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METHOD OF OPERATION

REMOTE CONSOLE UNIT (RCU) FOR THE

"PDP*" 11/70 MINICOMPUTER

INFORMATION SYSTEMS

Prepared by the Information Management Services Division,
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1. INTRODUCTION

1.01 Purpose

This practice provides the standard method of operation of the Remote Console Unit (RCU) for the Digital Equipment Corporation PDP* 11/70 minicomputers. For a quick reference, refer to user's manual BR 007-560-253).

1.02 Reasons for Reissue

This practice is being reissued due to divestiture.

2. GENERAL

2.01 RCU

The RCU is a microprocessor based interface to PDP 11/70 minicomputers that permits remote diagnostic and monitor capability. The RCU was primarily designed as a maintenance tool for the Bell Operating companies (BOC) Minicomputer Maintenance and Operations Centers (MMOCs). Also, as an operations tool for software development organizations. Maintenance and operations personnel communicate with the RCU via a dial-up line using a data set and a standard receive/transmit American Standard Code for Information Interchange (ASCII) terminal. Complete PDP 11/70 system console and terminal emulation is achieved.

2.02 RCU Kit

An RCU kit consists of a circuit pack (CP-1) FE81NE0012, power supply and mounting hardware, [EIA/DC LOW/TTY] cable, power cables, Light Emitting Diode (LED)/Key switch bracket, and miscellaneous hardware.

The two baud rate switches SW-4 and SW-5 located on the RCU CP-1 correspond to the speed options for the remote and local terminals, respectively. The SW-4 and SW-5 are two 10-position thumbwheel switches located in the middle upper half of CP-1. (See Figure 1) Table A lists the switch positions and their respective speeds.

> **Important:** The remote terminal speed must be greater than or equal to the local terminal speed. The SW-4 switch should never be set to a baud rate lower than SW-5.

The modem option switches SW-2 and SW-3 are two quad Single-Pole Double Throw (SPDT) dip switches located directly to the right of SW-4 and SW-5. Refer to BR 007-560-252 for recommended switch positions and various optional operating parameters.

The LED/Key switch bracket contains three LED indicators, a Local/Remote mode control key switch, and a DISCONNECT CARRIER button connector. The LEDs consist of (from top of bottom) a REMOTE LED, a CARRIER DETECT LED, and an RCU ACTIVE LED (operates at approximately 60 beats per minute). See CP-1 layout (Figure 1) for bracket location. The Local/Remote mode control key switch (Chicago Lock Co. #4235 using a keyed alike design to that of the console key switch used on the PDP 11/70) is located below the LEDs. (Refer to Figure 1.) Its function is to allow the local personnel control of RCU Local/Remote mode capabilities. The DISCONNECT CARRIER button located

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* Trademark of Digital Equipment Corporation.

between the LEDs and the key switch on the RCU front panel allows the local personnel to automatically drop the remote user from the line.

3. DESCRIPTION OF TERMS

The following list describes terms associated with the RCU PDP 11/70.

(a) **Remote Terminal:** The standard receive/transmit ASCII terminal located anywhere with a dial-up lie and data set (or acoustic coupler).

(b) **Local Terminal:** The minicomputer "system console." It is the standard ASCII terminal (usually a DECWRITER* terminal) used by the associated minicomputer.

(c) **Switch Register:** The bank of switches designated SWR21-SWR00 located on the minicomputer front console.

(d) **Remote Mode:** The operating state of the RCU when the Local/Remote mode control key switch is in REMOTE.

(e) **Local Mode:** The operating state of the RCU when the Local/Remote mode control key switch in LOCAL.

(f) **Locking Switches:** The switches located on the minicomputer front console that can be locked in two or more positions. They are the HALT/ENABLE, S BUS CYCLE/S INST, and Data Select and Address Select switches.

(g) **Momentary Switches:** The switches located on the minicomputer front console that can be momentarily switched to one additional position. They are the CONT, LOAD, START, EXAM, and DEP switches.

4. METHOD OF OPERATION

4.01 ESTABLISHING CONTACT WITH THE RCU

The remote user contacts the RCU via the telephone network using the telephone number preassigned to the RCU. The RCU supports full duplex ASCII terminals.

The data set connected to the RCU and also the data set (or acoustic coupler) connected to the remote terminal must have the following features: binary, full duplex, asynchronous, a standard RS232C interface, and be capable of operating within the RCU speed guidelines. (See Table A.) Several data set types and their significant operating parameters for interface to the RCU are listed in Table B.

The RCU ignores bit parity from the remote terminal during RCU command entry. The RCU remains transparent to character structure during direct communication between the remote terminal and the minicomputer and the local terminal and the minicomputer.

* Trademark of Digital Equipment Corporation.

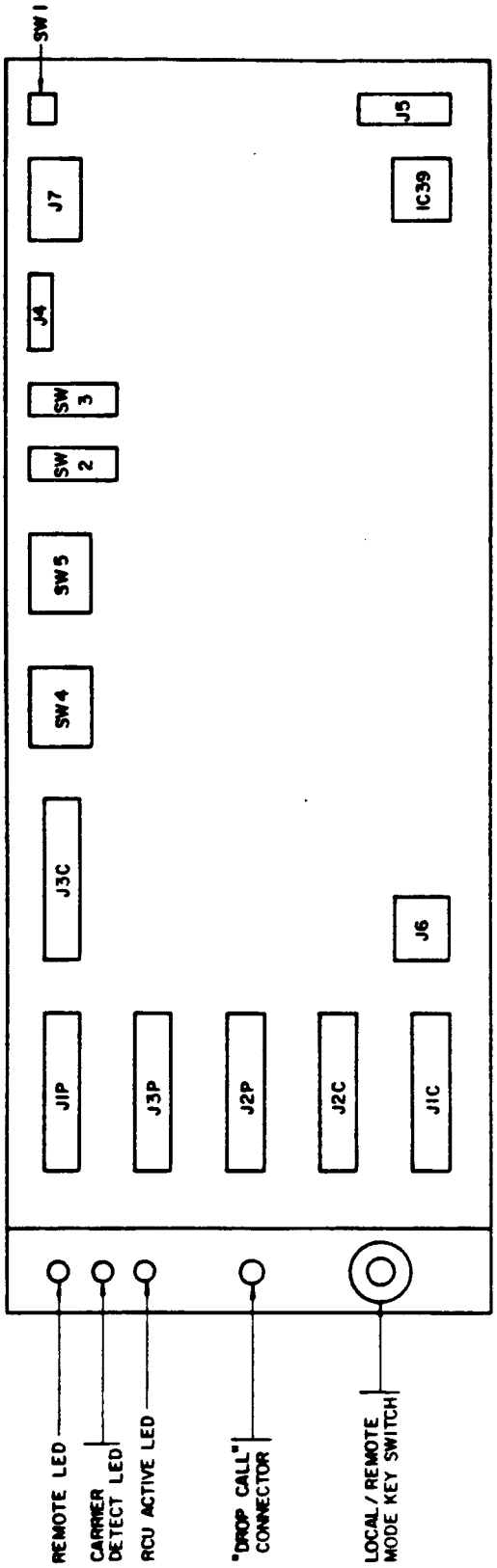

Figure 1. RCU CP-1 Layout

TABLE A. SW-4—REMOTE TERMINAL, SW-5—LOCAL TERMINAL

SWITCH POSITION	BAUD RATE
5	110
6	150
7	300
8	600
9	1200
0	1800
1	2400
2	3600
3	4800
4	9600

4.02 PASSWORD

The RCU is equipped with a special access code for security purposes. When a connection has been established, the system types *login:*. The user must then type the password followed by the RETURN key. If the password was erroneously entered, the RCU will type *login incorrect* and again prompt the user with another *login:*.

The RCU system has a 1-minute login timeout period at which time, if the remote user has not successfully logged in, the RCU will drop the calling party. The RCU accomplishes this by holding the Data Terminal Ready (DTR) lead from its connecting data set to a low logic level for approximately 10 seconds. The caller can also be dropped by a local person (e.g., at the RCU front panel below the actual minicomputer switch console) pressing the DISCONNECT CARRIER button. This can be done at any point during the remote user's contact with the RCU.

For security reasons, the RCU is not provided with a login password at the manufacturing location. The password must be programmed by the installation personnel during installation of the RCU. (Refer to BR 007-560-252.) The password is physically located on a 2000- by 8-bit Ultraviolet Erasable Programmable Read-Only Memory (UVEPROM) integrated circuit (IC39) (similar to the INTEL Co. 2716). The IC39 is a Dual In-Line Package (DIP) located in a zero-insertion socket on CP-1 (Figure 1). The password is local user changeable. The device (IC39) has the password loaded in memory locations (addresses) 000H through 3ffH. (An "H" following a number signifies that the number is hexadecimal.) The password characters must conform to the ASCII format. (DEL(7fH), @(40H), DC3(13H), CR(0dH), and LF(0aH) are all exceptions in the ASCII format and should not be sued in the password. The parity bit, or the most significant bit, must be left as zero. There should be no hexadecimal character code greater than 7eH entered. The reason is that the RCU will only accept 7-bit ASCII from the remote terminal during login entries. The password may be up to 1000 characters but **not** less than 6, with an additional last character entered being a 00H. A recommended practice is to keep the character count within a reasonable range to allow time to type in characters before the login period times out. Refer to BR 007-560-251 Appendix 1 for step-by-step procedures to change password.

TABLE B. RECOMMENDED DATA SET TYPES FOR INTERFACE WITH RCU

DATA SET TYPES	103J	113D	202T	212A
Data Rates (BPS) for RCU Operation*	110, 150, 300	110, 150, 300	110, 150, 300, 600, 1200, 1800	110, 150, 300, 1200
Channel Types	2-Wire	2-Wire	4-Wire	2-Wire
Line Interface	Switched	Switched	Private	Switched

*The RCU remote terminal speed must be greater than or equal to the local terminal speed.

Important: The last character entered of the password must be 00H. The password entered must be a minimum of 6 characters, difficult to guess, and unique to the processor of which the RCU is installed, e.g., password entered on UVEPROM:

DEVICE HEX ADDRESS	ASCII HEX CODE ENTERED	ASCII CHARACTER
000H	65H	e
001H	78H	x
002H	61H	a
003H	6dH	m
004H	70H	p
005H	6cH	l
006H	65H	e
007H	00H	

password entered at remote terminal:
example (nonechoing)

(followed by the RETURN key).

The IC 39 is a standard 2716-type UVEPROM (INTEL Co. or equivalent).

On an input line from the remote terminal, the character @ or DEL (delete) "kills" all the characters typed before it. The leading prompt is then typed again by the RCU. Tab characters are interpreted as white space (code 20H). The RCU makes provision for terminals with a "new line" function. All input "line feed" characters directed to the RCU during command code entry are changed to "carriage return" characters, and a "carriage return" and "line feed" pair is echoed to the terminal.

When logged in successfully, the RCU will respond with:

RCU System — ADE release 1.0.2 — [*]
Remote Console Unit for the PDP 11/70

<CONSOLE UNDER [†] CONTROL>

All Users: type "table" ‡

[Command:]*

* Identification of the associated minicomputer can be stated in [*] if option was chosen during installation of the RCU. (Refer to BR 007-560-252.) In addition, the minicomputer identification will substitute the prompt "Command."

† Depending on the position of the Local/Remote mode control key switch, [†] will state either LOCAL or REMOTE.

‡ Typing "table" prints a complete table of command codes available.

4.03 MINICOMPUTER IDENTIFICATION OPTION

The RCU is provided with an option to type out the code of the minicomputer associated with it. This code can be any series of characters to a maximum of 10 characters. This code automatically substitutes the RCU command entry prompt which defaults to *Command:*.

If the minicomputer identification option is chosen, the code must be entered in much the same way as the password is changed. The code is physically located on the same 2000-by 8-bit UVEPROM (IC39) as the password. This user changeable device has allocated for the code to be entered in the device memory locations (addresses) 400H through 409H. The code must conform to the ASCII format. (Characters DEL and @ or 7fH and 40H are exceptions in the ASCII format and should not be entered as code.) As with the password, there should be no hexadecimal character code greater than 7eH entered. Again, the last additional character entered **must** be 00H. Refer to BR 007-560-251 Appendix 1 for step-by-step procedures to change prompt-ID, e.g., code entered on UVEPROM:

DEVICE HEX ADDRESS	ASCII HEX CODE ENTERED	ASCII CHARACTER
400H	41H	A
401H	44H	D
402H	45H	E
403H	31H	1
405H	00H	

Above code entered yields following printout:

RCU System — ADE release 1.0.2 — ADE1
Remote Console Unit for the PDP 11/70

<CONSOLE UNDER [*] CONTROL>

All Users: type "table"

ADE1:

* Depending on the position of the Local/Remote mode control key switch, [*] will state either LOCAL or REMOTE.

If the default prompt is chosen, the hexadecimal code at location 400H must be ffH. The RCU has been previously set to the default prompt at the manufacturing location.

4.04 LOCAL CONTROLS AND INDICATORS

The RCU system contains two primary local control features. They both are accessible at the RCU front panel.

The first is the Local/Remote mode control key switch (Figure 1). It allows the local personnel to selectively limit the remote user (caller) to a listening only mode just by turning the key to LOCAL. This position allows the remote user to selectively receive the same information transmitted to the local terminal by the minicomputer. Also the remote user can obtain "snapshot" views of the minicomputer front console LED indicators. Alternatively, the local personnel can turn the key to REMOTE allowing the remote user to have complete control of the minicomputer front console and the local terminal. Specifically, the remote user can selectively transmit to the minicomputer as though the remote terminal were actually the local terminal. The local terminal is now in a receive only mode. The local console's switches are disabled. Also, the remote user can set **any** of the switches on the minicomputer front console. The remote user can effectively boot the system or perform any switch action normally performed at the front console.

The second control accessible to the local personnel is a DISCONNECT CARRIER pushbutton switch (Figure 1). It is designed primarily as a security feature. If the need arises, anyone at the RCU front panel may drop a remote user from the line simply by pressing a button.

The RCU system contains three visual indicators which are visible through the bezel window on the RCU front panel (Figure 1). These three LEDs are situated in a vertical pattern. They are red.

The top LED is the REMOTE mode LED. The OFF state is the Local mode condition and the ON state is the Remote mode condition. The LED is a hard-wired connection to the Local/Remote mode control key switch.

The lower LED is the RCU ACTIVE LED. It provides a visual "heartbeat" of the RCU system. The RCU microprocessor (the BELLMAC*-8 microprocessor) toggles a flip-flop based circuit 60 times a minute. The toggling LED driven from this circuit serves as an indicator of sanity of the microprocessor.

The middle LED is the CARRIER DETECT LED. It provides visual confirmation that a remote user is in contact with the RCU. The ON state indicates that a caller is on the line and conversely the OFF state indicates that the line is not seized. This LED is a hard-wired connection to the Carrier Detect (CD) lead from the connecting data set.

4.05 COMMAND ENTRY SYNTAX

After successfully logging in, the remote user receives a command prompt (default prompt is "Command") after which he/she may enter commands at will.

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* Trademark of Western Electric.

On an input line from a terminal, the character @ or DEL (delete) "kills" all the characters typed before it. The leading prompt is then typed again by the RCU. The character # or BS (backspace) erases the last characters back to, but not beyond, the beginning of the line. Tab characters are interpreted as white space (code 20H). The RCU makes provision for terminals with a "new line" function. All input "line feed" characters directed to the RCU are changed to "carriage return" characters, and a "carriage return" and "line feed" pair is echoed to the terminal.

The ASCII DC3 control character can be used to temporarily stop output. It is useful with a Cathode Ray Tube (CRT) terminal to prevent output from disappearing before it can be read. Output is resumed when any character is typed.

The RCU ignores bit parity from the remote terminal during RCU command entry.

The RCU will accept any unambiguous abbreviations of the commands.

4.06 Switch Commands

The following Address Select switch commands exhibit addresses associated with the present processor action or console request for action. Displayed is the address of data just examined or deposited. During a programmed HALT or WAIT instruction, the display shows the next instruction address. The following commands can only be access while in the Remote mode.

Command	Function
kernel d	Allows the remote user to set the Address Select switch to KERNEL D. This setting uses a 16-bit virtual address where bits 16 to 21 are always OFF.
kernel i	Allows the remote user to set the Address Select switch to KERNEL I. This setting uses a 16-bit virtual address where bits 16 to 21 are always OFF.
super d	Allows the remote user to set the Address Select switch to SUPER D. This setting uses a 16-bit virtual address where bits 16 to 21 are always OFF.
super i	Allows the remote user to set the Address Select switch to SUPER I. This setting uses a 16-bit virtual address where bits 16 to 21 are always OFF.
user d	Allows the remote user to set the Address Select switch to USER D. This setting uses a 16-bit virtual address where bits 16 to 21 are always OFF.
user i	Allows the remote user to set the Address Select switch to USER I. This setting uses a 16-bit virtual address where bits 16 to 21 are always OFF.

Command	Function
prog phy	Allows the remote user to set the Address Select switch to PROG PHY. Displays the 22-bit physical address of the current bus cycle that was generated by the memory management unit.
cons phy	Allows the remote user to set the Address Select switch to CONS PHY. This setting uses a 22-bit physical address to perform console operations (e.g., LOAD ADRS, EXAM, and DEP).

The following Data Select switch commands exhibit data associated with the present processor action or console request for action. The PARITY HIGH and LOW lights indicate the parity bit for the respective bytes on read operations. On write operations, the bits are off. The following commands can only be accessed while in the Remote mode.

Command	Function
bus reg	Allows the remote user to set the Data Select switch to BUS REG. This position is used to display the internal minicomputer processor register used for bus cycles.
data paths	Allows the remote user to set the Data Select switch to DATA PATHS. This position is used to display the examined or deposited data. This is the normal display mode.
display reg	Allows the remote user to set the Data Select switch to DISPLAY REGISTER. This position is used to display the contents of the display register. It has an address of 17 777 570.
uadrs f/c	Allows the remote user to set the Data Select switch to UADRS FPP/CPU. This position is used to display the Read-Only Memory (ROM) address, Fire-Protection Panel (FPP) control microprogram (bits 15 to 8), and the Central Processing Unit (CPU) control microprogram (bits 7 to 0).

The following control switch commands can be used to examine or change the generic portion of the processor's memory. When the "dep," "cont," "exam," or "load adrs" commands are implemented, the RCU will automatically continue by doing the "lights" command. The following commands can only be accessed while in the Remote mode.

Command	Function
start	Allows the remote user to activate the START switch. The RCU will type to the remote user: * START switch depressed If the minicomputer CPU is in the RUN state, the START switch has no effect. If the program had stopped, activating the START switch causes a System Reset signal to occur; the program will then continue only if the HALT/ENABLE switch is in ENABLE. When the Remote HALT/ENABLE switch position is set to HALT activating the START switch clears the computer system. The RCU will then type to the remote user: <INIT> When the Remote switch position is set to ENABLE, activating the START switch automatically transfers the remote terminal into the listening mode.
dep	Allows the remote user to activate the DEP switch. Causes the current contents of the switch register to be deposited into the address specified by the current contents of the address display. The RCU will type to the remote user: * DEPOSIT switch activated
cont	Allows the remote user to activate the CONT switch. Causes the minicomputer processor to continue operation from the point where it stopped. This switch has no effect when the minicomputer processor is in the RUN state. If the program stops, this switch provides a restart without a system reset. The RCU will type to the remote user: * CONTINUE switch depressed
exam	Allows the remote user to activate the EXAM switch. Causes the contents of the current location specified in the address display to be displayed in the Data Display Register when the Data Select switch is in the DATA PATHS position. The RCU will type to the remote user: * EXAM switch depressed

Command	Function
load adrs	Allows the remote user to activate the LOAD ADRS switch. Transfers the contents of the switch register into the address displayed. The RCU will type to the remote user: * LOAD ADDRESS switch depressed
halt **or** enable	Allows the remote user to activate the HALT/ENABLE switch. **ENABLE:** Allows the minicomputer processor to perform normal operations under program control. The RCU will type to the remote user: * ENABLE switch activated **HALT:** Causes the minicomputer processor to stop. The RCU will query the remote user by typing to the remote user: Are you sure? (y or n): If the remote user types "y" (upper or lower case), the RCU will activate the HALT switch. The RCU will then type to the remote user: * HALT switch depressed If any character besides "y" is typed, the RCU will ignore the command.
s bus cycle	Allows the remote user to activate the S INST/S BUS CYCLE switch. This switch affects only the operation of the CONT switch. This switch controls whether the minicomputer stops after instructions or bus cycles. It has no effect on any switches when the HALT/ENABLE switch is set to ENABLE. **S BUS CYCLE:** The RCU will type to the remote user: * S BUS CYCLE switch depressed **S INST:** The RCU will type to the remote user: * S INST switch activated

4.07 REMOTE AND LOCAL ACCESS COMMANDS

The command swr [] allows the remote user to set the Remote Switch Register. The command "swr" followed by [] (zero to a maximum of eight octal digits entered at the remote terminal) sets the Remote Switch Register equal to []. The digits entered [] are right justified and the remaining leftmost digits

default to zero. The RCU will type to the remote user:

REMOTE SWR = []

e.g., "swr77" yields: (RCU printout)

REMOTE SWR = 00000077

While the Remote Switch Register can be set in Local or Remote modes, it is the effective Console Switch Register only in Remote mode. The Local Console Switch Register is disabled while the RCU is in the Remote mode.

The command "listening" allows the terminal of the remote user to be in direct communication with the minicomputer. The RCU transmits characters from the remote terminal to the minicomputer without changing character format. Table C best illustrates the various communication modes and conditions of the remote terminal while in the listening mode.

The following procedures **must** be entered by the remote user in the specified order.

(a) To exit the listening mode:

- Start a new line.
- Press "%" key.
- Press control-g

(b) To temporarily exit the listening mode (ie, to execute an RCU command):

- Start a new line.
- Press "%" key.
- Enter RCU command.
- Press carriage return.*

*The RCU will prompt the user with another % when the present RCU command ends.

(c) In order to transmit a % to the minicomputer as the first character on a new line, precede this character with another %.

TABLE C. TERMINAL CAPABILITIES IN LOCAL AND REMOTE MODES

LOCAL/REMOTE MODE KEY SWITCH POSITION	MINICOMPUTER TERMINAL CAPABILITY	REMOTE TERMINAL CAPABILITY
LOCAL	Receive + Transmit	Receive Only
REMOTE	Receive Only	Receive + Transmit

Important: Upon entering a % on a new line, the remote terminal's receive capability terminates. The information transmitted to the local terminal by the minicomputer will not be received by the remote terminal. It will be reestablished automatically when returning from an RCU command [as in step (b) above] or when entering another % [as in step (c) above].

When in the listening mode, if the remote user attempts to prompt the minicomputer (e.g., start a new line) while in Local mode, the RCU will return the message:

<CONSOLE UNDER LOCAL CONTROL>-remote terminal can receive only

The command "switches" informs the remote user of the most updated Local and Remote mode switch settings. The RCU will print out who has control of the console functions. The RCU will print out locking and rotary switch status of both LOCAL and REMOTE settings. The Remote Switch Register settings are also displayed. If the console key switch is in PANEL LOCK, the RCU will print a message informing the remote user of its consequences. Namely, the local console switches as "seen" by the RCU when in PANEL LOCK position default to the upright or nondepressed position. The format is displayed below:

<CONSOLE UNDER [*] CONTROL>

PANEL LOCK SET - *LOCAL* SWITCHES DEFAULT as follows: [†]

LOCAL	REMOTE
S INST	SINGLE BUS CYCLE
ENABLE	HALT
USER I	USER I
UADRS FP/CP	BUS REG

REMOTE SWR = 00000000

*Depending on the Local/Remote mode control key switch position on the RCU front panel, this will say either LOCAL or REMOTE.

†This message will only appear when the console key switch is in the PANEL LOCK position.

The command "lights" informs the remote user of the most updated address and data bus LED status. The Remote Switch Register is also displayed. The format is displayed below:

ADRS = 17777777
DATA = 177777

REMOTE SWR = 00000000

PAR ERR ADRS ERR PAR HI PAR LO [*]

*PAR ERR and ADRS ERR are displayed when their respective LEDs are lit. If PAR ERR is lit, then PAR HI and/or PAR LO are displayed when lit.

The command "misc lmp" will inform the remote user if the following lamps are lit:

- RUN
- PAUSE
- MASTER
- USER or SUPER or KERNEL
- DATA

- 16-bit or 18-bit or 22-bit [addressing]
- PAR HI
- PAR LO.

Note: If the console key switch position is set to panel lock, PANEL LOCK will be displayed.

4.08 MISCELLANEOUS COMMANDS

The command "reset" can be accessed in Remote mode only. It resets all remote locking switches (excluding the Remote Switch Register) to the position on the actual console as scanned by the RCU. The RCU will type to the remote user:

<REMOTE RESET>

The "switches" routine is performed following the above printout.

The command "table" can be accessed in both the Local and Remote modes. It causes the RCU to type out to the remote user a complete table of command codes available. The RCU will type to the remote user:

Command Set (access)

(Remote Only)
s bus cycle - s inst
prog phy
kernel d
kernel i
cons phy
super d
super i
user d
user i
bus reg
data paths
display reg
uadrs f/c
start
dep
cont
exam
load adrs
halt - enable
reset

(Remote and Local)
swr
table
lights
listening
misc lmp

switches

The command "." repeats the previously entered command. It will operate in both Local and Remote modes except when present conditions (e.g., Local/Remote mode control key switch in LOCAL position) restrict previous commands (commands entered in the Remote mode) to be repeated.

When a command that is only permitted to be entered in the Remote mode is entered in the Local mode, the RCU will type to the remote user:

? - <CONSOLE UNDER LOCAL CONTROL>

If the Local/Remote mode control key switch is set to REMOTE, the remote switch settings will remain as the remote user has left them regardless of the transition of presence of carrier.

The remote switch settings (except the Remote Switch Register) are automatically reset to whatever state the RCU scanned on the actual console. This occurs only when switching the Local/Remote mode control key switch from the Remote to the Local position.

5. SECURITY PROVISIONS

The following are security precautions.

(a) Required implementation features for password:

  (1) The password must have a character length minimum equal to six.

  (2) The password must be unique to the system.

  (3) The password should not be guessed easily.

(b) Local/Remote mode control key switch position:

  (1) Do **not** leave the Local/Remote mode control key switch in the REMOTE position unless required by authorized maintenance and/or operations personnel.

  (2) Leave the Local/Remote mode control key switch in the LOCAL position at all times except when required.

(c) Data set configuration:

  (1) The telephone number associated with the data set should be unpublished.

  (2) The data set should be set to a make-busy state when the RCU is not in use by authorized personnel.

The following are security enhancements:

(a) An LED located on the RCU front panel lights when the Local/Remote mode control key switch is in the REMOTE position. This LED is designated REMOTE.

(b) Another LED located on the RCU front panel lights when anyone is in direct communication with the RCU. This LED is designated CARRIER DETECT.

(c) A pushbutton switch located on the RCU front panel (below the LEDs) drops any caller who is in direct communication with the RCU. This switch is designated DISCONNECT CARRIER.

If the security of the RCU is compromised or unauthorized use of the RCU is expected, then the following actions are recommended:

(a) Depress the DISCONNECT CARRIER pushbutton switch (located on the RCU front panel). The CARRIER DETECT LED (also located on the RCU front panel) should go dim.

(b) Switch the Local/Remote mode control key switch to the LOCAL position.

(c) Reconfigure the data set to a make-busy state as to not accept any callers.

(d) Report it to the security department.

(e) Change the RCU password. (Refer to BR 007-560-251 Appendix 1.)

(f) Change the telephone number associated with the RCU. (Make sure the telephone number is unpublished.)