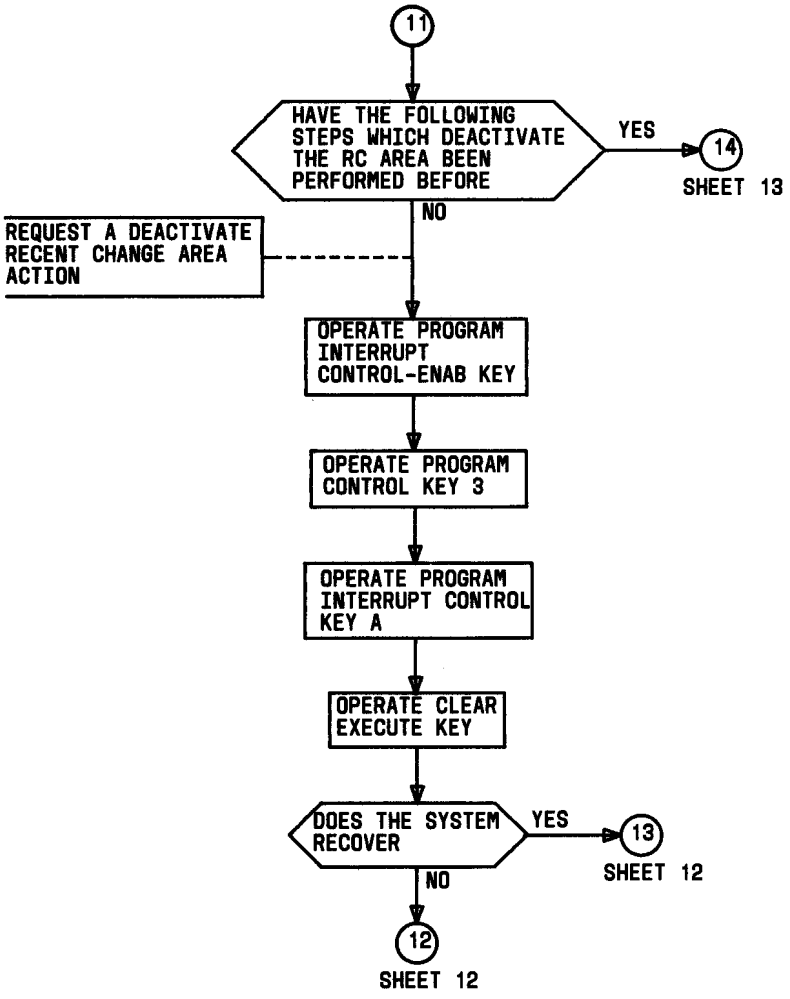


Fig. 2—Emergency Action Flowchart (Sheet 11)

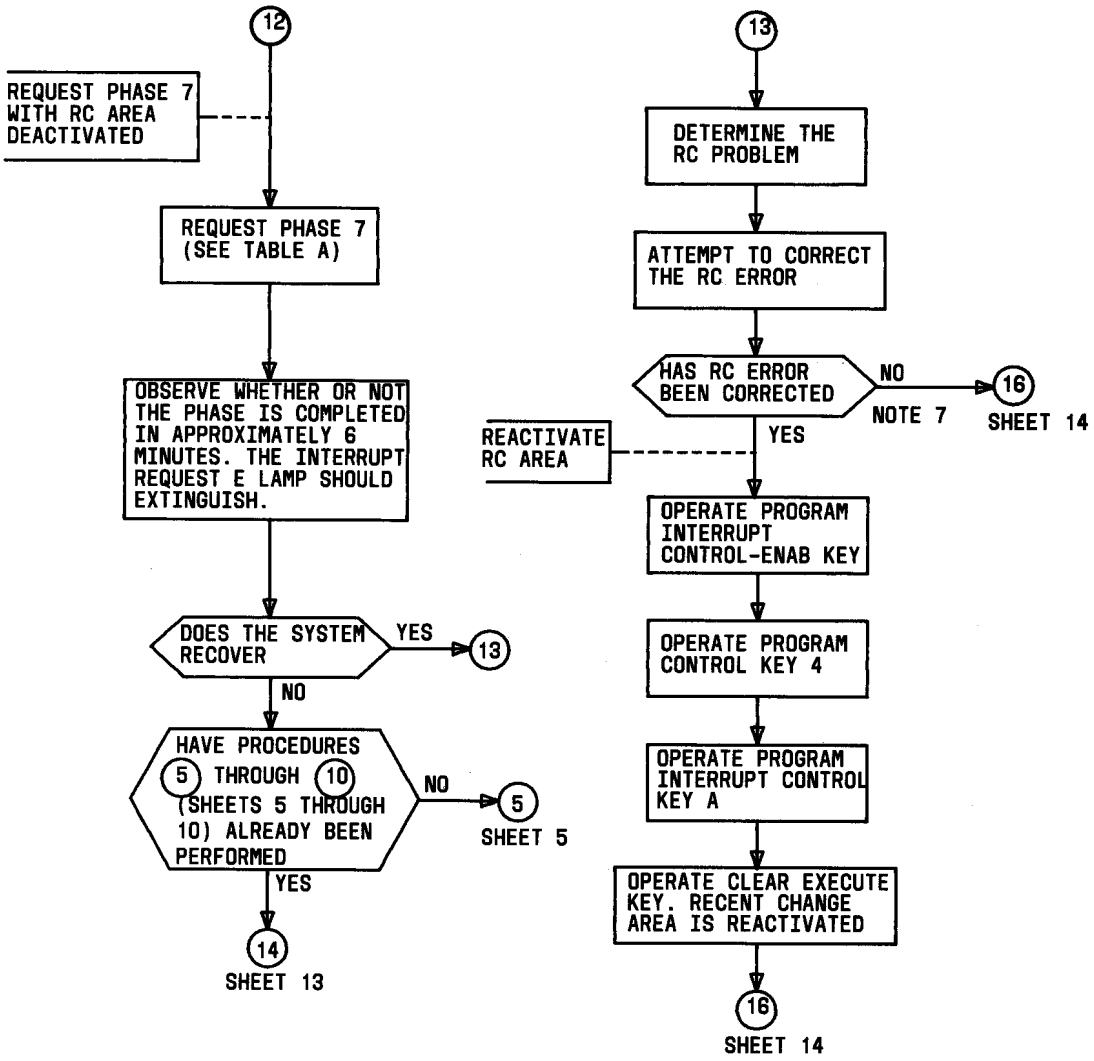


Fig. 2—Emergency Action Flowchart (Sheet 12)

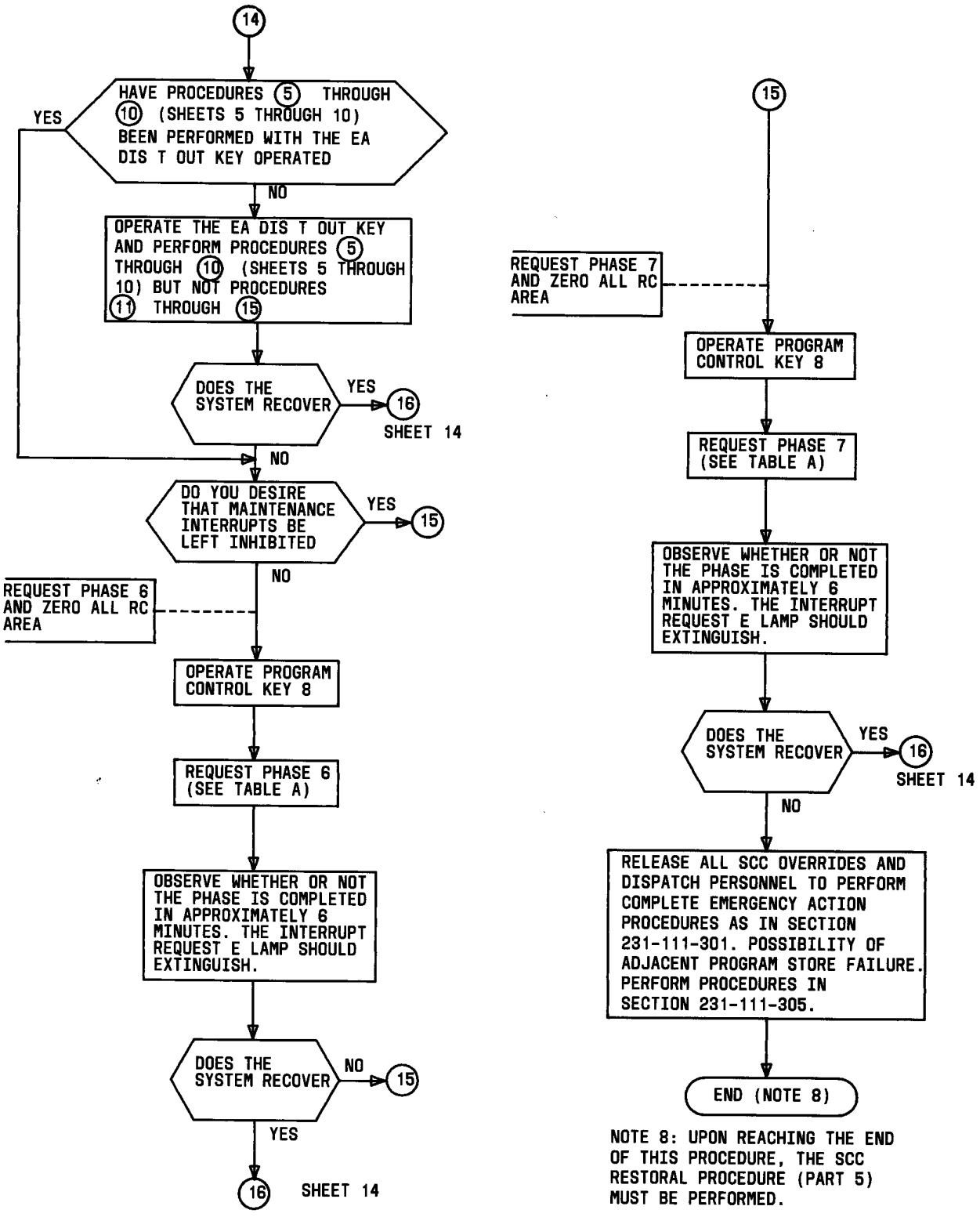


Fig. 2—Emergency Action Flowchart (Sheet 13)

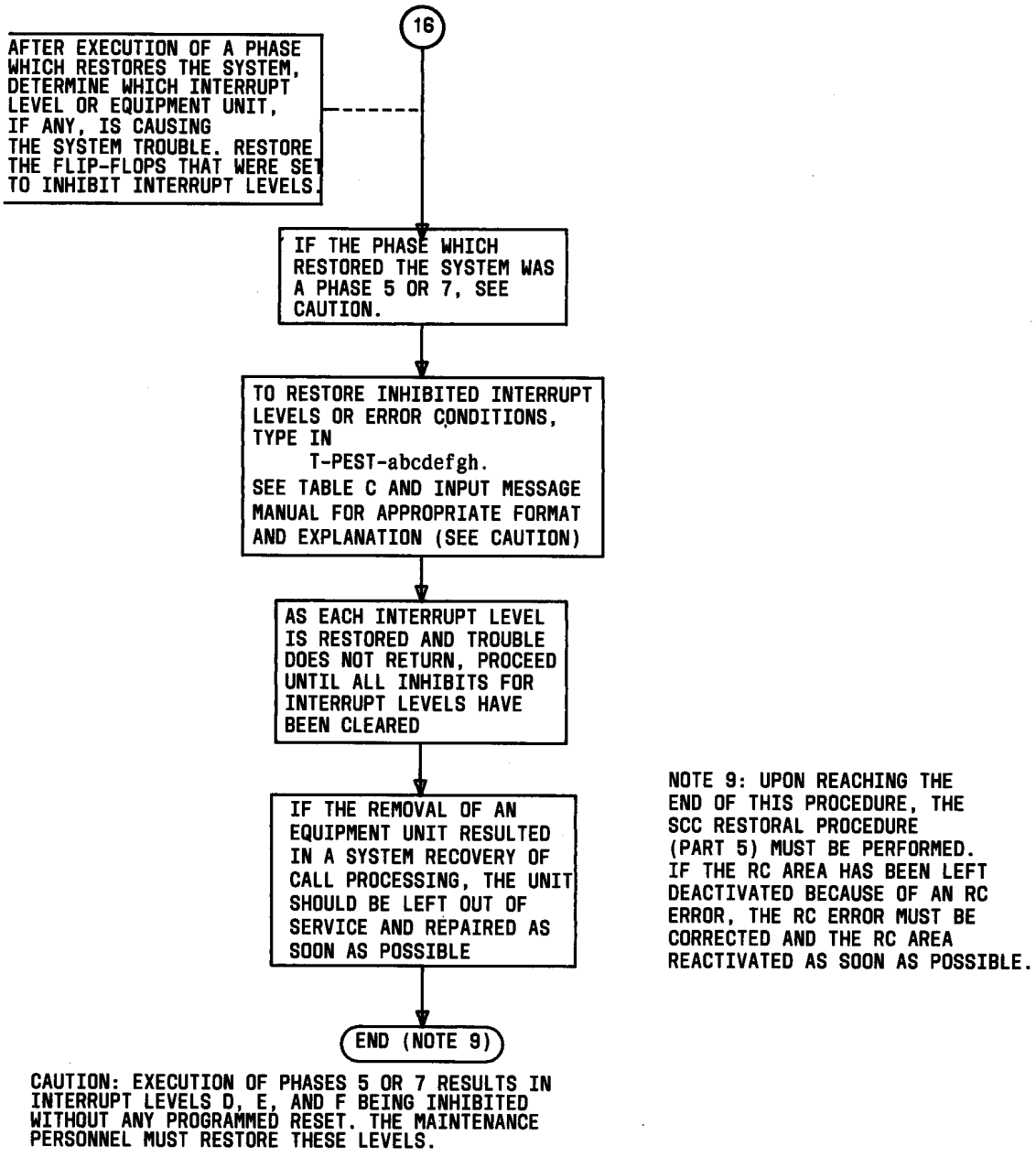


Fig. 2—Emergency Action Flowchart (Sheet 14)

TABLE A

HOW TO PERFORM A PHASE FROM WORK STATION CONSOLE (Note 1)

SCC CONSOLE KEYS	PHASES (NOTE 3)					
	1	2	4	5	6	7
PROGRAM INTERRUPT CONTROL — ENAB KEY	Operate	Operate	Operate	Operate	Operate	Operate
PROGRAM CONTROL KEY 1	Operate					
PROGRAM CONTROL KEY 2		Operate				
PROGRAM CONTROL KEY 4			Operate			
PROGRAM CONTROL KEY 5				Operate		
PROGRAM CONTROL KEY 6					Operate	
PROGRAM CONTROL KEY 7						Operate
PROGRAM INTERRUPT CONTROL E — KEY (Note 2)	Operate	Operate	Operate	Operate	Operate	Operate
CLR EX KEY	Operate	Operate	Operate	Operate	Operate	Operate
RESULTS	The EA PH IN PROG Lamp should light. This lamp should remain lighted for the duration of the phase. (See Table B for duration times of each phase.) A PH output message will be printed out while the phase is occurring.					

Note 1: To request a phase, operate the four keys indicated by the desired phase column. The sequence for operating the first two keys is not critical, but the CLR EX key must be operated last.

Note 2: The PROGRAM INTERRUPT CONTROL E key normally lights when operated and remains lighted when the operator's finger is removed. It is possible for the system to be unable to maintain the lock and for the key to extinguish when the operator's finger is removed. If so, the operator should operate the key and hold it manually while operating the CLR EX KEY.

Note 3: For phases below phase 6, all calls are lost except those in the talking state. For phase 6 and higher, all calls are lost.

Note 4: For 1E5.3 and later generics, phase 2 is removed to reduce down time. The number of times that phase 2 is effective is outweighed by the delay in system recovery when a phase 4 is required. Phase 4 will run if phase 2 is requested.

TABLE B

TIME DURATION OF SYSTEM PHASES

PHASE NUMBER	MAXIMUM COMPLETION TIME FOR EACH PHASE
DATA VALIDITY (DV)	1.5 MINUTES
1	1 MINUTE
2	2.5 MINUTES
4	6 MINUTES
5	6 MINUTES
6	6 MINUTES
7	6 MINUTES

Note: These are approximate times and may vary from office to office.

TABLE C

PROGRAM CONTROL KEYS ASSOCIATED WITH INTERRUPT LEVELS OR ERROR CONDITIONS

Note 1: For 1E4 and earlier generics, variables d, e, and f apply only to offices with signal processors and may be omitted for offices without signal processors. Variables g and h do not apply at all.

Note 2: For 1E5 and later generics, variables d, e, and f apply only to offices with signal processors, and variables g and h apply only to offices with peripheral processors (PI). Variables d through h must be specified even though they may be don't care bits in some offices.

Note 3: The PEST flip-flops may also be released or operated by depressing in sequence:

(1) PROGRAM INTERRUPT CONTROL key C and ENABLE
(2) PROGRAM CONTROL key 0, 1, 2, 14, 15, 17, 18, or 19
(3) CLR EX key.

T-PEST MESSAGE PARAMETER	PROGRAM CONTROL KEY	KEY STATE	ACTION
h	17	Released	Enable F-level interrupts in CC as a result of peripheral processor (PI) errors (reset IPIT in B8PEST)
h	17	Operated	Inhibit F-level interrupts in CC as a result of peripheral processor (PI) errors (reset IPIT in B8PEST)
g	None	Released	Enable all CS errors and rereads in CC on range-9 addresses (720000-737777) (reset IPICSE in B8ACR)
g	None	Operated	Inhibit all CS errors and rereads in CC on range-9 addresses (720000-737777) (reset IPICSE in B8ACR)

TABLE C (Contd)

PROGRAM CONTROL KEYS ASSOCIATED WITH INTERRUPT LEVELS OR ERROR CONDITIONS

T-PEST MESSAGE PARAMETER	PROGRAM CONTROL KEY	KEY STATE	ACTION
f	0	Released	Enable F-level (in CC) interrupts as a result of mismatches or CS failures in SP (reset IMS and INHE)
f	0	Operated	Inhibit F-level (in CC) interrupts as a result of mismatches or CS failures in SP (set IMS and INHE) SP peripheral failure interrupts are also inhibited (set INHPE)
e	1	Released	Enable SP peripheral failure F-level (in CC) interrupts (reset INHPE)
e	1	Operated	Inhibit SP peripheral failure F-level (in CC) interrupts (set INHPE)
d	2	Released	Enable SP scanner ASW failure F-level (in CC) interrupts (reset INASWS)
d	2	Operated	Inhibit SP scanner ASW failure F-level (in CC) interrupts (set INASWS)
c	14	Released	Enable CS failure D-level interrupts (reset ICSF)
c	14	Operated	Inhibit CS failure D-level interrupts (set ICSF)
b	15	Released	Enable PS failure E-level interrupts (reset IPSF)
b	15	Operated	Inhibit PS failure E-level interrupts (set IPSF)
a	18, 19	Released	Enable CC peripheral failure F-level interrupts (reset IPUEI and IPUEE)
a	18, 19	Operated	Inhibit CC peripheral failure F-level interrupts (set IPUEE and IPUEI)