NO. 2 SWITCHING CONTROL CENTER SYSTEM
NO. 2 ELECTRONIC SWITCHING SYSTEM APPLICATION
DESCRIPTION

1. GENERAL

1.01 This section describes the No. 2 Switching Control Center System (SCCS) application peculiar to a No. 2 Electronic Switching System (ESS). The facilities which are peculiar to this application are primarily the No. 2 ESS/SCCS console, data link, E2A telemetry and critical indicator panel. When these facilities are treated separately, they are referred to as the No. 1 SCCS.

1.02 When this section is reissued the reason for reissue will be explained in this paragraph.

1.03 The No. 2 SCCS is a centrally located monitor and control system that provides administrative, operational and maintenance functions for various central offices.

1.04 The No. 2 SCCS facility can be divided into two areas, the common equipment area and the work station area. In the common equipment area equipment cabinets contain SCCS and central office (CO) interface equipment common to the various central offices. The SCCS and CO equipment consists of data sets E2A telemetry unit, critical indicator interface, control circuitry, crossbar switches, power supplies and history TTYs. The history TTYs are dedicated to central offices for the purpose of recording maintenance history information. (In No. 1 SCCS, this TTY is the direct interface with the No. 2 ESS). The work station area provides desks and interface connections for the portable control consoles, TTY, and CRT monitor and keyboard. The interface connections and the connections for the central office selector and cable junction unit (COSU and CJU). Critical indicator panels are located centrally in this area to provide continuous status information for each CO.

1.05 The TTY and CRT terminal are two units used to transmit control messages to and receive data messages from the various central offices. The CRT terminal is used in a fully automated No. 2 SCCS having a computer subsystem. If the computer subsystem is inoperative or unavailable only the TTY is used (such a configuration is normally referred to as a BASIC SCCS or No. 1 SCCS).

1.06 The SCCS equipment defined as having specific No. 2 ESS applications are the J1C016H1 console and the critical indicator panel dedicated to monitor the status of a No. 2 ESS office. This document will primarily describe the application of these two units. Other SCC equipment is either dedicated to another type of CO or common to all COs. Common equipment is described in detail in the 190-110 layer BSPs. For BSP's covering equipment pertaining to a specific CO type refer to index 190-000-000. If the common equipment has specific No. 2 ESS applications, that application is described in this section.

2. EQUIPMENT DESCRIPTION

NO. 2 ESS/SCCS CONSOLE

2.01 The No. 2 ESS/SCCS console (Fig. 1) allows the SCCS maintenance personnel to monitor and control a No. 2 ESS office from a remote location. The console consists of a display panel and keyshelf panel, and is interconnected to a No. 2 ESS with E2A telemetry equipment.

2.02 The E2A telemetry unit (J92621P L1, L2, L4) located in the SCCS console provides the capability of transmitting control and status information between the console and the E2A unit located at the CO. When the console is not in control, status information is transferred between the CO E2A and SCCS critical indicator panel (Fig.

Fig. 1—No. 2 ESS/AIS SCCS Console

2) via the E2A central located in the common equipment bay.

2.03 The display panel of the console provides a remote lamp display of the No. 2 ESS maintenance panel lamp and switch status. In addition, the status of the telemetry, No. 2 ESS alarms, TTY controls, and miscellaneous circuitry assigned by TELCo is displayed.

2.04 The operation of the No. 2 ESS/SCCS console is such that the console key and lamp indicators duplicate the status of the corresponding MC key and lamps. When a lamp on the MC is lighted, the output of a display circuit provides a closure to light the corresponding equivalent lamp on the SCCS console.

2.05 Key controls selected to allow the SCCS maintenance personnel to manually maintain the No. 2 ESS office are located on the keyshelf panel on the SCCS console. The keys on the console are mechanically nonlocking; however, they function as electrically nonlocking or locking keys, depending on which type of key at the MC they duplicate.

2.06 When a key on the console keyshelf is operated, a command is sent via the telemetry to the MC. This command operates or releases a relay which simulates the operation of the corresponding key at the No. 2 ESS MC. The E2A scans the circuitry controlling the state of the lamps on the SCCS console to determine whether to send an activate or release command. Operation of a key on the keyshelf causes the E2A telemetry to transmit a command that initiates or stops a system function that would normally be implemented by a corresponding key on the MC panel at the CO. If the console key lamp is illuminated when the associated key is depressed, the E2A transmits a signal that simulates the release of the corresponding MC key. If the console lamp is extinguished when the associated key is depressed, the E2A sends an operate command to simulate the operation of the MC key (It should be noted that the command generated from a console key cannot change the state of an MC locking key left in the activated position.)

2.07 The console contains three power supplies:

(1) a +5 volt supply used to power the logic circuitry in the console and E2A telemetry unit,

(2) a +20 volt unregulated power supply used to power the display and key lamps, and

(3) ±15 volt power supply used to power the data set in the E2A telemetry unit.

2.08 There are three circuit packs designated CP1, CP2 and CP3. These packs contain the console lamp circuit drivers, critical indicator update driver, and CO encoder and service loss detector circuitry.

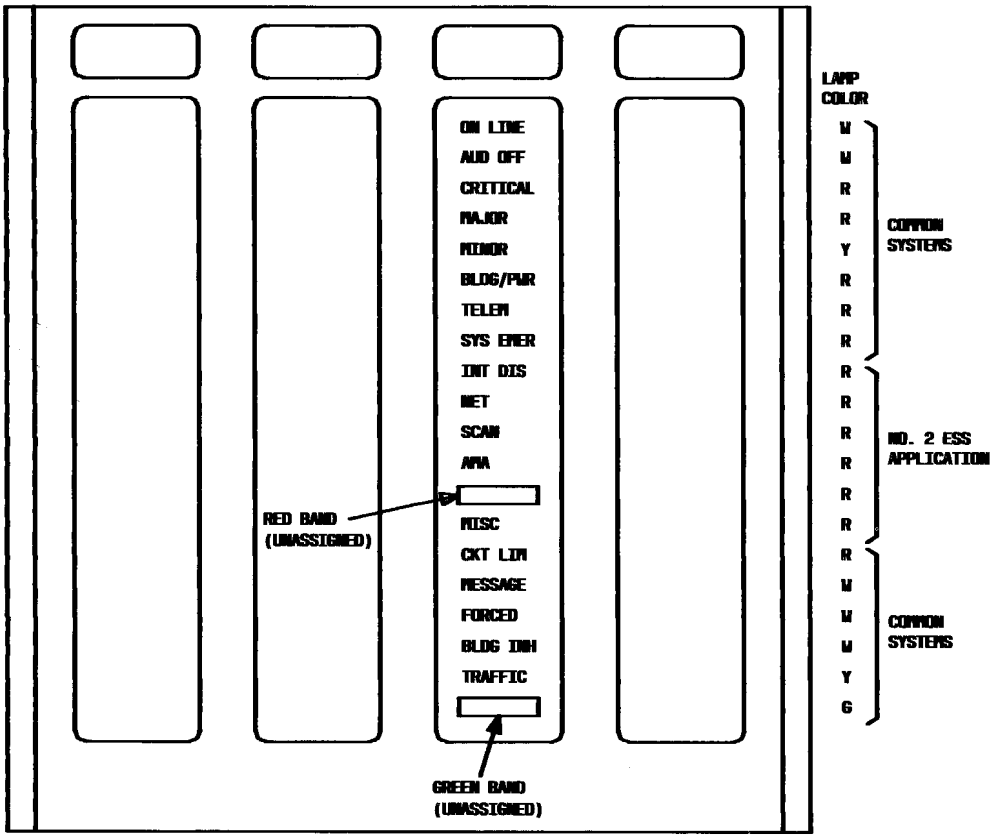


Fig. 2—Critical Indicator Panel

CRITICAL INDICATOR PANEL

2.09 The critical indicator panel (Fig. 2) displays the real time status information of the various central offices being monitored by the SCCS. It is comprised of 4 panels (one for each CO) 6 inches wide and 30 inches long and each panel displays 20 indications. In the case of the No. 2 ESS, two of these indications are spares and can be assigned to monitor fault conditions designated by the SCC. These alarm indications are defined in Table A.

TABLE A

CRITICAL INDICATOR PANEL

LAMP DESIGNATION	LAMP COLOR	INDICATION OR FUNCTION
ON LINE	WHITE	A work station has teletypewriter or console input capabilities to the central office. Indication is supplied by TTY switching apparatus at the No. 2 SCCS.
AUD OFF	WHITE	The No. 2 SCCS has silenced its telemetry audible alarms for the central office. Visual alarm indication is still supplied by alarm circuitry.
CRITICAL	RED	A critical alarm condition exists at the CO. The indication is transferred by the MCC interface circuit to the No. 2 SCCS via the telemetry unit. This alarm is associated with an audible alarm.
MAJOR	RED	Gives visual indication of major system troubles which immediately degrade service. This signal is activated, via the telemetry circuitry from the major alarm lamp on the No. 2 ESS MC. This alarm is associated with a TTY message and an audible alarm.
MINOR	YELLOW	When illuminated gives visual indication of minor system troubles not immediately degrading service, but meriting immediate attention. This signal is activated, via the telemetry circuitry from the minor alarm lamp on the No. 2 ESS MC and is associated with a TTY printout and an audible alarm.
BLDG/PWR	RED	Gives visual indication of a serious building alarm condition (such as commercial power failure, fire, loss of air conditioning, etc.). This signal is activated, via the telemetry circuitry from the BLG alarm lamp on the No. 2 ESS MC (MC SERV. CKT lamp has name and function changed to BLG).
TELEM	RED	A telemetry failure has been detected. Indication is supplied by E2A telemetry system.
SYS EMER (SYSTEM EMERGENCY) (Is reset with M SY:RSL!)	RED	Gives indication that a manual or automatic service affecting system reinitialization is in progress or that a serious loss of call processing capability has been detected. This signal is activated via the telemetry circuitry from the service loss lamp on the No. 2 ESS MC. (The service loss lamp is lit by program whenever a system initialization has taken place. This lamp flashes after the initialization program has completed its action and will remain flashing until the initialization level count is zero. If initialization level is high, lamp will remain on. If initialization level is low, lamp will extinguish.)

TABLE A (Cont)

CRITICAL INDICATOR PANEL

LAMP DESIGNATION	LAMP COLOR	INDICATION OR FUNCTION
INT DIS (Interrupt Disable)	RED	Gives indication that the control units are not running in the normal compare mode. (This signal is activated via the telemetry circuitry from the INT DIS lamp on the No. 2 ESS MC.)
NET (Network)	RED	Gives indication that a network controller has been removed from service (via maintenance personnel or program) or that a trouble has been detected in the networks. This signal is activated via the telemetry circuitry from the NET lamp on the No. 2 ESS MC.
SCAN (Scanner)	RED	Gives indication that a scanner controller has been removed from service or that a trouble has been detected in the scanner. This signal is activated via the telemetry circuitry from the SCAN lamp on the No. 2 ESS MC.
AMA (Automatic Message Accounting)	RED	Gives indication that an AMA tape transport is switched out-of-service. This indication is activated via the telemetry circuitry from the AMA lamp on the No. 2 ESS MC.
RED BAND	RED	Unassigned spare.
MISC (Miscellaneous)	RED	Gives an indication that a piece of equipment that it monitors has been switched out of service or has developed a fault. This indication is activated via the telemetry circuitry from the MISC lamp on the No. 2 ESS MC.
CKT LIM (Circuit Limit)	RED	Indicates that engineered circuits (such as trunk circuits or service circuits) have reached the limit beyond which these circuits cannot be automatically removed from service by the No. 2 ESS. This indicator should remain lit as long as any group remains at its limit. This indicator is activated via the telemetry circuitry from the MC CKT LIM light.
MESSAGE	WHITE	The indication will be supplied by the computer subsystem, not used at this time.
FORCED	WHITE	This indicator is activated when a control is activated (either at SCC or CO) that places the system in an abnormal state and requires manual action or a system reinitialization to deactivate. FORCE covers both hardware and software implemented controls affecting call processing, emergency and routine maintenance and ESS/SCC data communications. The FORCED indicator is an "OR" function of the No. 2 ESS AUTOMATIC TEST INHIBIT, SCC FORCED, and MTC FORCED indicators and is activated via the telemetry circuitry.

TABLE A (Cont)

CRITICAL INDICATOR PANEL

LAMP DESIGNATION	LAMP COLOR	INDICATION OR FUNCTION
BLG INH (Building Inhibit)	WHITE	This indicator is activated when one or more important CO building alarms are inhibited. (TELCo choice of alarms.)
TRAFFIC	YELLOW	This indicator is activated when a significant or unusual traffic condition is detected.
GREEN BAND	GREEN	Unassigned spare.

2.10 In general, the alarm indicators track the problem. When the problem goes away, the lamp extinguishes. Exceptions to this are the ***Critical, Major,*** and ***Minor*** indications. These three indications are accompanied by audible alarms. The relationship of the visual and audible alarms are as follows:

- Critical—Audible alarm cannot be inhibited at the SCCS, but must be retired. After the alarm is retired, the lamp will extinguish when the trouble is cleared.

- Major—When the audible alarm is inhibited at the SCCS, the lamp alarm remains lighted until the trouble clears. If the audible alarm is not inhibited, it must be retired from the work station and then the lamp alarm wwill remain lighted until the trouble is cleared.

- Minor—Audible alarm can be inhibited; however, if not inhibited it is self retiring in a few seconds. The lamp remains lighted until the trouble is cleared.

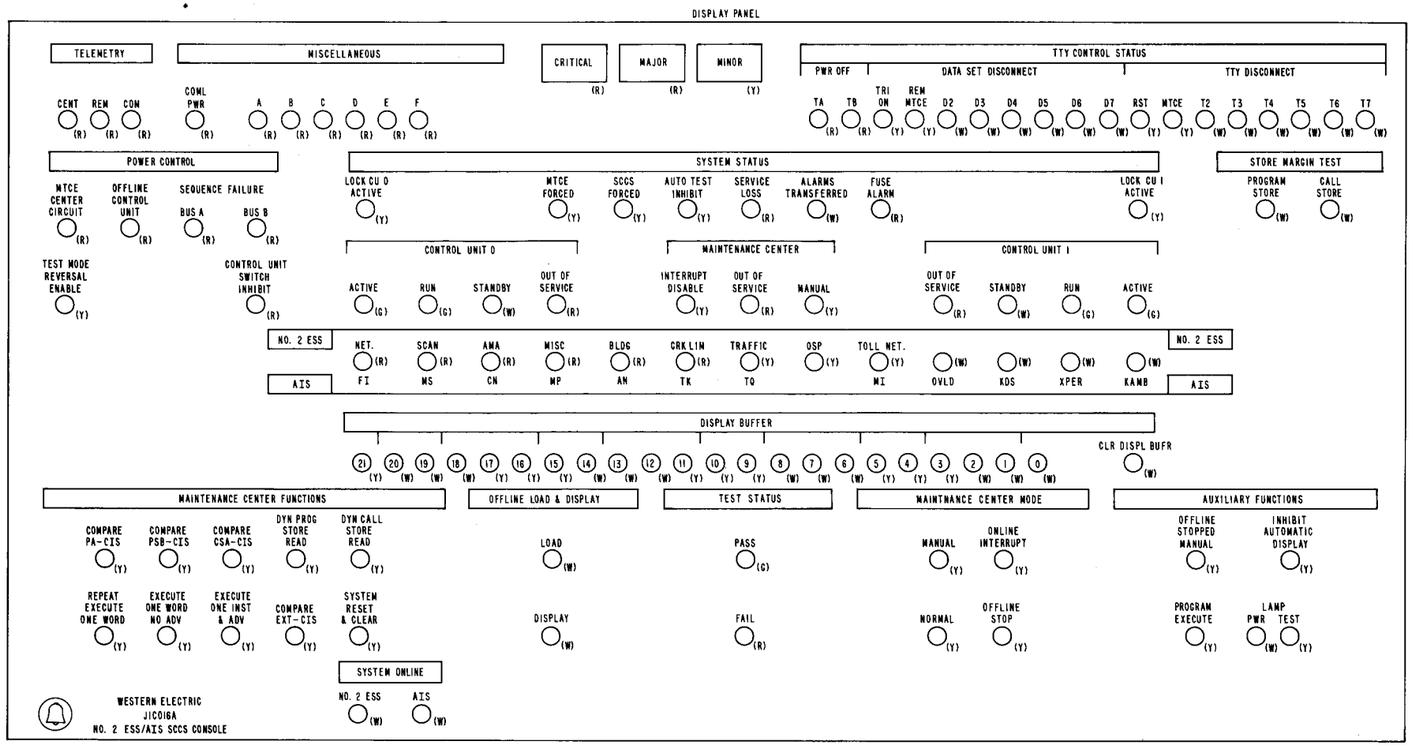
3. FUNCTIONAL DESCRIPTION

3.01 The work station in the SCCS allows maintenance personnel to remotely monitor and, when necessary, to manually intervene to correct problems at the various COs.

3.02 The No. 2 ESS/SCCS console duplicates selected MC indicators and function keys and; therefore, allows maintenance personnel to perform various routine and special purpose operations remotely from the SCCS.

3.03 The MC can be placed in two operational modes: **normal** and **manual.** The manual mode is required in most cases of human intervention. This mode disables certain automatic features which are available when the MC is in the normal mode. Use of the manual mode does not imply an abnormal or emergency situation since several day-to-day operations require this mode.

3.04 As can be seen in Fig. 3, the console display panel includes system status displays which indicate the current alarm status, CU status, maintenance center status, as well as the current status of the maintenance and call processing program capabilities. A line of nine lamps at the bottom of the SYSTEM STATUS display area is permanently assigned by the particular application of the No. 2 ESS. (See Table B.) These lamps indicate the states of major peripheral equipment. The indications are intended to point the craftsman to trouble areas. If a lamp is lighted, a craftsman can determine the reason by requesting status information for the particular unit in question via a TTY input message.



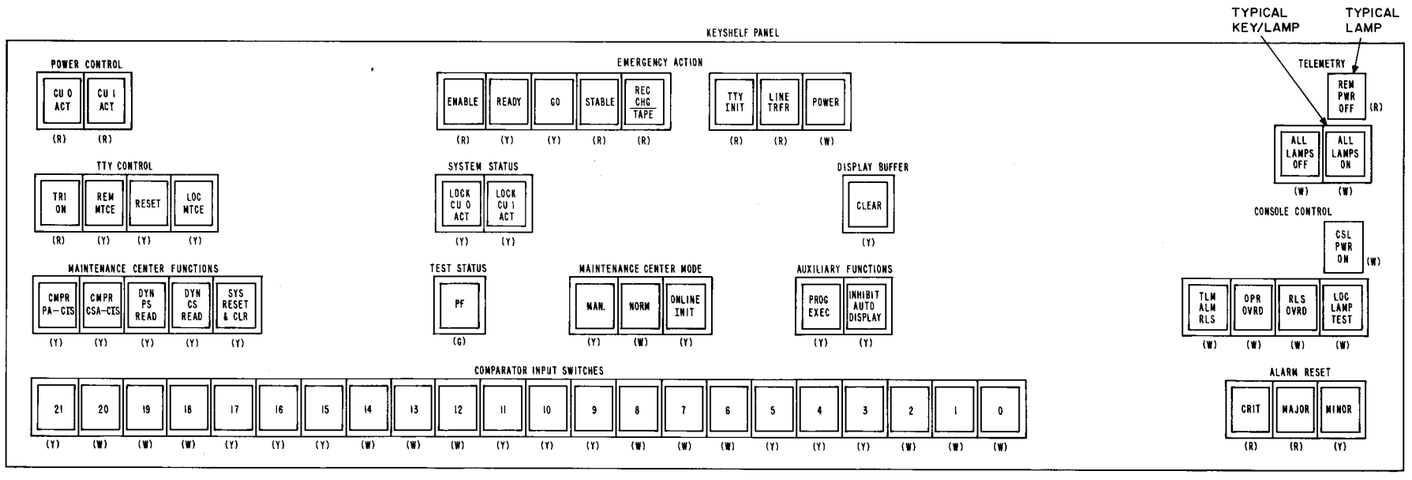


Fig. 3—Switching Control Center System No. 2 ESS/AIS Console

3.05 The key shelf panel provides the capability of controlling the CU status, reinitializing the processor, resetting alarms, removing local and remote TTYs from service, and performing compare operations. The light and key functions providing the above capability are defined in Table C.

TABLE B

NO. 2 ESS/AIS SCCS CONSOLE
DISPLAY PANEL INDICATORS

LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
TELEMETRY		
CENT	RED	The E2A telemetry central circuit in the console has failed.
REM	RED	The E2A telemetry remote circuit in No. 1 ESS MC frame has failed or there has been a facility failure.
COM	RED	An attempt was made to send a command by depressing a key on the control and display console keyboard. This command was not received correctly by the E2A telemetry remote circuit in the No. 2 ESS MC frame.
MISCELLANEOUS		
COML PWR	RED	A commercial power failure has occurred and the office is running on auxiliary power.
A-through-F	RED	These lamps are telephone company engineered and are intended to remotely monitor any important system condition.
CRITICAL	RED	This red lamp, when lighted, indicates a critical service affecting condition requiring immediate attention by SCC personnel. The lighting of this lamp is accompanied by an audible critical alarm. An accompanying TTY output message may appear to identify the problem and to indicate the action to be taken.
MAJOR	RED	This red lamp, when lighted, indicates a severe malfunction requiring immediate attention by SCC personnel. The lighting of this lamp is accompanied by an audible major alarm. An accompanying TTY output message may appear to identify the problem and to indicate the action to be taken.
MINOR	YELLOW	This amber lamp, when lighted, indicates a trouble of less severe consequence. The lighting of this lamp is accompanied by an audible minor alarm.

TABLE B (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
DISPLAY PANEL INDICATORS

LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
TTY CONTROL STATUS		
PWR OFF		
TA	RED	Even numbered TTY control circuit power has been removed.
TB	RED	Odd numbered TTY control circuit power has been removed.
DATA SET DISCONNECT		
TR1 ON	YELLOW	Control of the maintenance channel can be transferred between control circuit 1 and control circuit 0. When the TR1 indicator lamp is on, control circuit 1 is active. When the TR1 indicator lamp is out, control circuit 0 is active.
REM MTCE	YELLOW	The remote maintenance disconnect key is activated disconnecting the remote maintenance TTY.
D2 ------→D7	WHITE	A remotely located (remote to No. 2 ESS) nonmaintenance TTY has been disconnected from the control circuit (data set disconnected).
TTY DISCONNECT		
RST	YELLOW	Indicates a reset key has been depressed to restore a disconnected TTY.
MTCE	YELLOW	The local maintenance TTY has been disconnected.
T2------→T7	WHITE	A local (to the No. 2 ESS) nonmaintenance TTY has been disconnected from the control circuit.
POWER CONTROL		
MTCE CENTER CIRCUIT	RED	All maintenance center power except for protected 6-volt power used for the PC status circuit and power to the Emergency Action Panel has been removed. The exceptions are powered by the TTY bus.
OFFLINE CONTROL UNIT	RED	All off-line control unit power has been removed.

TABLE B (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
DISPLAY PANEL INDICATORS

LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
POWER CONTROL		
TEST MODE REVERSAL ENABLE	YELLOW	The capability of performing manual tests normally performed on the off-line control unit on the on-line control unit is enabled.
CONTROL UNIT SWITCH INHIBIT	RED	Indicates that a CU has been forced active.
SEQUENCE FAILURE		
BUS A BUS B	RED RED	Indicates a malfunction of the 6-volt converter during any power removal or restoration sequence initiated by MC, SCCS, or CU power keys.
SYSTEM STATUS		
LOCK CUO ACTIVE	YELLOW	Indicates that CU0 is locked active.
MTCE FORCED	YELLOW	One or more of the following 10 keys have been operated at the MC. LOCK CU0, LOCK CU1, CU SWITCH INHIBIT, TEST MODE REVERSAL ENABLE, SCC DISABLE, TA, TB, TR1, LOC MTC, REM MTC.
SCCS FORCED	YELLOW	SCC has operated a console key.
AUTO TEST INHIBIT	YELLOW	Indicates that various types of software controls are in effect. One or more of the automatic tests are inhibited.
SERVICE LOSS	RED	This lamp flashes at 120 IPM during a MRF sequence and remains lighted after the MRF. Lamp is extinguished by input message M SY:RSL! (See Table A "SYSTEM EMERGENCY.")
ALARMS TRANSFERRED	WHITE	Local major and minor alarms are transferred to a remote location and will be turned off automatically in the local office after 30 seconds.
FUSE ALARM	RED	Indicates a blown fuse in the system.
LOCK CU1 ACTIVE	YELLOW	Indicates that CU1 is locked active.

TABLE B (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
DISPLAY PANEL INDICATORS

LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
CONTROL UNIT 0		
ACTIVE	GREEN	CU0 is on-line.
RUN	GREEN	CU0 is actively processing information.
STANDBY	WHITE	CU0 is off-line and is capable of being switched on-line.
OUT OF SERVICE	RED	CU0 has been taken out of service by program or manual means.
MAINTENANCE CENTER		
INTERRUPT DISABLE	YELLOW	System is operating in the normal noncompare mode or the manual mode.
OUT OF SERVICE	RED	MC is out of service.
MANUAL	YELLOW	MC is in a manual mode.
CONTROL UNIT 1		
OUT OF SERVICE	RED	CU1 has been taken out of service by program or manual means.
STANDBY	WHITE	CU1 is off-line and is capable of being switched on-line.
RUN	GREEN	CU1 is actively processing information.
ACTIVE	GREEN	CU1 is on-line.
NO. 2 ESS		
NET	RED	Indicates network trouble.*
SCAN	RED	Indicates scanner trouble.*
AMA	RED	Indicates automatic message accounting trouble.*
MISC	RED	Indicates miscellaneous trouble.*
BLDG	RED	Indicates a serious building alarm condition. The lamp will turn "on" when a ferrod in a major alarm row in the miscellaneous alarm section of master scanner 0, or other designated locations in the scanner, is activated. TELCo designates the alarms and should include such items as commercial power failure,

* For list of possible troubles, refer to Section B of PK-2H140.

TABLE B (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
DISPLAY PANEL INDICATORS

LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
NO. 2 ESS (Cont)		
BLDG		fire, loss of air conditioning, loss of air circulation, and etc.
CRK LIM (CIRCUIT LIMIT)	RED	Indicates that a trunk or service circuit group has reached the limit allowable for automatic removal from service by the No. 2 ESS.
TRAFFIC	YELLOW	Indicates an unusually heavy traffic condition.*
DSP	YELLOW	Dynamic service protection has been initiated.*
TOLL NET	YELLOW	Toll network protection has been manually initiated.*
STORE MARGIN TEST		
PROGRAM STORE	WHITE	Indicates that the MARGIN switch at the MC is in the PROGRAM STORE position.
CALL STORE	WHITE	Indicates that the MARGIN switch at the MC is in the CALL STORE position.
DISPLAY BUFFER		
0----->21	YELLOW & WHITE	Displays the contents of the 22-bit DB register. The lights are colored in groups of three for easy reading of bit display as octal numbers (three bits white, three bits yellow and alternated for 21 of the 22 bits). When buffer lights are used to read program instruction (op codes), the groups are divided into groups of five. The 5-bit groups are further divided into groups of 3 and 2 bits to indicate the octal breakdown of the op code.
CLR DISPL BUFR	WHITE	Indicates the buffer is being cleared.
MAINTENANCE CENTER FUNCTIONS		
COMPARE PA-CIS COMPARE PSB-CIS COMPARE CSA-CIS COMPARE EXT-CIS	YELLOW YELLOW YELLOW YELLOW	Indicates that a compare between the designated register and the comparator input switches (CIS) is being performed.

* For list of possible troubles, refer to Section B of PK-2H140.

TABLE B (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
DISPLAY PANEL INDICATORS

LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
MAINTENANCE CENTER FUNCTIONS (Cont)		
DYN PROG STORE READ	YELLOW	The contents of the PO register will be placed in the DB when the program store address equals the COMPARATOR INPUT SWITCHES (CIS).
DYN CALL STORE READ	YELLOW	The contents of the CSI will be placed in DB when the call store address equals the comparator input switches.
REPEAT EXECUTE ONE WORD	YELLOW	Changing of the program address (PA) is prevented so that the same address is processed continuously after the program execute key is operated.
EXECUTE ONE WORD NO ADV	YELLOW	Changing of the PA is prevented so that the same address is processed with each operation of the program execute key (located at MCC) if this function is enabled.
EXECUTE ONE INST & ADV	YELLOW	After the off-line control unit has been stopped, the program will step one instruction with each operation of the program execute key (located at MCC) if this function is enabled.
SYSTEM RESET & CLEAR	YELLOW	Indicates SYSTEM RESET & CLEAR key is depressed (see TABLE C for functions).
OFFLINE LOAD & DISPLAY		
LOAD	WHITE	Lighted when the LOAD-DISPLAY function is in the LOAD mode.
DISPLAY	WHITE	Lighted when the LOAD-DISPLAY function is in the display mode.

TABLE B (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
DISPLAY PANEL INDICATORS

LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
TEST STATUS (NOTE) *		
PASS	GREEN	Indicates a test pass condition of a requested test such as a diagnostic.
FAIL	RED	Indicates a test fail condition of a requested test.
MAINTENANCE CENTER MODE		
MANUAL	YELLOW	Indicates that the MC is in either a manual or a normal mode of operation.
NORMAL	YELLOW	
ONLINE INTERRUPT	YELLOW	Indicates that the MC is in manual performing a compare test. With the MANUAL, ONLINE INTERRUPT, and compare function key depressed, the on-line CU is interrupted on a match. A utility message, if requested, is executed at time of interrupt.
OFFLINE STOP	YELLOW	Indicates OFF-LINE STOPPED key at the MCC is activated. When activated in a compare mode, an off-line stop will occur at match. In a dynamic read mode, an off-line read is performed.
AUXILIARY FUNCTIONS		
OFFLINE STOPPED MANUAL	YELLOW	Indicates OFFLINE STOPPED MANUALLY key at MCC is activated. This key allows direct setting of Alarm and Maintenance Register bit 3 in order to utilize the load and display functions as well as the execute function. Also stops the off-line control unit if the OFFLINE STOP and MANUAL keys are also operated.
PROGRAM EXECUTE	YELLOW	Indicates that PROGRAM EXECUTE key at MC has been activated. This key provides start pulse after an off-line stopped manually condition. (Resets OFF-LINE STOPPED MANUALLY.)
INHIBIT AUTOMATIC DISPLAY	YELLOW	Indicates that the automatic DB display has been inhibited.

* For further information on the meanings of the PASS/FAIL indicators see Section 232-105-102 or 232-105-103.

TABLE B (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
DISPLAY PANEL INDICATORS

LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
AUXILIARY FUNCTIONS (Cont)		
LAMP		
PWR	WHITE	24-volt power to the display p er lamp circuitry is on.
TEST	YELLOW	Indicates lamp test is in process.
SYSTEM ON LINE		
NO. 2 ESS	WHITE	Indicates which system is being monitored by console.
AIS	WHITE	

TABLE C

NO. 2 ESS/AIS SCCS CONSOLE
KEYSHELF PANEL KEYS

KEY/LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
POWER CONTROL		
CU 0 ACT	RED	Allows a manual change of the on-line/ off-line control unit. This key should be operated only if normal hardware controlled via the program timer or TTY request methods of switching fails.
CU 1 ACT	RED	
EMERGENCY ACTION		
ENABLE	RED	When operated enables initialization to be made. When initialization occurs, the program assumes the request was made from the EA panel if the ENABLE key is operated. When the ENABLE key is operated, a major alarm is generated, and the following TTY message is received. MA SY EAP *Note:* Always ensure that the keys on the EA panel are released after emergency action has taken place.
READY	YELLOW	When momentarily depressed, acts as a priming key between the ENABLE and GO keys (releases the interlock).
GO	YELLOW	When momentarily operated, causes an initialization to occur. The ENABLE and READY keys must be operated prior to operation of the GO key.
STABLE	RED	When operated in conjunction with ENABLE, READY, GO, causes a zeroing (clear out) of all stable data and transient data in call store (CS) and initializes the physical equipment.

TABLE C (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
KEYSHELF PANEL KEYS

KEY/LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
EMERGENCY ACTION (Cont)		
		Caution: Operation of the STABLE key (Fig. 2) destroyes all stable calls in the office at the time of initialization. The system time and date are initialized to all zeros by a stable clear initialization. AMA machines will be initialized to zero causing AMA-0 to be switched to on-line or remain on-line. Care should be taken to preserve AMA data that can be destroyed during initialization. The correct time and date must be restored as soon as possible after a stable clear initialization. See Section 232-016-301.
REC CHG /TAPE	RED	When operated in conjunction with ENABLE, READY, GO, causes a zeroing (clear out) of all recent change data in CS in conjunction with an all transient clear initialization (clearing data errors from lines in a transient state). *Caution: Operating REC CHG key clears all recent change data in call store. This data must be reinserted from paper tape record of service orders, customer dialed speed calling, etc. Customer changes cannot be reconstructed. AMA machines will be initialized to zero causing AMA-0 to be switched to on-line or remain on-line. Care should be taken to preserve AMA data that can be destroyed during initialization (see Section 232-106-301).*
TTY INIT	RED	When operated, clears out the TTY data in CS, sounds a major alarm, and prints out a TTY message if cleared. This key is operated when the TTY is suspected of being in trouble and the office still indicates call processing is taking place. The ENABLE, READY, and GO keys are not used for TTY initialization.
LINE TRFR	RED	When operated, provides designated customer lines temporary manual service under emergency conditions. The lines are terminated directly to an operator position via the emergency manual line circuitry. The ENABLE, READY, and GO keys are not used for line transfer operation.

TABLE C (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
KEYSHELF PANEL KEYS

KEY/LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
EMERGENCY ACTION (Cont)		
POWER	WHITE	Used to select either power bus (A or B) which supplies power to the EA panel. The lamp in the key is normally lighted.
TELEMETRY		
REM PWR OFF (lamp	RED	Provides an indication of power removal from the remote (at the No. 2 ESS) SCCS circuitry.
ALL LAMPS OFF	WHITE	When depressed, the E2A telemetry in the console sends a command to the remote E2A telemetry making all scan points idle. The resulting telemetry signal from the remote E2A causes all lamps at the No. 2 ESS/SCCS console to be extinguished except the CRITICAL, MAJOR, and MINOR lamps. These three lamps will flash until the key is released.
ALL LAMPS ON	WHITE	When depressed, the E2A telemetry in the console sends a command to the remote E2A telemetry making all scan points busy. The resulting telemetry from the remote E2A causes all lamps at the No. 2 ESS/SCCS console to light.
TTY CONTROL		
TR 1 ON	YELLOW	By depressing the TR1 ON key, the maintenance channel is transferred from control circuit 0 to control circuit 1. When the lamp is extinguished, control circuit 0 is active. With lamp on, control circuit 1 is active.
REM MTCE	YELLOW	Disconnects the remote maintenance TTY.
RESET	YELLOW	Restores TTY disconnects and/or channel transfers performed by program action.
LOC MTCE	YELLOW	Disconnects the local maintenance TTY (at the No. 2 ESS).
SYSTEM STATUS		
LOCK CU 0 ACT	YELLOW	If CU 0 is online, locks CU 0 online and prevents CU 1 from placing itself on-line. If CU 0 is offline, it can still switch online.

TABLE C (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
KEYSHELF PANEL KEYS

KEY/LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
SYSTEM STATUS (Cont)		
LOCK CU 1 ACT	YELLOW	If CU 1 is online, locks CU 1 online and prevents CU 0 from placing itself online. If CU 1 is offline, it can still switch online.
DISPLAY BUFFER		
CLEAR	YELLOW	Provides a manual DB reset signal. This feature is only available in the manual mode of operation.
MAINTENANCE CENTER FUNCTIONS		
CMPR PA-CIS	YELLOW	Provides access to the compare functions for the designated register or external input. The compare is made to the COMPARATOR INPUT SWITCHES (CIS).
CMPR CSA-CIS	YELLOW	
DYN PS READ	YELLOW	Allows the contents of the PO register to be placed in the DB when the call store address equals the COMPARATOR INPUT SWITCHES.
DYN CS READ	YELLOW	Allows the contents of CSI to be placed in the DB when the call store address equals the COMPARATOR INPUT SWITCHES.
SYS RESET & CLR	YELLOW	Provides an off-line control unit initialization which performs the following functions: (1) Jams PA to 17 (2) Resets INH (Inhibit Flip-Flop) (3) Sets "ITS" (Stops IO control logic) (4) Jams PO (Program Store Output) and PSB (Program Store Output Buffer) to 'OR 0 = NOP (no operation) (5) Zeros command timing (6) Zeros maintenance states registers (except Bit 6) (7) Sets BIN FLOP to block all interrupts
TEST STATUS		
PF	GREEN	Used to control the execution of repeat and step functions entered via a TTY input message.

TABLE C (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
KEYSHELF PANEL KEYS

KEY/LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
MAINTENANCE CENTER MODE		
MAN. (Manual	YELLOW	Provides a manual method of placing the MC in a manual or normal mode of operation.
NORM (Normal)	WHITE	
ONLINE INT (Online Interrupt)	YELLOW	When in a manual mode and with one of the compare function keys depressed, depressing this key causes an interrupt of the on-line CU when a match occurs. A utility message, if requested, is executed at time of interrupt.
AUXILIARY FUNCTIONS		
PROG EXEC (Program Execute)	YELLOW	Provides the start pulse after an off-line stopped manually condition (resets OFF-LINE STOPPED MANUALLY at the MC.
INHIBIT AUTO DISPLAY	YELLOW	Indicates the automatic DB display has been inhibited.
CONSOLE CONTROL		
CSL PWR ON (lamp)	WHITE	Indicates that the required power is applied to the console when the console is connected to a work station and the console power switch is operated to ON.
TLM ALM RLS	WHITE	When depressed, a ground is applied to the console E2A telemetry circuitry which clears the CENT, REM, COM telemetry alarm indications on the console display panel.
OPR OVRD	WHITE	Provides for changing the alternate action feature (operate/release) of the console keys. By holding the OPR OVRD key depressed, any other key when operated will send an operate command each time it is operated.
RLS OVRD	WHITE	Same as OPR OVRD except by holding the RLS OVRD key depressed, any other key when operated will send a release command each time it is operated.
LOC LAMP TEST	WHITE	When key is operated, all lamps on the console are lighted.

TABLE C (Cont)

NO. 2 ESS/AIS SCCS CONSOLE
KEYSHELF PANEL KEYS

KEY/LAMP DESIGNATION	COLOR	INDICATION OR FUNCTION
COMPARATOR INPUT SWITCHES		
0-21	YELLOW WHITE	These switches select a 0 or 1 condition for all manual compares and provide a means for matching two inputs of up to 22 bits each. The comparator output can be used to trigger one of several functions allowing maintenance personnel to capture events or conditions, such as a register equal to a given value. The two most common uses are to trigger the stop or interrupt mechanisms. For these switches, the colors are yellow and white; however, the grouping is the same as the DB.
ALARM RESET		
CRIT	RED	Provides for retiring audible alarms which are remoted to the No. 2 SCCS from the CO.
MAJOR	RED	
MINOR	YELLOW	

3.06 Interface between the SCCS and a CO can be established with or without the computer subsystem. If the computer subsystem is not functioning, CO interface is established by the central office selector unit through the switching network, telemetry, and an auxiliary TTY. The central office selector unit is used to manually connect the TTY or TTY and console to the selected CO. The central office selector unit is illustrated in Fig. 4 and the dial and key functions are defined in Table D. Detailed information pertaining to the central office selector unit can be found in the BSP 190-110 layer common systems documents.

TABLE D

CENTRAL OFFICE SELECT UNIT DIALS AND KEYS

	DIAL OR KEY	FUNCTION
DIAL	AUDIBLE ALARM RELEASE	Used in conjunction with the ALM RLS key to silence audible alarms transmitted via telemetry to the No. 2 SCCS. Selects the CO channel over which the alarms are transmitted.
	CHANNEL SELECT TENS & UNITS	Selects the CO (by TTY channel number) to be accessed by the control console and/or TTY.
KEY	CHAN RLS	Releases full access to a CO and returns the control console and/or TTY to an idle state.
	FA (Full Access)	Requests full access of the control console and/or the TTY to the CO designated by the channel select dial. This key is illuminated while the console or the TTY is accessing a CO.
	RO	Used when a TTY is used in place of the CRT. Places the TTY in a receive only mode. Any number of work station TTY's may be in a RO mode simultaneously on the same channel.
	ALM RLS	Used in conjunction with the audible alarm release dial. Silences the audible alarm which is transmitted over the channel that is selected by the dial.

3.07 When the computer subsystem is available, access to the CO is accomplished via the CRT terminal. The keyboard allows the SCCS maintenance personnel to transmit commands to the No. 2 ESS, via the mini computer, in the same format as from a TTY. The No. 2 ESS output messages are displayed on the CRT screen instead of printed on a TTY.

3.08 In addition to allowing capabilities similar to No. 2 ESS maintenance TTY operations, the CRT and keyboard permit review and manipulation of maintenance TTY output messages, access to TTY messages and data files stored in the computer subsystem, and input message to the computer subsystem requesting designated SCCS function.

3.09 The computer subsystem is constantly monitoring TTY output messages from the CO. This information is stored on magnetic disks and tapes for subsequent retrieval by the CRT and terminal. When this information indicates an alarm condition, the processor evaluates the messages and sounds the appropriate alarm. An indication of the alarm type is displayed on the alarm video monitor, which is the equivalent of a 23-inch commercial television set (Fig. 4) and is normally mounted for easy viewing from the work staqtion.

3.10 The computer subsystem allows the information stored on disks and tapes to be retrieved and manipulated in various ways:

- ***Browsing***—Browsing is a function that allows the user to examine the contents of a data file by displaying a full screen of data on the CRT terminal. The messages can then be scrolled up or down allowing the user to view the full data file.

- ***Patterns***—Selected information can be displayed by means of patterns. A pattern is defined as specific data describing a class of messages. The patterns provided for the No. 2 ESS are given in Table E. These patterns allow the SCCS maintenance personnel to display certain messages in a file without having to display the entire file.

TABLE E

NO. 2 ESS PATTERNS

SYSTBL — System Trouble
PROCTBL — Processor Trouble
NTWK — Network Trouble
NTWKA — Network Analysis
AUDIT — Audit Trouble
CONFL — Continuity Failure
CTXDL — Attendant Data Link Trouble
RART — Recorded Announcement and Ring and Tone Plant Trouble
TV FAIL — Test Vertical Failure
NTWK NN — Network Trouble per LTN
CPDFL — Central Pulse Distribution Failure

- ***Conversions***—When browsing ESS messages, it often necessary to convert a number from one base to another, determine which program corresponds to a specific program address, or, identify the register a call store address represents. The conversions applicable to a No. 2 ESS that can be performed through the conversion routine are:

  Octal to Decimal—Decimal to Octal

  Octal to Terminal Equipment Number (TEN)—TEN to Octal

  Address to Program Store Location

  Octally Coded BCD to BCD—BCD to Octally Coded BCD

  TEN to Line Scanner (LS)—LS to TEN

Line Trunk Network (LTN) to LS—LS to LTN

Octal to Scan Point Number (SPN)

SPN to Octal

- Message Expansion—speeds analysis by reformatting messages into a more readable form. Like the number conversion, message expansion saves both time and error by eliminating numerous bit conversions. Not all messages have expansions. If a request for expansion is made for those messages that do not have expansions, the computer subsystem responds with an error message. A list of No. 2 ESS messages that have expansion with the generic 3 program are listed in Table F. For additional expansions included in generic 4, refer to Input Message Manual IM-1P130-01.

TABLE F

NO. 2 ESS MESSAGE EXPANSIONS AVAILABLE WITH GENERIC 3

MI CF
M_ NW ADR
MI NW ERR
MI NW MAT
MA NW RMV
MI NW TVF
MR NW XRA
MI SY AE_
MI SY MM_
MI SY MMD
MI SY MRF
MI SY PMD
MI SY STA
MI SY STB
MI SY SIC
MI SY SID
M_ TT DGN

4. TABLES

Critical Indicator Panel (Table A)

4.01 The critical indicator panel indicators are controlled via the E2A telemetry circuitry, and the computer subsystem: details are covered in Section 190-110-110. There are two E2A units that have inputs to the critical indicator panel. When the SCCS console is not connected, status information is transmitted from the CO to critical indicator panel via the E2A unit located in the common equipment cabinets. When the console is connected, the E2A unit located in the console supplies both the critical indicator panel and the SCC console display and key panels with CO status information.

4.02 The critical indicator panel table lists the indicators in the order that they appear on

the panel. Table A provides the designation, color, and function for each lamp on the critical indicator panel.

DISPLAY PANEL (TABLE B)

4.03 The display panel (Fig. 3) provides remote status information of two No. 2 ESS panels. The MC control and display panel, and the TTY contol panel. In addition the status of the telemetry circuits, and status indications to be used for miscellaneous functions assigned by the SCCS are provided.

4.04 The system status indications of the peripheral equipment (net, scan, etc) are provided by dual function lamps. A complete listing of all the controls and indicators on the display panel along with the functions of each is provided in Table B.

KEYSHELF PANEL (TABLE C)

4.05 The keyshelf panel (Fig. 3) provides remote control of selected functions controlled locally from the No. 2 ESS MC panel, TTY control panel, and EMERGENCY ACTION PANEL. Additional keys are provided to test the telemetry path between the CO and SCCS, release audible alarms (telemetry generated), test console lamps, and transmit continuous operate or release commands.

4.06 Table C provides a listing of the lamp and key designations, color of each, and indications and functions of the lamps and keys mounted on the keyshelf. Lamps are listed by functional groups.

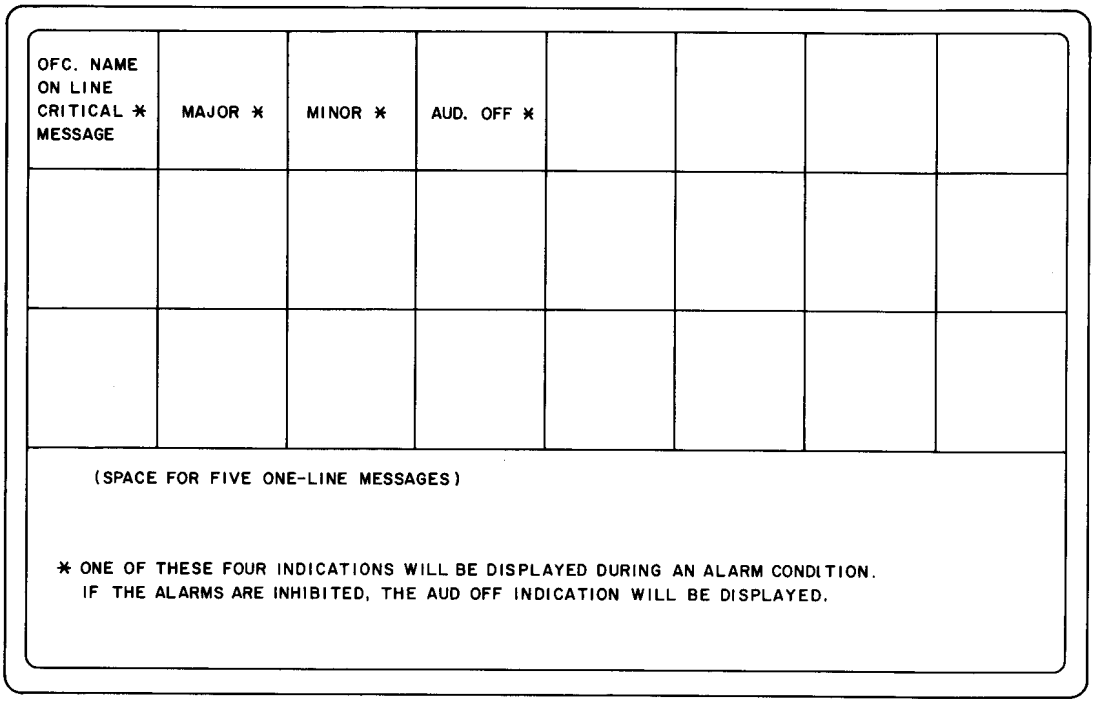


Fig. 4—Representation of Alarm Video Monitor Screen

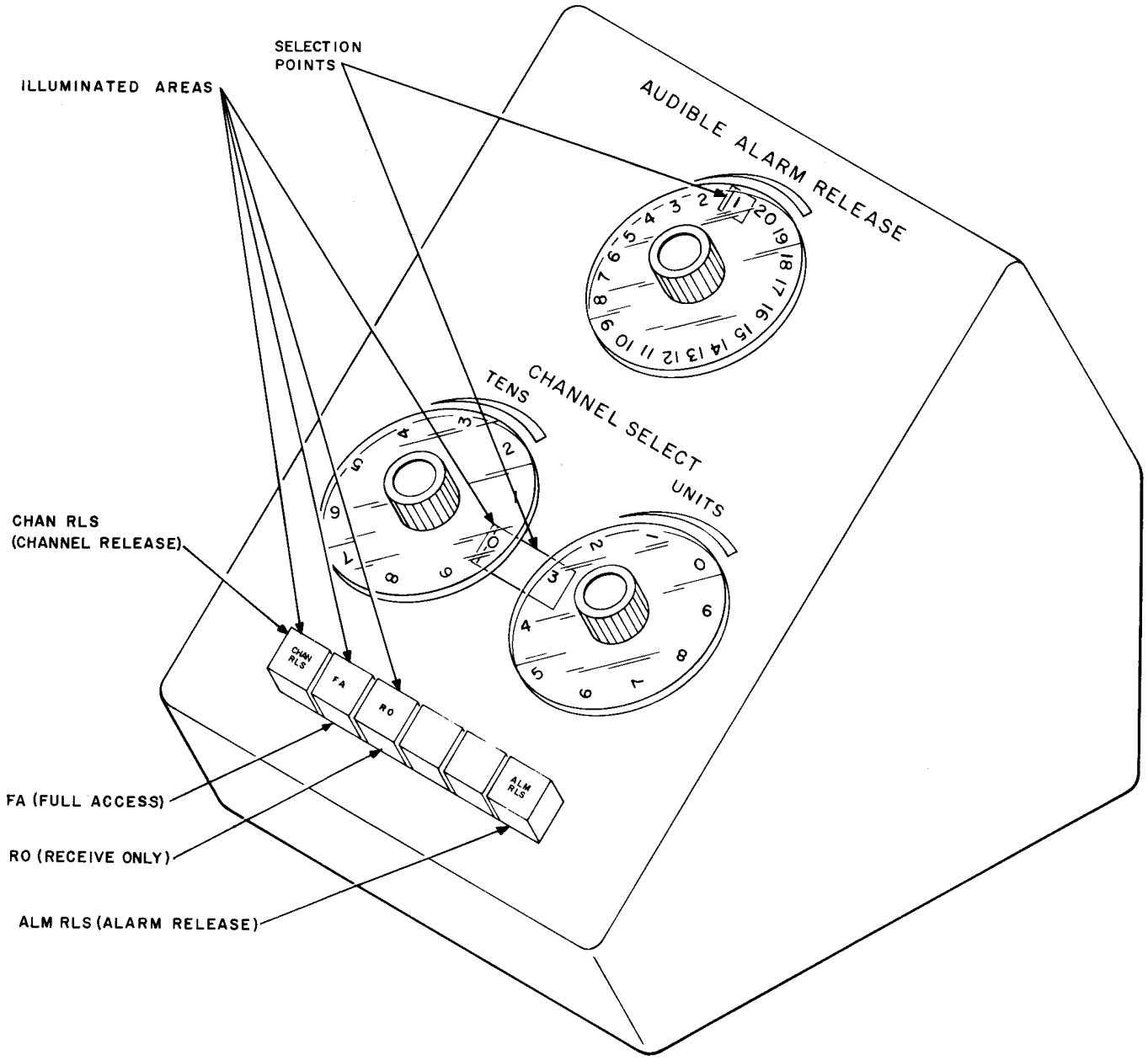


Fig. 5—Central Office Selector Unit