

## NO. 2 SWITCHING CONTROL CENTER SYSTEM

### NO. 2B ELECTRONIC SWITCHING SYSTEM APPLICATION

#### DESCRIPTION

#### GENERAL

**1.01** This section describes the No. 2 Switching Control Center System (SCCS) facilities which are peculiar to the No. 2B Electronic Switching System (ESS) application. Bell System Practices covering facilities, which are common to many types of SCCS applications, refer to a No. 2B ESS as a Stored Program Controlled System (SPCS).

**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 types of SPCSs.

**1.04** The SCCS Control Console 1A (CC1A) which is used for the No. 2B ESS application, is a microcomputer-based system with a cathode ray tube terminal as an input/output device. This console is designed to allow remote control capability of an SPCS switching machine and is configured for a specific SPCS (No. 2B ESS in this instance) from a floppy disc which is housed in the console (see Fig. 1).

**1.05** The No. 2 SCCS facility can be divided into three areas: the common equipment area, the work station area, and the computer subsystem (CSS) area. In the common equipment area, equipment cabinets contain SCCS and SPCS interface equipment common to the various SPCSs. The SCCS and SPCS interface equipment consists of data sets, E2A telemetry unit, critical indicator interface, control circuitry, crossbar switches, power supplies and history teletypewriters (TTYs). The history TTYs are dedicated to SPCSs for the purpose of recording maintenance history information. The work station area provides desks and interface connections for the CC1A, TTY and cathode ray tube monitor and associated keyboard (CRT). The

interface connections are those required to connect to the central office selector and junction unit (COSJU). Critical indicator panels (CIPs) are located centrally in this area to provide continuous status information for each SPCS.

**1.06** The TTYs and CRTs are units which are used to input control messages to and receive messages from the various SPCSs. The CRT is used in a fully automated No. 2 SCCS. If the computer subsystem is inoperative or unavailable, only the TTY and CC1A are used (such a configuration is normally referred to as a No. 1 SCCS).

**1.07** The SCCS equipment defined as having specific No. 2B ESS applications are the CC1A and the CIP dedicated to monitor the status of a No. 2B ESS office. This document primarily describes the application of these two units. Other SCCS equipment is either dedicated to another type of SPCS or common to all SPCSs. Common equipment is described in detail in the 190-110 layer Bell System Practices. For Bell System Practices covering equipment pertaining to a specific SPCS type, refer to index 190-000-000. If the common equipment has specific No. 2B ESS applications, that application is described in this section.

#### 2. EQUIPMENT DESCRIPTION

##### A. Control Console

**2.01** The SCCS CC1A (Fig. 1) allows the SCCS maintenance personnel to monitor and control an SPCS from a remote location (in this case the remote location is a switching control center). The man-machine interface portion of this console is a cathode ray tube terminal with its control display implemented on a microcomputer.

#### NOTICE

Not for use or disclosure outside the  
Bell System except under written agreement

## SECTION 190-116-110

**2.02** The major functions performed by the CC1A are the display of the status of, and operation of the control over, the SPCS accessed.

**2.03** The SCCS control console provides a remote display of the No. 2B ESS System Status Panel (SSP) lamp and key status. In addition, the status of the No. 2B ESS alarms, console control, and miscellaneous circuitry (assigned by TELCo), are displayed.

**2.04** The console display which corresponds to a RED key or lamp **ON** (at the SSP) is presented as bright reverse video (function name dark—background brightened). For SSP AMBER YELLOW & GREEN key or lamp **ON**, console display is dim reverse video (function name dark—background dimly brightened). For detailed information on these displays see PA-5P158.

**2.05** The CC1A also displays key controls which, when selected and activated permit the SCCS personnel to perform maintenance operations on the SPCS which is accessed. The combined display and control presentation is shown in Fig. 2.

**2.06** The E2A telemetry-computer-translator (TCT), microcomputer, data set and miscellaneous circuitry located in the console provides the capability of transmitting control and status information between the console and the E2A unit located at the SPCS. When the console is not in control, status information is transferred between the SPCS E2A and SCCS critical indicator panel (Fig. 3) via the E2A critical indicator (CI) located in the common equipment bay.

**2.07** When a key control on the console is executed, a command is sent via the TCT to the No. 2B ESS SSP. This command operates circuitry which simulates the operation of the corresponding key at the SSP. The state of the key on the SSP is reflected on the control console display: an activated (ON) key is shown in bright reverse video, a released (OFF) key is shown in normal video.

### B. Critical Indicator Panel

**2.08** The critical indicator panel (Fig. 3) displays the real time status information of the various SPCSs being monitored by the SCCS. In the case of the No. 2B ESS, one of these indications is a spare and can be assigned to monitor fault conditions

designated by the SCCS. These alarm indications are defined in Table A (indications peculiar to the No. 2B ESS application only). CIP indications common to all SPCSs are defined in Section 190-110-110.

**2.09** In general, the alarm indicators track the problem. When the problem goes away, the lamp indication is extinguished. 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 acknowledged and 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 will 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 retired at the COSJU.

## 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 No. 2B ESS offices. A block diagram of the system configuration is shown in Fig. 4.

**3.02** The No. 2B ESS/SCCS control console 1A remotes selected MTCE indicators and function keys and accordingly, allows maintenance personnel to perform various routine and special purpose operations remotely from the SCCS.

**3.03** The DISABLE REMOTE ACCESS key at the SSP is set and reset manually to control the SCCS E2A telemetry access into the SSP. Maintenance personnel can activate this key to disable the E2A's control leads into the SSP, however, the monitoring ability of the SCCS is not

disturbed. This procedure is used if the No. 2B ESS is adversely affected by erroneous E2A telemetry operation.

**3.04** As can be seen in Fig. 2, the CC1A display includes system status displays which indicate the current alarm status, temporary memory, system registers, or machine occupancy patterns, etc.

**3.05** The system status and control portion of the CC1A display (Fig. 2) is divided into four major areas; (1) **System Emergency Manual Control** which includes the **System Initialization Functions** and FORCE CU ACTIVE function, (2) **System Status & Control** which includes LOCK CU, Alarm Display and Control, Test Control and indications for System Normal & Panel Time Out, (3) **Peripheral Unit Status**, (4) **Display Buffer** with binary, octal and decimal (for low 16 bits) display, and **Panel Power** which includes Alternate Bus and Circuit Power indications (see Table B). The lamp indications represent the state of major peripheral equipment, and are intended to point the maintenance personnel to trouble areas. If a lamp indication is lighted, maintenance personnel can determine why by requesting status information for the particular unit in question via a TTY input message.

**3.06** Interface between the SCCS and a No. 2B ESS can be established with or without the computer subsystem. If the computer subsystem is not functioning, SPCS interface is established by the COSJU through the switching network, telemetry, and an auxiliary TTY. The COSJU is used to manually connect the TTY or TTY and console to the selected SPCS. Detailed information pertaining to the COSJU can be found in the BSP 190-110 layer common systems documents.

**3.07** With the computer subsystem, TTY access to the No. 2B ESS is accomplished via the CRT terminal. The keyboard allows the SCCS maintenance personnel to transmit commands to the No. 2B ESS, via the minicomputer, in the same format as from a TTY. The No. 2B ESS output messages are displayed on the CRT screen instead of printed on a TTY (the COSJU is still used to get console access to the No. 2B ESS).

**3.08** In addition to allowing capabilities similar to No. 2B 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 terminal. When this information indicates an alarm condition, the processor evaluates the messages and sounds the appropriate alarm.

**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. 2B ESS are given in Table C. These patterns allow the SCCS maintenance personnel to display certain messages in a file without having to display the entire file.
- **Conversions**—When browsing ESS messages, it is 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
  - **Octal to Scan Point Number (SPN)**—SPN to Octal

**Message Expansion**—Speeds analysis by reformatting messages into a more readable form; eliminating numerous bit conversions. Like number conversions, message expansion can save time and reduce errors when ESS data is being examined. 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. 2B ESS messages that have expansion with the generic 3 program (in the CSS) are listed in Table D.

**4. TABLES**

**A. Critical Indicator Panel (Table A)**

**4.01** 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 for those indications which are peculiar to the No. 2B ESS.

**B. Control Console 1A—Control/Display**

**4.02** The control/display indicators shown in Fig. 2 are listed in Table B.

TABLE A

## CRITICAL INDICATOR PANEL

(Indications Peculiar to the No. 2B ESS Application Only)

LAMP DESIGNATION	LAMP COLOR	INDICATION OR FUNCTION
CU (Control Unit)	RED	Gives indication that a CU must have been removed from service by error recovery programs or manually originated requests, such as TTY input request RMV: CU! A CU is OUT OF SERVICE if either CU is offline and not in the forced or locked state; or, if either CU is forced or locked off-line via manual activation of system status panel (SSP) key(s), a CU is UNAVAILABLE. The UNAVAILABLE status is terminated only by maintenance personnel deactivating the lock or force functions.
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. 2B ESS SSP.
SCAN (Scanner)	RED	Gives indication that a scanner controller has been removed from service or that a trouble has been detected in the scanners. This signal is activated via the telemetry circuitry from the SCAN lamp on the No. 2B ESS SSP.
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. 2B ESS SSP.
MAS (Main Store)	RED	Gives indication that a main store trouble exists, such as; standby CU's memory access, correctable and uncorrectable on line or off-line complement correction trouble, and uncorrectable on-line double store read trouble.
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 if any of the following SSP or control console indicators are lighted: MISC, RA, RT, TDC, or TTYC.

TABLE B

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
SYSTEM EMERGENCY MANUAL CONTROL		
SYSTEM INITIALIZATION		
ENABLE (enab)	KEY/LAMP	This key is set manually to activate control of the other system initialization keys. It is cleared automatically by hardware when the INIT EXECUTE key is manually activated. Software also clears the ENABLE key during initialization sequence.
STABLE CALLS (stab_calls)	KEY/LAMP	This key is set manually, following ENABLE key activation, to indicate stable calls are desired cleared when the next initialization occurs, either automatically or by manually activating the INIT EXECUTE key. Initializations with this key active will terminate all stable calls thus service will be affected.
MEMORY RELOAD (mem_rel)	KEY/LAMP	This key is set manually, following ENABLE key activation, to indicate that the generic program and current translations should be written from cartridge tape into write protected memory when the next initialization occurs, either automatically or by manually activating the INIT EXECUTE key. Initializations with the MEMORY RELOAD key active are service affecting; they stop call processing functions for two to five minutes, terminate transient calls, and generate a level 6 initialization.
RECENT CHANGE (rec_chg)	KEY/LAMP	This key is set manually following ENABLE key activation, to indicate that all recent change data and transient data should be cleared when the next initialization occurs, either automatically or by manually activating the INIT EXECUTE key. Initializations with this key active are service affecting, they require all unupdated service order changes (if any exist) to be reinputted and all transient calls to be reoriginated.
BACKDT OFFICE DATA (bkdt_od)	KEY/LAMP	This key is set manually, following ENABLE key activation, to indicate the translation portion of the write protected memory should be overwritten with the backup tape cartridge file following a bootstrap initialization, either automatically or by manually activating the MEMORY RELOAD and INIT EXECUTE keys. An active BACKDT OFFICE DATA key has no effect if active during a non-bootstrapping initialization. A backdate initializa-

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
<b>SYSTEM EMERGENCY MANUAL CONTROL</b>		
<b>SYSTEM INITIALIZATION</b>		
BACKDT OFFICE DATA (Contd)		tion is service affecting, it clears recent change memory and sets the initialization level to 6. This key is cleared by software (recent change program) when the write protected memory of both CUs matches the contents of both tape cartridges.
INIT EXEC (init_exec)	KEY/LAMP	This key is set manually following ENABLE key activation to start a system initialization whose severity is at least an activation of emergency audits which may affect transient calls. Initializations of greater severity are obtained pending the state of other system initialization keys, such as; STABLE CALLS, RECENT CHANGE, MEMORY RELOAD, and BACKDT OFFICE DATA.
TTY INIT (tty_init)	KEY/LAMP	This key is set manually to request all teletypewriter waiting lists and service status memory to be cleared. All appropriate TTY hardware is also initialized.
EMER LINE TRFR (emer_line_trfr)	KEY/LAMP	This key is set and reset manually to control service to special emergency lines. Should the No. 2B ESS become inoperative emergency lines are switched to manual operators upon activation of this key. The EMER LINE TRFR key directly controls the Emergency Manual Line Circuit. Software control is not involved.
DISABLE REMOTE ACCESS (disable_remote_access)	LAMP	This function is set and reset manually at the No. 2B ESS to control SCCS E2A telemetry access into the No. 2B ESS SSP (in the MTCE frame). Maintenance personnel at the No. 2B ESS can activate this function to disable the E2A leads into the SSP, however, the monitoring ability of the SCCS is not disturbed. This procedure is normally used when local office service is affected by faulty E2A telemetry operation.
<b>FORCE CU/SYC ACTIVE</b>		
FORCE	KEY/LAMP	This key is set and reset manually to control a hardware force of the on-line CU when a selection is indicated by manually activating either the SELECT 0 or SELECT 1 key. Activating the

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
SYSTEM EMERGENCY MANUAL CONTROL		
FORCE CU/SYC ACTIVE		
FORCE (Contd)		FORCE key will override the LOCK function. This FORCE function can only be removed manually by depressing the FORCE key or the active SELECT key. The FORCE function is intended to be used only if normal procedures described under the LOCK function are not applicable. Activating the off-line CU's SELECT key may generate an initialization switch and may be service affecting.
SELECT 0 & SELECT 1 (sel_0) (sel_1)	KEY/LAMPS (separate key/ lamps for 0 and 1)	One of these two keys is set by program when the LOCK key is active which guarantees that the correct on-line CU is forced active. Either key may be set manually to indicate which CU is being forced on-line if the FORCE key is active. These keys are reset by software when the LOCK or FORCE keys are deactivated.
SYSTEM STATUS AND CONTROL		ACTIVE, STANDBY, OUT OF SERVICE, and UNAVAILABLE do not exist all at once but appear one at a time.
CU 0 & CU 1		
ACTIVE (active)	LAMPS	Indicate which CU is on-line and executing the system controlling generic program.
STANDBY (standby)	LAMPS	Indicate which CU is off-line, not in the FORCED, LOCKED, or OUT OF SERVICE states. The STANDBY state indicates that both the on-line (ACTIVE) and off-line (STANDBY) CU's memory contents are identical with memory writes executed in the on-line CU also writing into the off-line CU's memory.
OUT OF SERVICE (out_svc)	LAMPS	Indicate which CU is off-line, not in the FORCED or LOCKED state. An OUT OF SERVICE CU is removed from service by either software (error recovery programs), or manually originated requests, such as TTY input request RMV:CU.
UNAVAILABLE (unavail)	LAMPS	Indicate which CU is either FORCED or LOCKED off-line via manual activation of SSP key(s). The UNAVAILABLE status is terminated by deactivating the LOCK or FORCE functions.

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/OR LAMP	INDICATION OR FUNCTION
<b>SYSTEM STATUS AND CONTROL</b>		
<b>CU0 &amp; CU1</b>		
SYSTEM NORMAL (system_normal)	LAMP	This lamp indication is set by software when none of the following indicators or functions are active (system trouble indicators are normal): AMA, ATI, BLDG, CKT LIM, CRITICAL, FUSE, INHIBIT BUILDING ALARM, MAJOR, MAJOR POWER, MANUAL FORCED, MAS, MINOR, MINOR POWER, MISC, NET, OUT OF SERVICE, PANEL TIMEOUT, RA, RT, SCAN, TDC, TRAFFIC, TTYC, OR UNAVAILABLE.
ALARM CONTROL PANEL TIMEOUT (panel_time_out)	LAMP	Indicates the panel timer has timed out. A time out results in a major alarm because the 3A CC did not reset the timer. This lamp indication is activated by the expiration of a 3.3 second hardware timer within the SSP. Software attempts to prevent this hardware timeout by periodically resetting the timer. The PANEL TIME OUT lamp indication is also reset by activating the ALARM RELEASE key.
<b>ALARMS</b>		
CRITICAL (critical)	LAMPS	Indicates a severe service affecting condition exists at the No. 2B ESS accessed, and that immediate remedial action must be taken. This control console indication is accompanied by an audible critical alarm. In addition, a message may be printed out on the CRT and/or TTY identifying the problem and action to be taken to correct the condition. This lamp is cleared by activating the ALARM RELEASE key.
MAJOR (major)	LAMPS	Indicates that trouble conditions exist at the No. 2B ESS accessed which require prompt corrective action. This indication is accompanied by an audible MAJOR alarm. In addition, a message may be printed out on the CRT and/or TTY identifying the problem and corrective action. This lamp is cleared by activating the ALARM RELEASE key.
MINOR (minor)	LAMPS	Indicates that conditions exist at the No. 2B ESS accessed which are other than normal and warrant close observation to minimize the possibility that these conditions could become more serious (service affecting).

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
SYSTEM STATUS AND CONTROL		
ALARMS		
ALARM CIRCUIT (alm_ckt)	LAMP	Indicates that the alarm circuitry in the No. 2B ESS is in an abnormal state. This indication is accompanied by an audible MAJOR alarm and a printout on the CRT (or TTY) (M SY ABA). This alarm can only be retired manually (by clearing the hardware trouble).
SERVICE LOSS (svc_loss)	LAMP	Indicates the initialization history of the No. 2B ESS. If indication is <i>flashing</i> , an initialization has occurred within the past 100 seconds. If indication is <i>steady</i> , (1) a level 6 or greater initialization (which was service affecting) has occurred at least 100 seconds previously, (2) an initialization message (M SY CLR) has been printed out and (3) PANEL TIME OUT has been reset. SERVICE LOSS indication is cleared (if it is not flashing) by input message M SY:RSL.
MAJOR POWER (mj_pwr)	LAMP	Indicates that a major power alarm condition has been detected. In addition, a major alarm message (MA SY MJP) is printed out on the CRT and/or TTY. This indication is accompanied by an audible MINOR alarm.
MINOR POWER (mn_pwr)	LAMP	Indicates that a minor power alarm condition has been detected. In addition, a minor alarm message (MA SY MNP) is printed out on the CRT and/or TTY. This indication is accompanied by an audible MINOR alarm.
FUSE (fuse)	LAMP	Indicates that a fuse is blown in the No. 2B ESS. In addition, an alarm message (MA SY FA) is printed out on the CRT and/or TTY. This indication is accompanied by an audible MAJOR alarm.
INH BLDG ALARMS (inh_bldg_alm)	KEY/LAMP	This key is set manually to inhibit all building alarms, the lamp indication is activated by hardware when the key is depressed. Telephone Operating Companies employ this KEY/LAMP to control building alarms per local procedures. Building alarms remain inhibited until the lighted INHIBIT BUILDING ALARM key is depressed to extinguish the lamp and enable building alarm detection.

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
SYSTEM STATUS AND CONTROL		
ALARMS		
ALARM RELEASE (alm_rls)	KEY/LAMP	This key is set by software whenever a CRITICAL, MAJOR, MINOR, and PANEL TIME OUT alarm occurs. When reset manually the CRITICAL, MAJOR, MINOR and PANEL TIME OUT alarms (both visual and audible) will be released.
ALARM TRFR (alm_trtr)	LAMP	This lamp indication is set when the ALARM TRFR key is operated at the SSP (alarms are monitored remotely from the No. 2B ESS). Alarms can also be transferred (ALARM TRFR lamp indication can be set — or reset) via TTY input messages. When this function is active, both local and remote audible alarms (MAJOR and MINOR) are permitted to sound, but audible alarms at No. 2B ESS are terminated after thirty (30) seconds.
TEST CONTROL		
PASS (pass)	LAMP	Indicates that the No. 2B ESS passed the tests which were requested via CRT (or TTY) in the step or repetitive mode.
FAIL (fail)	LAMP	Indicates that the No. 2B ESS accessed failed the tests which were requested via the CRT (or TTY) in the step or repetitive mode.  <i>Note:</i> Results which fail and are different than the first failure are indicated by both the PASS and FAIL lam indications.
EXECUTE (execute)	KEY/LAMP	This key is set to request the execution of a previously initiated step mode function.  Activating this key stops or starts a function which was requested in the repetitive mode. The lamp indication is set by software to show that a requested step or repetitive function is currently executing.  <i>Note:</i> Peripheral unit order execution functions (input messages with ORD action field) in the repetitive mode deviate from the previous definition. The repetitive ORD functions are terminated normally by maintenance channel request (see input message manual IM-2H200 CLR-RPT), and the EXECUTE key/lamp has no effect on these functions.

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
SYSTEM STATUS AND CONTROL		
TEST CONTROL		
LOCK (lock)	KEY/LAMP	<p>The LOCK function is used to prevent the inactive CU from placing itself active or the active CU from placing itself inactive. This key is set and reset manually to control program access to the SSP force circuit. The FORCE key and either the SELECT 0 or SELECT 1 key, pending the online CU, are set by program enabling the force hardware when the LOCK key is active.</p> <p>If the LOCK key is inactive, the FORCE key and appropriate select key are reset disabling the force hardware. The LOCK function is overridden when the FORCE key is activated. The LOCK key is the accepted technique for keeping the on-line CU active when the processor is running, and it eliminates errors associated with selecting the online CU. The LOCK function will remain unchanged through all initializations including memory reloads. The LOCK function is only retired manually, either by deactivating the LOCK key or by activating the FORCE key.</p>
PERIPHERAL UNIT STATUS		
TTYC	LAMP	Indicates that either TTY controller for maintenance channel (0 or 1) is out of service and is set or cleared by software.
BLDG	LAMP	This indication is set and cleared by software and is retired when the hardware trouble which set off the BLDG ALARM is repaired.
CKT LIM	LAMP	Indicates that either service circuit or trunk circuit trouble exists. Trouble is defined as any trunk or service circuit group which has more members maintenance busy than is acceptable for the size of the particular group. The acceptable number of maintenance busy members is either 1/4 or 1/8 pending the state of a bit in memory; maintenance busy threshold (MBT), maximum fraction of any given circuit group which may be equipped from service. This lamp indication is set and reset by software.

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
<b>SYSTEM STATUS AND CONTROL</b>		
<b>PERIPHERAL UNIT STATUS</b>		
TDC (tdc)	LAMP	This indication is set by software when either TDC or TDC 1 is out of service, and is reset when they are both in service.
MANUAL FORCED (man_forc)	LAMP	Indicates that maintenance personnel have manually activated FORCE or LOCK, or if either CU has its MANUAL, POWER, or TEST MODE key(s) active. This lamp indication is set and reset by software.
TRAFFIC (traffic)	LAMP	Indicates that the call handling capability of the No. 2B ESS has been exceeded. This lamp indication is set and reset by software.
DSP (dsp)	LAMP	(DYNAMIC SERVICE PROTECTION). This lamp indication is set by software when more than nine (9) of sixteen (16) dial tone speed tests fail and is reset (by software) when less than seven (7) of sixteen tests pass.
TOLL NET (toll_net)	LAMP	This lamp indication is inactive for No. 2B ESS.
ATI (ati)	LAMP	(AUTOMATIC TEST INHIBIT). This lamp indication is set and reset by software and indicates that an initialization has occurred, or that maintenance personnel have inhibited an automatic function; as the scanner detection or long term periodic exercise, or a multiscan function. In addition, certain error printouts may be inhibited.
MAS (mas)	LAMP	Indicates that the on-line ACTIVE CU does not have access to the off-line CU's memory or, that a correctable or incorrectable main store (on-line or off-line) trouble exists or, an on-line main store double store read trouble exists. This lamp indication is set and reset by software.
NET (net)	LAMP	This lamp indication is set by software when a switching network controller is out of service or, that a switching network trouble list entry exists (bad address ACCESS, bad address PUBAD). This lamp indication is set and reset by software.

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
SYSTEM STATUS AND CONTROL		
PERIPHERAL UNIT STATUS		
SCAN (scan)	LAMP	Indicates that at least one master scanner, universal scanner or line scanner is out of service or, that a scanner trouble list entry exists (bad address ACCESS, bad address PUBAD, column fault CLFLST). This lamp indication is set and reset by software.
AMA (ama)	LAMP	Indicates that the automatic message accounting frame has its standby transport in the out of service state. This lamp indication is set and reset by software.
RT (rt)	LAMP	Indicates that a ringing and tone plant has been removed from service. This lamp indication is set and reset by software.
RA (ra)	LAMP	Indicates that a recorded announcement channel has been removed from service. This lamp indication is set and reset by software.
MISC (misc)	LAMP	Indicates a trouble exists with an associated miscellaneous function, such as: Supplementary CPD, Local CPD or Input Output Control Circuit (IOCC), Automatic Identified Outward Dialed (AIOD), Attendant Data Link (AL), or the Tape Data Controller's (TDC) contents does not match main memory. This lamp indication is set and reset by software.
MAJOR EQUIP LOSS (major equip_loss)	LAMP	This lamp indication is set by software when any of the following lamp indications are set: AMA, MAS, MISC, NET, RA, RT, or SCAN.
PANEL POWER		
ALT BUS (alt_bus)	LAMP	Indicates the ALTErnate bus key at the No. 2B ESS (non-locking) has been operated.  Software is continually attempting to set this key and is successful if the normal power configuration develops a hardware problem.  In this event, the alternate power buses are used.
CIRCUIT POWER (ckt_pwr)	LAMP	Indicates circuit power is on the No. 2B ESS SSP.

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
<b>SYSTEM STATUS AND CONTROL</b>		
<b>PERIPHERAL UNIT STATUS</b>		
SCAN	LAMP	Indicates that at least one master scanner, universal scanner or line scanner is out of service or, that a scanner trouble list entry exists (bad address ACCESS, bad address PUBAD, column fault CLFLST). This lamp indication is set and reset by software.
AMA	LAMP	Indicates that the automatic message accounting frame has its standby transport in the out of service state. This lamp indication is set and reset by software.
RT	LAMP	Indicates that a ringing and tone plant has been removed from service. This lamp indication is set and reset by software.
RA	LAMP	Indicates that a recorded announcement channel has been removed from service. This lamp indication is set and reset by software.
MISC	LAMP	Indicates a trouble exists with an associated miscellaneous function, such as; Supplementary CPD, Local CPD or Input Output Control Circuit (IOCC), Automatic Identified Outward Dialed (AIOD), Attendant Data Link (AL), or the Tape Data Controller's (TDC) contents does not match main memory. This lamp indication is set and reset by software.
MAJOR EQUIP LOSS	LAMP	This lamp indication is set by software when any of the following lamp indications are set: AMA, MAS, MISC, NET, RA, RT, or SCAN.
<b>PANEL POWER</b>		
ALT BUS	LAMP	Indicates the ALternate bus key (non-locking) has been operated.  Software is continually attempting to set this key and is successful if the normal power configuration develops a hardware problem.  In this event, the alternate power buses are used.
CIRCUIT POWER	LAMP	Indicates circuit power is on the No. 2B ESS SSP.

TABLE B (Contd)

## SCCS CONTROL CONSOLE CONTROL/DISPLAY INDICATORS

DESIGNATION	KEY AND/ OR LAMP	INDICATION OR FUNCTION
SYSTEM STATUS AND CONTROL		
PANEL POWER		
DISPLAY BUFFER	LAMPS	The DISPLAY BUFFER contains twenty-four (24) lamp indications which are used to reflect one of the following: machine occupancy pattern, system initialization in progress, or a maintenance personnel initiated utility display of a memory location or scanner row. The DISPLAY BUFFER can be used to dynamically display the contents of a temporary memory location, CU register, or a scanner row. These display functions are initiated by TTY input requests (see IM-2H200 for MON messages). Actual and decimal conversions of the display buffer data are available (octal-all 24 bits, decimal-low 16 bits only).

## TABLE C

## NO. 2B ESS PATTERNS

The following patterns are predefined for No. 2B ESS. Note that for any pattern shown in quotes, the quotes are considered a part of the pattern name.

PATTERNS

ALARM	Matches alarm messages: i.e., those messages containing "*" or "**" in the alarm field.
HMARK	Matches those messages which occur on the hour and contain "00" in the time past the hour field.
HOURLY	Matches the hourly report message, "SYS STAT."
"MSG (<name 1>, <name2>, ..., <name9>")	Matches any message that is given as an argument. Up to nine names can be given. This is useful when it is desired to search for a message that doesn't have a defined pattern. It should not be used frequently, however, because it is inefficient. Rather, the message pattern should be defined using the RC:PAT command found in the IM-1P131-01.
SCTAB	Matches from the start of an output message to the beginning of the "sort code" field; i.e., skips the SCCS time and date header and the SPCS alarm and "time past the hour" fields.
MON	
TUES	
WED	
THURS	
FRI	
SAT	
SUN	Matches any hourly report messages, "SYS STAT", containing the given day of the week.

The patterns shown above are being provided with GENERIC III.

TABLE D

NO. 2B ESS MESSAGE EXPANSIONS

(1) EXPANDABLE DIAGNOSTIC RESPONSE MESSAGES

DGN CU COMP  
DGN CU X ABT  
DGN CU X COMP ATP  
DGN CU X STATUS TST  
DGN CU X TRBL

(2) EXPANDABLE NETWORK-MAINTENANCE MESSAGES

MA NW ADR  
MI NW ERR  
MI NW MAT  
MA NW RMV  
MR NW XRA  
MI NW TVF

(3) OTHER EXPANDABLE MESSAGES

MI CF  
MA SI ACC  
MA SI ADR  
AU  
INIT TTYC  
OP CU  
OP POSTMORT  
OP TTYC  
RCOVRY  
MAS  
OP APPL  
SYS



Fig. 1—SCCS Universal Control Console

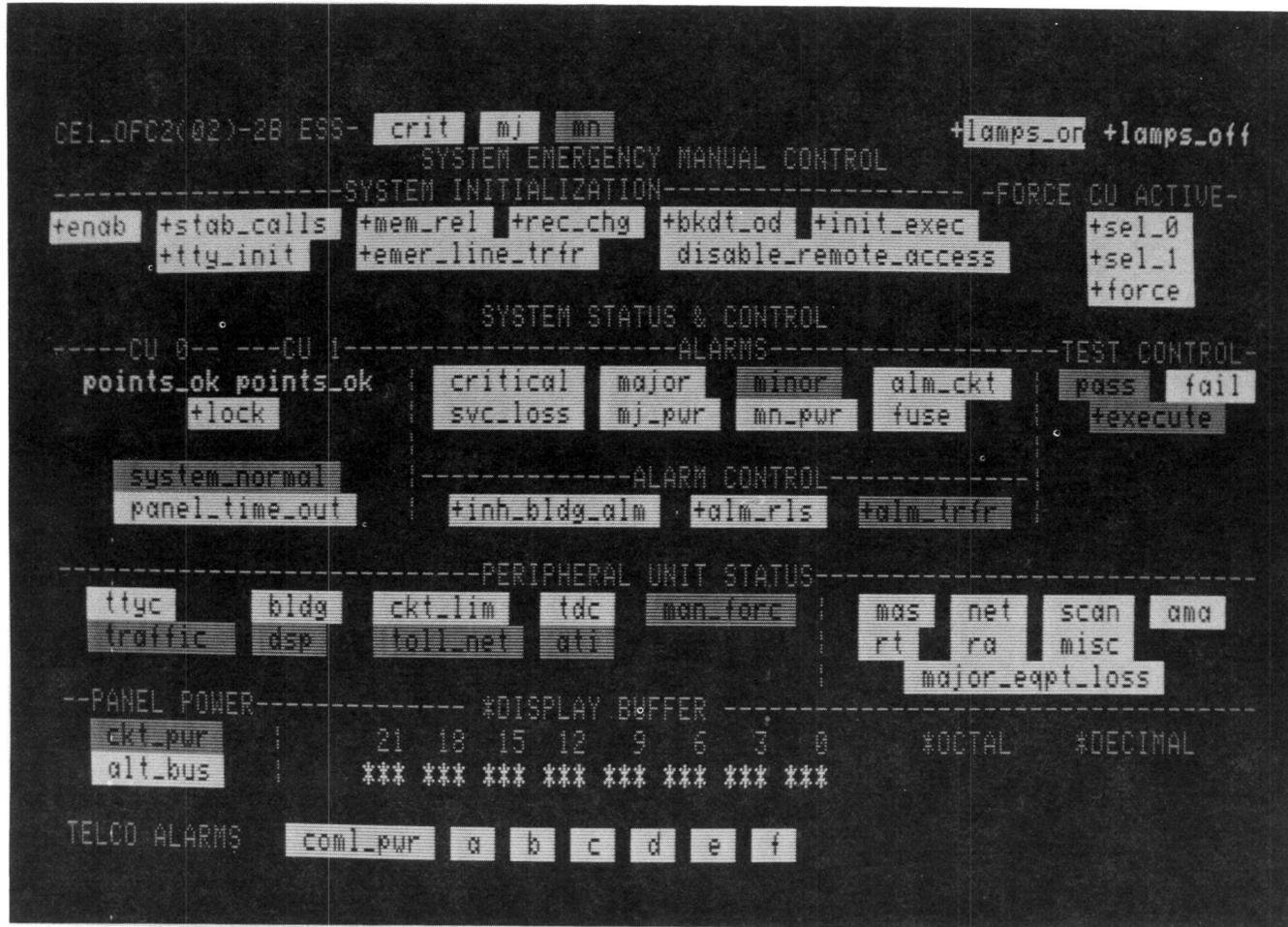


Fig. 2—SCCS Control Console—No. 2B ESS Layout



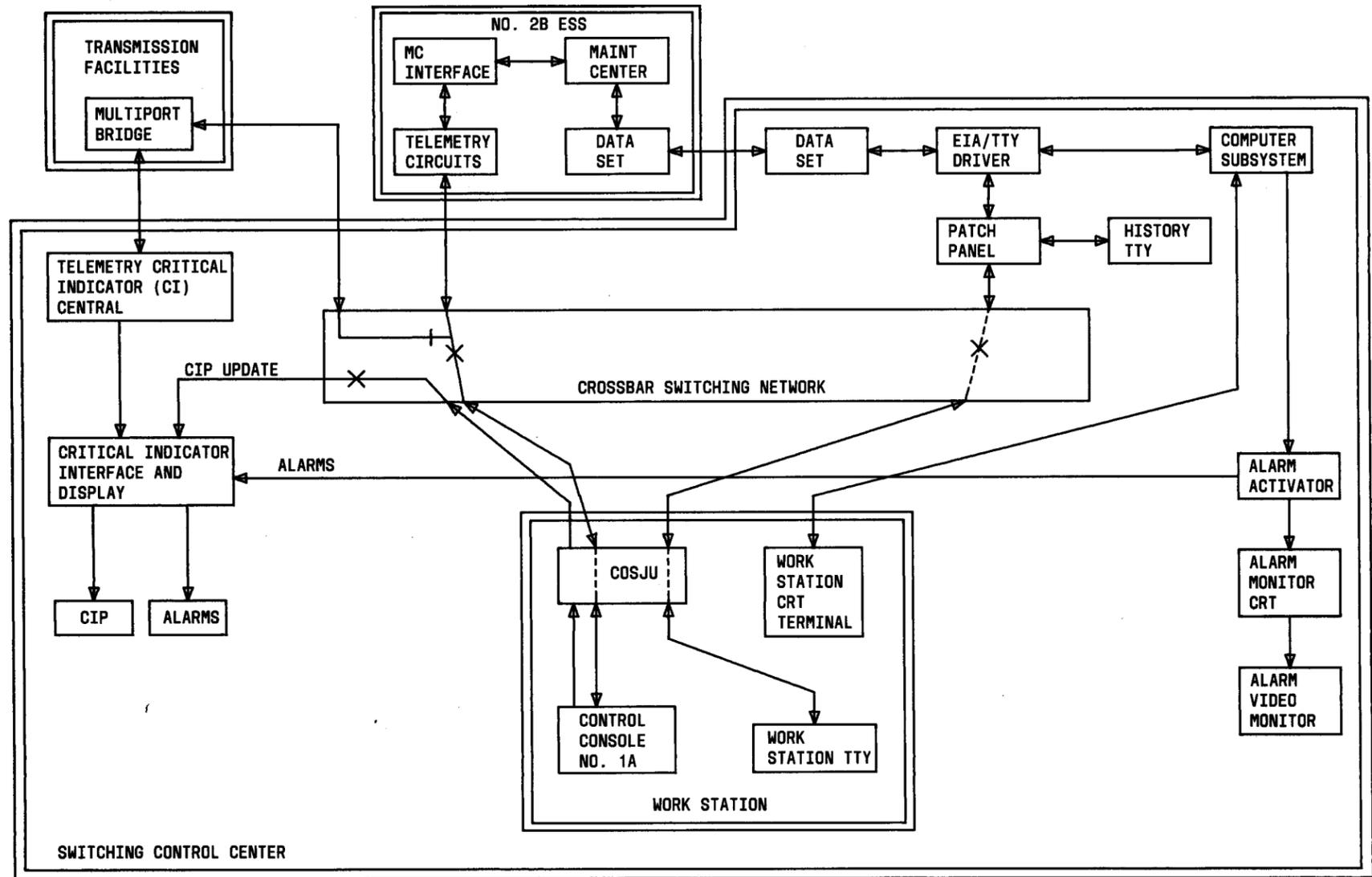


Fig. 4—No. 2 SCCS Configuration