

CYBER 180
Remote Technical Assistance
Handbook

Usage

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features and parameters.

Manual History

Revision	Description
A	Printed January 1987.
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C	Printed September 1988. Because extensive changes have been made, change bars and dots are not used, and all pages reflect the latest revision level. This manual obsoletes all previous editions.

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About This Manual

This document has been created by Engineering Services, Maintenance and Services Planning, in an effort to consolidate and standardize the many aspects of CONTROL DATA® CYBER 180 Remote Technical Assistance (RTA) into one easy to use manual. The CYBER 180 models covered in this manual include models 810 through 860 and models 960, 962, 990, 992, 994, 995.

The intended audience for this manual is field customer engineers and support engineers.

Users of this document are encouraged to comment on any problems noted herein and also to suggest improvements where thought beneficial. Continued field input will be the means by which this document can continue to grow into a meaningful and useful tool for the field.

Special Note on Reporting

As required on other maintenance activities, it is imperative that all providers and recipients of RTA report their activity using the Maintenance Activity Form (MAF).

Providers of Remote Support or Remote Maintenance (see RTA Definitions, section 1 of this document) are to enter a RA (field 14) code of:

5 - Provided Remote Support or Remote Maintenance.

If Remote Support, also enter:

Status Code (field 13) = A (assist)

Service Code (field 7) = xx

(where xx is same as the Product Service Code or System Service Code used by the engineer being assisted).

Recipients of Remote Support are to enter one of the following codes in the RA field (field 14):

- 1 - Voice only received/effective
- 2 - Voice only received/ineffective
- 3 - Voice and data link received/effective
- 4 - Voice and data link received/ineffective

Introduction

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1.1 RTA in the Maintenance Strategy

Customers of Control Data and other computer companies are demanding higher computer system reliability and lower computer system maintenance prices. At the same time, they expect an ever-increasing maintenance service proficiency (for example, reduced repair time, high first fix effectiveness, smooth installs, and so on.).

Use of Remote Technical Assistance (RTA) in our maintenance strategy, is one of the ways in which improved maintenance proficiency can be realized. At the same time, customer maintenance prices can be reduced and/or increases minimized.

The Control Data Computer Systems Division and the Engineering Services (ES) Division are committed to on-going improvement of our maintenance capabilities through the use of RTA.

Additional RTA maintenance strategy information (by product) can also be found in the ES Field Management Summary (FMS).

1.2 RTA Definitions

Remote Technical Assistance

Remote Technical Assistance (RTA) is the collective name for providing or assisting in the providing of remedial or predictive site maintenance remotely via a data link and/or assisting via voice link.

- Data link is defined as off-site to on-site electronic data exchanges for the purpose of directly monitoring or controlling on-site equipment, systems, or networks.
- Voice link is defined as verbal assistance provided to on-site personnel from any off-site source.

In actual use, RTA is subdivided into two categories termed Remote Maintenance and Remote Support.

Remote Maintenance

Implementation of RTA

- To assist in Predictive Maintenance such as periodic monitoring of an HPA/NPA -- determining if error trends suggest the scheduling of additional remote or on-site maintenance actions, and ...
- To assist in call screening activities such as remotely running a diagnostic or discussing a problem with the customer -- determining whether or not the customer should take an action, a CE is required on-site, the action can be deferred, which parts (if any) are required, and so on.

Remote Support

RTA whereby either a higher level of expertise and/or resource is provided to the field CE for the purpose of assisting him/her in a maintenance action or answering a maintenance question.

1.3 RTA Access Methods

Remote access into the site hardware and software can be categorized into one of two basic types of data links -- off-line or on-line.

Off-Line Data Link

Off-line type data links require a dedicated system. They are performed only when the customer has given up the system for maintenance or when the system or communication network is down due to failure.

At present, the Two Port Mux (TPM) Port 1, along with a modem provided by Engineering Services, supplies the physical connection means into the system. If you have a PC Console (CC598A/CC598B), the modem is connected to hostess port 2 of the Hostess Multi-port Adapter on the PC Console. The PC Console is then connected to the TPM.

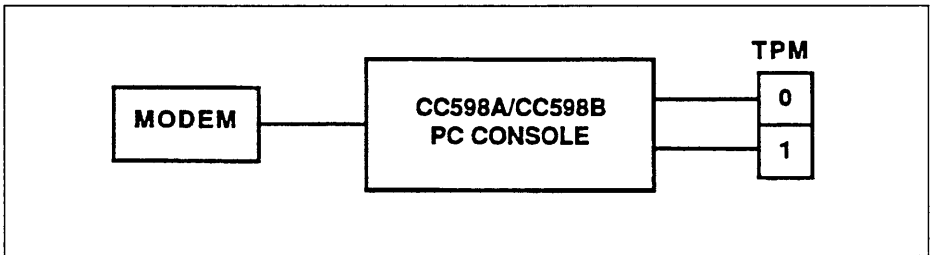


Figure 1-1. PC Console

Through this connection, and providing that access permission, phone line, and number have been authorized by the customer, Port 0 system console functions are available remotely via Port 1.

On-Line Data Link

On-line type data links are those which can be performed concurrent with customer operation. They generally may be accomplished by either the Control Data Communications Control Program (CCP/2550) or by Control Data® CDCNET® -- whichever is available and/or supported by the operating system.

Also, on NOS or NOS/BE systems, (or on the NOS side of dual state NOS/NOSVE systems), the TPM and Control Data® RTA modem may be used under control of the Remote Diagnostic Facility (RDF) application program to create an on-line data link. RDF is a variation of the Network Access Method (NAM) application program and permits on-line TPM access (instead of 2550). (Refer to the NOS and NOS/BE On-Line Maintenance Software Reference manuals, publication numbers 60454200 and 60453900.)

1.3 RTA Access Methods

The physical connection means for creating an on-line data link depends on which operating system and network (if any) is available at the site. The table below summarizes the availability of on-line data link access according to operating system type (NOS, NOS/BE or NOS/VE) and physical connection means.

On-Line Data Link Connection Means	NOS	NOS/BE	NOS/VE
2550	X	X	
CDCNET	X		X
TPM	X	X	
PC CONSOLE	X		X

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NOTE

Specific information on hardware features not covered in this manual can be obtained from the individual equipment owner's manual or operator's guide, shipped with the equipment.

2.1 On-Site RTA Modem

2.1.1 Introduction

The on-site RTA modem is not to be confused with customer-owned modems used on the customer's communication network. The on-site RTA modem is provided by Control Data Engineering Services (ES) and will always be connected (at minimum) to Port 1 of the Two Port Mux (Connection for PC Consoles differs. Refer to section 2.2).

Off-Line Data Links

The main purpose of having an on-site RTA modem, is to provide a means for creating an off-line data link. If the site system is down, the network will be inoperable and on-line data links cannot be performed.

On-Line Data Links

On an operational NOS or NOS/BE system, on-line data links are possible through the on-site RTA modem under control of the Remote Diagnostic Facility (RDF). If, however, the site has a CCP/2550 network or CDCNET network, the use of the network is recommended: With the Two Port Mux/RDF method, more operator intervention is required, a PPU must be dedicated to RDF (therefore it is not available for customer use), and Full Screen Editor is not supported.

Additionally, an on-line data link may be created through the on-site RTA modem via an RS232 switch and a subsequent connection into the site communication network. RS232 switches will be covered later in this section.

2.1.2 Types of On-Site RTA Modems

The basic requirements for on-site modems is that they operate in asynchronous mode at either 1200 or 2400 bps. Additional preferred features include error correction (MNP error control) and a voice/data switching capability to allow switching from voice to data without dropping the carrier.

Currently, there are two recommended on-site RTA modems for use in CYBER RTA (the same as those recommended for RTA workstation use). They are considered ES special tools and are documented as such in all CYBER 8XX-9XX FMSs.

- The Racal-Vadic 2400MNP or MNPAT (U.S.A. P/N 75447467 and Canada P/N 75447468).

NOTE

Though it is the same modem as can be used in an RTA workstation, setup of the modem's software options will be different.

- The Multitech 224-EH (U.S.A. P/N 75448048 and Canada P/N 75448040).

Several other varieties of modems currently exist in the field that can serve as an on-site RTA modem. However, they may not employ 2400 bps, error control or voice/data switching.

NOTE

The international community has strict guidelines concerning modem certification, usually controlled by each individual country. The modem should comply with CCITT standards and be V.22 bis compatible.

Modem options/setup, for the currently recommended Racal-Vadic and Multitech modems, will be covered later in this section.

2.1.3 Voice/Data Switching

Both the Racal-Vadic 2400PA and the Multitech 224-EH modems have voice/data switching capabilities. These modems are recommended when the customer provides access to only one phone line -- the minimal requirement per standard maintenance agreement. How to switch from voice to data or from data to voice is covered under section 3, System Console Operator Requirements, and also in section 5, RTA Workstation Operation.

2.1.4 Physical Placement of Modem

NOTE

The cabling of the modem to the Two Port Mux will be covered later in this section under Two Port Mux.

Recommendations on where to place the on-site RTA modem are as follows:

1. Place the modem at the console (preferably under the system console phone if one is used) when:
 - The phone line is to be shared with the system console, or ...
 - The modem is to be answered manually (versus auto-answer). This facilitates easy system console operator operation.
2. Place the modem near or inside the mainframe when:
 - A dedicated phone line has been provided for RTA data links, and
 - Another line is available (dedicated or shared) for voice links. This places the modem out of the way. If the modem employs voice/data switching, it also makes available another voice line that can be used during scoping, talking through a problem, and so on.

2.1.5 Racal-Vadic Modem - Setup

Hardware Options

The Racal-Vadic 2400 MNP (or MNPAT) modem contains both hardware and software options. When using this modem as an on-site RTA modem, the hardware options (jumper straps within the modem) are to be left as set at the factory.

Software Options

The software options, with the exception of option 4 (described below), are also to be set to factory standard settings as follows:

01 - 1	02 - 1
03 - 2	04 - 1 or 2 or 3
05 - 1	06 - 1
07 - 1	08 - 1
09 - 1	10 - 1
11 - 1	12 - 1
13 - 1	14 - 1
15 - 1	16 - 1
17 - 2	18 - 1
19 - 1	20 - 1
21 - 3	22 - 1
23 - 1	

For option 4, which setting is used depends upon whether or not the modem will have a telephone daisy-chained to it, and whether normal use of this phone is desired/expected. In other words, if the phone will be normally used for voice communication, and answered by picking up the receiver, option 2 or 3 will be desired.

- 04 - 1 Auto-Answer Enabled - The modem will automatically answer. This is the factory standard setting.
- 04 - 2 Auto-Answer Disabled - The daisy-chained phone must be manually picked up and, if desired, the modem's <ANSWER/DATA> button must be depressed to enable a data link. This allows normal use of a daisy-chained phone.
- 04 - 3 Auto-Answer Enabled on Third Ring - The daisy-chained phone must be picked up before the third ring, otherwise the modem will answer automatically.

Verifying/Changing Software Options

The modem's software options can be verified or changed by temporarily connecting it to a 721 terminal -- either a 721 that is being used on an RTA workstation or possibly (if available) the 721 being used as the system console. Step by step instructions on how to verify or change settings are found in section 4, RTA Workstation Setup -- Racal-Vadic Modem Parameters.

Terminal Cabling/Setup

If using the system console to verify or change modem software options, note that the existing cable between the 721 system console and Port 0 of the TPM is a modified (null modem) cable -- it cannot be used for the temporary modem-to-terminal connection. Refer to section 4, RTA Workstation Setup, for the proper cable type.

Verification and/or changing of the modem's software options will be done in the Racal-Vadic interactive mode. This will require that the 721 terminal operator parameters be set to full duplex and 2400 bps.

NOTE

If the system console is used to verify or change modem software options, any altered terminal operator parameter must be returned back to the way they were found before the console is placed back on the system. (See appendix I of the CIP Reference Manual, publication number 60457180, for system console parameters.)

2.1.6 Multitech 224-EH Modem - Setup

The Multitech 224-EH modem contains both hardware and software options. When using this modem as an on-site RTA modem, set the options as indicated below.

NOTE

The following settings are different from those used when this modem is employed in a RTA workstation configuration.

Hardware Options

All hardware options are set by DIP switches that are located on the underside of the modem. When using this modem as an on-site RTA modem, switches are to be set to off (down) except as follows:

NOTE

The functions controlled by the DIP switches become active only when the modem is initially powered on. If changes are made with the modem already powered on, they are not sensed. The modem must be powered off and then back on again, to be effective.

Non P/C Console Systems		P/C Console Systems
01 -	Forced DTR	01 - UP
02 -		02 -
03 -		03 -
04 -		04 -
05 - UP*	Enable Automatic Answer	05 -
06 -	Carrier Detect and DSR Normal	06 - UP
07 - UP	Single line setting for RJ11	07 - UP
08 -		08 -

* Which setting is used, depends upon whether or not the modem will have a telephone daisy-chained to it and normal use of this phone is desired/expected. In other words, if the phone will normally be used for voice communication, then answering by picking up the receiver (05 - DOWN) will be desired.

Software Options

All software options are to be left at factory (default) settings. The modem will automatically assume these settings when it is powered on.

2.2 Two Port Mux (TPM)/PC Console

2.2.1 Introduction

On CYBER 180 systems, excluding model 930 (S0), there are three basic types of TPMs -- one for each of the three types of Input/Output Units (IOUs) used:

TPM Type	IOU Type	Systems Used On
1	I1	815/25 810/30
2	I2	835 840/50/60 845/55
3	I4	845S/55S 840A/50A/60A 960/62 990/92/94/95

The basic capability of all TPMs is the same; they all allow system console functions to be performed from one of the two sources -- the system console (Port 0) or a remote console (Port 1).

On systems using an I1 IOU, remote deadstart and remote mainframe power up/down can also be done via the TPM. An I4 IOU allows only remote deadstart capability. As a security feature, keylock Port option switches are provided to allow the customer to enable or disable these functions. In the I4C IOU, there is no switch; security is handled by the PC Console (Refer to section 2.2.5).

Bps rate switches are provided on all IOUs to allow individually selectable communication speeds on either Port of the TPM. The location and correct settings for these switches will be covered later in this section by IOU type.

2.2.2 Required Cable

The correct cable to be used between the TPM and the on-site RTA modem is P/N 67185786. This is a 50-foot shielded RS232 cable.

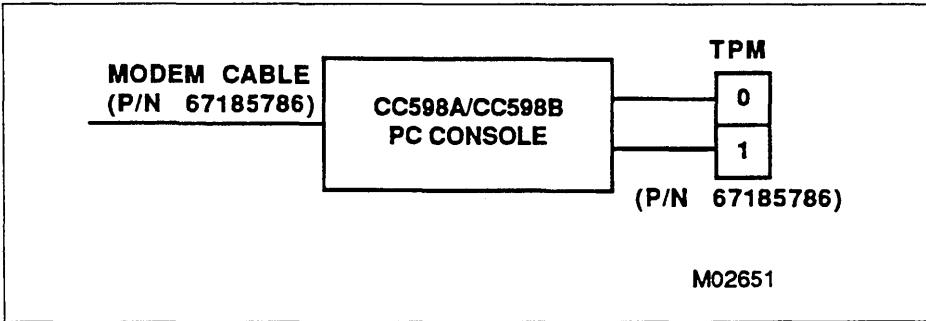


Figure 2-1. PC Console Cabling

2.2.3 I1 IOU - TPM Setup/Cabling to Modem

Setup

To select Port bps rates or enable/disable remote deadstart and/or remote power on/off, rotary keylock switches are provided on a panel at the inside rear of the CPU cabinet. There are no switches located on the Two Port Mux printed circuit board itself.

Rotary switches are set as follows:

Baud Rate Selection

- PORT 0 - 19.2 KBPS (System console use.)
- PORT 1 - 2400 BPS (Or 1200 if that is the highest speed the on-site RTA modem is capable of.)

Port Selection

- PORT 0 - DS PWR ENABLED (Typical setting -- actual setting determined by customer.)
- PORT 1 - DISABLED (Typical setting -- disabling remote access as a security measure.)

Cabling

The RS232 cable is to be connected between the IOU connector panel jack labeled "Terminal 1" and the modem. The IOU connector panel is located at the bottom/rear of the CPU cabinet.

2.2.4 I2 IOU - TPM Setup/Cabling to Modem

Setup

In order to select Port bps rates, one bank of DIP switches is provided on the Two Port Mux (7WF0) printed circuit board -- location D01.

To change switch settings the TPM board must be removed, observing standard electrostatic protection guidelines. Prior to this, power must be removed from the IOU cabinet by depressing the cabinet <Power Off> switch located at the rear of the cabinet.

NOTE

It is recommended that appropriate IOU diagnostics be executed after cabinet power is returned.

All Port 0 (optional 19200 bps system console) DIP switches are set to the OFF/OPEN position.

19200 BPS

- 1 - OFF/OPEN
- 2 - OFF/OPEN
- 3 - OFF/OPEN
- 4 - OFF/OPEN

Port 1 (remote console) DIP switches are set to the highest speed the on-site RTA modem is capable of (2400 or 1200 bps). Set switches to the OFF/OPEN position, except as shown:

<u>2400 BPS</u>	or	<u>1200 BPS</u>
5		5
6 - ON/CLOSED		6
7		7
8 - ON/CLOSED		8 - ON/CLOSED

Cabling

The RS232 RTA cable is connected between the IOU connector panel jack labeled "Terminal 1" and the modem. The IOU connector panel is located inside at the bottom/front of the IOU cabinet (below the channel cable jacks).

2.2.5 I4 IOU - TPM Setup/Cabling to Modem

2.2.5.1 I4 IOU (Without PC Console)-TPM Setup/Cabling

Setup

A TPM panel containing Baud Rate selection and Port Options selection switches, is located inside the I4 IOU cabinet. The switch settings are as follows:

Baud Rate Selection

PORT 0 - 19.2 K (System Console Use.)
PORT 1 - 2400 (Or 1200 if that is the highest speed the RTA modem is capable of.)

Port Options

PORT 0 - DS PWR ENABLED (Typical setting - actual setting determined by customer.)
PORT 1 - DISABLED (Typical setting - disabling remote access as a security measure.)

Cabling

The RS232 cable (P/N 67185786) is to be connected between the IOU connector panel jack labeled "Terminal 1" and the modem. The TPM connector is at the top of the IOU connector panel located on the right/front of the I4 cabinet.

2.2.5.2 I4 IOU (With PC Console)-TPM Setup/Cabling

Setup

The default communications parameter selections in the PC Console are set for the Multi-tech 224 EH modem. If a different modem is used, changes may need to be made to the communications parameters. Refer to the 19003 System Console Operations and Maintenance Guide (publication number 60463610).

I4 With TPM Panel

A TPM panel containing Baud Rate selection and Port Options selection switches, is located inside the I4 IOU cabinet. The switch settings must be as follows:

Baud Rate Selection

Port 0 - 19.2 K

Port 1 - 19.2 K

Port Options

Port 0 - DS Enabled

Port 1 - DS Enabled

I4 Without TPM Panel

The Baud Rate Selection and Port Options selection are done via software commands in the local PC Console. Refer to the 19003 System Console Operations and Maintenance Guide (publication number 60463610).

Cabling

Modem to PC Console

The RS232 Modem cable is connected between port 2 of the Hostess Multi-port Adapter (back of PC Console) and the modem. (Cable P/N 67185786)

PC Console to TPM

Connect one RS232 cable between Primary IOU TPM Terminal 0 and Port 8 of the Hostess Multi-port Adapter. Connect a second RS232 cable between Primary IOU TPM Terminal 1 and port 6 of the Hostess Multi-port Adapter. (Cable P/N 67185786)

If there is a Secondary IOU (Dual IOU Option) in the system configuration, connect one RS232 cable between the Secondary IOU TPM Terminal 0 and Port 7 of the Hostess Multi-port Adapter. (Cable P/N 67185786)

2.3 RS232 Switches

2.3.1 Introduction

A RS232 switch is a 25-pole switch that can be used to connect a RS232-type source (in this case the on-site RTA modem) to one of several RS232-type destinations. In use, one of the RS232-type destinations will always be Port 1 of the Two Port Mux (TPM), except in the case of a PC Console (Refer to Section 2.2 for information on PC Console Connection).

Other destinations (where the actual destination depends on what is desired, and how many destinations depends on the capability of the switch) are as follows:

- Communication Line Adapter (CLA) Port on CCP/2550.
- Device Interface (DI) Port on CDCNET.
- Subsystem Maintenance Ports (such as the RS232 interface ports on the 895 disk subsystem, Masstor, CDCNET, and so on.).

Use of a RS232 switch as part of the site RTA hardware is optional. It is a "local purchase" item and is discussed in this document to ensure that the user is aware of its availability and potential use. The following are advantages of using a switch:

- When used to tie into the customer's communication network, only one phone number/line is required to establish either an on-line or off-line data link.
- If used to tie into subsystems or other RS232 devices supportive of RTA, it again promotes use of only one phone number/line, a single modem, and simpler site and RTA workstation procedures.
- It provides an additional security measure.
- It may increase the on-line data link transmission rate if the customer network only has 1200 bps capability and the on-site RTA modem is capable of 2400.

2.3.2 A-B-C Switch

The simplest form of a RS232 switch is a manually operated rotary (wafer) switch called an A-B-C switch. It allows connection to one RS232-type destination in addition to the TPM Port 1 destination.

Typically, connectors A and B are used for the destination devices and connector C is used for the common source -- the on-site RTA modem. Actual connector labeling depends on the manufacturer of the switch.

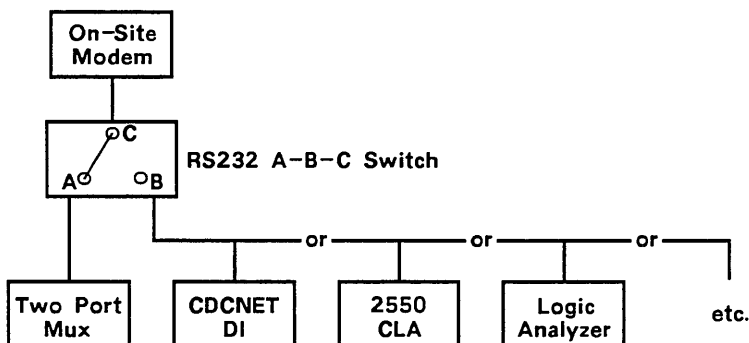
Since the customer may be required to operate this switch, the existing control knob labels (A, B, and so on.) should be covered (replaced) with more descriptive labels such as TO: TWO PORT MUX, TO: LOGIC ANALYZER, TO: DISK SUBSYSTEM, and so on.

Cabling

A "standard" RS232 cable is used for all connections. This is the same cable as used to configure the RTA workstation (P/Ns 61406100 or 15632984). Refer to section 4, Workstation Cabling, for a more complete description.

Installation

The switch is to be located next to the on-site RTA modem (refer to On-Site RTA Modem/Modem Placement, discussed earlier in this section). A typical configuration is as follows:



2.3.3 Giltronix Switch

This switch is controlled electronically (via commands from the RTA workstation) and can allow access to up to six RS232-type destinations in addition to the TPM Port 1 destination. Also, this switch can be used to provide additional system security as it requires entering of a password before functions can be performed.

The Giltronix switch is considered an ES special tool and is catalogued under the following part numbers.

U.S.A. & Canada (Model 1007-DR)	P/N 75447465
International 50Hz (Model 1007-DR-A)	P/N 75447466

Cabling

The switch is to be connected between Port 1 of the TPM and the modem. Refer to TPM Setup/Cabling to Modem, discussed earlier in this section, and place the switch in series with the TPM and modem using the same connectors as when the TPM/Modem connection is made directly.

"Standard" RS232 cables are to be used for both the input connection (that is, the connection from the modem to the switch) and the output connections. This is the same cable used to configure the RTA workstation (P/N 61406100 or 15632984). Refer to section 4, Workstation Cabling, for a more complete description of these cables.

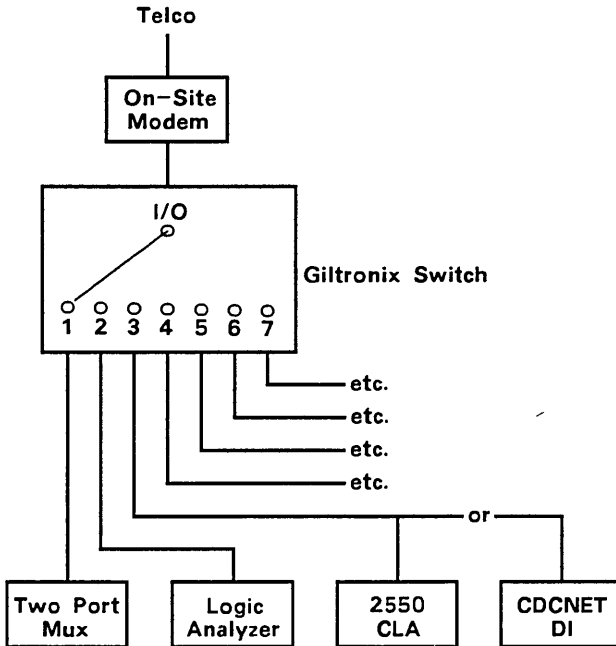
NOTE

Output cables (that is, cables connecting the Two Port Mux and other RS232 devices) require a cable adapter hooked in series with them to make them into null-modem cables. The required cable adapter is catalogued under P/N 75447673.

The cable adapters are to be installed at the Giltronix end of the cable.

Installation

The Giltronix switch is to be located next to the on-site RTA modem (refer to On-Site RTA Modem/Modem Placement, discussed earlier in this section). A typical configuration is as follows:



Hardware Options

One bank of DIP switches is located on the bottom of the switch. These switches control the bps rate at which the switch will operate. Set the switches to correspond to the highest bps rate of the on-site RTA modem (either 1200 bps or 2400 bps) as follows:

<u>1200 BPS</u>	<u>2400 BPS</u>
1 - ON	1
2 - ON	2
3 - ON	3 - ON
4	4

NOTE

Whenever the switch settings are changed, the power to the switch must be turned off and then back on before the setting will take.

Software Options

The only required software options are: AUTOBAUD - ON; POLL MODE - OFF; and HANG-UP COUNTER - (user defined). Setting of these options is done while setting the passwords described next.

Setting Passwords

During installation it is necessary to install passwords into the Giltronix switch to enable remote access. There may be up to ten different passwords that allow access to the system equipment. In addition, there is a select code to connect the modem to the desired RS232 equipment.

NOTE

If the mainframe is a 180-990, DO NOT PROCEED. Please contact the CYBER Remote Support Center. Refer to the CYBER 180 Model 990 Central Computer Installation and Checkout manual, publication 60461310, section 7.

The following procedure assumes that hardware and software modem options have been correctly set in the on-site RTA modem (discussed earlier in this section) and hardware options within the switch have been set as described in the previous subsection.

1. From the RTA workstation, establish an initial data link with the on-site RTA modem/Giltronix switch. If the switch has been properly connected and installed, it responds to the workstation with:

"DEFAULT PASSWORD"

2. In capital letters, enter: XINORTLIG <CR>.

The switch will respond to the workstation with:

"PASSWORD ACCEPTED: #6"

2.3 RS232 Switches

3. Depress <P> followed by a <CR>

The switch will respond to the workstation with

INDEX	CURRENT	PASSWORDS	LOGONS	ANSWER BACK:
0			----0	
1			----0	
2			----0	
3			----0	
4			----0	
5			----0	
6			----1	
7			----0	
8			----0	
9			----0	
TOTAL INCORRECT PASSWORDS			----0	
ENTER INDEX # TO BE CHANGED [or just <RET> to quit]				

4. Depress <6> followed by a <CR>

The switch will respond to the workstation with:

"ENTER NEW MASTER PASSWORD"

5. Enter a new password (up to 20 characters in length). All characters are allowed. For example, enter: Site 1 <CR>

The switch will respond with:

"STORE AN ANSWERBACK? [Y or N]"

Y Indicates that you wish to receive a response upon acceptance of the password.

N Indicates that you do not wish to receive a response upon acceptance of the password.

6. Depress <6> followed by a <CR>.

The switch will respond to the terminal with:

"ANSWER-BACK [41 Characters]"

7. Enter the desired response for an answer.

For example, enter: "Hello" <CR>.

The switch will respond to the terminal with:

INDEX	CURRENT	PASSWORDS	LOGONS	ANSWER BACK:
0			----0	
1			----0	
2			----0	
3			----0	
4			----0	
5			----0	
6			----1	HELLO
7			----0	
8			----0	
9			----0	
TOTAL INCORRECT PASSWORDS			----0	
ENTER INDEX # TO BE CHANGED [or just <RET> to quit]				

Every time a logon is initiated using the password SITE 1, the response HELLO will be returned.

8. Repeat step 7 for each new password entry desired.

NOTE

Index password #6 is the only one allowed to change internal settings of the switch. Index #'s 0 through 5, and 7 through 9 may select only ports and diagnostics.

9. Through the Giltronix "L" command, labels may be assigned to each of the seven RS232 ports. The following example labels the switch ports going to the Two Port Mux and a Logic Analyzer.

- a. Depress <L> followed by a <CR>.

The switch will respond to the terminal with:

"LABEL FOR PORT #1 IS [] RENAME TO > "

- b. For the Two Port Mux (on the switch's Port 1) enter: TPM
<CR>

The switch will respond to the terminal with:

"LABEL FOR PORT #2 IS [] RENAME TO > "

2.3 RS232 Switches

- c. For a logic analyzer (on the switch's Port 2) enter: ANA
<CR>

The switch will respond to the terminal with:

```
"LABEL FOR PORT #3 IS [ ] RENAME TO > "
```

- d. In this example, only two ports are being labeled. Depress <CR> and continue to depress <CR> until the remaining five ports have been processed. If more ports were being labeled, this would be done by continuing the above process.
10. Record all passwords and port labels entered into the switch. All future communications with the site must use these to gain access to the site RTA equipment.

NOTE

The switch has a battery backup to retain the passwords/labels in a power loss situation. A power on master clear will not clear the passwords/labels from the switch.

Setting Auto-Baud

1. Depress and hold the <CTRL> key then depress <N>, next depress <CR>.

The switch will respond to the terminal with:

```
"AUTO BAUD CURRENTLY OFF  
- CHANGE STATE [Y/N]"
```

2. Depress the <Y> key, followed by <CR>

NOTE

Depress the <N> key and <CR> if the response in step 1 was "AUTO BAUD CURRENTLY ON...".

Setting The Hang-up Counter

1. Depress the <C> key, followed by <CR>. The switch will respond to the terminal with:

```
"HANG-UP COUNTER NOW 2.  
ENTER NEW VALUE [1-9]"
```

2. Enter your choice of hang-up counts. This count is the number of incorrect passwords the switch will accept before disconnecting the call.

Setting Poll Mode Off

1. Depress the <T> key, followed by <CR>. The switch will respond to the terminal with:

```
"POLL MODE IS CURRENTLY ON  
CHANGE IT [Y/N]"
```

2. Depress the <Y> key, followed by <CR>.

NOTE

Depress the <N> key and <CR> if the response in step 1 was "POLL MODE IS CURRENTLY OFF...".

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3.1 Security Measures

3.1.1 Introduction

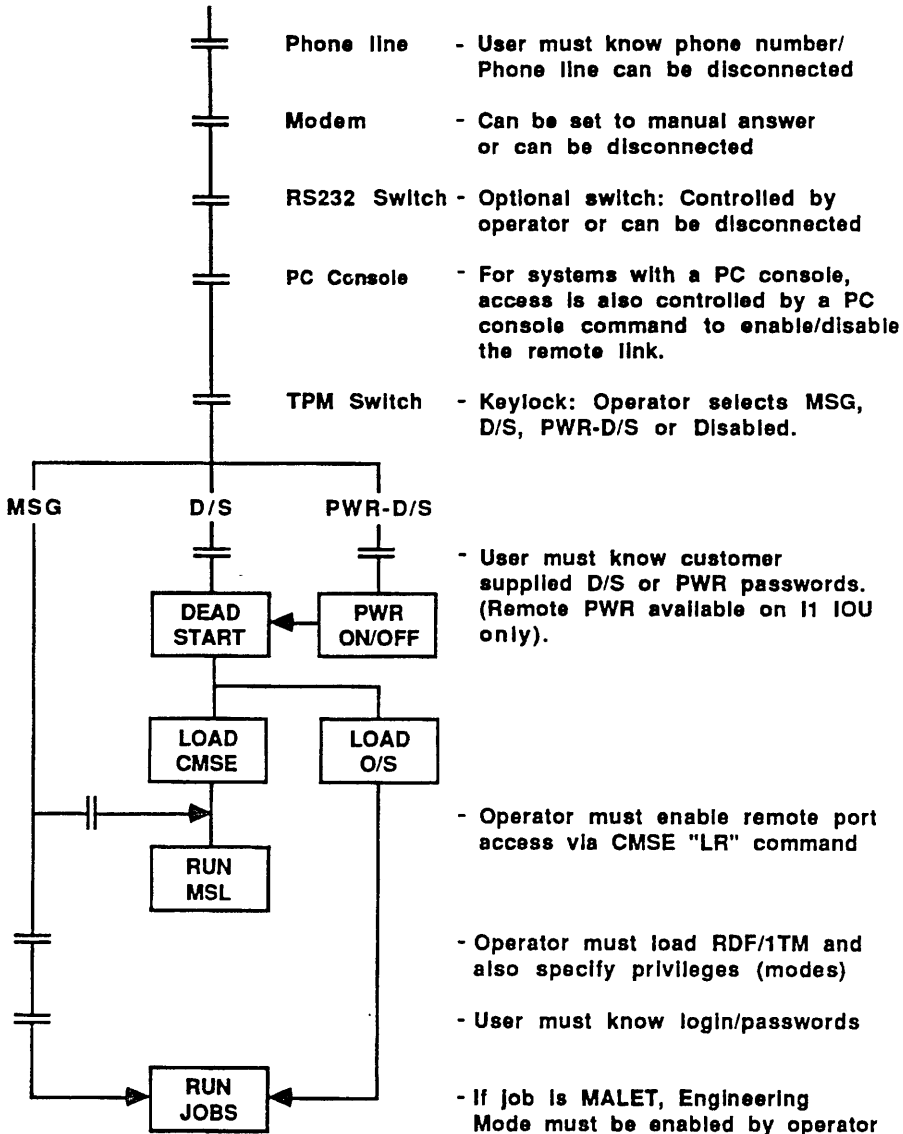
Regarding remote access, Control Data CYBER 180 Systems employ several built-in security features to provide customers with both operational safeguards and privacy of data.

Which security features are utilized depends on the CYBER 180 model type, Operating System type, type of communications network (if used), and the type of remote access being performed (that is, either an on-line data link or an off-line data link).

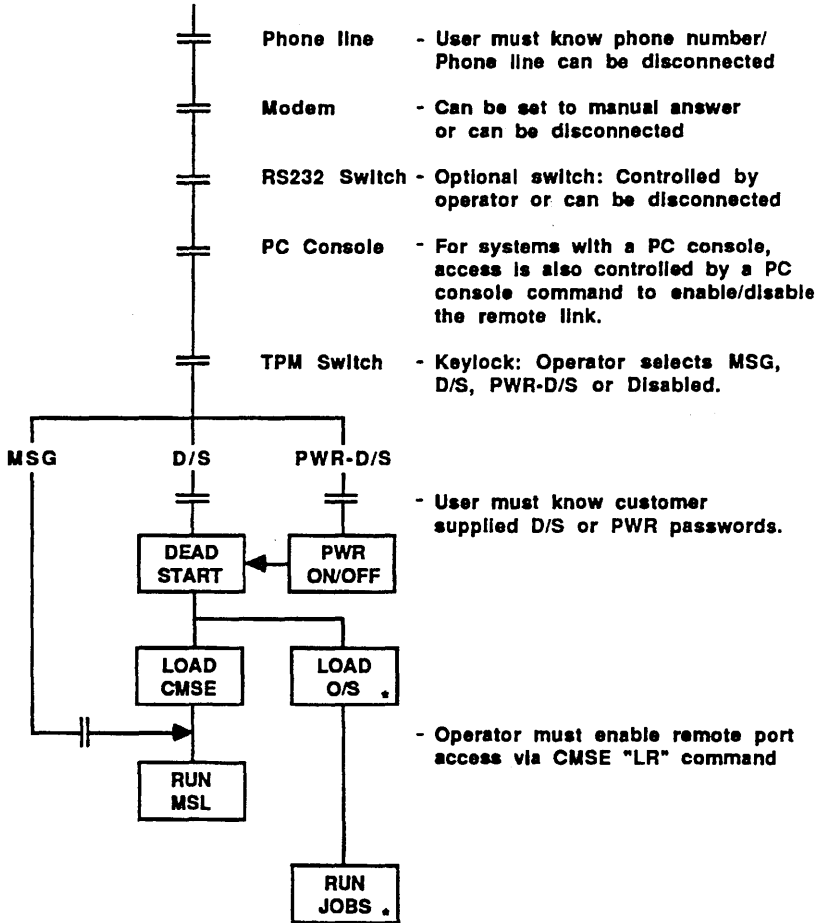
Security features/measures are shown pictorially on the following pages.

3.1.2 Security When Access Is Via Two Port Mux

I1 OR I4 IOU under NOS or NOS/BE



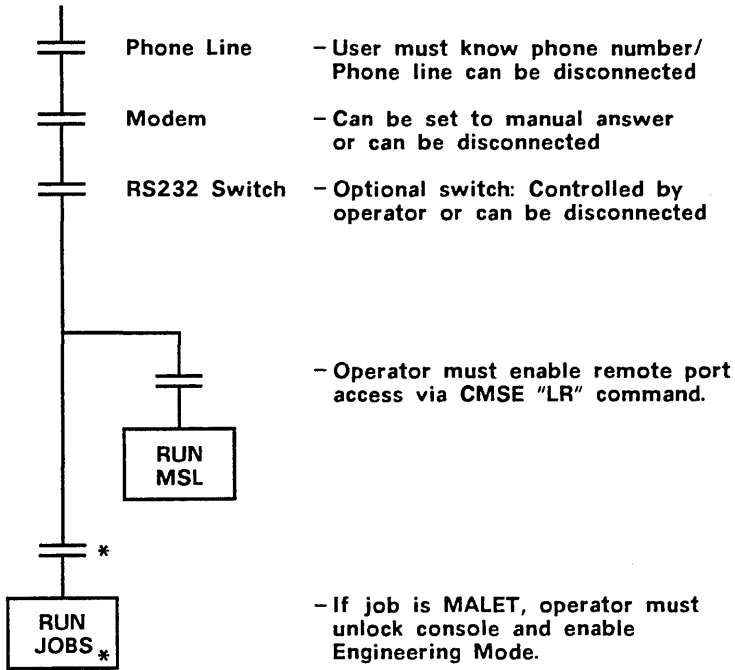
11 OR 14 IOU under NOS/VE



* Can only be done providing the system is deadstarted remotely.

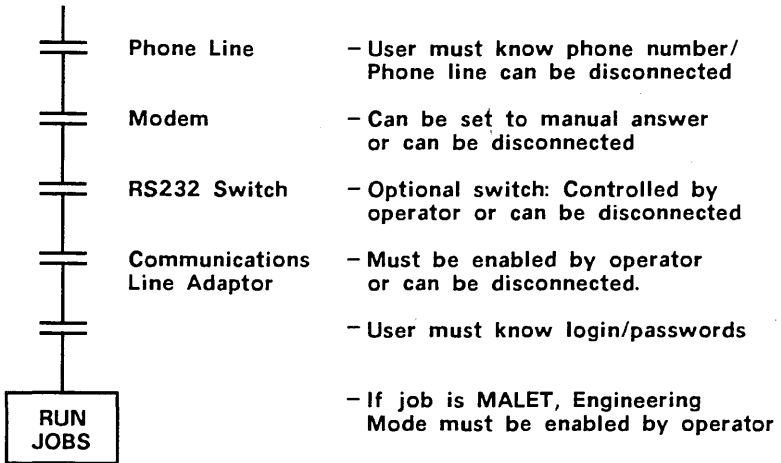
3.1 Security Measures

I2 IOU

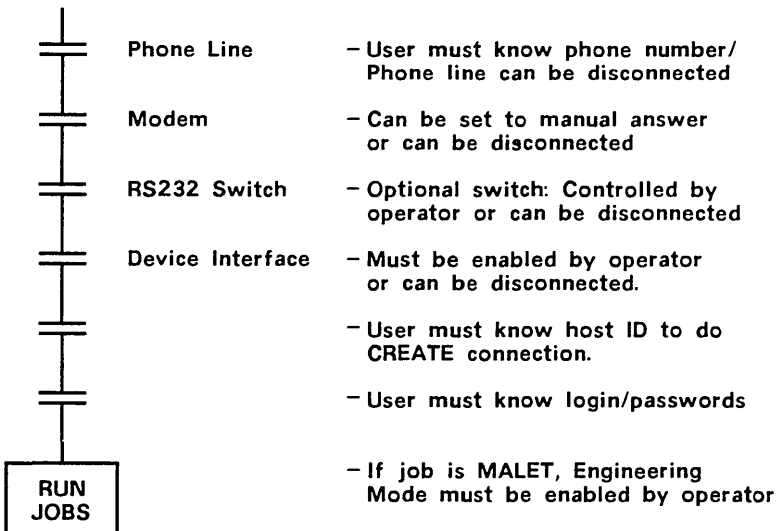


* Applies to NOS or NOSBE systems only. On-line data links under NOSVE can be done only via customer communication networks --not via Two Port Mux.

3.1.3 Security On-Line When Access Is Via CCP/2550



3.1.4 Security On-Line When Access Is Via CDCNET



3.2 Software

3.2.1 Introduction

NOTE

Hardware requirements to allow remote access into the site are described later in section 3.3.

Remote access to the site hardware is controlled and limited by the software programs and packages installed at the site. Once connection to the CYBER system is made, either via the TPM (PC Console) or the site communication network, all activities are controlled by the installed software.

For Control Data maintained or licensed sites, all necessary software components are available to allow remote access and control for RTA use.

Off-Line

The off-line maintenance system MSL/CMSE is delivered as part of the CIP package and is installed onto a site disk subsystem by E.S. Access to MSL and CMSE is via either the local console or the Two Port Mux (TPM). Refer to section 2.2 for an explanation of the TPM.

On an I1 IOU, remote access through the TPM is controlled with a key switch. An I4 IOU allows remote deadstart only. This switch can be set to allow Power off/on, Deadstart, or Message only connections to the IOU. In the I4C IOU, there is no switch; security is handled by the PC Console (refer to section 2.2). Another element of customer control of this capability is provided with a different password enable for each of these actions. It is a requirement that the customer set these passwords from the System Console (connected to TPM Port 0). This password must then be known and entered before remote deadstart or remote power off/on the system can be done. These passwords may not be changed from TPM Port 1.

Several of the software programs involved in off-line RTA are listed below:

DSP - The MSL/CMSE display driver for the CC545 system console.

DSQ - The MSL/CMSE 721 and 752 compatible display driver.

Both of these programs are part of MSL and as such, are installed when CIP is installed to the disk subsystem.

PC Console

For remote access through the TPM, in addition to password control, the operator has to enable the remote link via software commands from the PC Console. Refer to section 3.4. For software commands (refer also to 19003 System Console Operations and Maintenance Guide, publication number 60463610).

On-Line

The on-line operating system software necessary to provide remote access, is either delivered as part of the operating system release or supplied by Engineering Services as in the case of CML and CMSI.

In order to access the customers system remotely, a user must dial into either the customers communications network (CCP/2550 or CDCNET) or the Two Port Mux (or PC Console) and process a login through the system communications driver. It is the responsibility of the customer console operations personnel to enable and start the proper communications driver to allow system access and login. Under NOS, the CCP/2550 and CDCNET driver is NAM and IAF. Under NOS/VE, the CDCNET driver is NAMVE.

On a NOS or NOS/BE system, if remote access is via RDF (Remote Diagnostic Facility) and the TPM, the operator must enable and start RDF. RDF will drive the TPM similar to IAF. Information on the RDF product is available in the NOS and NOS/BE On-Line Maintenance Software Reference Manuals, publication numbers 60454200 and 60453900 respectively.

3.2 Software

Once logged in to the system, remote activities are controlled by the system validation limits placed on that user name. For NOS and NOS/BE, the minimum Engineering Services required validations are listed in section 1 of the CML Reference Manual, publication number 60455980. These validations place limits on the type, size, amount and duration of the system and control statements which are used. The validation limits listed in the CML Reference Manual are the minimum needed to effectively use CML. Other limits may be granted by the customer at their option.

For NOS/VE, refer to section 1 of the CML/VE Reference Manual, publication number 60000019.

NOS Tailored Release

Beginning with the NOS 2.4.1 release, the CML release tape image is included in the NOS tailored system release. The tailored release contains all the customer-ordered software products installed into the deadstart tape by the Software Manufacturing Division (SMD). For installations maintained by Engineering Services, this includes the OS resident parts of CML (HPA, MALET, TIO, REGEN). This allows the customer to use their OS without further modification. Along with the deadstart tape, is a set of permanent file dump tapes containing all of the configured products. On one of these tapes is the CML release image. As part of the NOS system installation process at the site, a "SYSGEN(FULL)" command should be issued. This command starts a group of procedures which among other things installs the user name CDCCE and validation for that user name and creates the CML release file image on permanent file CML3 in that user name. Refer to the CML Reference Manual, publication number 60455980, for the validation limits created.

In addition, within the operating system software release package received by the customer will be a copy of the CML Reference Manual and the Diagnostic Software Release Bulletin (DSRB) to support the included CML. These two items are intended for the Control Data customer engineer.

3.2.2. Equipment Status Tables

All on-line activities must be controlled by the OS. All communications equipment used must be known and defined by the OS. In each case, this requires an Equipment Status Table (EST) entry to be defined for that device. The following sections define the different ESTs used in each system.

3.2.2.1 NOS

Format and detail of all the following NOS entries is found in the NOS V2 Analysis Handbook, publication number 60459300.

RDF

In order to use the RDF package to access the system, the TPM must be defined in the deadstart equipment definition deck (EQPDECK). This entry is in the form :

```
EQest = RM,ST=status,PT=pt,CH=ch
```

where:	est	is the EST ordinal to be assigned to the TPM, 6 to 7778.
	RM	is the device code the mux is known to NOS by.
	status	is the initial status of the device, on or off.
	pt	is the port number for RDF access (0 or 1). RDF and the system console cannot use the same port number.
	ch	is the 865, 875 or CYBER 180 class machines channel for the TPM. Must be 15.

CCP/IAF/255X

The Network Processing Unit (255X NPU) requires the following EQPDECK entry:

```
EQest = NP,ST=status,EQ=equip#,PI=pip,CH=ch,ND=nd,SA=sa
```

where: NP is the device code as known to NOS.

est are as previously defined.

ch

status

equip# is the NPU controller equipment number, 0 to 7.

pip is the peripheral interface equipment index, 1 to 4.

nd is the node number of the couple associated with the NPU being defined. (Refer to the Network Definition Language Reference Manual, publication number 60480000.)

sa is the system auto start module (SAM) flag, on or off.

Further terminal line definitions are supplied in the Network Configuration table file (NCFFILE) and the local configuration file (LCFFILE). For information on the construction and format of these files and the creation utilities, refer to the NAM Network Definition Reference Manual, publication number 60480000.

CDCNET

Terminal usage through the CDCNET subsystem requires the following entry in the EQPDECK.

EQest = ND,ST=status,EQ=eq,PI=pip,CH=ch,ND=nd,NT=node

where: ND is the device code CDCNET is known to NOS by.

status are as previously defined.
eq
ch

nd is the node number of the coupler associated with the MDI or MTI being defined, 1 through 255.

node is the node number MDI or MTI, 1 through 255. This node number identifies the Control Data Network Architecture (CDNA) transport function.

3.2.2.2 NOS/BE

The following entries are examples for the NOS/BE EST generation macro used to define the equipment configuration and their associated attributes. For greater detail on the NOS/BE EST generation macro, refer to the NOS/BE V1 Installation Handbook, publication number 60494300.

RDF

The NOS/BE RDF EST entry is generated using the following format of the EST macro:

```
RM,CH=ch,EQP=eqp,MOD=OFF
```

where

RM	is the the NOS/BE device code.
ch	is the octal channel number of the TPM. If omitted, 15 is assumed.
eqp	is the octal equipment number of the TPM. If omitted, 15 is assumed.
OFF	is the initial status of the TPM, OFF or not used.

INTERCOM 5

The format of the EST macro for INTERCOM 5 for the 255X NPU is:

```
FE,CH=ch,EQP=eqp,MOD=OFF
```

where:

FE	is the NOS/BE device code
ch	are the same as defined above
eqp	
OFF	

3.2.2.3 NOS/VE

All NOS/VE equipment must be defined in the Physical Configuration and Logical Configuration files. These files are generated by the Physical Configuration Utility (PCU) and the Logical Configuration Utility (LCU).

CDCNET

CDCNET is currently the only supported network device for the NOS/VE operating system.

The CDCNET unit is defined using the DEFINE_CHANNEL_NETWORK and INSTALL_NETWORK_CONFIGURATION commands. They are used to create the file `$System.Network.Configuration.$Next` file. (See the NOS/VE System Performance and Maintenance manual, publication number 60463915.)

3.3 Hardware

3.3.1 Introduction

The hardware required to perform remote access will vary based on the situation, customer requirements, and site configuration. It is important therefore, that the situation requiring RTA be fully understood prior to enabling remote access. Also it is important to note that some tasks can only be accomplished using an on-line data link while others will require off-line access and a dedicated system.

Conversations between the RTA provider and the customer or console operator, prior to access, will assist in defining the appropriate access method and the required hardware resources.

3.3.2 Control Data Use of Phone Line(s)

The ideal situation is two customer-provided phone lines available for RTA use. This would enable one line to be directly connected to the modem for data-links, and another line to be connected to a phone near the system console for voice communication.

At a minimum, the customer is required to supply access to one phone/line.

NOTE

If only one line is allowed or provided, a modem with voice/data switching capabilities is to be used. Refer to section 2.1.3, Voice/Data Switching, if this limitation exists.

3.3.3 Control Data Use of CCP/2550 or CDCNET

If the maintenance action requires that an on-line data link be performed and the customer configuration includes a 2550 or CDCNET, this access is preferred. The customer is not obligated to enable this access, but may allow it, depending on the nature of the problem or maintenance action.

Prior to access through the 2550 or CDCNET, the customer or operator must provide a phone number, user identification, and password to enable the remote login. Refer to the 2550 and CDCNET validation procedures discussed previously in this section (under 3.2 Software -- On-Line).

Once access is enabled through the 2550 or CDCNET, all tasks and jobs submitted will be handled in the same manner as any other interactive user.

3.4 System Console Operator Requirements

3.4.1 Introduction

The operational characteristics of some customer systems/communication networks may not be set up to readily allow all forms of RTA data links. Furthermore, because (by design) some system console operator functions are required for security reasons, it may be necessary in some instances, for the system console operator to assist Control Data in the creation of a data link.

These actions may include changing the Two Port Mux (TPM) keylock (PC Console enabling the remote link) and/or bps switches, or operating an RS232 switch (if used).

If either of these actions becomes necessary to create a data link, refer to section 2, Site RTA Hardware.

3.4.2 Enabling RDF

NOTE

For a description of RDF and its capabilities, refer to 3.2 Software earlier in this section. Also, more information may be found in the NOS and NOS/BE On-Line Maintenance Software Reference manuals (publication numbers 60454200 and 6053900 respectively).

The Remote Diagnostic Facility (RDF) can be initiated with the Interactive Facility (IAF) already running, or it can be independently initiated.

The user must call the system console operator by telephone, identify him/herself and request that RDF be enabled. After the system console operator has properly identified the RDF user, RDF may be enabled as follows:

1. Turn on the Two Port Mux (the entry labeled RM) in the EST table. Do so with the following command (where est is the ordinal number):

```
ON,est
```

2. In a secure system, the security administrator must place the system in security unlock status with the UNLOCK command. Enter:

```
UNLOCK
```

More information on UNLOCK is described in the NOS Security Administrator's Handbook (60460410).

3. Enable the RDF subsystem through the use of the following DSD/SUBSYST commands:

```
SUBSYST.  
L.ENABLE,RDF.  
L.END
```

The NOS 2 Analysis Handbook (publication number 60459300, VOL. 1) has more information on SUBSYST.

4. If desired, change the modes (PRIVILEGED or RESIDENT) in which RDF will be used. Do so with one or more of the following DSD commands:

```
ENABLE PRIVILEGED RDF.      or  
DISABLE PRIVILEGED RDF.    and/or  
  
ENABLE RESIDENT RDF.       or  
DISABLE RESIDENT RDF.
```

3.4 System Console Operator Requirements

PRIVILEGED/ UNPRIVILEGED	allows use of any maintenance or system functions available at a particular site. When this parameter is not specified (Default - UNPRIVILEGED mode), the system allows the user to perform only those maintenance and system functions listed in the Terminal Control Commands (NOS and NOS/BE On-Line Maintenance Software Reference manuals, 60454200 and 60453900 respectively).
RESIDENT/ NONRESIDENT	If parameter is not specified (Default - NONRESIDENT mode), the user is automatically logged out after 15 minutes of inactivity and RDF must be reinitiated for future use. In RESIDENT mode RDF remains active until disabled.

3.4.3 Disabling RDF

At the end of an RTA session, the system console operator may disable RDF through the following DSD/SUBSYST commands:

```
SUBSYST.  
L.DISABLE,RDF.  
L.END
```

NOTE

If the system had been in a locked (secure) status, a system UNLOCK command would have been required prior to doing the above.

3.4.4 Sending Conversational Display Messages

With an on-line data link established to the host, the system console operator may send conversational display messages to the RTA provider from the system console and the RTA provider may send messages to the systems console operator from the RTA workstation. The methods for doing this depend on the Operating System being used and are described next. (To send messages from the RTA workstation, see section 5, Workstation Operation.)

NOS Operating System (2550 or CDCNET)

Messages sent to the system console will be displayed at a System Control Point next to the JSN of the RTA provider. To respond to the message and send another message to the RTA provider, do the following:

1. Enter `ASSIGN, jsn, 2<CR>` (where jsn is the JSN of the RTA provider). This acknowledges the message.
2. Enter `DIAL, jsn, text <CR>`. (Replace jsn with the JSN from the message; replace text with your text. The text may not be more than 48 characters long.)

NOS/VE Operating System (CDCNET)

Messages sent to the system console will be displayed in the NOS/VE Operator Action Window with the system-supplied ID of the RTA provider. To respond to and send a message to the RTA provider, enter the following:

`REPA $systemID 'text'<CR>`. (Replace \$systemID with the system-supplied ID from the message. Do not forget the quote marks around your message text.)

NOS/BE Operating System (2550)

To send a message to a remote terminal, enter:

`id,message text<CR>` (where id is the user id or terminal id.)

3.4.5 Voice/Data Switching

If the on-site RTA modem makes use of a daisy-chained phone, it may be advantageous in some instances to switch directly from an already established voice conversation on this phone, to a data link (that is, without breaking the connection). Similarly, it may be advantageous to switch from an established data link back to voice conversation. The following lists the instructions for doing either.

Data-to-Voice (Using a Racal-Vadic 2400 PA Modem)

To switch from data to voice mode (when requested), the system console operator will be asked to do the following:

1. Pick up the telephone handset.
2. Depress the <DATA/VOICE> on the modem's front panel. The red light on this switch will go out.
3. Wait. The RTA provider will similarly switch their modem into voice and then say hello. At this time, phone conversation can take place.

Voice-to-Data (Using a Racal-Vadic 2400 PA Modem)

To switch from voice to data mode (when requested), the system console operator will be asked to do the following:

1. If the data link is to be at 2400 bps, this step may be omitted. Otherwise, the system console operator will be asked to depress a bps rate switch located on the modem's front panel.
Depress the <300> or <1200> bps switch as directed. A red light lit on the switch verifies its selection.
2. Depress <DATA/VOICE> on the modem's front panel.
3. Hang up the handset.
The RTA provider will depress the <ANS/ORG> switch and then the <DATA> switch on their modem and the initial data link connection will be established.
At this point, the CTS, DSR and CXR lights and either the HS (2400 bps), 1200 or 300 bps lights should be lit on both the site and RTA provider's modem.

Data-to-Voice (Using a Multitech 224EH Modem)

To switch from data to voice mode (when requested), the system console operator or the remote operator will be asked to do the following:

1. Pick up the telephone handset.
2. Momentarily push the <VOICE/DATA> switch DOWN. This switch is located on the right side of the modem's front panel.
3. The modem at the secondary location will then emit a short alert tone and the modem's internal speaker will be enabled.
4. The primary operator may then speak into the handset telling the secondary operator to pick up the handset and normal voice communications can then take place.

NOTE

The secondary operator must pick up the handset within 5 seconds after the alert tone has sounded, or the link will disconnect and the call will have to be reestablished.

Voice-to-Data (Using a Multitech 224EH Modem)

To switch from voice to data mode (when requested), the system console operator will be asked to do the following:

1. Set the three position bps rate switch to either <300>, <1200> or <2400> as directed.

This is the second switch from the right on the modem's front panel. A front panel indicator light will come on verifying 1200 or 2400 bps has been selected or, if both lights are out, 300 bps has been selected.

2. Momentarily push the <VOICE/DATA> switch DOWN. This switch is located on the right side of the modem's front panel.
3. Hang up the handset.

The RTA provider (if also using the Multitech modem) will momentarily push the <VOICE/DATA> switch UP and the initial data link connection will be established.

3.4 System Console Operator Requirements

At this point, the CD, OH, and TR lights should be lit on both the site and RTA provider's modem. If operation is at 2400 or 1200 bps one of these lights will also be lit.

3.4.6 PC Console Enable/Disable Remote Link

Another form of security has been added with the PC Console, software enabling/disabling of the Remote link (TPM). To accomplish enabling the TPM, follow the instructions below.

1. From the console main menu, select C (Console utilities).
2. From the console utilities display, select L (Remote link options).
3. At the Remote link options display, select Enabled and hit return.
4. To disable the link, follow the above procedure and in step 3, select Disabled instead of enabled; or at the console utilities display, select T (Terminate Remote link).

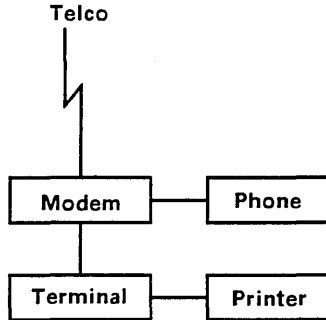
Refer also to 19003 System Console Operations and Maintenance Guide, publication number 60463610, for further information.

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4.1 Workstation Definition

The RTA workstation consists of a terminal, printer, modem and phone, configured as follows:



The specific devices used in the configuration are:

- | | |
|--------------------|---|
| Phone | Any (pulse or tone). |
| Modem | Racal-Vadic 2400 MNPAT (USA P/N 75447467; Canada P/N 75447468), or

MULTITECH MULTIMODEM 2400-EH (USA P/N 75448048; Canada P/N 75448040). |
| Terminal | Control Data 721 (CC634 or CC638) (also called the Viking X). |
| Serial Port Option | Control Data YR101 (contained within the terminal). |
| Matrix Printer(s) | Control Data 720-10 (CK130) (also called the SCAMP printer), or

Centronics H136-3, or

Epson LQ 1000. |

Cabling and setting of parameters for these devices are covered in the remainder of this section.

4.2 Workstation Cabling

Phone Line Cables

Cables used between the modem and phone line (Telco) or between the modem and handset (Telset) are of the modular (RJ11C) type. They are to be connected as directed by the labels on the back of the modem.

Required RS232 Cables

Cables used between the terminal and modem or between the terminal and a serial printer are "standard" EIA RS232 type cables (except for the Epson LQ 1000).

Many variations of RS232 cables exist. Null-modem cables are quite common but will not work. Also, otherwise modified cables may not work.

The correct modem and/or serial printer cable is :

P/N 61406100 (Equipment YA255-A w/angled connectors), or
P/N 15632984 (Equipment YA254-B w/straight connectors).

The Epson printer uses serial RS232C cable, Epson P/N 8294.

Connecting RS232 Cables

RS232 cables are to be connected to the selected workstation equipment jacks as follows:

Terminal Jack

Modem Jack

"DATA SET"----- (RS232) ----- "EIA RS232"

Terminal Jack

Printer Jack

"J01" ¹ ----- (RS232) ----- not labeled ²
 (Ser. I/F Bd)

1. J01 on the 721 Ser.I/F Bd. is the lower jack (Port A).

2. This is the vertical jack on the Centronics H136-3 or the only jack on the Control Data CK130.

4.3 Workstation Parameters

4.3.1 721 Terminal Parameters

Types of Parameters

The 721 terminal utilizes three different categories of parameters:

- Terminal installation parameters
- Mode installation parameters

NOTE

There are eight separate sets of mode installation parameters. For RTA of CYBER systems, only knowledge of one of these is required (CYBER mode). The other parameter sets are not covered in this document.

- Operation parameters

To verify or change parameter settings, proceed to one of the desired parameter categories by following the steps on this and subsequent pages.

NOTE

Do not perform the following Basic Instructions for Changing Parameters until asked later in the text to do so.

Basic Instructions for Changing Parameters

Selecting a Parameter Block

With parameter blocks appearing at the bottom of the screen, press the terminal's <F2> through <F9> key that corresponds with the numbered block where a change is to be made. This moves the cursor within that block.

Changing Terminal Installation Parameters or Mode Installation Parameters

After selecting the appropriate terminal installation or mode installation parameter block, use the <SPACE> bar to go forward or <BACKSPACE> key to go backward and move cursor to digit of wrong value. Then key in the correct value.

Changing Operator Parameters

After selecting the appropriate operator parameter block, repeatedly depress the same function key until the the desired parameter setting is toggled into position.

Terminal and Mode Installation Parameter Settings

1. Power on or Reset the 721 terminal. Wait for the self test to complete. Mode menu blocks will appear at the bottom of the screen.
2. Hold down the <CTRL> key then depress the <SETUP> key.

NOTE

It is possible your terminal has mode select automatically preconfigured. If, after completing the steps above, your screen has the Operator Parameter Setting display shown on the following page instead of that in item 3 below, you will have to complete the following sequence before continuing with step 3 below. This will be necessary only once.

Depress RESET on the 721 terminal

Depress SETUP

Depress the <F10> key. Depress the <F10> key again.

Hold down the <CTRL> key, then depress the <SETUP> key.

Continue with step 3 below.

4.3 Workstation Parameters

3. Verify the following *terminal installation parameters*. If different, correct by referring to the Basic Instructions for Changing Parameters in the beginning of this section.

F2	F3	F4	F5	F6	F7	F8	F9	
CONFIG	CONFIG	CONFIG	CONFIG	AS X Y	ID	PORT A	PORT B	
011001	000000	000010	000000	0 0 0	0 000	5 8	5 8	

4. If changes were made, depress the <COPY> key at this time. The parameters, as displayed, will be saved in the terminal's nonvolatile memory. If no changes were made, this step may be omitted.
5. Depress the <F10> key.
6. Enter <1> at the "ENTER MODE" prompt. This selects CYBER mode.

7. Verify the following (CYBER) *mode installation parameters*. If different, correct by referring to Basic Instructions for Changing Parameters in the beginning of this section.

		*						
F2	F3	F4	F5	F6	F7	F8	F9	
CONFIG	CONFIG	CONFIG	CONFIG	OPR DF	A-DIAL	A-DIAL	00 T R	
100000	000110	000000	010000	4C05	000000	000000	00 8 8	

8. If changes were made, depress the <COPY> key at this time. The parameters, as displayed, will be saved in the terminal's nonvolatile memory. If no changes were made, this step may be omitted.
9. Depress the <F1> key to exit from parameter setup. The mode menu blocks will reappear.
10. Depress the <F1> key again to enter the CYBER mode.

NOTE

The F3 CONFIG parameter (noted with an *) contains the communication parameters DATA BITS = 7, STOP BITS = 1, Parity = EVEN. If your host system utilizes a different set of parameters, refer to appendix A of the 721 Terminal Operator's Guide, publication number 62950101.

Operator Parameter Settings

NOTE

If not already in CYBER mode, depress the <F1> key to enter CYBER mode.

1. Depress the <SETUP> key.
2. Verify the following (CYBER mode) *operator parameters*. (If different, correct by referring to the Basic Instructions for Changing Parameters in the beginning of this section.

F2	F3	F4	F5	F6	F7	F8	F9	
LINE	PRINTR	MARGIN	ALERT	LOCK	IN PAD	SCREEN	CYBER	
	*							
ON	OFF	ON	SOFT	ALPHA	NORMAL	ROLL	LARGE	

3. Depress the <F10> key for more parameters.
4. Verify the following additional *operator parameters*. If different, correct by referring to the Basic Instructions for Changing Parameters in the beginning of this section.

F2	F3	F4	F5	F6	F7	F8	F9	
BKGND	CURSOR	CURSOR	BPS	DUPLEX	CHR/LN	LINES	XPARNT	
				*				
DARK	LINE	BLINK	2400	FULL	80	30	OFF	

5. Depress the <F1> key to exit from parameter setup and return to CYBER mode.

NOTE

The above *operator parameters* noted with an *, reflect the settings to which these parameters will default upon a 721 Reset or Power Off/On. They may differ, as determined by the user, during actual workstation operation.

Any operator parameter can be easily altered at any time. For RTA workstation operation, only two parameters are typically changed: PRINTR and DUPLEX.

PRINTR

Communication with the printer may be turned off or on (at the discretion of the operator) as follows:

1. Depress the <SETUP> key at any time (while in CYBER mode)
2. Depress the <F3> key repeatedly until the PRINTR operator parameter is set as desired (OFF for off or SERIAL for on).
3. Depress the <F1> key to exit from parameter setup and return to CYBER mode.

It should be noted that, since the terminal's serial port was previously enabled (Installation Parameter PORT A = 4 8), logical turn-on of the printer now enables the terminal to communicate with the printer. If the terminal attempts to communicate with the printer, the printer must be ready. In other words the printer must be cabled, powered up and on line. Failure to meet these requirements will cause the workstation to hang with no obvious indication as to what is wrong.

DUPLEX

Full duplex operation is recommended during RTA sessions and it is a requirement when interactive mode is being used with a Racal-Vadic 2400PA modem. However, if it is desired to change to half duplex operation (such as when using an RDF/TPM access), this may be done as follows:

1. Depress the <SETUP> key at any time (while in CYBER mode)
2. Depress the <F10> key.
3. Depress the <F5> repeatedly until the DUPLEX operator parameter is set as desired (FULL for full duplex or HALF for half duplex).
4. Depress the <F1> key to exit from parameter setup and return to CYBER mode.

4.3.2 Racal-Vadic Modem Parameters

Basic Modem Capabilities

- The ability to operate at 2400, 1200 or 300 bps (CCITT Recommendation V.22 bis and Bell 212/Bell 103 protocols).
- MNP capabilities (internal modem error correction).
- The ability to communicate with a modem and a terminal that are set to different speeds (Speed Conversion).
- The ability to auto-dial with automatic speed selection and parity detection.
- The ability to store 15 telephone numbers in memory.
- The ability to use Hayes (AT) commands (capability present but will not be utilized by the RTA workstation).
- Nonvolatile memory backed up by a lithium battery.
- The ability to switch from voice to data without dropping the carrier.

Racal-Vadic Interactive Mode

You must operate the modem through a terminal (in this case the 721) to perform any commands such as auto-dial or memory functions and also to change any internal software options. When you first turn on the modem, it is in idle mode and waits for you to tell it what to do. To operate the modem from the terminal, you must "wake it up" by putting it into interactive mode. This is done by entering a <CTRL-E> <CR>, as will be explained later in this text.

NOTE

The terminal must be in FULL-DUPLEX (a Racal-Vadic requirement) and the speed of both the terminal and modem must be set the same -- in this case, both set to 2400 bps.

After going into interactive mode the modem will supply an asterisk (*) acknowledgement and will then wait for a command to be entered. If no command is entered within 2 minutes, the terminal will time out and return to idle mode

Hayes (AT) Mode

In addition to the Radic-Vadic interactive mode, a similar Hayes "AT" mode exists. The AT command mode is not discussed in this manual. If you should find it necessary to use the Hayes AT command set, refer to the owner's manual accompanying the modem.

Required Hardware Options

All hardware options (jumper straps within the modem) are left as set at the factory.

NOTE

Modems received through Control Data Engineering Services have been modified to include a DSR-ALWAYS-HIGH jumper option. This option is not noted in any of Racal-Vadic user documentation. The unit should be received with DSR in the wired-high state.

Required Software Options

Various modem software options can be set from the terminal. When using the modem in the RTA Workstation configuration, several of these options (noted below with a *) are altered from standard factory settings.

* 01 - 2	02 - 1
03 - 2	* 04 - 2
05 - 1	* 06 - 2 or 3
07 - 1	08 - 1
09 - 1	10 - 1
11 - 1	12 - 1
13 - 1	14 - 1
15 - 1	16 - 1
17 - 2	* 18 - 2
19 - 1	20 - 1
21 - 3	22 - 1
23 - 1	

The reasons for these changes are as follows:

- 01 - 2 Indicates standard (factory) settings are altered
- 04 - 2 Disables the auto-answer feature to allow normal use of the daisy-chained telephone
- 06 - 2 Selects Tone-Dialing, or
- 06 - 3 Selects Pulse-Dialing, whichever is required
- 18 - 2 Enables Speed Conversion - The modem communicates with the terminal at whatever speed the terminal is set (in this case 2400 bps). It can also communicate with a remote modem at a different speed (1200 or 300 bps).

Verifying Software Options

NOTE

Workstation cabling (or at minimum cabling between the modem and terminal) and also the setting of all terminal parameters and modem hardware options are a prerequisite to this section.

1. Depress <RESET> on the modem and wait for the self test to complete (that is, wait for reset and error lights to extinguish on the modem).

NOTE

At this point the HS, DTR and Power lights should be lit on the modem, and DSR should be indicated as being received at the terminal.

2. Depress the <F1> key to enter CYBER mode.
3. Hold down the <CTRL> key then depress <E>, next depress <CR>. This wakes up the modem and it will respond with "HELLO I'M READY" followed by an asterisk. Racal-Vadic commands can now be entered.
4. Depress the <T> key, next depress <CR>. This commands the modem to display its current software option settings.
5. Verify that the software options are set to that described in the previous section under Required Software Options.
6. If the software options are not set as described, proceed to the following section -- Changing Software Options.

NOTE

If the modem has received prior use, it is possible that other settings (in addition to those previously called out as "changed from factory settings") may be different. These will also need to be changed.

Changing Software Options

1. If not already in the interactive mode, hold down the <CTRL> key then depress the <E> key, next depress <CR>.

Interactive mode will be entered and the modem will respond with "HELLO I'M READY" followed by an asterisk (*) prompt.

NOTE

If you were already in interactive mode and the above was done, the modem would respond with "INVALID COMMAND" (the modem was already "awake").

2. Depress the alpha <O> key then depress <CR>. The modem will respond with "OPTION NUMBER ?"
3. Enter the number of the option you want to change, then depress <CR>. The modem will respond with the selected option number followed by its current setting.
4. Enter the number of the new (desired) setting of the selected option, then depress <CR>. The setting will be changed and the modem will respond again with "OPTION NUMBER" (asking if you wish to alter other options).
To make more changes, repeat steps 3 and 4.
5. When no more changes are required, do an escape by depressing just the <CR> at step 4. The modem will return to Interactive mode and display the asterisk (*) prompt.
6. Depress the <T> key then depress <CR>. Verify that the options now displayed agree with those previously listed.

Displaying Memory

There are 15 memory locations in the modem (addresses 1 through 15) in which telephone numbers (and descriptions) can be stored for use by the auto-dialer.

To display the current contents of memory:

At the asterisk prompt, depress the <M> key and then <CR>. The modem will respond by displaying each memory location code (1 through 15) followed by their contents.

Storing Telephone Numbers

NOTE

Each memory location can contain a maximum of 60 characters. Phone numbers are entered first and if desired, a brief description can be entered following the number. Phone numbers and descriptions must be separated by a semicolon (;).

To store a telephone number in memory:

1. At the asterisk prompt, depress the <C> key and then <CR>. The modem will respond with "ADDRESS ?"
2. Enter the address of the memory location (1 through 15) where you want to store the number, then depress <CR>. The modem will respond by displaying the selected memory address followed by its current contents.

If the selected memory location already contains a number, you can delete the number by holding down the <CTRL> key then depressing the key. Other editing commands are described in the following section, Editing Memory.
3. Type in the telephone number (you can use spaces and dashes if you wish), then enter <CR>. The modem will enter this number in memory and will respond again with "ADDRESS ?" (asking if you wish to enter another number).
4. If you wish to enter more numbers, repeat steps 2 and 3.

If you have finished entering numbers, do an escape by depressing just the <CR> key at step 3.

Editing Memory

To change any information already stored in a memory location:

1. At the asterisk prompt, depress the <C> key then <CR> (the same command used for storing a number). The modem will respond with "ADDRESS ?"
2. Type in the memory location (1 through 15) for the phone number you wish to change, then <CR>. The modem will respond by displaying the selected address followed by its current contents.
3. Use the following functions for editing:

<CTRL-H>	Backspace.
<CTRL-F>	Move the cursor forward (to the right).
<CTRL-D>	Delete a single character.
<CTRL-B>	Blank out the entire memory location.
<any character>	Any character key depressed inserts that character to the left of the cursor.
4. Depress <CR> after making all changes to the selected location. The changes will be entered into memory and the modem will respond with "ADDRESS ?" (asking if you wish to make changes to another location).
5. If you wish to edit more locations, repeat steps 2 through 4. If you have finished editing, do an escape by depressing just the <CR> key after step 4.

Clearing Memory

To erase one or all of the phone numbers from memory:

1. At the asterisk prompt, depress the <C> key then <CR>. The modem will respond with "ADDRESS ?"
2. Depress the <C> key again followed by another <CR>. The modem will respond with "CLEAR NUMBER ?"
3. You may now clear either a single memory location or all of memory:

- *To clear a single location* - After step 2, type in the address of the phone number you wish to clear. Memory at this address will be cleared and the modem will respond with "CLEARED ADDRESS ?" (asking if you want to clear additional memory locations).

To clear additional memory locations, enter the desired address as done in the previous step.

To exit the clear memory routine at this point, depress just the <CR> key.

- *To clear all of memory* - After step 2, again depress the <C> key followed by <CR>. In other words, this is the third time the "C" command has been entered since the asterisk (*) prompt. The modem will respond with "CLEAR ALL NUMBERS ? (y/n)."

To exit the memory clearing routine depress the <N> key then <CR>, or...

To clear all memory locations depress the <Y> key then <CR>. All memory locations will be cleared and the memory clearing routine will be automatically exited.

4.3.3 Multitech 224-EH Modem Parameters

Basic Modem Capabilities

- The ability to operate at 2400, 1200, or 300 bps (CCITT recommendation V.22 bis and Bell 212/103 protocols).
- MNP capabilities (internal modem error correction).
- The ability to communicate with a modem and a terminal that are set to different speeds (speed conversion).
- The ability to auto-dial and/or auto-answer with automatic speed selection and parity detection.
- The ability to store ten telephone numbers in nonvolatile memory backed up by a lithium battery.
- The ability to use Hayes (AT) commands.
- The ability to switch from voice to data and data to voice without losing phone connection.
- External on/off power switch.
- Internal speaker for call monitoring.

Required Hardware Options

Hardware options are set by DIP switches that are located on the underside of the modem. For RTA workstation use, switches are to be set to off (down) except as follows (The Workstation Modem switches are set the same when used with a P/C or Non-P/C console system):

01	
02 - UP	Verbose (word) responses
03	
04 - UP	Enable echo of command characters
05	
06	
07 - UP	Single line setting for RJ11
08	

NOTE

The functions controlled by the DIP switches become active only when the modem is initially powered on. If changes are made with the modem already powered on, they will not be sensed. The modem must be powered off and then back on again, for them to be effective.

Required Software Options

There are numerous software options and features available for use with the Multitech 224EH modem; however, only one change from the factory-standard (default) settings (enabling BAUD ADJUST) is required to allow the modem to be used by the workstation. Enabling BAUD ADJUST is required to allow the workstation to communicate remotely with any (2400, 1200 or 300 bps) on-site RTA modem.

NOTE

This document section only describes how to ensure factory-standard settings, how to set BAUD ADJUST and how to store phone numbers. Commands required to operate (dial with) the modem are discussed in Section 5, Workstation Operation (5.1.2 Multitech Modem). For information on other commands/settings, see the owner's manual accompanying your modem.

General Command Concepts

The "AT" (Attention characters) are used to preface or "wake up" the modem. The "AT" must be entered as capital letters and must be followed by a <CR> to take effect in the modem. The only exception to the <CR> is the command A/ which reissues the last command typed and A: which will do a continuous redial of the last phone number dialed.

NOTE

Workstation cabling (or at minimum, cabling between the modem and terminal) and also the setting of all terminal parameters and modem hardware options (DIP switches) are a prerequisite to this section.

Setting Default Values

When the modem is initially powered up or when the Z (reset) command is issued, the modem will assume default values.

To do a reset command:

1. If not already in CYBER mode, depress the <F1> key, followed by a <CR> to enter CYBER mode.
2. Enter ATZ, followed by a <CR>. The modem will respond with "OK" and factory-standard (default) settings will be stored in the modem's memory.

Setting BAUD ADJUST

Entering of two AT commands is necessary to set BAUD ADJUST and store it in memory. This should be the only time necessary unless the modem's battery is removed or someone changes the \$BA parameter. Set BAUD ADJUST as follows:

1. If not already in CYBER mode, depress the <F1> key, followed by a <CR> to enter CYBER mode.
2. Enter AT\$BA0 followed by <CR>. This sets the software option \$BA=0 enabling auto-baud detect. The modem will respond with "OK".

3. Enter AT&W0 followed by <CR>. This saves the above parameter in the modem's memory. The modem will respond with "OK".

NOTE

The \$BA parameter, as well as all other parameters, may be checked at any time by entering ATL5 followed by <CR>.

Storing Phone Numbers

Ten telephone numbers (of up to 37 digits each) may be stored in the modem's memory. Each number stored will be given a name (memory location), using the codes N0 through N9. The type of dialing (tone or pulse) is also specified as part of the entry.

For example, to store a tone-dial phone number 9 612 482 2189 in memory location N3, do the following:

1. If not already in CYBER Mode, depress the <F1> key, followed by a <CR> to enter CYBER Mode.
2. Enter ATDT96124822189N3 followed by a <CR>

NOTE

If the number is a pulse-dial number, substitute the ATDP prefix in place of ATDT.

To dial this number in the future, you need only type ATN3 for the number to dial automatically.

CAUTION

Do not include a "D" in this command or the stored number will be erased.

Listing Stored Phone Numbers

To list the contents of all of the phone numbers in memory, do the following:

1. If not already in CYBER mode, depress the <F1> key, followed by a <CR> to enter CYBER Mode.
2. Enter ATL, followed by a <CR>.
All memory locations (0 through 9) will be displayed along with the contents of each.

Editing a Memory Location

Once a number is stored in memory, no editing is possible. The entire command must be reentered with the changed data.

Clearing a Memory Location

Stored phone numbers may be individually erased from memory as follows:

1. If not already in CYBER mode, depress the <F1> key, followed by a <CR> to enter CYBER mode.
2. Enter ATDNx followed by a <CR> (where x is the location of the number to be deleted).

The phone number will be erased from the memory location specified and the modem will respond with "OK."

4.3.4 Control Data CK130 (Scamp) Printer Parameters

Basic Description

- Dot matrix impact printer (Control Data equipment number 725-10).
- Serial interface (option).
- Supports Xon/Xoff protocol.
- 150 characters-per-second.
- Tractor feed.

DIP Switches

The serial interface of the Scamp printer contains three banks of DIP switches (banks A, B and C) that are located at the rear of the unit above the serial I/O jack. Bank A is on the left as viewed from the rear.

For RTA workstation use, these switches are to be set to OFF except as noted below:

- Bank A - 1
(left) 2
3 ON - Received data on pin 3
4
5
6
7 ON - Transmitted data (Xon/Xoff) on pin 2
8
9
10
- Bank B - 1
(ctr.) 2
3 ON - 2400 bps
4
5
6
7 ON - 1 stop bit
8 ON - 7 data bits
- Bank C - 1
(right) 2
3
4 ON - PRINTER DTR/BUSY on pin 20
5
6
7 ON - Negative DTR (pin 20) when buffer busy
8
9
10

NOTE

The functions controlled by the DIP switches become active only when the printer is initially powered on. If changes are made with printer already powered on, they will not be sensed. The printer must be powered off, then back on again, to be effective.

4.3.5 Centronics H136-3 Printer Parameters

Basic Description

- Dot matrix impact printer.
- Serial interface (option making it differ from a H136-1).
- Parallel interface (standard H136 option but not used).
- Supports Xon/Xoff protocol.
- 160 characters-per-second.
- Tractor feed.

Jumper Straps

For RTA workstation use, all jumper straps in the Centronics printer should remain as set at the factory (that is, all straps set to side A).

DIP Switch Settings

CAUTION

DIP switches and jumper straps are not accessible without removing the top cover of the printer. The printer is to be unplugged when accessing DIP switches, to remove the hazardous line voltages that are present.

Two printed circuit boards (PCBs) contain DIP switches -- the Main Logic PCB and the Serial Interface PCB. The Serial interface PCB is located on top of the Main Logic PCB.

For RTA workstation use, the DIP switches on both PCBs are set to the off position, with the following exceptions:

Serial I/F PCB

1 & 2 ON - 2400 bps
 3
 4
 5
 6
 7 ON - 1 stop bit (7 data bits)
 8

Main Logic PCB (Remove printer's Ser. I/F PCB to access)

Bank SW1 - 1
 2
 3
 4
 5
 6
 7 ON - Italics, when program selected
 8

Bank SW2 - 1
 2
 3
 4
 5
 6
 7
 8 ON - Right margin = 136

Bank SW3 - 1 ON - Allow remote select/deselect
 2
 3
 4
 5
 6
 7
 8

4.3.6 Epson LQ 1000 Printer Parameters

Basic Description

- Dot matrix impact printer.
- Serial and parallel interfaces included.
- Supports Xon/Xoff protocol.
- 180 characters-per-second.
- Tractor feed.

DIP Switch Settings

Two DIP switches are located on the back of the printer. The printer comes from the factory set for parallel operation. The RTA workstation will utilize the serial interface, making it necessary to change DIP switch settings.

NOTE

Each time you change a DIP switch setting, power must be reset to recognize the new setting.

For RTA workstation use, the DIP switches are to be set to the off position, except for those shown next.

SW 1	1	ON	} Switches 1, 2 and 3 select U.S.A. character set.
	2	ON	
	3	ON	
	4		
	5	ON	Selects draft mode on power up.
	6		
	7		
	8		
SW 2	1		
	2		
	3	ON	Serial interface - even parity.
	4		
	5	ON	1200 baud select.
	6		
	7	ON	No software deactivation of printer.

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5.1 Basic Dialing and Voice/Data Switching

5.1.1 Racal-Vadic Modem

Creating the initial link between the Racal-Vadic RTA workstation modem and the site modem can be done via auto-dial (using phone numbers that are prestored in the Racal-Vadics's memory) or it can be done "manually" by dialing the individual digits of the phone number from the keyboard.

The speed (bps rate) at which the modems connect to each other will be determined by the speed of the site modem.

Auto-Dialing

NOTE

Having the site phone number(s) prestored in the modem's memory is a prerequisite to being able to perform the following auto-dial function. Storing of numbers is covered in section 4, under Racal-Vadic Modem Parameters.

1. Depress the <F1> key on the terminal to enter CYBER mode.
2. At this point you may wish to check the operator parameters for 2400 bps, FULL DUPLEX and (as desired) PRINTR ON or PRINTR OFF. To do this, depress <SETUP>, check parameters, change as necessary, and then depress <F1> again to escape. More detailed instructions are contained in section 4, 721 Terminal Parameters.
3. Hold down the <CTRL> key then depress <E>, next depress <CR>. The modem will go into interactive mode and respond with "HELLO I'M READY" followed by an asterisk (*) prompt.
4. Depress the key(s) that correspond to the address of the pre-stored site phone number (that is, enter 1 through 15), then depress <CR>.
5. The modem will dial the site phone number and while doing so, will display call-progress messages as shown on the following page.

If there is no number stored at the selected memory location, the modem will respond with "NOT FOUND" and then return to interactive mode.

If it is decided that dialing be terminated while the modem is in the process of dialing (either from an auto-dial or manual dial), depress any key on the keyboard. The modem will return to interactive mode. This can also be done by depressing <RESET> on the modem.

Call-Progress Messages

If the call is successful, the modem will respond with the following messages:

DIALING...	(Indicates the workstation modem has started to dial.)
RINGING...	(May or may not be present - not present if the site modem answers on the first ring.)
ANSWER TONE	(Indicates the site modem answered.)
ON LINE 1200	(or 2400 or 300 - depends on the bps rate modems actually connect at.)
NO ERROR CONTROL	(or ERROR CONTROL -- if the site modem has MNP Error Control capability and the handshake is successful.)
SELECTED SPEED - UNAVAILABLE	(May or may not be present - not present if the modems connected as tried, that is at 2400 bps.)

If the call is unsuccessful the modem will respond with one of the following messages:

NO DIAL TONE	(Ensure phone line is connected to modem and wall jack.)
BUSY	(The site phone was busy or option 6 or 18 in the workstation modem was set incorrectly.)
FAILED CALL	(The site modem never answered, was answered by a person, or could not complete the handshake)

Manual Dialing

To dial a number not already stored in memory:

1. Enter the interactive mode on the modem (that is, do the same as Auto-Dialing steps 1 and 2).
2. At the asterisk prompt, depress the <D> key followed by <CR>. The modem will respond with "NUMBER?".
3. Enter the phone number you wish to dial, then <CR>. The modem will dial the number and provide call-progress messages while doing so.

NOTE

A shorter version of this can be performed by entering "D" followed by the phone number, followed by <CR>. The "NUMBER?" prompt is then omitted.

Redialing

The last phone number dialed by the modem or dialed from the keyboard may be redialed by depressing the <REDIAL> key on the modem or by using the "R" command from the terminal.

To use the "R" command:

1. Enter the interactive mode on the modem (that is, do the same as Auto-Dialing steps 1 and 2).
2. At the asterisk prompt, depress the <R> key followed by <CR>. The modem will respond with "NUMBER OF RETRIES?" (asking how many times you want the modem to retry in the event the call fails).
3. Enter the number of retries (the maximum number that can be specified is 9) followed by <CR>. The modem will redial the last number dialed. Depress <CR> if only one redial is required.

Under the "R" command, the modem will continue to dial the number and display messages until the call goes through or until it has dialed the specified number of times.

Voice/Data Switching (Using a Racal-Vadic 2400 PA Modem)

NOTE

This information can also be found in section 3.

If the on-site RTA modem makes use of a daisy-chained phone, it may be advantageous in some instances to switch directly from an already established voice conversation on this phone, to a data link (that is, without breaking the connection). Similarly, it may be advantageous to switch from an established data link back to voice conversation. The following lists the instructions for doing either.

Data-to-Voice

To switch from data to voice mode (when requested), the system console operator will be asked to do the following:

1. Pick up the telephone handset.
2. Depress the <DATA/VOICE> switch on the modem's front panel. The red light on this switch will go out.
3. Wait. The RTA provider will similarly switch their modem into voice and then say hello. At this time, phone conversation can take place.

Voice-to-Data

To switch from voice to data mode (when requested), the system console operator will be asked to do the following:

1. If the data link is to be at 2400 bps, this step may be omitted. Otherwise, the system console operator will be asked to depress a bps rate switch located on the modem's front panel.

Depress the <300> or <1200> bps switch as directed. A red light lit on the switch verifies its selection.

2. Depress <DATA/VOICE> on the modem's front panel.
3. Hang up the handset.

The RTA provider will depress the <ANS/ORG> switch and then the <DATA> switch on their modem and the initial data link connection will be established.

At this point, the CTS, DSR and CXR lights and either the HS (2400 bps), 1200 or 300 bps lights should be lit on both the site and RTA provider's modem.

5.1.2 Multitech Modem

Creating the initial link between the Multitech RTA workstation modem and the site modem can be done via auto-dial (using phone numbers that are prestored in the Multitech's memory) or it can be done "manually" by dialing the individual digits of the phone number from the keyboard.

The speed (bps rate) at which the modems connect to each other will be determined by the speed of the site modem.

Auto-Dialing

NOTE

Having the site phone number(s) prestored in the modem's memory is a prerequisite to being able to perform the following auto-dial function. Storing of numbers is covered in section 4, under Multitech 224-EH Modem Parameters.

1. Depress the <F1> key on the terminal to enter CYBER mode.
2. At this point you may wish to check the operator parameters for 2400 bps, FULL DUPLEX and (as desired) PRINTR ON or PRINTR OFF. To do this, depress <SETUP>, check parameters, change as necessary, and then depress <F1> again to escape. More detailed instructions are contained in section 4, under 721 Terminal Parameters.
3. Type ATNn where n = the modem memory address 0 through 9 corresponding to the desired prestored phone number.
4. The modem will dial the site phone number and while doing so, the modem speaker will audibly reflect dialing, answer tone or busy signal and carrier/data transfer.

If there is no number stored at the selected memory location, the modem speaker will reflect a dial tone only. Depress <CR> to disconnect.

If it is decided that dialing be terminated while the modem is in the process of dialing (either from an auto-dial or manual dial), depress any key on the keyboard. The modem will return to interactive mode. This can also be done by depressing the ANS/ORG switch on the modem.

Call-Progress Messages

Call monitoring can best be accomplished using the audio speaker internal to the modem. However, a visual display of call progress can be accomplished by issuing an ATB1 command to change the B parameter from the factory default of 0 to 1. Expanded visual progress codes can be selected by changing the X parameter from 0 to 1 by issuing an ATX1 command.

To save one or both of these parameters, issue the AT&W0 command.

The advantage of using extended progress codes is that the baud setting of the remote connection is displayed. Also, if MNP error correction is available at the remote modem, the word "RELIABLE" will be displayed. For example:

DIAL TONE

RING

CONNECT 2400 RELIABLE

Manual Dialing

To dial a number not already stored in memory:

Type the command ATDT or ATDP (depending on tone or pulse phone connection) followed by the desired phone number.

For example, if the number of the remote site to be dialed into is 9 555-1212, you would issue the command:

ATDT95551212

followed by a <CR>.

Redialing

The command A/ (without a <CR>) can be used to issue the last command. If the last command was a manual or auto-dial phone command, issuing the A/ will redial the last number. If the last command was something other than a dial command, that command will be reissued.

The command A: (without a <CR>) can be issued to continuously redial a busy number until your call is answered. This command would be used only if you had already reached a busy number after executing a normal dial command. You can stop the redialing by depressing any key.

NOTE

This command can only be used if the Wait-For-Dial-Tone command (B parameter = 1 on previous page) has been selected.

Voice/Data Switching (Using a Multitech 224-EH Modem)

NOTE

This information can also be found in section 3.

If the on-site RTA modem makes use of a daisy-chained phone, it may be advantageous in some instances to switch directly from an already established voice conversation on this phone, to a data link (that is, without breaking the connection). Similarly, it may be advantageous to switch from an established data link back to voice conversation.

5.1 Basic Dialing and Voice/Data Switching

Data-to-Voice

To switch from data to voice mode (when requested), the system console operator or the remote operator must do the following:

1. Pick up the telephone handset.
2. Momentarily push the <VOICE/DATA> switch DOWN. This switch is located on the right side of the modem's front panel.
3. The modem at the secondary location will then emit a short alert tone and the modem's internal speaker will be enabled.
4. The primary operator may then speak into the handset to tell the secondary operator to pick up the handset. Normal voice communications can then take place.

NOTE

The secondary operator must pick up the handset within 5 seconds after the alert tone has sounded or the link will disconnect and the call must be reestablished.

Voice-to-Data

To switch from voice to data mode (when requested), the system console operator will be asked to do the following:

1. Set the three position bps rate switch to either <300>, <1200> or <2400> as directed.

This is the second switch from the right on the modem's front panel. A front panel indicator light will come on verifying 1200 or 2400 bps has been selected or, if both lights are out, 300 bps has been selected.

2. Momentarily push the <VOICE/DATA> switch DOWN. This switch is located on the right side of the modem's front panel.
3. Hang up the handset.

The RTA provider (if also using the Multitech modem) will momentarily push the <VOICE/DATA> switch UP and the initial data link connection will be established.

At this point, the CD, OH, and TR lights should be lit on both the site and RTA provider's modem. If operation is at 2400 or 1200 bps one of these lights will also be lit.

5.2 Creating an On-Line Data Link

5.2.1 Introduction

On-line remote access (that is, a data link) into the site hardware and software will be done via either the customer's Control Data Communications Control Program (CCP) /2550 Network or the customer's Control Data CDCNET Network.

On a NOS system, access may also be accomplished via the Two Port Mux (TPM) Port 1 under control of the Remote Diagnostic Facility (RDF) application program.

NOTE

RDF must be running in a Peripheral Processing Unit (PPU) prior to attempting on-line data link via the TPM. Refer to System Console Operator Requirements/Enabling RDF in section 3.

On-line remote access via either the CCP/2550 or CDCNET networks, or via the RDF/TPM method, will first require that an initial phone connection be made between the RTA workstation and site modems and second, that appropriate login commands be given to the host system.

As a security measure, network ports are typically configured with echoplex disabled; typed-in login characters will not be displayed on the RTA workstation terminal. This can be defeated by having the terminal in half-duplex (where typed in characters are locally echoed back by the terminal), or by enabling echoplex at the host before login. Neither practice is recommended. The correct method is to enable echoplex at the host after login. Instructions on how to enable echoplex will be covered later on in this section.

NOTE

PASSWORDS GIVEN TO CONTROL DATA PERSONNEL BY CUSTOMERS ARE TO BE HELD IN STRICT CONFIDENCE AND ARE NOT TO BE DISSEMINATED TO OTHERS.

5.2.2 Making Initial Connection Via CCP/2550

1. Dial the phone number for the site's dial-up CCP/2550 asynchronous line, wait for the modems to connect, then depress <CR> twice.

The network will respond to each <CR> by displaying one or two blank line(s), then it will display some system identification information and then it will wait for login commands to be entered. If no response, depress <CR> again.

NOTE

Step 2 below is applicable to NOS only. NOS/BE HAS NO TERMINAL CLASS COMMAND and will accept any TTY protocol terminal.

2. If at this point, the display shows garbage data or parity errors, it may be due to the fact that the terminal class of 3 (the class for a 721 terminal) has not been designated in the site's network software. To set the terminal class...
 - a. Depress the <ESCAPE> key, then enter TC = 3 followed by a <CR>. The system will respond with "TC ACCEPTED".

NOTE

Some systems may use a system control character of % instead of ESCAPE. If there is no response to the above, use the <%> key (that is, %TC=3).

- b. Depress <CR>. Disregard any login error messages occurring at this time.
 - c. Continue to depress <CR> and disregard error messages until either a prompt for "FAMILY NAME" or "USER NAME" is displayed (whichever appears first).
3. Login may now be performed, as described later in this section.

5.2.3 Making Initial Connection Via RDF/TPM

The phone number to be dialed is the one for the phone line connected to the On-Site RTA Modem (that is, the modem connected to the Two Port Mux/PC Console). Prior to dialing this number, the site's system console operator must be called and instructed to load RDF into a PPU (they may also be required to push <DATA> on the modem if auto-answer is not desired/enabled). Refer to System Console Operator Requirements in section 3.

With RDF loaded, making the initial connection is done the same as when the access is via CCP/2550.

5.2.4 Making Initial Connection Via CDCNET

1. Dial the phone number for the site's dial-up CDCNET asynchronous line and wait for the modems to connect. Assuming the Device Interface (DI) port connected to have been configured for auto-recognition, the network will respond with some network information including speed, code set and parity (for example, 1200 bps, ASCII, parity even).

NOTE

If a CDCNET line configured for auto-recognition is not available, the site's system console operator has the capability of providing this. Refer to System Console Operator Requirements in section 3.

2. Depress <CR>. The network will respond with:

"You may enter CDCNET commands."

At this point, a data link has been made only into the DI on CDCNET. To communicate with the host, a connection must be made between the DI and the host. This will be done with the CDCNET Create Connection command.

3. Enter the Create Connection command, CREC xxxx, followed by a <CR> -- where xxxx is the mainframe ID, and a site-dependent parameter.

The network will respond with

"Connection xx created"

4. Depress <CR> twice.

The system will respond by displaying some system identification information and then, depending on the operating system type, will prompt for the following:

- NOS Operating System

"FAMILY NAME"

or

"USER NAME"

- VE Operating System

"Enter validation for service access"

Login may now be performed as described next.

5.2.5 Login

NOS Operating System

1. If the site has more than one mainframe or has users divided into families, the system may prompt for "FAMILY NAME". If so, enter the appropriate family name followed by <CR>.
2. At the "USER NAME" prompt, enter your user name, then <CR>.
3. At the "PASSWORD" prompt, enter your password, then <CR>.

NOTE

If the system displays "IMPROPER LOGIN, TRY AGAIN." or similar messages, check the names you just entered; you may have entered one incorrectly. When the system prompts you, try again. Up to three attempts at login will be tolerated by the system.

4. The system may prompt for an "APPLICATION NAME". If so, enter IAF followed by <CR>.

Upon successful login, the system will respond with either "READY" if in batch mode, or "/" if in null mode, or...

If the Common Maintenance Software Interface (CMSI) has been installed, it will either respond with "TO EXECUTE CMSI ENTER: BEGIN,CMSI,CMLINST", or display the CMSI main menu.

NOS/VE Operating System

1. After the connection is made to the host system, the system will prompt for "User:". Enter your user name.
2. The next prompt will be for "Password:". Enter your password, followed by <CR>.
3. The last prompt will be for "Family:". Enter the appropriate family name, followed by <CR>.
4. The system may prompt for an "Application Name". If so, enter VEIAF followed by <CR>

NOS/BE Operating System

1. After the connection is made to the host system, the system will prompt the user to log in. Enter LOGIN<CR>.
2. The next prompt will be for "User Name". Enter your user name followed by <CR>.
3. The last prompt will be for "Password". Enter your password followed by <CR>.

5.2.6 Enabling Echoplex and Flow Control

After login, echoplex should be enabled on the host to allow the terminal to display characters as they are typed.

Also, if a printer is to be used during the RTA session, Xon/Xoff (character) Flow Control must be enabled at the host to prevent the possibility of losing print data (that is, the host may send data to the workstation faster than its printer can handle). It is good practice to always enable Flow Control.

CCP/2550 or RDF/TPM (NOS Only)

On a CCP/2550 network or when access is via RDF/TPM, echoplex and flow control (Output Control is all that is required) are to be enabled, immediately after login, as follows:

1. Depress the <ESCAPE> key, then enter EP=Y, then depress <CR>. Echoplex will be enabled and the system will respond with "EP ACCEPTED".
2. Depress the <ESCAPE> key, then enter OC=Y, then depress <CR>. Output Control will be enabled and the system will respond with "OC ACCEPTED".

CDCNET

On a CDCNET network, echoplex and flow control are to be enabled immediately after login, as follows:

1. Enter the CDCNET command: %CHATA E=ON
2. Depress <CR>. Echoplex will be enabled and the system will respond with "Attributes changed".
3. Enter the CDCNET command: %CHATA CFC=ON
4. Depress <CR>. Character Flow Control will be enabled and the system will again respond with "Attributes changed".

NOTE

The <ESCAPE> and % Network Command characters used above are the standard characters used throughout Control Data. In certain instances, those characters may differ. Consult your systems analyst if the above procedure does not produce the desired result.

5.2.7 Sending Conversational Display Messages

With an on-line data link established to the host, the RTA provider may send conversational display messages to the system console from the RTA workstation. The methods depend on the operating system being used, and are shown below. (To respond to messages at the system console, see section 3, Customer Requirements.)

NOS Operating System (2550 or CDCNET)

Enter: REQUEST, OPER. message text <CR>

NOS/VE Operating System (CDCNET)

Enter: REQQA 'message text' <CR>

(Be sure to include the single quote marks around the message text.)

NOS/BE Operating System (2550)

Enter: M, message text <CR>

RDF/TPM

Enter: <ESCAPE> MS = message text<CR>

5.2.8 Logout

After finishing an RTA session, a system logout should be performed (that is, don't just hang up).

NOS Operating System or RDF/TPM

Enter: BYE<CR>.

NOS/VE or NOS/BE Operating System

Enter: LOGOUT<CR>.

5.3 Creating an Off-Line Data Link

5.3.1 Introduction

Off-line remote access (that is, a data link) into the site hardware and software is always done via the Two Port Mux (TPM) Port 1.

The basic capability, providing customer authorization for use is granted, is that of being able to remotely act as the system console and perform the following:

- Mainframe power on/off (I1 only) and Common Test and Initialization (CTI) functions, except on the CYBER 170 models 835 through 860 (those models with an I2 IOU, as explained in section 2, Site RTA Hardware, under Two Port Mux).
- Access to the Maintenance Software Library (MSL) under control of the Common Maintenance Software Executive (CMSE).
- Access to the Maintenance Access Channel (MAC) under control of Monitor Display Driver (MDD).

NOTE

MDD may also be accessed on line.

As a security measure, I1 and I4 type IOUs employ an operator controlled keylock. (In addition, PC Consoles (CC598A/CC598B) must also have access enabled at the PC Console by the operator (Refer to section 2.2). Also, the RTA provider must know a password before remote off-line access can be accomplished. Refer to the procedures for TPM setup and cabling to modem, described in section 2 under Two Port Mux.

NOTE

PASSWORDS GIVEN TO CONTROL DATA PERSONNEL BY CUSTOMERS ARE TO BE HELD IN STRICT CONFIDENCE AND ARE NOT TO BE DISSEMINATED TO OTHERS.

5.3.2 Making Initial Connection Via TPM

Creating an off-line data link via the TPM can be accomplished providing there is a modem connected to the TPM (Refer to section 2.2 for PC Console connections) and CMSE is accessible on the system. A number of prerequisite conditions are necessary before a link will be successful. They are:

- Knowledge of the phone number connected to the modem on the TPM.
- TPM switches properly set to allow access and/or remote deadstart capability, if applicable.
- Proper connection of the modem to the TPM (as described in section 2 -- Site RTA Hardware). Refer to section 2.2 for PC Console connections.
- The modem is set for auto-answer or arrangements to manually answer the modem at the main site.
- For PC Consoles (CC598A/CC598B) the Remote link must be enabled by the operator.
- If remote deadstart is applicable, prearranged knowledge of the deadstart password is necessary.

In order to set the deadstart password, the site operator must complete the following from the site console:

1. Deadstart the system from the main console.
2. Type <H> (Help) at the initial display.
3. Type <+> to toggle to the second help screen.
4. The operator will see a help line

```
PW DS XXXXXXXXXXXXXXXX.
```

5. The operator can then assign the deadstart password by typing PW DS "password", where "password" is replaced with the arranged password.

5.3 Creating an Off-Line Data Link

To set the password on a *PC Console* (CC598A/CC598B), do the following: (refer to 19003 System Console Operations and Maintenance Guide, publication number 60463610 for further information).

1. From PC Console main menu, select C (Console Utilities).
2. From console utilities menu, select R (Modify Remote Access password).
3. At the operator prompt, enter new remote access password: enter a password of up to 15 characters.
4. At the verify password prompt, the operator must retype the password before the new password is changed.

There are two modes of operation available for remote access:

- One is the capability to initiate a remote deadstart, currently available on the CYBER 810s through 830s and upper CYBER systems with an I4 IOU.
- The second mode of operation is to have the system deadstarted from the main site and CMSE already up on the system. After completing a successful phone link to the TPM (PC Console), control of the system can be transferred to the remote terminal via the LR command described later in this section.

Remote Deadstarting

1. Be sure all the prerequisite conditions mentioned above have been satisfied.
2. Using **SETUP** on the 721 remote console, place the terminal in half duplex.
3. Dial the phone number of the modem connected to the TPM.
4. When a successful connection has been made, holding down the **<CTRL>** key, depress the **<R>** key.
"Operator Access Enabled" should be displayed on your screen.
5. Holding down the **<CTRL>** key, depress the **<G>** key.
"Enter Deadstart Password" should be displayed on your screen.
6. Type in your prearranged and authorized deadstart password.

You will now be in control of the deadstart process and will be able to initialize any CMSE routine just as you would from the site console.

You may also transfer control back to the main site console or share control; that is, both consoles are able to input via the keyboard and monitor the display screen. To do this, use the LR command described later in this manual.

Remote Deadstarting a PC Console System

NOTE

Refer to 19003 System Console Operations and Maintenance Guide, publication number 60463610.

1. Same as Remote Deadstarting (above).
2. Same as Remote Deadstarting (above).
3. Same as Remote Deadstarting (above).
4. User prompted for password: "Enter remote access password for service".
5. Enter password previously obtained.
6. Control Data logo appears.
7. Remote console main menu appears after 10 seconds.
8. Select the option you require.
 - D SELECT SYSTEM DISPLAYS
 - U SELECT USER MODE
 - S SYSTEM LOAD OPTIONS
 - M MAINTENANCE OPTIONS
 - T TERMINATE REMOTE LINK

Transferring Console Control

If you require access to the TPM for CMSE but are unable to remote deadstart because of machine type, or if you wish to access a system with CMSE already running, it is possible to dial into the TPM and have control passed to you via the main system operator or CE. To do this follow the procedure below.

1. Repeat steps 1 through 3 of the Remote Deadstarting procedure.
2. When a successful connection has been made, the system operator can use the LR command to transfer/share control of the CMSE keyboard to the remote console.
3. At the main console's CMSE command line, type:

```
LR,CCPP,ccpp <CR>
```

where CC = Display Channel
 PP = Display Port
 cc = Second Display Channel
 pp = Second Display Port

5.3 Creating an Off-Line Data Link

For example:

1. If the main system console is a CC545, the operator would type

```
LR, 1501 <CR>
```

to transfer control to TPM channel 15, Port 01.

2. If the operator types

```
LR, 1501, 1000 <CR>
```

console control and monitoring can be done from both consoles.

3. If the main console is a Viking (721) terminal connected to TPM Port 0, the operator types

```
LR, 1500, 1501 <CR>
```

to share control and monitoring with the remote terminal on TPM Port 1.

4. To relinquish control of the remote console, type

```
LR, 1500 <CR>
```

or

```
LR, 1000 <CR>
```

depending on the main system console type. This could also be done from the main console.

For more information on the LR command, see the MSL 15X Off-Line Maintenance Software Library Reference Manual (publication number 60456530).

5.3.3 Making Initial Connection Via A-B-C Switch/TPM

Creation of an off-line data link, when an A-B-C switch is employed as part of the on-site RTA hardware, is essentially the same as when access is direct into the TPM. The difference is that the systems console operator may have to place the switch in the TPM position.

Before attempting to create the data link, call the system console operator and have them place the switch in the TPM position. Proceed in establishing system access by following the steps listed previously under off-line access via TPM.

5.3.4 Making Initial Connection Via Giltronix Switch/TPM

Creation of an off-line data link, when a Giltronix switch is employed as part of the on-site RTA hardware, is essentially the same as when access is direct into the TPM. The difference is that the RTA provider must know the switch's access password and port labeling scheme. For more information, refer to Giltronix Switch, in section 2, Site RTA Hardware.

With the RTA provider having knowledge of the switch's password(s) and labels, creation of the data link is as follows:

1. Create the initial connection between the RTA workstation and on-site RTA modem by dialing the appropriate phone number and waiting for the modems to connect.
2. Depress the <SPACE> bar twice. This teaches the Giltronix switch the bps rate.

NOTE

You may need to enter the two <SPACE> bar entries several times to get a response from the switch.

The switch will respond to the workstation with:

"PASSWORD:"

5.3 Creating an Off-Line Data Link

3. Enter the appropriate password followed by a <CR>.

The switch will respond to the workstation with:

"<H> & <CR> - For the HELP menu"

4. Enter the label for the TPM (for example, enter MUX).

The switch will respond to the workstation with:

"I/O to Port # 1"

5. A link has now been created from the RTA workstation to the TPM (port 1 of the switch connected to Port 1 of the TPM). Proceed in establishing system access by following the steps previously listed under off-line access via TPM.

Appendixes

Glossary	A-1
----------------	-----

A

AA

(Auto-Answer)

A modem feature (that is, not all modems have it). If turned on, the modem will automatically answer an incoming call.

ANSWER/ORIGIN

A functional, two-position switch located on a modem. In RTA use, the switch is set to origin mode for the workstation end, and answer mode for the site end.

Asynchronous Transmission

Transmission in which time intervals between transmitted characters may be of unequal length. Transmission is controlled by start and stop bits at the beginning and end of each character.

B

Baud

A unit of speed, baud is the number of discrete conditions or events per second (could be the same as bps).

bps

(Bits Per Second)

A unit of data transmission rate.

C

Cable Jacks

The connectors located on a piece of equipment onto which cables are attached.

CCITT

(International Telegraph and Telephone Consultive Committee)

A set of standards used internationally to govern data communications between countries.

CCP

(Communications Control Program)

The software resident in a 255X type Network Processing Unit (NPU). This package (CCP) contains three different software utilities:

HIP - Host Interface Program used to link front end NPU to the host CPU.

LIP - Link Interface Program used to link a front end NPU to another remote NPU.

TIP - Terminal Interface Program used to provide front end NPU interfacing to terminals.

CD

(Carrier Detect)

Used to indicate that the modem is receiving a signal from the other modem.

CDCNET

(Control Data Distributed Communications Network)

A system that enables host computers, user terminals and workstations, and unit record equipment to work together as a data processing network.

CIP

(CYBER Initialization Package)

A release tape created for each model of CYBER computer systems. It contains microcode, CMSE, SCD, CTI, EI, MDD, selected MSL programs, command buffers and utility routines, all necessary items for the initialization and maintenance of the computer system. CIP provides a simple process for installing the hardware and software interface modules.

CLA

(Communications Line Adapter)

A hardware component which is located within a 2550 product. It functions as part of the communications link between the computer (at one end) and a terminal (at the other end). The CLA is the interface for the communications line, and comes in two types, synchronous and asynchronous.

CML

(Concurrent Maintenance Library)

An on-line maintenance software package that can be used to help diagnose, monitor or isolate system problems, or verify proper system operation, while the operating system is up and running. CML consists of programs such as MALET, TIO, HPA, MTPLOT and SKEDULAR.

CMRDECK

(Central Memory Resident Deck)

The part of the operating system that contains entries which define central memory, table sizes, and configuration information not oriented to equipment (deadstart deck).

CMSE

(Common Maintenance Software Executive)

Provides off-line monitoring of system hardware, loads and initiates execution of maintenance software (MSL) and utility programs, and loads and initiates execution of microcode as required for the CPU.

CMSI

(Common Maintenance Software Interface)

A set of CYBER Control Language (CCL) procedures which provide a user environment specifically for Engineering Services CML usage. These procedures support the local and remote interactive use of CML and provide a standard method of accessing these products (e.g., HPA, NPA, MALET, DSDI, etc.).

CRSC

(CYBER Remote Support Center)

A Control Data/Engineering Services (ES) support organization which provides RTA (voice and/or data links), on-site support or a combination of both in supplying hardware, software and problem determination support to the field on CYBER 170/180 System problems.

CTI

(Common Test and Initialization)

Performs hardware initialization and represents a standardized human interface to the deadstart process. CTI provides a set of displays from which you select the desired method of deadstarting.

CTS

(Clear to Send)

A modem interface signal sent from the DCE (modem) to the DTE (terminal), indicating that the modem is ready to transmit data.

D**Daisy-Chained**

A cabling system used to connect equipment together in a string (each successive unit cabled to the unit before it).

Data Link

Is defined as off-site to on-site electronic data exchanges for the purpose of directly monitoring or controlling on-site equipment, systems or networks.

DCE

(Data Communications Equipment)

The equipment that provides the functions required to establish, maintain and terminate a data transmission connection, for example, a modem.

Deadstart

The initial loading process that makes the system (mainframe, peripheral devices, and operating system software) ready to process jobs.

DI

(Device Interface)

A small communications processor (within CDCNET) consisting of a MPB (Main Processor Board) and a SMM (System Main Memory). Installation of unique interface boards then make up the different types of device interfaces (Terminal DI, Mainframe DI, Network DI and others).

DIP (Dual Inline Package) Switch

A bank of small, two-position logic switches, normally located on a logic module. They are frequently used in equipments to allow setting of options (for example, setting even parity versus odd parity).

DSD

(Dynamic System Display)

The NOS system display program. It is the program used by the system console or RTA workstation to communicate with the system.

DSDI

(Deadstart Dump Interpreter)

A utility program that converts selected portions of the binary information on an Express Deadstart Dump (EDD) file into formatted/edited reports.

DSQ/DSP

(CMSE Display Driver)

Two of the available display drivers, used to provide console interfacing to the Common Maintenance Software Executive (CMSE). DSQ supports four different consoles: CC545 alone on channel 10; 721 or 752 alone on TPM channel 15; simultaneous use of both of the above where CC545 is the system operator console, and 721/752 is the secondary console; and two 721/752 types on the TPM with a primary and secondary type configuration.

DSR

(Data Set Ready)

Modem interface control signal from the DCE (modem) to the terminal equipment indicating that the modem is connected to the telephone circuit (same as OH indicator on some modems).

DTE

(Data Terminal Equipment)

The equipment acting as the data source, data link, or both (for example, a terminal or TPM).

DTR

(Data Terminal Ready)

A modem interface control signal from the terminal equipment, indicating to the modem that the terminal is ready for transmission.

Duplex (Half or Full)

Transmission of data in either direction over communications lines.

E**Echoplex**

A function used for the displaying of characters as they are typed in at the terminal/workstation. Echoplex should be enabled on the host after login. A method of checking data transmission accuracy, whereby received data is returned to the sending unit for comparison.

EDD

(Express Deadstart Dump)

A utility that may be run at deadstart time after a system malfunction has occurred. It generates the Express Deadstart Dump file on magnetic tape.

EIA RS232

(Electronics Industries Association)

A standards organization in the United States specializing in the electrical and functional characteristics of interface equipment.

EQPDECK

A deadstart text deck that is used to describe the hardware configuration to the operating system.

EST

(Equipment Status Table)

A table built and used by the operating system. A list of all peripheral devices connected to the system. Each table entry indicates the status of a particular device (EST resides on CMR).

F**Flow Control**

A function to stop and start the flow of data between a terminal and host and/or between a terminal and line printer, to prevent the loss of data due to speed differences.

FMS

(Field Management Summary)

A document provided with each product that Engineering Services is responsible for maintaining. The document provides information to Customer Engineering field management on specific support requirements for a given product.

FSE

(Full Screen Editor)

Enables the user to edit files or Source Code Utility (SCU) decks both page-by-page (screen mode), and line-by-line (line mode).

G**Giltronix Switch**

An electronically controlled switch having one input and several outputs. Normally cabled between the TPM and the modem, the switch provides: additional site security (password control) and the ability to connect to other equipments (Logic Analyzer, 255X CLA, CDCNET DI and others).

H**HPA**

(Hardware Performance Analyzer)

A set of programs that generate equipment and media performance reports using data collected by the NOS operating system. It gives the CE the ability to detect minor problems before they become serious enough to effect customer operations.

HS

(High Speed)

A feature and indicator on a modem which denotes the highest speed available (1200 or 2400 bps).

Hostess Multi-Port Adapter

A printed circuit board and connector assembly that are added to a PC Console to provide additional RS232 ports for connections to modems, Two Port Mux cables, and so on.

I**IAF**

(Interactive Facility)

An application program by way of NAM that provides users with the ability to create files and programs from an interactive device.

IOU

(Input/Output Unit)

The IOU unit is the section of the mainframe that controls the transferring of data between central memory and the peripheral units. It contains the PPs, channels, and deadstart mechanism.

J**Jumper Straps**

A device used in some equipments to turn certain functions on or off. Usually a plug or pins connected in different combinations to attain a certain configuration, or enable/disable a feature (similar to DIP switch use).

M**MDD**

(Monitor Display Driver)

The peripheral processor program that allows access to the maintenance channel (internal channel 17), hardware status registers, or central memory.

Modem

A device used to convert serial digital data from a transmitting terminal, to a signal suitable for transmission over a telephone channel; or to reconvert the transmitted signal to serial digital data for acceptance by a receiving terminal.

MSG

(Message)

Information sent by the operating system to the operator console to acknowledge a problem, or to inform the operator of something the OS requires.

MSL

(Maintenance Software Library)

A set of tests, diagnostics, and utilities that perform isolation of malfunctions, testing of system components, and monitoring of machine states.

MR

(Modem Ready)

The same as Data Set Ready (DSR).

Multiple Mainframe

A network of physically and logically connected computer systems.

Multiplexer

(Mux)

A device used for division of a transmission facility into two or more subchannels, either by splitting the frequency band into narrower bands (frequency division) or by allotting a common channel to several different transmitting devices one at a time (time division).

N**NAM**

(Network Access Method)

A software package basically comprised of interface and supervisory programs that provide a generalized method of using a communications network for switching, buffering, queuing and transmitting data.

NOS

(Network Operating System)

A collection of computer programs which execute in a Control Data computer to assist and control the execution of user programs.

NOS/BE

(Network Operating System/Batch Environment)

A collection of computer programs which execute in a Control Data computer to assist and control the execution of user programs, primarily in a batch mode of operation.

NOS/VE Dual State

(Network Operating System/Virtual Environment Dual State)

Two different operating systems (NOS and VE) residing in the same group of hardware elements. The hardware elements are partitioned at deadstart time and are assigned to one operating system or the other. The CPU, which is shared, is assigned on a priority basis to one OS or the other.

NOS/VE Standalone

(Network Operating System/Virtual Environment Standalone)

One operating system that handles all the system responsibilities, including all virtual addressing features of the CYBER 170-8XX (except the 865/875) and the CYBER 180.

NPA

(Network Performance Analyzer)

A CDCNET analysis tool, made up of flexible modular software components resident in a CYBER 170/180 mainframe. It provides the ability to analyze the performance of the network's operation by producing a variety of reports.

NPU

(Network Processing Unit)

The collection of hardware and software that switches buffers and transmits data between terminals and host computers (255X product).

Null/Modem Cable

A device that connects two DTE devices (for example, terminals) directly by emulating the physical connections of a DCE device (modem).

P**Password**

A password is a security measure that is used to permit entrance into a computer system by only the users who should have access.

PC Console

An IBM Compatible PC/AT computer that executes Control Data-generated software, and functions as a system console.

R**RD**

(Received Data)

The modem is receiving data.

RDF

(Remote Diagnostic Facility)

Is an applications program that, along with a peripheral processor program (1TM), allows concurrent on-line system access via the Two Port Mux.

RI

(Ring Indicator)

Used to indicate to the DTE equipment that the external data communications equipment (modem) is receiving a ringing signal on its communication channel.

RM

(Remote Maintenance)

Implementation of RTA

- To assist in predictive maintenance such as periodic monitoring of a HPA/NPA -- determining if error trends suggest the scheduling of addition remote or on-site maintenance actions, and ...
- To assist in pre-call screening activities such as remotely running a diagnostic or discussing a problem with the customer -- determining whether or not the customer should take an action, a CE is required on-site, the action can be deferred, which parts (if any) are required, and so on.

RS

(Remote Support)

RTA whereby either a higher level of expertise and/or resource is provided to the field CE for the purpose of assisting in a maintenance action or answering a maintenance question.

RS232

A standard interface between data terminal equipment and data communications equipment employing serial binary data interchange.

RTA

(Remote Technical Assistance)

The collective name for providing, or assisting in the providing of remedial or predictive site maintenance remotely via a data link, and/or assisting via voice link.

RTS

(Request to Send)

A modem interface control signal from DTE equipment, requesting type system operator console

S**SCD**

(System Control Driver)

The peripheral processor program that services a 721 type system operator console configured on port 0 of the TPM. SCD supports NOS/VE system console operation or, in conjunction with DSD, supports NOS only or NOS-NOS/VE dual state.

SMM

(System Maintenance Monitor)

A diagnostic package, consisting of the many individual diagnostics used in the maintenance of Control Data CYBER 170 type computers. It is still used to maintain some older systems but has been replaced by MSL.

Synchronous Transmission

Transmission in which the data characters and bits are transmitted at a fixed rate with the Transmitter and receiver synchronized. Synchronous transmission eliminates the need for start and stop bits.

T**TD**

(Transmit Data)

The modem is transmitting data.

TELCO

A term used to indicate the telephone company or telephone line.

TELSET

A term used to indicate the telephone handset.

TPM

(Two Port Mux)

An asynchronous communications interface connected to channel 15. It provides communications between a PP and the terminals. Both ports 0 and 1 have an RS-232-C interface. Port 0 is reserved for the operator console using a 721 type terminal, and port 1 is reserved for the RTA equipment (modem).

V**Voice Link**

Is defined as verbal assistance provided to on-site personnel from any off-site source.

Voice/Data Switching

A switch located on the modem (voice/data - not on all modems), which enables the users to switch between voice transactions and data transmissions

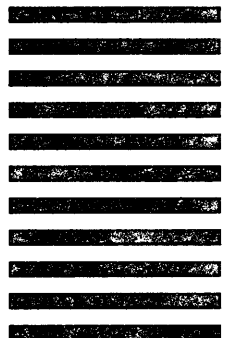
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