

United States
Environmental Protection
Agency

Office of Administration
and Resources Management
National Data Processing Division
Research Triangle Park, NC 27711



Guide to NCC Services

ABOUT THIS MANUAL



Depicts how your terminal screen should appear for the specified task.



Indicates an address to write to for more information.



Indicates telephone numbers to call for assistance.



Indicates a note, an exception, or a cautionary statement.

iii

Stands for the User-ID.

aaaa

Stands for the account code.

lowercase

Indicates that you should substitute your data set or other name. For example:

```
//ddname DD SYSOUT=class
```

ddname is the name you assign to the statement.

class is the printout class such as A or F.

UPPERCASE Indicates that you should type as is, for example, DD
SYSOUT in the sample above.



Points you to other sources or to online documentation for more detailed information.

A number of text data sets reside on the IBM mainframe as usage aids to describe methods and specific details about the software, utilities, and procedures at NCC. Often this online documentation includes the latest release information provided by the vendor. Online documentation data sets usually take the following form:

JUSD.package.DATA

How to access (for full-screen users):

After you are logged on to TSO on the IBM, choose the **BROWSE** function of ISPF and then enter the data set name.

How to access (for line terminal users):

After you are logged on to TSO on the IBM, type the following at the **READY** prompt for a list of the particular data set's members:

LISTDS 'JUSD.package.DATA' M

A list of members appears on your screen. When you have determined which member you want to read through, type in the following at the prompt:

LIST 'JUSD.package.DATA(member)'

You can now view the text one screen at a time.

READER'S COMMENTARY

Please use this form to express your opinions and comments concerning this publication. We are particularly interested in your views concerning the completeness, technical accuracy, and organization.

Please complete the following:

- Name: _____
- Telephone Number: _____
- Title: _____
- * How do you use this publication?
 - _____ Frequently for reference.
 - _____ For introductory purposes to a subject.
 - _____ For information on a specific topic.
 - _____ Other. (Please specify.) _____
- Comments (Please include page numbers and give examples.)

This form, along with any supporting material, should be sent to the following address:

NCC-IBM USER SUPPORT
EPA-NCC
MD-34B
Research Triangle Park, NC 27711

Thank you for your comments.

**GETTING
STARTED**

Getting Started

GETTING STARTED

JANUARY 1989

Revised January 1990

Prepared by:

**US Environmental Protection Agency
National Data Processing Division
National Computer Center
Research Triangle Park
North Carolina**

Preface

Getting Started provides essential information for the new user of the National Computer Center, including short descriptions of services and registration procedures and detailed instructions about logon.

CONTENTS

WHAT IS THE NCC?	1
MISSION	1
SERVICES	2
Planning and Acquisitions	2
Computer Operations	2
Telecommunications	2
Technical Support	3
User Support	3
Training	3
Data Base Support Services	3
Information Centers	4
LINKING TO THE NCC	5
TELECOMMUNICATIONS NETWORK	5
TELECOMMUNICATIONS SERVICE REQUEST	5
REGISTRATION	6
ADP COORDINATOR	6
TSSMS OFFICE	6
REGISTRATION FORMS	6
NON-EPA USERS	6
YOUR USER-ID	7

CONTENTS

HELP IS AVAILABLE	8
USER SUPPORT	8
"PHONE BOOTH"	8
CENTRALIZED PROBLEM MANAGEMENT	8
TELECOMMUNICATION DEVICE FOR THE DEAF	8
DATA PROCESSING SUPPORT SERVICES	9
FUNCTIONS	9
TAPE LIBRARY	9
I/O CONTROL	9
MICROGRAPHICS SERVICES	10
KEYPUNCH SERVICES	10
COURIER SERVICES	10
TRAINING OPPORTUNITIES	11
NCC TRAINING	11
CLASSROOM TRAINING	11
COMPUTER-BASED TRAINING	11
VIDEOTAPE TRAINING	11
INTERACTIVE VIDEO INSTRUCTION	12

CONTENTS

- BUSINESS HOURS 13**
 - OPERATIONS 13**
- USER MEMOS 14**
 - WHAT ARE USER MEMOS? 14**
 - PICKING YOUR SUBJECTS 14**
 - HOW TO SIGN UP FOR USER MEMOS 14**
 - QUESTIONS? 14**
- COSTS OF SERVICES AND REFUNDS 15**
 - COSTS OF SERVICES 15**
 - RESOURCES 15**
 - Chargeback Algorithm 15**
 - Computer-Related Charges 15**
 - Fiscal Year Rates 15**
 - REFUNDS 16**
 - REFUND REQUEST FORMS 16**
- LOGON PROCEDURES 17**
 - HARDWIRED OR DIAL-UP? 17**
 - HARDWIRED TERMINALS 17**
 - DIAL-UP TERMINALS 25**
 - Modems and Software 25**
 - Type of Link 25**
 - Hardwired “Look-Alike” 25**

CONTENTS

LOGOFF PROCEDURES	31
NORMAL LOG OFF	31
ABNORMAL LOG OFF	31
SIGNON ANNOUNCEMENTS	32
NEWS ALERTS	32
BROADCAST MESSAGES	32
PF KEYS	33
WHAT ARE THEY?	33
DEFAULT ASSIGNMENTS	33
DISPLAYING AND CHANGING PF KEY ASSIGNMENTS	35
INDEX	Index-1

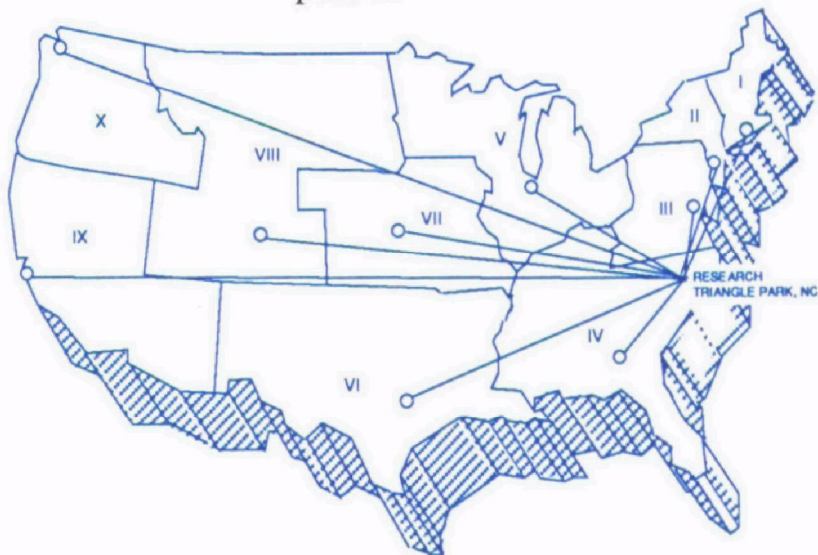
WHAT IS THE NCC?

MISSION

The National Computer Center (NCC) is one of the largest, most modern, high-speed computer centers in the nation. Its mission is to support the Environmental Protection Agency in the area of scientific and administrative applications. The NCC serves EPA users and other qualified agencies and contractors through a vast telecommunications network which allows the distribution of computer services to remote locations. Along with hardware and software, and the means to communicate data, the NCC provides user support and problem solving services.

The major operations center of the NCC is in Research Triangle Park (RTP), North Carolina. The RTP facility has three principal data processing capabilities:

- IBM-compatible mainframes.
- DEC minisystem operation.
- Micro/mainframe support for uploading and downloading data on personal computers.



All NCC operations are conducted at the center in RTP and at the Washington Information Center (WIC). The WIC provides EPA Headquarters users with remote access through its Logical Mainframe (LMF) to RTP's IBM mainframes. The computer center supports all 10 EPA regional offices, state environmental offices and the EPA labs throughout the country.

SERVICES

The NCC provides a variety of services for its users in eight major areas.

Planning and Acquisitions

Mainframe, mini, or personal computer hardware and software requirements, as well as telecommunications and operating system needs, are identified, planned, and procured.

Computer Operations

The mainframe processors are monitored and maintained through consoles at the NCC production control desk.

NCC Operations responds to your requests for mounting tapes, maintaining printers, and loading disk packs. Periodic maintenance checks are performed to keep the computer system operating efficiently.

Telecommunications

The NCC plans, installs, and implements all data communications services requested by the EPA. The requests take the form of a Telecommunications Service Request (TSR). After the request is made, the NCC plans each network connection, issues the work orders to carry out the connection, and tracks the work implementation through a data base. The NCC also manages voice communications (telephones) for the Agency.

**Technical
Support**

NCC's technical support staff installs and maintains all telecommunications software and system software products. These programs allow the regional Logical Mainframes to communicate with RTP's IBM mainframes. Technical support also reconfigures the system for maximum computer performance and installs and maintains IBM systems software, operating systems, and programming languages.

User Support

User Support is the primary point of contact between the NCC user community and the NCC's computers. The User Communications Center in RTP solved over 20,000 user problems last year in many areas such as graphics, PCs, fourth generation languages, programming languages, and information systems. Overall, User Support resolves problems associated with approximately 75 software products. When you dial User Support, an operator works with you to define the problem. The operator records this information in the central problem management system and then directs the problem to the appropriate specialist for resolution, thus providing a record for later referral.

Training

NCC Training provides instruction in the software services available in the various hardware configurations at the NCC. PC training is offered and conducted by the Washington Information Center. Potential students may select training from classroom courses, computer-based training, or videotape instruction.

**Data Base
Support
Services**

NCC Data Base Support Services supports the Central Data Base Administrator in all facets of central data base administration. These tasks include such activities as operating the Development, Production, and Test ADABAS Systems; testing, implementing,

and maintaining all Data Base Management System software; providing technical consultation to Project Managers, developers, and Application Data Base Administrators on ADABAS and the central environment; solving Central Data Base Management System technical problems; and controlling ADABAS data bases, data base files, and disk space.

Information Centers

Information Centers have a wide variety of PC hardware and software. These centers provide users with the opportunity to receive individual assistance and to explore current data processing techniques. The information centers provide a wide variety of services such as the following:

- Special seminars.
- Technical library for all users.
- User group meetings.
- Telephone hotline service for PC hardware and software problems.

LINKING TO THE NCC

TELECOM- MUNICATIONS NETWORK

A complex telecommunications network links the NCC to the user. The NCC plans, installs, and implements all data communications services for the Agency.

TELECOM- MUNICATIONS SERVICE REQUEST

The Telecommunications Service Request is initiated each time a user requests a connection to the network or requires a change in his service. To obtain a TSR form, contact your ADP Coordinator or call the Network Support Group:



(FTS) 629-4506
(919) 541-4506

Users in the Washington area should contact the WIC Telecommunications Group:

(202) 382-HELP

If you have any questions or problems completing the form, contact the Network Support group or the WIC Telecommunications group.

After the TSR form is completed, a planning specialist may conduct further discussions with you to arrive at the best possible network configuration. The NCC works with you to meet your requirements and oversees the satisfactory completion of your connection.

REGISTRATION

ADP COORDINATOR

The ADP Coordinator is the principal contact for the user who wants to access the NCC's computers. The ADP Coordinator initiates requests for User-IDs and ensures that users who leave the organization no longer have access to the computer. In brief, the ADP Coordinator establishes accounts, registers users, and controls the expenditure of time sharing funds.

TSSMS OFFICE

The Time Sharing Services Management System (TSSMS) Office controls the registration of accounts and users who access the NCC's computers. The TSSMS Office, in conjunction with the Billing Services group, collects data on the utilization of resources and produces reports which track each organization's time sharing expenditures against its ADP time sharing budget.

REGISTRATION FORMS

Registration forms are available through your ADP Coordinator who will assign you an account number through which your organization will be billed for your use of computer resources.

NON-EPA USERS

NCC resources are available to non-EPA users through Interagency Agreements (IAGs). IAG accounts can be set up for state environmental agencies or other federal agencies who would regularly use the NCC's computer resources. For more information, contact:



IAG Coordinator
EPA
MD-34 NCC
RTP, NC 27711

Other users who have only occasional need for EPA computer-generated data are better served through the National Technical Information Service (NTIS).

NTIS sets up an account through which billing for EPA services and computing resources is accomplished. For more information, contact:



US Department of Commerce
NTIS
5285 Port Royal Road
Springfield, VA 22161

**YOUR
USER-ID**

When registration has been completed, you will receive notification of your three-character User-ID, initial password, and account codes. This information is required each time you sign on to the NCC-IBM.

HELP IS AVAILABLE

USER SUPPORT

The NCC has a comprehensive user support service. It provides user technical assistance; problem diagnosis, solution, and tracking; and consultation for all NCC methods, procedures, and software.

"PHONE BOOTH"

User Support is the primary point of contact between the NCC user community and the NCC-IBM facility. You need only call one telephone number to request assistance, no matter what the problem. The technician screens your call to decide which NCC specialist or department can best handle your problem. The telephone numbers for this comprehensive assistance are:



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

CENTRALIZED PROBLEM MANAGEMENT

The technician needs your name, User-ID, and telephone number, and, occasionally, your account number as well as a brief description of your problem. If the problem is network related, you must also supply your terminal ID number. All this information is entered into the Centralized Problem Management (CPM) system to track the problem and document its resolution. You are given a Problem Management Record (PMR) number which may be used later. So, it is a good idea to write this number down.

TELECOMMUNI- CATION DEVICE FOR THE DEAF

If you are hearing impaired, the NCC urges you to take advantage of the Telecommunication Device for the Deaf (TDD) at:



(FTS) 629-2586
(919) 541-2586

Be sure to include enough information to open a PMR.

DATA PROCESSING SUPPORT SERVICES

FUNCTIONS

As a part of the Operations department, Data Processing Support Services (DPSS) performs a variety of related functions such as managing the tape library; performing Input/Output (I/O) control; and scheduling and overseeing micrographics, keypunch, and courier services.

TAPE LIBRARY

DPSS is responsible for all computer tapes stored at the NCC. With a library numbering in the thousands, the tape librarian uses an online Tape Management System to assist in inventory control, utilization and ownership reporting, replacement of defective tapes, purchase of new tapes, and initialization of volumes at regular intervals. If you require tapes for storing computer data or sending it offsite for micrographic services, the tape library stores and tracks your tapes and also ensures that the requested tapes are pulled for use in your processing.

I/O CONTROL

With the shift to electronic media, use of punched cards has faded. The emphasis is on retrieving, separating, and distributing computer-generated printouts and tapes. I/O Control personnel prepare, log, and ship output; control visitor access to the computer room; and process "foreign" tapes (those tapes not owned by the NCC). If you submit a job for printing, for example by the laser printer, I/O Control picks up your printout from the printer room, ensures that it goes to your assigned bin, and further ensures that no unauthorized person has access to the contents of your bin.

**MICROGRAPHICS
SERVICES**

DPSS receives and monitors your requests for micrographics services. They can help you set up the specifications for microfiche output. These jobs are sent to an offsite contractor on a computer tape, and then the microfiche are distributed as output. The WIC also provides the same service for EPA Headquarters users.

**KEYPUNCH
SERVICES**

DPSS receives your requests for keypunch services, logs the request, pulls any requested tapes, and forwards the tape with specifications to the keypunch contractor. When the job is completed and returned, DPSS notifies you or forwards the tape. The WIC also provides the same service for EPA Headquarters users.

**COURIER
SERVICES**

DPSS coordinates the courier service at RTP. Twice a day output is dispatched via the courier to various RTP locations. Input is also delivered twice a day to the NCC. The WIC also provides the same service for EPA Headquarters users.

Direct any questions or problems concerning DPSS activities to User Support at the following telephone numbers:



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

TRAINING OPPORTUNITIES

NCC TRAINING

NCC Training provides a choice of methods for users to learn about the software services available on the various hardware configurations at the NCC.

CLASSROOM TRAINING

Traditional classroom instruction is scheduled on a quarterly basis, both at RTP and at the WIC. Courses can also be provided at any location specified by the requestor. The classes are taught with a hands-on approach. The instructor explains a concept, the students practice on the terminal or PC, and then they can refer to the customized training manuals provided to reinforce the learning process. The classes are paced so that adequate time is provided for questions and answers.

IBM Mainframe and DEC/VAX training are the responsibility of the RTP training staff; PC training is conducted by the WIC training staff.

COMPUTER- BASED TRAINING

Computer-based training (CBT) is a system of learning that is dependent on student interaction with the computer. The computer becomes the instructor and responds to answers from the student. CBT instruction is self-paced, menu-driven, and easy-to-use. Computer-based training for the NCC-IBM is provided via the PHOENIX system. PHOENIX courses are available to any user who has access to the NCC-IBM system with a full-screen 3270-compatible terminal.

VIDEOTAPE TRAINING

The NCC has contracted with a major supplier for videotape training. The curriculum includes a variety of topics, such as data processing tools, management, and communication skills. Catalogs are provided to Regional ADP Coordinators.

INTERACTIVE VIDEO INSTRUCTION

NCC Training also makes available interactive video instruction (IVI). IVI is an exciting new generation of technology that is made up of a personal computer, a laser videodisc player, a touch screen monitor, and courseware for the PC. IVI learning centers have been established at various regional offices and selected laboratories.



More information about training services, course syllabus, registration requirements, and quarterly schedules are available through the NCC Training Office. Contact them through User Support:



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

For information about PC training and registration, contact the WIC Training Office:

(FTS) 475-7201
(202) 475-7201

BUSINESS HOURS

OPERATIONS

The scheduled hours of operation of the various NCC facilities are shown below. Times are Eastern time zone.

<u>Facility</u>	<u>Open</u>	<u>Closed</u>
NCC Computer	0700 Mon. - 2000 Sun.	2000 Sun. - 0700 Mon.
TSO Services	0700 Mon. - 2000 Sun.	2000 Sun. - 0700 Mon.
Telecom.	0700 Mon. - 2000 Sun.	2000 Sun. - 0700 Mon.
CICS	0700 Mon. - 2000 Sun.	2000 Sun. - 0700 Mon.
ADABAS	0700 Mon. - 2000 Sun.	2000 Sun. - 0700 Mon.
I/O Control	0700 Mon. - 1800 Sat.	1800 Sat. - 0700 Mon.
User Support	0800 Mon. - 1900 Fri.	1900 Fri. - 0800 Mon.



Exceptions to this schedule may occur because of maintenance or system testing. Changes are posted to the online data set JUSD.HOURS.

USER MEMOS

WHAT ARE USER MEMOS?

User Memos are our way of keeping you informed of new products, enhancements, or changes in NCC's policies. They are our principal means of sending out needed information. For example, the NCC takes into consideration your notification of changes through the User Memos when granting or denying refunds. User Memos are paper documents usually 1-4 pages long that are mailed to your address or placed in your bin.

PICKING YOUR SUBJECTS

NCC has established a communications system for disseminating User Memos. This system allows you to receive only the types of information that you request. A data base contains your profile information such as name, address, User-ID, and phone number as well as your user interest keys. The interest keys allow User Memos to be distributed only to those users who have expressed an interest in a particular category. For example, if you only use the IBM computer, your interest key can be set to block User Memos to you concerning DEC VAX hardware. Interest keys can be added or deleted at any time.

HOW TO SIGN UP FOR USER MEMOS

Shortly after you become a registered user with a User-ID, the NCC Communications and Training Office will send you a User Profile Worksheet to be completed. Unless you return the User Profile Worksheet, you will not receive User Memos.

QUESTIONS?

If you have questions or need help completing the User Profile Worksheet, contact NCC Communications and Training:



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

COSTS OF SERVICES AND REFUNDS

COSTS OF SERVICES

The IBM system is viewed as an Agency computing environment that includes the NCC-IBM mainframe and the installed base of Regional Logical Mainframes. The cost of providing services using this network of hardware is recovered through a nonprofit chargeback system. IBM chargeback rates are set such that job processing charges are normalized within the Agency's IBM computing environment. The CPU rates for the WIC, Cincinnati, NEIC, and regional Logical Mainframes are scaled to achieve uniform job costs across all the IBM computers in the Agency. In short, the system was designed to be fair, simple, predictable, and repeatable.

RESOURCES

Dollars charged to you are determined by the resources used and the level of service requested. Resources are divided into computer job components and computer-related resource components.

Chargeback Algorithm

Computer job component costs are determined by applying the NCC chargeback algorithm. These costs include such items as Central Processing Unit (CPU) rates and Execute Channel Program (EXCP) commands.

Computer-Related Charges

Computer-related charges are those components not directly tied to computing time and memory, such as data storage, archive tape storage, microfiche, key-punch, etc.

Fiscal Year Rates

Once a year the NCC reviews its chargeback structure and adjusts to new or changed requirements. The costs are then set for the fiscal year.



Cost components are discussed in detail in the online data set JUSD.USERS.REFER(COSTS).

REFUNDS

Each day User Support receives a list of the jobs that were cancelled the previous day. User Support then notifies the user and may, if warranted, initiate a refund request. Additionally, any user may request a refund for the costs associated with the job which fails due to an error by the operator, a hardware failure, or an error in the system software or one of the supported application packages. Refunds are not granted for such situations as the job being run at a higher priority to assure its turnaround in a certain time period. Refunds may also be requested for miscellaneous changes such as disk rental, delivery, tape usage, etc.

REFUND REQUEST FORMS

Refund request forms may be printed from the online data set JUSD.USERS.REFER(SAMPFORM). The completed form along with all documentation supporting the request should be sent to:



NCC-IBM User Support
EPA NCC
MD-34B
RTP, NC 27711
Attn: Refund Request



More details on refund requests are available in the online data set JUSD.USERS.REFER(REFUNDS).

If you have questions or need help completing the Refund Request, contact NCC User Support:



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

LOGON PROCEDURES

HARDWIRED OR DIAL-UP?

In order to use the NCC IBM mainframe, you must have a User-ID and a terminal linked to the NCC. This link can be through hardwired equipment which does not require dialing or through a dial-up modem hooked to your terminal. Let's address the hardwired terminals first. Discussion about dial-up terminals then follows.

HARDWIRED TERMINALS

First make sure that your terminal is turned on. If you are hardwired to the NCC, your screen should appear like the one below. If it does not, press the RESET key or the ENTER key and the screen should appear; or turn the terminal off and then on again. If it still does not appear, call User Support.



If you press **M** and **ENTER**, the following menu screen will appear:

U.S. EPA TELECOMMUNICATIONS NETWORK MENU			TERM T260624	
15 20 Tuesday August 23, 1988			MODEL 2	
NATIONAL COMPUTER CENTER			LOGICAL MAINFRAME	
PF KEY	SELECTION	SERVICE	PFKEY	SELECTION SERVICE
PF13	PCICS	CICS-Production	PF15	NY TSO-New York LMF
PF14	DCICS	CICS-Development	PF16	DV TSO-Denver NEIC LMF
PF19	TSO	TSO-NCC	PF17	WIC TSO-Wash Info Center
PF8	EMAIL	EMAIL ACCESS	PF20	SE TSO-Seattle LMF
PF10	ARBITER	Arbiter	PF21	AT TSO-Atlanta LMF
			PF22	DA TSO-Dallas LMF
			PF23	KC TSO-Kansas City LMF
			PF24	PH TSO-Philadelphia LMF
			PF2	CI TSO-Cincinnati LMF
			PF3	BN TSO-Boston LMF
			PF4	CH TSO-Chicago LMF
			PF5	SF TSO-San Francisco LMF

HIT PFKEY OR ENTER SELECTION

4BQa 012/001 31 FT



When the logon process becomes routine, you may bypass this menu screen by entering a command such as **TSO** (for the NCC's Time Sharing Option) or by entering the code for another machine or **LMF** that allows you access such as **NY** for the **NY LMF**.



Note the terminal ID number in the upper right-hand corner. You may need this number to report a network problem. It's a good idea to copy it down so that you can refer to it later if the hardware malfunctions and does not allow you to look it up.

If you choose, for example, TSO at the NCC, the following will appear:

----- TSO/E LOGON ----- T260624

PF1/PF13 ----> HELP PF3/PF15 ----> LOGOFF PA1 ----> Attention PA2 ----> Reshow

ENTER LOGON PARAMETERS BELOW

USERID ---->

PASSWORD ---->

PROCEDURE ---->

ACCT NMBR ---->

FIMAS ---->

SIZE ---->

COMMAND ---->

RACF LOGON PARAMETERS

NEW PASSWORD ---->

GROUP IDENT ---->

BIN NUMBER ---->

SYSOUT DEST ---->

ENTER AN S BEFORE EACH OPTION DESIRED BELOW

-NOMAIL -NONOTICE -NOSUMMARY -CANCEL

4BQa

012/001 ☐ ☐ 31 FT

Just type in your three-character User-ID and press the ENTER key.

The next screen shows the cursor sitting at the password entry point. If you have logged on before with this User-ID, you need only to type in the password (it will not be displayed) and press ENTER.

TSO/E LOGON

T260624

PF1/PF13 ==> HELP

PF3/PF15 ==> LOGOFF

PA1 ==> Attention

PA2 ==> Reshow

ENTER LOGON PARAMETERS BELOW

RACF LOGON PARAMETERS

USERID ==> III

PASSWORD ==>

NEW PASSWORD ==>

PROCEDURE ==> \$EPATSO

GROUP IDENT ==>

ACCT NMBR ==> ACCT

FIMAS ==> FFFFMUUJ

BIN NUMBER ==> Bbbb

SIZE ==>

SYSOUT DEST ==>

COMMAND ==>

ENTER AN 'S BEFORE EACH OPTION DESIRED BELOW

-NOMAIL

-NONOTICE

-NOSUMMARY

-CANCEL

4BQa

012/001 31 FT

If you are logging on for the first time with this User-ID, you must change your password and complete the required fields on the screen. Your password is the same as your User-ID when you log on for the first time. So, to change it, type your User-ID in the password field, TAB to the new password field, type the new password and press ENTER. Then the cursor is positioned for you to retype the new password for verification. As soon as you press ENTER, your new password becomes effective.

The other required fields are PROCEDURE, ACCT NUMBER, FIMAS, and BIN NUMBER. Procedure is \$EPATSO for TSO users. Account number is the 4-character code assigned to you for billing purposes.

The Facility Impact Monitoring and Analysis System (FIMAS) code identifies a specific ADP system or activity and associates computer usage statistics with that activity. The FIMAS code is depicted as follows:

ffffmuuu

Where ffff is a 4-character/digit code, m is a mode character, and uuu is an optional 3-position field for your use. Modes can be one of the following:

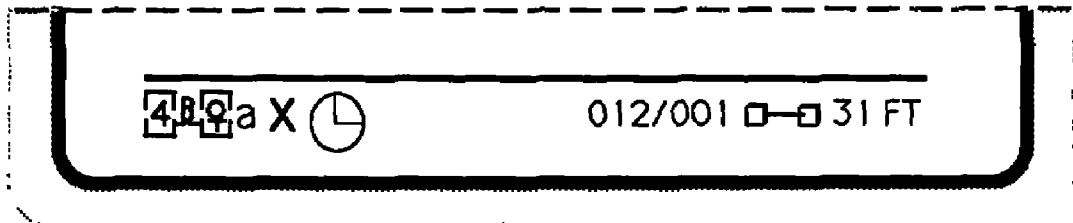
F	Feasibility study.
D	Development of software.
T	Testing.
M	Maintenance.
P	Production.
R	Retrieval.
U	Update.

Consult with your ADP Coordinator for more information on FIMAS codes.

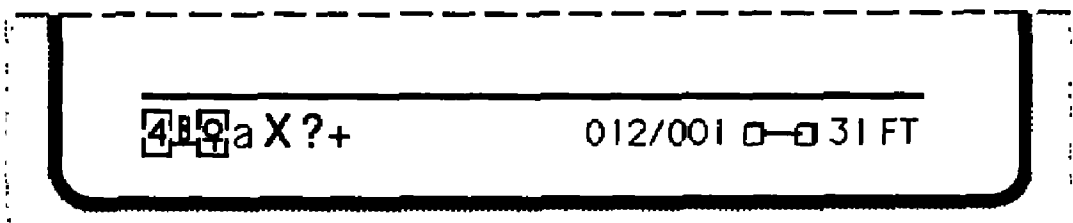
Bin number is the NCC assigned mailing code for your printouts.

After these fields are completed at the first logon, they will appear the next time you logon. After all required fields are completed, press ENTER.

Note the X and the clock at the bottom of your screen. This indicates that the IBM is "busy" carrying out your instructions. You cannot type anything more until it disappears.



Another picture (as shown below) indicates that you tried to type while the IBM was busy. Just press the RESET key to clear up this situation.



You must also change the password in the following cases:

- If a "PASSWORD EXPIRED" message appears.
- If your password has been reset by User Support.

To change your password:

- Type the current password.
- Press TAB

- **Type the new password.**
- **Press the ENTER key.**

A password has the following characteristics:

- **Contains from 6 to 8 alphanumeric or national characters (\$, #, or @). There must be at least one alpha and one numeric character. Blanks are not allowed.**
- **Is unique to the associated User-ID and cannot equal the User-ID.**
- **Must be changed at least every 90 days. (Will be date stamped when changed.)**
- **Cannot be changed back to either of the 10 most recently used passwords. (In other words, you can't use the current or the previous 10.)**
- **Must not be included with any output.**
- **Must be obliterated on terminal devices through a clear screen or overprint.**
- **Should be memorized and not written down.**

The next screen, as shown below, is the end of the logon process. Note the list of NEWS ALERT titles. NEWS ALERTs are discussed in more detail in a separate topic of this manual. The READY prompt indicates that you are in the TSO environment and may enter TSO commands.

ICH700011 III LAST ACCESS AT 15 25 47 ON MONDAY, AUGUST 22, 1988
IKJ564551 III LOGON IN PROGRESS AT 15 38 24 ON AUGUST 23, 1988

08/18/88 FOCUS 553 AVAILABLE FOR TESTING, REVISED

-SEE NEWS ALERT1

08/11/88 UPGRADED WIC PRINTER LIMIT

-SEE NEWS ALERT2

08/11/88 NATURAL DYNAMIC PARAMETER AVAILABILITY

-SEE NEWS ALERT3

READY



480a

012/001 31 FT

DIAL -UP TERMINALS

Dial-up terminals, often called line terminals, can be linked to the NCC in a variety of ways. The common denominator is the modem which requires you to dial a telephone number before the link is complete.

Modems and Software

Modems are the dialing hardware which link the telephone line to your terminal. Getting your modem's "attention" through your keyboard may require help from someone at your site who is familiar with your modem and terminal. Once you know how to "talk" to your modem, you must determine the telephone number to dial. Along with the modem, you need some type of telecommunications software (for example, Crosstalk or KERMIT).

Type of Link

The Network Support Group has, in most instances, worked with your site's management to establish communications. You may be linked to the NCC through the Washington Rotor, TYMNET, or the Develcon. The type of linkage generally depends on your location and how many other users are in your area. Try to determine the type of link that has been established or what telephone number you must dial for access. If your local sources do not have this information, call User Support at:



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

Hardwired "Look-Alike"

At some sites, you may be able to link to the NCC in a "full-screen" manner. The Terminal/Controller Processor (TCP) allows you to use the full-screen capabilities much like a user with a hardwired terminal. In that case, after you have chosen TCP, follow the logon procedures for hardwired terminals previously discussed.

When you have successfully established a connection to the NCC, the following menu will appear.

WELCOME TO THE ENVIRONMENTAL PROTECTION AGENCY NATIONAL COMPUTER CENTER

Please enter one of the following selections

IBMPSI for IBM
TCP for IBM 3270 EMULATION
VAXA for VAX SYS A
VAXB for VAX SYS B
EMAIL for EMAIL

Enter selection

To choose the NCC IBM mainframe for a line terminal, type IBMPSI and press ENTER. Then the following menu appears.

Enter selection IBMPSI
CONNECTED
connected 310600908827/110504

U S EPA (TTY-X25-IBM)

- A TSO - NCC
- B NY
- C NEIC
- D WIC
- E SEATTLE
- F ATLANTA
- G DALLAS
- I KANSAS CITY
- J PHILADELPHIA
- K CINCINNATI
- L SAN FRANCISCO
- M BOSTON
- N CHICAGO

SELECTION ?

To access TSO at NCC, select A and then press ENTER. The other selections are LMF sites. Then the following message appears.

SELECTION ? A
IKJ56700A ENTER USERID -

If this is the first time you have logged on with this User-ID, your profile reflects the NOPROMPT characteristic. After you type your User-ID and press ENTER, the following will then appear.

```
SELECTION ? A
IKJ56700A ENTER USERID -
111
IKJ56705I MISSING PASSWORD FOR 111
IKJ56400A ENTER LOGON OR LOGOFF-
```

The system is asking for a single line logon command. Type in the following and use your assigned values:

① ② ③ ④ ⑤
LOGON 111/pswd A(acct) S(nnnn) PROC(\$EPATSO)

- ① Your 3-character User-ID.
- ② Your password (6-8 characters).
- ③ Your account code.
- ④ A size parameter, for example, 3000 (may be omitted).
- ⑤ The procedure name (usually \$EPATSO, but may be different depending on your application).

For a first time logon, the password is the same as the User-ID and must be changed immediately. The following logon command should be typed in:

```
LOGON 111/111/newpswd A(acct) S(nnnn) PROC($EPATSO)
```

The following will then appear.

```
LOGON III/pswd A(acct) S(mnn) PROC($EPATSO)
ICH700011 III LAST ACCESS AT 13 50 42 ON TUESDAY, AUGUST 30, 1988
IKJ564551 III LOGON IN PROGRESS AT 14 00 01 ON AUGUST 31, 1988
ENTER FIMAS ID -
```

The FIMAS code identifies a specific ADP system or activity and associates computer usage statistics with that activity. The FIMAS code is depicted as follows:

ffffmuuu

Where ffff is a 4-character/digit code, m is a mode character, and uuu is an optional 3-position field for your use. Modes can be one of the following:

F	Feasibility study.
D	Development of software.
T	Testing.
M	Maintenance.
P	Production.
R	Retrieval.
U	Update.

Consult with your ADP Coordinator for more information on FIMAS codes.

After you have typed the FIMAS code and pressed ENTER, a list of NEWS ALERT titles appears. NEWS ALERTs are discussed in more detail in a separate topic of this manual.

The next screen, as shown below, is the end of the logon process.

ENTER FIMAS ID -

ffffmjuu

08/18/88 FOCUS 553 AVAILABLE FOR TESTING, REVISED

-SEE NEWS ALERT1

08/11/88 UPGRADED WIC PRINTER LIMIT

-SEE NEWS ALERT2

08/11/88 NATURAL DYNAMIC PARAMETER AVAILABILITY
READY

-SEE NEWS ALERT3

You can now change your profile to prompt you for your logon information. At READY, just type the command PROFILE PROMPT and press ENTER. The following logon sequence will appear the next time you log on.

IKJ56700A ENTER USERID -

|||

IKJ56714A ENTER CURRENT PASSWORD FOR |||

pswd

ICH7000||| LAST ACCESS AT 15 34 38 ON WEDNESDAY, AUGUST 31, 1988

IKJ56700A ENTER ACCOUNT NUMBER -

acct

IKJ56700A ENTER PROCEDURE NAME -

\$epatso

IKJ564551 ||| LOGON IN PROGRESS AT 13 51 02 ON SEPTEMBER 1, 1988

ffffmjuu

08/18/88 FOCUS 553 AVAILABLE FOR TESTING, REVISED

-SEE NEWS ALERT1

08/11/88 UPGRADED WIC PRINTER LIMIT

-SEE NEWS ALERT2

08/11/88 NATURAL DYNAMIC PARAMETER AVAILABILITY

-SEE NEWS ALERT3

READY

LOGOFF PROCEDURES

NORMAL LOGOFF

To log off, you must type the following command at the READY prompt:

LOGOFF

If you are in an application, you should "back out" using normal end and/or save commands (or PF keys) to return to the READY prompt. Then type LOGOFF.

ABNORMAL LOGOFF

If you have not completed the logon process and want to "quit," you have several options:

1. Continue the logon process until you get the READY prompt. Then type LOGOFF.
2. Abort your session by turning off your terminal and breaking the communications link.
3. Call User Support at one of the telephone numbers listed below. They can terminate your session.



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

SIGNON ANNOUNCEMENTS

NEWS ALERTS

NEWS ALERTs communicate important information to NCC users. Each time you logon, whether through a hardwired terminal or a dial-up terminal, a list of NEWS ALERT titles appears. To read the entire text of the NEWS ALERT message, type the following at the READY prompt:

NEWS #

Where # is the 1 or 2-digit NEWS ALERT number.

In addition, LISTBC will relist the NEWS ALERT titles.

BROADCAST MESSAGES

Broadcast messages are sent out to all users signed on to TSO. They may be the first appearance of a NEWS ALERT or they may be important instructions to the entire user community such as "LOGOFF. SYSTEM GOING DOWN."

Other types of broadcast messages are system generated, such as messages only you receive that inform of a completed job or notify you of a message from another user.

PF KEYS

**WHAT ARE
THEY?**

Program Function (PF) keys are a shortcut method of entering commands on a full-screen IBM 3270-type terminal (or a terminal that acts like a 3270 through TCP). PF keys are activated when you use the Interactive System Productivity Facility (ISPF) and their assigned functions are stored in your TSO/ISPF profile. These keys, usually labeled PF1 - PF12 (alternate) and/or PF13 - PF24 (primary), may require the use of the ALT key in combination with the appropriate number key on some keyboards (for example, pressing 5 while holding down ALT yields PF5). The default assignments are specified in ISPF as follows:

**DEFAULT
ASSIGNMENTS**

<u>PF KEYS</u>	<u>LABEL</u>	<u>FUNCTION</u>
1 13	HELP	Provides access to help screens for more information on a subject.
2 14	SPLIT	Divides screen into 2 screens for working in 2 concurrent ISPF sessions at the same time. Dividing line is at the cursor.
3 15	END	Returns you to the next higher level panel, or in other words, backs you out one step at a time.
4 16	RETURN	Returns you directly to the Primary Option.

<u>PF KEYS</u>	<u>LABEL</u>	<u>FUNCTION</u> Menu.
5 17	RFIND	Repeats the last find command that was entered.
6 18	RCHANGE	Repeats the last change command that was entered.
7 19	UP	Scrolls up. Number of lines is determined by setting SCROLL field on the current ISPF panel display.
8 20	DOWN	Scrolls down. Number of lines is determined by setting SCROLL field on the current ISPF panel display.
9 21	SWAP	In split screen mode, moves cursor from one screen to another.
10 22	LEFT	Scrolls current screen display to the left.
11 23	RIGHT	Scrolls current screen display to the right.
12 24	RETRIEVE	Recalls, at the command/option arrow, the last command entered.

DISPLAYING AND CHANGING PF KEY ASSIGNMENTS

PF keys can be reassigned to functions of your choice, such as the editing functions of text entry, text split, or text flow or to multiple operations such as shortcut menu choices through the path to place you in the Spool Display and Search Facility (SDSF). In fact, some applications automatically assign different values to the PF keys (for example, the ISPF tutorial).

To view the keys, their associated commands, and their labels under ISPF, select ISPF option 0.2 or enter the following command at the option or command arrow (===>):

KEYS

You may also display the keys at the bottom of your screen by using the PF SHOW command. The display will remain until you reverse the action by 'PFSHOW OFF'.

To change the default PF key assignments, enter 'PFSHOW TAILOR' and overtype the values you wish to change with new commands or labels.



A more detailed discussion of PF keys may be found in the ISPF tutorial (Option T from the primary options menu). Go to the tutorial index and enter K.

INDEX

A	Abnormal logoff	31
	Aborting logon	31
	Access (how to obtain)	6
	Account code	7, 28
	ADABAS	3
	ADABAS, business hours	13
	ADP Coordinator	5, 6, 11, 21
	Assignment, for Program Function keys	33
	Assistance	8
B	Billing	6, 15
	Broadcast message	32
	Business hours	13
C	CBT (Computer-based training)	11
	Central Processing Unit	15
	Centralized Problem Management	8
	Chargeback algorithm	15
	Charges	15
	CICS, business hours	13
	Classes	11
	Classroom training	11
	Closed hours	13
	Communications, network	5
	Communications systems, for users	14
	Communications, voice	2
	Computer Operations	2
	Computer-based training	11
	Computer-related charges	15
	Costs of services	15
	Courier services	10
	Courier services, WIC	10
	Courses	11
	CPM (Centralized Problem Management)	8
	CPU (Central Processing Unit)	15
	Crosstalk	24

INDEX

D	Data Base Support Services	3
	Data Processing Support Services	9
	Deaf, Telecommunication Device for	8
	DEC/VAX training	11
	Description, NCC	1
	Develcon	25
	Dial-up terminal	25
	DPSS (Data Processing Support Services)	9
E	Education	11
	EXCP (Execute Channel Program)	15
	Execute Channel Program	15
F	Facility Impact Monitoring and Analysis System	21, 29
	FIMAS (Facility Impact Monitoring and Analysis System)	21, 29
	Fiscal year rates	15
	Foreign tapes	9
	Full-screen terminal	17, 25
H	Hardwired terminal	17
	Hardwired terminal, look-alike	25
	Help	8
	Hotline, PC	4
	Hours of business	13
I	I/O Control (Input/Output Control)	9
	LAG (Interagency Agreement)	6
	IBM Mainframe training	11
	Information Centers	4
	Input/Output Control	9
	Input/Output Control, business hours	13
	Interactive System Productivity Facility	33
	Interagency Agreements	6
	ISPF (Interactive System Productivity Facility)	33

INDEX

K	KERMIT	25
	Keypunch services	10
	Keys, Program Function	33
L	Line terminal	25
	Link, telecommunications	25
	LMF (Logical Mainframe)	2
	Logical Mainframe	2
	Logoff procedures	31
	Logon procedures	17
	Logon statement, for dial-up terminal	28
M	Messages	32
	Microfiche	10
	Micrographics services	10
	Micrographics services, WIC	10
	Mission of the NCC	1
	Modem	25
N	National Technical Information Service	6
	NCC computer, business hours	13
	NCC services	2
	NCC's mission	1
	Network Support Group	5
	New user	6
	News alert	23, 29, 32
	Non-EPA users	6
	Normal logoff	31
	NTIS (National Technical Information Service)	6
O	Open hours	13
	Operations, Computer	2
P	Password	7, 28
	Password, changing	20, 22
	Password, characteristics	23

INDEX

	PC training	3, 11
	PF keys (Program Functions keys)	33
	PHOENIX courses	11
	Phone booth	8
	Planning and Acquisitions	2
	PMR (Problem Management Record)	8
	Problem Management Record	8
	Problems	8
	Profile of a user	14
	Profile, TSO/ISPF	33
	Program Function keys	33
	PROMPT profile	28, 30
Q	Quit	31
R	Refund Request	16
	Refunds	14, 15, 16
	Registration	6
	Registration, forms	6
	Research Triangle Park	1
	Reset	22
	RTP (Research Triangle Park)	1
S	Schedule (business hours)	13
	SDSF (Spool Display and Search Facility)	35
	Services, NCC	2
	Signon announcement	32
	Software for telecommunications	25
	Spool Display and Search Facility	35
	Stop	31
T	Tape library	9
	Tape Management System	9
	Tape, foreign	9
	TCP (Terminal Controller Processor)	25
	TDD (Telecommunication Device for the Deaf)	8
	Technical Library	4
	Technical Support	3

INDEX

Telecommunication Device for the Deaf	8
Telecommunications	2
Telecommunications Network	5
Telecommunications Service Request	2, 5
Telecommunications, business hours	13
Telecommunications, link	25
Telecommunications, software	25
Telephone, DPSS	10
Telephone, for HELP	8
Telephone, NCC training office	11
Telephone service	2
Telephone, WIC training office	11
Terminal ID number	18
Terminal, dial-up	25
Terminal, full-screen look-alike	25
Terminal, hardwired	17
Terminal, line	25
Terminal/Controller Processor	25
Time Sharing Option	18, 19, 27
Time Sharing Services Management System	6
TMS (Tape Management System)	9
Training	3, 11
Training, DEC/VAX	11
Training, IBM Mainframe	11
Training, PC	3, 11
Training, PHOENIX	11
Troubleshooting	8
TSO (Time Sharing Option)	18, 19, 27
TSO Services, business hours	13
TSR (Telecommunications Service Request)	2, 5
TSSMS (Time Sharing Services Management System)	6
TYMNET	25
U	
US Department of Commerce	7
User Assistance	8
User Memos	14
User Profile Worksheet	14

INDEX

	User Support	3, 8, 31
	User Support, business hours	13
	User-ID	7, 19
	User-ID, establishing	6
V	Video instruction, interactive	12
	Videotape training	11
	Voice communications	2
W	Washington Information Center	2
	Washington Information Center, HELP desk	5
	Washington rotor	25
	Welcome screen	17
	WIC (Washington Information Center)	2

IBM READY REFERENCE

IBM Ready Reference

IBM READY REFERENCE

JANUARY 1989

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Prepared by:

**US Environmental Protection Agency
National Data Processing Division
National Computer Center
Research Triangle Park
North Carolina**

Preface

Ready Reference provides essential information for users of the National Computer Center. Basic descriptions of procedures, utilities, languages, and software are included as well as pointers to online documentation.

CONTENTS

SECTION 1: LOGON PROCEDURES

HARDWIRED OR DIAL-UP?	1-1
HARDWIRED TERMINALS	1-1
DIAL-UP TERMINALS	1-8
Modems and Software	1-8
Type of Link	1-8
Hardwired "Look-Alike"	1-8

SECTION 2: TSO AND ISPF

TIME SHARING OPTION	2-1
TSO COMMANDS	2-1
EDITING SUBCOMMANDS	2-2
HELP COMMAND	2-2
INTERACTIVE SYSTEM PRODUCTIVITY FACILITY	2-3
PRIMARY ISPF COMMANDS	2-4
PRIMARY EDIT COMMANDS	2-5
ISPF EDIT LINE COMMANDS	2-5
PF KEYS	2-6
Default Assignments for PF Keys	2-7
HELP COMMAND	2-7

CONTENTS

SECTION 3: DATA SETS

NAMING DATA SETS.....3-1

OPERATING SYSTEM STANDARDS3-1

NCC CONVENTIONS FOR USER DATA SETS3-1

NCC CONVENTIONS FOR SYSTEM DATA SETS.....3-2

SYSTEM CATALOG CONVENTIONS.....3-2

NON-STANDARD DATA SETS.....3-2

ALLOCATING DATA SETS.....3-3

TSO ALLOCATE COMMAND3-3

ALLOCATE FOR LINE TERMINAL USERS3-4

ALLOCATE USING ISPF UTILITY.....3-6

FILE STRUCTURE3-12

PARTITIONED VERSUS SEQUENTIAL.....3-12

CONTENTS

SECTION 4: DISK MANAGEMENT

DIRECT ACCESS STORAGE DEVICE MANAGEMENT	4-1
DATA FACILITY/HIERARCHICAL STORAGE MANAGER	4-1
HLIST COMMAND	4-2
HRECOVER COMMAND	4-3
HMIGRATE COMMAND	4-3
HRECALL COMMAND	4-4
HDELETE COMMAND	4-4
CLEANUP OF DF/HSM POOL	4-4

SECTION 5: TAPE MANAGEMENT

TAPE STORAGE	5-1
AVAILABLE TAPES	5-1
ASSIGNING A TAPE	5-2
TAPE RETENTION PERIODS	5-3
TAPE ARCHIVING	5-4
TAPE DEARCHIVING	5-5
TAPESCAN UTILITY	5-5
FOREIGN TAPES	5-6

CONTENTS

SECTION 6: JOB ENTRY SUBSYSTEM

WHAT IS IT?	6-1
JES2 CONTROL STATEMENTS	6-1
JOBPARM STATEMENT	6-1
ROUTE STATEMENT	6-1
JES2 OPERATOR COMMANDS	6-2
JOB STREAM MANAGER AND PRIORITIES	6-3

SECTION 7: PRINTING OPTIONS

PRINTING AT THE NCC	7-1
TSO PRINTOFF COMMAND	7-1
BATCH PRINTING	7-3
Batch Utility for Printing	7-4
OUTPUT JCL Statement	7-4
CHOICES OF PAPER AND SIZE OF PRINT	7-5
PRINTING USING ISPF LIST DATA SET	7-8
How to Activate LOG/LIST	7-8
PRINTING UTILITY FOR DOCUMENTATION	7-9
PRINTING AT ANOTHER SITE	7-10

CONTENTS

SECTION 8: NCC UTILITIES

BATCH UTILITIES8-1

JES2 GLOBAL STATUS TRACKING8-1

SPOOL DISPLAY AND SEARCH FACILITY8-2

JOB STATUS TRACKING SYSTEM.....8-3

BULK DATA TRANSFER8-3

INTERACTIVE TRANSFERS.....8-4

BATCH TRANSFERS8-4

ARBITER8-4

ARBITER PC SOFTWARE.....8-6

ACCESSING ARBITER.....8-6

EMAIL SERVICE.....8-8

RESOURCE ACCESS CONTROL FACILITY8-9

UTILIZING RACF8-10

PROTECT A DATA SET8-10

ADD USERS AND GROUPS TO RACF LIST8-10

LIST RACF PROFILE8-11

CHANGE RACF PROFILE8-11

DELETE RACF PROTECTION8-11

CONTENTS

SECTION 8: NCC UTILITIES (continued)

JOB OUTPUT PROTECTION8-11
 Create Resource Profile8-11
 Change Resource Profile8-12
 Delete Resource Profile8-12
 List Resource Profile8-12
 Build Access List8-12
 Delete From Access List8-12
 Tape Protection8-12

PLSORT8-13

KWIC/KWOC8-14

SECTION 9: IBM UTILITIES

BATCH UTILITIES9-1

IEFBR149-1

IEHPROGM9-1

IDCAMS9-2

IEBGENER9-3

IEBCOPY9-3

IEHMOVE9-3

IEHLIST9-4

CONTENTS

SECTION 9: IBM UTILITIES (continued)

LINKAGE EDITOR9-5

VIRTUAL STORAGE ACCESS METHOD9-6

VSAMAID/XP9-6

SECTION 10: PROGRAMMING LANGUAGES

COMPILERS, INTERPRETERS, AND ASSEMBLERS 10-1

LINKAGE EDITOR 10-1

ASSEMBLER LANGUAGE 10-2

CATALOGED PROCEDURES 10-3

COBOL 10-3

CATALOGED PROCEDURES FOR VS COBOL II 10-4

FORTRAN 10-4

VECTOR PROCESSING 10-4

CATALOGED PROCEDURES 10-6

PL/1 10-7

CATALOGED PROCEDURES 10-7

BASIC 10-7

CONTENTS

SOFTWARE CATALOG

DATA BASE SYSTEMS	SC-1
ADABAS	SC-1
BASIS	SC-2
S2K	SC-3
RETRIEVAL AND REPORTING SYSTEM	SC-4
EASYTRIEVE PLUS	SC-4
MATHEMATICAL AND STATISTICAL SYSTEMS	SC-5
BMDP	SC-5
ESP	SC-6
IMSL	SC-7
PL-MATH	SC-8
SAS	SC-9
SUPERCALC	SC-10
GRAPHICS	SC-11
CA GKS	SC-11
CUECHART	SC-12
DATA CONNECTION	SC-13
DISSPLA	SC-14

CONTENTS

GRAPHICS (continued)

GEOMAP	SC-15
INTERORG.....	SC-16
SAS/GRAPH	SC-17
TELL-A-GRAF	SC-18
TELLAPLAN	SC-19
UNEDIT	SC-20
UNIMAP	SC-21
DATA DICTIONARY/DIRECTORY SYSTEM	SC-22
DC2	SC-22
FILE MANAGEMENT SYSTEM	SC-23
LIBRARIAN.....	SC-23
SIMULATION AND MODELING SYSTEM	SC-24
GPSS	SC-24
TEXT EDITOR	SC-25
SCRIPT	SC-25
FOURTH GENERATION LANGUAGE	SC-26
FOCUS	SC-26
INDEX	Index-1

SECTION 1

LOGON PROCEDURES

1



Much of the information in this section is also found in the "new user" documentation called *Getting Started*. After the initial distribution, *Getting Started* will be sent only to new users. LOGON PROCEDURES are repeated here for those users who only log on occasionally or for those users who have training responsibilities. References to specific procedures for "new users," such as changing passwords at the first logon, have been removed.

HARDWIRED OR DIAL-UP?

In order to use the NCC IBM mainframe, you must have a User-ID and a terminal linked to the NCC. This link can be through hardwired equipment which does not require dialing or through a dial-up modem hooked to your terminal. Let's address the hardwired terminals first. Discussion about dial-up terminals then follows.

HARDWIRED TERMINALS

First make sure that your terminal is turned on. If you are hardwired to the NCC, your screen should appear like the following one. If it does not, press the RESET key or the ENTER key and the screen should appear; or turn the terminal off and then on again. If it still does not appear, call User Support.



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

WELCOME TO THE
U.S. ENVIRONMENTAL PROTECTION AGENCY
TELECOMMUNICATIONS NETWORK
ENTER COMMAND OR M FOR MENU

4BQa

012/001 31 FT

If you press **M** and **ENTER**, the following menu screen will appear:

When the logon process becomes routine, you may bypass this menu screen by entering a command such as TSO (for the NCC's Time Sharing Option) or by entering the code for another machine or LMF that allows you access such as NY for the NY LMF.

U.S. EPA TELECOMMUNICATIONS NETWORK MENU			TERM: T260624	
15:20 Tuesday August 23, 1988			MODEL 2	
NATIONAL COMPUTER CENTER			LOGICAL MAINFRAME	
PF KEY	SELECTION	SERVICE	PFKEY	SELECTION SERVICE
PF13	PCICS	CICS-Production	PF15	NY TSO-New York LMF
PF14	DCICS	CICS-Development	PF16	DV TSO-Denver NEIC LMF
PF19	TSO	TSO-NCC	PF17	WIC TSO-Wash Info Center
PF8	EMAIL	EMAIL ACCESS	PF20	SE TSO-Seattle LMF
PF10	ARBITER	Arbiter	PF21	AT TSO-Atlanta LMF
			PF22	DA TSO-Dallas LMF
			PF23	KC TSO-Kansas City LMF
			PF24	PH TSO-Philadelphia LMF
			PF2	CI TSO-Cincinnati LMF
			PF3	BN TSO-Boston LMF
			PF4	CH TSO-Chicago LMF
			PF5	SF TSO-San Francisco LMF

HIT PFKEY OR ENTER SELECTION ■

4BQa 012/001 31 FT



Note the terminal ID number in the upper right-hand corner. You may need this number to report a network problem. It's a good idea to copy it down so that you can refer to it later if the hardware malfunctions and does not allow you to look it up.

If you choose, for example, TSO at the NCC, the following will appear:

TSO/E LOGON

T260624

PF1/PF13 ==> HELP
PF3/PF15 ==> LOGOFF
PA1 ==> Attention
PA2 ==> Reshow

ENTER LOGON PARAMETERS BELOW

USERID ==>
PASSWORD ==>
PROCEDURE ==>
ACCT NMBR ==>
FIMAS ==>
SIZE ==>
COMMAND ==>

RACF LOGON PARAMETERS

NEW PASSWORD ==>
GROUP IDENT ==>
BIN NUMBER ==>
SYSOUT DEST ==>

ENTER AN 'S' BEFORE EACH OPTION DESIRED BELOW

-NOMAIL
-NONOTICE
-NOSUMMARY
-CANCEL

480a

012/001 31 FT

Just type in your three-character User-ID and press the ENTER key.

The next screen shows the cursor sitting at the password entry point. If you have logged on before with this User-ID, you need only to type in the password (it will not be displayed) and press ENTER.

To change your password, type your current password in the password field, TAB to the new password field, type the new password, and press ENTER. Then the cursor is positioned for you to retype the new password for verification. As soon as you press ENTER, your new password becomes effective.

----- TSO/E LOGON -----		T260624
PF1/PF13 ==> HELP	PF3/PF15 ==> LOGOFF	PA1 ==> Attention PA2 ==> Reshow
ENTER LOGON PARAMETERS BELOW		RACF LOGON PARAMETERS
USERID ==> III		
PASSWORD ==> █	NEW PASSWORD ==>	
PROCEDURE ==> \$EPATSO	GROUP IDENT ==>	
ACCT NMBR ==> ACCT		
FIMAS ==> FFFFMUUU	BIN NUMBER ==>	Bbbb
SIZE ==>	SYSOUT DEST ==>	
COMMAND ==>		
ENTER AN S BEFORE EACH OPTION DESIRED BELOW		
-NOMAIL	-NONOTICE	-NOSUMMARY -CANCEL
<div style="display: flex; justify-content: space-between; align-items: center;"> 480a 012/001 31 FT </div>		



If you have problems with this screen, contact User Support.

You must change the password in the following cases:

- **If a “PASSWORD EXPIRED” message appears.**
- **If your password has been reset by User Support.**

A password has the following characteristics:

- **Contains from 6 to 8 alphanumeric or national characters (\$, #, or @). There must be at least one alpha and one numeric character. Blanks are not allowed.**
- **Is unique to the associated User-ID and cannot equal the User-ID.**
- **Must be changed at least every 90 days. (Will be date stamped when changed.)**
- **Cannot be changed back to either of the 10 most recently used passwords. (In other words, you can't use the current or the previous 10.)**
- **Must not be included with any output.**
- **Must be obliterated on terminal devices through a clear screen or overprint.**
- **Should be memorized and not written down.**

The next screen, as shown below, is the end of the logon process. Note the list of NEWS ALERT titles. The READY prompt indicates that you are in the TSO environment and may enter TSO commands.

```

ICH700011 III          LAST ACCESS AT 15:25:47 ON MONDAY, AUGUST 22, 1988
IKJ564551 III          LOGON IN PROGRESS AT 15:38:24 ON AUGUST 23, 1988
***
08/18/88: FOCUS 5.5.3 AVAILABLE FOR TESTING, REVISED.          -SEE NEWS ALERT 1
08/11/88: UPGRADED WIC PRINTER LIMIT                             -SEE NEWS ALERT 2
08/11/88: NATURAL DYNAMIC PARAMETER AVAILABILITY                 -SEE NEWS ALERT 3
READY

```

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012/001 31 FT



Some terminals may require that ENTER be pressed twice.

DIAL -UP TERMINALS

Dial-up terminals, often called line terminals, can be linked to the NCC in a variety of ways. The common denominator is the modem which requires you to dial a telephone number before the link is complete.

Modems and Software

Modems are the dialing hardware which link the telephone line to your terminal. Getting your modem's "attention" through your keyboard may require help from someone at your site who is familiar with your modem and terminal. Once you know how to "talk" to your modem, you must determine the telephone number to dial. Along with the modem, you need some type of telecommunications software (for example, Crosstalk or KERMIT).

Type of Link

The Network Support Group has, in most instances, worked with your site's management to establish communications. You may be linked to the NCC through the Washington Rotor, TYMNET, or the Develcon. The type of linkage generally depends on your location and how many other users are in your area. Try to determine the type of link that has been established or what telephone number you must dial for access. If your local sources do not have this information, call User Support at:



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

Hardwired "Look-Alike"

At some sites, you may be able to link to the NCC in a "full-screen" manner. The Terminal/Controller Processor (TCP) allows you to use the full-screen capabilities much like a user with a hardwired terminal. In that case, after you have chosen TCP, follow the logon procedures for hardwired terminals previously discussed.

When you have successfully established a connection to the NCC, the following menu will appear.

WELCOME TO THE ENVIRONMENTAL PROTECTION AGENCY NATIONAL COMPUTER CENTER

Please enter one of the following selections

IBMPSI for IBM
TCP for IBM 3270 EMULATION
VAXA for VAX SYS A
VAXB for VAX SYS B
EMAIL for EMAIL

Enter selection

To choose the NCC IBM mainframe for a line terminal, type IBMPSI and press ENTER. Then the following menu appears.

Enter selection IBMPSI
CONNECTED
connected 310600908827/110504

U S EPA (TTY-X25-IBM)

- A TSO - NCC
- B NY
- C NEIC
- D WIC
- E SEATTLE
- F ATLANTA
- G DALLAS
- I KANSAS CITY
- J PHILADELPHIA
- K CINCINNATI
- L SAN FRANCISCO
- M BOSTON
- N CHICAGO

SELECTION ?

To access TSO at NCC, select A and then press ENTER. The other selections are LMF sites. Then the following message appears.

SELECTION ? A
IKJ56700A ENTER USERID -

If this is the first time you have logged on with this User-ID, your profile reflects the NOPROMPT characteristic. After you type your User-ID and press ENTER, the following will then appear.

```
SELECTION ? A
IKJ56700A ENTER USERID -
111
IKJ56705I MISSING PASSWORD FOR 111
IKJ56400A ENTER LOGON OR LOGOFF -
```

The system is asking for a single line logon command. Type in the following and use your assigned values:

① ② ③ ④ ⑤
LOGON 111/pswd A(acct) S(nnnn) PROC(\$EPATSO)

- ① Your 3-character User-ID.
- ② Your password (6-8 characters).
- ③ Your account code.
- ④ A size parameter, for example, 3000 (may be omitted).
- ⑤ The procedure name (usually \$EPATSO, but may be different depending on your application).

The following will then appear.

LOGON III/pswd A(acct) S(nnnn) PROC(\$EPATSO)
ICH700011111 LAST ACCESS AT 13 50 42 ON TUESDAY, AUGUST 30, 1988
IKJ56455111 LOGON IN PROGRESS AT 14 00 01 ON AUGUST 31, 1988
ENTER FIMAS ID -

The FIMAS code identifies a specific ADP system or activity and associates computer usage statistics with that activity. The FIMAS code is depicted as follows:

ffffmmuu

Where ffff is a 4-character/digit code, m is a mode character, and uuu is an optional 3-position field for your use. Modes can be one of the following:

F	Feasibility study.
D	Development of software.
T	Testing.
M	Maintenance.
P	Production.
R	Retrieval.
U	Update.

Consult with your ADP Coordinator for more information on FIMAS codes.

After you have typed the FIMAS code and pressed ENTER, a list of NEWS ALERT titles appears.

The next screen, as shown below, is the end of the logon process.

ENTER FIMAS ID -
ffffmuuu

08/18/88: FOCUS 5.5.3 AVAILABLE FOR TESTING, REVISED.

08/11/88: UPGRADED WIC PRINTER LIMIT

08/11/88: NATURAL DYNAMIC PARAMETER AVAILABILITY
READY

-SEE NEWS ALERT1

-SEE NEWS ALERT2

-SEE NEWS ALERT3

You can now change your profile to prompt you for your logon information. At READY, just type the command PROFILE PROMPT and press ENTER. The following logon sequence will appear the next time you log on.

IKJ56700A ENTER USERID -

iii

IKJ56714A ENTER CURRENT PASSWORD FOR iii

pswd

ICH700011 iii LAST ACCESS AT 15:34:38 ON WEDNESDAY, AUGUST 31, 1988

IKJ56700A ENTER ACCOUNT NUMBER -

acct

IKJ56700A ENTER PROCEDURE NAME -

\$epatso

IKJ564551 iii LOGON IN PROGRESS AT 13:51:02 ON SEPTEMBER 1, 1988

ENTER FIMAS ID -

ffffmuuu

08/18/88: FOCUS 5.5.3 AVAILABLE FOR TESTING, REVISED.

08/11/88: UPGRADED WIC PRINTER LIMIT

08/11/88: NATURAL DYNAMIC PARAMETER AVAILABILITY

READY

-SEE NEWS ALERT1

-SEE NEWS ALERT2

-SEE NEWS ALERT3

SECTION 2 TSO AND ISPF

TIME SHARING OPTION

Time Sharing Option (TSO) is a system which allows you to use the IBM mainframe from a low-speed terminal or from a 3270-type terminal. TSO has text editing capabilities, a remote batch facility for executing programs, and an extensive command procedure (CLIST) capability.

When you log on to TSO at the NCC and get the READY prompt, you can type a command with its operand(s) or the name of a CLIST. The most often used commands and their meanings are listed below:

TSO COMMANDS

<u>Command</u>	<u>Meaning</u>
ALLOCATE	Used to associate a data set with a program or to create a new data set.
ATTRIBUTE	Allows multiple allocations of data sets with the same characteristics.
FREE	Used to deallocate data sets or to delete attribute lists.
LIST	Displays the contents of a data set on your terminal.
PRINTOFF	Used to print a copy of a specified data set.
IED	Used to manipulate data with such functions as input, edit, store, and retrieve. INPUT mode is used to enter new data, a line at a time. EDIT mode allows you to use sub-commands.

**EDITING
SUBCOMMANDS**

The following are subcommands commonly used with the IED command.

<u>Subcommand</u>	<u>Meaning</u>
UP, DOWN TOP, BOTTOM	Moves the line pointer within a data set.
FIND	Searches for a specified character string.
DELETE	Used to remove a line or range of lines.
INSERT	Used to add lines to a data set.
CHANGE	Used to replace a line or a string.
COPY	Duplicates any line or block of lines.
MOVE	Moves any line or block of lines to a new location.
SUBMIT	Used to start a TSO batch job from a terminal.
SAVE	Saves editing changes with a data set.
END	Terminates an IED session.

HELP COMMAND

The HELP command is a comprehensive source of information readily available to you at the terminal. You can type HELP at the READY prompt and a list of topics appears. Then just type HELP and the topic name to display information on that subject. You can

also access the same **HELP** facility from within **ISPF** by typing the following on the **COMMAND ===>** line:

TSO HELP topic

Topic is optional and indicates the command for information display.



For a general discussion of **TSO** and the **TSO** startup **CLIST**, see the following online documentation:

JUSD.USERS.REFER(TSOISPF)
JUSD.TSOE.DATA
JUSD.TSOE.V1R4.DATA

For more information and detailed explanations of **TSO** commands and their operands, see the following online documentation:

JUSD.TSOLINE.GUIDE

INTERACTIVE SYSTEM PRODUCTIVITY FACILITY

Interactive System Productivity Facility (ISPF) is an **IBM** product designed to improve your productivity. It is a menu-driven system used on full-screen terminals under the control of **TSO**.

To access **ISPF**, type **ISPF** at the **READY** prompt. The **Primary Option Menu** appears as follows:

OPTION □□□▶

0	ISPF PARMS	- Specify terminal and user parameters	Userid	-	III
1	BROWSE	- Display source data or output listings	Prefix	-	IIIAAAA
2	EDIT	- Create or change source data	Terminal	-	3278
3	UTILITIES	- Perform utility functions	PF Keys	-	24
4	FOREGROUND	- Invoke language processors in foreground	Time	-	10:45
5	BATCH	- Submit job for language processing	Date	-	90/01/17
6	COMMAND	- Enter TSO command or CLIST	Julian	-	90 017
7	DIALOG TEST	- Perform dialog testing	Proc	-	\$EPATSO
8	LM UTILITIES	- Perform library management utilities functions	Applid	-	ISR
9	IBM PRODUCTS-	- Additional IBM program development products			
10	SCLM	- Software Configuration and Library Manager			
C	CHANGES	- Display summary of changes for this release			
T	TUTORIAL	- Display Information about ISPF/PDF			
X	EXIT	- Terminate ISPF using log and list defaults			
E	EPA	- EPA/NCC Application Option Menu			
G	Group	- Group Application Option Menu			
U	User	- User Defined Application Option Menu			

Enter END command to terminate ISPF

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From this menu you can browse, edit, delete, rename, compress or allocate a data set, as well as use other utilities and applications.

If, for example, you choose Option 2 EDIT, you can create or modify data using ISPF commands.

PRIMARY ISPF COMMANDS

Primary ISPF commands are those commands which are entered in the COMMAND/OPTION field (==>). Some primary commands can be entered on every ISPF panel. Others apply only to certain panel types and can be used only on those panels. In many instances primary ISPF commands correspond to the PF keys, such as the following:

END	RETRIEVE	SPLIT
RETURN	HELP	

PRIMARY EDIT COMMANDS

Enter Primary Edit Commands, such as the following commonly used ones, at the COMMAND ==>:

<u>Command</u>	<u>Meaning</u>
CANcel	Returns to the previous menu with changes not saved.
END	Saves and returns to the previous menu.
SAVE	Saves but does not end.
FIND	Locates a specified character string.
CHANGE	Finds and changes the next occurrence of a string.

ISPF EDIT LINE COMMANDS

Enter line commands by overtyping the line number field of any line. The most frequently used line commands are as follows:

<u>Command</u>	<u>Meaning</u>
I	Inserts a line below the cursor.
D	Deletes the line.
R	Repeats the line.
C	Copies the line.
M	Moves the line.
A	After

<u>Command</u>	<u>Meaning</u>
B	Before
O	Overlay
X	Excludes the line.
F	Shows the first excluded line.
L	Shows the last excluded line.
<	Shifts data to the left.
>	Shifts data to the right.
(Shifts column to the left.
)	Shifts column to the right

Each of these line commands can be followed by a number to indicate the number of times to execute the command. With the exception of the A, B, F, L, and I commands, you can also make a line command apply to a block of lines by entering the line command twice on the first line of the block and twice on the last line.

PF KEYS

Program Function (PF) keys are a shortcut method of entering commands, and their functions are stored in your TSO/ISPF profile. They can be tailored to suit your requirements.

**Default Assign-
ments for PF Keys**

The default assignments for PF keys are as follows:

<u>PF Key</u>		<u>Function</u>
PF1	PF13	HELP
PF2	PF14	SPLIT
PF3	PF15	END
PF4	PF16	RETURN
PF5	PF17	RFIND
PF6	PF18	RCHANGE
PF7	PF19	UP
PF8	PF20	DOWN
PF9	PF21	SWAP
PF10	PF22	LEFT
PF11	PF23	RIGHT
PF12	PF24	RETRIEVE

HELP COMMAND

The ISPF HELP command is a comprehensive source of information. When you type HELP on the COMMAND ==> line while in ISPF, you will access the ISPF Tutorial. The type of information that will be displayed depends on where you are when you type the HELP command. For example, if you choose Option 2, Edit and then type HELP on the command line, information on the Edit capabilities will be displayed.



For more general information on ISPF, see the following online documentation:

JUSD.USERS.REFER(TSOISPF)

For more details about ISPF commands, see the following online documentation:

JUSD.ISPF.GUIDE

Or, for information on commands and the PF keys, select the TUTORIAL (T) from the ISPF/PDF Primary Option Menu.

SECTION 3 DATA SETS

NAMING DATA SETS

The data set name is assigned to a particular set of information and distinguishes that set of information from others on the disk pack or tape. Data set names must conform to specific standards.

OPERATING SYSTEM STANDARDS

The operating system requires that all data set names are strings of up to 44 characters. They must also conform to the restrictions listed below:

- Characters are alphabetic (A-Z), numeric (0-9), national (@, #, and \$), and periods (.).
- The whole name must be divided into segments (qualifiers) of up to eight characters each. For example, SEPT.REPORT.DATA is the name of a data set whose qualifiers are SEPT, REPORT, and DATA.
- The first character of the data set name and the first character after a period must be alphabetic or national.
- The last character of a data set name may not be a period; nor may there be two consecutive periods.

NCC CONVEN- TIONS FOR USER DATA SETS

Data sets at NCC are required to be cataloged and to have standard names. To insure that one user's data sets do not conflict with another user's, NCC has adopted the standard of prefixing the data set name with User-ID and account. For example, IIIAAAA.SEPT.REPORT.DATA is a fully qualified, cataloged data set.

NCC CONVENTIONS FOR SYSTEM DATA SETS

Library names for vendor supported software are standardized as follows:

- For IBM software, the prefix is SYS1.
- For other vendors, the prefix is SYS2. and the product name. For example, SYS2.SAS.
- Documentation is prefixed with JUSD.
- Other qualifiers such as LOAD and OBJECT are added from a standardized list for descriptive purposes.

SYSTEM CATALOG CONVENTIONS

The operating system makes an entry in the system catalog for each qualifier in a fully qualified data set name with pointers to the lower level qualifiers or to the qualified name. With this type of organization, certain utility programs can list all the data sets with any specified level of qualification. For this reason, a character string used as a qualifier may not also be used as a qualified name when both are preceded by an identical series of qualifiers. For example, the names

IIIIAAAA.SOURCE.SPROJECT

IIIIAAAA.SOURCE

would cause a conflict. The solution is to name the first data set

IIIIAAAA.SPROJECT.SOURCE

NON-STANDARD DATA SETS

Data sets that are not cataloged or that have non-standard names are subject to deletion.



More information on data set naming standards can be found in the following online documentation:

**JUSD.USERS.REFER(STANDARD)
JUSD.ISPF.GUIDE**

ALLOCATING DATA SETS

The process of creating a new data set is called “allocating” a data set and accomplishes two tasks:

1. Reserves disk space so there is a place for the information that the data set will contain.
2. Enters the name and address of the data set in the system catalog so that the operating system can find the data set when you ask for it again.

There are a variety of ways to create a data set, depending mainly on your application and your terminal connection.

TSO ALLOCATE COMMAND

Used in a TSO environment, the TSO ALLOCATE command has the following format:

```
ALLOCATE    DATASET(data-set-name)
            USING(attribute-list-name)
            SPACE(primary,secondary)
              BLOCKS TRACKS
              CYLINDERS
              DIR(value)
              BLKSIZE(value)
            DSORG(data-set-organization)
            RECFM(record-format)
            LRECL(record-length)
            NEW SHR OLD MOD
            REUSE RELEASE
```

A description of the operands follows:

<u>Operand</u>	<u>Description</u>
DATASET	Specifies the name of a data set to be allocated.
USING	Uses characteristics assigned to an attribute list created with the ATTRIB command.
SPACE	Denotes the primary and secondary space allocation. If SPACE is used, a unit type must be specified.
BLOCKS	Indicates data set is allocated in blocks.
TRACKS	Indicates data set is allocated in tracks.
CYLINDERS	Indicates data set is allocated in cylinders.
DSORG	Organization of data sets. Types are PS (Physical Sequential) or PO (Partitioned Organization).
RECFM	Establishes the format and characteristics of data set records. Some options are fixed block (FB) and variable block (VB).
LRECL	Establishes the maximum number of characters that can be placed on a line. Largest valid value is 32,756.

<u>Operand</u>	<u>Description</u>
NEW	Data set is being newly created.
OLD	Data set exists. You want exclusive use.
SHR	Data set exists. More than one person can use the data set.
MOD	Used only with sequential data set; indicates output is to be appended to the current contents of the data set.
RELEASE	Returns unused space after a data set is freed.



For more information on determining space, record length, and optimum blocksize, see the following on-line documentation:

JUSD.USERS.REFER(DASD)
JUSD.USERS.REFER(JCLDD)

ALLOCATE FOR LINE TERMINAL USERS

The IED Line Editor will allow you to create a new data set simply with the following command at the TSO READY prompt:

IED new.data.set.name

The system responds with the following:

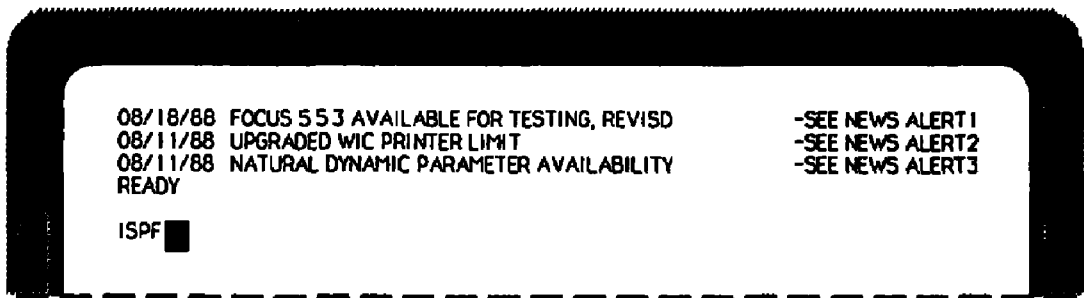
```
IKJ523201 DATA SET OR MEMBER NOT FOUND, ASSUMED TO
BE NEW
INPUT
00010
```


TSO will assign default characteristics, and when the data is entered and END SAVE is specified, TSO will catalog the new data set.

**ALLOCATE
USING ISPF
UTILITY**

The easiest way to allocate a new data set is with the ISPF data set utility available to full-screen terminal users.

To get into the ISPF environment, type ISPF at the READY prompt, as shown below and press ENTER:



The following Primary Option Menu appears:

```

----- ISPF/PDF PRIMARY OPTION MENU -----
OPTION ----> █

0 ISPF PARMs - Specify terminal and user parameters
1 BROWSE - Display source data or output listings
2 EDIT - Create or change source data
3 UTILITIES - Perform utility functions
4 FOREGROUND - Invoke language processors in foreground
5 BATCH - Submit job for language processing
6 COMMAND - Enter TSO command or CLIST
7 DIALOG TEST - Perform dialog testing
8 LM UTILITIES - Perform library management utilities functions
9 IBM PRODUCTS- Additional IBM program development products
10 SCLM - Software Configuration and Library Manager
C CHANGES - Display summary of changes for this release
T TUTORIAL - Display information about ISPF/PDF
X EXIT - Terminate ISPF using log and list defaults
E EPA - EPA/NCC Application Option Menu
G Group - Group Application Option Menu
U User - User Defined Application Option Menu

Userid - III
Prefix - IIIAAAA
Terminal - 3278
PF Keys - 24
Time - 10:45
Date - 90/01/17
Julian - 90.017
Proc - $EPATSO
Applid - ISR

```

Enter END command to terminate ISPF.

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012/001 31 FT

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Choose Option 3, UTILITIES, and the following screen appears:

----- UTILITY SELECTION MENU -----
 OPTION ==> ■

- | | |
|---------------|---|
| 1 LIBRARY | - Compress or print data set Print index listing.
Print, rename, delete, or browse members |
| 2 DATASET | - Allocate, rename, delete, catalog, uncatalog, or
display information of an entire data set |
| 3 MOVE/COPY | - Move, copy, or promote members or data sets |
| 4 DSLIST | - Print or display (to process) list of data set names
Print or display VTOC information |
| 5 RESET | - Reset statistics for members of ISPF library |
| 6 HARDCOPY | - Initiate hardcopy output |
| 8 OUTLIST | - Display, delete, or print held job output |
| 9 COMMANDS | - Create/change an application command table |
| 10 CONVERT | - Convert old format menus/messages to new format |
| 11 FORMAT | - Format definition for formatted data Edit/Browse |
| 12 SUPERC | - Compare data sets (Standard dialog) |
| 13 SUPERC | - Compare data sets (Extended dialog) |
| 14 SEARCH-FOR | - Search data sets for strings of data |

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012/001 □—□ 31 FT

Now choose Option 2, DATASET, and the following screen appears:

----- DATA SET UTILITY -----	
OPTION ==> <input type="checkbox"/>	
A - Allocate new data set	C - Catalog data set
R - Rename entire data set	U - Uncatalog data set
D - Delete entire data set	S - Data set information (short)
blank - Data set information	
ISPF LIBRARY:	
PROJECT	==>
GROUP	==>
TYPE	==>
OTHER PARTITIONED OR SEQUENTIAL DATA SET:	
DATA SET NAME	==>
VOLUME SERIAL	==> (If not cataloged, required for option "C")
DATA SET PASSWORD	==> (If password protected)
<div> <div>4BQa</div> <div>012/001 <input type="checkbox"/> <input type="checkbox"/> 31 FT</div> </div>	

Select A at the OPTION arrow, tab down to DATA SET NAME, type in the your chosen name, and press ENTER. The following screen appears:

----- ALLOCATE NEW DATA SET -----		
COMMAND ----> █		
DATA SET NAME IIIAAAA NEW DATA SET NAME		
VOLUME SERIAL	---->	(Blank for authorized default volume) *
GENERIC UNIT	----> DISK	(Generic group name or unit address) *
SPACE UNITS	----> TRKS	(BLKS, TRKS, or CYLS)
PRIMARY QUANTITY	----> 10	(In above units)
SECONDARY QUANTITY	----> 5	(In above units)
DIRECTORY BLOCKS	----> 25	(Zero for sequential data set)
RECORD FORMAT	----> FB	
RECORD LENGTH	----> 80	
BLOCK SIZE	----> 6160	
EXPIRATION DATE	---->	(YY/MM/DD YY DD in Julian form DDDD for retention period in days or blank)
(* Only one of these fields may be specified)		

480a	012/001	31 FT

Note that the majority of the information is already filled in. These characteristics are those of the data set that you last allocated and may be changed just by pressing TAB and overtyping. If a volume-serial number appears, be sure to blank it out using the space bar. When you press ENTER, the following screen appears:

FILE STRUCTURE

PARTITIONED VERSUS SEQUENTIAL

Two basic types of data set organization are available on the IBM.

- Partitioned data sets (PDSs) are “partitioned” into various segments with “member” names. For example, the fully qualified data set `JUSD.USERS.REFER` has over 100 members, such as `CONTENTS` or `##README`, which are denoted by parentheses and are added to the end of the data set name as in `JUSD.USERS.REFER(CONTENTS)`.
- Sequential data sets are not subdivided.

Users are encouraged to change sequential data sets into members of partitioned data sets for these reasons:

- It is more efficient to manage partitioned data sets.
- A PDS structure conserves more disk space than does a sequential file structure.



For more information on partitioned versus sequential data sets, see the following online documentation:

JUSD.USERS.REFER(PDS)

SECTION 4 DISK MANAGEMENT

DIRECT ACCESS STORAGE DEVICE MANAGEMENT

Direct Access Storage Device (DASD) Management at NCC ensures integrity of your data on disks, maintains maximum disk space availability, and promotes optimal use of disk space. The DASD management practices that most directly affect you are those related to space release, data set migration (archiving), and the daily backing up of new or modified disk data sets.

DATA FACILITY/ HIERARCHICAL STORAGE MANAGER

The Data Facility/Hierarchical Storage Manager (DF/HSM) provides space management, backup, and recovery functions to manage data sets automatically on a variety of storage devices. It thus reduces manual intervention and optimizes the use of primary storage space, such as USRxxx volumes. It does so by moving (migrating) and compacting "aged" data sets and then automatically recalling them to primary volumes when they are referenced by a batch job or needed during a TSO session.

The current storage hierarchy at the NCC is as follows:

1. Primary - USRxxx volumes. Incremental backups are taken when the data set is modified, up to a limit of seven generations.
2. Migration Level One - ML1xxx volumes. Uses the Migration Control Data Set (MCDS).
3. Migration Level Two - Mxxxxxx volumes. Also uses MCDS.

After DF/HSM has migrated data sets, the System Catalog indicates that they are cataloged to the volume MIGRAT. Although there is physically no such volume mounted on the system, DF/HSM operates as if there were. For example, if you reference migrated data sets via a standard TSO or batch job command, DF/HSM will recall the data sets for you and then will process your TSO command or proceed with the batch job.

HLIST COMMAND

The HLIST command lists information about migrated and/or backed up data sets using the MCDS or the BCDS (Backup Control Data Set). If you do not specify which type of information is desired, DF/HSM will list migrated (MCDS) data sets.

The following will list information about the specified data set from both the MCDS and the BCDS.

```
HLIST BOTH DATASETNAME(data.set.name)
```

The following will list information about the specified backed up data set from the BCDS to the terminal:

```
HLIST BCDS DATASETNAME(data.set.name)
```

The following will list information about data sets beginning with prefix 'iiiiaaa' within the MCDS to your terminal:

```
HLIST LEVEL(iiiiaaaa)
```

The following will list information about data sets beginning with prefix 'iiiiaaa' within the MCDS to a permanent data set:

```
HLIST LEVEL(iiiiaaaa) ODS(data.set.name)
```



The results of the HLIST command default to the terminal unless an OUTPUT data set parameter is specified.

HRECOVER COMMAND

The command HRECOVER is used to recover a backup version of one or more data sets.

The following will recover a data set from the most recent backup generation:

```
HRECOVER 'iiiiaaa.data.set.name'
```

The following will recover a data set from the 'x' backup generation:

```
HRECOVER 'iiiiaaa.data.set.name' GENERATION(x)
```



The generation number can be obtained via the HLIST BCDS command. Note that no minus sign is used with the generation number.

HMIGRATE COMMAND

The HMIGRATE command is used to explicitly migrate one or more data sets.

The following will migrate a data set from primary DASD to a migration level 2 volume with a 2-year expiration date.

```
HMIGRATE 'iiiiaaa.data.set.name'
```

The following will migrate a data set from primary DASD to a migration level 2 volume with a 7-year expiration date.

```
HMIGRATE 'iiiiaaa.data.set.name' PERM
```



When DF/HSM recalls a data set from a migration level two volume, the data set is physically removed from that migration volume. The data set is treated as a new allocation, and if deleted before another backup is taken, the data set is lost. To ensure that the data set is maintained for more than one year, you must reissue the HMIGRATE command.

HRECALL COMMAND

The following will recall a data set from a migration pack to a USRxxx disk pack without tying up the TSO session.

HRECALL data.set.name NOWAIT

HDELETE COMMAND

HDELETE deletes one or more migrated data sets from a migration volume. DF/HSM deletes the data set without recalling it to a primary volume. When DF/HSM deletes the data set, it maintains any backup versions of the data set and the information in the BCDS.



HDELETE cannot be used to delete data sets from primary volumes or backup volumes.

The following deletes a migrated data set from the MCDS without waiting for the command to complete:

HDELETE data.set.name NOWAIT

CLEANUP OF DF/HSM POOL

Ongoing cleanup of the BCDS is necessary to control growth of the DF/HSM backup volume pool. BCDS entries are eligible for deletion if one of the following conditions is met:

1. A BCDS entry is over 35 days old for a data set that is no longer cataloged.

2. A data set has been unused for 35 days and has been migrated to the Migration Level Two. (In this case, all but the most recent BCDS entry is eligible for deletion.)
3. A data set has been migrated for at least 2 months. (In this case, the last BCDS entry is eligible for deletion.)

Ongoing cleanup of the MCDS is also necessary to control growth of the DF/HSM Migration Level Two pool. MCDS entries are eligible for deletion 1 year from the date of migration unless the data set was migrated explicitly by the user with the HMIGRATE command for 2 or 7 years.



For more information on DF/HSM and noted incompatibilities with the IEHMOVE utility and the TSO commands DELETE and ALTER, see the following online documentation:

**JUSD.USERS.REFER(DFHSM)
JUSD.DFHSM.DATA**

DF/HSM does not support ISAM data sets. These data sets reside on ISAMxx volumes and are maintained by Automated Space Management (ASM2).



For more information on ASM2's archive and dearchive commands, see the following online documentation:

**JUSD.USERS.REFER(DISK)
JUSD.DASD.DATA**

SECTION 5 TAPE MANAGEMENT

TAPE STORAGE

NCC uses IBM 3480 magnetic cartridge tape technology as the default tape storage medium. Magnetic tape at the NCC is used most commonly for offline storage of extremely large and/or infrequently used data sets. Because of the way the read/write head operates, tapes are used almost exclusively for data files which are processed in their physical order, and which need not be shared by more than one program at any given time. The magnetic tape technology incorporates new features that improve tape performance and reliability. This new technology provides higher data transfer rates, data compression, and superior error recovery capabilities. Consider the following characteristics when you are choosing tape storage:

- When data on a tape is modified, the entire reel or cartridge must be copied to another reel with the appropriate changes made to individual records as they are carried forward. A single reel or cartridge is an awkward medium for storing volatile files.
- A reel of tape or cartridge may not be shared by multiple jobs, and two or more data sets on the same reel must be processed one after the other by a single job.

AVAILABLE TAPES

The NCC maintains a supply of 9-track, 6250 bits per inch (bpi) magnetic tapes and 18-track, 38000 BPI tape cartridges for general use. Tapes owned and supplied by the NCC are initialized and prepared for use prior to job submission.

ASSIGNING A TAPE

Tapes are assigned at the NCC only in the batch processing mode. In other words, you must submit a batch job with the proper Job Control Language (JCL) statements and options.

To create a tape file use the DD statement in your JCL. An example follows:

```
//anyname DD DSN=IIIAAAA.tape.file.name,  
//          DISP=(NEW,CATLG,DELETE),  
//          UNIT=(TAPE,,DEFER),  
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=8000),  
//          LABEL=(1,SL,EXPDT=98240)
```

Descriptions of these statements and the most commonly-used parameters and subparameters follow:

Anyname DD. Any valid data definition name.

DSN. Tape file name which conforms to the same standards as a data set name if it is to be cataloged.

DISP. The first subparameter indicates the current status of the tape file; the second subparameter indicates the disposition at normal termination; the third subparameter indicates the disposition at abnormal termination.

UNIT. Specifies the particular I/O device type.

DCB. Data Control Block.

RECFM. Specifies the record format. The first character may be one of the following:

- U - Undefined record format
- V - Variable length records
- F - Fixed length records
- D - Variable length ASCII tape records

The following may be used as the second and/or third character in any combination:

- B - Blocked records
- S - When used with F, indicates fixed, standard format. When used with V indicates spanned records.
- A - ASA carriage control characters.
- M - Machine carriage control characters

LRECL. Specifies the length of the logical record for fixed or variable length records.

BLKSIZE. Size of each physical block in bytes.

LABEL. Tape label information.

EXPDT. Expiration date.



For more details on tape JCL, see the following online documentation:

JUSD.USERS.REFER(TAPE)

TAPE RETENTION PERIODS

The EXPDT subparameter on the tape DD statement indicates the expiration date. If you do not specify any expiration date, the system defaults to a period of 5 days. Thirteen months is the maximum length of time for retention in the tape library. Expiration subparameter values are as follows:

EXPDT=98000	Indicates a tape volume with no record in the Tape Management Catalog (usually foreign/non-NCC tapes).
--------------------	--

EXPDT=98xxx	Indicates that the tape may only be released if not referenced within xxx (001-365) days. If the tape is referenced once every xxx days, it will remain in the tape library indefinitely.
EXPDT=99000	Identifies a Generation Data Group tape.
EXPDT=99xxx	Specifies the tape as one of a set of tapes consisting of xxx tapes. Retained for the maximum of 13 months.

TAPE ARCHIVING



(FTS) 629-2385
(919) 541-2385
(800) 334-9700



Before archiving a tape, you should consider transferring the data to disk, and then archiving the data set.

The archival library provides for offsite storage of cartridge tapes containing data that needs to be retained but that has no immediate processing requirements. To qualify for placement in the archive tape-library, at least 70 percent of the tape must have been used. You are encouraged to consider migrating the data instead of the tape itself. If you choose to archive the physical tape, you must copy the tape to another tape assigned by DPSS. Upon completion of the copy, you must notify DPSS so that the tape can be transferred to the offsite archive library for storage.

TAPE DEARCHIVING

Consider the following when dearchiving a tape:

- Each trip to the archive tape library carries an additional charge.
- Advance notice of 24 hours is required before using a dearchived tape. You will be notified when it is available for processing.
- Archived tapes are considered to be permanently inactive and are not in the Tape Management Catalog so the expiration date should be EXPDT=98000.
- Dearchived tapes can be read but not written to. If you want to add data to your tape file, copy the tape file to a Tape Management System (TMS) controlled tape and then return the dearchived tape to the archive library or release it.
- Dearchived tapes will be returned to the archive library no later than 5 days from the date you were notified of availability. So, if you need more time, copy the tape file to a TMS controlled tape.

TAPESCAN UTILITY

TAPESCAN is a utility which produces a summary dump of the contents of a magnetic tape volume. Only the first 132 characters of each tape block are printed. TAPESCAN is particularly useful when the tape data set names and characteristics of the internal label of the tape are not known.

User Support will process TAPESCAN for the registered owner (or creator) of a tape. Just call User Support at one of the following telephone numbers:



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

Be prepared to supply the User Support specialist with your User-ID and the volume-serial number of your tape.

FOREIGN TAPES

Foreign tapes are those tapes not permanently stored in the tape library nor resident in the Tape Management Catalog. This category includes any tape created with the intention of removing it from the NCC or any tape submitted from an outside source for processing.

To process a foreign tape and bypass the Tape Management Catalog, you must code the expiration date in the DD JCL statement as EXPDT=98000.

A foreign tape must be properly labeled with an identification sticker which includes the following information:

- User name
- User-ID
- Account number
- Telephone number
- Bin number or mailing address
- Volume-serial number or original reel identification

Foreign tapes are assumed to be ready for processing upon arrival at the NCC unless you specifically request DPSS to label the tape or to tape mark an unlabeled tape. DPSS will notify you when the tape arrives or when it is ready for processing. DPSS will also inform you of the assigned slot number.

The JCL must include the slot number on the following tape mount statement:

```
/*TAPE Bxnnnn,vvvvvv
```

Where $x = 0$ for IBM or 2 for DEC, $nnnn$ is a slot number from 0001-9999, and $vvvvvv$ is the volume number.



At NCC, foreign tapes are also referred to as B-tapes. The name comes from the slot number which is prefaced with the letter B.

Other considerations about foreign tapes are as follows:

- A file guard ring will be inserted in every foreign tape received at NCC and a “no write ring” sticker will be placed on the face of the tape. If you want to write to your tape, you must notify DPSS when you submit the tape.
- There is no security on a foreign tape.
- Foreign tapes are automatically returned to you in 90 days. If you need to use the tape file on a foreign tape for a longer period, copy it to an NCC tape or disk.



For more information on foreign tapes, see the following online documentation:

JUSD.USERS.REFER(TAPE)

SECTION 6 JOB ENTRY SUBSYSTEM

6

WHAT IS IT?

Job Entry Subsystem (JES2) is a program that handles the order of job execution, job submission, and SYSOUT (printed and punched) output processing. The program controls the communication with high-speed Remote Job Entry (RJE) workstations and handles commands related to job and system status.

JES2 CONTROL STATEMENTS

JES2 command and control statements allow you a degree of control over the submission, execution, and retrieval of a job. The control statement is used in a set of JCL statements and has the following format:

`/*command operands`

JOBPARM STATEMENT

One of the most commonly used control statements is the JOBPARM statement which is inserted between the JOB statement and the first EXEC statement. For example:

```
/*JOBPARM COPIES=cc FORMS=fff LINES=llll  
/*JOBPARM BURST=Y(or N) DEST=dd
```

In the above statements, you can specify from 1 to 30 copies, a form number, the number of lines of print (in thousands), a bursted printout, and a destination printer.



Note that the above statements can be coded on one line without repeating JOBPARM if you do not go past column 71.

ROUTE STATEMENT

Another commonly used JES2 control statement is ROUTE which directs printed or punched output to a specific location. It also goes in a JCL stream after the JOB statement and before the EXEC statement. For example:

```
/*ROUTE PRINT HOLD
```

This **ROUTE PRINT HOLD** statement allows you to view the output before printing by using the Spool Display and Search Facility (SDSF) and then purge the output or route it to the printer of your choice using the output capabilities of SDSF.

In the following examples the **ROUTE** command allows you to send the printout to a specific printer (remote) associated with the system on which the job executes, or to another computer system (node) within the EPA network.

```
/*ROUTE PRINT R239
```

```
/*ROUTE PRINT N9
```

```
/*ROUTE PRINT N9R12
```

Other **JES2** statements inserted in a job's **JCL** can control the order of submission of data for processing, such as the **BEFORE**, **AFTER**, or **CNTL** statements.



For more details about **JES2** control statements and their formats, see the following online documentation:

JUSD.USERS.REFER(JES2CON)

JES2 OPERATOR COMMANDS

The **JES2** operator commands are the commands used by the operator of an RJE station to control its devices and the jobs whose output is routed to them. The commands have the following format:

```
/*$command operands
```



For more details on the JES2 operator commands, see the following online documentation:

JUSD.USERS.REFER(JES2OP)

JOB STREAM MANAGER AND PRIORITIES

All batch jobs which are executed on the NCC-IBM run under the control of one of the active initiators, and JES2 controls the initiators. The JES2 Job Stream Manager assigns each job to a class (a queue for similar jobs). Classes are defined according to the CPU time a job requests. Within job classes, jobs are ordered by the initiation priority which you assigned on the JOB statement. Priority establishes:

- The job's importance in relation to all other jobs in the same class.
- How much you are willing to pay for job turnaround.

Priority is defined on the JOB statement with the PRTY=n operand. Values for n can be one of the following:

- 5 - Receives the fastest batch turnaround. ADP Coordinator must approve this request. Costs six times as much as the default Priority 2. Usually the job will start within 5 minutes.
- 2 - Default value. Turnaround times vary according to job class.
- 1 - Costs one-half as much as Priority 2. Turnaround time is overnight.



For more information about batch job priorities and classes, see the following online documentation.

JUSD.USERS.REFER(SCHEDULE)

SECTION 7 PRINTING OPTIONS

PRINTING AT THE NCC

There are four basic ways to print a data set from the NCC-IBM:

- TSO PRINTOFF command
- Batch job
- ISPF LIST data set
- Special documentation utility

TSO PRINTOFF COMMAND

The TSO PRINTOFF command is entered at the TSO READY prompt. It has the following format:

PRINTOFF 'data-set-name' bin# options

<u>Options</u>	<u>Meaning</u>
CLASS(class)	SYSOUT class in which output is to be printed. System printer is A; laser printer is F.
DEST(remote)	Remote location to which SYSOUT data sets are to be routed. Form is Rnnn, RMnnn, or RMTnnn.
COPIES(nnn)	Number of copies to be printed. Default is 1.
OUTLM(lines)	Output limit in number of lines. May be 1-6 digits.
HOLD	Output is placed in HOLD queue upon deallocation; NOHOLD is default.

<u>Options</u>	<u>Meaning</u>
LIST	Prints member names; using LIST without the PRINT option will list just the member names in each PDS in DSLIST. NOLIST indicates that member names are not to be printed.
PRINT	Members are printed (following member name if LIST option is given). NOPRINT indicates that members are not to be printed.
NOMSG	Suppresses messages to the terminal.
CAPS	Output is to be converted to upper case prior to printing.
ASIS	Output is printed without conversion to upper case.
UCS(image)	Print image to be used when printed (e.g., PN for upper case).
TEXT	Output is to be considered text. Defaults to ASIS UCS(TN).
FORMS(form)	Form (type and size of paper) on which the data set is to be printed.
HEADING	Output is to have heading information generated by PRINTOFF; heading will contain data set name.
NOHEADING	Output is not to have heading information.

<u>Options</u>	<u>Meaning</u>
SNUM	Last 8 columns of fixed-length records or first 8 columns of variable-length records will not be printed. Allows sequence numbers to be suppressed from the print.
ASA	Data set contains ASA carriage controls in Column 1. Not necessary if RECFM indicates carriage control.
VOLUME(#)	Volume where data sets to be printed are found. Used for all data sets specified in the data set list. Not required for cataloged data sets.
BURST	Output is to be separated into sheets, and sprocket holes are stripped off. Otherwise, output is printed in normal fanfold mode.



For more information on the PRINTOFF command, see the following online documentation:

JUSD.USERS.REFER(PRINTOFF)

BATCH PRINTING

You can also print a data set using a set of Job Control Language statements in the batch mode. The general form of the DD statement to print is as follows:

```
//ddname DD SYSOUT=class,optional-parameters
```

The most commonly used SYSOUT classes are as follows:

- A Output goes to a system printer.
- F Output goes to the IBM 3800 laser printer. To specify a special form, the format is as follows:

SYSOUT=(F,nnnn)

Where nnnn is the 4-digit form number.

Batch Utility for Printing

The online data set JUSD.UTILITY.DATA can be used to print data sets. Access the member PRINT to print a data set on the system printer on 14-7/8" by 11" paper in upper case or the member PRNTTEST to print a data set on the laser printer in compressed print on 11" by 8-1/2" paper. Just substitute your job card information and data set name and submit the job for processing. Then type CANCEL (or CAN) on the COMMAND ==> line to restore the utility to its previous version.



For more information on printing, see the following online documentation:

JUSD.USERS.REFER(PRINT)
JUSD.USERS.REFER(NCCLASER)
JUSD.USERS.REFER(PNTNFORM)

OUTPUT JCL Statement

Used in conjunction with the DD statement, the OUTPUT JCL statement can specify options for a SYSOUT data set such as destination, number of copies, class, spacing, or form number. The OUTPUT JCL statement will allow you to print a job locally while at the same time send the same job to a distant site for printing.



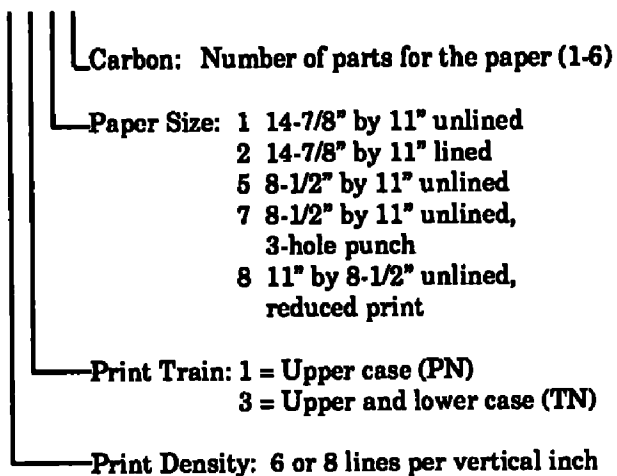
For more information on the OUTPUT JCL statement, see the following online documentation:

JUSD.USERS.REFER(JCLOUT)

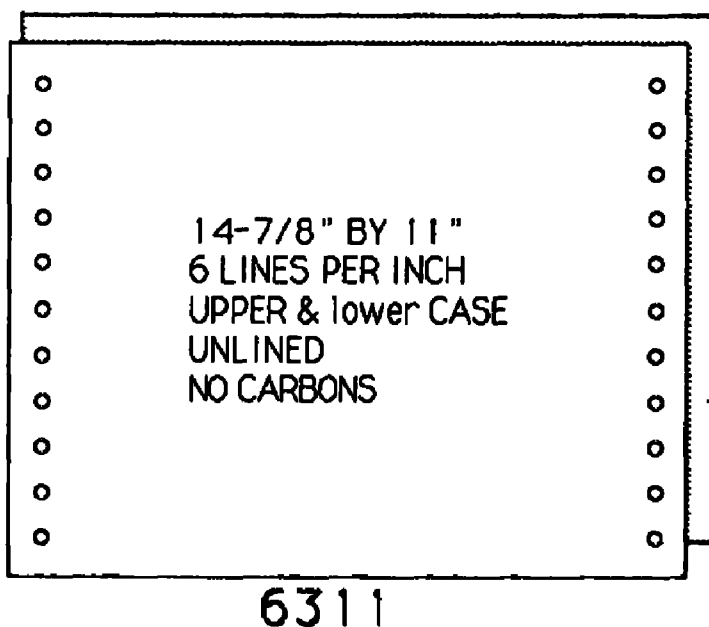
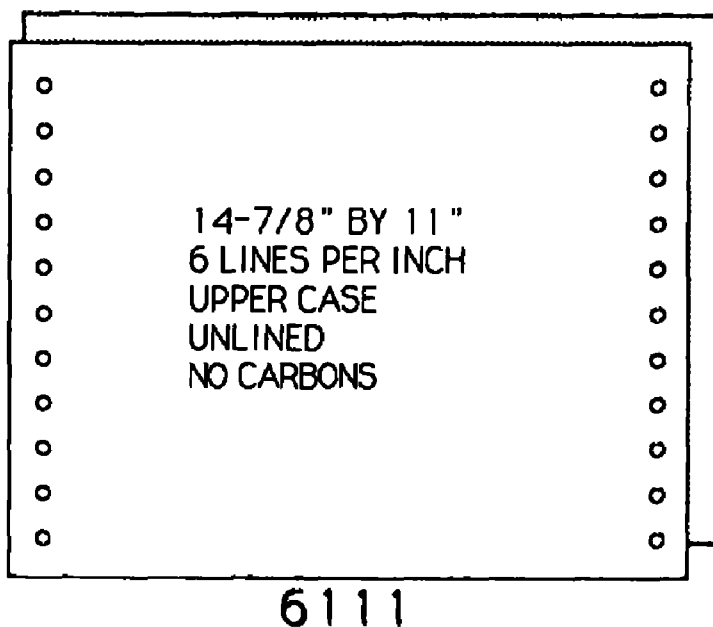
CHOICES OF PAPER AND SIZE OF PRINT

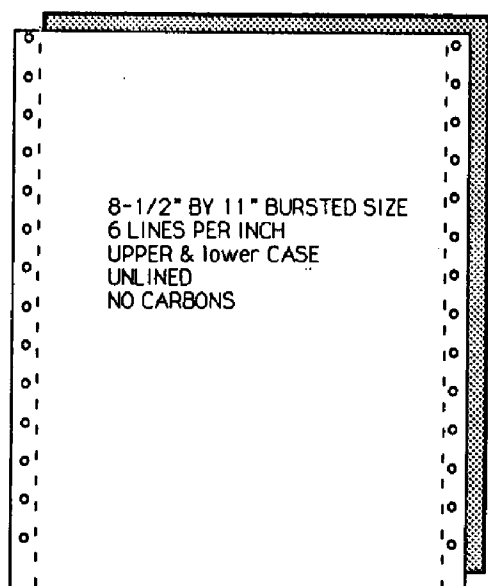
The NCC allows you several options with respect to type of paper and size of print. The form number is the key to requesting these options. The form number is defined as follows:

FORMS(XXXX)

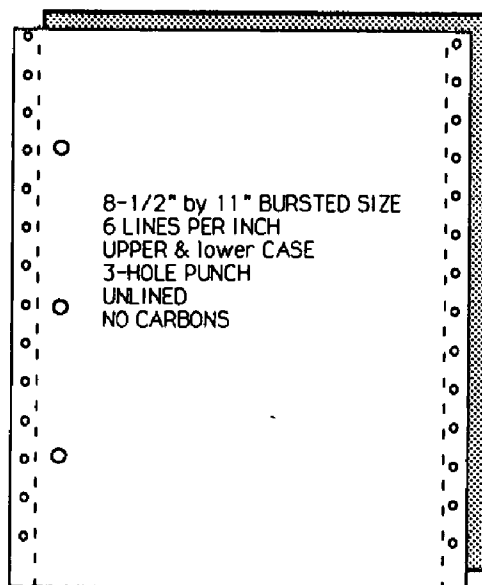


The following drawings depict the NCC's most commonly used types of paper.

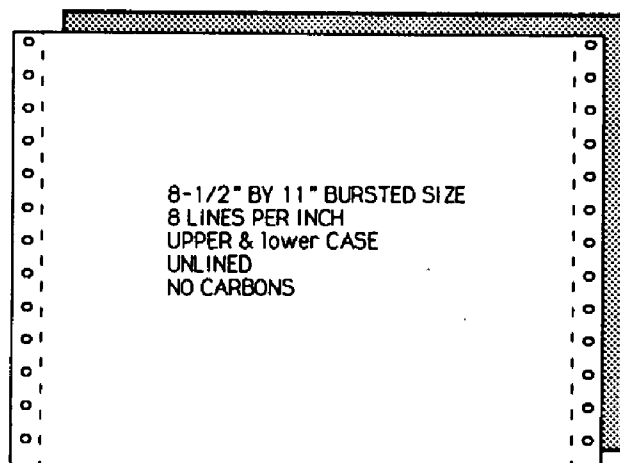




6351



6371



8381

PRINTING USING ISPF LIST DATA SET

If you are a full-screen user, you can take advantage of ISPF's LIST data set to obtain printed copies of data sets. A number of ISPF functions (for example, the LIBRARY UTILITY, the DATA SET LIST UTILITY, and the MOVE/COPY UTILITY) provide options to "print" entire data sets or PDS members. When hard copies are requested in this way, ISPF copies the source data set (the one you asked to be printed) into the LIST data set that ISPF maintains for every user's session. Then when you exit from ISPF, one batch job is submitted to print everything that has been accumulated in the LIST data set during the just ended session. This method is particularly useful for printing multiple data sets, as opposed to entering the PRINTOFF command for each data set to be printed. In addition, it is sometimes convenient to use the ISPF primary command PRINT to copy the contents of the terminal screen into the LIST data set for subsequent printing.

How to Activate LOG/LIST

To obtain hard copies using the LIST data set, you must first set up the ISPF LOG/LIST DEFAULTS panel. Choose Option 0 from the ISPF/PDF Primary Options Menu; then select Option 2, LOG/LIST. ISPF displays the LOG/LIST DEFAULTS panel for you to specify whether you want to print the contents of these two data sets at the end of your ISPF session, and if so, where. The LOG data set contains an "audit trail" of your ISPF session. For example, if you created a new data set, that event would be recorded in the LOG data set. The LOG listing may be of value to a programmer investigating a program that continues to "bomb" by indicating at what point processing stopped and by providing a mini dump. However, most users elect to suppress the LOG data set by entering a D in the process option and changing the primary and secondary pages fields to zero. To obtain

the hard copies you want from the LIST data set, the recommended process option is PD (for print and delete). This selection tells ISPF to delete the LIST data set after its contents have been sent to the printer.

The final step to ensure that the contents of the LIST data set are processed properly is to complete the job card on the JCL at the bottom of the LOG/LIST DE-FAULTS panel. ISPF uses that job card on the job it submits to print your LIST data set. It should reflect you own User-ID, account, FIMAS code, bin number or mail code, and any other parameters you wish to specify (like NOTIFY). You may also enter a JES2 ROUTE statement to direct your printout to the printer of your choice.

PRINTING UTILITY FOR DOCUMENTA- TION

Full-screen users can print most NCC documenta-
tion with a special utility under ISPF.

Just select E from the ISPF/PDF Primary Option
Menu and then U for UTILITIES.

Then you can select a category of NCC-IBM documen-
tation or the NCC-IBM User's Guide. A list appears
on the screen. You can then browse (B) or print (P)
your selection just by typing a B or a P to the left of
your selection. Complete instructions are on the
screen.

PRINTING AT ANOTHER SITE

When you print jobs on the NCC's system printer or on the IBM 3800 laser printer, the printout is placed in your bin for courier delivery, or it is mailed to you. If the printer hardware is available, you may choose to print the results of a job at your site by routing the job to your node or remote printer. Use the destination parameter on the PRINTOFF command as follows:

PRINTOFF 'data-set-name' bbbb DEST(RMTnnn)

Where bbbb is the bin number and nnn is the remote number.

The JES2 /*ROUTE statement is also used for routing print to a remote location. In the following example, the output is sent to the LMF at New York:

/*ROUTE PRINT N7



For more information on routing print, see the following online documentation:

JUSD.USERS.REFER(JES2CON)

High-quality, channel-connect printing from the IBM 3090 is available at the WIC through the use of two Datagraphix 9835 laser printers. To route to the WIC submit your batch job with the following JES2 control statement:

/*ROUTE PRINT N3

The default form at the WIC is 8381 (8 lines per inch, upper and lower case, 11" by 8-1/2" paper, no carbons).



For more details on the policies and parameters concerning the WIC's laser printers, see the following online documentation:

JUSD.USERS.REFER(WICLASER)

**BATCH
UTILITIES**

NCC User Support has developed a set of “skeleton” batch jobs to help you complete various tasks in the batch mode. This sample Job Control Language is in the online data set JUSD.UTILITY.DATA with member names. Each member has comment lines which describe the utility and instruct you in its use. The suggested method for using these data sets is to allocate a partitioned data set under your User-ID and then copy the members that you want to use. Each set of JCL requires a job card as the first card, and it must contain your User-ID, account code, FIMAS code, and bin number. In a short time you will develop a “personalized” set of utilities for your most frequent tasks.

Some of the types of batch tasks that may be accomplished using JUSD.UTILITY.DATA include disk space management, data set allocation, data set maintenance, copy utilities, and print utilities. Refer to member CONTENTS for the name and a description of the members of JUSD.UTILITY.DATA.

**JES2 GLOBAL
STATUS
TRACKING**

JES2 Global Status Tracking allows you to determine the real-time status of jobs at different nodes in the network. The utility will display the status of all jobs including those executing, those waiting for print, and those waiting for execution.

To use Global Status Tracking, enter the following command at the TSO READY prompt:

QX node prefix

Node is the destination of the request. A table of node numbers is listed in the online data set JUSD.NODE.LOCATION.DATA.

Prefix is the job name prefix. If the prefix is omitted, the prefix defaults to your User-ID.



For more information on JES2 Global Status Tracking, see the following online documentation:

JUSD.USERS.REFER(GLOBAL)

SPOOL DISPLAY AND SEARCH FACILITY

The Spool Display and Search Facility (SDSF) allows you to display the system log and the JES2 queues and obtain information on the status of your jobs. For example, you made changes to a text file and want to proofread the output before it prints. You can use SDSF to view the output on the terminal screen. In addition, you can reroute jobs from one remote site to another, cancel jobs awaiting execution, change the job class, or purge job output.

To use the utility, type SDSF after the READY prompt. Or, if you are a full-screen user, choose E from the ISPF/PDF Primary Option Menu and then S from the next screen.

The two most frequently used options are I to view the input queues and O for the output queues. The prefix is set by default for your User-ID and limits the display to only your jobs.



For more information on SDSF, see the following online documentation.

**JUSD.USERS.REFER(SDSF)
JUSD.ISPF.GUIDE
JUSD.SDSF.DATA**

JOB STATUS TRACKING SYSTEM

Job Status Tracking System (JSTS) is a utility that allows you to track the activity of a job as it progresses through the NCC-IBM system. Complete historical data on jobs is available through JSTS, including such information as when a job was submitted, when it began execution, and when execution was completed. You can also see when the job printed, which device it was printed on, how many lines of output were generated, and which form it was printed on.

To access JSTS, type JSTS at the READY prompt. Or, if you are a full-screen user, choose E from the ISPF/ PDF Primary Option Menu and then J from the next screen.

Three screens are provided: the JSTS option menu; the job list menu, which displays all jobs run under your User-ID for the preceding 7 days; and the detailed job list panel. To get information on jobs submitted by other users, overtype the User-ID on the JSTS option menu panel.



For more information on JSTS, see the following online documentation:

JUSD.USERS.REFER(JSTS)
JUSD.JSTS.GUIDE

BULK DATA TRANSFER

Bulk Data Transfer (BDT) provides facilities to transfer data sets from one mainframe computer to another, such as from the NCC-IBM to an LMF or from one LMF to another LMF.

The transfers can be accomplished through interactive execution or through batch.

INTERACTIVE TRANSFERS

Full-screen users can access Bulk Data Transfer by choosing E from the ISPF/PDF Primary Option Menu and then B or BD. B presents NCC customized dialogs; BD is a more generic version.

BATCH TRANSFERS

You can also use Bulk Data Transfer in batch mode by creating a job containing JCL statements and BDT transactions and then submitting it for processing.



For more information on BDT and sample batch JCL, see the following online documentation:

**JUSD.USERS.REFER(BDT)
JUSD.BDT.DATA**

Or, after you have selected B or BD from the NCC Option Menu, type HELP on the COMMAND ==> line.

ARBITER

Arbiter, a micro-to-mainframe software link from Tangram Software, employs software components on both the mainframe and your personal computer to allow the two to communicate with each other and to perform tasks unique to the separate environment of each.

Arbiter extends the resources of the PC by providing virtual disk drives into which you can mount remote disks that exist as mainframe disk space (DASD). That is, Arbiter intercepts all DOS disk I/O commands and executes remote disk commands against the mainframe DASD files as though the disks were physically attached to your PC. This allows you to issue commands such as COPY and BACKUP to copy files from the PC to the mainframe without having to issue upload and download commands.

Utilities and applications will work with remote disks in that same way as with real PC disk drives. You can readily share data and programs with other PC users by storing the information on shared remote disks. Furthermore, you can subset mainframe data bases to a remote disk and can then use the data on a PC without transferring the data to the PC's hard drive. Besides supplying additional work space to PC users, Arbiter also provides facilities for remote job entry, printing mainframe data at the PC, and 3278 or 3279 terminal emulation.

Arbiter provides access to EPA's corporate data by supplying interfaces to SAS and FOCUS as well as application programming interfaces for mainframe products such as COBOL, FORTRAN, and Assembler. Software developers can use these facilities to develop specific retrievals on an ad hoc basis or on a recurring basis. Arbiter allows the PC user to quickly initiate "predefined extractions" from DOS-level command or from an easy-to-follow menu system.

Arbiter supplies device drivers that include all EPA PC communications mainframe links to the IBM 3090, including synchronous and asynchronous links, standalone and LAN connections, and common vendor communications adapters such as DCA, IBM, IRMA, and CXI. Dial-up access is available through the TCP and IBM PSI.

Arbiter may be used in place of Kermit and other file transfer software such as IRMA's SEND/RECEIVE, since it provides reliable data transfers in combination with conversion of mainframe data to PC file formats. Arbiter also provides facilities for uploading and downloading mainframe flat files using selected translate tables to maintain compatibility with other NCC supported file transfer methods.

**ARBITER PC
SOFTWARE**

NCC has purchased and installed the Arbiter main-frame components and is licensed to distribute the PC component to any user with a valid IBM timeshare account number. The PC software component and documentation are available through PC Site Coordinators and Information Centers in Washington and RTP.

**ACCESSING
ARBITER**

To access Arbiter, type M for menu at the "Welcome to EPA" screen as shown below:

A screenshot of a computer terminal window with a thick black border. The text inside is centered and reads: "WELCOME TO THE", "U.S. ENVIRONMENTAL PROTECTION AGENCY", "TELECOMMUNICATIONS NETWORK", and "ENTER COMMAND OR M FOR MENU". At the bottom, there is a horizontal line. Below the line, on the left, is a small box containing the number "4" followed by the letter "a". On the right, it displays "012/001" followed by a small box containing a horizontal line and another small box containing the number "31", followed by "FT".

WELCOME TO THE
U.S. ENVIRONMENTAL PROTECTION AGENCY
TELECOMMUNICATIONS NETWORK
ENTER COMMAND OR M FOR MENU

4a 012/001 31 FT

When the following menu appears, type ARBITER or press PF10.

U.S. EPA TELECOMMUNICATIONS NETWORK MENU
15:20 Tuesday August 23, 1988

TERM: T260624
MODEL 2

NATIONAL COMPUTER CENTER
PF KEY SELECTION SERVICE
PF13 PCICS CICS-Production
PF14 DCICS CICS-Development
PF19 TSO TSO-NCC
PF8 EMAIL EMAIL ACCESS
PF10 ARBITER Arbiter

LOGICAL MAINFRAME
SELECTION SERVICE
PF15 NY TSO-New York LMF
PF16 DV TSO-Denver NEIC LMF
PF17 WIC TSO-Wash Info Center
PF20 SE TSO-Seattle LMF
PF21 AT TSO-Atlanta LMF
PF22 DA TSO-Dallas LMF
PF23 KC TSO-Kansas City LMF
PF24 PH TSO-Philadelphia LMF
PF2 CI TSO-Cincinnati LMF
PF3 BN TSO-Boston LMF
PF4 CH TSO-Chicago LMF
PF5 SF TSO-San Francisco LMF

HIT PFKEY OR ENTER SELECTION: ARBITER ■

4BQa

012/001 31 FT

The Arbiter system will then prompt for your User-ID, your password, and your Timeshare account number.



For more information on Arbiter, see the following online documentation:

JUSD.USERS.REFER(ARBITER)
JUSD.ARBITER.DATA

EMAIL SERVICE

Electronic Mail (Email) is an easy-to-use, computer-based messaging service provided to all Agency employees and authorized affiliates. The service provides virtually instantaneous exchange of textual messages and/or binary files regardless of the time or location of transmission. Email is available through all computer terminals supported by the Agency including full-screen IBM mainframe terminals, ASCII terminals, PCs, Primes, and DEC's.

To obtain Email service, you must register through your Email Coordinator. (Check with your ADP Coordinator or call User Support if you need the name and telephone number of your Email Coordinator.) You will be issued an Email ID which is your "electronic" mailbox number and an initial password.

To access Email, type EMAIL on the WELCOME screen, or press PF8 at the Menu screen. You will be prompted by the Email service to login to Email by entering your Email ID and your password.

After you have successfully accessed the service, at the Email system prompt (>), you have several command options including the following:

<u>Command</u>	<u>Function</u>
EPANET	Display the EPA network telephone numbers.
ED	Access the Email text editor.
EMAIL NEWS or EM	Access the EPA Email bulletin board.
HELP or ?	Access the Email online help facility.
LEARN	Access the Email online tutorial.
MAIL	Access the Email Mail service.
MAILCK	Check the current status of your mailbox.

NETWORK	Display the telephone numbers for the public carriers.
OFF or LO	Sign off the Email service.
ON EPAxxxxx	Logon to another Email ID.
PASSWD	Change your current password.

Using the Mail command, you can send messages to other Email users or read (or scan) messages in your mailbox. When you send messages to other users, the messages can be created online in the Mail service, or you can create them offline on your local computer system, such as in a PC file or in an IBM mainframe data set. The message file can then be uploaded to Email for transmission. If your message is more than a few lines, creating it offline is probably easier and more efficient.

An Email Quick Reference Guide is available which explains the EPA's Email service in more detail. Contact User Support or your Email Coordinator to obtain a copy of the Guide.

In addition, you can refer to the Email Guide, a section in this Guide to NCC Services, for detailed information on using Email.

RESOURCE ACCESS CONTROL FACILITY

IBM's Resource Access Control Facility (RACF) is the security tool for protecting your computer resources (e.g., data sets, job output, tapes, etc.)

Full-screen users can use RACF by selecting E from the ISPF/PDF Primary Option Menu and then by selecting R for RACF. The menu/dialogs give you options to modify or add protection to your resources. Another method of protecting resources with RACF uses a few simple TSO commands which are typed in at the READY prompt.

UTILIZING RACF RACF manages resources on the system (e.g., data sets, tapes etc.) through user-defined profiles. RACF profiles identify the resource owner, access to the resource, and audit notification criteria. Generic profiles can protect an individual resource or can hierarchically protect multiple resources. Wildcard characters can be included in the generic profile to provide masks for matching resource names.

PROTECT A DATA SET The ADDSD command protects an unprotected data set. The format is as follows:

ADDSD 'dsname' OWNER(iii) UACC(access) GENERIC

The owner of a data set should be an individual user (iii). Only the owner may change the RACF parameters associated with the data set.

UACC means Universal Access or access granted to all users on the system. You can specify NONE (no access), READ (read-only access), UPDATE (read/write access), or ALTER (read/write, delete, create).

ADD USERS AND GROUPS TO RACF LIST The PERMIT command is used to add a user to the access list for a RACF protected data set. The format is as follows:

PERMIT 'dsname' ID(iii) ACCESS(access) GENERIC

In the ID parameter, you may indicate a User-ID or an account. When an account is specified, you are providing the specific access to any User-ID that is valid under the specified account.

In the ACCESS parameter, you specify what type of access that the added user is to have.

LIST RACF PROFILE

The LISTDSD command is used to list the details of a specific RACF profile. The format is as follows for a list of all parameters:

LISTDSD DATASET(dsname) ALL GENERIC

CHANGE RACF PROFILE

The ALTDSD command is used to change the RACF profile for a data set. The format is as follows:

ALTDSD 'dsname'...parameters GENERIC

Where parameters can be any of those that provide access authority to one or more users. In the following example, any access authority that User-ID ABC had for the data set is removed and no access to the data set is reestablished for User-ID ABC.

ALTDSD 'dsname' ID(ABC) ACCESS(NONE) GENERIC

DELETE RACF PROTECTION

The DELDSD command deletes all RACF protection from a data set. The format is as follows:

DELDSD 'dsname' GENERIC

Only the owner of the data set or someone with explicit authority may use this command for the specified data set.

JOB OUTPUT PROTECTION

Job output can also be protected by a few simple TSO commands. These functions are also available through ISPF panels.

Create Resource File

The RDEFINE command is used to create a RACF resource profile for a job. If the job name ends with an asterisk, the profile will apply to all jobs beginning with the sequence of characters. An example follows:

	RDEFINE OUTPUT jobname OWNER(iii) UACC(access)
Change RACF Profile	The RALTER command is used to change the UACC and/or owner associated with the resource profile. An example follows: RALTER OUTPUT profile-name OWNER(iii) UACC(access)
Delete Resource Profile	The RDELETE command deletes a RACF resource profile. An example follows: RDELETE OUTPUT profile-name OWNER(iii) UACC(access)
List Resource Profile	The RLIST command displays the resource profile. An example follows: RLIST OUTPUT profile-name ALL
Build Access List	The PERMIT command allows you to build an access list for the resource profile. Note that you can use an individual User-ID (iii) or an account code (aaaa) for the OUTPUT ID parameter. An example follows: PERMIT profile-name OUTPUT ID(iii) ACCESS(access)
Delete from Access List	The PERMIT command also allows you to remove access to a job for a User-ID/account. An example follows: PERMIT profile-name OUTPUT ID(iii) DELETE
Tape Protection	Tapes may also be protected through similar TSO commands or through ISPF panels. Just substitute the OUTPUT parameter with TAPEVOL and indicate the tape volume number instead of a profile or job name. The GENERIC operand should be omitted since all tape profiles are discrete.



For more information on security and RACF protection, see the following online documentation:

JUSD.USERS.REFER(SEcurity)
JUSD.RACF
JUSD.RACF.DATA
JUSD.JOB.PROTECT

Or, access the tutorial by typing **HELP** after you choose **RACF** from the **ISPF/PDF Primary Option Menu**.

PLSORT

The NCC offers only software package for sort/merge applications, Phase Linear Systems Inc.'s product called **PLSORT**. The package offers all of the capabilities included in IBM's Soft/Merge program. **PLSORT** can be initiated with job control language or invoked from user-written **FORTRAN**, **COBOL VS II**, **PL/1**, or **Assembler** programs. It runs under the **OS/VS** operating system. The utility processes fixed- or variable-length, blocked or unblocked records as long as the input and output have the same general record type (fixed or variable). For input and output, **PLSORT** supports sequential data sets, **VSAM** files, and library members. Sequential data sets may reside on disk, tape, or any other medium supported by **BSAM**.

The following **JCL** invokes the **PLSORT** procedure:

```
//stepname EXEC PLSORT  
SORT
```

Tape sorts are not available on the IBM system. Users should use **MAXSORT** if large volume sorts are to be performed. Since tape sorts are not used, a **SORTLIB DD** card is unnecessary.



For more information on PLSORT, see the following online documentation:

**JUSD.USERS.REFER(PLSORT)
JUSD.PLSORT.DATA**

KWIC/KWOC

The Key-Word-In-Context (KWIC) system provides a simple input procedure and flexible multipoint output of almost any kind of non-computational information. It was originally designed to handle bibliographical information. The system, which can be used for anything from a reprint file to a legal document system, allows the automatic generation of various indexes based on data provided by you.

The indexes requested most frequently are those by author, title, Key-Word-In-Context, and Key-Word-Out-of-Context (KWOC).



For more information on KWIC/KWOC, see the following online documentation:

**JUSD.USERS.REFER(KWICKWOC)
JUSD.KWIDOC**

SECTION 9 IBM UTILITIES

BATCH UTILITIES

IBM-supplied utilities are an integral part of the IBM system and provide a variety of useful functions.

These utilities are used in batch processing. Sample Job Control Language (JCL) is as follows:

```
//stepname EXEC PGM=utility name
//SYSPRINT DD SYSOUT=class
//SYSUT1 DD DSN=input-data-set-name
//SYSUT2 DD DSN=output-data-set-name
//SYSIN DD *
      (control statements)
```

IEFBR14

IEFBR14 is not a utility in the true sense of the word, but it is useful as a program that terminates immediately with a return code of zero. IEFBR14 allows system allocation routines to be invoked so that you can check JCL syntax and allocate, delete, catalog, and uncatalog data sets through JCL alone. It also helps in ensuring that enough space is available for data sets without invoking the main program.



For more information on IEFBR14, see the following online documentation:

JUSD.USERS.REFER(IEFBR14)

IEHPROGM

IEHPROGM is a data set maintenance utility with the following functions:

- Scratches data sets or member of data sets on Direct Access Storage Device (DASD) volumes.
- Renames data sets or members of data sets on DASD volumes.
- Catalogs or uncatalogs data sets.

The DISP field is used most often for cataloging or uncataloging a data set, but if you want to scratch a data set without deleting the catalog entry, use the IEHPROGM utility.



For more information on IEHPROGM, see the following online documentation:

JUSD.USERS.REFER(IEHPROGM)

IDCAMS

IDCAMS (Access Method Services) is a VSAM utility which provides data set maintenance functions without writing a program. These functions include the following:

- Defining VSAM data sets.
- Deleting VSAM data sets.
- Recovering and backing up data sets.
- Printing data sets.
- Creating alternate indexes for certain types of data set organizations.
- Creating catalog listings.
- Altering tuning parameters.
- Copying VSAM or SAM data sets to VSAM or SAM data sets.
- Listing a catalog.



For more information on IDCAMS, see the following online documentation:

JUSD.USERS.REFER(IDCAMS)
JUSD.DFEF.DATA

IEBGENER

IEBGENER has the following functions:

- Copies sequential data sets.
- Copies individual member of partitioned data sets.
- Reblocks data sets.



For more information on **IEBGENER**, see the following online documentation:

JUSD.USERS.REFER(IEBGENER)

IEBCOPY

IEBCOPY has the following functions:

- Copies a partitioned data set. Often used to expand allocation or change directory space.
- Creates a backup copy on tape of a partitioned data set.
- Compresses a partitioned data set in place.



For more information on **IEBCOPY**, see the following online documentation:

JUSD.USERS.REFER(IEBCOPY)

IEHMOVE

IEHMOVE has the following functions:

- Copies or moves sequential, partitioned, or direct data sets. **COPY** leaves the original; **MOVE** scratches the original after the copy and changes the catalog entry.

- Automatically allocates space (or it may be preallocated).
- Reblocks the target data sets if requested.

Although IEHMOVE has many duplicated functions in IEBGENER and IEBCOPY, it allocates space automatically, and it can handle direct as well as partitioned and sequential data sets.



For more information on IEHMOVE, see the following online documentation:

JUSD.USERS.REFER(IEHMOVE)

IEHLIST

IEHLIST lists the entries in the directory (i.e., the members) of a partitioned data set created by the Linkage Editor.

IEHLIST can list up to 10 partitioned data set directories in a single invocation. A partitioned data set directory is made up of blocks of 256 bytes. Each directory contains one or more entries which reflect member and/or alias names as well as attributes assigned by the Linkage Editor. From the listing, you can see what members exist, their sizes, and their various attributes.



For more information on IEHLIST, see the following online documentation:

JUSD.USERS.REFER(IEHLIST)

LINKAGE EDITOR

The Linkage Editor is a program provided by IBM as an adjunct to the various language translation programs. It is used to process the object modules produced by the language translators, resolving references between programs, changing the form to that of a relocatable load module, and storing attribute information.

The Linkage Editor takes a combination of object modules, load modules, and control statements and combines them into a single output load module.

The following specific DD names are used to call the Linkage Editor.

<u>DD Name</u>	<u>Associated Data Set</u>
SYSLIN	Primary input
SYSLIB	Automatic call library
SYSUT1	Work data set
SYSPRINT	Diagnostic messages
SYSLMOD	Output module

The Linkage Editor may also be called with the TSO LINK command.



For more information on the Linkage Editor, see the following online documentation:

JUSD.USERS.REFER(LINKED)

Or, type HELP LINK at the TSO READY prompt.

VIRTUAL STORAGE ACCESS METHOD

Virtual Storage Access Method (VSAM) supports the following data set organizations:

- **Key Sequenced Data Sets (KSDS)**
- **Relative Record Data Sets (RRDS)**
- **Entry Sequenced Data Sets (ESDS)**

VSAM maintains a comprehensive set of statistics to provide information concerning utilization, performance, and access and update counts. It also provides device independence, program independent tuning parameters, RACF security support, a range of data sharing and integrity options, and a comprehensive set of utilities.

VSAMAID/XP

VSAMAID/XP provides the tools required to tune and monitor VSAM clusters. It is primarily for the performance analyst and the capacity planning manager, but it can also be used for tuning individual VSAM clusters. Statistical history can be used to produce cluster definition recommendations as follows:

- **Attempt to reduce index levels.**
- **Maximize Direct Access Storage Device utilization.**
- **Estimate required free space by projecting past growth.**
- **Estimate true allocation requirements based on calculated average size, device capacity for the selected CISIZE, and free space requirements.**



For more information on VSAM, see the following online documentation:

JUSD.USERS.REFER(VSAM)
JUSD.VSAM.DATA(DOC)

SECTION 10 PROGRAMMING LANGUAGES

COMPILERS, INTERPRETERS, AND ASSEMBLERS

The NCC maintains many different programming language compilers, interpreters, and assemblers for EPA users.

Compilers are software systems which accept statements coded in specific languages as input and produce object code as output. During the compilation process, syntactical errors are noted automatically and many other useful programmer aids can be produced using selected compiler options. Compilers are used exclusively to produce machine-executable code from high-level language source statements. High-level languages are so named since each language statement will produce many machine language instructions when compiled.

Interpreters also operate on high-level source languages. They are significantly different from compilers since they interpret and execute each statement as it is encountered. Consequently, interpretive languages are generally most economical for one-shot programs or time-critical development work. Programs which are to be run repeatedly would be far too expensive to run continually in this mode.

Assemblers process low-level languages with instruction sets which have almost a one-to-one correspondence with the machine instructions they produce. Such languages are usually used for systems software coding or for coding which has to be as efficient as possible.

LINKAGE EDITOR

The primary output produced by compilers and assemblers is object code. Object code cannot be executed directly but must be processed by the Linkage Editor.

NCC has established standards governing the construction and use of language processor cataloged procedures. Step names and commonly used symbolics are given consistent names. Any procedure which invokes a compiler, assembler, or interpreter must be supplied with the following JCL statement:

//xxxx.SYSIN DD

This DD statement must refer to the data set containing the source program or is followed by the source program in the input stream. xxxx is the name of the compile step; e.g., FORT for FORTRAN, COB for COBOL, COB2 for VS COBOL II, etc. Similarly, any input into the Linkage Editor steps should be included in order as the following:

//LKED.SYSLIN DD

Or, in the GO steps as the following:

//GO.name DD

ASSEMBLER LANGUAGE

Assembler Language (ALC from Assembler Language Coding) is a low-level symbolic programming language. ALC instructions have almost a one-to-one correspondence with absolute machine instructions. ALC does allow macroinstructions to be created and stored for inclusion into any number of ALC programs. This facility tends to make ALC programming more reasonable over a period of time. ALC is used for most system software work since it allows the programmer to code at the same level as the computer operates. Because of ALC's micro nature, it is rarely used for the development of application systems since the cost of such developments and of the subsequent maintenance can be cut substantially by using a high-level language.

CATALOGED PROCEDURES

Cataloged procedures for Assembler Language are as follows:

<u>Procedure</u>	<u>Function</u>
ASMHC	Assemble only.
ASMHCL	Assemble and link-edit.
ASMHCLG	Assemble, link, and execute.
ASMHCG	Assemble and execute without link-edit.
ASMH LG	Link-edit and execute.



For more information about Assembler Language and parameters for the cataloged procedures, see the following online documentation:

JUSD.USERS.REFER(ASSEMBLR)

COBOL

COBOL (Common Business Oriented Language) is a high-level programming language, with English-like syntax, which is used mainly for commercially-oriented application programming. The American National Standards Institute has published standards which are intended to create a language that is interchangeable on and by all computer systems which offer COBOL. Two versions of COBOL are supported at the NCC.

CATALOGED PROCEDURES FOR VS COBOL II

Cataloged procedures for VS COBOL II are as follows:

<u>Procedure</u>	<u>Function</u>
COB2UC	Compile only.
COB2UCL	Compile and link-edit.
COB2UCLG	Compile, link-edit, and execute.
COB2UCG	Compile, load, and execute.
COB2ULG	Load and execute.
COB2UCX	Alias for COB2UCG.

The VS COBOL II compiler at NCC supports 31-bit addressing and includes many performance and functional enhancements.



For more information about COBOL and parameters for the cataloged procedures, see the following online documentation:

JUSD.USERS.REFER(COBOL)

FORTRAN

FORTRAN (Formula Translator) is a high-level programming language which is used primarily for scientific, engineering, and other applications which involve extensive mathematical computation. The American National Standards Institute has defined a standard for the FORTRAN language.

The compiler is available through the ISPF/PDF Primary Option Menu or in batch via the cataloged procedures.

VECTOR PROCESSING

The IBM mainframe vector facility provides a mechanism for achieving a high level of performance when identical operations are performed on large amounts

of data. The VS FORTRAN Version 2 compiler allows the FORTRAN programmer to take advantage of this facility by automatically generating the necessary vector instructions where appropriate.

Central to the operation of the vector facility are the vector registers. On the IBM mainframe, there are 16 vector registers, each of which contains 128 elements of 4 bytes each. An operation on two FORTRAN arrays can be carried out by loading each array into a vector register, and then issuing a single command to perform the desired operation on each pair of elements in the two registers. If the arrays contain more than 128 elements, they must be broken up into sections of 128 elements each and this process must be repeated for each section.

For example, the FORTRAN loop:

```
REAL*4 A(256),B(256)
- - -
DO 10 I = 1,256
    A(I) = A(I) +B(I)
10 CONTINUE
```

could be executed by loading the first 128 elements of A and B into vector registers, adding all of these elements with a single vector instruction, storing the result in A, and then repeating the process for the remainder of A and B.

(Actually, most vector instructions have formats that allow one of the operands to be taken directly from storage. Therefore, this operation could be carried out using only a single vector register.)

Notice that when using vector instructions, all of the calculations for one section are performed before any of the results are put back into storage. This means that if a FORTRAN loop computes a value on one iteration that will be used on a later iteration, it cannot be translated into vector instructions.

CATALOGED PROCEDURES

Cataloged procedures for FORTRAN are as follows:

<u>Procedure</u>	<u>Function</u>
FORTVC	Compile only.
FORTVCL	Compile and link-edit.
FORTVCLG	Compile, link-edit, and execute.
FORTVCG	Compile, load, and execute.
FORTVLG	Link-edit and execute.
FORTVL	Load and execute.
FORTVG	Execute only.
FORTRC	Re-entrant compile only.
FORTRCL	Re-entrant compile and link-edit.
FORTRCLG	Re-entrant compile, link-edit, and execute.
FORTRLG	Re-entrant link-edit and execute.
FORTVIAD	Execute InterActive Debug in batch.



For more information about FORTRAN and parameters for the cataloged procedures, see the following online documentation:

JUSD.USERS.REFER(FORTRAN)
JUSD.VSFORT2.DATA(PROCS)

PL/1

PL/1 (Programming Language 1) is a multipurpose, high-level language which lends itself to commercial and scientific applications as well as to real-time and systems software work. The language contains many of the capabilities of FORTRAN, COBOL, and ALGOL as well as some of the attributes of Assembler Language. The NCC supports the PL/1 Optimizing Compiler.

CATALOGED PROCEDURES

Cataloged procedures for PL/1 are as follows:

<u>Procedure</u>	<u>Function</u>
PLIXCC	Compile only.
PLIXCL	Compile and link-edit.
PLIXCLG	Compile, link-edit, and execute.
PLIXCG	Compile, load, and execute.
PLIXLG	Load and execute; translate and interpret.



For more information about PL/1 and parameters for the cataloged procedures, see the following online documentation:

JUSD.USERS.REFER(PL1)

BASIC

BASIC (Beginners' All-purpose Symbolic Instruction Code) is an interpretive language which was originally developed at Dartmouth College as a training aid for student programmers.

BASIC is an inefficient language for production runs. Because it is an interpreter, each statement is compiled immediately prior to its execution. Its primary benefit is the speed and ease with which it can be learned and applied to a specific problem by a nonprogrammer.

Since **BASIC** is an interpreter, there are no cataloged procedures available at NCC.



For more information about **BASIC**, see the following online documentation:

JUSD.USERS.REFER(BASIC)
JUSD.BASIC.DATA

DESCRIPTION

ADABAS provides system developers with an efficient, flexible, and comprehensive capability for meeting data management requirements for a variety of application environments. EPA has installed ADABAS to meet the Agency's Central Data Base Management System requirements.

ADABAS can access data using multiple "keyed" selection criteria, supports complex data structures, conserves data base storage space through the use of data compression techniques, provides excellent backup, recovery, and data security facilities, and provides a comprehensive set of utilities to easily accommodate data base structural changes with minimal impact on existing programs. ADABAS can be used in both batch and interactive processing modes and can interface with application programs written in COBOL, FORTRAN, PL/1, and Assembler languages.

The vendor for ADABAS also provides a 4th Generation Language (4GL) called NATURAL that is a nonprocedural and highly productive application development language. NATURAL can provide end users and programmers with the capability of querying, reporting on, and updating ADABAS data bases. It can operate in both batch and online modes. ADABAS data bases can also be queried, reported on, and updated using embedded ADABAS SQL statements in COBOL, FORTRAN, or PL/1 programs. The use of these programming languages to access ADABAS data bases requires the approval of the Central Data Base Administrator.



JUSD.USERS.REFER(ADABAS)
JUSD.ADABAS.DATA

DESCRIPTION

Battelle's Automated Search Information System (BASIS) is a superior tool for managing and using large text data bases. It has been particularly useful to EPA in the areas of bibliographic/library systems and litigation support. Other clear choices for BASIS applications include technical information lookup, newspaper and journal archiving, law and regulation tracking, and records management.

BASIS has some exceptionally useful retrieval capabilities. Among them are the ability to recognize plurals of searched-for words. BASIS can also do synonym searching through its Thesaurus feature. Another aspect of the Thesaurus feature is the ability to standardize data within the data base. For example, you might allow state abbreviations to be input, but full state names would be stored in the data base.



JUSD.USERS.REFER(BASIS)
JUSD.BASIS.DATA

DESCRIPTION

SYSTEM 2000 (S2K) allows you to define, load, retrieve, and update data bases. S2K uses its own elementary command language and supports fully nested Boolean logic for selection criteria. You can define functions and command strings and store them for later use. Addressing and I/O operations are handled automatically for you. The system also includes a report writer, optional audit trail facility for updates, and an interface which permits COBOL, FORTRAN, or PL/1 languages to be used with the data base.

Each S2K data base is composed of six BDAM files, and if an audit trail is desired, an optional update file is available. The command language syntax provides a complete set of commands for defining, restructuring, saving, sharing, and releasing a data base, as well as for updating and retrieving data. Security provisions may be used to restrict access to the data base for retrieval and/or update purposes. S2K also has several built-in statistical functions such as sum, count, mean, maximum, minimum, and standard deviation.

DBACCESS

The DBACCESS software package gives COBOL PLEX programmers in the S2K environment the capability to dynamically issue the LOCATE command with full WHERE CLAUSE processing.



JUSD.USERS.REFER(S2K)
JUSD.S2K.DATA

DESCRIPTION

EASYTRIEVE PLUS was designed to simplify computer programming. Its English-like language and simple declarative statements provide the novice with the tools needed to produce comprehensive reports with ease, while its enhanced facilities provide the experienced data processor with the capabilities to perform complex programming tasks.

EASYTRIEVE PLUS can be used for the following types of tasks:

- Report generation.
- Information retrieval.
- Record updating/editing.
- Matching/merging files
- Preprinted or customized forms or microfiche output.



JUSD.USERS.REFER(EASYTRV)
JUSD.EASYT.DATA
JUSD.EASYTREV.PLUS.DATA

DESCRIPTION

Biomedical Computer Programs (BMDP) are a comprehensive and integrated library of statistical programs. These programs may be loosely classified into six series:

- Data Description
- Frequency Tables
- Regression Analysis
- Analysis of Variance
- Multivariate Analysis
- Special (including nonparametric statistics and cluster analysis)

BMDP offers a broad set of descriptive and analytical procedures. Data grouping or selection can be affected through the control language.



JUSD.USERS.REFER(BMDP)
JUSD.BMDP.DATA

DESCRIPTION

The Econometric Software Package (ESP) is a computer language for the statistical analysis of time series by the ordinary least squares method or the two-stage least squares method. It is designed to carry out the computational and data processing steps which occur routinely in econometric research.

PROC

ESP



JUSD.USERS.REFER(ESP)
JUSD.ESP.DATA

DESCRIPTION

The International Mathematical and Statistical Library (IMSL) is an extensive collection of mathematical, statistical, and function subprograms written in FORTRAN and supported by IMSL. In most cases, the subroutines are available in both single and double precision forms and support the vector feature hardware available on the IBM mainframe. With these subroutines, complex computational routines can be constructed quickly and inexpensively.

PROCS

<u>Procedure</u>	<u>Function</u>
IMS1CISP	Compile, link, and go using Level 10.
IMSLSCLG	Compile, link, and go using the interface to the Level 9 single precision library.
IMSLDCLG	Compile, link, and go using the interface to the Level 9 double precision library.



JUSD.USERS.REFER(IMSL)
JUSD.IMSL.DATA

DESCRIPTION

The Procedure Library-Mathematics (PL-MATH) is a set of basic computational procedures for PL/1 language users. The PL-MATH routines do not include I/O statements. Many routines provide the option to handle double-precision computations.



JUSD.USERS.REFER(PLMATH)

DESCRIPTION

SAS is an integrated system for data management and statistical analysis. It combines statistics routines, plotting, data manipulation, and report writing capabilities.

SAS has a PL/1-like language which is used to transform or delete variables, create new variables, create new data sets, merge data sets, and print all or part of a data set. SAS accepts data in most forms and can handle many input devices. The system also performs general data manipulation and many statistical functions.

PROC

SAS

CLIST

To execute SAS interactively, a CLIST has been developed. Just type SAS at the TSO READY prompt.



JUSD.USERS.REFER(SAS)
JUSD.SAS.DATA

Or, use the HELP statement in SAS for information on SAS procedures, statements, formats, informats, functions, and call routines. Just type the following for a brief description of the HELP statement:

HELP;

DESCRIPTION

SuperCalc/MF is a spreadsheet which provides for data storage and allows ledger display with immediate recalculation upon value update. It is available only in a full-screen, interactive mode. SuperCalc supports over 90 commands for formatting data display and over 140 built-in functions for performing mathematical, trigonometric, financial, statistical, and logical processes.

Data base facilities are provided in SuperCalc as well as the facility to process data from data sets external to SuperCalc. SuperCalc supports uploading of VisiCalc and LOTUS 1-2-3 spreadsheets from a personal computer.

To access SuperCalc, just type the following at the TSO READY prompt:

SUPERCAL



JUSD.USERS.REFER(SUPERCAL)
JUSD.SUPERCAL.DATA

DESCRIPTION

CA-GKS provides an implementation of a Graphical Kernel System (GKS) library. GKS consists of a set of basic functions for graphics programming that has been defined by the American National Standard. It is a low-level graphics system for use in creating portable applications that produce computer-generated, two-dimensional pictures on vector or raster output devices. CA-GKS applications can be ported to any installation supporting a GKS of the appropriate level in the programming language used in the application. CA-GKS is at level 2b in the GKS classification system and uses FORTRAN 77 as the language.



JUSD.USERS.REFER(CAGKS)
JUSD.CAGKS.DATA

DESCRIPTION

CUECHART is an easy-to-use, user-friendly graphics package. To prepare a graph with CUECHART, select any of the over 1100 standard stencils pictured in the CUECHART and CHARTBOOK User's Guides, invoke CUECHART, and respond to simple, "English" prompts to provide information necessary to tailor the general stencil to your specific needs. Stencils are available for creating line charts, pie charts, bar charts, word/bullet charts, error bars, and tables. The output of CUECHART is a file containing TELL-A-GRAF commands. TELL-A-GRAF is subsequently invoked, the CUECHART file "included," and the chart plotted on any of a variety of graphic output devices.



JUSD.USERS.REFER(CUECHART)
JUSD.CUECHART.DATA

DESCRIPTION

DATA CONNECTION is an integrated portfolio of tools designed to solve data access problems. **DATA CONNECTION** builds links between **TELL-A-GRAF** and the many sources of data used to produce graphs. Its components are as follows:

Report Connection. Reads tabular data from printed reports stored in any format.

File Connection. Reads, selects, analyzes, and compares data from any data file with uniform record formats.

External Program Connection. Links **TELL-A-GRAF** directly with user-written applications programs.

Decision Support Connection. Edits, modifies, and mathematically manipulates data before it is converted to graphic output.



JUSD.USERS.REFER(DATACONN)
JUSD.DATACONN.DATA

DESCRIPTION

DISSPLA is a library of subroutines which enable a programmer to present data in graphical form. The DISSPLA package includes the capability to produce two- and three-dimensional graphs, geographic maps, color-shaded contour maps, and business charts. Object rendering capability provides for the representation of complex geometric objects in wire frame as well as fully shaded models.

DISSPLA CODEBOOK can be used to facilitate DISSPLA programming. CODEBOOK contains over 50 predefined graphics prototypes. You can just select the prototype, answer the questions, and supply the data. CODEBOOK generates the DISSPLA code necessary to generate the specific chart.



JUSD.USERS.REFER(DISSPLA)
JUSD.DISSPLA.DATA

DESCRIPTION

GEOMAP is an interactive computer mapping program used for displaying and analyzing thematic coded data. You can select from several GEOMAP formatted cartographic files, including those with state, county, and ZIP code boundaries.

GEOMAP is menu-driven and allows you to control the characteristics of the map, including titles, legends, colors, etc. You may also overlay other boundary files on the map.

GEOMAP runs as a front-end to TELL-A-GRAF and the full range of TELL-A-GRAF formats and capabilities is available.



JUSD.USERS.REFER(GEOMAP)
JUSD.GEOMAP.DATA

DESCRIPTION

InterOrg allows you to interactively create organization charts. The charts may be displayed on a variety of graphics devices. You can specify box names, box titles, optional comments, reporting relationships, plot titles, footnotes, options for line style, colors, fonts, page layout, etc. Prompting mode reads all input from the keyboard; menu mode reads chart information from files saved during the previous InterOrg session.

InterOrg runs as a front-end to TELL-A-GRAF and the full range of TELL-A-GRAF devices, formats, and capabilities are available.



JUSD.USERS.REFER(INTERORG)
JUSD.ORGCHART.DATA

DESCRIPTION

SAS/GRAPH is the graphics feature of the SAS System. It consists of a set of SAS procedures for displaying data graphically. Its capabilities include X-Y plots, bar and pie charts, contour plots, 3D plots, thematic maps, and text pages. SAS/GRAPH supports a wide variety of graphics terminals, printers, and plotters.



JUSD.USERS.REFER(SASGRAPH)
JUSD.SAS.DATA

DESCRIPTION

TELL-A-GRAF is a conversational graphics system which produces quality graphs from ordinary English commands. TELL-A-GRAF may take on one of five "personalities:"

- Line plot
- Area chart
- Bar plot
- Pie chart
- Page of text

The program produces graphics interactively when invoked from a terminal capable of drawing vectors (lines), although any type of terminal may be used to enter commands to create a graphics output file. A separate post-processor program can then use the plot file to produce graphics output on a plotting device.



JUSD.USERS.REFER(TELAGRAF)
JUSD.TELAGRAF.DATA

DESCRIPTION

TELLAPLAN EXPERT is a project planning and management tool. You can use the English-like commands for the following tasks:

- Build detailed plans for ongoing projects and events in order to control their progress.
- Report progress with a variety of Gantt charts, cost/resource charts, or printed reports.
- Show planned, actual, and estimated start and end dates, in addition to dependencies, critical paths, slack time, and milestones.
- Create sophisticated structure diagrams including work breakdown structures, arrow diagrams, and activity on node diagrams.

TELLAPLAN EXPERT charts may be plotted on a wide variety of graphics output devices.



JUSD.USERS.REFER(TELLAPLAN)
JUSD.TELLAPLAN.EXPERT.DATA

DESCRIPTION

UNIEDIT, an interactive graphics design and editing program, supports freehand drawing through digitizing tablets, but its most significant feature is the ability to edit UNIMAP output. UNIEDIT can be used to correct errors, to reshape, delete, or replace contours, and to add annotation.



JUSD.USERS.REFER(UNIMAP)
JUSD.UNIRAS.UNIEDIT.DATA

DESCRIPTION

UNIMAP is an interactive contour mapping and modeling system. When you supply the X, Y, and Z data, UNIMAP can produce a variety of graphic displays, including two-dimensional contour plots, three-dimensional bar maps, and three-dimensional surface displays. UNIMAP can shade between contours with varying degrees of color and patterns. The surface may be shaded according to a fourth variable, thus producing a four-dimensional display. With full use of defaults, UNIMAP can produce a surface quickly. For example, you can change from two-dimensional to three-dimensional quickly, or you can view the surface from a different angle.



JUSD.USERS.REFER(UNIMAP)
JUSD.UNIRAS.UNIMAP.DATA

DESCRIPTION

Data Catalog 2 (DC2) is a comprehensive data dictionary/directory system. It may be used to document data, procedures, users, and their interactions. The system can be equally effective as a systems development tool, as a data administration tool, and as an inventory of user data and procedures resources.

PROCS

<u>Procedure</u>	<u>Function</u>
DC2BKUP	Backs up DC2 files.
DC2CNVRT	Converts source programs to dictionary entries.
DC2COPY	Copies and moves between dictionaries.
DC2INIT	Initializes a dictionary.
DC2MAINT	Dictionary maintenance.
DC2PURGE	Deletes the master files.
DC2QRY	Queries the dictionary; generates COBOL layouts.
DC2RPT	Reports on the dictionary (no index).
DC2RPTI	Reports on the dictionary (index).
DC2RSTR	Restores the dictionary.
DC2UPD	Updates the dictionary.
DC2UTL	Performs utility functions.



JUSD.USERS.REFER(DC2)
JUSD.DC2.DATA

DESCRIPTION

The LIBRARIAN, a software product from Computer Associates, is a highly sophisticated and flexible storage medium, together with service routines that manipulate the data stored there. This data can be in the form of source programs, test data, or text. Any collection of 80-byte records can be stored by the LIBRARIAN as a module on a LIBRARIAN master file, along with information about the data.

LIBRARIAN master files are highly efficient libraries designed to maximize storage capacity while minimizing access and retrieval time. LIBRARIAN master files offer such desirable features as data compression, module archiving, program auditing, and automatic library reorganization to recover unused space.

Information is stored on a master file in discrete units called modules. A module can be an individual program, a program segment or object code, or any group of 80-byte records. The number of modules that can be stored on a single master file is limited only by the size of the master file and the size of the individual modules.

LIBRARIAN is available in batch mode and also in TSO ISPF through Extended LIBRARIAN Interactive Productivity Services (ELIPS) and LIB/CCF (Change Control Facility).

PROCS

<u>Procedure</u>	<u>Function</u>
LIBINIT	Initialize LIBRARIAN disk master file
LIBEXEC	Execute LIBRARIAN

JUSD.LIBARIAN.DATA



DESCRIPTION General Purpose Simulation System (GPSS) is a program for conducting evaluation of and experiments with systems, methods, processes, and designs. The program divides the simulation items into four classes:

<u>Class</u>	<u>Function</u>
Dynamic	Transactions which represent units of traffic.
Equipment	Objects which are acted upon by transactions.
Statistical	Queues and tables which measure system behavior.
Operational	System logic which instructs transactions where to go and what to do.

GPSSVGO



JUSD.USERS.REFER(GPSS)

DESCRIPTION

SCRIPT is a document-composition program. It accepts input, processes it, and produces output. SCRIPT recognizes only two different types of input: text and control words. SCRIPT can format files of fixed or variable length. Using control commands which usually begin with a period in column one, you can establish a page format (line length, number of lines per page, etc.) along with headings and footers. Other commands enable you to justify lines, indent blocks of text, incorporate footnotes, and build a table of contents and an index.



JUSD.USERS.REFER(SCRIPT)
JUSD.SCRIPT.DATA

DESCRIPTION

FOCUS is a comprehensive information processing system designed for interactive or batch processing. It contains facilities for describing external files and **FOCUS** files and for generating reports. **FOCUS** provides a dialog manager to incorporate full-screen maintenance procedures and to validate data based on your definitions. The system can be used by nonprogrammers as well as programmers. It is powerful enough for developers to build IBM 3270 menu-driven applications yet easy enough for non-technical users to perform ad hoc queries and write reports.

Other optional features include the following:

- **FOCUS Graph Subsystem**
- **FIDEL**, a full-screen data entry language
- **Simultaneous Users**
- **FOCUS Statistical Analysis System**
- **FOCUS Host Language Interface**
- **TABLETALK**, a window-driven process to create **FOCUS** report requests.
- **FILETALK**, another window-driven process to create **FOCUS** report requests
- **FOCUS Data Dictionary**
- **PC Data Export**

FOCUS also has optional data base interfaces to **ADABAS** and **System 2000** files.



JUSD.USERS.REFER(FOCUS)
JUSD.FOCUS.DATA

INDEX

A

ACCESS parameter, of RACF	8-10
Access control	8-9
Access Method Services	9-2
Account code	1-4, 1-11, 8-1
ADABAS	SC-1
ADDSD command	8-10
ADP Coordinator	1-7, 1-13, 6-3
AFTER statement	6-2
ALC (Assembler Language Coding)	10-2
ALTER, with DF/HSM	4-4
ARBITER	8-4
Archiving, disk	4-3
Archiving, tape	5-4
ASM2 (Automated Space Management)	4-4
Assembler	10-1
Assembler Language Coding	10-2
Assembler language	10-2
Assembler, cataloged procedures	10-3
Assignments for PF keys	2-7
Automated Space Management	4-4

B

B-tapes	5-7
Backup Control Data Set	4-2
Backup data set	4-1
BASIC (Beginners' All-purpose Symbolic Instruction Code)	10-7
BASIS (Battelle's Automated Search Information System)	SC-2
Batch jobs	8-1
BCDS (Backup Control Data Set)	4-2
BDT (Bulk Data Transfer)	8-3
BDT, batch	8-4
BDT, interactive	8-4
BEFORE statement	6-2
BMDP (Biomedical Computer Programs)	SC-5
Bulk Data Transfer	8-3

INDEX

C	CA GKS (Graphical Kernel System)	SC-11
	Cartridge tape	5-1, 5-4
	Cataloged procedures, Assembler	10-3
	Cataloged procedures, FORTRAN	10-6
	Cataloged procedures, PL/1	10-7
	Cataloged procedures, VS COBOL II	10-4
	Changing password	1-5
	Classes, for jobs	6-3
	Cleanup of DF/HSM pool	4-4
	CLIST	2-1, 2-3
	CNTL statement	6-2
	COBOL (Common Business Oriented Language)	10-3
	Compiler	10-1
	Controlling access to data	8-9
	Conventions for data sets	3-1
	Conventions for system data sets	3-2
	Copy, member	9-3
	Copy, sequential data set	9-3
	Creating a data set	3-3
	Crosstalk	1-8
	CUECHART	SC-12
 D	 DATA CONNECTION	 SC-13
	Data base systems, ADABAS	SC-1
	Data base systems, BASIS	SC-2
	Data base systems, S2K	SC-3
	Data Definition, for tape	5-2
	Data Dictionary/Directory System	SC-22
	Data Facility/Hierarchical Storage Manager	4-1
	Data set, archive	4-1
	Data set, backup	4-2
	Data set, characteristics	3-1
	Data set, copying	9-3
	Data set, maintenance	9-1
	Data set, migration	4-1
	Data set, moving	9-3
	Data set, names	3-1

INDEX

	Data set, partitioned	3-12, 9-3
	Data set, prefixes	3-2
	Data set, sequential	3-12
	Data set, utilities	3-8
	Datagraphix 9835 laser printer	7-10
	DBACCESS	SC-3
	DC2 (Data Catalog 2)	SC-22
	DD (Data Definition)	5-2
	Dearchiving, tape	5-4
	DELDS command	8-11
	DELETE, with DF/HSM	4-4
	DF/HSM (Data Facility/Hierarchical Storage Manager)	4-1
	Direct Access Storage Device Management	4-1
	Directory, listing	9-4
	Disk management	4-1
	DISSPLA	SC-14
E	Email	8-8
	Email Coordinator	8-8
	EASYTRIEVE PLUS	SC-4
	Editing commands	2-2, 2-5
	Electronic mail	8-8
	ELIPS (Extended Librarian Interactive Productivity Services)	SC-23
	ESP (Econometric Software Package)	SC-6
F	Facility Impact Monitoring and Analysis System	1-12
	File guard ring	5-8
	File Management System	SC-23
	File structure	3-12
	File transfer, ARBITER	8-3, 8-4
	FIMAS (Facility Impact Monitoring and Analysis System)	1-12
	FOCUS	SC-26
	Foreign tapes	5-6

INDEX

	Forms, examples	7-6
	Forms, printing	7-5
	Forms, WIC	7-10
	FORTTRAN, cataloged procedures	10-6
	FORTTRAN, vector facility	10-4
	FORTTRAN (Formula Translator)	10-4
	Fourth Generation Language	SC-26
	Freehand drawing	SC-20
G	GDG (Generation Data Group)	5-4
	Generation Data Group	5-4
	GEOMAP	SC-15
	GKS (Graphical Kernel System)	SC-11
	Global Status Tracking	8-1
	GPSS (General Purpose Simulation System)	SC-24
	Graphics packages	SC-11 through SC-21
	GST (Global Status Tracking)	
H	Hardwired "look-alike"	1-8
	Hardwired terminal	1-1
	HELP command	2-2, 2-7
	HDELETE command	4-4
	HLIST command	4-2
	HMIGRATE command	4-3
	HRECALL command	4-4
	HRECOVER command	4-3
I	IDCAMS	9-2
	IEBCOPY	9-3
	IEBGENER	9-3
	IEFBR14	9-1
	IEHLIST	9-4
	IEHMOVE	9-3
	IEHMOVE, with DF/HSM	4-4
	IEHPROGM	9-1
	IMSL (International Mathematical and Statistical Library)	SC-7

INDEX

	Indexing system	8-14
	Initiating a data set	3-3
	Interactive System Productivity Facility	2-3
	InterOrg	SC-16
	Interpreter	10-1
	Interpreter, BASIC	10-7
	ISAM data set	4-4
	ISPF (Interactive System Productivity Facility)	2-3
	ISPF, allocating from	3-6
	ISPF, commands	2-4
J	JCL (Job Control Language)	8-1, 9-1
	JES2 (Job Entry Subsystem)	6-1
	JES2 Global Status Tracking	8-1
	Job card	8-1
	Job Control Language	8-1, 9-1
	Job Control Language, for tapes	5-2
	Job Entry Subsystem	6-1
	JES2, control statement	6-1
	JES2, operator command	6-2
	Job classes	6-3
	Job execution order	6-1
	Job output protection	8-11
	Job priority	6-1, 6-3
	Job statement	8-1
	Job Status Tracking System	8-3
	Job Stream Manager	6-3
	Job submission order	6-1
	JOBPARM statement	6-1
	JSTS (Job Status Tracking System)	8-3
K	KERMIT	1-8
	Key word	8-14
	KWIC/KWOC	8-14

INDEX

L	Languages, programming	10-1
	Laser printer, at RTP	7-4
	Laser printer, at WIC	7-11
	LIB/CCF (Change Control Facility)	SC-23
	LIBRARIAN	SC-23
	Limiting access to data	8-9
	Line commands	2-5
	Line editor	3-5
	Line terminal	1-8
	Line terminal, allocating from	3-5
	Link, telecommunications	1-8
	Linkage editor	9-5, 10-1
	LIST data set	7-8
	LMF (Logical Mainframe)	1-3
	Location, of nodes	8-1
	LOG data set	7-8
	LOG/LIST	7-8
	Logical Mainframe	1-3
	Logon procedures	1-1
	Logon statement	1-11
	Lowercase printing	7-5
M	Mail	8-8
	Map program	SC-15, SC-21
	Mathamatical packages	SC-5, SC-7, SC-8, SC-10
	Migration	4-2
	Migration Control Data Set	4-1
	Modems	1-8
	Moving data set	9-3
N	Naming data sets	3-1
	NATURAL	SC-1
	Network Support Group	1-8
	NEWS ALERT	1-7, 1-12
	Node numbers	8-1
	Non-standard data sets	3-2
	NOPROMPT	1-11

INDEX

O	Operating System standards	3-1
	Optimizing Compiler, for PL/1	10-7
	Organization charts	SC-16
	OUTPUT JCL statement	7-4
	Output processing	6-1
P	Paper, examples	7-6
	Paper, for printing	7-5
	Paper, WIC	7-10
	Partitioned data set	3-12, 9-3
	Password	1-5, 8-9
	Password, changing	1-5
	Password, characteristics	1-6
	PERMIT command	8-10, 8-12
	PF (Program Function) keys	2-6
	PL-MATH (Procedure Library - Mathematics)	SC-8
	PLSORT	8-13
	PL/1 (Programming Language 1)	10-7
	Plotting packages (see Graphics packages)	
	PN (Gothic 10 uppercase print train)	7-5
	Primary Option Menu	2-4, 3-6
	Print trains	7-5
	Printing	7-1
	Printing, batch mode	7-3
	Printing, batch utility	7-4
	Printing, documentation	7-1
	Printing, types of paper	7-5
	Printing, using ISPF LIST data set	7-8
	Printing, utility for documentation	7-9
	PRINTOFF command	7-1
	Priority, job	6-3
	PROFILE	1-13
	Profile, of resource	8-11
	Profile, RACF	8-11
	Program Function keys	2-6
	Program Function keys, assignments	2-7

INDEX

	Programming languages	10-1
	Protection, job output	8-11
	Protection of resources	8-11
	Protection, tape	8-12
	PRTY operand	6-3
Q	Qualifier, data set	3-2
R	RACF (Resource Access Control Facility)	8-9
	RALTER command	8-12
	RDEFINE command	8-11
	RDELETE command	8-12
	Reels of tapes	5-1
	Remote sites	7-10
	RESET	1-1
	Resource Access Control Facility	8-9
	Resource profile	8-11
	Retrieval and reporting system	SC-4
	RLIST command	8-12
	ROUTE statement	6-1
	Rules for data sets	3-1
S	S2K (System 2000)	SC-3
	SAS	SC-9
	SAS, cataloged procedure	SC-9
	SAS, CLIST	SC-9
	SAS/GRAPH	SC-17
	SCRIPT	SC-25
	SDSF (Spool Display and Search Facility)	5-6, 6-2, 8-4
	Security	8-9
	Security, on foreign tape	5-8
	Sequential data set	3-12, 9-3
	Simulation and Modeling System	SC-24
	Sort utility	8-13
	Space management	4-1
	Space release	4-1
	Spool Display and Search Facility	5-6, 6-2, 8-2

INDEX

Spreadsheet	SC-10
Standards for data sets	3-1
Statistical packages	SC-5, SC-6, SC-7, SC-9, SC-17
SUPERCALC/MF	SC-10
System catalog conventions	3-2
System data sets	3-2

T

Tape Management Catalog	5-5
Tape management	5-1
Tape, archiving	5-4
Tape, assigning	5-2
Tape, cartridge	5-1, 5-4
Tape, dearchiving	5-5
Tape, expiration date	5-3
Tape, file guard ring	5-8
Tape, foreign	5-6
Tape, protection	8-12
Tape, retention periods	5-3
Tape, storage	5-1
Tape, types available at NCC	5-1
TAPESCAN	5-5
TCP (Terminal/Controller Processor)	1-8
Telephone, User Support	1-1
TELL-A-GRAF	SC-12, SC-13, SC-15, SC-16, SC-18
TELLAPLAN EXPERT	SC-19
Terminal ID number	1-3
Terminal, dial-up	1-8
Terminal, hardwired	1-1
Terminal/Controller Processor	1-8
Text editor	SC-25
Time Sharing Option	1-3, 2-1
TN (Text 1 and 2 uppercase and lowercase print train)	7-5
TSO (Time Sharing Option)	1-3, 2-1
TSO commands	2-1

INDEX

	TSO startup CLIST	2-3
	Turnaround time for jobs	6-3
	TYMNET	1-8
U		
	UNIEDIT	SC-20
	UNIMAP	SC-20, SC-21
	Uppercase printing	7-5
	User Support	1-1
	User-ID	1-4, 8-1
	Utilities, ARBITER	8-4
	Utilities, batch	8-1
	Utilities, batch (IBM)	9-1
	Utilities, BDT	8-5
	Utilities, data set	3-8
	Utilities, GST	8-1
	Utilities, IBM	9-1
	Utilities, IDCAMS	9-2
	Utilities, IEBCOPY	9-3
	Utilities, IEBGENER	9-3
	Utilities, IEFBR14	9-1
	Utilities, IEHLIST	9-4
	Utilities, IEHMOVE	9-3
	Utilities, IEHPROGRM	9-1
	Utilities, JSTS	8-3
	Utilities, KWIC/KWOC	8-13
	Utilities, NCC	8-1
	Utilities, PLSORT	8-13
	Utilities, Primary Option Menu	3-7
	Utilities, printing documentation	7-9
	Utilities, RACF	8-9
	Utilities, SDSF	8-2
V		
	Vector facility	10-4
	VS COBOL II	10-4
	VSAM (Virtual Storage Access Method)	9-6
	VSAM utility	9-2
	VSAM/AID	9-6

INDEX

W	Welcome screen	1-2, 8-6, 8-8
	Word processing	SC-25

Micro-to-Mainframe Link

MICRO-TO-MAINFRAME LINK

FEBRUARY 1990

Prepared by:

**US Environmental Protection Agency
National Data Processing Division
National Computer Center
Research Triangle Park
North Carolina**

Preface

Micro-to-Mainframe Link provides essential information for users of the National Computer Center who transfer files between the mainframe and a Personal Computer. Each type of file transfer is discussed including asynchronous, coax, LAN SNA gateway, and Arbiter.

CONTENTS

INTRODUCTION	1
ASYNCHRONOUS FILE TRANSFERS	2
KERMIT PROTOCOL	2
MS-KERMIT	5
MAINFRAME TO PC	5
MS-KERMIT DOWNLOAD PROCEDURES	6
CROSSTALK DOWNLOAD PROCEDURES	7
UPLOADING DATA TO THE MAINFRAME VIA CROSSTALK OR MS-KERMIT	7
KERMIT BINARY FILE TRANSFER	8
COAX FILE TRANSFERS	10
IRMA CARD AND FORTE CARD	10
UPLOADING USING IRMA OR FORTE	10
CXI CARD	13
UPLOADING USING THE CXI CARD	13
DOWNLOADING USING COAX CARDS	13
LAN SNA GATEWAY FILE TRANSFERS	16
UPLOADING USING THE LAN SNA GATEWAY	16
DOWNLOADING USING THE LAN SNA GATEWAY	19

CONTENTS

ARBITER FILE TRANSFERS21

TWO METHODS TO USE WITH ARBITER.....21

UPLOADING USING ARBITER.....22

DOWNLOADING USING ARBITER.....25

COMMAND LINE TRANSFERS30

INDEX.....Index-1

INTRODUCTION

Although there are many data file transfer needs within the Environmental Protection Agency, this portion of the **Guide to NCC Services** is limited to transfers of text or binary data from MS DOS, IBM-compatible microcomputers to any of the NCC-IBM mainframe computers. It is assumed that you have acquired a User-ID and account on at least one of the NCC-IBM mainframes and are able to log on to TSO.



For more information on registration procedures and for detailed logon instructions, refer to the section of this guide entitled **Getting Started**.

File transfers can occur across any micro-to-mainframe connection **except** the NCC's System Network Architecture (SNA) protocol converter, also referred to as the Terminal/Controller Processor (TCP). The NCC supports transfer accesses in the following categories:

- Asynchronous: dialup, multiplexers, and DEC terminal servers
- Coaxial: IRMA, CXI, and FORTE
- Local Area Network (LAN) SNA gateway connections

Asynchronous connections are established through modems such as HAYES 1200 or 2400 baud modems or through direct wired connections. These direct connections include multiplexer devices, often referred to as muxes, and DEC terminal servers.

ASYNCHRONOUS FILE TRANSFERS

KERMIT PROTOCOL

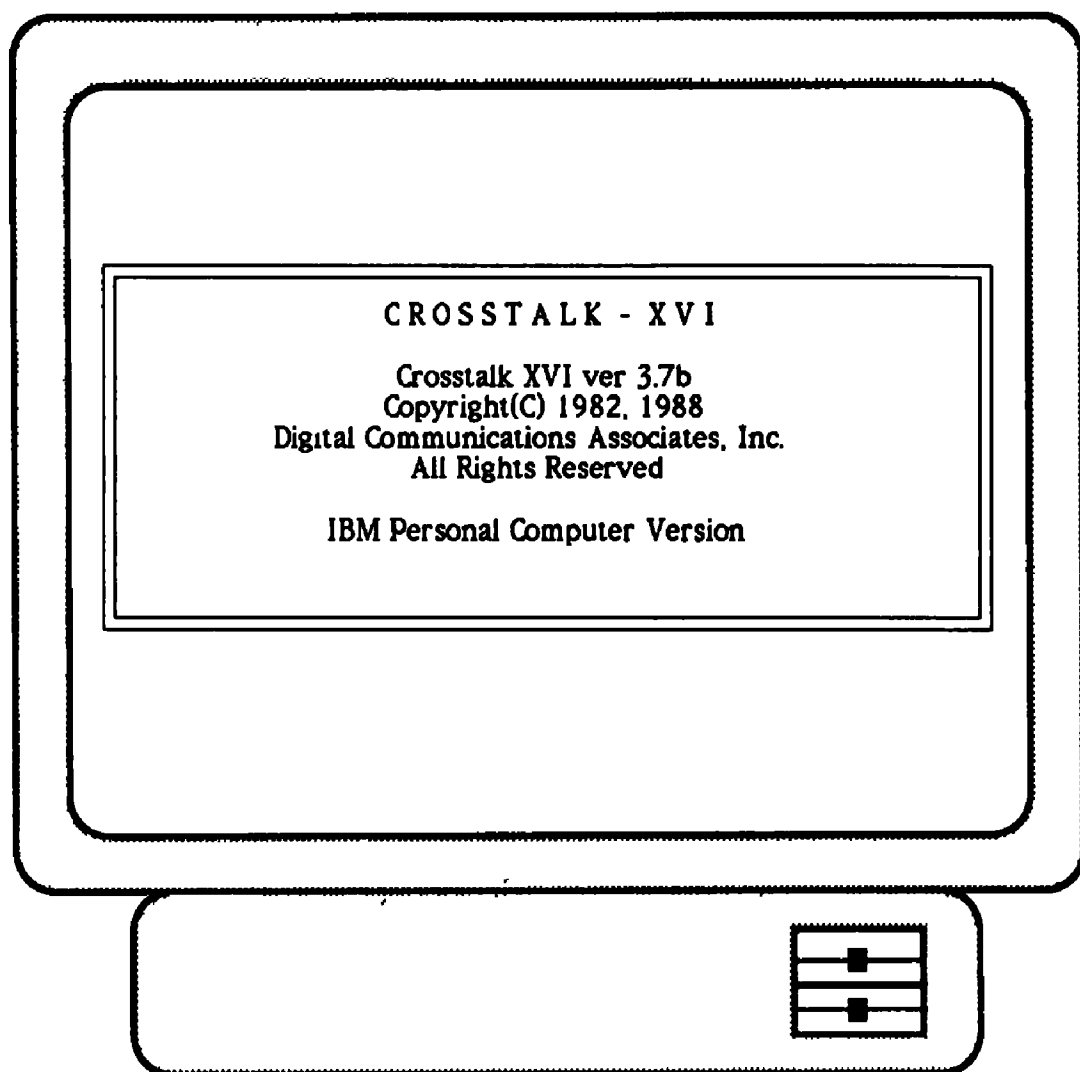
Kermit is a file transfer protocol which will ensure error free data transfer between two computers across asynchronous communications connections. A Kermit file transfer requires that both computers involved have Kermit software available. The Kermit file transfer protocol was developed several years ago by Columbia University for transferring data to and from mainframes. Columbia placed Kermit in the public domain, and it has been developed for many different computer systems including IBM-compatible PC's and IBM mainframes. The version on the NCC-IBM mainframe is called TSO-Kermit; the version for the IBM PC is called MS-Kermit.

Both Crosstalk and MS-Kermit may be used on the PC to accomplish Kermit text file transfers with other computers across asynchronous connections.



Crosstalk and MS-Kermit both accomplish file transfers, but each has its own set of display menus and screens. Their similarities lie in the fact that both use the Kermit file transfer protocol.

While all versions of MS-Kermit will perform Kermit file transfer, Crosstalk must be version 3.6 or later to perform Kermit file transfers. The opening banner of Crosstalk will display the version as you start the program as shown below:



This screen will disappear after a few seconds, or you can just press ENTER and the following screen will appear:

CROSSTALK - XVI Status Screen

Off line

Name	Crosstalk default settings	Loaded	STD
Number	0700	Capture	Off

Communications parameters

Speed	2400	PARity	Even	DUplex	Full
Data	7	STop	1	EMulate	VT-100
Port	1			MOde	Call

Filter settings

DEbug	Off	LFauto	Off
TAbez	Off	BLankex	Off
INfilter	On	OUtfilter	On

Key settings

ATten	GS (^)	COmmand	ETX (^C)
SWitch	Home	BReak	End


Send control settings

CWait	None
LWait	None

Available command files

1) EMAIL
2) NEWUSER
3) SETUP
4) STD
5) TSO

Enter number for file to use (1 - 12).



Command files allow you to automatically access the hardware by storing the phone numbers and other parameters in a macro-like file. For example, this screen has been set up to allow access to TSO on the mainframe simply by entering the number 5.

For more information on setting up your own command files, see the Crosstalk documentation or call User Support.



Note that if you add or delete a command file, numbering will change because Crosstalk arranges the files alphabetically.

MS-KERMIT

For convenience, the MS-Kermit version includes the Kermit transfer protocol along with a terminal emulation program to allow you to log on to the mainframe and transfer data in the same program.



Every mainframe/PC transfer (either direction) must begin with the mainframe because you are using the PC as a way to enter commands.

MAINFRAME TO PC

Transferring data from a mainframe to a PC is commonly referred to as downloading. To begin a Kermit file transfer from the mainframe to your PC, log on to the IBM and get to the TSO READY prompt. Refer to the section of this guide entitled **Getting Started** for logon details. Then enter the following at the TSO READY prompt:

```
READY  
KERMIT
```

The following prompt will then appear:

```
Kermit-TSO>
```

Then type SEND followed by the TSO data set name you wish to transfer to your PC. A message should appear instructing you to begin receiving data on your PC. An example follows:

Kermit-TSO>>SEND data-set-name

Delay in seconds before sending is 20
Escape to your local KERMIT and enter the RECEIVE command

At this point procedures differ depending on whether you are using Crosstalk (version 3.6 or later) or MS-Kermit (currently version 2.30).

MS-KERMIT DOWNLOAD PROCEDURES

If you are using MS-Kermit, press CTRL-] followed by C to escape to the command mode on the PC. In newer versions of MS-Kermit, Alt-X will function the same way.

The Kermit-MS> prompt appears on the screen. Enter RECEIVE in response to the prompt as shown below:

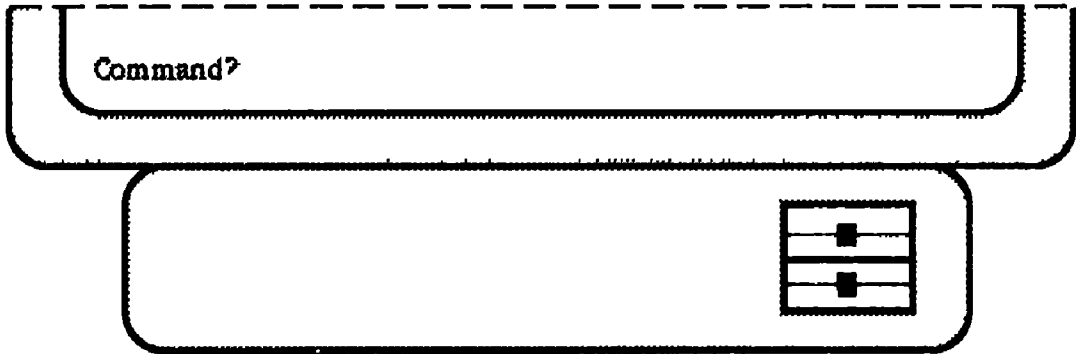
```
Kermit-MS>RECEIVE
Kermit-MS  V2 30  8 Jan 1988
      File name  DATA SET NAME
KBytes transferred 12345
      Receiving  In progress
Number of packets  0
      Packet length
Number of retries  1
      Last error. None
      Last warning None
```



The transfer begins and Kermit continues to display the status of the transfer until it completes.

CROSSTALK DOWNLOAD PROCEDURES

If you are using Crosstalk, press your Attn (attention) key, which is usually defined as ESC, to go to the PC. You will see a Command? prompt on the bottom of your screen as shown below:



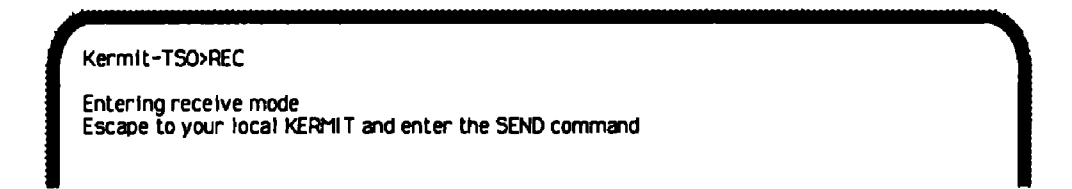
Enter **KERMIT RECEIVE** in response to the prompt. The file transfer begins and continues to display the status of the transfer until it is complete.



Commands can be abbreviated to their shortest unique length. For example, **RECEIVE** can be shortened to **REC**.

UPLOADING DATA TO THE MAINFRAME VIA CROSSTALK OR MS-KERMIT

Sending data from your PC to the IBM mainframe is very much like receiving data. First log on to the mainframe and get the TSO READY prompt. Then type **KERMIT** to get the Kermit-TSO> prompt. Tell the mainframe to begin receiving data by issuing a **RECEIVE** data set command at the Kermit-TSO> prompt as shown below:



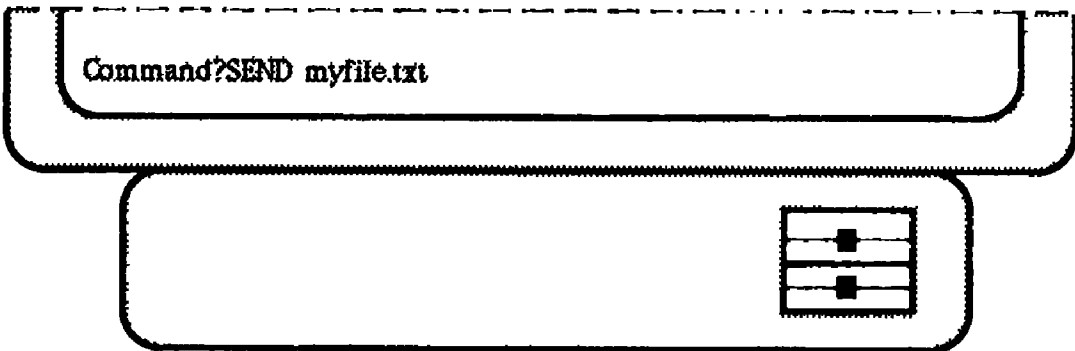
Then escape from the terminal mode of MS-Kermit or Crosstalk, (CTRL-] or Attn key as discussed before) and tell your PC to send the data you wish to transmit. Crosstalk uses the following command at the Command? prompt to send data to the TSO data set:

KERMIT SEND filename

The command to do the same thing in MS-Kermit is as follows:

SEND filename

An example follows:



KERMIT BINARY FILE TRANFER

Kermit binary file transfers are used when the data being transferred is data that must not be changed. Since text is represented differently on mainframes, such as the NCC's IBM 3090, than on PC's, the text must be converted as the data is transmitted. Kermit translates unless you instruct it to leave the data alone. If you disable the translate feature, you will be affecting a binary file transfer.

To transfer binary data you must first tell TSO-Kermit to handle the data as binary by issuing the

following command at the Kermit-TSO> prompt prior to starting your SEND or RECEIVE of any data:

SET FILE BINARY



To reverse this and start text file transfers the command is SET FILE TEXT.

MS-Kermit requires no special commands to switch to binary mode from text mode. It recognizes the mainframe activities as binary activities and switches accordingly.

However, Crosstalk must be told to switch to binary mode before starting to send or receive data with the following entered at the Command? prompt:

A diagram of a terminal window. The top part is a rounded rectangle containing the text "Command?kermit mode binary". Below this is a larger rounded rectangle representing the main display area, which is currently empty. To the right of this main area is a small icon representing a control panel with three horizontal slots, each containing a small square.

Binary file transfers must not be used when sending text data from a PC to the mainframe to be further edited or printed. The resulting data on the mainframe will be useless except by another PC which could download the data in binary mode and have a duplicate copy of what was transferred to the mainframe.

Binary data file transfers are useful for distributing data such as WordPerfect files, dBASE files, and Lotus files as well as programs for IBM-compatible PC's.

COAX FILE TRANSFERS

Another method which is used within the EPA to connect IBM-compatible PCs to the various IBM mainframes uses coaxial cable (often referred to as coax). This coax is connected to the PC by use of coax adapters or interface cards installed inside the PC.

There are three major coax cards used within EPA and supported by NCC User Support:

- IRMA
- FORTE
- CXI (PCOX)

All three products can perform file transfers provided that you have the right software installed on your PC. As in any file transfer there must be software on each computer capable of communicating with the other across the communications link. The NCC supports one software package called IND\$FILE on the IBM mainframes which will communicate with any of the three interface cards mentioned.

IRMA CARD AND FORTE CARD



The IRMA card from Digital Communications Associates (DCA) will transfer files using IND\$FILE with software on the PC called FT3270 SEND/RECEIVE.

The product called FTTSO is not supported by the NCC and should not be used.

Like the IRMA card, the FORTE card, also manufactured by DCA, uses the FT3270 SEND/RECEIVE software.

UPLOADING USING IRMA OR FORTE

To send, or upload, a file to the IBM mainframe from your PC using the IRMA or FORTE card, the IRMA or FORTE terminal software must be loaded as

resident in the PC's memory for FT3270 to work. See the IRMA or FORTE manuals for more information on making the terminal software resident.

Access the IBM through the IRMA or FORTE connection (often just by selecting the software from the AUTOMAX menu). Then log on to TSO and get to the READY prompt. See the section of this guide called **Getting Started** for logon details. At the READY prompt, press the HOTKEY.



The HOTKEY is usually defined as pressing both shift keys simultaneously to escape to the DOS prompt. At the DOS prompt enter the following command:

```
SEND d:\path\pcfile.typ tso.dsn[(mbr)] [options]
```

Where the command elements are explained as follows:

d:\path represents the DOS path to the file to be sent, such as C:\MAIN\.

pcfile.typ represents the DOS filename of the file to be sent to the mainframe.

tso.dsn is the destination data set name in TSO followed by an optional partitioned data set member name if the target data set is a partitioned data set.

options at the end of the command may include any of the following:

- **Data Control Block (DCB) information:**
BLKSIZE (size of logical data blocks)
LRECL (length of logical data records)
RECFM (record format such as fixed or variable)
SPACE (how much space to allow for the data on the mainframe)
TRACKS or **CYLINDERS** to refer to the **SPACE** option
- **ASCII** (to translate from ASCII to EBCDIC)
- **CRLF** (to define CRLF as end of logical records)
- **APPEND** (to add the new data to an existing data set on the mainframe).

For example, to send a small text file called **IRMATEXT.DOC** from the PC's A: disk drive to a data set in TSO called **ABCW123.IRMATEXT** with member **MAY0189** to be printed from the IBM mainframe, the command would look like the following:

```
C \>SEND A \IRMATEXT.DOC 'ABCW123.IRMATEXT(MAY0189)'
RECFM(FB) LRECL(80) BLKSIZE(6160) SPACE(5,1) TRACKS ASCII CRLF
```



Since the DCB information is default values, the command can be shortened to the following:

**SEND A:\IRMATEXT.DOC
'ABCW123.IRMATEXT(MAY0189)' ASCII CRLF**



For more information on TSO data set data control block information, refer to Section 3 of the **IBM Ready Reference** or refer to IBM documentation.

After entering the **SEND** command, a status line appears on the PC's screen and displays the progress of the file transfer. When it is complete, you can **HOTKEY** back to the TSO session and browse, edit, or print the newly uploaded data set.

CXI CARD

The CXI card from Novell (sometimes called the PCOX card) has its own **SEND/RECEIVE** software product. However, like **FT3270 SEND/RECEIVE** the CXI **SEND/RECEIVE** software will communicate with **IND\$FILE** to transfer files to and from the mainframe.

UPLOADING USING THE CXI CARD

The **SEND** command syntax for the CXI/PCOX card is the same as the IRMA and FORTE syntax unless you are using the **WINDOWED** version of the CXI/PCOX product. For the **WINDOWED** (multi-session) product, a window designator such as **A:** must be placed in front of the TSO data set name to direct the data to the appropriate session for transfer to a TSO data set.



For more information on **WINDOWED CXI/PCOX** sessions see the **PCOX** documentation.

DOWNLOADING USING COAX CARDS

The **RECEIVE** command is used to move data from a TSO data set to a file on your PC. The command syntax is as follows:

RECEIVE d:\path\pcfile.typ tso.dsn [(mbr)] [opt]

Where the command elements are explained as follows:

d:\path represents the DOS path to the file to be created on the PC.

pcfile.typ represents the DOS filename of the file to be received from the mainframe.

tso.dsn is the data set name in TSO from which you wish to receive the data followed by an optional partitioned data set member name if the source data set is a partitioned data set.

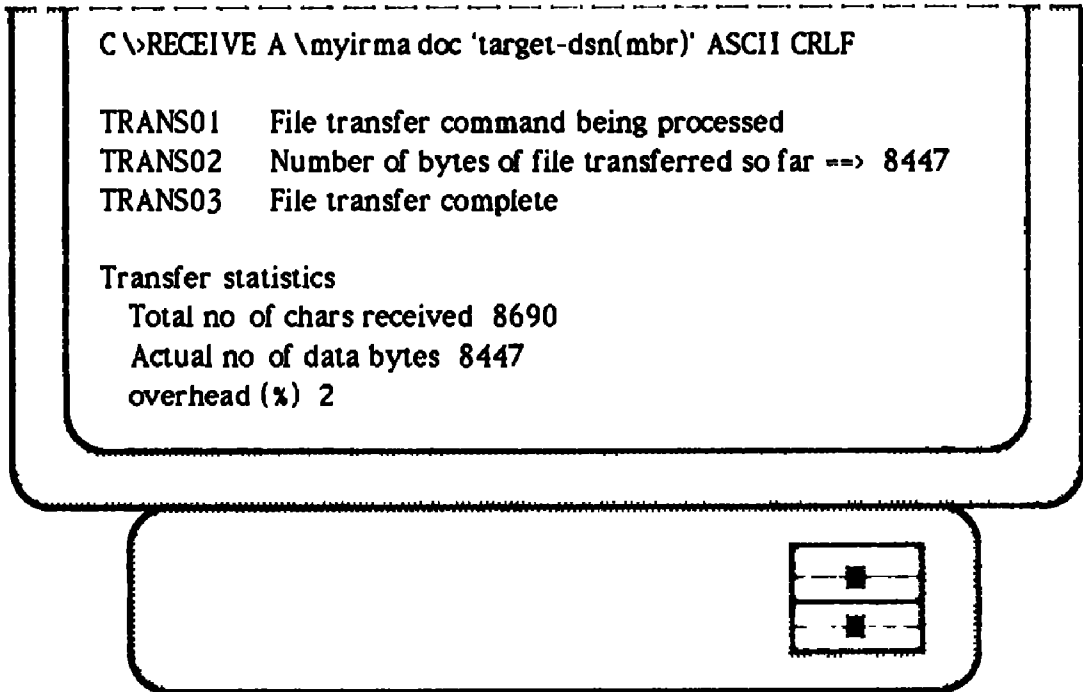
There are fewer options at the end of the **RECEIVE** command than in the **SEND** command:

- **ASCII** (to translate from EBCDIC to ASCII).
- **CRLF** (to define CRLF as end of logical records).
- **APPEND** (to add the new data to an existing file on the IBM PC).

For example, to receive a small text file called **IRMATEXT.DOC** to the A: disk drive on the PC from a data set in TSO called 'ABCW123.IRMATEXT' member **MAY0189** to be merged into a WordPerfect document on the PC, the command would look like the following:

**RECEIVE A:\IRMATEXT.DOC
'ABCW123.IRMATEXT(MAY0189)' ASCII CRLF**

After you enter the RECEIVE command, a status line appears on the PC's screen and displays the progress of the file transfer, as shown in the example below:



Transfer messages are different for each type of coax transfer. But each will notify you that the transfer is complete.

When your transfer from the mainframe is complete, you can edit, merge, or print the new PC file.

LAN SNA GATEWAY FILE TRANSFERS

PC TOKEN RING LAN

PC Token Ring LAN's, installed throughout the Agency, often provide an easily accessible pathway to the IBM mainframe. EPA sites with Novell SNA gateways will have the Novell Workstation software available for 3270 emulation. This software is similar to the CXI/PCOX coax software discussed previously.

Like the CXI/PCOX software, the workstation software must be loaded as resident in memory for the SEND and RECEIVE software to function in the PC. The main difference between the LAN file transfer and the coax file transfer is in the SEND command.



The SEND command for the LAN conflicts with a utility which is available for LAN users to send messages to each other and is called SEND. To resolve this problem NCC has renamed the file transfer send command to the following:

SENDFILE

With the exception of SENDFILE, command syntaxes for sending and receiving are the same as for the CXI/PCOX access method.

The LAN SNA Gateway software from Novell in conjunction with the IBM Token Ring cards will transfer files using IND\$FILE with software on the PC called CXI PCOX SEND/RECEIVE.

UPLOADING USING THE LAN SNA GATEWAY

To send, or upload, a file to the IBM mainframe from your PC using the LAN SNA Gateway, the Gateway software must be resident on the PC's memory.



For more information on making the terminal software resident, see the CXI PCOX manual.

Access the IBM through the LAN SNA Gateway connection. Then log on to TSO and get to the READY prompt. See the section of this guide called **Getting Started** for logon details. At the READY prompt, press the HOTKEY (usually defined as Alt-PageUp) to escape to the DOS prompt. At the DOS prompt enter the following command:

```
SENDFILE d:\path\pcfile.typ w:tso.dsn[(mbr)]  
[options]
```

Where the command elements are explained as follows:

d:\path represents the DOS path to the file to be sent, such as C:\MAIN\.

pcfile.typ represents the DOS filename of the file to be sent to the mainframe.

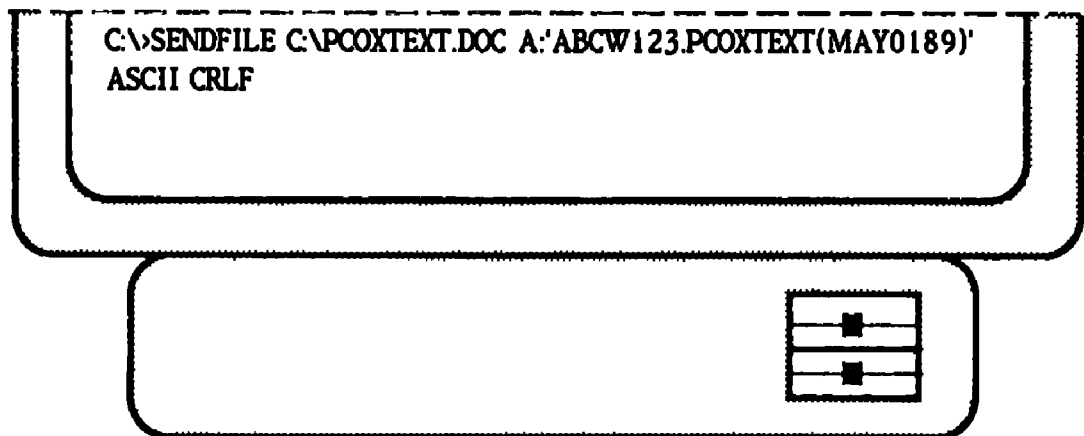
w: refers to the window you wish to transfer the data with, since the gateway software operates in a windowed mode.

tso.dsn is the destination data set name in TSO followed by an optional partitioned data set member name if the target data set is a partitioned data set.

options at the end of the command may include any of the following:

- **Data Control Block (DCB) information:**
BLKSIZE (size of logical data blocks)
LRECL (length of logical data records)
RECFM (record format such as fixed or variable)
SPACE (how much space to allow for the data on the mainframe)
TRACKS or **CYLINDERS** to refer to the **SPACE** option
- **ASCII** (to translate from ASCII to EBCDIC)
- **CRLF** (to define CRLF as end of logical records)
- **APPEND** (to add the new data to an existing data set on the mainframe)

For example, to send a small text file called PCOXTTEXT.DOC from the PC's C: disk drive to a data set in TSO called 'ABCW123.PCOXTTEXT' with member MAY0189 using the A: window to be printed from the IBM mainframe, the command would look like the following:





For more information on TSO data set data control block information, see Section 3 of **IBM Ready Reference** and IBM documentation.

After entering the **SENDFILE** command, a status line appears on the PC's screen and displays the progress of the file transfer. When it is complete, you can **HOTKEY** back to the TSO session and browse, edit, or print the newly uploaded data set.

DOWNLOADING USING THE LAN SNA GATEWAY



The **SEND** and **RECEIVE** command syntax for the **CXI/PCOX LAN SNA Gateway** product is the same as the **CXI/PCOX** coax card syntax.

For more information on **WINDOWED CXI/PCOX** sessions see the **PCOX** documentation.

The **RECEIVE** command is used to move data from a TSO data set to a file on your PC. The command syntax is as follows:

```
RECEIVE d:\path\pcfile.typ w:tso.dsn[(mbr)]  
[options]
```

Where the command elements are explained as follows:

d:\path represents the DOS path to the file to be created on the PC.

w: refers to the window you wish to transfer the data with, since the gateway software operates in a windowed mode.

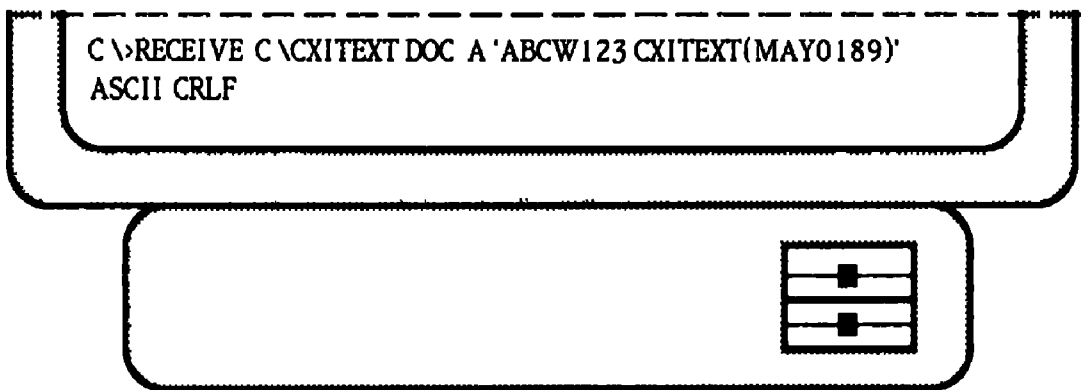
pcfile.typ represents the DOS filename of the file to be received from the mainframe.

tso.dsn is the data set name in TSO from which you wish to receive the data from followed by an optional partitioned data set member name if the source data set is a partitioned data set.

options include the following:

- **ASCII** (to translate from EBCDIC to ASCII)
- **CRLF** (to define CRLF as end of logical records)
- **APPEND** (to add the new data to an existing file on the IBMPC)

For example, to receive a small text file called CXITEXT.DOC to the C: disk drive on the PC from a data set in TSO called 'ABCW123.CXITEXT' member MAY0189 through PCOX window A: to be merged into a WordPerfect document on the PC, the command would look like the following:



After entering the **RECEIVE** command a status line appears on the PC's screen and displays the progress of the file transfer. When it is complete you can edit, merge, or print the new PC file.

ARBITER FILE TRANSFERS

ARBITER FILE TRANSFERS

Arbiter has many features including using the mainframe as disk drive server, 3270 full-screen terminal emulation, data translation, and file transfers. This section will cover the file transfer features of Arbiter.

Like MS-Kermit, Crosstalk, and IRMA, Arbiter can transfer data between your PC and the NCC-IBM mainframe. However, unlike all of the other methods available at the NCC, Arbiter is not specific to any one connection type. It can attach IBM-compatible PC's to the IBM mainframe using a variety of connection methods. Arbiter supports almost all of the NCC communications access methods. In addition, all features of Arbiter are available to you regardless of the access method you choose to use.

The NCC purchases, installs, and maintains the Arbiter mainframe products. The PC software components and documentation are available at no charge through PC Site Coordinators and Information Centers at Washington and RTP. Or Arbiter software and documentation kits can be obtained from NCC Production Control for a copy fee of \$25.00 per kit. Contact Production Control at one of the telephone numbers listed below and be sure to have a valid IBM timeshare account number available for billing purposes.



TWO METHODS TO USE WITH ARBITER

(FTS) 629-3609
(919) 541-3609

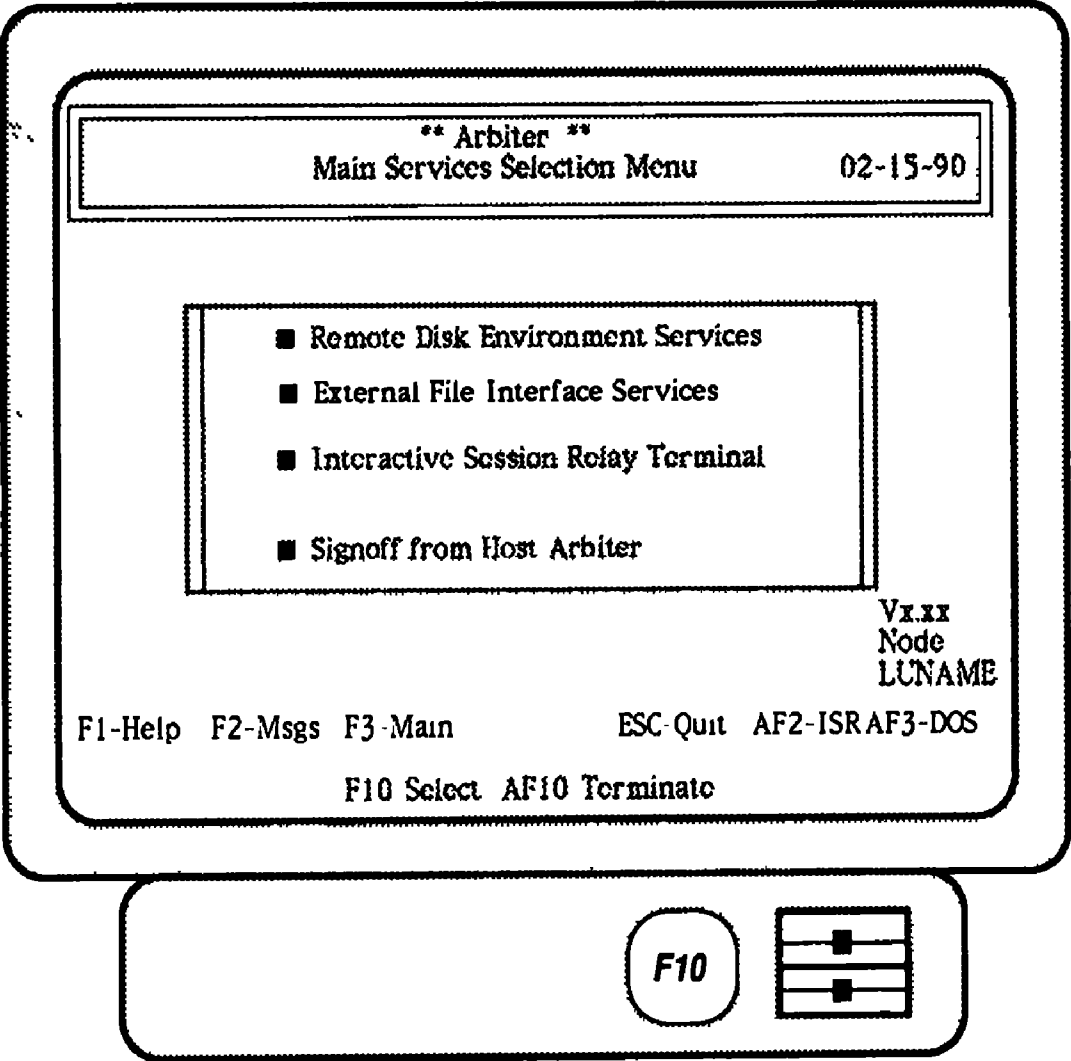
After logging onto Arbiter, there are two ways to transfer a file:

Full-Screen Panels. Full screen panels prompt you through the process. All field data is retained from one transfer session to the next to allow for easy editing of repeated transfers.

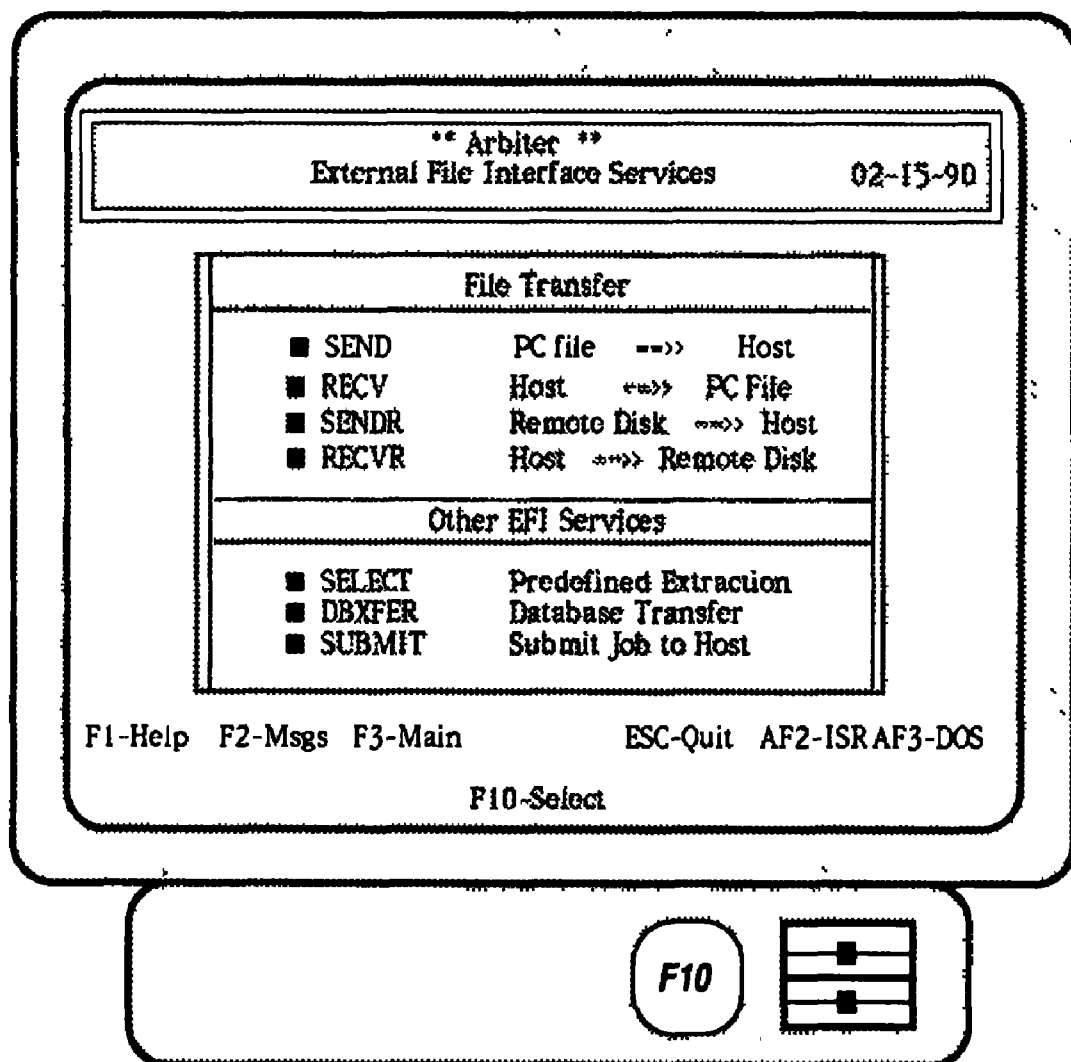
Extended commands. You can issue extended commands on the DOS command line. This is useful when automating file transfers using the DOS batch functions.

**UPLOADING
USING ARBITER**

To start a transfer of data from the PC to the main-frame using full-screen prompting, issue the command \$ at the DOS prompt. The following screen appears:



Select the **EXTERNAL FILE INTERFACE (EFI)** option by moving the highlighted bar with your arrow keys and pressing **F10**. The next screen then appears:



Next, highlight the **SEND** command and press **F10**. The following screen appears:

PC >>> Host	** Arbiter ** File Transfer	02-15-90				
<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">TEXT</td> <td style="padding: 5px;">TEXT</td> </tr> <tr> <td style="padding: 5px;">Transfer Type</td> <td style="padding: 5px;">FIXREC BINARY</td> </tr> </table>			TEXT	TEXT	Transfer Type	FIXREC BINARY
TEXT	TEXT					
Transfer Type	FIXREC BINARY					
From: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; padding: 5px;">FilePath</td> <td style="padding: 5px;">C:</td> </tr> </table>			FilePath	C:		
FilePath	C:					
To: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Host DSN</td> <td style="width: 50%; padding: 5px;">Member ()</td> </tr> </table>			Host DSN	Member ()		
Host DSN	Member ()					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Append</td> <td style="width: 50%; padding: 5px;">No</td> </tr> </table>			Append	No		
Append	No					
F1-Help F2-Msgs F3-Main F4-EFI F10-Exec ESC-Quit AF2-ISR AF3-DOS <div style="display: flex; justify-content: space-around;"> F5-↑ F6-↓ F9-View </div>						

F10

Specify the PC path and file name of the PC file you wish to send, the TSO data set name which will receive the data (including a member name if needed for a partitioned data set), and the file transfer type (TEXT or BINARY).



More information on the file transfer type may be found in the Arbiter Users Guide in Chapter 21.

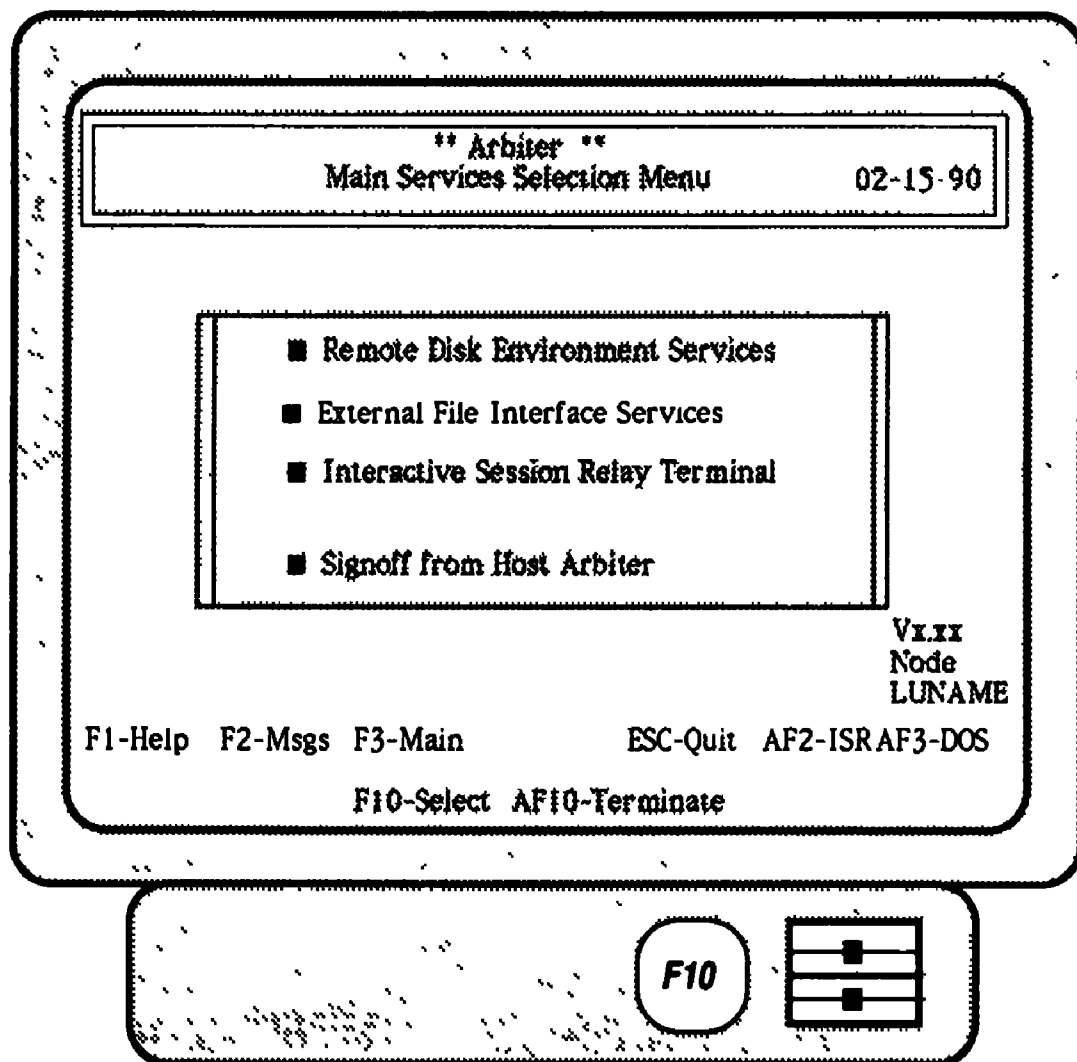
The filepath field requires a valid PC file name and optional path that references an existing PC file.



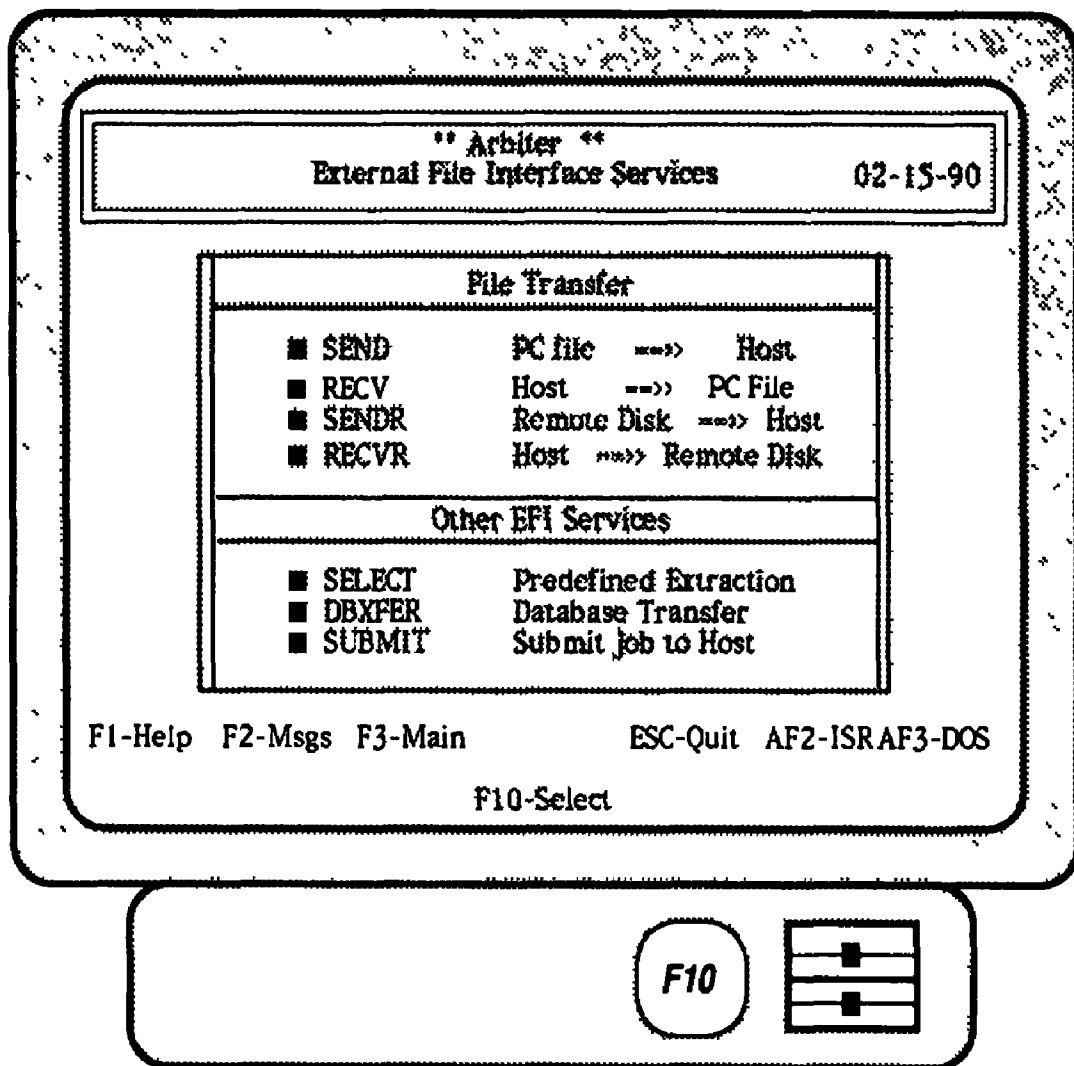
The TSO data set field requires the name of a PRE-ALLOCATED data set on the mainframe because Arbiter is not capable of dynamic allocation of TSO data sets. However, members of partitioned data sets (PDSs) will be dynamically created once the PDS is allocated.

DOWNLOADING USING ARBITER

Downloading data is easier than uploading because you need not allocate PC files. The receive process is started like the send process by issuing the \$ command at the DOS prompt. You will again see the following screen:




Select the EFI option with the highlighted bar, being sure to press F10 to select the option. The following screen appears:



Next, select RECV using the highlighted bar and F10. The following screen appears:

** Arbiter ** File Transfer		02-15-90
Host ==>> PC		
The Host Data Set Name must be filled in		
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> TEXT Transfer Type </div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;"> TEXT FIXREC BINARY </div>	
From:		
Host DSN	Member	()
To:		
FilePath	C:	
Replace	No	
F1-Help F2-Msgs F3-Main F4-EFI F10-Exec ESC-Quit AF2-ISR AF3-DOS		

F10



On the Host ==>> PC panel, specify the host data set name and a member name if the data set is a partitioned data set, a PC file name to receive the host data, and the type of data transfer (TEXT or BINARY).

The type of file transfer may be one of the selections you see by pressing the F5 and F6 keys on your keyboard with the cursor placed in the box labeled

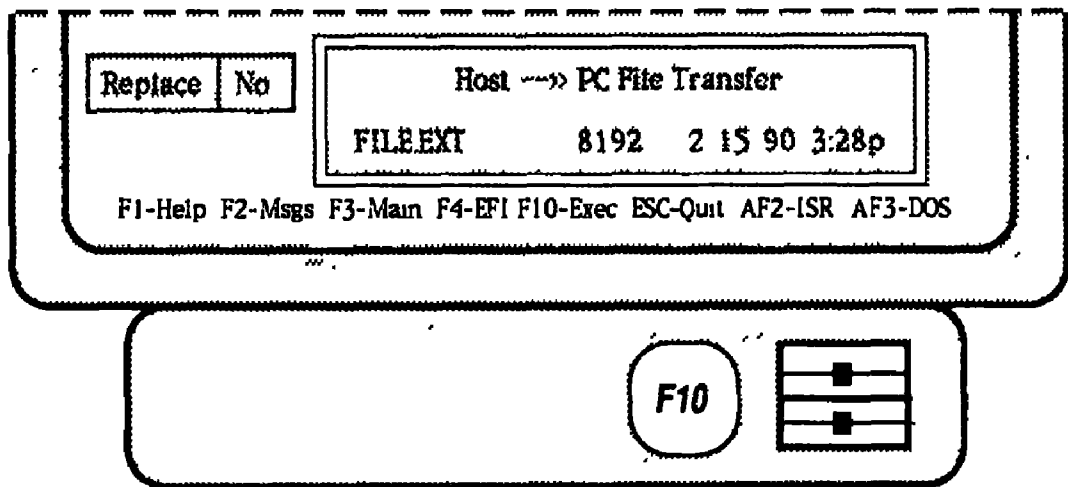
'Transfer Type', or you may create a transfer type of your own by pressing the F9 key.



For more information on modifying transfer characteristics, see the Arbiter Users Guide, Chapter 21.

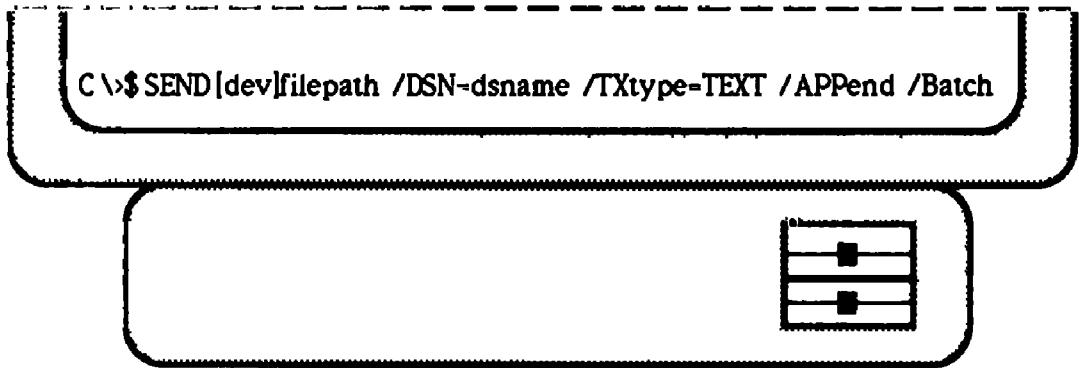
The last field on the the Host ==>> PC screen is the Replace field. The default is NO. If you place YES in this box, you will overwrite the data in the PC file if the PC file already exists; otherwise, the file transfer will abort and tell you that the PC file cannot be overwritten.

When all fields are complete, press F10 to begin the file transfer. The PC will display a small window at the bottom of your screen showing the status of your file transfer. This window displays the name of the file into which data is being written, the date and time of the transfer, and the number of bytes transferred, as shown in the following example:



COMMAND LINE TRANSFERS

You may suppress the full-screen panels of Arbiter if you wish to use PC batch processing to transmit and receive data from the mainframe. All of the options available from the panels may be placed on the command line of the \$ command, as shown in the following example:



The \$ SEND command is used to transfer data from the PC to the mainframe. Some of the commonly used options are as follows:

dev	Such as C: for a hard drive.
filepath	Such as \DOS\ for a DOS subdirectory.
/DSN='dataset'	Defines the TSO data set.
/TXtype=TEXT	Transfer type such as TEXT or BINARY.
/APPend	Appends file to end of mainframe data set.
/Batch	Suppresses the Arbiter panels.



More information on other transfer options may be found in the Arbiter Users Guide in Chapter 21.

INDEX

\$	\$ command	22
A	Account	1
	Arbiter file transfer	21
	Arbiter PC software	21
	Asynchronous transfer	1
	AUTOMAX menu	11
B	Binary file transfer	1, 8, 9, 24, 28
	Binary file transfer, using Arbiter	24, 28
	Binary file transfer, using Crosstalk	9
	Binary file transfer, using Kermit	8
C	Coax cards	10
	Coax file transfer	10
	Coaxial cable	10
	Coaxial transfer	1
	Columbia University	2
	Command line transfers, using Arbiter	30
	Command mode, on the PC	6
	Command prompt	7
	Command, abbreviating	7
	Command, extended for Arbiter	22
	Commands, KERMIT SEND	8
	Commands, RECEIVE	6, 14, 19
	Commands, RECV	27
	Commands, SEND	6, 8, 11, 16, 23
	Commands, SENDFILE	16
	Crosstalk	2, 3
	CXI (PCOX) card	10
	CXI	1
	CXI card	13
	CXI, WINDOWED version	13
D	Data set, preallocated	25
	DEC terminal server	1
	Dialup connection	1

INDEX

	Digital Communications Associates	10
	Direct wired connection	1
	Documentation, for Arbiter	21
	Downloading, using Arbiter	25
	Downloading, using coax cards	14
	Downloading, using Crosstalk	7
	Downloading, using CXI	14
	Downloading, using FORTE	14
	Downloading, using IRMA	14
	Downloading, using Kermit	5
	Downloading, using MS-Kermit	6
	Downloading, using the LAN SNA gateway	19
E	EFI (Extended File Interface)	23, 26
	Extended command, for Arbiter	22
	External File Interface	23, 26
F	File transfer, introduction	1
	File transfer, Arbiter	21
	File transfer, coax	10
	File transfer, Kermit	2
	File transfer, LAN SNA gateway	16
	FORTE	1
	FORTE card	10
	FT3270 SEND/RECEIVE	10
	FTTSO	10
	Full-screen panels, for Arbiter	21
H	HOTKEY	11, 13, 17
I	IND\$FILE	10, 16
	IRMA	1
	IRMA card	10
K	KERMIT RECEIVE	7
	KERMIT SEND command	8
	Kermit protocol	2

INDEX

L	LAN (Local Area Network)	1
	LAN SNA gateway	1
	LAN SNA gateway file transfer	16
	Local Area Network	1
M	Mainframe to PC	5
	Modem	1
	MS-Kermit	2, 5
	Multiplexer connection	1
N	NCC Production Control	21
	Novell workstation	16
P	Preallocated data set	25
	Production Control	21
	Protocol converter	1
	Protocol, file transfer	2
R	RECEIVE command	6, 14, 19
	Receive, using MS-Kermit	6
	Receiving, using Arbiter	25
	Receiving, using coax cards	14
	Receiving, using Crosstalk	7
	Receiving, using CXI	14
	Receiving, using FORTE	14
	Receiving, using IRMA	14
	Receiving, using MS-Kermit	7
	Receiving, using the LAN SNA gateway	19
	RECV command	27
S	SEND command	6, 8, 11, 16, 23, 30
	SEND command, LAN SNA gateway	16
	SENDFILE command	16, 17
	Sending, using Arbiter	22
	Sending, using Crosstalk	7
	Sending, using CXI	13
	Sending, using FORTE	10

INDEX

	Sending, using IRMA	10
	Sending, using LAN SNA gateway	16
	Sending, using MS-Kermit	5
	Shift keys (HOTKEY)	11
	SNA (System Network Architecture)	1
	SNA gateway	1
	System Network Architecture (SNA)	1
T	Telephone numbers, Production Control	21
	Terminal/Controller Processor (TCP)	1
	Text file transfer	1, 24, 28
	Text file transfer, command to set	9
	Text transfer, compared to binary	8
	Time Sharing Option	1
	Token Ring card	16
	Token Ring LAN	16
	Translation, of text	8
	TSO (Time Sharing Option)	1
	TSO-Kermit	2
U	Uploading, using Arbiter	22
	Uploading, using Crosstalk	7
	Uploading, using CXI	13
	Uploading, using FORTE	10
	Uploading, using IRMA	10
	Uploading, using LAN SNA gateway	16
	Uploading, using MS-Kermit	7
	User-ID	1
W	Workstation software	16

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VAX

VAX Cluster Ready Reference

VAX CLUSTER READY REFERENCE

DECEMBER 1989

Prepared by:

**US Environmental Protection Agency
National Data Processing Division
National Computer Center
Research Triangle Park
North Carolina**

Preface

VAX Cluster Ready Reference provides essential information for users of the National Computer Center's DEC VAX computers. Basic descriptions of procedures, utilities, languages, and software are included as well as pointers to online documentation.

This document and its associated online references replace the previously published NCC-VAX User's Guide.

BEFORE YOU BEGIN

The VAX Cluster Ready Reference is especially geared for the novice VAX user. Therefore, the more basic subjects are covered in the greatest detail. Topics of a more advanced nature, as well as information that is subject to frequent change, has been placed in files on the VAX system itself where all users may access them. These documents are referenced herein with the following format:

USERGUIDE:topic.DOC

USERGUIDE is a logical name which points to a directory where the documentation files are stored; topic.DOC is the file name. A contents file, \$CONTENTS.README, is also provided which gives a short description of each document. You may TYPE, COPY, or PRINT these files as desired. For example:

\$ TYPE USERGUIDE:\$CONTENTS.README

or

\$ COPY USERGUIDE:CLUSTER.DOC [ABC]CLUSTER.DOC

Any problems or inaccuracies noted within this document or the online files should be reported to User Support for correction. Please complete the READER'S COMMENTARY form at the front of the manual.

TRAINING OPPORTUNITIES

NCC Training has developed courses specifically for VAX users. These courses are taught regularly at Research Triangle Park, NC but can also be provided at other locations by special arrangement.

VAX Course I is designed to teach the basic fundamentals of the VAX/VMS system. It covers the following: overview of the VAX/VMS system; logging in and out; DCL commands; EDT and EVE editors; file naming conventions and specifications, directories, and subdirectories; file protection; and MAIL and PHONE.

VAX Course II, a follow-on to VAX Course I, covers the following: using logicals and symbols, writing command procedures, using disk and tape volumes, and submitting batch and print jobs.

VAX FOCUS courses are also offered.

Refer to the following online documentation for more details:

USERGUIDE:CLASSES.DOC

CONTENTS

SECTION 1: ACCESSING THE NCC VAX

DIAL-UP ACCESS 1-1

PORT SELECTOR SWITCH 1-1

TYMNET ACCESS 1-3

WIC DATA SWITCH 1-4

ETHERNET ACCESS 1-5

Terminal Server Commands 1-5

LOGON PROCEDURES 1-7

USERNAME 1-7

PASSWORD 1-8

PROJECT CODE..... 1-9

LOGOUT PROCEDURES 1-10

SECTION 2: THE VAX ENVIRONMENT

THE VAX CLUSTER 2-1

OPERATING SYSTEM..... 2-1

DCL COMMANDS 2-1

Help Utility 2-1

Command Abbreviation 2-2

Command Continuation..... 2-2

Command Recall 2-3

INTERACTIVE CPU LIMIT 2-3

CONTENTS

INACTIVE SESSION TERMINATION2-4

ACCOUNTING AND CHARGEBACK2-4

REFUNDS2-5

SECTION 3: DISK AND FILE STRUCTURE

FILE SPECIFICATIONS3-1

 WILDCARDS3-2

DIRECTORIES3-3

 CREATING SUBDIRECTORIES.....3-3

FILE PROTECTION3-4

 CHANGING FILE PROTECTION.....3-6

 CHANGING DEFAULT PROTECTION LEVELS3-6

 DISPLAYING FILE PROTECTION3-7

 DIRECTORY PROTECTION3-7

SECTION 4: FILE MANIPULATION

FILE MANIPULATION COMMANDS4-1

 DIRECTORY4-1

 SET DEFAULT4-2

 TYPE4-3

CONTENTS

COPY.....4-3

RENAME4-4

DELETE4-4

PURGE.....4-5

PRINTING FILES.....4-6

NCC VAX Cluster Printer4-6

PRINT Command4-6

Desktop Laser Printers4-7

Form Types4-7

Remote Node Printers4-7

NCC-IBM 3090 Printers4-10

SECTION 5: DISK SPACE MANAGEMENT

SYSTEM BACKUPS5-1

RECOVERING FILES FROM INCREMENTAL BACKUPS.....5-2

ARCHIVING FILES5-4

STANDBY ARCHIVING5-7

DISK QUOTAS5-8

SCRATCH WORK SPACE5-8

SECTION 6: LOGICAL NAMES AND SYMBOLS

LOGICAL NAMES6-1

CONTENTS

DEFINE6-1

LOGICAL NAME TABLES6-2

DISPLAYING LOGICAL NAMES6-2

SYMBOLS6-3

**SECTION 7: COMMAND PROCEDURES &
BATCH JOBS**

COMMAND PROCEDURES.....7-1

 LOGIN COMMAND PROCEDURES7-3

BATCH JOBS7-4

 BATCH QUEUES7-4

 BATCH JOB ACCOUNTING.....7-5

 SUBMITTING A BATCH JOB.....7-5

SECTION 8: EDITING FILES

EDT EDITOR8-1

 COMMANDS8-2

 EDT RECOVERY FEATURES8-6

 EDT STARTUP COMMAND FILE.....8-6

EXTENSIBLE VAX EDITOR (EVE).....8-7

CONTENTS

COMMANDS8-8

MULTIPLE FILE EDITING8-11

EVE RECOVERY FEATURE.....8-13

USING DCL COMMAND FROM EVE.....8-13

SECTION 9: VAX VMS UTILITIES

MAIL9-1

 INVOKING MAIL9-1

 COMMANDS9-1

 SENDING A MAIL MESSAGE9-2

 READING A MAIL MESSAGE9-1

PHONE9-1

 INVOKING THE PHONE UTILITY9-3

 COMMANDS9-4

BACKUP9-7

LIBRARIAN9-8

SORT9-9

DIGITAL STANDARD RUNOFF (DSR).....9-11

NCC-SUPPLIED UTILITIES9-11

CONTENTS

ABI (ARCHIVE/BACKUP INQUIRY)9-12

ABR (ARCHIVE/BACKUP RECOVERY)9-12

ARCHIVE9-12

AUTOPRINT9-12

EMAIL9-12

IBMSUBMIT9-12

LASERPRINT9-13

MEMO9-13

OPERATION_SCHEDULE9-13

PROTECT9-13

SCRATCH9-13

TUTOR.....9-13

SECTION 10: TAPE MANAGEMENT

TAPES AT NCC10-1

VAX SYSTEM TAPES10-1

FOREIGN TAPES10-1

ALIEN TAPES.....10-2

DPSS TAPE SERVICES10-3

CONTENTS

TAPESYS TAPE MANAGEMENT SYSTEM	10-4
VAX TAPE LABEL POLICY	10-4
TAPESYS COMMANDS	10-5
MODIFYING TAPE INFORMATION	10-6
INQUIRING ABOUT TAPES.....	10-7
FREEING TAPES	10-7
BACKING UP FILES TO TAPE	10-8
RESTORING FILES FROM TAPE.....	10-11
USING TAPES INTERACTIVELY	10-13
INITIALIZING TAPES	10-17
 SECTION 11: COMMUNICATION & FILE TRANSFER	
DECNET (VAX <—> VAX).....	11-1
DISPLAYING THE NETWORK	11-1
LOGGING ON TO A REMOTE NODE	11-1
USING DCL COMMANDS OVER THE NETWORK	11-2
DECNET/SNA GATEWAY (VAX <—> IBM).....	11-2
DECNET/SNA 3270 TERMINAL EMULATOR.....	11-3
DECNET/SNA REMOTE JOB ENTRY	11-7

CONTENTS

FILE TRANSFER USING DECNET/SNA RJE..... 11-8

DECNET/SNA DATA TRANSFER FACILITY 11-9

TRANSFER/DTF.....11-10

JNET/BITNET.....11-11

KERMIT 11-12

SOFTWARE CATALOG

PROGRAMMING LANGUAGESSC-1

VAX FORTRANSC-2

VAX MACROSC-4

DEBUGGERSC-5

VAXSETSC-4

APPLICATION PACKAGESSC-5

SASSC-9

FOCUSSC-10

IMSLSC-11

GRAPHICS PACKAGE.....SC-12

GKSSC-12

INDEX.....Index-1

SECTION 1 ACCESSING THE NCC VAX

You can access the NCC VAX Cluster in one of two ways:

- By using a modem to connect to the system over a telephone line.
- Through the Ethernet network.

DIAL-UP ACCESS

Video terminals or personal computers equipped with modems are used to dial-up the VAX system. Since there is a wide variety of communications packages and modems that can be used, you should refer to your hardware documentation for specific instructions. There are, however, some general guidelines that apply to all types of communication with the VAX:

- You may dial-up at either 1200 or 2400 baud.
- Your communication software should be emulating a VT100-type terminal.
- Communication parameters should be 7 data bits, 1 stop bit, and even parity.

The telephone number that your modem can use to dial the VAX depends on your location and your modem speed. Local users will dial up the Port Selector switch directly. Users in other cities may find it more economical to use TYMNET. Users in Washington, DC may access the VAX through the Headquarters Data Switch.

PORT SELECTOR SWITCH

The NCC Port Selector switch provides the most direct means to access the VAX Cluster with a modem. Dial one of the following numbers:



- 1200 baud: (919) 541-4642
or (FTS) 629-4642
- 2400 baud: (919) 541-0700
or (FTS) 629-0700

When you make the connection, press the RETURN key once to display the Port Selection menu as shown below:

WELCOME TO THE ENVIRONMENTAL PROTECTION AGENCY NATIONAL COMPUTER CENTER

Please enter one of the following selections

IBMPSI for IBM
TCP for IBM 3270 EMULATION
VAXA for VAX SYS A
VAXB for VAX SYS B
EMAIL for EMAIL

Enter selection

Most users select the VAXA option which connects you to node VAXTM1 of the Cluster. The VAXB option connects to node CASTOR, which is the Geographical Information System (GIS) VAX. After making your selection, a "Connected" message should appear. Press RETURN again to initiate the logon procedure.

TYMNET ACCESS If you are not local to the NCC, you may reach the Port Selector menu through the TYMNET communication network. Contact User Support or Telecommunications Support for help in determining your local TYMNET number. When connecting to TYMNET, you will be prompted with the following:



Please type your terminal identifier:



Note that this line may appear as or may be preceded by a line of garbage characters.

Type "a" in response to this prompt. Then you will see a screen similar to the following:



Please type your terminal identifier:a

-2613-015
please log in:

Type EPA1 if you are at 1200 baud, or EPA2 for 2400 baud.

The next message will be similar to the following:

NODE 3157

HOST 1038 EPA IS ON LINE

Then the Port Selector menu will appear and you can proceed as described above for dial-up, Port Selector Switch users.

The VAX Cluster may also be accessed directly from the TYMNET "Please login:" prompt by entering one of the following:

EPAPSI:5002.1202 (for VAXA)

EPAPSI:5002.1203 (for VAXB)

WIC DATA SWITCH



If you are located in the DC area, you can access the VAX Cluster through the Washington Information Center's Data Switch at the following telephone number:

(202) 488-3671

The menu that appears on your screen is as follows:

WELCOME TO THE ENVIRONMENTAL PROTECTION AGENCY HEADQUARTERS DATA SWITCH	
To Access	Type
IBM (TTY)	IBMPSI
IBM 3270 EMULATION	TCP
EPA/DIALCOM ELECTRONIC MAIL	EMAIL
PRIME	system name
VAX	system name
MODEM POOL	MODEM, 999-999
OTHER SERVICES	HELP
YOUR SELECTION?>	

At the selection prompt, enter **VAX** and your connection is complete.

ETHERNET ACCESS

Some users access the **VAX** with terminals that are linked directly to the Ethernet network through a terminal server. If this is the case for you, you need only turn on your terminal and press **RETURN**. The **DECserver 200 Terminal Server LOCAL** prompt should appear. Then to connect to the **VAX Cluster**, type the following command:

CONNECT VAX

Terminal Server Commands

Other terminal server commands you may issue at the **LOCAL** prompt include the following:

<u>Command</u>	<u>Function</u>
HELP TUTORIAL	Displays a quick guide on using a terminal server.
SHOW SERVICES	Displays all available services on the network.

<u>Command</u>	<u>Function</u>
SHOW PORT	Displays information about your port setup.
SHOW SESSIONS	Displays all active sessions.
SHOW USERS	Shows all users logged on to your terminal server.
SET BREAK REMOTE	Allows your terminal to send <BREAK> characters to the remote system.
SET BREAK LOCAL	Causes the <BREAK> character to return you to the terminal server command prompt.
SET LOCAL SWITCH [char]	Sets a character which, when pressed, returns you to the terminal server command prompt.
SET FORWARD SWITCH [char]	Sets a character which, when pressed, connects you to your next sequentially numbered session.
SET BACKWARD SWITCH [char]	Sets a character which, when pressed, connects you to the previously numbered session.

<u>Command</u>	<u>Function</u>
SET SESSION PASSALL	Sets the terminal server to pass binary data; useful for file transfer.
CONNECT xxxx	Connects you to the indicated system.
DISCONNECT SESSION n	Terminates an active session.
LOCK	Locks your terminal server port with a password that you supply. This password must be reentered to unlock the port.
LOGOUT	Logs out your terminal off the server and disconnects any active sessions.

LOGON PROCEDURES

Once you have established a connection to the NCC VAX Cluster, the system will prompt you for your user name. You may need to press RETURN once to get the following prompt:

Username:

USERNAME

The system is asking for your 3-character User-ID which was provided to you when you registered with the NCC. Your username will identify you to the VAX every time you log on to the VAX Cluster. Type it in and press RETURN.

PASSWORD

You will then be prompted to enter your password by the following prompt:

Password:



Type your password carefully because it will not appear on the screen, and press RETURN. If you type an incorrect password, the following message will appear:

User Authorization Failure.

If this happens, press RETURN once, and the system will prompt with Username: again.



After three consecutive unsuccessful password attempts, you are disconnected from the line.

After five consecutive unsuccessful logon attempts your User-ID is prohibited from attempting to logon again.

If your current password has expired, as it will be the first time you log on, you will be required to change it immediately. You may also change your password anytime by issuing the SET PASSWORD command. In either case, you will be prompted by the system as follows:

Old Password New Password Verification.

In response to the "Old Password" type in your current password. Then type in the new password, and verify it by typing the new password again.

The following rules apply to your VAX password:

- It can be from 6 to 31 characters in length. Valid characters are A-Z, 0-9, \$ and _ (underline character). It is recommended that it include at least one alpha and one numeric character. It is not case sensitive.
- It expires every 90 days, and you are forced to change it.
- It cannot be changed back to its most recent value.
- It should be changed often, and immediately whenever its secrecy is compromised.

If you need help with your password, call NCC User Support at one of the following telephone numbers:



(FTS) 629-7862
(919) 541-7862
(800) 334-2405 (outside NC)

PROJECT CODE

The last logon prompt asks for your project code. When you registered, you were authorized for one or more projects. These codes are used by the VAX Cluster accounting system to allocate charges for resources consumed. The project prompt is as follows:

Project:



If you are authorized for multiple projects, you may change projects during a terminal session without logging off by typing the following command:

CP

At this point, the VAX \$ prompt should appear. It indicates that you are fully logged on, and the system is ready to receive commands.

LOGOUT PROCEDURES

To conclude a VAX Cluster terminal session, enter one of the following commands:

LOGOUT	Logs you off and provides full accounting information.
LO	Logs you off quickly without showing session charges.

SECTION 2 THE VAX ENVIRONMENT

THE VAX CLUSTER

The NCC VAX Cluster consists of several Digital Equipment Corporation (DEC) VAX computers configured as a “cluster.” Each computer is identified by its node name. Most users will access node VAXTM1, the “timesharing” computer. The other nodes have more specialized and, in some cases, restricted, uses.



For more information on the current configuration of the VAX Cluster, see the following online documentation:

USERGUIDE:CLUSTER.DOC

OPERATING SYSTEM

The VAX Cluster uses an operating system called Virtual Memory System (VMS). You communicate with VMS using Digital Command Language (DCL). DCL commands may be issued interactively (from your terminal) or from command procedures and batch jobs. When you successfully log on to the VAX Cluster, the “\$” prompt indicates that the VAX is ready to accept DCL commands.



Note that you may redefine the DCL prompt for your session by using the SET PROMPT command. An example follows:

```
$ SET PROMPT="VAX>"  
VAX>
```

DCL COMMANDS

DCL consists of about 200 commands, most of which have a number of qualifiers and parameters used with them. However, since the most commonly used options are often assumed by default, you do not always have to explicitly specify command qualifiers.

Help Utility

Complete explanations of all the DCL commands and their options are available to you online through the

HELP utility. To access this utility, type the following at the DCL prompt:

HELP

A list of topics will appear on your screen, and then you just type in the topic of your choice. If you already know the topic or command, you may access the topic information directly as shown in the example below:

HELP SET PROMPT



For detailed help with using the HELP utility, enter the command **HELP HELP**.



Most of the VAX topics in this manual are discussed further in the HELP utility. It contains much of the same text that is found in the VAX/VMS DCL Dictionary.

Command Abbreviation

DCL commands may be abbreviated to their shortest unique length. For example, the **DIRECTORY** command may be abbreviated to **DIR** because no other command begins with those same letters. In no case is it necessary to use more than the first four letters of a DCL command.

Command Continuation

If a command is too long to fit on one line, you may continue it onto one or more additional lines by ending a line with a hyphen (-). This may be done either interactively or in a command procedure. After ending a line with a hyphen and pressing **RETURN**, you prompt will be prefixed with an underscore (e.g., "**_ \$**"), indicating that you are continuing a command.



Note that this technique has been used in some of the command examples in this manual, due to the neces-

sary page formatting. It is not required that you enter the commands this way.

Command Recall

Command recall allows you to recall a recently typed command without typing it in again. Use the up arrow key to scroll back through your 20 most recently issued commands, bring back a command, make changes or corrections, and then reissue it. Or use the RECALL command instead of the arrow key. The following command displays a numbered list of commands available for recall:

RECALL/ALL

Then type the following to recall a specific numbered command in the list.

RECALL n

Where n is the number of the command.

The RECALL command can also be used to recall a command by name. For example, the following command will recall the most recently issued command that starts with "DIR":

\$ RECALL DIR

INTERACTIVE CPU LIMIT



To encourage you to process large jobs in batch instead of interactively, an interactive CPU limit of 20 minutes has been imposed. If you exceed the 20-minute limit, your session will be terminated.

Spawning sub-processes will reduce this allotment since the 20 minutes is divided among them.

INACTIVE SESSION TERMINATION



If no activity is detected for 30 minutes, your interactive session will be terminated, in an effort to minimize both security risks and unnecessary connect time charges.

For more information about inactive process termination, see the following online documentation:

USERGUIDE:HITMAN.DOC

ACCOUNTING AND CHARGEBACK

The VAX Cluster uses an accounting system that calculates usage statistics for each account and user for chargeback purposes. There are two categories of charges:

- **Computer-related charges** include tape and/or disk rental, disk quota, foreign tape storage, terminal rental, dedicated port, and batch privileges. In addition, they also include one-time charges such as terminal installation, technical charges, and graphics plotter charges.
- **Processor charges** include charges for connect time and system utilization measured by the VAX resources used.

ADP Coordinators receive monthly billing reports for all registered accounts. These reports are broken down by the account and utilization categories.

Chargeback rates are reviewed each year and may be changed at the beginning of the fiscal year (October 1). For current information on chargeback rates, see the following online documentation:



USERGUIDE:CHARGES.DOC

REFUNDS

Charges will be refunded if a transaction fails due to the following:

- **Console operator errors.**
- **System hardware failures.**
- **System software errors.**

Jobs using more than 2 hours of CPU time must have a user-defined save and restart capability to be eligible for a refund. The refund will not exceed charges greater than those incurred during 2 hours of CPU utilization. To apply for a refund, contact User Support.

SECTION 3

DISK AND FILE STRUCTURE

FILE SPECIFICA- TIONS

A file specification tells the VAX/VMS operating system where to locate a file. A complete file specification consists of several parts, but it is usually not necessary to use them all. The maximum length is 255 characters. The format is as follows:

NODE: **:DEVICE:** [**DIRECTORY**]**FILENAME.TYPE;VERSION**

Each element is explained below:

NODE is the node (system) name. A node specification is only necessary if the file is located on a system other than the one you are currently using.

DEVICE is the device (usually a disk) that the file resides on. It is not needed if you are referencing a file that is on the current default device.

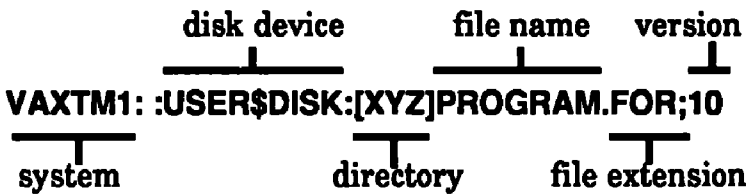
DIRECTORY is the name of the directory containing the file. It is enclosed within square brackets, and used when referencing a file not in the current default directory.

FILENAME is the name of the file. It may be from 1 to 39 characters long. You may use letters, numbers, and the underline () and dollar sign (\$) characters in the file name.

TYPE is an extension to the file name. It may be from 0 to 39 characters long, but usually it is 3 characters that identify the contents of the file. For example, DAT is a data file, and COM is a command procedure.

VERSION is the version number of the file indicating how many times the file has been altered. It may range from 1 to 32,767. If omitted (or zero), the most recent version is assumed.

The following example illustrates each element of a file specification:



This file specification refers to the tenth version of a file called PROGRAM.FOR (a FORTRAN program) that resides in directory XYZ, which is on disk device USER\$DISK, on the VAXTM1 system.

Keep in mind that when specifying a file, the system will assume your current defaults for information not given. Thus, if you were logged on to the VAXTM1 system and directory XYZ on USER\$DISK was your current default, you could specify the above file with just PROGRAM.FOR;10. (And if version 10 were the most recent, PROGRAM.FOR would be sufficient.)

WILDCARDS

You may refer to more than one file with a single file specification by using special characters (known as wildcards) within your specification. This allows you to affect more than one file with a single command. There are two wildcard characters that can be used in file specification:

1. Asterisk (*) is used to represent any number of characters. For example, *.DAT would match any file that had a file type of DAT. ABC*. would match any file that began with ABC regardless of its file type. And, of course, *. will match everything.

2. Percent sign (%) works just like the asterisk except that it will only represent one character. Therefore, %%.DAT will match all files that have a three-character name and a file type of DAT.

DIRECTORIES

You can think of a directory as being a space where files are kept. Every user on the VAX Cluster has a private directory for file storage. Your directory's name is the same as your three-character User-ID and will usually be enclosed in square brackets. For example, user ABC's directory would be [ABC]. Often this directory will be referred to as the "root" directory, because you have the ability to create subdirectories under it.

CREATING SUBDIRECTORIES

Subdirectories will help you better organize your files. To create a subdirectory, use the following command:

CREATE/DIRECTORY

In the following example user ABC creates a subdirectory called "reports":

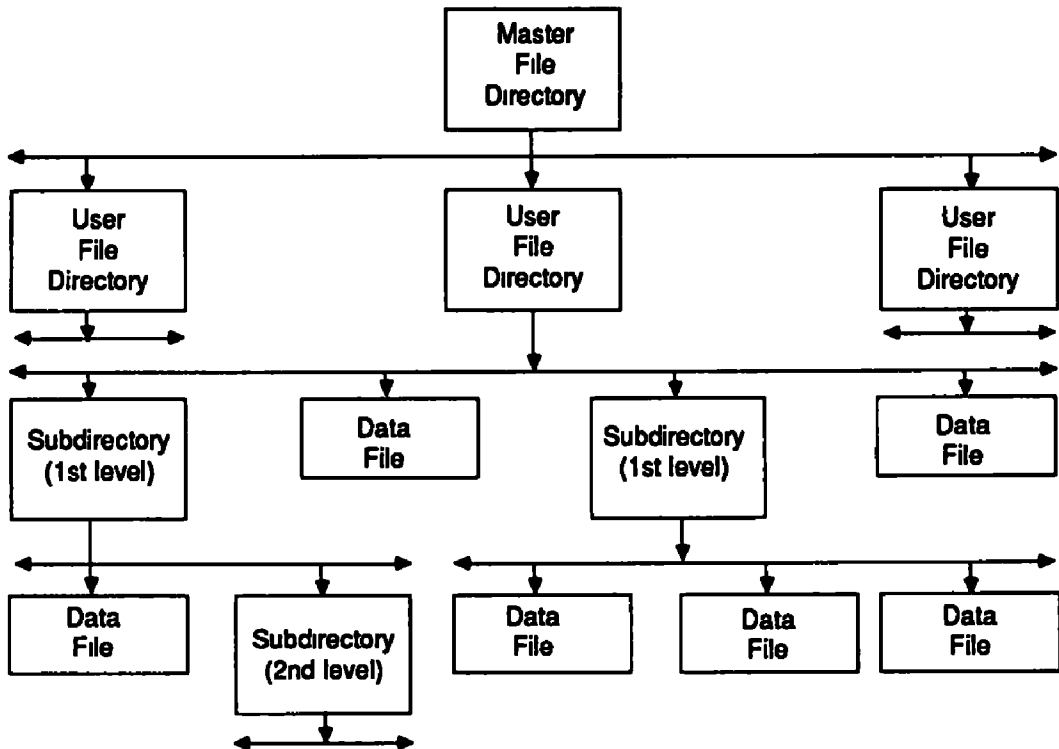
CREATE/DIRECTORY [ABC.REPORTS]

The result is a directory file called REPORTS.DIR in the [ABC] directory. To move to this subdirectory, use the SET DEFAULT command as follows:

SET DEFAULT [ABC.REPORTS]

You may create as many as seven levels of subdirectories below your root directory with an unlimited number of subdirectories on each level. The diagram that follows depicts a typical disk structure.

DISK STRUCTURE



FILE PROTECTION

You have the ability to specify varying degrees of protection for your files. The VAX protection system recognizes four categories of users to which you may grant or deny access to a file:

1. **SYSTEM (S).** Includes console operators, system management, and user support personnel.
2. **OWNER (O).** You, the owner of the file.

3. **GROUP (G).** Other users in your User Identification Code (UIC) group. (Members of your UIC group are usually the other users in your office or work group.)
4. **WORLD (W).** Everyone on the system.

For each category, you may grant any of four types of access.

1. **READ (R).** A user can look at, but not change, the file. This access includes the ability to TYPE, COPY, and PRINT the file.
2. **WRITE (W).** A user can modify the file using such tools as an editor, etc.
3. **EXECUTE (E).** A user can execute the file (if it is a program or a command procedure) but cannot view or change it.
4. **DELETE (D).** A user can delete the file.

Protection levels are often referred to using the abbreviations shown above. For example, the default protection levels for files on the VAX Cluster are as follows:

S:RWED,O:RWED,G:RE,W

This means that:

SYSTEM has full access to the file. (It is inadvisable to restrict this access because it may impact certain system maintenance functions.)

OWNER also has full access. You may want to alter this in certain cases. For example, you can prevent

accidental deletion by disallowing DELETE on your files.

GROUP has only READ and EXECUTE access.

WORLD has no access. You may want to alter this in some cases to allow a user in another group to access your files.

CHANGING FILE PROTECTION

You may alter the protection levels of any files that you own with the following command:

```
SET PROTECTION=(protect-codes) filename
```

Where protect-codes are as described above (S:RWED, etc.)

The following example allows WORLD to have READ access to a file called REPORT.DAT. None of the other protection attributes will be changed, since they are not mentioned in the command.

```
$ SET PROT=(WORLD:R) REPORT.DAT
```

The next example specifies no access options; therefore, GROUP will have no access to PROGRAM.FOR.

```
$ SET PROT=(GROUP) PROGRAM.FOR
```

CHANGING DEFAULT PROTECTION LEVELS

You can specify the protection that you want applied to all files that you create to be different from the system defaults with the following command:

```
$ SET PROT=(protect-codes)/DEFAULT
```

Where protect-codes are as described above (S:RWED, etc.)

For example, after executing this command, files created during your current session will allow full access to GROUP and READ access to all users. The defaults for SYSTEM and OWNER are unchanged.

\$ SET PROT=(G:RWED,W:R)/DEFAULT

DISPLAYING FILE PROTECTION

You may check to see how a file is protected (provided that you have appropriate access to it) by using the **DIRECTORY** command as follows:

DIRECTORY/PROTECTION filename

Where filename is the name of the file to check.

An example follows:

\$ DIR/PROTECTION REPORT.DAT

The following is then displayed on the screen:

```
Directory $2$DUAL [XYZ]
REPORT.DAT, 1 (RWED,RWED,RE,R)
Total of 1 file
```

DIRECTORY PROTECTION

When applied to directory files (file type DIR), the protection attributes have slightly different meanings:

READ. A user can read the directory to locate and access files.

WRITE. A user can make changes to the directory (such as creating or deleting files in it.)

EXECUTE. Similar to **READ**, except the user must use an exact file specification when accessing the directory. Wildcard operations are not valid.

DELETE. A user can delete the directory. A directory must be empty before it can be deleted. Also, **DELETE** access is not provided by default, even to the directory's owner. You must use **SET PROTECTION** to allow yourself **DELETE** access before you can delete it.

You can control access to a large group of files by adjusting the protection of the directory they reside in. For example, by denying **READ** and **EXECUTE** access to a directory, all files in that directory will be inaccessible, regardless of their individual protection attributes.



The online utility **PROTECT** is available to assist you in changing file protection levels.

SECTION 4 FILE MANIPULATION

FILE MANIPULATION COMMANDS

There are many DCL commands available for you to use in maintaining and manipulating your files and directories. Some of the most often used ones are described below. Keep in mind that all the commands have many additional qualifiers that can be used with them. Use the HELP command to obtain complete details on their use.

DIRECTORY

The DIRECTORY command provides a listing of the files in a directory. It can also provide additional information about the files, such as their size, protection, date of creation, etc. If a file specification is given with the command, only files that match it will be displayed.

The format is as follows:

DIRECTORY filename

In the following example, the system produces a list of all files in the default directory ([ABC]), because no file specification was given. (This implies a file specification of *.*.*)

```
$ DIRECTORY  
  
Directory $2$DUA1 [ABC]  
  
REPORT DAT,5   REPORT DAT,4   TEST FILE,2   TEST FILE,1  
  
Total of 4 files
```

In the next example, the command lists only files that match the file name **TEST.FILE** and requests information on the file size and date of creation.

\$ DIRECTORY/SIZE/DATE TEST FILE			
TEST FILE,2	3	12-JUL-1989	12 35 28 49
TEST FILE,1	1	12-JUL-1989	11 55 53 16
Total of 2 files, 4 blocks			

Some useful qualifiers are the following:

/SIZE	Gives the file's size in disk blocks (each equal to 512 bytes).
/DATE	Gives the file's date of creation. Other dates are also available.
/PROTECTION	Displays the file's protection attributes.

SET DEFAULT

The **SET DEFAULT** command is used to change your current default directory; that is, you use it to "move" between directories.

The format is as follows:

SET DEFAULT directory

For example:

\$ SET DEFAULT [ABC.SUB]



It is possible to SET DEFAULT to a nonexistent directory. No error message will be issued until you execute a command that attempts to read the directory.

TYPE

The TYPE command is used to display a file on your terminal screen. It does not allow you to edit the file; it merely prints it to the screen for you to see.

The format is as follows:

\$ TYPE filename

For example:

```
$ TYPE TEST FILE
This is a sample text file
$
```

A useful qualifier is the following:

/PAGE

Causes the file to be displayed one page at a time. You are prompted to press RETURN after each page is displayed.

COPY

The COPY command creates a new file from an existing one.

The format is as follows:

COPY input-filename output-filename

In the following example TEST.FILE is copied from the current default directory into a file called NEWFILE.DAT in directory [XYZ].

\$ COPY TEST.FILE [XYZ]NEWFILE.DAT

A useful qualifier is the following:

/LOG Causes a message to be displayed indicating the name and size of the file(s) copied.

RENAME

The RENAME command assigns an existing file a new name. It can also be used to “move” a file to another directory by specifying a different directory (on the same device) as part of the new name.

The format is as follows:

RENAME filename new-filename

For example, you can rename the file JOE.DATA to be JOHN.DATA.

\$ RENAME JOE.DATA JOHN.DATA

Or you can move SAM.DAT from the current directory to [ABC.DAT] :

\$ RENAME SAM.DAT [ABC.DAT]SAM.DAT

DELETE

The DELETE command is used to delete unwanted files. When deleting a file, you must specify its version number. The “*” wildcard may be used to delete all versions of the file.

The format is as follows:

DELETE filename

In the following example, the system deletes only version 3 of JOHN.DATA.

\$ DELETE JOHN.DATA;3

In the next example, the system deletes all versions of SAM.DATA.

\$ DELETE SAM.DATA;*

PURGE

The PURGE command is used to “clean up” a directory. It deletes the old versions of files that accumulate as new ones are created. This saves you the trouble of having to issue individual DELETE commands. By default, all but the most recent version are deleted.

The format is as follows:

PURGE filename

In the following example all old versions of all files in the default directory are purged, since no file specification is given.

\$ PURGE

In the next example, only the old versions of the file TEST.FILE are purged.

\$ PURGE TEST.FILE

Some useful qualifiers are as follows:

/KEEP=n Allows you to specify how many versions of a file are to be kept. For example, **PURGE/KEEP=3** will delete all but the 3 most recent versions.

/CONFIRM Causes you to be prompted before a file is purged of old versions.

PRINTING FILES You may obtain a printed copy of a file by requesting it to be printed on any of several available printers.

NCC VAX Cluster Printer All users can print files on the VAX Cluster system line printer located at the NCC.

PRINT Command Use the **PRINT** command which has the following format:

PRINT/NOTE=bin# filename



The **/NOTE=bin#** qualifier is **required** in order to specify your bin number to the operators and to ensure that your printout is correctly routed to you. If you do not know your bin number, contact User Support for assistance.

Some useful qualifiers are as follows:

/AFTER=time Does not print the job until after a specific time.

/FORMS=type Specifies the name or number of the form for the print job. (See Desktop Laser Printers in this section.)

/NOTIFY	Notifies you when the print job completes.
/QUEUE=queue-name	Requests a print job to a specific queue. (See Desktop Laser Printers in this section.)
/COPIES=n	Specifies the number of copies to print.
/DELETE	Causes the file to be deleted after printing.

For example, to print 10 copies of MEMO.TXT after 8:00 p.m. (20:00):

```
$ PRINT/AFTER=20/COPIES=10 MEMO.TXT
```

Desktop Laser Printers

Some users can also access desktop laser printers located in their local offices.

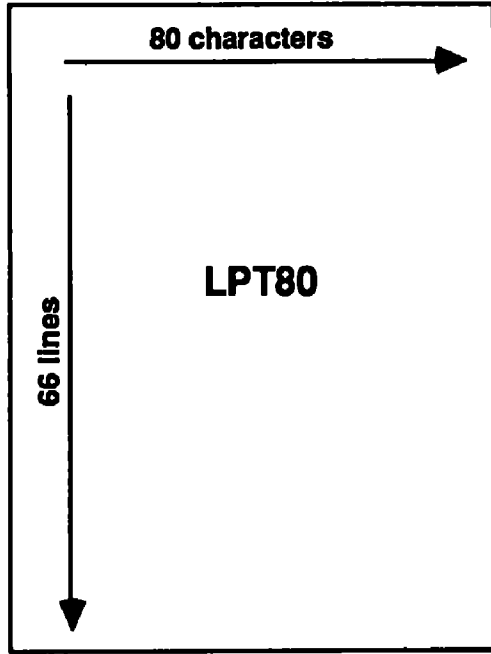
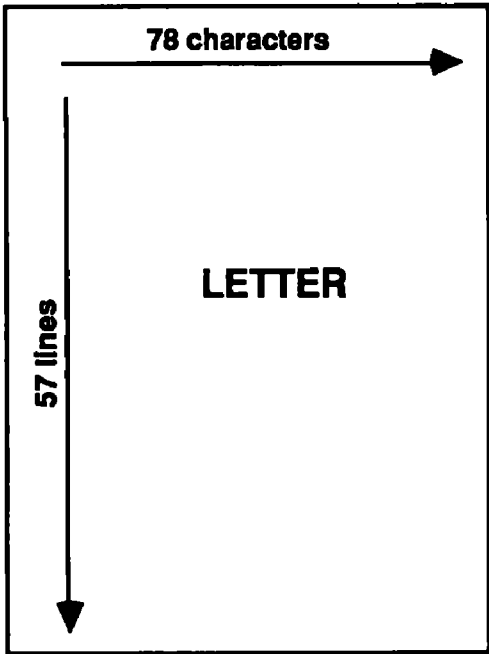
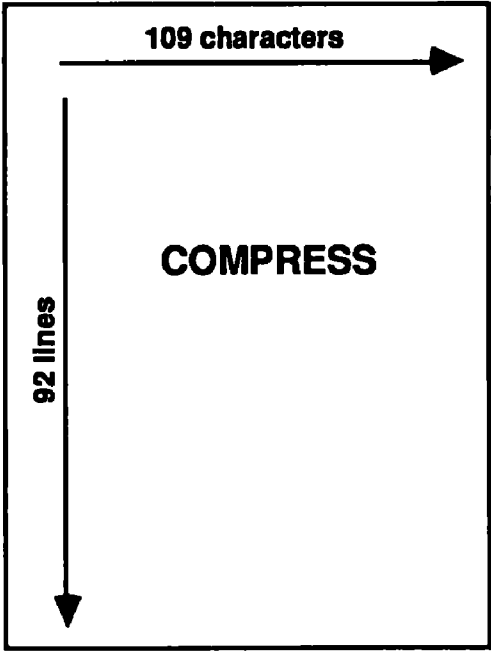
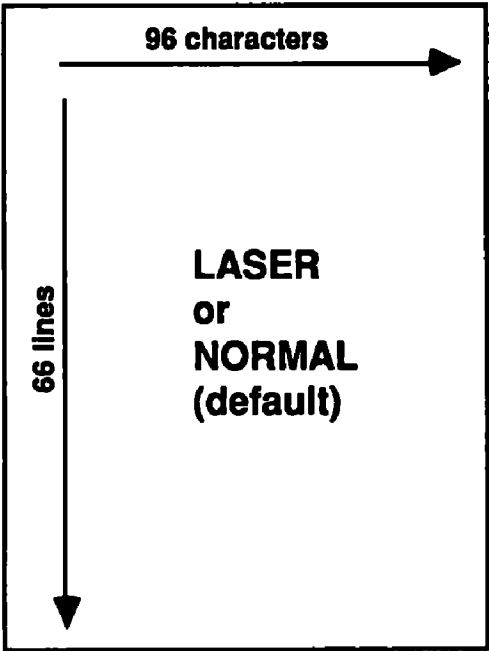
To route output to these printers, you must specify the queue name and the form type. The command format is as follows:

```
PRINT/QUEUE=queue/FORM=type filename
```

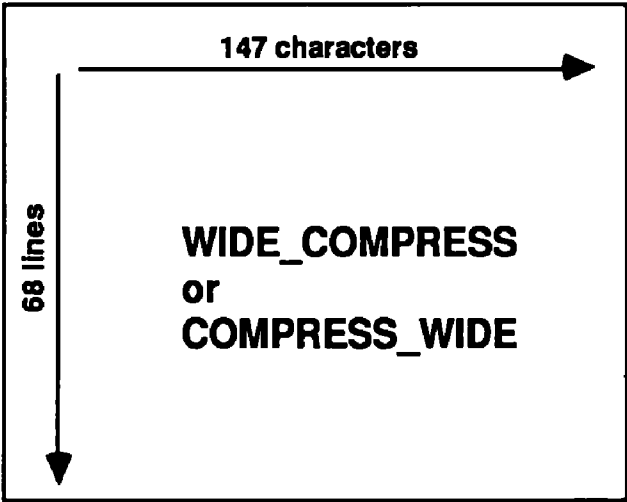
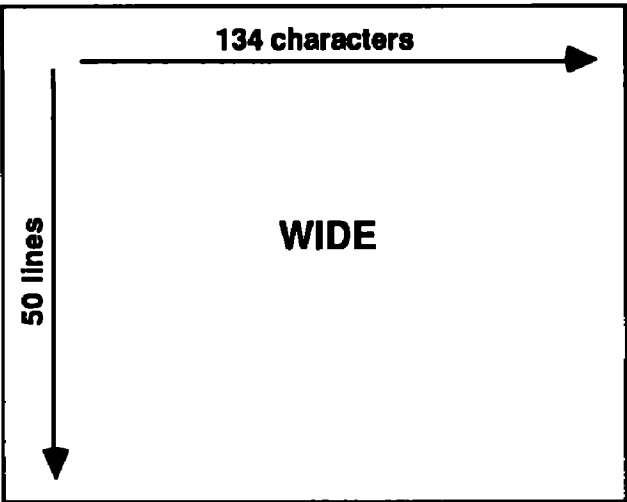
Form Types

The defined form types are depicted in the following drawings.

PORTRAIT LASER PRINTER FORMS



LANDSCAPE LASER PRINTER FORMS



Remote Node Printers

Users of remote VAX systems on DECnet can route files to their system printers by using the NET-PRINT command. The format is as follows:

NETPRINT/NODE=node-name filename

Most of the PRINT command qualifiers can be used on the NETPRINT command. For more information on NETPRINT, type the following at the DCL prompt:

HELP NETPRINT

NCC-IBM 3090 Printers

Users of NCC-IBM 3090 system can route files to print on the system's printers provided they have a valid User-ID for the NCC-IBM system.

In particular you may want to make use of the IBM 3800 laser printer. To use the VAX utility that automates this process, type the following command at the DCL prompt:

LASERPRINT

You will be prompted for the information necessary to print your file.



For more information on printing files on the IBM, see the following online documentation:

USERGUIDE:IBMPRINT.DOC

**SYSTEM
BACKUPS**

Files on disk volumes are regularly copied to magnetic tape by the NCC Operations staff using the VMS BACKUP utility program. Two types of backups are performed:

- Incremental Backups are run every night and copy only those files which have been created or modified that day. The tapes are kept for a period of 30 days, during which you may recover files from them.
- Full (Standalone) Backups, which copy ALL files on the system, are run every other week on Saturday evening. They generally require 10 to 12 hours to run, during which users are locked off the system.



The procedure includes purging all but the latest two versions of all user files.

Full backup tapes are intended primarily for use in recovering from disk hardware problems; however, where possible, Data Management will assist users in recovering individual files from them that cannot be restored from any other source. Full backup tapes are retained for 31 days.



Private user packs are not subject to system backups. It is the responsibility of the owners of these disk packs to perform backups. However, the Data Management staff will perform such backups by special arrangement with the owners. Contact Data Management at the telephone number below for more information:



(FTS) 629-4078
(919) 541-4078

RECOVERING FILES FROM INCREMENTAL BACKUPS

You may recover files from the system incremental backup tapes without any operator assistance. Typically, you might want to do this if you were to accidentally delete a file, or if you wanted to get back to an earlier version than your current one. In any case, keep in mind that the incremental backup tapes are kept for only 30 days. If a file was not created or altered within the past 30 days, it will not be available for recovery from these tapes.

Recovering a file requires two steps:

- Determine which tape it was backed up to.
- Issue a request to restore it back to disk.

Both of these tasks are performed through the TAPESYS tape management system.

Use the following command to get a listing of a file's backup copies:

```
$ TAPE REPORT/SYSTEM-  
_$/HISTORY=DAILY filespec
```

Where filespec is a particular file or a file specification which includes wildcards to reference multiple files. Specifying "[...]*.*" will produce a listing of all backed up files. Include the following qualifier to send the report to a file instead of to the terminal screen:

```
/OUTPUT=filename
```

For example, with a default directory of \$2\$DUA1:[XYZ] assume that user XYZ issues the following command:

```
$ TAPE REPORT/SYSTEM-
_$ /HISTORY=DAILY-
_$ /OUTPUT=REPORT.DAT LOGIN.COM
```

The following report would be written to
[XYZ]REPORT.DAT:

Run date 07-JUL-1989 09 45		Page 1
System Backup Report		
Set DAILY - File * \$2DUA1 [XYZ]LOGIN.COM,*		

VAXTM1 \$2\$DUA1 [XYZ]LOGIN.COM,48		[USE,XYZ]
1-JUL-1989 19 01 097307	\$2\$DUA1 BAK	
VAXTM1 \$2\$DUA1 [XYZ]LOGIN.COM,47		[USE,XYZ]
27-JUN-1989 19 38 097861	\$2\$DUA1 BAK	
VAXTM1 \$2\$DUA1 [XYZ]LOGIN.COM,46		[USE,XYZ]
12-JUN-1989 19 14 097740	\$2\$DUA1 BAK	
End of report		



This report may also be produced using the Archive/Backup Inquiry (ABI) utility. Just type ABI at the DCL prompt.

The listing indicates the date and time the backup was made, the six-digit reel number of the tape it was put on, and the name of the saveset that contains it (diskname.BAK). You will need this information to issue the request to restore the file with the following command:

```
$ TAPE RESTORE-
_$ /SELECT=filename reel-number-
_$ saveset output-file
```

For example to restore the first file listed in the report above, use the following command:

```
$ TAPE RESTORE-  
_$/SELECT=LOGIN.COM;48 097307-  
_$$2$DUA1.BAK [XYZ]*.*
```

A batch job will be submitted to perform the restoration, and you will receive a MAIL message when it is completed.



The recovery request may also be made using the TAPESYS menu system or the Archive/Backup Recovery (ABR) utility. Just type ABR at the DCL prompt.

ARCHIVING FILES

To make the most efficient use of disk space on the VAX Cluster, unused files are archived to tape. A file is determined to be “unused” by the expiration date associated with it. To see this date, use the following command:

```
$ DIR/DATE=EXP
```

Each time a file is accessed, its expiration date is reset to 45 days from the present. An “access” can be any read or write operation. Data Management jobs are regularly run to look for files that have reached their expiration dates (unused for 45 days). These files are copied to tape and deleted from the disk. The archive tapes are kept for a period of one year. A second copy of the archive tapes is also made and stored offsite for use in disaster recovery.

Files may be recovered from the archive tapes without any operator assistance in two steps:

- Determine where the file is located (archive tape reel number and saveset name).
- Issue a request to restore it back to disk.

To get a listing of archived files, issue the following command:

```
$ TAPE REPORT/SYSTEM-
_$ /HISTORY=ARCHIVE filespec
```

Where filespec is a particular file or a file specification which includes wildcards to reference multiple files. Specifying "[...]*.*" will produce a listing of all archived files. Include the following qualifier to send the report to a file instead of to the terminal screen:

```
/OUTPUT=filename
```

For example, with a default directory of \$2\$DUA1:[XYZ] assume that user XYZ issues the following command:

```
$ TAPE REPORT/SYSTEM-
_$ /HISTORY=ARCHIVE-
_$ /OUTPUT=ARCHIVE_REPORT.DAT-
_$ MYDATA.DAT
```

The following report would be written to [XYZ]ARCHIVE_REPORT.DAT:

Run date 31-JUL-1989 12:34

Page 1

System Backup Report

Set ARCHIVE - File * \$2DUA1 (XYZ)MYDATA.DAT,*

VAXTM1 \$2\$DUA1 (XYZ)MYDATA.DAT,1
28-JUL-1987 08 13 098469 \$2\$DUA1 ARC

End of report



This report may also be produced using the ABI utility.

The listing indicates the date and time the file was archived, the six-digit reel number of the tape it was copied to, and the name of the saveset that contains it (diskname.ARC). You will need this information to issue the request to restore the file with the following command:

**\$ TAPE RESTORE/SELECT=filename-
_ \$ reel-number saveset-name output-file**

For example to restore the file listed in the report above, use the following command:

**\$ TAPE RESTORE-
_ \$ /SELECT=MYDATA.DAT 098469-
_ \$ \$2\$DUA1.ARC *. ***

A batch job will be submitted to perform the restoration, and you will receive a MAIL message when it is completed.



The recovery request may also be made using the TAPESYS menu system or the ABR utility.

STANDBY ARCHIVING

You may also request that a file be intentionally archived for long-term (2-year) storage. To initiate the procedure, called Standby Archiving, enter the following command:

```
$ TAPE BACKUP/REEL=ARCHIVE-  
_ $ /NOTES=2_YEAR/RECORD/LOG-  
_ $ filename
```

Note the following about the command:

- The REEL= specification must be the word ARCHIVE.
- The /NOTES= qualifier must be included in all requests with the first word being 2_YEAR (in uppercase letters) to indicate an archive class to TAPESYS.
- The /LOG option will include a log entry in your directory.
- The /RECORD option will make an entry in the history file to enable you to inquire about the file at a later date.



Standby archiving may also be requested using the ARCHIVE utility or the TAPESYS menu system.

Archiving is not accomplished immediately upon executing the above command. The actual archiving of the files is done by jobs executed by NCC Data Management personnel several times a week. This execution may be 1 or 2 days after the archive request was made. You will receive a MAIL message when the job runs and the file is archived. You will be charged only for issuing the command, not for unloading or storing the file.

DISK QUOTAS

At the time of this writing, disk quotas are not used on the VAX Cluster to restrict the amount of space you may occupy on public disk packs. However, you are expected to exercise good judgment with regard to the amount of space used. You are encouraged to check periodically for unused files that can be deleted and to purge old versions of files. Large files that are used only occasionally should be moved to tape for long-term storage.



VAX Cluster disk space management policy is currently undergoing revision, and it is anticipated that disk quotas will be implemented. For current information, see the following online documentation:

USERGUIDE:DISK_SPACE.DOC

SCRATCH WORK SPACE

If you require a large amount of disk space on a short-term basis, use the scratch work space that has been established. This work space consists of three disks mounted as a volume set, providing a total of 2,673,216 blocks of space. It may be referenced with the logical name **WORK_SCRATCH**. All users are free to make use of this storage space; however, keep in mind that the following policies apply to it:

- The space is intended for **TEMPORARY** storage only. Files which have existed on the pack for more than 48 hours will be automatically deleted by Data Management who will run jobs to check for such files every night, Monday through Thursday. Files will not be deleted on Friday, Saturday, or Sunday nights to allow for large batch jobs that may require access to a file for more than 48 hours.

- The volume set will be reinitialized (completely erased) every other Saturday night during the standalone backup period.
- No charges will be incurred for storage on these disks.
- No backups will be performed on these disks.
- Currently, these packs are emergency spares and their availability cannot be guaranteed. If the failure or impending failure of another system disk requires the use of a spare, they may be taken offline with little or no notice given.

For current status information about the scratch packs, use the following command:

\$ SCRATCH

SECTION 6 LOGICAL NAMES AND SYMBOLS

LOGICAL NAMES

Logical names are descriptive words defined to equate to all or part of a file specification, or to a physical device. They can save you time and keystrokes by allowing you to use a short logical name in place of a longer real name. They also allow device and file independence in program design.

DEFINE

The **DEFINE** command is used to establish the connection between the logical name and the equivalent file specification or device.

The format is as follows:

DEFINE logical-name equivalence-name

For example, you can define **MRD** to equate to **MISSISSIPPI_RIVER.DATA** which allows you to use **MRD** instead of the longer file name:

\$ DEFINE MRD MISSISSIPPI_RIVER.DATA

The following command defines **MYDIR** to be the directory **[ABC]** on device **\$2\$DUA62**:

\$ DEFINE MYDIR \$2\$DUA62:[ABC]

Logical names and their equivalence name strings can each have as many as 255 characters. A logical name can form all or part of a file specification. If only part of a file specification is a logical name, it must be the leftmost part of the file specification, and it must be terminated with a colon, as in this example:

\$ DELETE MYDIR:OLD_DATA.DAT;1

A logical name also may be defined to equate to another logical name, up to a limit of 10 levels.

LOGICAL NAME TABLES

Logical names are stored in four logical name tables which determine who can use them:

- **Process** logical names are available only to the process that defined them.
- **Job** logical names can be used by your process and its subprocesses.
- **Group** logical names can be used by all users in the same UIC group as the process that defined them.
- **System** logical names are accessible by all processes on the system.

The privileges GRPNAM and SYSNAM are necessary to make entries in the Group and System logical name tables, respectively.

DISPLAYING LOGICAL NAMES

The SHOW LOGICAL command will display the contents of the Process, Group, and System logical name tables. You can use this command with a qualifier to display the entries in a particular table (e.g., SHOW LOGICAL/PROCESS to show those logical names defined for your process). You can also show individual logical names. For example:

```
$ SHOW LOGICAL MYDIR  
"MYDIR"=$2$DUA62[ABC]" (Process)
```

SYMBOLS

A symbol allows you to assign a short name to a character string, numeric value or DCL command string. Symbols are often used to redefine DCL commands, based on personal preferences.

For example, the **DIRECTORY** command, when used without any qualifiers, does not provide a very useful listing of your files. It lists them horizontally, which is difficult to read, and no extra information is provided. A much more informative listing is produced by the following command:

DIRECTORY/SIZE/DATE

But this command requires more effort to type. However, you could assign this command string to a very short symbol, 'DSD' for example, that produces the same result when entered as a command:

\$ DSD=="DIRECTORY/SIZE/DATE"

The **DIRECTORY/SIZE/DATE** command could then be issued simply by typing **DSD**.



The double equal signs indicate that the symbol will be globally defined.

You can use this technique to create customized commands. By placing the assignment statements in your **LOGIN.COM** command procedure, the symbols will be set up every time you log in.

Symbols are also used as variables within command procedures as in the following examples:

\$ NAME = "BOB SMITH"

\$ X = 5

\$ X = X + 10



The single equal sign indicates that the symbol will be locally defined, available only to the current command level (in this case, the command procedure).

A symbol's value may be displayed by using the **SHOW SYMBOL** command, as shown in the following example:

```
$ SHOW SYM DSD
DSD="DIRECTORY/SIZE/DATE"

$ SHOW SYM X
X=15  HEX=0000000F  OCTAL=00000000017
```


SECTION 7

COMMAND PROCEDURES & BATCH JOBS

COMMAND PROCEDURES

A command procedure is simply a file containing a sequence of DCL commands which can be executed interactively or as a batch job. A command procedure can save you time and keystrokes by allowing you to execute a complicated or repetitive series of tasks with a single command. However, a command procedure may be more than just a list of commands. Various functions, labels, symbols and relational operators may also be used to create a program that can use logic, prompt you for input at your terminal, and extract and pass information.

When you create a command procedure with the text editor, the following rules must be observed:

- The standard naming convention for a command procedure is "procedure-name.COM". If you choose not to use COM for the file type, you must specify the file type when executing it.
- Each command line of a command procedure (and lines left blank) must start with a "\$".
- Command lines may be continued on the next line. End the first line with a hyphen (-), and start the continued line without a \$.
- An exclamation point (!) is used to include a comment. Everything to the right of the exclamation point is ignored by the command interpreter.

The following is an example of a simple command procedure named RUNREPORT.COM:

```
$! This command procedure will compile, link,  
$! and run REPORT.FOR  
$  
$! Change default directory  
$! SET DEFAULT [ABC.FORTRAN_PROGRAMS]  
$! Compile the program  
$ FORTRAN REPORT  
$  
$! Link the program  
$ LINK REPORT  
$  
$! Run the program  
$ RUN REPORT  
$  
$! Change the default directory back  
$ SET DEFAULT [ABC]  
$  
$ EXIT
```

Execute a command procedure by typing its name preceded by an at sign (@). For example, to execute RUNREPORT.COM, you would issue the following command:

\$ @RUNREPORT

For command procedures that you execute often, you may wish to define a symbol that will allow you to execute the procedure without the @. For example:

\$ RUNREP=="@RUNREPORT"

Now, typing the command RUNREP will produce the same result as @RUNREPORT.

LOGIN COMMAND PROCEDURE

When you log on to the VAX (either interactively or as a batch job), the system checks to see if you have a special command procedure called LOGIN.COM in your root directory. If it exists, the system executes it as the last part of the logon process. This allows you to automatically set up symbols, define logicals, set terminal characteristics, or perform any other task that you would like to have done every time that you log on. All new users on the VAX Cluster are provided with a sample LOGIN.COM file to get started.

The following sample LOGIN.COM file illustrates some of the commands you may want to include in your file:

```
$ ! SAMPLE LOGIN.COM COMMAND PROCEDURE
$
$ ! Check to see if this is a batch job and exit if it is.
$ IF F$MODE() .NES. "INTERACTIVE" THEN EXIT
$
$ ! Commands above this point will execute during
$ ! both batch and interactive logins; those below
$ ! will execute only during interactive logins
$
$ ! Set the DCL prompt
$ SET PROMPT="VAX>"
$
$ ! Set the terminal type
$ SET TERMINAL/VT100/LINE_EDIT/INSERT
$
$ ! Set up command symbols
$ USERS=="SHOW USERS"
$ EVE=="EDIT/TPU"
$ DIR=="DIR/DATE/SIZE/PROT"
$ RUNREP=="@RUNREPORT"
$ EXIT
```

BATCH JOBS

When you execute a program or command procedure interactively, your terminal is tied up until it completes. This can be inconvenient (as well as expensive) when running a program or procedure that requires a long time to complete. Such a task is a candidate for batch mode. A batch job is simply a command procedure that is running in a queue in the "background" independent of your terminal session.

BATCH QUEUES

Several different batch queues are available on the VAX Cluster. They differ with regard to their priorities, CPU limits, and the processor on which their jobs run. You can display the batch job queues that are currently set up on the cluster by typing the following command:

\$ SHOW QUEUE/BATCH

Batch job queue names begin with NORM, FAST, or SLOW indicating their relative priority:

<u>Speed</u>	<u>Priority</u>	<u>Cost*</u>	<u>CPU Limit</u>
FAST	3	2x	5 minutes
NORM	2	1x	180 minutes
SLOW	1	.5x	Unlimited

*Cost as a factor of interactive CPU cost.



Note that interactive sessions run at priority 4 with a CPU limit of 20 minutes.

The remainder of the name indicates the node on which the queue's jobs run, such as the following:

<u>Queue Name Ending</u>	<u>Node</u>
_GEN1	VAXTM1
_GEN2	CASTOR
_MOD1	NCCORD
_MOD2	HYDRA

BATCH JOB ACCOUNTING

Batch jobs are charged to your project code, just as interactive sessions are. If you have only one project code, you do not need to specify it in the job. If you have multiple projects, you may specify one as a comment in the first line of your job, as in the following example:

```
$ ! ABCD0001
```

Otherwise, the system will charge one of your projects by default.

SUBMITTING A BATCH JOB

The SUBMIT command is used to enter a job in a batch queue. The format is as follows:

```
SUBMIT filename
```

For example:

```
$ SUBMIT SASRUN.COM
```

If no queue is specified, the job goes into the queue defined by the logical name SYS\$BATCH. For most users, this is NORM_GEN1. If you want to place the job in a different queue, you must specify it in the SUBMIT command. In the following command the job was placed in the SLOW queue:

\$ SUBMIT/QUEUE=SLOW_GEN1 SASRUN.COM

You will receive a message confirming that the job was submitted and informing you of its queue entry number.

A log file (filename.LOG) will be created in your root directory. This log will document everything the job does and can be very helpful in diagnosing errors. However, by default, the log file is printed and deleted when the job completes. The printed log will NOT have the routing information (bin number) on it necessary to deliver it to you. So, use the /NOPRINT qualifier to retain the log until you are sure you have no need for it.

Some useful qualifiers are as follows:

/NOTIFY	Sends a message to your terminal when the job finishes.
/NOPRINT	Prevents the log file from being printed and deleted.
/AFTER=time	Causes the job to be held in the queue until the time you specify.
/LOG=filename	Allows you to define an alternate log file name.

You can display status information about the queue and your job by issuing the following command:

\$ SHOW QUEUE/ALL/FULL queue-name

An example follows:

\$ SHOW QUEUE/ALL/FULL NORM_GEN1

Batch queue NORM_GEN1, on VAXTM1

/BASE_PRIORITY=2 /CPUMAXIMUM=03 00:00 /JOB_LIMIT=6 /OWNER=[SYSTEM]
/PROTECTION=(S E,O-D,G R,W W) /WSEXTENT=4096 /WQUOTA=1024

<u>Jobname</u>	<u>Username</u>	<u>Entry</u>	<u>Status</u>
SASRUN	ABC	382	Executing

Submitted 21-JUL-1989 09 06 /KEEP /NOTIFY /PRIORITY=100
File _\$2\$DUA1 [ABC]SASRUN COM,6 (executing)

SECTION 8 EDITING FILES

Similar to a word processor, a text editor is used to enter text from your terminal into a newly created file or to make changes to an existing file. You can use an editor to create programs, data files, macros, letters, etc. There are two editors available to you on the VAX Cluster—EDT and EVE. Try them both, and then decide which one best suits your type of work.

EDT EDITOR

The EDT editor is the standard text editor on DEC VAX/VMS computers. It can be used in keypad mode (full-screen editing, using the numeric keypad to enter commands) with DEC VTxxx series terminals as well as line mode from hardcopy terminals. EDT has the following features:

- Allows you to work with several files simultaneously.
- Gives you the ability to redefine your function keys.
- Provides a mechanism to recover from system failures that would otherwise cause you to lose your file.

An online tutorial on the EDT editor is available on the VAX Cluster by typing the following command:

\$ TUTOR

The course covers all features of EDT in a comprehensive, easy-to-understand format.

The EDT editor can be invoked with one of the following commands:

\$ EDIT/EDT filename

or

\$ EDIT filename

or

\$ EDT filename

When invoked, EDT is in line editing mode (indicated by the asterisk prompt). If you need to use line mode, enter the command **HELP** for information on line mode commands.

To change to the more versatile keypad mode, enter the following command to be ready to begin full-screen editing:

CHANGE

When you are finished editing, exit from keypad mode back to the * prompt by typing **Ctrl-Z** and typing one of the following:

EXIT Takes you out of EDT and saves the contents of the file.

QUIT Takes you out of EDT without saving the file.

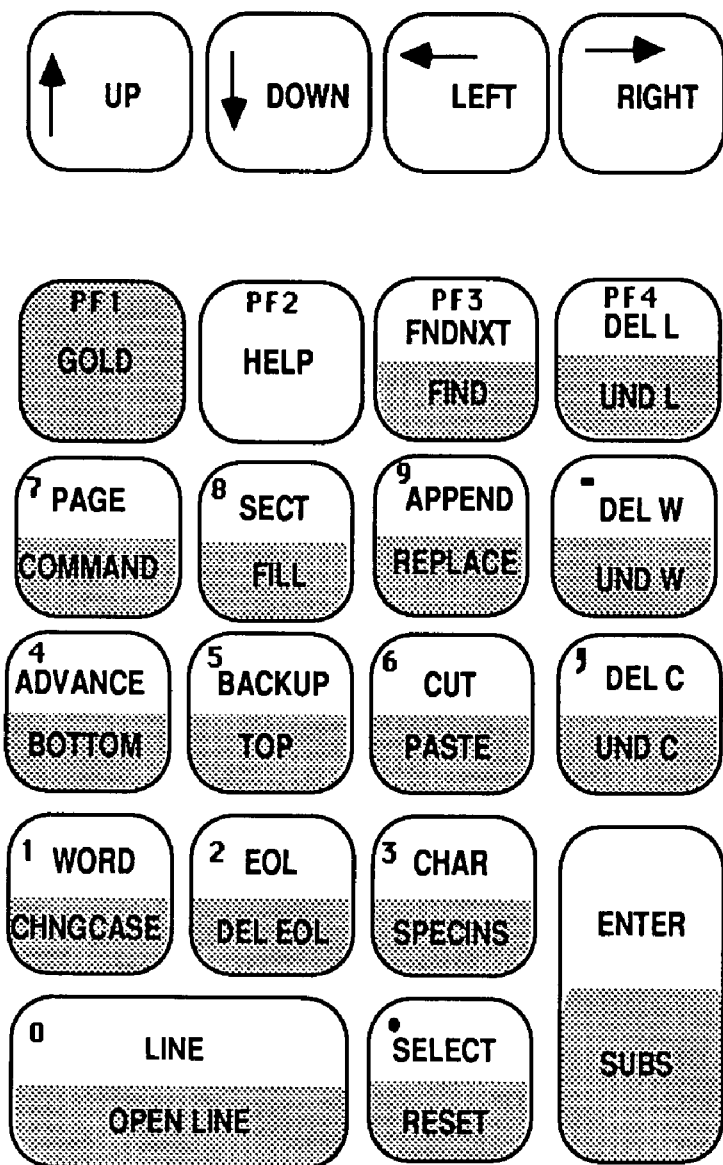
COMMANDS

While in a keypad mode editing session, you may enter EDT commands in two ways. The most efficient is to use the functions assigned to the numeric keypad. Most keys have two functions: a primary

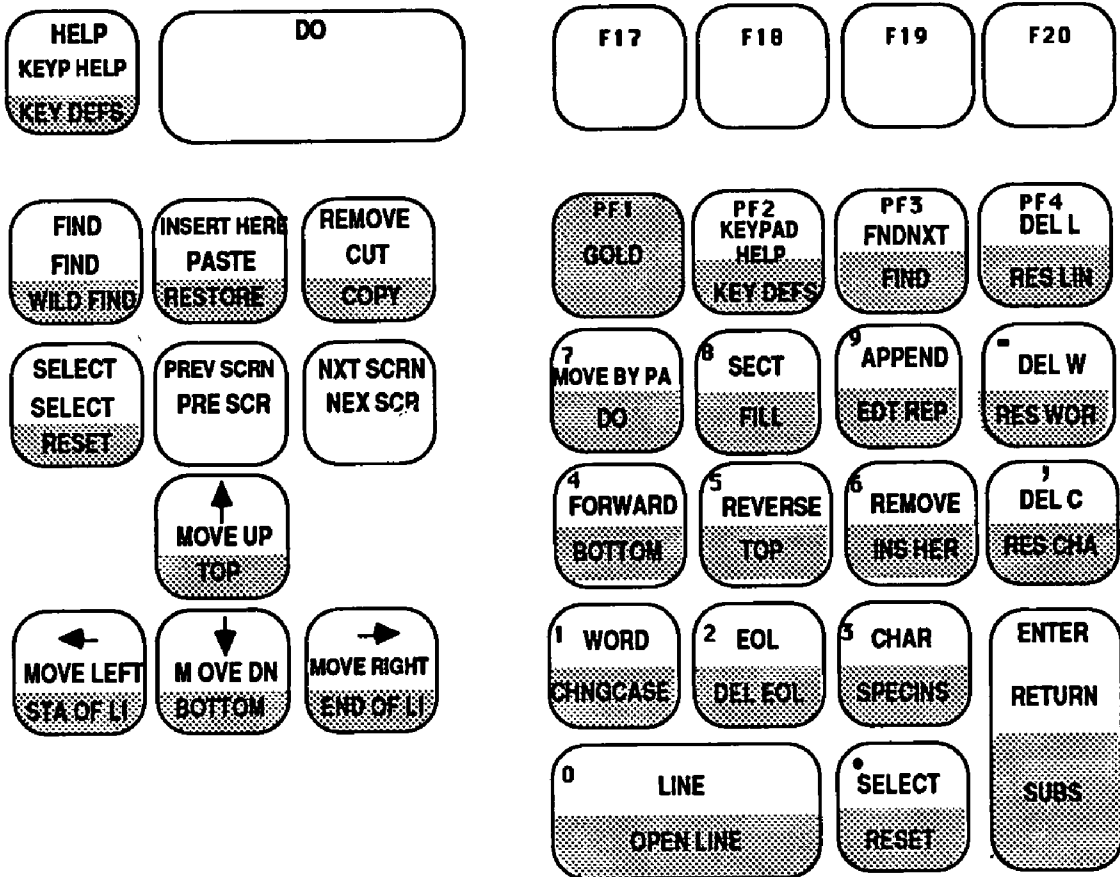
function invoked by simply pressing the key, and an alternate one invoked by first pressing the Gold key (PF1). After pressing the Gold key, the next key pressed will execute its alternate command. The PF2 key's function is help. Press it to display the keypad map.

The following drawings depict the keypads for the VT100 and the VT200 using the EDT editor.

VT100 EDT KEYPAD



VT200 EDT KEYPAD



You may also enter line mode commands while in keypad mode. The GOLD/7 function will prompt you for a command.

EDT RECOVERY FEATURE

While editing a file, EDT keeps a record of your keystrokes, saving them in a journal file called "filename.JOU". When you exit normally (with EXIT or QUIT), the journal file is deleted. In the event of a system crash or other abnormal termination, the journal file is retained and can be used to recover the edit session. In that case, invoke EDT again with the following command:

EDIT/RECOVER filename

EDT will rebuild the file, and you can continue your editing session from the point at which it was interrupted.

EDT STARTUP COMMAND FILE

When invoked, EDT checks your default directory for a startup command file called EDTINI.EDT. If it finds it, the file is executed immediately. You can use this file to direct EDT to automatically change to keypad mode, set tab stops, set margins, or execute any line mode commands you wish. The following is an example of a startup file:

**SET MODE CHANGE
SET QUIET
SET WRAP 70**

This file would change you to keypad mode automatically, silence the bell that normally accompanies error messages, and enable word wrapping at screen position 70.



For more information on the EDT editor, see the VAX EDT Reference Manual.

EXTENSIBLE VAX EDITOR (EVE)

EVE (Extensible VAX Editor) is an editing interface to the **VAX Text Processing Utility (VAXTPU)**. Its capabilities and operation are similar to those of keypad mode **EDT**, but it includes several unique features such as the following:

- Split-screen editing.
- Insert and overstrike mode.
- Ability to execute **DCL** commands without leaving the editor.

As with **EDT**, **EVE HELP** can be accessed with the **PF2** key.

The command to invoke **EVE** is as follows:

EDIT/TPU filename

For easiest access, you should include the following command in your **LOGIN.COM** file:

\$ EVE=="EDIT/TPU"

This will allow you to invoke the editor by simply typing **EVE**.

To terminate **EVE** and save your edited text, use either of the following:

Ctrl-Z

or

Press the **DO** key (see the keypad diagram following) and type **EXIT**.

To terminate without saving, use the following sequence:

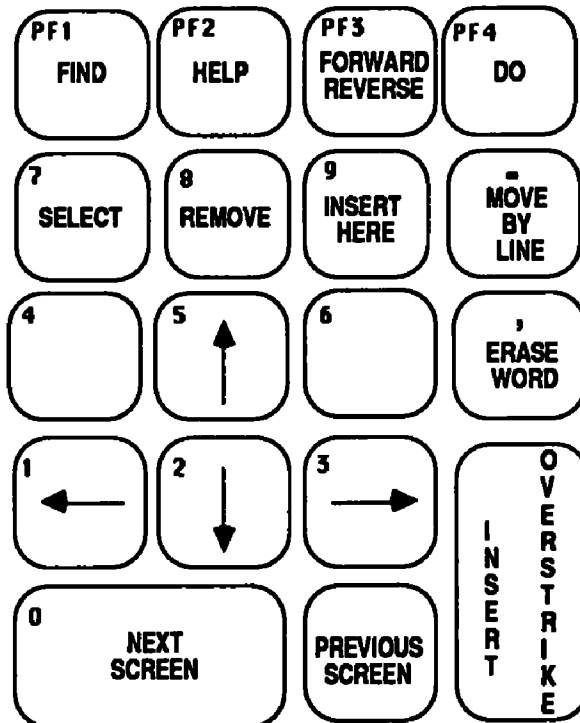
Press the DO key and type QUIT.

COMMANDS

Enter EVE commands using the keypad edit keys or the DO key and a command.

The following drawings depict the keypads for the VT100 and the VT200 using the EVE editor.

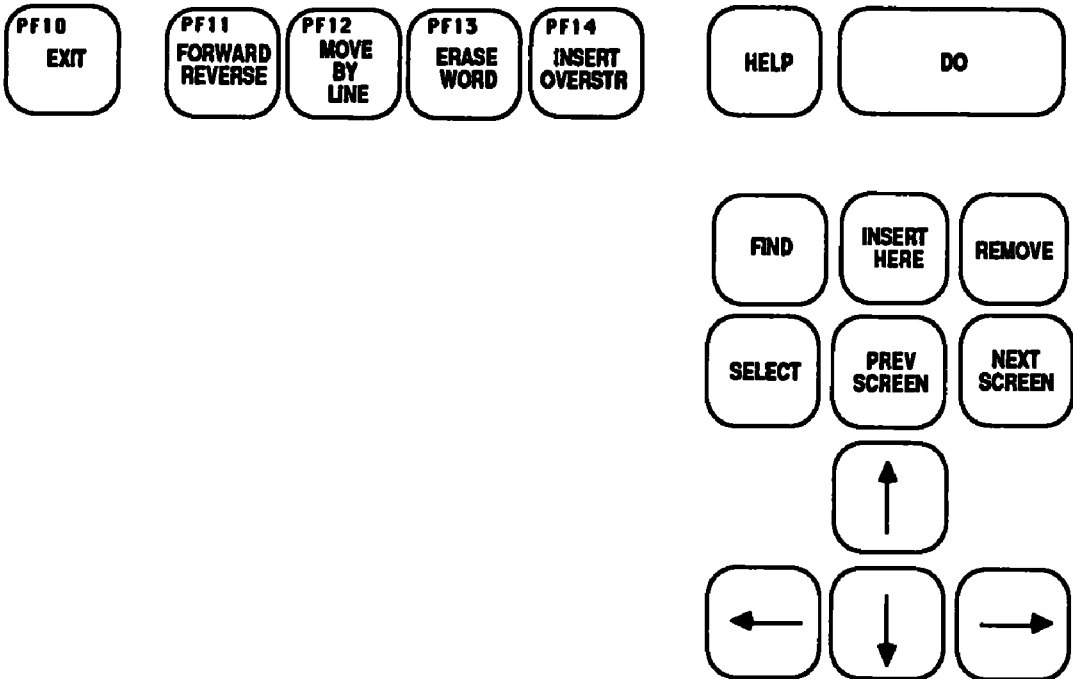
VT100 EVE KEYPAD



Backspace - Start of line
Ctrl-B - Recall
Ctrl-E - End of line
Ctrl-K - Learn
Ctrl-R - Remember

Ctrl-U - Erase to start of line
Ctrl-V - Quote
Ctrl-W - Refresh
Ctrl-Z - Exit

VT200 EVE KEYPAD



Note that the VT200 numeric keypad can function like the one on the VT100 with the following command:

\$ SET KEYPAD VT100

The keypad allows you to perform many useful functions including the following:

- a. Move Cursor.** The cursor may be moved by character or by line using the keypad. The **NEXT SCREEN** and **PREV SCREEN** keys allow you to page through a file in either direction.
- b. Cut and Paste.** Blocks of text may be moved from one location in a file to another (or even from one file to another). The procedure is as follows:
 - 1. Press the SELECT key and move the cursor to highlight the text to be moved.**
 - 2. Press the REMOVE key to delete the text.**
 - 3. Move the cursor to the desired location and press the INSERT HERE key to restore the text.**
- c. Insert and Overstrike.** You may toggle between insert and overstrike mode by pressing the **INSERT-OVERSTR** key. Note that the status line at the bottom of the screen displays the current mode.

- d. **Find Text.** Pressing the FIND key causes EVE to prompt for the text string to be found. Type in the text and press RETURN. EVE will position the cursor at the next occurrence of that text. The direction of search is determined by the FORWARD-REVERSE key; the current direction is displayed on the status line. To search again for the same text, press the FIND key twice.
- e. **Get Help.** Pressing the HELP key displays a map of the keypad and allows you to access help for a key function by then pressing that key.

Pressing the DO key causes EVE to prompt for a command. Some examples of commands that may be entered in this manner are as follows:

TOP BOTTOM	Moves cursor to the top or bottom of the file.
MARK GO TO	Marks current cursor location with an invisible label. Cursor may be returned to this location using GO TO command.
SET LEFT (or RIGHT) MARGIN	Resets margins.
DEFINE KEY	Assigns an EVE command to a single key or control key sequence.

MULTIPLE FILE EDITING

EVE allows you to edit two or more files during an edit session. This is especially useful if you want to copy text from one file to another. The procedure is as follows:

<u>Action</u>	<u>Command</u>
Edit the first file.	\$ EDIT/TPU file1.txt
Get command prompt.	Press the DO key.
Create new buffer.	GET FILE file2.txt.

You are now editing file2.txt. To change back to file1.txt, use the following procedure:

<u>Action</u>	<u>Command</u>
Get command prompt.	Press the DO key.
Switch to file1.txt buffer.	BUFFER file1.txt

To view what buffers have been created, use the SHOW BUFFERS command.

It is also possible to view two or more files on your screen simultaneously:

<u>Action</u>	<u>Command</u>
Edit the first file.	\$ EDIT/TPU file1.txt
Get command prompt.	Press the DO key.
Split the screen into two sections; each contains a copy of file1.txt.	SPLIT WINDOW
Get command prompt.	Press the DO key.
Display file2.txt in the current window.	GET FILE file2.txt

You now have both files displayed on your screen. The command **OTHER WINDOW** will move you back and forth between them.

EVE RECOVERY FEATURE

Similar to EDT, EVE creates a temporary journal file (named filename.TJL) in which all editing commands are recorded. If the EVE session is interrupted, the file changes can be recovered by using the **/RECOVER** qualifier as follows:

\$ EVE/RECOVER filename

Some of the last few keystrokes will be missing due to EVE's storage system.

USING DCL COMMANDS FROM EVE

You may execute a DCL command without leaving the EVE editor by pressing the **DO** key and entering the following:

DCL command-name

EVE will create a buffer and open a window on the screen to display the command and its output. You may then move the cursor to the DCL window and copy text from the command output to the file you are editing.



For more information on these and other EVE features, consult the DEC VAX Text Processing Utility Manual.

SECTION 9 VAX VMS UTILITIES

MAIL

The VAX has its own electronic mail system (not to be confused with the EPA's EMAIL system) that allows you to send and receive messages from other users on the VAX Cluster, as well as from other users on other DECnet nodes. When you receive a mail message, you are notified immediately at your terminal (or at your next logon, if you are not logged on at the time).

INVOKING MAIL

To access the MAIL utility, type the following command at the DCL prompt:

MAIL

Your prompt will change to MAIL> which indicates that you are now executing the MAIL utility.

The command EXIT (or Ctrl-Z) will exit MAIL.

COMMANDS

MAIL has its own HELP facility; use the HELP command for complete details on all the commands available to you. Some of the most common are as follows:



Like DCL, MAIL commands can be shortened to four letters, if desired.

<u>Command</u>	<u>Function</u>
DIRECTORY	Displays a numbered list of the messages in the current folder. Includes date, sender, and subject.
READ #	Displays a specified mail message number. If no number is given, READ displays the oldest message in the folder.

<u>Command</u>	<u>Function</u>
SEND	Sends a message to another user.
FORWARD	Forwards a copy of the message just read to another user.
REPLY	Sends a message to the sender of the message just read.
DELETE	Deletes the most recently read message. DELETE # deletes a specified message number.
EXTRACT	Copies the message just read into an ordinary file.

SENDING A MAIL MESSAGE

To send another user a message, invoke **MAIL** and enter the command **SEND** at the prompt. **MAIL** will then prompt you for the username of the recipient, the subject of the message, and the message text. When you enter the text of your message, press **RETURN** at the end of each line.



You cannot go back and change a line after pressing **RETURN**.

When you have completed the text, press **Ctrl-Z** to send the message or **Ctrl-C** to abort it.

An example follows:

```
$ MAIL
MAIL>SEND
To xyz
Subj mail utility test
```

Enter your message below Press CTRL/Z when complete, or CTRL/C to quit

This is a test of the MAIL utility

READING A MAIL MESSAGE

To read a message, invoke the MAIL utility and enter the following command:

MAIL>READ #

Where # is a message number, as shown by the **DIRECTORY** command. If no number is given, the oldest message is displayed.



READ is the default command; therefore, you may just press RETURN at the MAIL> prompt.



For more information about using the MAIL utility, see the following online documentation:

USERGUIDE:MAIL.DOC

PHONE

The **PHONE** utility allows you to simulate an interactive telephone conversation between 2-5 other users. All parties simultaneously see what the others are typing.

INVOKING THE PHONE UTILITY

To access the **PHONE** utility, type the following command at the DCL prompt:

PHONE



COMMANDS

Your terminal will respond by splitting the screen and leaving the cursor at the % prompt.

The PHONE utility is available only on a full-screen terminal such as the VT100.

To access the PHONE utility's own HELP facility, type HELP at the % prompt.

Some of the most common commands are as follows:

<u>Command</u>	<u>Function</u>
ANSWER	Answers the phone when you receive a call.
DIRECTORY	Lists users available on the system.
DIAL or PHONE	Calls another user.
FACSIMILE	Allows users to include file contents in the telephone conversation.
HELP	Displays information on the PHONE utility.
MAIL	Mails a short message to another user.
HOLD or UNHOLD	Places caller on hold (or releases them).
HANGUP	Disconnects all current links without exiting the PHONE utility.

<u>Command</u>	<u>Function</u>
EXIT	Executes HANGUP and exits the PHONE utility.
Ctrl-G	Rings the bell of all users in conversation.
Ctrl-L	Clears the view port.
Ctrl-W	Refreshes the screen.
Ctrl-Z	Hangs up.

For example, after invoking the PHONE utility, you can call another user with the following command:

% DIAL xyz

Or, if someone is ringing you, reply with the following command:

% ANSWER

When a connection is established, the caller can type on his screen, and the text will simultaneously be displayed on the answering user's screen.

The PHONE screen display is as follows:

VAX/VMS Phone Facility	23-AUG-1989
%	

VAXTM1 xyz	
This is a test User xyz is calling user abc	

VAXTM1 abc	
This is the same test User abc is logged on to the VAX and is answering user xyz	

To return to the command line, type %. From the command line, you can add other users to the conversation (DIAL), include the contents of a file (FACSIMILE), HANGUP, or EXIT.

If you do not want your terminal session to be disturbed by PHONE or MAIL messages, enter the following command at the DCL prompt:

\$ SET TERM/NOBROADCAST

BACKUP

The VMS BACKUP utility is used for making backup copies of files. A backup may be made to disk, but it is usually made to tape, often for purposes of transporting the files to another system. One advantage of using BACKUP instead of COPY is that BACKUP will preserve and reproduce the directory structure of saved files. When backing up to tape, files are stored in a special format called a “save set” which can only be read with the BACKUP utility.

The basic format of the command is as follows:

BACKUP input/qual output/qual

The BACKUP utility determines that it is to perform a save, restore, or copy operation based on the devices and qualifiers used in the above command.



Important: Tape use on the VAX Cluster is controlled by the TAPESYS tape management system. TAPESYS automates the use of the BACKUP utility (with regard to tape backups) through various commands and menu screens. **In most cases, its use is considered preferable to issuing the BACKUP command directly.** Outside of TAPESYS, the BACKUP utility can, under certain circumstances, generate misleading operator requests that may result in data loss. TAPESYS offers significant security advantages, and its use is strongly encouraged.

One exception to this is the case where you may need to read a BACKUP tape that was created on another VAX system. TAPESYS cannot be used to restore files from such a tape because it always uses the qualifier “/OWNER=ORIGINAL” on its BACKUP command, which requires that you be the owner of the file you are restoring. Such a tape must be read

without using TAPESYS. Contact User Support for assistance.



For more information on backing up and restoring files from tape, see the chapter in this document entitled TAPE MANAGEMENT.



For more information on the BACKUP utility, type HELP BACKUP at the DCL prompt, or see the VMS BACKUP Utility Manual.

LIBRARIAN

The **LIBRARIAN** utility is used to maintain and access libraries which are indexed files containing frequently used code or text modules. There are five types of libraries:

HELP (file type HLB). Contains modules that provide information about editors, programs, utilities, etc.

MACRO (file type MLB). Contains macro definitions used as input to the Assembler whenever the Assembler encounters a macro not defined in a source program.

OBJECT (file type OLB). Contains frequently called routines used as Linker input. The Linker searches the object module library if it encounters a reference that it cannot resolve from the input file(s).

SHAREABLE IMAGE (file type OLB). Contains the symbol tables of shareable images used as Linker input.

TEXT (file type TLB). Can contain any sequential record files that are retrieved as data for programs.

The **LIBRARY** command, with various command qualifiers, can be used to create, delete, or modify libraries, and to insert, delete, extract, and list library modules and symbols. The basic format of the **LIBRARY** command is as follows:

\$ LIBRARY/qual lib-filename input-filename

Where:

/qual(ifiers) are functions to be performed. More than one, if compatible, can be designated.

lib(rary)-filename is the name of the library to be created or maintained.

input-filename is the name of the file containing modules to be inserted in the specified library.



For complete information on **LIBRARIAN**, see the **VMS LIBRARIAN Utility Manual**.

SORT

The **SORT** utility sorts records in input files based on the fields defined in the **SORT** command and generates a reordered output file. Unless specified otherwise, the entire record will be sorted as a whole. By using qualifiers, you can select complex sort specifications.

The format of the **SORT** command is as follows:

SORT/qualifiers input-file output-file

Some useful qualifiers are as follows:

/KEY=(POSITION:n,SIZE:n) Specifies the starting position of the field that the file is to be sorted on and the size of that field.

/KEY=(...,ASCENDING) Will sort in ascending order.

/KEY=(...,DESCENDING) Will sort in descending order.

/[NO]DUPLICATES By default SORT will keep records with duplicate keys.

In the following example, the file DATA1.LIS is sorted on the first eight characters of each record and output to DATA2.LIS:

```
$ SORT/KEY=(POSITION:1,SIZE:8)-  
_ $ DATA1.LIS DATA2.LIS
```

In the next example, the file STAT.LIS is sorted in ascending order on the characters from position 8 to position 27 and output to STAT2.LIS:

```
$ SORT/KEY=(POS:8,SIZ=20,-  
_ $ ASCENDING) STAT.LIS STAT2.LIS
```

In the next example, the entire personnel record file is sorted and duplicate records are eliminated in the output file:

```
$ SORT/NODUPLICATES-  
_ $ PERSONNEL.DAT-  
_ $ PERSONNEL2.DAT
```



DIGITAL STANDARD RUNOFF (DSR)

For more information on the SORT utility, see the VMS SORT/MERGE Utility Manual.

Digital Standard Runoff (DSR or RUNOFF) is a text formatting utility that can assist you in creating a formatted document, including a table of contents and index. A text editor is used to create a file; then RUNOFF is invoked to process it and format the text. The formatted file can then be printed using the DCL PRINT command. DSR commands specify the format of text (size of pages, right justification, line spacing, etc.). Flags emphasize text through special characters such as capital letters, spacing of text, and others. The DCL command RUNOFF processes the file and controls certain characteristics of the file. The table of contents and index utilities provide a quick method to create both.

A DSR command always begins with a control flag (.) which must be in column 1 of a line unless it follows another command in the same line. Multiple commands on the same lines are permitted. A keyword follows the flag to specify the function. Arguments can follow certain functions and are separated by commas or spaces. A terminator (;) ends the command or string of commands.



NCC-SUPPLIED UTILITIES

For more information, see the VAX Digital Standard Runoff Reference Manual.

The utilities described below are not part of the VAX VMS operating system. They have been created by NCC User Support and Technical Services to assist you with certain common tasks. To use the utilities, type the utility name as a command at the DCL prompt.



Although all these utilities are available to all users, some commands may not work for you if you have defined symbols using the same names.

**ABI
(ARCHIVE/
BACKUP
INQUIRY)**

ABI is used to locate files stored on the mandatory archive and incremental system backup tapes. It is simply an automated method of performing the **TAPE REPORT** command. The report it produces can be sent to your terminal, a file, or both. The information in this report can then be used to request file recovery (see **Archive/Backup Recovery**). Detailed help text is available within the utility.

**ABR
(ARCHIVE/
BACKUP
RECOVERY)**

ABR is used to request the recovery of a file from archive or incremental backups. You must supply the file name, tape reel number, and saveset name (information which may be obtained with ABI). The ABR function is the same as that performed by the **TAPE RESTORE** command and the **TMENU** restore screen.

ARCHIVE

ARCHIVE is a utility that allows you to easily request files to be archived to system tape for 2 years ("standby archive"). Detailed help text is available within the utility.

AUTOPRINT

AUTOPRINT is a generic print utility used to assist users in printing files on the **VAX** system printer.

EMAIL

EMAIL allows you to access the electronic mail system at EPA. See the **Email** section of this manual for detailed instructions on using **Email**.

IBMSUBMIT

IBMSUBMIT is a utility for submitting a batch job to the **IBM 3090** system. It prompts you for the name of the file to be submitted and your **VAX** password

which it uses in an access control string to execute a SUBMIT/SNA command. It uses the /NOLOG qualifier for security purposes.

IBMSUBMIT should not be used when submitting a file containing records longer than 80 characters or in cases where you want a log file.



For more information on IBMSUBMIT, see the following online documentation:

USERGUIDE:IBMJOBSUBMIT.DOC

LASERPRINT

LASERPRINT allows you to quickly and easily print a file on the IBM system's laser printer. You must have a valid IBM User-ID in order to use this utility. You can specify your choice of form, the number of copies, and whether or not to burst the resultant printout.

MEMO

MEMO is a menu-driven facility for accessing VAX-related NCC User Memos.

OPERATION_ SCHEDULE

OPERATION_SCHEDULE displays the VAX Cluster operating schedule for the current week.

PROTECT

PROTECT will assist you in checking and changing file protection levels.

SCRATCH

SCRATCH displays status information about the system scratch packs (WORK_SCRATCH) including space available and clean-up schedule.

TUTOR

TUTOR invokes online VMS and EDT tutorials.

SECTION 10 TAPE MANAGEMENT

TAPES AT NCC

Tapes are most frequently used to either back up data for safekeeping or to facilitate the transfer of data to other sites. Extremely large files that are used infrequently may also be best stored on tape. Data Processing Support Services maintains a supply of 9-track, 6250 bpi magnetic tapes for general use. These tapes are considered standard at the NCC.

Tapes are identified by a 6-digit number assigned to them and are classified as system, foreign, or alien.

VAX SYSTEM TAPES

System tapes are owned by the NCC and assigned to users for use on a particular system. VAX system tapes are currently identified by the volume numbers 099000 and higher. A system tape has an internal label identical to its volume number (i.e., tape 099123 has an internal label of 099123). A system tape may not be removed from the data center unless you choose to purchase it (at which point it becomes a foreign tape).

FOREIGN TAPES

DPSS defines foreign tapes as those tapes not permanently stored in the NCC tape library. This category includes tapes brought in from other computer sites for processing at the NCC, as well as tapes that have been purchased from DPSS. Foreign tapes are also referred to as B-tapes because they are identified by a number prefixed with the letter "B".

If you want to process a tape that you have created on another system, send it to DPSS:



Data Processing Support Services
EPA-NCC
MD-24
Research Triangle Park, NC 27711

Your tape must have an identification sticker on it that provides the following information:

**User name
User-ID
Account number
Telephone number
Bin number or mailing address
Volume serial number or original reel
identification**

You must also inform DPSS if you want the tape to be write-enabled. DPSS will notify you when your tape has been received and is available for use and will inform you of the B-number that you will use to reference it. B-numbers are of the following format:

Bxnnnn

Where x=0 for IBM or 2 for VAX and where nnnn is the slot number. However, you may use a B-tape on its non-resident system as well.

You can release a B-tape by either picking it up at DPSS or by calling and requesting that it be mailed to you. In no case can a B-tape be stored at the NCC for more than 90 days. After 90 days, such tapes are automatically released and returned to the owner. Data that is needed for longer periods should be copied to system tapes or disk.

ALIEN TAPES

An alien tape is an NCC system tape that is temporarily being used on the opposite system (i.e., a VAX tape being used on the IBM or vice versa). You must contact DPSS ahead of time to request that such a tape be made available to the other system. After DPSS verifies the tape's ownership, they will write-protect the tape and move it to a staging area for the

system that is to read it. At the end of the day, the tape will be returned to its native system without the write ring.

DPSS TAPE SERVICES

Tape Cleaning. DPSS has three cleaner/evaluators for magnetic tapes. Tapes are cleaned and/or evaluated by user request or as needed, based on an established set of standards.

Tape Degaussing. A tape degausser is a device that passes magnetic tape through a strong magnetic field thereby erasing any information recorded on it, including any labels and header information. This device ensures an erasure level of not less than 80 decibels; normal computer tape recording levels are between 50 and 60 decibels. This erasure level complies with the requirements of the Privacy Act of 1964 and meets National Security Agency standards. The degausser will erase a 2400-foot reel of computer tape in about 15 seconds.

Monthly Foreign Tape Report. Users who have foreign tapes registered in the NCC Tape Library are sent a monthly report identifying these tapes and their B-numbers.

Monthly TMS Tape Report. A report is sent to all users who currently are assigned system tapes. This report provides the tape volume number, the date of allocation, the scratch date and special notes text.

Tape Archiving. The NCC archival library is available for offsite storage of tapes containing data to be retained indefinitely but with no immediate processing requirement. A user may have a tape transferred to (archived) or returned from (dearchived) the archive library by notifying DPSS. Advance notice of 24 hours is required for dearchival. You will be notified

when the dearchived tape is onsite and available for processing.



For information on tape-related charges, see the following online documentation:

USERGUIDE:CHARGES.DOC

TAPESYS TAPE MANAGEMENT SYSTEM

Tape activities on the NCC VAX Cluster are accomplished through an automated tape management system called TAPESYS. TAPESYS operations may be performed in either of two ways:

- Menus are provided to automate certain commonly performed tasks such as backing up and restoring data from tapes. To access the menu system, type the following command at the DCL prompt:

TMENU

- DCL-like commands can be used to perform the same operations as the tape menu system, and they may also be included in command procedures. All of these commands begin with the word TAPE.

VAX TAPE LABEL POLICY

An important feature of TAPESYS is the increased security it provides tape users, thereby reducing the risk of accidentally mounting and overwriting someone else's tape. TAPESYS verifies that the tape number requested for mounting matches the tape's internal label. If they do not match, the operator will be notified of the discrepancy, and TAPESYS will ask him to either confirm or abort the mount. If the tape involved is a VAX system tape (099000 or higher series), the mount request will be aborted.



VAX tape policy requires that all such tapes have matching internal and external labels.

However, the VAX VMS operating system will allow you to overwrite a tape's label. Users should therefore exercise great care when performing tape operations that could potentially alter the tape's label. Non-VAX system tapes, such as B-tapes, are mounted regardless of label status. Users who experience problems mounting tapes should contact User Support for assistance.

TAPESYS COMMANDS

Allocate a new VAX system tape by issuing the following command:

\$ TAPE ALLOCATE

TAPESYS will then prompt you for three items:

1. The quantity of tapes desired. In most cases you will reply with "1". However, if the amount of data you plan to put on tape is too great to fit on a single reel, enter a larger number. TAPESYS will then allocate the tapes as a volume set. This means the tapes are logically linked in the TAPESYS library, and the system will automatically call for subsequent tapes when used.



If you are not sure how many reels you will need, and you intend to write files to the tape in VMS BACKUP format, don't use TAPE ALLOCATE to obtain tapes but instead use the FREE TAPE option of the TAPESYS backup menu, which will allocate as many tapes as necessary to complete the job.

2. Tape format. Valid replies are BACKUP, LABELED, UNLABELED, ASCII, and EBCDIC. Usually you should choose BACKUP. Your choice has no physical effect on the tape you are allocating since all tapes are the same; however, its designated format will be interpreted by TAPESYS for some backup and restore operations.
3. Notes. Up to 64 characters of text. Enter any information that will help you identify the use or contents of the tapes. (You will be able to reference this information online at any time without mounting the tape.)

The above information may also be provided all at once along with the command, for example:

```
$ TAPE ALLOCATE 1 BACKUP-  
_ $ WATER PROJECT
```

TAPESYS will then assign a tape and display a summary of information about it. The tape will be pre-initialized with a density of 6250 and an internal label identical to its external label (reel number).



MODIFYING TAPE INFORMATION

The tape's scratch date will be set to 5 days from the date of allocation, but it may be modified (see below).

You may change a tape's format, notes, and scratch date at any time with the TAPE MODIFY command. Use one of the following formats:

TAPE MODIFY/FORMAT reel-# format

TAPE MODIFY/NOTES reel-# notes

TAPE MODIFY/SCRATCH reel# scratch-time

“Scratch-time” can be a specific date or a delta time, in days, in the standard VMS date format.

In the following example, the scratch date is set to January 1, 1990.

```
$ TAPE MODIFY/SCRATCH 099000-
_$ 01-JAN-1990
```

In the next example, the scratch date is set to 30 days from today.:

```
$ TAPE MODIFY/SCRATCH 099000 “+30”
```

INQUIRING ABOUT YOUR TAPES

Several commands are available to provide information about the tapes you currently own.

To obtain a detailed report about a specific tape, use the following command:

```
$ TAPE INQUIRE reel-id
```

To obtain a summary of all tapes you own, use the following command:

```
$ TAPE INQUIRE SUMMARY
```

To obtain a listing of your tapes in order of their scheduled scratch dates, use the following command:

```
$ TAPE INQUIRE FORECAST
```

FREEING TAPES

A tape will be scratched automatically by TAPESYS when its scratch date arrives. However, you may also free a tape as soon as it is no longer needed by using the following command:

```
$ TAPE FREE reel-id
```




Since the NCC has a limited supply of tapes, you are encouraged to release tapes as soon as possible to avoid any shortages. In addition, you may be saving yourself the cost of tape rental.

BACKING UP FILES TO TAPE

A common use of tapes is to back up your disk files using the VMS BACKUP utility. TAPESYS provides an easy, automated method for backups using the TAPESYS menus. TAPESYS takes care of allocating a tape drive, loading the tape(s), and performing the backup. When the job completes, you are notified via MAIL and provided with a log file showing what was done.

To begin the process, type TMENU at the DCL prompt. The following TAPESYS main menu will be displayed:

```

TAPESYS V441

USER'S TAPE ACTIVITY MENU

Backups                                Reports
1  Request a Backup via CRT            9  Inquire on All Owned Tapes
2  Request a Restore via CRT           10 List Tapes by Scratch Date
                                       11 List Files on Owned Tapes
                                       12 List Files on Sysmgr's Tapes

                                       Commands
5  Inquire on a Specific Tape
6  Modify a Scratch Date
7  Modify Notes
8  Free a Specific Tape (or Set)        T  Standard Tape Command
0  Return to Entry Point

      Selection (type a number or letter)?
```

Choose Option 1, Request a Backup via CRT. The following backup menu will be displayed:

10

SP32's TAPESYS V4.2 BACKUP MENU

<PF2=Help, TAB forward, BACKSPACE backward, RETURN to send, ~ to quit>

Files to be included <use arrow to scroll within window - up to 16 specs>

Files to be excluded <use arrow to move about and scroll in window>

Qualifiers

Date Options 24-AUG-1989 09:56

Reel ID Free Tape

Format

0 None

1 Created

Saveset 24AUG89_0956.BAK

Bk Fct

1 Before

2 Modified

Time

Re Len

2 Since

3 Expired

☒ Ignore Locks?

☒ Verify Backup

4 Backed up

☒ Use /LOG?

☒ CRC enable?

☒ Online reference?

☒ Initialize tape?

Scratch date 29-AUG-1989 09:56:03

Size 2400 Density 6250 Pool Media type 9TRACK

Tape Notes

Licensed to Environmental Protection Agency - Durham, NC

Use the tab key to move between the fields, filling in the blanks. The PF2 key can be used to get help with any item. Most are already filled in with default values. Critical information is the following:

Files to be included. Type in the name(s) of the file(s) you want to backup. Wildcards are acceptable (e.g., [xyz...] *.*; * to backup all your directories). You can enter up to 16 file specifications in this field. (The window will scroll.)

10-9

Files to be excluded. List any files that are included due to wildcards used above but which you really do not want to be backed up.

Reel ID. By default this field says "Free Tape" meaning that TAPESYS will allocate a tape(s) for you to use in the backup operation. If you already have a tape allocated that you would like to use, type in its reel number instead. If you want to use a B-tape, enter the word "FOREIGN" here.

Saveset. TAPESYS will offer a name composed of the current date and time by default. You may want to enter a different name to be used for the saveset on the tape, e.g., MYFILES.BAK.

Scratch date and Tape Notes. If you gave a reel-ID, these fields already contain the information given when the tape was allocated. If not, enter a scratch date and whatever text you want to associate with the tape. If you entered "FOREIGN" for the reel number, the notes field indicates a "private tape." Blank that phrase out and enter the actual B-number.

When all fields are completed, press the RETURN key to submit your request. TAPESYS will submit a batch job to perform the backup. When it is completed, you will receive a MAIL message informing you of the job's status.

Backup commands may also be entered in command form instead of through the TMENU. For instance, you may want to issue a backup request from a command procedure. Then you would use the command with the following format:

\$ TAPE BACKUP/qualifiers files

Where files is the list of files to be backed up and qualifiers include the same parameters specified through the menu:

/BAckup	/Log
/BEfore=time	/Modified
/CRC	/Owner_uic[=uic]
/CREated	/Record
/Density=density	/Reel=reel-id
/EXclude	/SAve_set=save-set
/EXpired	/SCRAtch=time
/Fast	/SINce=time
/INit	/Size=reel-size
/Initialize	/Verify

RESTORING FILES FROM TAPE

TAPESYS also provides an automated method of requesting the restoration of backed up files from tape.

To begin the process, type TMENU at the DCL prompt (see screen depicted in discussion of back-ups).

Choose Option 2, Request a Restore via CRT. The following restore menu will be displayed:

SP32's TAPESYS V4.2 RESTORE MENU

<PF2=Help, TAB to each window, CR to send away, BACKSPACE to go back>

Files to be restored (use down- and up-arrows to move about in window)

Output file

Duplicate file action	Reel #		Pos
<input checked="" type="checkbox"/> 0 Report error, bomb	Saveset	**	
1 Make new version		BACKUP	Format
2 Overlay existing file			Blocking Fct: N
3 Replace existing file			Rec Length
		6250	Density
			9TRACK Media

Notes

(Enter ~ to abort)

Use the tab key to move between the fields, filling in the blanks. The PF2 key can be used to get help with any item. Critical information is the following:

Files to be restored. Enter the name(s) of the file(s) you want to recover from tape. Wildcards can be used.

Output file. Indicate where the files are to be restored to. By default TAPESYS will complete the item with the name of your current directory.

Reel #. Enter the reel number of the reel containing the files.

Saveset. Enter the name of the saveset containing the files.

When all fields are completed, press the RETURN key to submit your request. TAPESYS will submit a batch job to perform the restore. When it is completed, you will receive a MAIL message informing you of the job's status.

Restore commands may also be entered in command form instead of through the TMENU. For instance, you may want to issue a restore request from a command procedure. Then you would use the command with the following format:

```
$ TAPE RESTORE/qualifiers-
_$ reel-id saveset out-file
```

Where reel-id is the tape number, saveset is the backup saveset name, out-file is the file name to which files will be restored, and qualifiers include any of the following:

/Crc	/OWner_uic[=uic]
/Log	/REPlace
/New_version	/Select=files
/OVerlay	/Verify

USING TAPES INTERAC- TIVELY

At times, you may want to mount a tape for purposes other than the backup and restore procedures described above. For example, you might have a FORTRAN program that requires the use of a tape. Or you may need to read a tape received from another

site that was not written in BACKUP format. In this case, you must interactively request the tape to be loaded.

First, allocate a tape drive to your process by using the following command:

```
$ TAPE SELECT drive reel-id
```

Where drive is a name of your choosing which will become a logical name for the tape drive you are assigned, and reel-id is the tape number of the tape you intend to mount.

In the following example MYDRIVE indicates the drive name and 099123 is the reel-id:

```
$ TAPE SELECT MYDRIVE 099123
```

TAPESYS will recognize only VAX system tape numbers. If you are going to use a non-VAX system tape (such as a B-tape), specify the keyword BTAPE instead of the reel-ID.

In the following example MYDRIVE indicates the drive name and BTAPE indicates that a foreign tape is to be used.

```
$ TAPE SELECT MYDRIVE BTAPE
```

You will then receive a message indicating that a tape drive has been allocated to you. For example:

```
$ TAPE SELECT MYDRIVE 099123  
%DCL-I-ALLOC, _$3$MUA1 allocated
```

If all tape drives are in use, requests are answered in the order they were received, as drives become available.

After allocating a drive, request that the operator load your tape with the following command:

```
$ TAPE LOAD drive reel-id
```

Where drive is the same name you specified in the TAPE SELECT command and reel-id is the tape number. Specify a B-tape number here if applicable.

If you want to write-enable the tape, add the qualifier /RING, as shown in the following example:

```
$ TAPE LOAD/RING MYDRIVE 099123
```

Your terminal will display a message stating that the operator has been notified, and your session will be suspended until the tape is loaded, as in the following example:

```
$ TAPE LOAD/RING MYDRIVE 099123
%TAPE-I-OPRNOTIF, operator notified (1-AUG-1989 09 41 27)

%TAPE-I-REPLY, %%%%%%%%%%% OPCOM 1-AUG-1989 09 44 57 88
%%%%%%%%%%%%%
Request 128260 was canceled
$
```



The message, "Request n was cancelled", is normal. It indicates that your load request has been canceled because it was completed.

It is at this point that TAPESYS verifies that the tape's internal label matches the volume you requested. If it does not, a message will appear requesting the operator to respond to the discrepancy. The operator will either continue the load or abort it, depending on the type of tape involved. Contact User Support for assistance if you have a problem getting a tape loaded.

Your tape is now physically mounted on the drive. The last step is to logically mount it with the MOUNT command. The command format is as follows:

MOUNT/qualifiers drive tape-label

In the following example, the drive is MYDRIVE and the tape label is 099123:

```
$ MOUNT MYDRIVE 099123
%MOUNT-1-MOUNTED, 099123 mounted on _$3MUA1
```

In the next example the tape is mounted with the FOREIGN qualifier, which disables label processing. Therefore, no label is given. It is necessary to use /FOREIGN when mounting an unlabeled tape.

```
$ MOUNT/FOREIGN MYDRIVE
%MOUNT-I-MOUNTED, mounted on _$3$MUA1
```



Various other qualifiers are available for the MOUNT command. For more information type **HELPMOUNT** or see the **VMS MOUNT Utility Manual**.

When you are finished using the tape, dismount it with the **DISMOUNT** command and deallocate the tape drive with the **DEALLOCATE** command, as in the following example:

```
$ DISMOUNT MYDRIVE
$ DEALLOCATE MYDRIVE
```

INITIALIZING TAPES

The **INITIALIZE** command is used to write a label on a tape immediately followed by an end-of-tape mark. Any data that was on the tape becomes inaccessible. All tapes in the NCC tape library are initialized (with a label identical to the tape number) when placed into service. However, tapes are **NOT** reinitialized between users, so when you allocate a tape from the system, it may contain old files. Since files cannot be deleted from tape, the only way to erase them is to initialize the tape.

The command format is as follows:

```
INITIALIZE drive label
```

The **INITIALIZE** command must be issued after having the tape loaded but before using the **MOUNT** command. The tape must also be write-enabled.

In the following example the tape is loaded with a write ring, initialized, and mounted:

```
$ TAPE LOAD/RING MYDRIVE 099123
%TAPE-I-OPRNOTIF, operator notified ( 1-AUG-1989 09 41 27)
%TAPE-I-REPLY, %%%%%%%%%%%%%% OPCOM 1-AUG-1989 09 44 57 88 %%%%%%%%%%%%%%
Request 128260 was canceled
$ INITIALIZE MYDRIVE 099123
$ MOUNT MYDRIVE 099123
%MOUNT-I-MOUNTED 099123 mounted on _$3$MUA1
$
```



It is imperative that you specify the tape number correctly as the label to be written on the tape. Otherwise, future load attempts will be aborted.

The **TAPESYS** automated backup procedures described previously have an option that will reinitialize the tape before it begins the backup (the default action when using “**FREE TAPE**”).



For more online information on **TAPESYS**, use one of the following commands:

\$ HELP TAPESYS

or

\$ HELP TAPE



In addition, the TAPESYS User Guide is available from the vendor. For ordering information and prices, see the following online documentation:

USERGUIDE:DOCUMENTATION.DOC

11

COMMUNICATION &
SECTION 11
FILE TRANSFER

DECNET
(VAX <—> VAX)

DECnet is the collective name for the hardware and software products that allow the VAX to function as one of several interconnected nodes that make up a network. Through DECnet, a user who is logged on to one of the network's nodes is able to access any other node on the network. DECnet may be used to log on to another node or to access files residing on it.

**DISPLAYING
THE NETWORK**

To get information about the nodes available on the network, type the following command:

SHOW NETWORK

The current status of all network nodes will be displayed as shown in the following example:

VAX/VMS Network status for local node 1 12 VAXTM1 on 1-AUG-1989 10 53 52 07

The next hop to the nearest area router is node 1 20 UVAX

Node		Links	Cost	Hops	Next Hop to Node	
1 12	VAXTM1	2	0	0	(Local)	-> 1 12 VAXTM1
1 11	NCCORD	0	2	1	UNA-1	-> 1 11 NCCORD
1 13	CASTOR	1	2	1	UNA-1	-> 1 13 CASTOR
1 14	HYDRA	0	2	1	UNA-1	-> 1 14 HYDRA
1 20	UVAX	1	2	1	UNA-1	-> 1 20 UVAX
1 22	THULE	0	2	1	UNA-1	-> 1 22 THULE
1 23	EUROPA	0	2	1	UNA-1	-> 1 23 EUROPA
1 26	CHARON	0	2	1	UNA-1	-> 1 26 CHARON
1 30	SNA001	3	2	1	UNA-1	-> 1 30 SNA001
1 31	SNA002	0	2	1	UNA-1	-> 1 31 SNA002
1 36	GISSUN	0	2	1	UNA-1	-> 1 36 GISSUN

**LOGGING ON TO
A REMOTE NODE**

Provided that you have a valid User-ID on the remote system, establish communications with another node using the following command:

SET HOST nodename

Where nodename is one of the available nodes displayed by the SHOW NETWORK command. The remote system will then prompt for your username and password. To return control to your local node, log off from the remote system or press Ctrl-Y several times in rapid succession.

USING DCL COMMANDS OVER THE NETWORK

Most DCL commands used to perform file operations at a local node can also be used to perform these operations on remote nodes. You can obtain file directory listings, manipulate files, and execute command procedures that reside on other nodes.

The extent to which you can access the remote system will depend on whether you are an authorized user on it. If you are not, you will only be able to access directories and files which permit WORLD access. If you are an authorized user on the remote node, you will have the same access authority as you have when you are logged on to that node; however, you must include your username and password in the remote file specification. The format is as follows:

node "username password"::device:[dir]filename

For example, to copy a file located on node NARVAX, a user could issue the following command:

```
$ COPY NARVAX"XYZ SECRET"::-  
_ $ USER$DISK:[XYZ]REPORT.DAT *.*
```

DECNET /SNA GATEWAY (VAX <—> IBM)

The DECnet/SNA gateway is software that links the VAX Cluster and the IBM system. This link allows VAX users to logon to the IBM interactively, submit batch jobs on the IBM, and access files residing on the IBM.

**DECNET/SNA
3270 TERMINAL
EMULATOR**

You may logon to the NCC-IBM 3090 system as well as the EPA-IBM Logical Mainframe systems through the SNA Gateway. To access the network menu, type the following command:

\$ NETSOL

The following menu will be displayed:

U.S. EPA TELECOMMUNICATIONS NETWORK MENU			TERM	T260624
15 20 Tuesday August 22, 1989				MODEL 2
NATIONAL COMPUTER CENTER			LOGICAL MAINFRAME	
PF KEY	SELECTION	SERVICE	PFKEY	SELECTION SERVICE
PF13	PCICS	CICS-Production	PF15	NY TSO-New York LMF
PF14	DCICS	CICS-Development	PF16	DV TSO-Denver NEIC LMF
PF18	CICS	Disaster Recovery	PF17	WIC TSO-Wash Info Center
PF19	TSO	TSO - NCC	PF20	SE TSO-Seattle LMF
PF8	EMAIL	EMAIL Access	PF21	AT TSO-Atlanta LMF
PF10	ARBITER	Arbiter	PF22	DA TSO-Dallas LMF
			PF23	KC TSO-Kansas City LMF
			PF24	PH TSO-Philadelphia LMF
			PF2	CI TSO-Cincinnati LMF
			PF3	BN TSO-Boston LMF
			PF4	CH TSO-Chicago LMF
			PF5	SF TSO-San Francisco LMF
HIT PFKEY OR ENTER SELECTION				

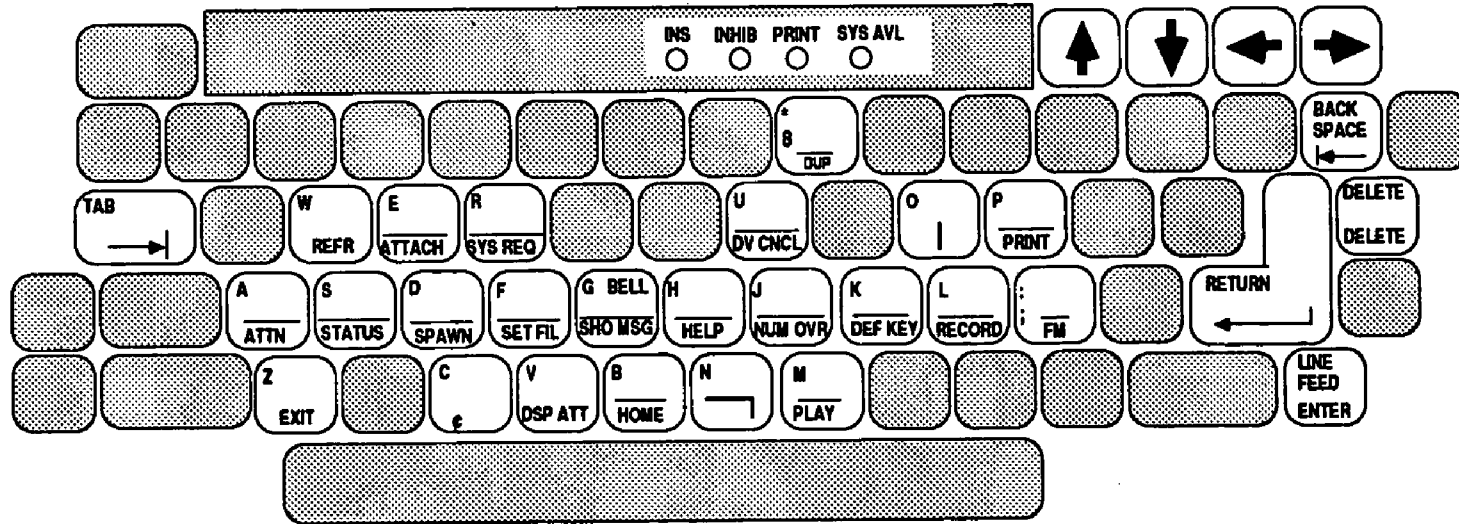
Select the system to connect with. To return to the VAX, log off the remote system and press Ctrl-Z.

You may also access TSO on the IBM 3090 directly by using the following command:

\$ TSO

While logged on to an IBM through DECnet/SNA, your VT100 or VT200 type terminal will emulate an IBM 3270. The following drawings illustrate the keyboard function conversions.

VT100 KEYBOARD 3270 TERMINAL EMULATION



To use the function shown on the front of the key above the line, press the key.

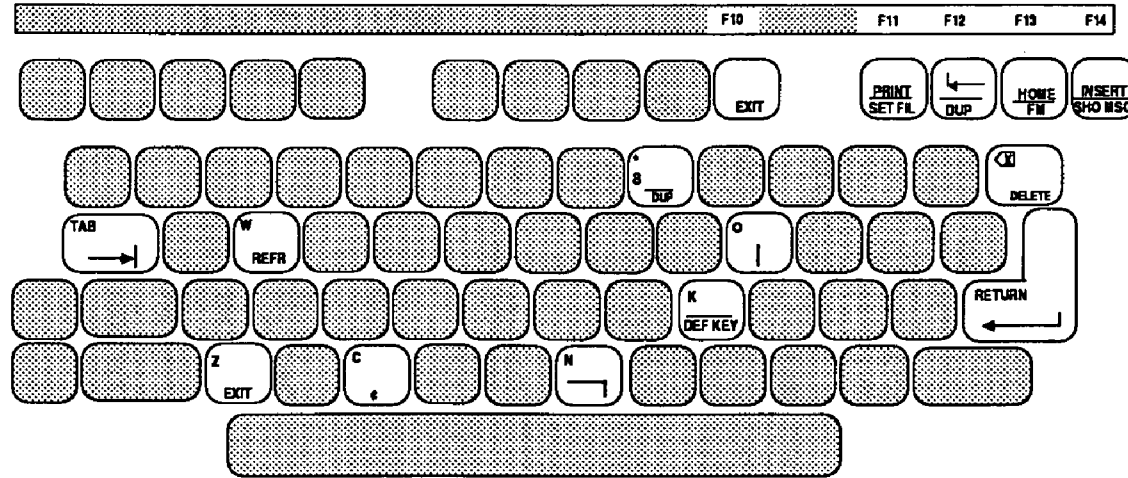
To use the function shown on the front of the key below the line, press the EXT function key and then the key.

PF1 PF13	PF2 PF14	PF3 PF15	PF4 PA1 INSERT
7 PF4 PF16	8 PF5 PF17	9 PF6 PF18	0 PA2 IER INP
4 PF7 PF19	5 PF8 PF20	6 PF9 PF21	3 PA3 EREOF
1 PF10 PF22	2 PF11 PF23	5 PF12 PF24	ENTER
0 RESET	EXT	CLEAR	

To use the single function shown on the front of the key, press the key. Note the following exceptions:

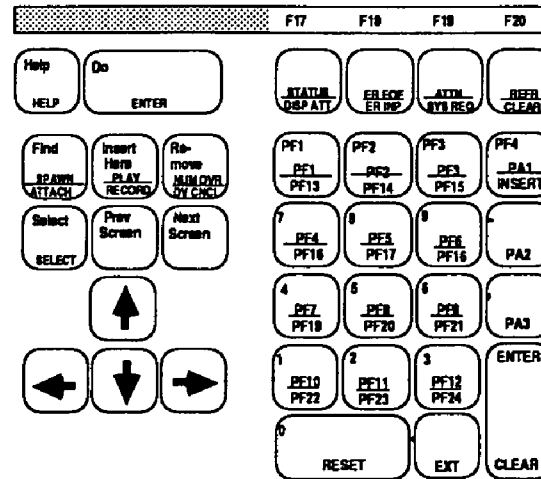
- To use the ¢ (cent), | (logical OR), and below the ¬ (logical NOT) functions, press the EXT function key and the key.
- To use the DEF KEY, DSP ATT, EXIT, and REFR functions, press the CTRL key and the key simultaneously.

VT200 KEYBOARD 3270 TERMINAL EMULATION



To use the function shown on the front of the key above the line, press the key.

To use the function shown on the front of the key below the line, press the EXT function key and then the key.



To use the single function shown on the front of the key, press the key. Note the following exceptions:

- To use the ¢ (cent) | (logical OR), and below the ¬ (logical NOT) functions, press the EXT function key and the key.
- To use the DEF KEY, EXIT, and REFR functions, press the CTRL key and the key simultaneously.

For online help, press the keypad period key and then the H key.



For more information on DECnet/SNA terminal emulation, see the following online documentation:

USERGUIDE:3270TERM.DOC

DECNET/SNA REMOTE JOB ENTRY

The IBM 3090 perceives the VAX as an SNA Remote Job Entry (RJE) workstation (RMT358). This emulation allows VAX users to submit batch jobs and receive job output from the IBM.

Any job output coming back to the VAX from the IBM must contain a special line specifying its disposition. You may route the output to a file, print it, or both. To route the output to a specified file, use the DNX statement in your job with the following format

//* DNX user-id device:[dir]filename

Where user-id is the 3-character code assigned to you and device:[dir]filename is a file specification indicating where the output will go.

If you want to print the output as well as route it to a file, add the following qualifier to the command above:

/PRINT

To route the output to be printed and delivered to the specified bin, use the DNX statement in your job with the following format:

//* DNX user-id /PRINT/NOTE=bin#

Where user-id is the 3-character code assigned to you and bin# is your bin code.

You will receive a MAIL message when the output is received by the VAX.

After creating your job in a file using appropriate JCL commands, send it to the IBM with the following command:

SUBMIT/SNA



For complete details on this procedure, see the following online documentation:

USERGUIDE:IBMJOBSUBMIT.DOC

FILE TRANSFER USING DECNET/ SNA RJE



A specialized function of the DECnet/SNA RJE capabilities is to transfer files. An IBM batch job performs the file transfer, and jobs may be transferred in either direction through the SNA Gateway.

An IBM-to-VAX transfer may be initiated from the IBM system by routing a data set to RMT358 (the VAX Cluster).

The following rules apply to file transfers using the RJE method:

- Only text files may be sent in this manner.
- Files with record lengths up to 254 may be sent VAX-to-IBM.
- Files with record lengths up to 132 may be sent IBM-to-VAX.

- Files with record lengths greater than 80 are sent IBM-to-VAX in print format (which requires some clean-up to restore to original form).



For detailed information on transferring files via SNA/RJE and sample JCL jobs, see the following online documentation:

USERGUIDE:VAXTOIBM.DOC
USERGUIDE:IBMTOVAX.DOC

DECNET/SNA DATA TRANSFER FACILITY

The SNA Data Transfer Facility (DTF) allows you to perform many common DCL commands, including COPY, using an IBM data set as input or output. As such, it may be used to transfer files between the VAX and the IBM 3090 system. Features are as follows:

- Transfers text or binary files.
- Has no record length limitations.
- Provides VAX users with record-level access to data sets residing on the IBM via many DCL commands.
- Initiates transfers from IBM TSO, ISPF panels, or batch jobs.

The logical name "NCCIBM" has been defined on the VAX Cluster to refer to the IBM 3090 system. Use the following file specification to refer to IBM files:

NCCIBM:."data-set-name/qualifiers"

Where data-set-name is a fully qualified IBM data set name and "qualifiers" are any optional qualifiers.

In addition, the following specifies your IBM User-ID: .

/USER:userid

And the following specifies your IBM password:

/PASS:password



Note that in both qualifiers a colon, not an equal sign, is used.

Other qualifiers you may find useful are as follows:

/NOTRANSULATE. Suppresses ASCII/EBCDIC translation of the file (necessary when copying binary data files).

/SUPERCEDE. Specifies overlaying an existing file.

For example, to copy the VAX file REPORT.DAT to the IBM data set XYZACCT.REPORT.DATA, overlaying the existing version, use the following command:

```
$ COPY REPORT.DAT-  
_ $ NCCIBM:."XYZACCT.REPORT.DATA-  
_ $ /SUPERCEDE/USER:XYZ-  
_ $ /PASS:SECRET"
```

TRANSFER/DTF

To copy extremely large files, use the TRANSFER/DTF command interface. It has the following advantages:

- Does not tie up your terminal while the transfer takes place.

- Provides a checkpoint and recovery feature that allows you to restart a file transfer from the last checkpoint after a network or system failure.

To use the interface, enter the following command:

TRANSFER/DTF

Your prompt will look this:

TRANS/DTF>

Then use the COPY command as above and a batch job will be generated to transfer the file.



For more information on the TRANSFER/DTF facility, you may also enter the HELP command at the TRANS/DTF> prompt.



There is an obvious security concern associated with using DTF, since your IBM User-ID and password will be echoed on your terminal when issuing the commands. The DTF software includes a proxy data base which can preclude the need to use password information in data set references. If you intend to make use of DTF frequently, use a proxy account. Contact User Support for more details.



For more information on DTF, see the following online documentation:

USERGUIDE:DTF.DOC

JNET/BITNET

Another method of transferring files between the VAX and the IBM uses the BITNET network. BITNET is an international telecommunication network

that links data centers at hundreds of universities and research centers. JNET is the VAX software interface to the BITNET network. Using the JNET/ BITNET network has the following advantages:

- Text or binary files may be transferred.
- There are no record length limitations.

But transfer speed is relatively slow, so using JNET/ BITNET is inappropriate for large files.



For detailed information on using JNET/ BITNET, see the following online documentation:

USERGUIDE:JNET_BITNET.DOC

KERMIT

KERMIT-32 is a file transfer protocol designed for VAX computers under the VAX/VMS Version 3 or higher operating systems. On the VAX Cluster, KERMIT is primarily used for file transfer between the VAX and Personal Computers (PCs) also equipped with KERMIT. Use the following command to access the KERMIT protocol:

\$ KERMIT



For more information on KERMIT, see the complete KERMIT user guide in the following online documentation:

USERGUIDE:KERMIT.DOC

SOFTWARE CATALOG



The following section describes the software installed on the VAX Cluster as of the time of this writing. For the most current listing of system software, see the following online documentation:



USERGUIDE:SOFTWARE.DOC

Software packages covered previously in this document, such as TAPESYS, EDT, EVE, etc., are not included in this catalog.

DESCRIPTION

FORTRAN (FORmula TRANslator) is a high-level programming language used primarily for applications which involve extensive mathematical calculations. The American National Standards Institute (ANSI) has defined a standard FORTRAN. The FORTRAN language available on VAX/VMS systems, called **VAX FORTRAN**, is based on ANSI FORTRAN-77 (ANSI X3.9-1978). Some extensions to ANSI FORTRAN-77, as well as support for programs written under ANSI X3.9-1966 standards are included.

By convention, a FORTRAN source code file has a file type of FOR, i.e., **SAMPLE.FOR**. The compiler is invoked with the **FORTRAN** command as in the following example:

\$ FORTRAN SAMPLE

There are many options available when compiling FORTRAN programs.

VAX FORTRAN is a compatible superset of DEC's PDP-11 FORTRAN-77 enabling you to compile existing PDP-11 FORTRAN-77 programs using the **VAX FORTRAN** compiler.

FORTRAN upgrades are usually made available when the VMS operating system is upgraded.



For more information, see the following DEC manuals:

- **VAX FORTRAN Users Manual**
- **VAX FORTRAN Language Reference Manual**



For ordering information, see the following online documentation:

USERGUIDE:DOCUMENTATION.DOC

DESCRIPTION

MACRO is the assembly language for VAX VMS systems. The Assembler reads a file of **MACRO** statements and produces relocatable object code suitable for linking to other object modules, if necessary, by the **VAX LINKER** to create an executable image.

A **MACRO** source code file has the file type **MAR**. The **MACRO** compiler is invoked by the the **MACRO** command as in the following example:

```
$ MACRO SAMPLE
```

For more information, see the following DEC manual:



VAX MACRO and Instruction Set Reference Manual

For ordering information, see the following online documentation:



USERGUIDE:DOCUMENTATION.DOC

DESCRIPTION

The VMS Debugger is an interactive tool that helps you locate run-time programming or logic errors in your FORTRAN or MACRO programs. Use the debugger with a program that has been compiled and linked successfully but does not run successfully. You can locate errors by observing and manipulating your program interactively as it executes.

Compile and link programs that you intend to debug with the /DEBUG command qualifier as follows:

\$ FORTRAN/DEBUG file-specification
\$ LINK/DEBUG file-specification

The COMPILE command controls whether the compiler makes local symbol table and traceback information available. Using the /DEBUG qualifier in the LINK command includes that information in the executable image as well. The RUN command will call Debugger and leave you at the Debugger prompt, as in the following example:

```
$RUN file-specification
```

```
VAX DEBUG Version 3.0
```

```
%DEBUG-I-INITIAL, language is xxx, module set to 'file-specification'  
DBG>
```

Alternately, if your program is running without Debugger control and you want to call the Debugger, interrupt the running program with Ctrl-Y and give the DEBUG command as follows:



```
$ RUN file-specification
```

```
Ctrl-Y  
$ DEBUG
```

If you interrupt a running program and enter the **DEBUG** command, you will not know which instruction was executing. The instruction can be determined by the **SHOW CALLS** command, as in the following example:



```
$ DEBUG
```

```
VAX DEBUG Version 3.0
```

```
%DEBUG-I-INITIAL, language is xxx, module set to 'file specification'  
DBG>SHOW CALLS
```

At the initiation of a debugging session, the language (xxx) in which the program (module) being debugged is written will determine certain parameters for Debugger. These language-dependent parameters are **MODE**, **OUTPUT**, **STEP**, and **TYPE**.

For more information about Debugger, see the following DEC manuals:



- **VMS Debugger Manual**
- **VAX FORTRAN User's Guide**

For ordering information, see the following online documentation:

USERGUIDE:DOCUMENTATION.DOC

DESCRIPTION

VAX Software Engineering Tools (VAXset) is a collection of programmer productivity tools developed and marketed by DEC that include the following:

- The DEC/Code Management System (CMS) offers a series of utilities that will provide source code or documentation archiving and historical tracking for an individual software developer or an entire project team.
- The DEC/Test Manager (DTM) automates the process of software testing by organizing software tests and evaluating test results.
- The VAX Language-Sensitive Editor (LSE) is a multi-language, advanced text editor specifically designed for software development. The FORTRAN version of the editor is available on the NCC VAX Cluster.
- The VAX Source Code Analyzer (SCA) is an interactive, multi-language source code cross-reference and static analysis tool designed to aid developers in understanding the complexities of large-scale software systems.
- The DEC/Module Management System (MMS) updates files by comparing the revision times of specified files in a description file. If a "source" file (for example, an object module) is newer than its "target" (for example, an executable image), MMS updates the source by executing commands supplied in the description file. If some of the sources need updating, MMS updates them before building the target. If the target is newer than its sources, it is already up to date and MMS does not rebuild it.

- The VAX Performance and Coverage Analyzer (PCA) is a software development tool that helps you analyze the run-time behavior of application programs. The VAX PCA can pinpoint execution bottlenecks and other performance problems in user programs. Using this information, you can modify your programs to run faster. This tool also measures which parts of your program are or are not executed by a given set of test data so that you can devise tests that exercise all parts of your program.



For information on ordering a DEC manual for each of these products, see the following online documentation:

USERGUIDE:DOCUMENTATION.DOC

DESCRIPTION

Statistical Analysis System (SAS) was originally a statistical package, but it has evolved into a more general data analysis system. SAS reads data from disk or tape and then organizes the values into a SAS data set which contains both the data and its description. The data set can be combined with other data sets, analyzed statistically, and incorporated into reports. SAS produces both preformatted and user-formatted reports. SAS-GRAPH allows graphical presentation of data in the form of color plots, charts, maps, and slides on terminals and hard copy devices.

SAS products available on the VAX Cluster include the following (in addition to the base SAS product):

- SAS/GRAPH
- Full Screen Product (FSP)
- Econometrics and Time Series Analysis (ETS).

SAS is licensed on nodes VAXTM1 and HYDRA and may be invoked interactively with the following command:

\$ SAS



For information on ordering complete SAS documentation, see the following online documentation:

USERGUIDE:DOCUMENTATION.DOC



For information on using the CalComp 1051 plotter as a SAS/GRAPH device, see the following online documentation:

USERGUIDE:CALCOMP1051.DOC

DESCRIPTION

FOCUS, a fourth-generation language, is a complete “information control system” with comprehensive features for entering, maintaining, retrieving, and analyzing data. The nonprocedural FOCUS language was designed to replace traditional programming languages in most applications programming situations. The simplicity of the command syntax in the language stems from the fact that it uses simple English phrases. FOCUS is licensed on node VAXTM1 and may be invoked with the following command:

\$ FOCUS



NCC Training offers a course in FOCUS on the VAX. For more information on training classes, see the following online documentation:

USERGUIDE:CLASSES.DOC



Comprehensive documentation is available directly from the vendor. For ordering information, see the following online documentation:

USERGUIDE:DOCUMENTATION.DOC

DESCRIPTION

International Mathematical and Statistical Library (IMSL) is a set of mathematical and statistical routines for use in FORTRAN programs. The IMSL libraries consist of three separate but coordinated libraries that allow easy user access:

- **MATH/LIBRARY** (General applied mathematics)
- **STAT/LIBRARY** (Statistics)
- **SFUN/LIBRARY** (Special functions)

The IMSL libraries on the VAX Cluster can be referenced with the logical name "IMSL" and can be linked as follows:

\$ LINK program-name,IMSL/LIB



Most of the subprograms are available in both single and double precision versions. For an overview of IMSL subroutine capabilities, see the following online documentation:

USERGUIDE:IMSL.DOC



For information on ordering manuals from the vendor, see the following online documentation:

USERGUIDE:DOCUMENTATION.DOC

DESCRIPTION

VAX Graphical Kernel System (GKS) is a run-time library of graphical functions that are defined by the ANSI X3.124-1985 and ISO 7942-1985 Graphical Kernel System standards. GKS functions provide application programs with a standard method of producing graphics on a potentially large number of physical devices such as workstations, terminal screens, pen plotters, or graphic printers.



For more information on VAX GKS, see the following online documentation:

USERGUIDE:VAXGKS.DOC.



For information on ordering the GKS DEC manual, see the following online documentation:

USERGUIDE:DOCUMENTATION.DOC

INDEX

A	Abbreviation of commands	2-2
	ABI (Archive/Backup Inquiry)	5-3, 5-6, 9-12
	ABR (Archive/Backup Recovery)	5-4, 5-6, 9-12
	Access, dial-up	1-1
	Access, ETHERNET	1-5
	Access, TYMNET	1-3
	Accessing the NCC VAX	1-1
	Accounting and chargeback	2-4
	Accounting, by project code	7-5
	ADP Coordinators	2-4
	Alien tape	10-2
	Application packages, FOCUS	SC-10
	Application packages, IMSL	SC-11
	Application packages, SAS	SC-9
	ARCHIVE	9-12
	Archive, standby	5-7, 9-12
	Archive, tape	10-3
	Archive, using ABI	9-12
	Archive/Backup Inquiry	5-3
	Archive/Backup Recovery	5-4
	Archiving files	5-4
	Archiving, 2-year	5-7
	Assistance	2-1
	Asterisk, as wildcard character	3-2
	AUTOPRINT	9-12
B	B-tapes	10-1
	BACKUP	9-7
	Backups, full	5-1
	Backups, incremental	5-1
	Backups, standalone	5-1
	Backups, tape	10-8
	Batch job accounting	7-5
	Batch job, submitting	7-5, 9-12
	Batch jobs	7-1, 7-4
	Batch queues	7-4
	Baud rate	1-1

INDEX

	Billing	2-4
	Bin number	4-6
	BITNET	11-11
	Business hours	9-13
C		
	CalComp 1051 plotter	SC-9
	CASTOR	1-1
	Changing password	1-8
	Chargeback rates	2-4
	Charges	2-4
	Charging, to project code	7-5
	Command file, startup	8-6
	Command procedure, login	7-3
	Command procedure	7-1
	Command procedure, example of	7-2
	Command, abbreviating	2-2
	Command, BACKUP	9-7, 10-10
	Command, continuation	2-2
	Command, COPY	4-3
	Command, DCL	2-1, 7-1
	Command, DCL from EVE	8-13
	Command, DEFAULT	4-2
	Command, DELETE	4-4
	Command, DIRECTORY	3-3, 4-1, 6-3
	Command, EDT editing	8-2
	Command, EVE	8-8
	Command, file manipulation	4-1
	Commans, INITIALIZE	10-18
	Command, LIBRARY	9-9
	Command, MAIL	9-1
	Command, MOUNT	10-16
	Command, PHONE	9-4
	Command, PRINT	4-6
	Command, PURGE	4-5
	Command, recall	2-3
	Command, RENAME	4-4
	Command, short form	2-2

INDEX

Command, SUBMIT	7-5
Command, TAPESYS	10-5
Command, terminal server	1-5
Command, TRANSFER/DTF interface	11-10
Command, TYPE	4-3
Command, using over the network	11-2
Communication, among systems	11-1
Compiler, FORTRAN	SC-22
Compiler, with Debugger	SC-5
Computer-related charges	2-4
Connect time charges	2-4
Continuation of commands	2-2
Conventions, for command procedures	7-1
COPY	4-3
Costs	2-4

D

Data Management	5-1
Data Processing Support Services	10-1
Data Switch, headquarters	1-1
Data Switch, WIC	1-4
Data Transfer Facility	11-9
Data transfer	11-10
DCL (Digital Command Language)	2-1
DCL commands	2-1, 7-1
DCL commands, from EVE	8-13
DCL commands, over the network	11-2
Debugger	SC-5
DECnet	11-1
DECnet/SNA Data Transfer Facility	11-9
DECnet/SNA Gateway	11-2
DECnet/SNA remote job entry	11-7
DECnet/SNA RJE, file transfer	11-8
DECnet/SNA terminal emulator	11-3
DEFINE	6-1
Degaussing tapes	10-3
DELETE	4-4
Desktop laser printer	4-7

INDEX

	Device	3-1
	Dial-up access	1-1
	Digital Command Language	2-1
	Digital Standard Runoff	9-11
	DIRECTORY	4-1
	Directory	3-1, 3-3
	Directory, clean-up	4-5
	Directory, PURGE	4-5
	Disk and file structure	3-1
	Disk quotas	5-8
	Disk space management	5-1
	Disk structure	3-4
	DNX statement	11-7
	DO key	8-7, 8-11
	Drive, tape	10-14
	DSR (Digital Standard Runoff)	9-11
	DTF (Data Transfer Facility)	11-9
E	Editing files	8-1
	Editing, multiple files	8-11
	EDT Editor	8-1
	EDT recovery feature	8-6
	EDT startup	8-6
	EDTINI.EDT	8-6
	EMAIL	9-12
	Ending session automatically	2-4
	Erasing tapes	10-7
	ETHERNET access	1-5
	ETS (Econometrics and Time Series Analysis) SC-9	
	EVE (Extensible VAX Editor)	8-7
	EVE keypads	8-8
	EVE recovery feature	8-13
	Expiration date, of file	5-4
	Extensible VAX Editor	8-7
F	File editing	8-1
	File manipulation	4-1

INDEX

	File name	3-1
	File name extension	3-1
	File printing	4-6
	File protection	3-4
	File protection, displaying	3-7
	File specification	3-1
	File structure	3-1
	File transfer	11-1, 11-8
	File transfer protocol	11-12
	File type	3-1
	File version	3-1
	FOCUS	SC-10
	Foreign tape	10-1
	Foreign tape report	10-3
	Format of commands	2-1
	Forms	4-7
	FORTRAN	SC-2
	FORTRAN, IMSL routines	SC-11
	Fourth-generation language	SC-10
	Freeing tapes	10-7
	Full backups	5-1
G	Geographical Information System	1-2
	GIS (Geographical Information System)	1-2
	GKS (Graphical Kernel System)	SC-12
	Graphics package, GKS	SC-12
	Group logical names	6-2
H	Headquarters Data Switch	1-1
	Help	2-1
	Hitman	2-4
	Hyphen, in command format	2-2
I	IBMSUBMIT	9-12
	IMSL (International Mathematical and Statistical Library)	SC-11
	Incremental backups	5-1

INDEX

	Incremental backups, recovering files	5-2
	Initializing tape	10-17
	Interactive CPU limit	2-3
	Interactive session termination	2-4
	International Mathematical and Statistical Library	SC-11
J	JNET/BITNET	11-11
	Job logical names	6-2
K	KERMIT	11-12
	Keyboard equivalents	11-5, 11-6
	Keypad, VT100	8-3
	Keypad, VT200	8-3
L	Label, tape	10-4
	Landscape forms	4-9
	Laser printer	4-10, 9-13
	Laser printer forms	4-8
	Laser printer, desktop	4-7
	LIBRARIAN	9-8
	Limits, disk	5-8
	Limits, on CPU time	2-3
	Loading tape	10-14
	LOCAL prompt	1-5
	Log file	7-6
	Logical names	6-1
	Logical names, displaying	6-2
	Login command procedure	7-3
	LOGIN.COM file	7-3
	Logon procedures	1-1, 1-7
	Logon, to a remote node	11-1
	Logout procedures	1-10
M	MACRO	SC-4
	MAIL	9-1, 11-8
	MAIL message	5-6, 5-7

INDEX

	MAIL, reading	9-3
	MAIL, sending	9-2
	MEMO	9-13
	Messages, MAIL	9-6
	Messages, PHONE	9-6
	Mounting tape	10-13
	Multiple file editing	8-11
N		
	Netprint	4-10
	NETSOL	11-3
	Network	11-1
	Node	1-2, 3-1, 11-1
	NOTE qualifier	4-6
O		
	Operating system	2-1
P		
	Paper, for printing	4-7
	Password	1-8
	Password, changing	1-8
	Password, characteristics of	1-9
	Password, criteria	1-9
	Password, expired	1-8
	Password, for new user	1-8
	Percent sign, as wildcard character	3-3
	Personal computers, using KERMIT	11-12
	PHONE	9-3
	Plotter	SC-9
	Port selector switch	1-1
	Portrait forms	4-8
	PRINT	4-6
	Printer, IBM 3090	4-10
	Printer, laser	4-7, 9-13
	Printer, remote node	4-10
	Printer, VAX Cluster	4-6
	Printing files	4-6
	Printing files, with AUTOPRINT	9-12
	Priority, of batch jobs	7-4

INDEX

	Private user packs	5-1
	Privileges (GRPNAM and SYSNAM)	6-2
	Process logical names	6-2
	Processor charges	2-4
	Programming languages, Debugger	SC-5
	Programming languages, VAX FORTRAN	SC-2
	Programming languages, VAX MACRO	SC-4
	Project code	1-9, 7-5
	Project code, changing	1-10
	Prompt, changing	2-1
	PROTECT	9-13
	Protection levels	3-5, 9-13
	Protection levels, default	3-6
	Protection, changing file	3-6
	Protection, directory	3-7
	Protection, displaying file	3-7
	Protection, file	3-4
	PURGE	4-5
Q	Quotas, disk	5-8
R	Recalling commands	2-3
	Recovery, EDT	8-6
	Recovery, EVE	8-13
	Recovery, using ABR	9-12
	Refunds	2-5
	Releasing tapes	10-7
	Remote Job Entry	11-7
	Remote workstation (RMT358)	11-7
	RENAME	4-4
	Reports, monthly for ADP Coordinators	2-4
	Restoring file	5-2, 10-11
	Restoring file, from tape	10-11
	Recovering file, from incremental backups	5-2
	Restrictions, disk	5-8
	RJE (Remote Job Entry)	11-7
	Routing printout	4-6

INDEX

S	SAS (Statistical Analysis System)	SC-9
	SAS/GRAPH	SC-9
	Schedule	9-13
	SCRATCH	9-12
	Scratch space	5-8
	Scratching tapes	10-7
	Security	1-8, 9-13, 11-11
	Security, file	3-4, 3-6
	Session termination	2-4
	SET DEFAULT	4-2
	Shortening commands	2-2
	SNA gateway	11-8
	Software catalog	SC-1
	Software Engineering Tools	SC-7
	SORT	9-9
	Space limitations	5-8
	Spawning	2-3
	Specifications, file	3-1
	Standalone backups	5-1
	Standby archive	5-7, 9-12
	Startup, EDT	8-6
	Statistical Analysis System	SC-9
	Storage, temporary	5-8
	Subdirectory, creating	3-3
	Symbols	6-1, 6-3
	System backups	5-1
	System logical names	6-2
	System tape	10-1
	System utilization charges	2-4
T	Tables, logical name	6-2
	Tape archive	10-3
	Tape cleaning	10-3
	Tape degaussing	10-3
	Tape drive	10-14
	Tape information	10-6
	Tape inquiries	10-7

INDEX

Tape label	10-4
Tape Management System	10-4
Tape management	10-1
Tape services	10-3
Tape, alien	10-2
Tape, foreign	10-1
Tape, initializing	10-17
Tape, load	10-14
Tape, system	10-1
Tape, using interactively	10-13
TAPESYS	5-6, 5-7, 9-7, 10-4, 10-11
TAPESYS menu	10-8
TAPESYS tape management system	5-2
Telecommunications Network Menu	11-3
Temporary storage	5-8
Temporary work space	9-13
Terminal server commands	1-5
Terminating session	2-4
Text editor, EDT	8-1
Text editor, EVE	8-7
Text editor, with DSR	9-11
Text formatting	9-11
Text Processing Utility (TPU)	8-7
Time Sharing Option	11-4
TMS report	10-3
Tools, software engineering	SC-7
Transferring data	11-9
TSO (Time Sharing Option)	11-4
TUTOR	8-1, 9-13
TYMNET	1-1, 1-3
TYMNET prompt	1-4
TYPE	4-3

U

User Memo	9-13
User packs	5-1
User-ID	1-7
Username	1-7

INDEX

Utility, ABI	9-12
Utility, ABR	9-12
Utility, ARCHIVE	5-7
Utility, ARCHIVE	9-12
Utility, AUTOPRINT	9-12
Utility, BACKUP	9-7
Utility, EMAIL	9-12
Utility, help	2-1
Utility, IBMSUBMIT	9-12
Utility, LASERPRINT	9-13
Utility, LIBRARIAN	9-8
Utility, MAIL	9-1
Utility, MEMO	9-13
Utility, NCC-supplied	9-11
Utility, OPERATION_SCHEDULE	9-13
Utility, PHONE	9-3
Utility, PROTECT	3-8, 9-13
Utility, SCRATCH	9-13
Utility, SORT	9-9
Utility, text processing	8-7
Utility, TUTOR	9-13
Utility, VAX	9-1

V

VAX environment	2-1
VAX FORTRAN	SC-2
VAX Software Engineering Tools	SC-7
VAX to IBM	11-2
VAX to VAX	11-1
VAXA	1-2
VAXB	1-2
VAXset	SC-7
VAXTM1	1-2
VAXTPU	8-7
Version, file	3-1
Version, purging	5-1
Virtual Memory System	2-1
VMS (Virtual Memory System)	2-1

INDEX

	VMS utilities	9-1
	VT100 EVE keypad	8-8
	VT100 keyboard 3270 terminal emulation	11-5
	VT100 keypad	8-3
	VT100-type terminal	1-1
	VT200 EVE keypad	8-9
	VT200 keyboard 3270 terminal emulation	11-6
	VT200 keypad	8-3
W	WIC Data Switch	1-4
	Wildcards	3-2
	Work space, scratch	5-8
	WORK_SCRATCH	9-13
	Write ring, on tape	10-15

Email Guide

TELECOM

MICRO-TO- MAINFRAME LINK

EMAIL GUIDE

DECEMBER 1989

Prepared by:

**US Environmental Protection Agency
National Data Processing Division
National Computer Center
Research Triangle Park
North Carolina**

Preface

Email Guide provides essential information for users of the EPA's Electronic Mail Service, called Email, provided by Dialcom, Inc.

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CONTENTS

SECTION 1: PRELIMINARIES

WELCOME TO THE EMAIL SERVICE	1-1
HOW TO USE THIS SECTION	1-2
SPECIAL KEYS	1-2
EMAIL SERVICES	1-3
BASIC SERVICES	1-3
PREMIUM SERVICES	1-3
REGISTRATION	1-4
USAGE GUIDELINES	1-6
REQUIRED EQUIPMENT	1-7
COMMUNICATION METHODS	1-8
DIRECT CONNECTION	1-9
DIAL-UP CONNECTION	1-15
DISCONNECTING FROM EMAIL	1-19

SECTION 2: BASIC SERVICES

MAIL SERVICE	2-1
YOUR MAILBOX	2-1
HOW TO SEND MAIL	2-2

CONTENTS

SEND OPTIONS	2-4
HOW TO READ MAIL	2-6
READ OPTIONS	2-7
HOW TO SCAN MAIL	2-8
SCAN OPTIONS	2-10
PCMAIL SERVICE	2-11
CREATING A MAIL MESSAGE FILE	2-11
HOW TO SEND MAIL VIA PCMAIL	2-12
PCMAIL OPTIONS	2-14
TEXT EDITOR SERVICE	2-15
TEXT EDITOR COMMANDS	2-15
LINE CHANGING COMMANDS	2-16
 SECTION 3: HELPFUL HINTS	
MAIL DIRECTORY	3-1
SEARCH THE MAIL DIRECTORY	3-1
MAIL.REF FILE	3-3
MAIL OPTIONS	3-5
DATE ACTIVATE YOUR MAIL	3-5

CONTENTS

PROTECT MAIL WITH PASSWORD	3-6
SPECIAL READ OPTIONS	3-6
TRACK YOUR MAIL	3-7
SWITCH BETWEEN MAIL IDs	3-8
COMMAND LINE MODE	3-9
CHANGE YOUR PASSWORD	3-9
NETWORK PHONE NUMBERS	3-10
RECONNECT FEATURE	3-11
TERM COMMAND	3-12
HELP AND MORE INFORMATION	3-13
BULLETIN BOARD	3-13
CHECK FOR NEW INFORMATION	3-16
POST INFORMATION TO EMAILNEWS	3-16
EXIT EMAILNEWS	3-17

SECTION 4: COMMAND SUMMARIES

MAIL COMMAND SUMMARY	4-1
SEND	4-1
READ	4-4

CONTENTS

SCAN4-7

SYSTEM LEVEL COMMAND SUMMARY4-8

TEXT EDITOR COMMAND SUMMARY4-9

PCMAIL COMMAND SUMMARY4-11

INDEXIndex-1

SECTION 1

PRELIMINARIES

WELCOME TO THE EMAIL SERVICE

Welcome to the EPA Electronic Mail Service, called Email, provided by Dialcom, Inc. Email is an easy-to-use, computer-based messaging system that allows EPA employees, contractors, independent researchers, and others to correspond with each other through computer terminals. Using Email, you are instantly in touch with EPA's people, activities, business issues, and concerns.

Similar to the Email Quick Reference Guide, this section of the Guide to NCC Services provides an easy-to-use, desktop reference for Email information. It is divided into four sections:

Section 1: Preliminaries describes what Email services are offered, how to register to use the services, and what equipment is required. This section also includes an explanation of the preferred methods of accessing Email based on your location and computer system.

Section 2: Basic Services explains the MAIL services and its basic functions including SEND, READ, and SCAN. This section describes PCMAIL, an efficient means for transmitting text messages through Email directly from a PC hard drive or floppy disk. The basic Email Editor is also described in this section.

Section 3: Helpful Hints provides some useful information including where help is available, how to get network numbers, how to change your password and terminal attributes, and how to create a reference list, etc.

Section 4: Command Summary provides a summary of all the available MAIL, PCMAIL, Editor, and System Level commands.

Questions and comments should be directed to Email User Support:



(FTS) 382-7539
(202) 382-7539

or send an Email message to **USER.SUPPORT**.

HOW TO USE THIS SECTION

Throughout the Email section of the Guide to NCC Services, conventions other than the ones described in the front of the manual have been adopted specifically for Email:

- Upper and lower case text is used to duplicate as closely as possible the appearance of the terminal screen.
- Bold text depicts your typed responses and in some cases only the first letter or two of a command or option is required.

SPECIAL KEYS

RETURN (or **ENTER** key). Enter a line of information into the computer or terminal. You must press the **RETURN** key after each line of information.

@ (at sign). Ignore or kill the current line.



This can be a problem if you need to include an **@** in your message. See **HELPFUL HINTS, TERM COMMAND** for more details.

Ctrl-H (Control key and H). Backspace and erase, one character at a time.

Ctrl-S (Control key and S). Freeze a scrolling screen.

Ctrl-Q (Control key and Q). Resume a scrolling screen.

Ctrl-P (Control key and P) or **BREAK** key. Interrupt the current command.



EMAIL SERVICES

Note that the **Ctrl** key will not work on IBM 3270-type terminals.

The EPA Email service, provided through Dialcom, Inc., offers both basic and premium services.

BASIC SERVICES

MAIL, the basic Email service, is a computer-based messaging system provided to each Email user. With **MAIL**, you can instantly send and receive correspondence from other Email users through their computer terminals. **MAIL** provides various options to both the sender and receiver to improve communication efficiency.

PCMAIL is a batch mail transfer service that allows you to electronically transmit text messages created offline on a PC or word processor. With **PCMAIL**, the messages are sent directly from a PC hard drive or floppy disk to an Email mailbox.

EDITOR is a basic text processing program. With the **EDITOR**, you can edit **MAIL** messages and create special text files.

PREMIUM SERVICES

PREMIUM SERVICES are available in addition to the basic services described above. These include such features as the Official Airlines Guide, Newswires, and specialized EPA data bases. For more information on these premium services, contact the EPA Email System Manager at one of the following telephone numbers:



(FTS) 629-2377
(919) 541-2377

REGISTRATION

EPA employees and affiliates (such as contractors, etc.) who require an EPA Email mailbox must first complete an Email request form. This form can be completed online on the Email system, or a hardcopy can be obtained through your EPA organization's Email Coordinator.

To complete the form online, work with any currently registered Email user to access Email. At the system level prompt (>), enter the following command:

REQUEST EMAIL.REQ.xxxx

Where xxxx is your EPA organization's abbreviation as listed below:

<u>Abbreviation</u>	<u>Organization</u>
OA	Office of the Administrator
OEA	Office of External Affairs
OIG	Office of Inspector General
OPPE	Office of Policy, Planning, and Evaluation
OECM	Office of Enforcement and Compliance
NEIC	National Enforcement Investigations Center
OGC	Office of General Counsel
OARM-HQ	Office of Administration and Resources Management, Headquarters
OARM-RTP	Office of Administration and Resources Management, Research Triangle Park
OARM-CINC	Office of Administration and Resources Management, Cincinnati
OW	Office of Water
OSWER	Office of Solid Waste and Emergency Response - Immed. Office

<u>Abbreviation</u>	<u>Organization</u>
OSWER-SF	Office of Solid Waste and Emergency Response - Superfund
OSWER-SW	Office of Solid Waste and Emergency Response - Solid Waste
OSWER-WPE	Office of Solid Waste and Emergency Response - Water Programs Enforcement
OAR	Office of Air and Radiation
OPTS	Office of Pesticides and Toxic Substances - Immed. Office
OPTS-CM	Office of Pesticides and Toxic Substances - Compl. Monitoring
OPTS-TS	Office of Pesticides and Toxic Substances - Toxic Substances
OPTS-PP	Office of Pesticides and Toxic Substances - Pest Programs
ORD	Office of Research and Development
REG01 thru REG10	Regional Offices

The request form will ask for information regarding your proposed use of the system and some basic information about you. If you are a non-EPA employee, you will be asked for the name of your EPA Project Office or sponsor.

After the request form is completed and has been reviewed and approved by the appropriate Email Coordinator, it is sent to Email User Support for processing. When you mailbox is ready, you will be notified by your Email Coordinator.

USAGE GUIDELINES

The basic guidelines for Email usage are as follows:

- **Minimize processing and connect time.** Prepare and read long documents offline with a PC or a word processor. Avoid periods of inactivity or idle time. Log off the system when your work is completed. The system will terminate Email sessions after 10 minutes of idle time.
- **Utilize the EPA private data network.** The EPA network offers the most cost efficient access to Email. See COMMUNICATION METHODS later in this section.
- **Minimize disk storage.** Read and act on messages on a regular basis. Delete messages ASAP. READ messages are automatically deleted after 30 days. UNREAD messages are automatically deleted after 60 days. Deleted messages cannot be restored. If you want to reference Email messages later, download them to a file on your PC or word processor.
- **Keep directory information up-to-date.** Review and submit directory changes as needed to Email User Support. Release unused mailboxes. Boxes inactive over 90 days are subject to reassignment.

The basic guidelines for Email system security are as follows:

- **Change your initial password immediately.** The first time you access the Email system, change your password. See HELPFUL HINTS, CHANGE YOUR PASSWORD.

- **Change your password regularly.** Change your password at least every 90 days. An EPA banner will appear as a reminder.
- **Protect your password.** Do not include it in script files or post it on your terminal. If you use a Group Box, share the Group Box password only with those who "need to know."
- **Protect confidential data.** Add the PASSWORD option PA to messages that require confidentiality. See HELPFUL HINTS, MAIL OPTIONS.
- **Do not use Email for sensitive communications.** The Email system was not designed to provide a high level of security necessary for transmitting sensitive data. If you have doubts, do not use Email.

REQUIRED EQUIPMENT

To use Email, you'll need the proper equipment. Specifically, this includes a terminal with access to a communication link to the Email computers.

You can use almost any type of terminal such as a 3270, ASCII (dumb) computer terminal, word processor, or personal computer. If you use a word processor or PC, you will also need a communication program such as Kermit or Crosstalk.

The communication link to the Email computers, for most EPA Email users, is available through the private EPA data network. This communication link can be a direct or indirect connection depending upon your equipment and location.

For those users with a terminal connected to the IBM mainframe, a Logical Mainframe (LMF) system, one

of the other host computer systems (VAX or Prime), or an EPA network data switch, a direct connection to Email is available via the EPA private data network. For other users, a dial-up connection to Email is available through a modem and telephone line. The dial-up connection can be directly through the EPA private data network or indirectly through the EPA private network via a commercial data network, such as TYMNET.



Access to Email through the EPA private data network is encouraged since it offers significant cost savings to the Agency.

COMMUNICA- TION METHODS

There are many different terminals and communication connections used throughout the Agency. A brief description of the preferred Email access method for each is outlined in the following pages. If you are unsure of your terminal configuration or the appropriate access method for your configuration, contact your local Information Center staff, ADP personnel, or NCC Telecommunication Support for assistance.



Throughout the following pages EPAxxxx is your Email ID where xxxx is a 4- or 5-digit number.



A reference card of Very Important Phone #s (VIP#s) for the Email system is available through Email User Support. This card includes all the EPA private data network numbers plus the phone numbers for telecommunication and general Email assistance.

**DIRECT
CONNECTION**

**3270-Type Terminal Connected to the IBM
Mainframe or an IBM Logical Mainframe
(LMF)**

WELCOME TO THE
US ENVIRONMENTAL PROTECTION AGENCY
TELECOMMUNICATIONS NETWORK

ENTER COMMAND OR M FOR MENU

email

Please Sign On
>ID EPAXxxx

Terminals Connected to the RTP-NCC Data Switch

WELCOME TO THE EPA NATIONAL COMPUTER CENTER

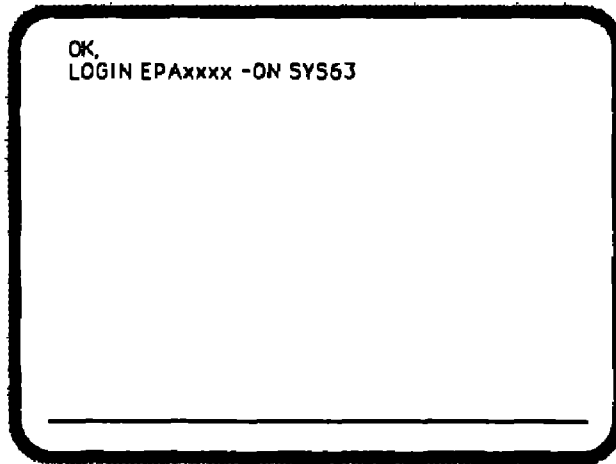
Please enter one of the following selections

IBMPSI for IBM
TCP for IBM 3270 EMULATION
VAXA for VAX SYS A
VAXB for VAX SYS B
EMAIL for EMAIL

Enter selection email

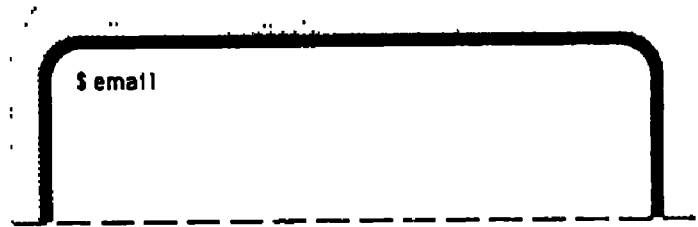
Please Sign On
>ID EPAxxxx

Terminals Connected to a Prime System

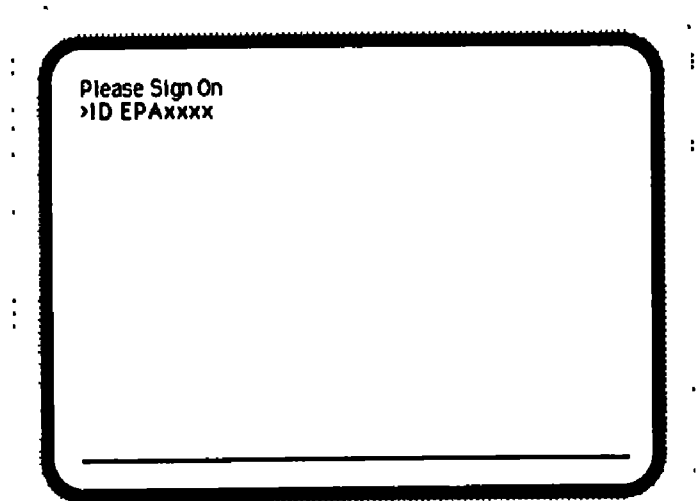
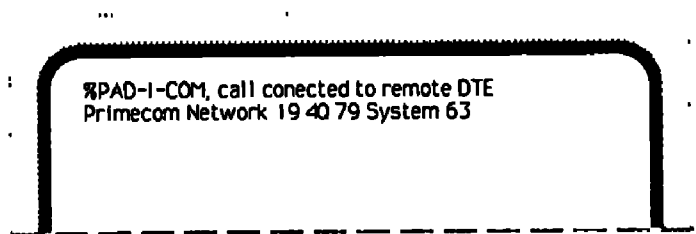


Some Email services are not available through this logon procedure. Contact your Prime System Administrator if you have problems.

Terminals Connected to a VAX System



Then the following message appears:



Terminals Connected via Ethernet

Use the Ethernet commands to connect to the local data switch. Once connected to the data switch, the screen will appear as follows:

WELCOME TO THE EPA NATIONAL COMPUTER CENTER

Please enter one of the following selections

IBMPSI for IBM
TCP for IBM 3270 EMULATION
VAXA for VAX SYS A
VAXB for VAX SYS B
EMAIL for EMAIL

Enter selection email

Please Sign On
>ID EPAxxxx

Terminals Connected to an EPA TYMNET Node

Please Log In
EPAEMAIL 63

Please Sign On
>ID EPAxxxx

DIAL-UP CONNECTION

You can get access to the Email services through a dial-up connection via the EPA private data network or a local call (DC users only).

Washington, DC Users - Option 1

You can access the Email computers directly by calling the local Dialcom number as follows:



738-0135

*C 063

Please Sign On
>ID EPAxxxx

Washington, DC Users - Option 2

You can access the Washington Information Center data switch by dialing a local number. This number is available through the EPANET command (if you have other access to Email). Or you can call Email User Support for help.

WELCOME TO THE EPA NATIONAL COMPUTER CENTER	
HEADQUARTERS DATA SWITCH	
TO ACCESS	TYPE
IBM (TTY)	IBMPSI
IBM 3270 EMULATION	TCP
EPA/DIALCOM ELECTRONIC MAIL	EMAIL
PRIME	system name
VAX	system name
MODEM POOL	MODEM, 999-9999
OTHER SERVICES	HELP
NEED HELP? TYPE HELP	
YOUR SELECTION?>email	

Welcome to EMAIL1 - Please enter a carriage return to continue
To access EMAIL type LOGIN EPAxxxx -ON SYS63

WIC1-3671/09 CONNECTED TO S0007002

Login please
login epaxxx -on sys63
Primecom Network 19 40 79 System 63

Please Sign On
>Password

Users Outside DC Area via a Local EPA Data Switch

You may be able to access your local data switch by dialing a local number. This number is available through the EPANET command (if you have other access to Email). Or you can call Email User Support for help.

WELCOME TO THE EPA NATIONAL COMPUTER CENTER

Please enter one of the following selections

IBMPSI for IBM
TCP for IBM 3270 EMULATION
VAXA for VAX SYS A
VAXB for VAX SYS B
EMAIL for EMAIL

Enter selection email

Please Sign On
>ID EPAxxxx

or

Please Sign On
>LOGIN EPAxxxx -ON SYS63

Users Outside DC via a Local TYMNET Number

If you do not have local telephone access to the EPA private data network, you may be able to obtain access through a local call through the public TYMNET network. When the connection is made, you will either get a Terminal Identifier prompt or "garbage characters". In response to either of these, enter an "A". Then the following will appear:

The image displays two terminal window screenshots, each enclosed in a dashed rectangular border. The top window has a thick black border and contains the text "Please Login" followed by "EPAEMAIL 63" on the next line. A horizontal cursor line is positioned near the bottom of the window. The bottom window also has a thick black border and contains the text "Please Sign On" followed by ">ID EPAxxxx" on the next line. A horizontal cursor line is also present near the bottom of this window.

```
Please Login
EPAEMAIL 63
```

```
Please Sign On
>ID EPAxxxx
```

Other Dial-Up Users

A limited number of 800 numbers are available through NCC-RTP. Call NCC Telecommunication Support at one of the telephone numbers listed below for a valid 800 number:



(919) 541-4506
(FTS) 629-4506
(800) 334-0741

DISCONNECT- ING FROM EMAIL

When you are ready to end your Email session, enter one of the following at the system level prompt(>):

off

or

lo

SECTION 2 BASIC SERVICES

MAIL SERVICE

The MAIL Service is an efficient alternative to the traditional methods of writing letters and memos, replying to incoming correspondence, sending time critical items for overnight delivery, and general filing of any resultant copies. MAIL is a computer-based messaging service that allows you to electronically create, read, and distribute messages, instantly, to or from anywhere throughout the Agency, at a time convenient to you.

YOUR MAILBOX

Each registered Email user is assigned a mailbox. Your individual mailbox contains the messages you have sent to other users and the messages other users have sent to you. Your mailbox is a computerized In/Out box, and each time you sign on or off the MAIL service, the system displays the contents of your In box. Something like the following example may appear:

Mail Call (1 read, 3 unread, Total 4)

You can also receive your In box status information at any time by entering the following at the system level prompt (or >):

mailck

To access the MAIL service, type the following at the system level prompt:

mail

The system will display the Send, Read or Scan: prompt. Send, read, and scan are the three major functions available to you. But, in addition, two other functions are most useful. To receive on-line help, enter the following at any prompt:

help

The system provides help information in accordance with where you are in the system. For example, when you type help at the Send, Read or Scan: prompt, you will get explanations of commands that you can use at this prompt.

To exit MAIL and return to the system level prompt, enter the following at any prompt:

quit

HOW TO SEND MAIL

To send a message, enter the following at the Send, Read or Scan: prompt.

send

The system will respond with the following prompt:

To:

At the To: prompt, enter the IDs or familiar names of your message recipients, placing a blank space between each ID or name. (Or you can enter the help command to receive online help.) Once the system has verified that each recipient is in the Mail directory, it will display the Subject: prompt. At the Subject: prompt, enter a brief, one-line description of your message.

Next you will receive the Text: prompt. At the Text: prompt, enter your message. To receive on-line help, enter the following on a line by itself, at the beginning of a line:

.help



Note the use of the period preceding the command.

Note that you must enter a RETURN or press the ENTER key at the end of each line. Text does not automatically wrap as it would in a PC word processing program.

When you have finished entering your text, enter the following on a line by itself, at the beginning of a line:

`.send`

You will receive a message verifying that your message was sent. The system will display an interpersonal message (IPM) number which uniquely identifies your message.

The following is an example of sending a message:

```
Send, Read or Scan s
To User Support ex
Subject Email Training
Text
Are there any Email classes scheduled this month?
cc Pgm Mgr
$
Mail Id IPM-163-890228-150130293
User Support -Sent Express
PgmMgr -Sent
To q
```

SEND OPTIONS

The following are the most common send command options. (See Section 4, **COMMAND SUMMARIES** for a complete list.)

<u>Command/Meaning</u>	<u>Function</u>
ex (express priority)	Places the message at the "top" of the recipient's In box. If the recipient is online, his terminal will beep, and a message stating that an express message has been placed in his In box will be displayed.
cc (carbon copy)	Sends a complimentary (carbon) copy.
bc (blind copy)	Sends a blind copy.
ar (acknowledgment requested)	The system sends you an acknowledgment when the message is read.
rr (reply requested)	Forces the recipient to reply to your message by displaying the Text: prompt.
quit	Quits the MAIL service.
quiet	Suppresses the verifications of to whom the message was sent after the .send command is entered.

The send options can be entered at either the To: or the Text: prompt. If entered at the To: prompt, the

option(s) apply to all the recipients listed after it. In the following example, only C.User would get the express priority message.

To: J.Doe A.Smith B.Jones ex C.User

If entered at the end of the To: line, the option(s) apply to all recipients listed. In the next example, all recipients would receive the express priority message.

To: J.Doe A.Smith B.Jones C.User ex

To enter a send option at the Text: prompt, you must include a period before the option, enter the option at the beginning of a line, and have no other entries on the line. For example, to send a copy to Email User Support, type in the following after you have entered your text:

**.cc User.Support
.s**

If you change your mind about sending to one of your recipients, you can remove the name without starting over. For example, you can use the following command at the Text: prompt:

.to -J.Doe

Or if you want to add a recipient, you can use the .to command at the Text: prompt as follows:

.to EPA1234

This command may be particularly useful with a distribution (MAIL.REF) list to add or remove a recipient on a one-time basis.

HOW TO READ MAIL

To read a message, enter the following at the Send, Read or Scan: prompt:

read

The system will respond with the "header" associated with the mail message at the "top" of your mailbox. The header tells you the basic facts about the message, including its subject, who sent it, who received copies of it, when it was sent, and how long it is. After the header information, the system will display the following prompt:

--More--

To continue reading, press the ENTER key. At the end of the text, the system will display a Disposition: prompt. At this prompt, you must decide what to do with the message.



Note that messages should be deleted as soon as possible. READ messages will be automatically deleted after 30 days; UNREAD messages will be automatically deleted after 60 days. Disregard any system message indicating your messages have been AUTOFILED.

By default, the system allows you to read messages in the following order:

1. Express messages, most recent first.
2. Remaining messages in chronological order.

The following is an example of reading an Email message:

```

Send, Read or Scan r
To User Support (EPA0004)
cc Pgm Mgr (EPAxxxx)
From New User (EPAnnnn) Delivered Tue 28-Feb-89 15:01 EST Sys 163(2)
Subject Email Training
Mail Id IPM-163-890228-150130293
--More--
Are there any Email classes scheduled this month?
Disposition d

```

READ OPTIONS

You can use the read options to tell the system which messages you want to read. The following are the most common read command options. (See Section 4, **COMMAND SUMMARIES** for a complete list.)

<u>Command</u>	<u>Function</u>
read unread	Reads unread mail.
read unread express	Reads unread express mail.
read from <i>ID</i>	Reads messages from a specified Email ID.

The --More-- prompt is displayed after the header and after every 23 lines of text. The --More-- prompt serves two purposes: (1) it gives you the option to stop reading a message, and (2) it gives you the time to read the text before it scrolls off the screen. The following options may be entered after the --More-- prompt:

<u>Command</u>	<u>Function</u>
ENTER or yes	Continues the message.
no	Skips to the Disposition: prompt.
next	Skips to the next message.

The following options can be entered at the Disposition: prompt as well as the --More-- prompt:

<u>Command</u>	<u>Function</u>
ENTER	Leaves message in mailbox and goes to the next message.
reply	Allows you to type in a reply.
ap reply	Allows you to append a reply.
forward <i>ID</i>	Forwards the message to a specific Email ID.
delete	Deletes the message.
quit	Quits the MAIL service.

HOW TO SCAN MAIL

If you have several mail messages currently in your mailbox, you may find it convenient to scan through the messages before deciding which one to read first. The scan, or quick scan (qscan) command allows you to scan your mailbox by displaying the message "headers." A message header tells you who sent the message, when it was sent, the subject of the message, and how long it is.

To scan your mailbox, enter the following at the Send, Read or Scan: prompt:

scan

Headers of the messages in your mailbox are then displayed.

If you enter the following at the Send, Read or Scan: prompt, the system will display condensed, one-line headers:

qscan

After you have scanned your mailbox, the Read or Scan: prompt appears. You can either read messages or perform another scan. If you perform another scan, you will scan the entire mailbox again, not just the numbered list of messages displayed on your screen. (This function includes any new messages received since the last scan.)

The following is an example of scanning a mailbox:

Send, Read or Scan: **sc**

1	From	New User(EPAAnnnn) Delivered
		Tue 28-Feb-89 15:01 EST Sys 63
	Subject	Email Training
	Mail Id	IPM 163-890228-150130293

2	From	Pgm Mgr (EPAxxxx) Delivered
		Tue 28-Feb-89 16:34 EST Sys 63
	Subject	Monthly Status Rpts
	Mail Id	IPM 163-890228-17279999

Read or Scan: **r 2**

SCAN OPTIONS

The following are the most common scan command options. (See Section 4, COMMAND SUMMARIES for a complete list.)

<u>Command</u>	<u>Function</u>
scan unread	Scans only unread messages.
scan unread express	Scans only unread express messages.
scan from <i>ID</i>	Scans messages from a specified Email ID.

The following command options are available at the Read or Scan: prompt. (See Section 4, COMMAND SUMMARIES for a complete list.)

<u>Command</u>	<u>Function</u>
read #	Reads a specific numbered message.
read # #	Reads a series of specifically numbered messages.
read #-	Reads from the specified message, inclusive.
read -#	Reads up to the specified message, inclusive.
read #-#	Reads messages # through #.

In the read option commands listed above, you can substitute delete for read. Some examples follow:

<u>Example</u>	<u>Function</u>
delete 3	Deletes message 3.
delete 3 5	Deletes messages 3 and 5.
delete 2-	Deletes all messages from 2 on.

PCMAIL SERVICE

The PCMAIL batch mail transfer service allows you to send mail messages that you have created offline on a PC or a word processor. Your messages are transmitted directly from the PC floppy or hard disk to another user's mailbox. PCMAIL differs from MAIL used with a prepared message file in two ways:

- PCMAIL allows you to prepare the entire process in one file to include the mail commands and the message text. This is very convenient if you have a series of messages or a number of recipients.
- PCMAIL conserves the amount of time spent on the Email system itself, thus reducing the Agency's overall cost for Email.

CREATING A MAIL MESSAGE FILE

The first step to using PCMAIL is to create the offline "mail message" file on your PC or word processor. Keep in mind that this file must be an ASCII file. Type into the file the messages that you want to send along with a MAIL command line and a .send command for each message. (See Section 3, HELPFUL HINTS for more information on Command Line Mode.) At the end of the file, you must also type in the .end command on a line by itself. The .end command indicates to PCMAIL the end of the mail message

file. In the following example, the mail message file contains two mail messages. The first is to User.Support; the second is to "staff", a distribution list containing several users.

```
mail User Support ex su Special Request
Please register me for your next Email
class Thank you
s
mail staff su Monthly Status Reports
Email your monthly staff reports to me
by Friday
s
end
```

After you have created the mail message file, save it on your floppy disk or hard disk. Then access Email.

HOW TO SEND MAIL VIA PCMAIL

At the system level prompt, enter the following command:

pcmail

At the Prepare your diskette prompt, use your PC communication software to upload your mail message file from your floppy or hard disk to your Email ID. The specific methods used to accomplish this may vary according to your communications software. For example, in Crosstalk you would press the escape key and type send. Then Crosstalk asks for the file name. Refer to the instruction manuals for your particular communications software for specific directions.

After the mail message file has been uploaded, the following notice will appear:

Transfer complete.

PCMAIL then displays a confirmation as it mails each message for you. When PCMAIL is finished mailing all the messages in your message file, the system level prompt will be displayed.



Note that if there is an error, such as a format error, in any of your messages, only the error-free messages will be sent. To display a description of the error, type the following at the system level prompt:

ty perror

You can then return to your PC to edit the mail message, correct the errors, and re-send the message.

The following is an example of sending mail via PCMAIL:

```
>pcmail
PCMAIL version 3.0
Prepare your diskette and begin sending
Transfer complete 2 messages processed
Mailing 2 correct messages Please wait

-Mailing message 1-
Item Mail User Support ex su Spec Req
2 lines loaded
User Support -Sent Express

-Mailing message 2-
Item mail staff su Monthly Stat Rpts
2 lines loaded
Asst Mgr1 -Sent
Asst Mgr2 -Sent
All done 2 messages completed
```

PCMAIL OPTIONS

PCMAIL options use the following format:

>pcmail -option1 -option2...

The following are the most common PCMAIL options. (See Section 4, COMMAND SUMMARIES for a complete list.)

<u>Command</u>	<u>Function</u>
-check	Causes PCMAIL to check for errors in your mail message file before sending the messages. If PCMAIL finds any errors, none of the messages are sent, and you are returned to the system level prompt.
-echo	Displays the text of your messages as they are mailed.
-end	Allows you to substitute a command other than .end to indicate the end of your mail message file. For example, enter -end .done if .end is used for another function on your PC.
-linesize nn xx	Allows you to indicate or change where you want PCMAIL to insert carriage returns in your messages. If you enter -linesize 60 70, PCMAIL will insert a carriage return at the first blank space it detects between the 60th and 70th characters.
-stop	Allows you to pause and correct errors, such as format errors, while PCMAIL is in the process of mailing the messages in your message file.

TEXT EDITOR SERVICE

The Text Editor provided through Email is a basic text processing program. With the Text Editor, you can edit messages or create text files. Remember, however, it is a line editor, and its functions are not as extensive as those of a word processor.

To edit your message, enter the following on a line by itself:

`.ed`

Since messages are stored in the system line by line, to edit a message you will need to move the cursor (see list of cursor moving commands below) to each line that you want to change and then enter a line changing command. When you have finished editing your message, save your changes with the following command:

`save`

The system will display the More Text: prompt. At this point, you can continue creating your message, you can send your message, or you can enter the quit command to delete the message.

TEXT EDITOR COMMANDS

The following are the most common Text Editor Commands. (See Section 4, COMMAND SUMMARIES for complete list.)

<u>Command</u>	<u>Function</u>
t	Moves cursor to top of message.
b	Moves cursor to bottom of message.
p	Prints current line.

<u>Command</u>	<u>Function</u>
p#	Prints a specified number of lines, beginning with the current line.
p*	Prints all lines, beginning with the current line.
n	Moves cursor to the next line.
n#	Moves cursor a specified number of lines down.
u	Moves cursor up one line.
u#	Moves cursor a specified number of lines up.
l <i>string</i>	Moves cursor to the first line containing the specified string.

LINE CHANGING COMMANDS

The following are the most common Line Changing Commands. (See Section 4, COMMAND SUMMARIES for a complete list.)

<u>Command</u>	<u>Function</u>
<i>c/current/new</i>	Changes current string to new string.
<i>a string</i>	Appends string to end of current line.
<i>r line</i>	Allows you to retype current line.
<i>i line</i>	Allows you to insert a line of text between current line and the next line.

<u>Command</u>	<u>Function</u>
d	Deletes line.
d#	Deletes a specified number of lines, beginning with the current line.
oops	Restores a line.
h	Displays the online help.

SECTION 3 HELPFUL HINTS

MAIL DIRECTORY

An important feature of the MAIL service is the MAIL directory. The MAIL directory contains the familiar or directory names and IDs (EPAxxxx) of all the Email users in the Agency. In addition, the directory contains the telephone number and organizational information for each user. Since the directory contains familiar names as well as IDs, you do not need to remember a user's ID when sending a mail message. Either the familiar name or the ID is a valid mail address. For example, to send a message to Email User Support, you can use EPA0004 or User.Support. Most people find the familiar names easier to remember.

Every effort should be made to keep the MAIL directory up to date. If you have changes in your directory entry, submit them to Email User Support.



In some instances, you may need to search the MAIL directory for a particular ID or group of IDs. The next topic explains how to search the directory. But before experimenting with the DISplay DIRectory command, be aware that the EPA MAIL directory is quite large. If you ask for a DISplay DIRectory without specifying a particular ID or name, your terminal will be busy for over 15 minutes while the entire directory is displayed. If you find yourself in this predicament, use the Break key or Ctrl-P to stop the screen display.

SEARCH THE MAIL DIRECTORY

To search the MAIL directory for a particular ID, enter the following command at the Send, Read or Scan: prompt:

```
dis dir ?EPAxxxx?
```

Where xxxx represents the particular ID. Be sure to enter the ? as indicated.

An example of searching for a specific ID is shown below:

```
>mail
```

```
Send, Read or Scan  dis dir ?EPA0004?
```

```
USER SUPPORT      163 EPA0004    CNTR-PMSB/NDPD/OARM-RTP OARM FTS 382-7539
```

If you are not sure of the ID or the familiar name of an Email user, you can use the “wildcard” search function of the MAIL directory. Enter the following command at the Send, Read or Scan: prompt:

```
dis dir ?name?
```

Where name represents the character string you are looking for. A character string is any combination of letters, numbers, or punctuation marks.

An example of searching using the “wildcard” function is shown below:

```
>mail
```

```
Send, Read or Scan  dis dir ?EPA0004?
```

```
USER SUPPORT      163 EPA0004    CNTR-PMSB/NDPD/OARM-RTP OARM FTS 382-7539  
UNISYS/EMAIL USER SUPPORT  C\37074G\
```

The following commands can be used to control the screen display while looking through the directory:

<u>Command</u>	<u>Function</u>
Ctrl-S	Freezes the screen display.
Ctrl-Q	Resumes the screen display.
Break or Ctrl-P	Terminates the display and returns you to the Send, Read or Scan: prompt.

MAIL.REF FILE If you regularly send mail to the same group of users, you may want to customize the MAIL service to meet this particular need. This is easily done by creating a distribution list of these frequently referenced users. The distribution list is stored in a file named MAIL.REF. Once created, instead of entering each recipient's ID at the To: prompt, you simply enter the distribution list name, such as staff or ADP.Chiefs.

There are two types of MAIL.REF files:

- Public - Maintained by the Email User Support Group and available to all users.
- Private - Created and maintained by an individual user and available only to that user.

You can review the public distribution lists by entering the following command at the Send, Read or Scan: prompt:

dis ref

Or you can search for a particular name in a public distribution list by entering the following command at the Send, Read or Scan: prompt:

dis ref ?name?

If you would like to establish a public distribution list, you can submit a request to Email User Support. At the system level prompt enter the following command:

request email.reflist

An online form is displayed for you to complete.

You can create your own private MAIL.REF file by using the Email Text Editor. To access the Text Editor, enter the following command at the system level prompt:

ed

When you are in the input mode, enter the name of your distribution list and skip a space. Then enter the IDs or directory names of each user you want to include in the list. Names are acceptable, but IDs make your list more efficient. Precede each ID with an asterisk (*) and separate IDs with a space. If your list includes more IDs than can fit on one line, begin each new line with an ampersand (&) followed by a space. Up to 500 IDs can be included.

When you are finished creating your list, press RETURN and the system will display the Edit prompt. Then enter the following command:

save mail.ref

Mail options can also be added to a distribution list. Use the noshow option in long distribution lists to suppress the To: list.

An example is shown below:

```
>ed
INPUT
staff noshow *EPAXxxx *EPAXxxx
& *EPAXxxx *EPAXxxx

EDIT
>save mail ref
```



Note that the instructions described above explain how to initially create your own MAIL.REF file. If you have already created a MAIL.REF file and you want to add or delete entries in your file, enter the following command at the system level prompt:

ed mail.ref

Then use the Text Editor commands to make the required changes or additions.

MAIL OPTIONS

The following MAIL options can be used to customize the Mail service to meet your needs.

DATE ACTIVATE YOUR MAIL

The da option allows you to create a message and delay its delivery. At the To: prompt, enter the following:

da m/d/y

Where m is the month, day is the day, and y is the year.

or

da m/d/y h:m

Where h:m is the time after which you want the message sent. Time is expressed in terms of the 24-hour clock.

For example:

To: USER.SUPPORT DA 2/10/89

PROTECT MAIL WITH PASSWORD



The password option adds additional protection to a message by prompting the recipient for a password before the text is displayed.

Note that the recipient must know the password before he can read the message.

To password protect a message, enter the following at the To: prompt after the recipient's Email ID:

pa passwd

Where passwd is the message password which must be 4 or more letters and no special characters.

SPECIAL READ OPTIONS

The following options are entered at the Send, Read or Scan: prompt:

Command

Function

nomore

Turns off the --More-- prompt displayed after the message header.

<u>Command</u>	<u>Function</u>
hardcopy	Turns off the --More-- prompts displayed after every 23 lines. An entire message is displayed without pauses. This option is particularly useful if you are capturing the messages on disk to print out later.
read " <i>char string</i> "	Allows you to read all messages containing the specified character string in the text. If single quotes are used, allows you to read all messages containing the character string in the header subjects.
read all	Allows you to read all messages without any pauses.
read back	Allows you to read all messages, starting with the most recent.
read da <i>m/d/y</i>	Allows you to read messages from a specified date.

TRACK YOUR MAIL

Mail options can also be used to track your messages. The following are entered at the Send, Read or Scan: or the Read or Scan: prompt:

<u>Command</u>	<u>Function</u>
scan out	Allows you to check the headers of the messages in your Out box. At the Read or Scan: prompt you can delete any unread messages.

read out Allows you to read the messages in your Out box. At the Read or Scan: prompt you can delete any unread message.

read check Allows you (after you have scanned the messages) to see whether a recipient has read your message. At the Read or Scan: prompt, you can use one of the variations to indicate the message number from the scan out list, such as the following:

rc # Checks specified message.

rc #-# Checks a series of messages.

rc #- Checks from a specified message on.

rc -# Checks up to a specified message.

SWITCH BETWEEN EMAIL IDs

Another user can quickly check his Email using your terminal even if you are already signed on to the system. The on command eliminates the time-consuming task of signing off and disconnecting from the system and then reconnecting and signing on. To use the on command, enter the following at the system level prompt:

on EPAxxxx

Where xxxx is the other user's ID. The system logs you off and prompts the other user for his password. Then you could use the on command again to reconnect to Email. Often someone who has to check multiple mail IDs finds the on command very helpful.

COMMAND LINE MODE

Command line mode allows you to enter several commands at one time instead of waiting for each command to execute, as in conversational mode.

Here are some examples:

```
>mail r un fr d.jackson
```

This command line tells the system you wanted to access the MAIL service and read all your unread mail from d. jackson.

```
>mail h.williams su New Audit
```

This command line tells the system that you wanted to access the MAIL service to send a message to h.williams about the New Audit. Note that the send command is omitted because it is assumed as a default.

CHANGE YOUR PASSWORD

Your password is a security code that prevents unauthorized persons from using your Email ID. For security reasons, your password must be changed the first time you access the system and at least every 90 days thereafter.

The password should be at least four characters.

For a nonprinting password, hold down the control key while typing the letters of your password.



Caution: Do not use the letters H, L, M, O, P, Q, or S in a nonprinting password. These letters have special meanings in combination with the control key.

To change your password, type the following at the system level prompt:

passwd

At the old password prompt enter your old (current) password. The system will then ask you for your new owner password. Just type in the new password and then type it in again when the system asks for verification.

NETWORK PHONE NUMBERS

The preferred access method to Email services is through the EPA private data network. This network is available nationwide, and in most cases as a local telephone call. To find the telephone number for your location, enter the following at the system level prompt:

EPANET

The system displays a list of data switch telephone numbers located throughout the country including Regional Offices, Labs, EPA Headquarters, and NCC-RTP.

If you cannot dial one of these telephone numbers locally, you can indirectly access the Email services through the EPA network via any local TYMNET node. To display a list of TYMNET telephone numbers, enter the following at the system level prompt:

NETWORK

Then answer the sequence of questions as follows:

<u>Prompt</u>	<u>Answer</u>
Which Network?	TYMNET
Which State?	Two-character state abbreviation.

Which City or Area Code? City name or area code

Then you will receive a list of local TYMNET telephone numbers.

After you have dialed the number and have identified your terminal type (see Section 1, PRELIMINARIES), the system will display a please login: prompt. It is important to enter the following at the prompt to route your call to Email through the EPA private data network.

EPAEMAIL:.63



RECONNECT FEATURE

It is important to use the EPA private data network if at all possible! TYMNET usage is 6 times more expensive than the EPA private data network.

In the unlikely event that the Email system goes down in the middle of your session, use the Reconnect feature to sign back on and continue with what you were doing when you were unexpectedly terminated.

To use the Reconnect feature, sign back on the system. The system displays a message stating that you have a disconnected job with some information about it. Then it will ask if you want to reconnect. Respond with yes or no, as shown in the following example:

```
Please Sign On
>Id EPAxxxx
>Password password
```

```
Dialcom Computer Services 19 40 52 (63)
Last on At 8 20 02/28/89 EST
(1 other user under this id)
You have a Disconnected Job
EPAxxxx d11 1 213 T1 MAIL Scanning 7 1
Do you want to Reconnect? n
Mail Call (4 Read)
```

TERM COMMAND

The **TERM** command allows you to customize the Email system defaults to work with your particular terminal. To display your terminal's attributes, enter the following at the system level prompt:

```
term -display
```

Then you can determine if you want to change any of the characteristics.

One common example of a change is to modify the terminal line width. If you need to send a message with a line length longer than the normal 80 characters, enter the following at the system level prompt:

```
term widthxxx
```

Where **xxx** is your required line width which must be between 8 and 255.

Another example of a change is to modify the kill character. If your message includes an at sign (@), you will have a problem sending the message because the @ is the system kill character. To change the kill character, enter the following at the system level prompt:

term -kill *

Where * is the new kill character.

HELP AND MORE INFOR- MATION

You can get immediate online assistance by entering help or ? at any prompt. You will receive online help instructions related to the command you are executing.

An online tutorial is also available. It allows you to teach yourself how to use the MAIL service. To access the LEARN tutorial, type the following at the system level prompt:

LEARN

Additional assistance is available from the Email User Support Group. Send them a message through Email to USER.SUPPORT or call one of the following telephone numbers:

(FTS) 382-7539
(202) 382-7539



BULLETIN BOARD

An online bulletin board or Tradepost for the EPA Email Service is also available. The Tradepost, called EMAILNEWS, contains news and information items specifically related to the Agency's Email system and users. To access the EPA Email Tradepost, type the following at the system level prompt:

EMAILNEWS

or

EM

The following screen will then appear:

TradePost Version 3.0

EPA EMAILNEWS BULLETIN BOARD

Welcome to EMAILNEWS, a customized bulletin board for EPA

CATEGORY	NEW ITEMS
----------	--------------

*New Category

*AA> Email & Network News	0
*AB> EPA Email Documentation	0
*AC> EPA HDO News & Announcements	0
*AD> Regs/Labs News & Announcements	0
*AE> NCC/RTP News & Announcements	0
*AF> EPA Email Request Forms	0
*AG> Prime Systems News	0

Category Menu

*New Category

*AA> Email & Network News	*AB> EPA Email Documentation
*AC> EPA HDO News & Announcements	*AD> Regs/Labs News & Announcements
*AE> NCC/RTP News & Announcements	*AF> EPA Email Request Forms
*AG> Prime Systems News	

Current category selection aa

P)ost R)ead SC)an C)ategories D)elete O)ptions H)elp

Command

Once you have accessed EMAILNEWS, the available commands are very similar to the commands used in the basic MAIL service, for example, READ, SCAN, QSCAN, and Quit. A complete list of commands is as follows:

<u>Command</u>	<u>Function</u>
P)ost	Post items to bulletin board.
R)ead	Read items posted to bulletin board.
SC)an	Scan headers of items posted to bulletin board.
C)ategories	Select categories of special interest.

<u>Command</u>	<u>Function</u>
D)delete	Delete items posted to bulletin board.
O)ptions	Change user options.
QSC)an	Scan headers of items posted in abbreviated form.
TP)check	Display tally of new items posted by category.
S)top	Exit from bulletin board.
B)ack	Exit from bulletin board.
Q)uit	Exit from bulletin board.
H)elp	Display help messages.

Only the most commonly used commands are displayed on the screen menu.

Enter the letter(s) indicated in uppercase to execute the function. For example, if you wanted to read EPA Email Documentation, enter R and the following screen would appear:

```

Command r
Category Menu
*New Category

*AA> Email & Network News          *AB> EPA Email Documentation
*AC> EPA HDO News & Announcements  *AD> Regs/Labs News & Announcements
*AE> NCC/RTP News & Announcements  *AF> EPA Email Request Forms
*AG> Prime Systems News

Category ab

F)orward, B)ackward, U)nread, H)elp, I)tem#

```

If you choose to read forward, enter F and the earliest posted item will be displayed. If you choose to read backward, enter B and the latest posted item will be displayed.

In addition to documentation, the Email bulletin board contains information targeted to individual segments of the Agency (Regional Offices) and special user groups such as Prime system users. The Forms category contains up-to-date information on the forms available through Email, such as the mailbox registration request form. Other categories will be added as required.

CHECK FOR NEW INFORMATION

To check for new information on the bulletin board, type the following at the system level prompt:

>TPCHECK EMAILNEWS

or enter TP at the Command: prompt if you are already in EMAILNEWS.

You will then receive a display of the number of new items posted to each category.

POST INFORMATION TO EMAILNEWS

To post an item to the bulletin board, simply choose P)ost at the menu and the category to which you want to post the item. Complete the To: and Subject: lines and enter your text. The format is very similar to MAIL processing. Then finally, to post the item, enter the following on a line by itself:

.send



Remember that the bulletin board system manager has established certain defaults such as expiration dates. In addition, items posted to some categories, such as Email documentation and Forms, are reviewed before they are actually posted to the board.

EXIT
EMAILNEWS

To exit from EMAILNEWS, type the following at any prompt:

quit

or

q

MAIL Command Summary

SEND

Subject:

Command	Meaning
help (or ?)	Online help.
quit	Exit MAIL.

Text:



(Note the use of the period preceding the command.)

.again header	Display header again.
.ar	Acknowledgement requested.
.bc	Blind copy.
.cc	Carbon copy.
.da <i>d/m/y [h.m]</i>	Date activate.
.dis	Display text.
.dis subject	Display subject.
.dis ref	Display reference directory.
.dis ref ?<i>name</i>?	Search reference directory for name.
.ed	Edit message.

MAIL Command Summary

SEND

Text: (cont.)

Command	Meaning
.ex (or .ur)	Express (or urgent) message.
.help (or ?)	Online help.
.hold	Hold message.
.noshow	Suppress To: list.
.pa <i>password</i>	Password protect message.
.quiet	Suppress verification list.
.quit	Exit MAIL.
.rr	Immediate reply requested.
.send	Send the message.
.sp	Check message spelling.
.su [<i>subject</i>]	Change subject.
.to [<i>-name</i>]	Add [or delete] ID from To: list

MAIL Command Summary

READ

READ

Command	Meaning
read	Read messages.
read all	Read messages without pausing.
read back	Read messages in reverse order (most recent first).
read dall	Read all messages and delete.
read dam	Delete all messages without reading.
read da <i>m/d/y</i>	Read message dated <i>m/d/y</i> .
read da <i>m/d/y-</i>	Read message from date forward.
read da <i>-m/d/y</i>	Read messages prior to specific date.
read da <i>m/d/y-m/d/y</i>	Read messages from one date to another.
read ex (or ur)	Read express messages.
read fr <i>ID</i>	Read messages from <i>ID</i> .
read hardcopy	Turn off --More-- prompt after every 23 lines of text.
read nomore	Turn off initial --More-- prompt.
read out	Read messages in Out box.
read '<i>string</i>'	Read message with <i>string</i> in subject.

MAIL Command Summary

READ

READ (cont.)

Command	Meaning
read "string"	Read message with string in text.
read to ID	Read messages to ID.
read un	Read unread messages.

--More--

RETURN or y	Continue.
no	Stop reading.

(any **Disposition:** option)

Disposition:

again	Read message again.
again header	Read header again.
ap forward	Add comments; send to another user.
ap reply	Reply to sender; append message.
crt	Turn on --More-- prompt.
delete	Delete message.

MAIL Command Summary

READ

Disposition: (cont.)

Command	Meaning
dq	Delete message and exit mail.
f ID	Forward message to ID.
help (or ?)	Online help.
more	Turn on initial --More-- prompt.
next	Read next message.
quit	Exit MAIL.
reply	Reply to sender of message.
reply all	Send reply to all recipients.

MAIL Command Summary

SCAN

SCAN

Command	Meaning
qsc	Display 1 line message headers.
sc both (any Read option)	Display message headers from In/Out box.

Read or Scan:

any **Scan** option or any **Read** option

delete #	Delete a specific message.
dis dir ?EPAxxxx	Directory search for ID.
dis dir ?string?	Directory search for string.
help (or ?)	Online help.
quit	Exit MAIL.
rcheck # (or rc #)	Check if recipient has read the specified message.
read #	Read a specific message.
read # #	Read message # and #.
read #-	Read from message #, inclusive.
read -#	Read up to message #, inclusive.
read # - #	Read message # through #.

System Level Command Summary

Commands Available at the System Level Prompt (>)

Command	Meaning
epanet	Display EPA network numbers.
ed	Access the Email Text editor.
emailnews (or em)	Access EPA Email Tradepost.
help (or ?)	Display help message.
learn	Access online tutorial.
mail	Access the MAIL service.
mailck	Check status of your In box.
network	Display public network numbers.
off or lo	Sign off Email system.
on EPAxxxx	Quick method to sign off one ID and sign on another.
passwd	Change your password.
pcmail	Access the PCMAIL service.
ty pccerror	Display PCMAIL error file.
term	Set terminal attributes.

Text Editor Command Summary

Cursor Moving Commands

Command	Meaning
b	Move cursor to bottom of message.
l <i>string</i>	Move cursor to line containing first occurrence of string.
n	Move cursor to next line down.
n#	Move cursor # lines down.
p	Print current line.
p#	Print # lines, beginning with current line.
p*	Print all lines, beginning with current line.
t	Move cursor to top of message.
u	Move cursor up one line.
u #	Move cursor # lines up.
#	Move cursor to line number #.
w	Display current line number.

Text Editor Command Summary

Line Changing Commands

Command	Meaning
a <i>string</i>	Append string to end of current line.
c/string/new string	Change first occurrence of string to new string.
c/string/new string/g	Change all occurrences of string on current line to new string.
c/string/new string/g*	Change all occurrences of string to new string.
d	Delete current line.
d#	Delete # lines beginning with current line.
i line	Insert line between current line and the next line.
oops	Restore a line.
quit	Ignore changes to file.
r <i>string</i>	Retype current line.
RETURN	Toggle between input/edit mode.
save (<i>filename</i>)	Save changes to (<i>filename</i>).

PCMAIL Command Summary

Command	Meaning
-check	Send messages in your message file, only if all messages are correct.
-echo	Display header and text of messages as they are transmitted.
end	Signal the end of message file.
-end xxx	Specify another end of message file signal.
-linesize # #	Insert automatic carriage return if blank space detected between # #.
-lf	Echo a line feed to your terminal.
-nobreak	Disable BREAK key or Ctrl-P key.

INDEX

A	Acknowledgement	2-4
	ASCII file	2-11
	Assistance	1-2, 2-2, 3-13
	At sign	3-12
	Autofiled	2-6
B	Backspace and erase	1-2
	Batch mail transfer service	1-3, 2-11
	Blind copy	2-4
	Break key	1-3
	Bulletin board	3-13
C	Carbon copy	2-4
	Change password	1-7
	Check multiple IDs	3-8
	Checking mail	2-1
	Command line mode	3-9
	Communication methods	1-8
	Complimentary copy	2-4
	Confirmation, PCMAIL	2-13
	Connection, dial-up	1-8
	Connection, direct	1-8
	Contractor employee	1-5
	Control keys	1-2
	Cost savings	1-8
	Crosstalk	1-7, 2-12
D	Data bases	1-3
	Data network	1-6, 1-7, 3-10
	Data switch, RTP	1-10
	Data switch, Washington	1-16
	Date activate	3-5
	Delete read messges	2-6
	Delete unread messages	2-6
	Dial-up connection	1-8, 1-15
	Dialcom, Inc.	1-1, 1-15
	Direct connection	1-8, 1-9
	Directory	1-6

INDEX

	Disconnecting from Email	1-19
	Disk storage	1-6
	Distribution list	2-5, 3-3
E	Editing MAIL.REF file	3-5
	EDITOR	1-3
	800 numbers	1-19
	Email Coordinator	1-4, 1-5
	Email Quick Reference Guide	1-1
	Email request form	1-4
	Email services	1-3
	Email System Manager	1-3
	EMAILNEWS	3-13
	Ending Email	1-19
	Enter key	1-2
	EPA data bases	1-3
	EPA private data network	1-6, 1-7, 3-10
	EPA Project Officer	1-5
	EPANET	1-16, 1-17, 3-10
	Equipment	1-7
	Erase	1-2
	Error	2-13
	Ethernet	1-13
	Exiting Email	1-19
	Exiting EMAILNEWS	3-17
	Express mail	2-4
	Express messages	2-6
F	Familiar name	3-1
	First password	1-6
	Format error	2-13
	Freeze scroll	1-2
G	Group box	1-7
H	Hardware	1-7
	Header	2-6, 2-9
	Help	1-2, 2-2, 3-13

INDEX

I	IBM Logical Mainframe	1-9
	IBM Mainframe	1-9
	Idle time	1-6
	IDs	3-1
	In/Out box	2-1
	Initial password	1-6
	Interpersonal message number	2-3
	Interrupt	1-3
K	Kermit	1-7
	Keys, special	1-2
	Kill character	3-12
L	LEARN	3-13
	Logical Mainframe	1-7, 1-9
	Logoff	1-19
M	MAIL	1-3
	MAIL directory	3-1
	MAIL options	3-5
	MAIL service	2-1
	Mail message file	2-11
	MAIL.REF	2-5, 3-3
	Mailbox	1-4, 2-1
	Mainframe	1-9
	Messaging service	1-3
	More	2-6, 2-7
N	NETWORK	3-10
	Network	1-6, 1-7, 3-10
	Network phone numbers	3-10
	New user, password	1-6
	New users	1-4
	Newswires	1-3
	Non-EPA employee	1-5
	Nonprinting password	3-9

INDEX

O	Official Airlines Guide	1-3
	Organization abbreviations	1-4
P	Password	1-7, 3-6
	Password, changing	3-9
	Password, nonprinting	3-9
	PCMAIL	1-3
	PCMAIL options	2-14
	PCMAIL services	2-11
	Period, preceding command	2-3
	Personal computer	1-7
	Premium services	1-3
	Prime	1-8, 1-11
	Private data network	1-6, 1-7, 3-10
	Private distribution list	3-3
	Project Officer	1-5
	Public distribution list	3-3
Q	Qscan	2-9
	Quick scan	2-8
	Quit	1-19
R	READ messages	1-6
	Read mail	2-6
	Read messages	2-6
	Read options	2-7, 3-6
	Reconnect feature	3-11
	Reference card, of phone numbers	1-8
	Registration	1-4
	Registration request form	3-16
	Registration, online	1-4
	Reply requested	2-4
	Resume scroll	1-2
	Return key	1-2
S	Scan mail	2-8
	Scan options	2-10
	Search, directory	3-1

INDEX

	Security guidelines	1-6
	Send mail	2-2
	Send mail via PCMAIL	2-12
	Send options	2-4
	Sensitive communications	1-7
	Signing up for Email	1-4
	Special keys	1-2
	Switch between Email IDs	3-8
T		
	Telephone numbers	1-8
	TERM command	3-12
	Terminal	1-7
	Terminal characteristics	3-12
	Text editor service	2-15
	Tracking mail	3-7
	Tradepost	3-13
	Training	3-13
	Tutorial	3-13
	TYMNET	1-18, 3-10
	TYMNET node	1-14
U		
	UNREAD messages	1-6
	Unread messages	2-6
	Usage guidelines	1-6
	User Support	1-2
V		
	VAX	1-8, 1-12
	Very Important Phone #s	1-8
W		
	Wildcard	3-2