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DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 9/2
COMPUTER CENTER INTRODUCTORY REFERENCE MANUAL. (U)

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**DAVID W. TAYLOR NAVAL SHIP
RESEARCH AND DEVELOPMENT CENTER**

Bethesda, Md. 20084



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COMPUTER CENTER
INTRODUCTORY
REFERENCE MANUAL

by
David V. Sommer

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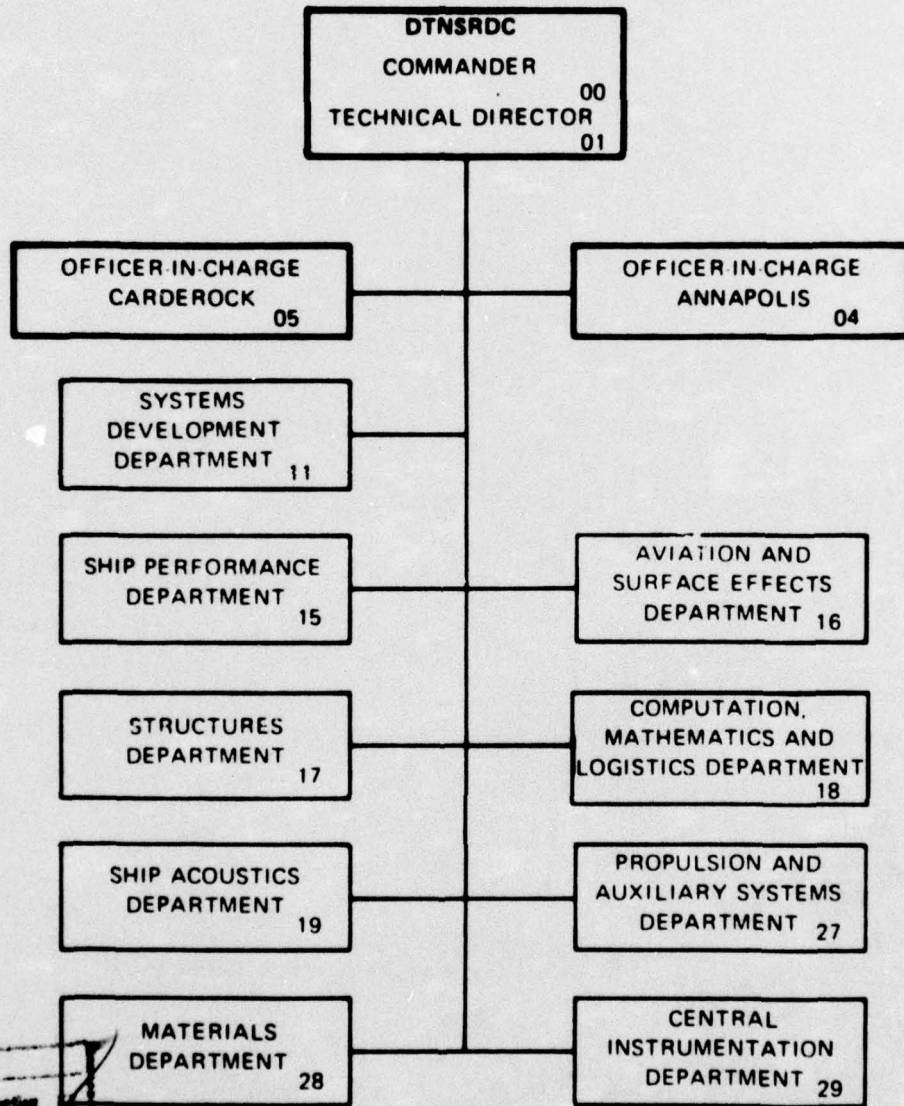
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The Computer Center Introductory Reference Manual provides an introduction to the CDC 6000 NOS/BE operating system for new users. Some information has been distilled from many individual documents and reflects usage at DTNSRDC. Control card examples and descriptions of some software are included.		

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*** GLOSSARY ***

THE FOLLOWING TERMS ARE MENTIONED IN THIS REPORT:

- ALPHAMERIC** A LETTER (A-Z) OR A DIGIT (0-9). ALSO CALLED ALPHANUMERIC.
- CATALOGUED PROCEDURE**
A PREVIOUSLY-DEFINED SEQUENCE OF CONTROL CARDS FOR PERFORMING A TASK. A CATALOGUED PROCEDURE IS EXECUTED USING THE 'BEGIN' CONTROL CARD.
- CCLIB** USED THROUGHOUT THIS MANUAL TO REFER TO "COMPUTER CENTER LIBRARIES", CMLD-77-12.
- CCRM** USED THROUGHOUT THIS MANUAL TO REFER TO THE "COMPUTER CENTER REFERENCE MANUAL", CMLD-77-11.
- CONTROL CARD RECORD**
THE FIRST GROUP OF CARDS IN A BATCH JOB, ENDING WITH A CARD HAVING 7/8/9 MULTI-PUNCHED IN COLUMN 1. THESE ARE ALL THE CONTROL CARDS TO BE PROCESSED DURING THE JOB. ANY ADDITIONAL RECORDS, SUCH AS A SOURCE PROGRAM OR DATA, FOLLOW THE CONTROL CARD RECORD.
- DAYFILE, BATCH**
AS A BATCH JOB IS BEING RUN, A PERMANENT RECORD OF THE JOB ACTIVITY IS CREATED. THIS IS CALLED THE DAYFILE, A COPY OF WHICH IS PRINTED AT THE END OF EACH BATCH JOB. THE DAYFILE INCLUDES A LIST OF ALL CONTROL CARDS EXECUTED, ANY SYSTEM- OR PROGRAM-GENERATED MESSAGES AND A SUMMARY OF THE SYSTEM USAGE INCLUDING THE ESTIMATED BASIC CHARGE. THIS CHARGE DOES NOT INCLUDE CARD READING/PUNCHING OR LINE PRINTING. (SEE POLICY FOR THE CURRENT RATES.) EACH MESSAGE HAS THE TIME-OF-DAY IT WAS WRITTEN.
- DAYFILE, INTERCOM**
AS COMMANDS ARE EXECUTED DURING AN INTERCOM SESSION, MESSAGES ARE GENERATED SIMILAR TO THOSE IN BATCH. THEY ARE COLLECTED AND PRINTED AT THE TERMINAL, USUALLY AT THE END OF EACH COMMAND, THOUGH SOME MAY BE PRINTED DURING THE EXECUTION OF A COMMAND. EXCEPT FOR 'LOGOUT' (SEE 3-1), THE DAYFILE MESSAGES ARE NOT TIME-STAMPED.
- FIELD LENGTH (FL)**
THE AMOUNT OF CORE OCCUPIED BY A PROGRAM. ADDRESSES IN A PROGRAM ARE RELATIVE TO THE START OF THE FIELD LENGTH, CALLED THE REFERENCE ADDRESS (RA). A PROGRAM OCCUPIES FROM RA+0 THRU RA+FL-1. THUS A USER NEVER NEEDS TO KNOW THE ACTUAL LOCATION OF THE PROGRAM IN CORE.
- POLICY** USED THROUGHOUT THIS MANUAL TO REFER TO "COMPUTER CENTER POLICY", JULY 1975.

***** INTRODUCTION *****

DTNSRDC HAS THREE CDC 6000 COMPUTER SYSTEMS: THE 6700, 6600 AND 6400. THE OPERATING SYSTEM ON EACH IS NOS/BE 1.0 (NETWORK OPERATING SYSTEM/BATCH ENVIRONMENT, VERSION 1.0). NOS/BE HAS 3 MAJOR SUBSYSTEMS:

- 1) THE BATCH SYSTEM FOR PROCESSING JOBS SUBMITTED AT CENTRAL SITE, THROUGH REMOTE BATCH TERMINALS OR FROM INTERACTIVE TERMINALS;
- 2) THE TIME-SHARING SYSTEM, CALLED INTERCOM, WHICH SUPPORTS TELETYPEFS AND OTHER INTERACTIVE TERMINALS (6700 AND 6400 ONLY);
- 3) THE INTERACTIVE GRAPHICS SYSTEM.

THIS INTRODUCTORY REFERENCE MANUAL IS DESIGNED TO PROVIDE THE NEW USER WITH ENOUGH INFORMATION TO RUN SIMPLE BATCH JOBS AND TO CREATE AND RUN PROGRAMS AND BATCH JOBS INTERACTIVELY. SOME OF THE MOST FREQUENTLY USED CONTROL CARDS ARE DESCRIBED. MAGNETIC TAPES AND USER-OWNED DEVICE SETS (DISKS) ARE NOT DISCUSSED. NO ATTEMPT IS MADE TO DESCRIBE ALL FEATURES OF THE OPERATING SYSTEM OR EVEN ALL PARAMETERS OF THE CONTROL CARDS DISCUSSED. MORE INFORMATION CAN BE FOUND IN THE COMPANION PUBLICATIONS CCRM, CCLIB, POLICY.

BEFORE USING THE SYSTEM, JOB ORDER NUMBER(S) TO BE CHARGED MUST BE REGISTERED WITH CODE 1891. OUTSIDE USERS MUST TRANSFER FUNDS TO DTNSRDC BEFORE RECEIVING AN ACCOUNT NUMBER. EACH INDIVIDUAL USER SHOULD HAVE 4-CHARACTER USER INITIALS ASSIGNED (ALSO BY CODE 1891).

*** FILES ***

THE CDC 6000 IS A FILE-ORIENTED SYSTEM. A FILE IS A COLLECTION OF RELATED RECORDS TREATED AS A UNIT. IT MAY RESIDE ON DISK, MAGNETIC OR PAPER TAPE, CARDS, PRINTER OUTPUT. IT MAY ALSO BE A CONNECTED INTERCOM TERMINAL. FILES MAY BE TEMPORARY OR PERMANENT. TEMPORARY FILES EXIST FOR ALL OR PART OF A JOB OR INTERCOM SESSION; PERMANENT FILES ARE ADDED TO THE SYSTEM BY THE USER AND REMAIN UNTIL REMOVED BY THE USER OR UNTIL REMOVED FOR LACK OF USE (SEE 2-3: AUDIT).

PERMANENT FILES ARE IDENTIFIED TO THE SYSTEM BY A PERMANENT FILE NAME (PFN) HAVING 1-40 ALPHANUMERIC CHARACTERS (LETTERS AND/OR DIGITS) AND AN 'ID' (THE 4-CHARACTER USER INITIALS), BOTH SUPPLIED BY THE USER. PERMANENT FILES MAY BE ACCESSED BY ANY OF THE NOS/BE SUBSYSTEMS. SOME PERMANENT FILES MAY BE ACCESSED BY SEVERAL JOBS SIMULTANEOUSLY.

THERE ARE TWO SETS OF PERMANENT FILES: ONE IS SHARED BY THE 6700 AND 6600 AND MAY BE ACCESSED BY EITHER MACHINE: ONE IS FOR THE 6400.

DURING A JOB OR INTERCOM SESSION, ALL FILES, WHETHER TEMPORARY OR PERMANENT, MUST HAVE A UNIQUE MEANS OF IDENTIFICATION. THIS IS CALLED THE LOCAL FILE NAME (LFN) WHICH BEGINS WITH A LETTER AND CONTAINS 1-7 ALPHAMERIC CHARACTERS. THE LFN IS DEFINED IN ONE OF MANY WAYS:

- 1) *ATTACH*ING A PERMANENT FILE (IN THIS CASE THE LFN MAY BE THE SAME AS THE PERMANENT FILE NAME (PFN)).
- 2) EXECUTING CONTROL CARDS (SUCH AS COPYE, FTN, REQUEST, REWIND) WHICH OPERATE ON FILES.
- 3) EXECUTING A USER PROGRAM.
- 4) SAVING A FILE IN EDITOR (INTERCOM).

ONCE DEFINED, THE LFN REMAINS UNTIL END-OF-JOB OR END-OF-SESSION UNLESS RELEASED BY COMMANDS SUCH AS RETURN, ROUTE, DISCARD (SEE 2-5, 3-2).

SEVERAL LFN'S HAVE SPECIAL MEANING IN BATCH JOBS:

- INPUT - BATCH CARD DECK
- OUTPUT - PRINTER OUTPUT
- PUNCH - CODED PUNCHED CARD OUTPUT (BCD)
- PUNCHB - BINARY PUNCHED CARD OUTPUT

EXAMPLES

THE FOLLOWING ILLUSTRATE BOTH STATED AND IMPLIED LOCAL FILE NAMES FOR SOME TYPICAL CONTROL CARDS:

COMMAND	LOCAL FILE NAMES		
COPYSF, INPUT, OUTPUT.	INPUT	OUTPUT	
FTN.	INPUT	OUTPUT	LGO (SEE 2-4)
REQUEST, MYFILE, *PF.	MYFILE		
ATTACH, MYPROG, PROGRAM, ID=XXXX.	MYPROG		
ATTACH, UTILITY.	UTILITY	(ALSO PFN)	
RETURN, A, B, C.	A	B	C

***** BATCH JOBS *****

A BATCH JOB CONSISTS OF ONE (1) OR MORE RECORDS (WHICH ARE CALLED LOGICAL RECORDS AND ARE SEPARATED BY END-OF-RECORDS (EOR)). THE JOB IS TERMINATED BY AN END-OF-FILE (EOF). IF THE BATCH JOB IS A CARD DECK, THE EOR IS A CARD WITH 7/8/9 MULTI-PUNCHED IN COLUMN 1 AND IS REPRESENTED BY * IN THE EXAMPLES; THE EOF IS A (GREEN) CARD WITH 6/7/8/9 MULTI-PUNCHED IN COLUMN 1 AND IS REPRESENTED BY " IN THE EXAMPLES.

THE FIRST/ONLY RECORD CONTAINS ALL THE CONTROL CARDS FOR THE JOB. EACH CONTROL CARD INVOKES A PROGRAM TO PERFORM THE REQUIRED TASK (E.G., 'REWIND,....' TO REWIND FILES, 'FTN,....' TO COMPILE A FORTRAN PROGRAM, 'LGO.' TO EXECUTE A COMPILED PROGRAM).

ANY ADDITIONAL RECORDS CONTAIN DATA FOR THE PROGRAMS EXECUTED IN THE CONTROL CARD RECORD (E.G., SOURCE PROGRAM FOR FTN COMPILER, DATA FOR A USER PROGRAM).

SOME CHARACTERS HAVE DIFFERENT PUNCHES IN 026 AND 029 MODE. THE MOST FREQUENTLY USED ONES ARE () = +. ALL CARDS IN EACH LOGICAL RECORD MUST BE PUNCHED IN THE SAME MODE (ALL 026 OR ALL 029). A CHANGE OF MODE IS INDICATED BY '26' OR '29' IN COLUMNS 79-80 OF THE EOR CARD PRECEDING THE RECORD. THE MODE OF THE CONTROL CARD RECORD IS INDICATED IN COLUMNS 79-80 OF THE JOB CARD (OMITTED=026). SOME REMOTE TERMINALS (CDC 200 USER TERMINAL (200-UT)) REQUIRE THAT ALL CARDS IN A JOB BE IN ONE MODE. SEE 2-8: EXAMPLE 6.

AT THE END OF THIS CHAPTER ARE SEVERAL EXAMPLES ILLUSTRATING SOME TYPICAL BATCH JOBS.

*** CONTROL CARD RECORD ***

THE FIRST CARD OF EACH JOB IS THE JOB CARD; NEXT IS THE CHARGE CARD. THE REMAINING CONTROL CARDS DEPEND UPON THE TASK TO BE PERFORMED.

A CONTROL CARD CONTAINS A PROGRAM NAME FOLLOWED BY ZERO OR MORE COMMA-SEPARATED PARAMETERS ENCLOSED IN PARENTHESES OR COMMA/PERIOD:
 PROG.
 PROG(PARAM1,PARAM2,...)
 PROG,PARAM1,PARAM2,.....

THE CONTROL CARD RECORD ENDS WITH A CARD HAVING 7/8/9 MULTI-PUNCHED IN COLUMN 1.

*** JOB OUTPUT ***

LISTABLE OUTPUT IS NORMALLY ON FILE 'OUTPUT'. WHEN PRINTED, IT WILL CONSIST OF ONE OR TWO BANNER PAGES CONTAINING THE NOS/BE JOB NAME (SEE DESCRIPTION OF JOB CARD BELOW). NEXT IS ONE PAGE WITH THE SYSTEM BULLETIN WHICH GIVES NEW INFORMATION TO THE USER (IT IS UPDATED FREQUENTLY). THEN FOLLOW THE PAGES OF USER OUTPUT: COMPILATION LISTINGS, LOADER MAPS, USER PROGRAM OUTPUT, ETC. LAST IS THE DAYFILE (SEE GLOSSARY).

*** JOB CARD ***

THE JOB CARD IDENTIFIES THE JOB AND DEFINES CORE AND TIME REQUIREMENTS AND RUN PRIORITY. FOR ADDITIONAL PARAMETERS, SEE CCRM, 2-3.

JOB CARD REQUIREMENTS VARY AMONG INSTALLATIONS. AT DTNSRDC, THE FOLLOWING MUST BE OBSERVED:

- 6700 - BLUE CARD (CARDEROCK)
- YELLOW STRIPE (ANNAPOLIS)
- 6600 - LAVENDER CARD
- 6400 - ORANGE CARD

NO OTHER CARDS IN A DECK MAY BE OF THESE COLORS.

THE JOB CARD HAS THE FORM:

JOBNAME,CMNNNNNN,PN,TNNNN.

CODE/NAME

KP

JOBNAME IS THE JOB NAME. IT IDENTIFIES THE JOB. TO INSURE UNIQUENESS AMONG JOBS, NOS/BE WILL ALTER THE LAST TWO CHARACTERS. THIS NOS/BE JOB NAME (JOBNA**) WILL APPEAR ON THE BANNER PAGE OF THE OUTPUT. THE JOB NAME HAS THE FORM: XXXXXX, WHERE
 XXXX ARE THE USER INITIALS (ASSIGNED BY CODE 1891)
 YYY MAY BE ANY LETTERS OR DIGITS OR OMITTED.

CMNNNNNN IS THE MAXIMUM CORE THE JOB WILL REQUIRE, IF GREATER THAN THE DEFAULT OF 46000.
 NNNNNN IS AN OCTAL NUMBER \leq 300000.

PN IS THE JOB PRIORITY. IT MAY BE ONE OF THE FOLLOWING:
 P4 - EXPRESS CM \leq 100000 WITH T \leq 200 (MAX: MT2, RP0)
 P3 - REGULAR CM \leq 100000 WITH T \leq 3600 (DEFAULT)
 P2 - DEFERRED (OVERNIGHT IF $<$ 2 HOURS WALL CLOCK)
 EMERGENCY - BY SPECIAL WRITTEN REQUEST ONLY, SEE POLICY (SEE POLICY FOR ADDITIONAL CM, TIME, TAPE AND USER DEVICE SET COMBINATIONS FOR P3, P4.) CHARGES INCREASE FOR GREATER PRIORITY (P2 HAS THE LOWEST CHARGE).

TNNNN IS THE TIME LIMIT FOR THE JOB IN SECONDS.
 NNNN IS A DECIMAL NUMBER (DEFAULT: 180 SECONDS)

CODE/NAME ARE COMMENTS STARTING ABOUT COLUMN 60.

KP COLUMNS 79-80. IF CONTROL CARDS ARE PUNCHED IN 029 MODE, ENTER '29': IF 026 MODE, ENTER '26' OR LEAVE BLANK.

IF ONLY THE JOBNAME IS SPECIFIED, THE DEFAULT JOB CARD IS:

JOBNAME,CM46000,P3,T180.

26

SOME USER SITES HAVE DIFFERENT FORMS OF THE JOB NAME AND CODE/NAME COMMENTS. CONTACT YOUR LOCAL USER SERVICES GROUP.

*** CHARGE CARD ***

THE SECOND CARD MUST BE A CHARGE CARD WHICH HAS THE FOLLOWING FORMAT:

CHARGE, XXXX, JJJJJJJJJJ.

XXXX ARE THE USER INITIALS

JJJJJJJJJJ IS THE JOB ORDER NUMBER FOR CHARGING THIS JOB

*** SOME NOS/BE CONTROL CARDS ***

THE FOLLOWING ARE SOME OF THE MOST FREQUENTLY USED CONTROL CARDS (LISTED ALPHABETICALLY). WHERE APPROPRIATE, THERE IS A REFERENCE TO SIMILAR OR RELATED CARDS. ADDITIONAL PARAMETERS FOR MANY OF THESE CONTROL CARDS MAY BE FOUND IN CCRM.

ATTACH, LFN, PFN, ID=XXXX, <PARAMETERS>.

ATTACH, LFN, ID=XXXX, <PARAMETERS>.

MAKE A PREVIOUSLY CATALOGED FILE AVAILABLE FOR USE BY THIS JOB. MANY PARAMETERS, INCLUDING CYCLE NUMBER AND PASSWORDS, ARE AVAILABLE (SEE CCRM, 3-5,6). PFN IS A 1- TO 40-CHARACTER PERMANENT FILE NAME. IF PFN IS OMITTED, LFN IS ALSO PFN. (SEE CATALOG/PURGE)

AUDIT.

LIST ALL FILES CATALOGED BY USER-ID XXXX (WHERE XXXX IS TAKEN FROM THE CHARGE CARD). THE USER SHOULD CHECK THE 'LAST ATT' (LAST ATTACH) COLUMN FREQUENTLY. FILES WHICH HAVE NOT BEEN USED FOR 30 DAYS OR MORE ARE PURGED. FOR A SORTED AUDIT, USE BEGIN, AUDIT.

BEGIN, <PARAMETERS>.

EXECUTE A (CATALOGUED) PROCEDURE. SEE CCRM, 7-18, FOR A DISCUSSION OF CATALOGUED PROCEDURES.

CATALOG, LFN, PFN, ID=XXXX, <PARAMETERS>.

CATALOG, LFN, ID=XXXX, <PARAMETERS>.

SAVE A FILE AFTER IT HAS BEEN WRITTEN. IT CAN THEN BE ATTACHED IN A LATER JOB. PFN IS A 1- TO 40-CHARACTER PERMANENT FILE NAME. IF PFN IS OMITTED, LFN IS ALSO PFN. (SEE ATTACH/PURGE)

COBOL, <PARAMETERS>.

EXECUTE THE COBOL 4 COMPILER. SOME PARAMETERS ARE:
 B=LFNBIN - BINARY OBJECT PROGRAM WILL BE ON FILE LFNBIN
 (DEFAULT: B=LGO)
 I=LFNIN - THE SOURCE PROGRAM IS ON FILE LFNIN
 (DEFAULT: I=INPUT)
 L=LFNOUT - THE LISTINGS WILL BE ON FILE LFNOUT
 (DEFAULT: L=OUTPUT)
 (FOR CROSS REFERENCES, USE LRM=LFNOUT)

SEE CCRM, 5-1,2 FOR ADDITIONAL PARAMETERS.

NOTE: COBOL REQUIRES CM61000 ON THE JOB CARD.

COMMENT. ADD COMMENTS TO THE CONTROL CARD RECORD. THEY ARE PRINTED IN THE DAYFILE.

COPYE,LFNIN,LFNOUT.
MAKE AN EXACT COPY OF LFNIN. BOTH LFNIN AND LFNOUT MUST BE SPECIFIED.

COPYF,LFNIN,LFNOUT,N.
COPYR,LFNIN,LFNOUT,N.
COPY N FILES OR RECORDS (DEFAULT: 1) FROM LFNIN TO LFNOUT. BOTH LFNIN AND LFNOUT MUST BE SPECIFIED.

COPYSF,LFNIN,LFNOUT,N.
COPYSR,LFNIN,LFNOUT,N.
SINGLE SPACE LISTING OF N FILES OR RECORDS. USEFUL FOR LISTING FILES WHICH DO NOT HAVE CARRIAGE CONTROL IN COLUMN 1, SUCH AS SOURCE PROGRAMS. (DEFAULTS FOR LFNIN,LFNOUT ARE INPUT,OUTPUT.)

DMP,FFFFFF,LLLLLL.
DMP,LLLLLL.
DUMP FROM RELATIVE OCTAL ADDRESS FFFFFFF THRU LLLLLL. IF FFFFFFF IS OMITTED, 0 IS USED. WILL STOP AT CURRENT FL.

EXIT.
WHEN A PROGRAM ENDS ABNORMALLY, NO MORE CONTROL CARDS ARE EXECUTED UNLESS THERE IS AN 'EXIT' CARD. THEN CONTROL CONTINUES WITH THE FIRST CARD FOLLOWING AN 'EXIT.' CARD. FOR EXAMPLE,
EXIT.
DMP(46000)

FTN,<PARAMETERS>.
COMPILE FORTRAN PROGRAM(S). SOME PARAMETERS ARE:
B=LFNBIN - BINARY OBJECT PROGRAM WILL BE ON FILE LFNIN (DEFAULT: B=LGO)
I=LFNIN - THE SOURCE PROGRAM IS ON FILE LFNIN (DEFAULT: I=INPUT)
L=LFNOUT - PUT LISTINGS ON FILE LFNOUT (DEFAULT: OUTPUT)
OPT=0 - OPTIMIZATION LEVEL, MAY BE:
OPT=0 - NO OPTIMIZATION (FAST COMPILE, SLOW EXECUTE) (DEFAULT)
OPT=1 - PARTIAL OPTIMIZATION (SLOW COMPILE, FAST EXECUTE)
R=1 - CROSS REFERENCE LIST OF VARIABLES AND STATEMENTS, ETC. MAY BE:
R=1 - LIST VARIABLES, FORMATS, STATEMENTS, ETC., WITH RELATIVE ADDRESSES (DEFAULT)
R=3 - SAME AS R=1 PLUS CROSS REFERENCES AND EQUIVALENCE AND COMMON AREA EXPANSION
SEE CCRM, 4-1,2 FOR ADDITIONAL PARAMETERS.

LDSET,LIB=LIBNAME.

LIBNAME IS THE LFN OF AN ATTACHED LIBRARY OF COMMONLY USED (SUB)PROGRAMS. WHEN LOADING A USER PROGRAM, THE LOADER WILL SEARCH THE SPECIFIED LIBRARY FOR ROUTINES THE PROGRAM NEEDS. LDSET APPLIES TO THE NEXT LOAD ONLY. SEE 2-8: EXAMPLE 4.

LDSET,PRESETA=NGINF.

BEFORE LOADING, PRESET CORE TO NEGATIVE INFINITE (WILL CAUSE FATAL ERROR IF PROGRAM TRIES TO COMPUTE WITH AN UNDEFINED FLOATING POINT NUMBER.) EACH WORD'S ADDRESS IS PLACED IN THE WORD TO AID IN LOCATING THE FAULTY VARIABLE. LDSET IS A LOADER CONTROL CARD AND APPLIES TO THE NEXT LOAD ONLY.

NAME.

LOAD AND EXECUTE LFN 'NAME' (MAY BE ATTACHED PERMANENT FILE). E.G., ATTACH,MYPROG,ID=XXXX.
MYPROG.

PURGE,LFN,PFN,ID=XXXX,<PARAMETERS>.

PURGE,LFN,ID=XXXX,<PARAMETERS>.

REMOVE A FILE FROM THE SYSTEM. PFN IS A 1- TO 40- CHARACTER PERMANENT FILE NAME. IF PFN IS OMITTED, LFN IS ALSO PFN. IF LFN IS A FILE WHICH HAS ALREADY BEEN ATTACHED (SEE CCRM, 3-5), ONLY LFN IS REQUIRED. (SEE ATTACH/CATALOG)

REQUEST,LFN,*PF.

FILE LFN IS TO BE PUT ONTO PERMANENT FILE SPACE. MUST BE USED BEFORE CREATING A FILE TO BE CATALOGED.

REQUEST,LFN,*Q.

FILE LFN IS TO BE PUT ONTO QUEUE SPACE. USED BEFORE CREATING A FILE TO BE ROUTED. (SEE ROUTE)

RETURN,LFN1,LFN2,...,LFNN.

RETURN ONE OR MORE FILES TO THE SYSTEM.

REWIND,LFN1,LFN2,...,LFNN.

POSITION EACH FILE AT ITS BEGINNING.

ROUTE,LFN,<PARAMETERS>.

ROUTE FILE LFN ACCORDING TO SPECIFIED/IMPLIED PARAMETERS, WHICH MAY INCLUDE:

DC=PR - ROUTE TO PRINTER (DEFAULT FOR 'OUTPUT')
DC=PU - ROUTE TO PUNCH (DEFAULT FOR 'PUNCH'/'PUNCHB')
DC=SC - SCRATCH THE FILE (DEFAULT FOR MOST OTHERS)
DEF - DEFER ROUTING UNTIL END-OF-JOB
TID - RETURN FILE TO JOB ORIGIN
TID=C - ROUTE LFN TO CENTRAL SITE
TID=AA - ROUTE LFN TO TERMINAL WITH ID OF AA
FC=WW - FORMS CODE (CENTRAL SITE ONLY) FOR PRINTED/
PUNCHED OUTPUT (E.G., FC=1T - NARROW, UNLINED
PAPER (SEE CCRM, 2-9 FOR ADDITIONAL CODES)

NOTE: AFTER ROUTING, LFN DOES NOT EXIST.

*** ERROR MESSAGES ***

IF THERE ARE ANY ERRORS IN EXECUTION, MESSAGES WILL APPEAR IN THE DAYFILE. IN ADDITION, ERROR MESSAGES MAY APPEAR IN COMPILATION LISTINGS, LOADER MAPS AND PROGRAM OUTPUT. FATAL ERRORS WILL CAUSE A SHORT JUMP TO BE PRINTED ON FILE 'OUTPUT'.

FREQUENT PROGRAM ERROR MESSAGES INCLUDE:

ARITHMETIC ERROR MODE=01 ADDRESS = NNNNNN
ERROR MODE=01. ADDRESS = NNNNNN

ADDRESS OUT OF RANGE. USUALLY A SUBSCRIPT ERROR. IF THE FIRST DIGIT OF THE INDICATED ADDRESS IS ≥ 4 , CHECK THE DAYFILE OR LOADER MAP FOR MISSING SUBPROGRAM(S).

ARITHMETIC ERROR MODE=02 ADDRESS = NNNNNN
ERROR MODE=02. ADDRESS = NNNNNN

PROGRAM TRIED TO USE AN INFINITE (E.G., DIVISION BY 0). THIS ERROR DOES NOT OCCUR WHEN THE INFINITE VALUE WAS CREATED, ONLY WHEN IT IS USED IN COMPUTATION.

ARITHMETIC ERROR MODE=04 ADDRESS = NNNNNN
ERROR MODE=04. ADDRESS = NNNNNN

PROGRAM TRIED TO USE AN INDEFINITE (E.G., 0 DIVIDED BY 0). THIS ERROR DOES NOT OCCUR WHEN THE INDEFINITE VALUE WAS CREATED, ONLY WHEN IT IS USED IN COMPUTATION.

OTHER ERRORS ARE DESCRIBED IN CORM, 2-21, CHAPTERS 4 AND 5.

*** EXAMPLES ***

1. COMPILE AND EXECUTE A PROGRAM. IF PROGRAM RUNS, CATALOG BINARY OBJECT PROGRAM TO ELIMINATE RECOMPILATION.

```

JOBNAME.                                NAME/CODE
CHARGE,XXXX,JJJJJJJJJJ.
REQUEST,LGO,*PF.
FTN.                                     ** OR COBOL. NEEDS CM61000 ON JOB CARD
LGO.
CATALOG,LGO,MYOBJ,ID=XXXX.
' 7/8/9      EOR
(SOURCE PROGRAM)
' 7/8/9      EOR
(DATA CARDS)
" 6/7/8/9    EOF

```

2. EXECUTE A PREVIOUSLY CATALOGED BINARY OBJECT PROGRAM.

```

JOBNAME.                                NAME/CODE
CHARGE,XXXX,JJJJJJJJJJ.
ATTACH,MYOBJ,ID=XXXX.
MYOBJ.
' 7/8/9      EOR
(DATA CARDS)
" 6/7/8/9    EOF

```

3. COMPILE AND EXECUTE. IF JOB RUNS, ROUTE OUTPUT TO 1700 TERMINAL 'AE'. IF JOB ABORTS, PRINT OUTPUT WITH REST OF JOB (ROUTE CARD WILL NOT BE EXECUTED).

```

JOBNAME.                                NAME/CODE
CHARGE,XXXX,JJJJJJJJJJ.
FTN.
LGO.
ROUTE,OUTPUT,DC=PR,TIO=AE.
' 7/8/9      EOR
(FORTRAN PROGRAM)
' 7/8/9      EOR
(DATA CARDS)
" 6/7/8/9    EOF

```

4. COMPILE AND EXECUTE A PROGRAM WHICH USES SUBROUTINE(S) FROM LIBRARY 'NSRDC'.

JOBNAME.	NAME/CODE
CHARGE,XXXX,JJJJJJJJJJ.	
FTN.	** OR COBOL. (CM61000 ON JOB CARD)
ATTACH,NSRDC.	
LJSET,LIB=NSRDC.	** MAKE LIBRARY AVAILABLE TO THE LOADER
L33.	
' 7/8/9 EOR	
(SOURCE PROGRAM)	
' 7/8/9 EOR	
(DATA CARDS)	
" 6/7/8/9 EOF	

5. READ AND CATALOG A DECK OF CARDS (MAY BE SOURCE PROGRAM FOR LATER INTERACTIVE USE, DATA CARDS, ETC.).

JOBNAME.	NAME/CODE
CHARGE,XXXX,JJJJJJJJJJ.	
REQUEST,DATA,*PF.	
COPYR,INPUT,DATA.	
CATALOG,DATA,DATAXYZ,ID=XXXX.	
' 7/8/9 EOR	
(CARDS TO BE CATALOGED)	
" 6/7/8/9 EOF	

6. ILLUSTRATE CONTROL CARD RECORD PUNCHED IN 029 MODE, NEXT 2 RECORDS IN 026 MODE, LAST RECORD IN 029 MODE.

JOBNAME.	NAME/CODE	
CHARGE,XXXX,JJJJJJJJJJ.		
(REST OF CONTROL CARDS IN 029 MODE)		
' 7/8/9 EOR		29
(CARDS IN 026 MODE)		
' 7/8/9 EOR		26
(CARDS IN 026 MODE)		
' 7/8/9 EOR		29
(CARDS IN 029 MODE)		
" 6/7/8/9 EOF		

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7. AJDIT USER'S FILES.

JOBNAME. NAME/CODE
CHARGE,XXXX,JJJJJJJJJJ.
AUDIT. ** LIST FILES WITH ID=XXXX
" 6/7/8/9 EOF

8. PRINT ONE COPY OF THE COMPUTER CENTER REFERENCE MANUAL (CCRM) ON
NARROW PAPER AT CENTRAL SITE.

JOBNAME. NAME/CODE
CHARGE,XXXX,JJJJJJJJJJ.
BEGIN,MANUAL.
RJITE,OUTPUT,DC=PR,TID=C,FC=1T.
" 6/7/8/9 EOF

***** INTERCOM *****

INTERCOM IS THE NOS/BE INTERACTIVE SYSTEM. THROUGH IT, THE USER CAN EXECUTE ALMOST ALL CONTROL CARDS. BY THE USE OF EDITOR, PROGRAMS CAN BE CREATED AND EXECUTED. BATCH JOBS MAY ALSO BE CREATED AND SENT TO THE SYSTEM FOR PROCESSING.

INTERCOM IS CONSIDERABLY MORE EXPENSIVE THAN BATCH, BUT THE TURNAROUND IS ALMOST IMMEDIATE. WITH CAREFUL PLANNING, MORE WORK CAN BE ACCOMPLISHED IN LESS TIME.

THE SPECIAL FILE NAMES (LFN'S) LISTED ON 1-2 ARE JUST FILE NAMES IN INTERCOM. IF INPUT AND OUTPUT ARE TO BE INTERACTIVE AT THE TERMINAL, THEY MUST BE CONNECTED (SEE 3-2: CONNECT).

ALL USER ENTRIES **MUST** BE FOLLOWED BY CARRIAGE RETURN. IT HAS BEEN OMITTED FROM MOST ILLUSTRATIONS IN THIS CHAPTER.

BEFORE USING INTERCOM, USER INITIALS AND CHARGE NUMBERS MUST BE REGISTERED WITH USER SERVICES, CODE 1892. (REGISTRATION FOR BATCH USE DOES NOT AUTOMATICALLY INCLUDE INTERCOM.)

*** ACCESSING INTERCOM ***
(LOGIN)

INTERCOM SUPPORTS TELETYPES, CRT'S AND OTHER TELETYPE EQUIVALENTS AT 10 AND 30 CHARACTERS PER SECOND. DIRECTIONS FOR DIALING THE COMPUTER SHOULD BE POSTED ON OR NEAR EACH TERMINAL. AFTER CONNECTING WITH THE COMPUTER:

- A) ENTER CARRIAGE RETURN WITHIN 30 SECONDS. (6700 ONLY)
- B) THE COMPUTER WILL RESPOND WITH A TIME AND DATE GREETING, AFTER WHICH ENTER LOGIN .
- C) IN RESPONSE TO "ENTER USER ID-" , ENTER AN INTERCOM ID OF THE FORM XXXXXXXXXX .
- D) IN RESPONSE TO "XXXXXXXXXX ENTER PASSWORD" , ENTER JOB ORDER NUMBER IN THE BLANKED OUT SPACE.
- E) WHEN THE COMPUTER RESPONDS WITH COMMAND-, ENTER ANY VALID NOS/BE OR INTERCOM COMMAND.

SEE 3-7: EXAMPLE 1 FOR A TYPICAL LOGIN SEQUENCE.

A USER-DEFINED TURNKEY PASSWORD IS AVAILABLE TO PROTECT AGAINST UNAUTHORIZED USE BY OTHERS (SEE CCRM, 9-2). WHEN DEFINED, IT WILL BE REQUESTED AFTER STEP D) ABOVE.

*** LEAVING INTERCOM ***
(LOGOUT)

TO TERMINATE THE INTERCOM SESSION, ENTER **LOGOUT** . THE COMPUTER WILL GIVE SOME STATISTICS ABOUT THE SESSION, ENDING WITH:
MM/DD/YY LOGGED OUT AT MM.MM.SS.

THE USER SHOULD THEN HANG UP THE PHONE TO COMPLETE THE SESSION.

*** SOME INTERCOM COMMANDS ***

IN ADDITION TO MOST NOS/BE COMMANDS (SEE CHAPTER 2), SEVERAL INTERCOM COMMANDS ARE AVAILABLE. COMMANDS NEED NOT BE ENDED WITH A TERMINATOR (PERIOD OR RIGHT PARENTHESIS) AS INTERCOM WILL SUPPLY ONE WHEN NECESSARY. ADDITIONAL PARAMETERS FOR MANY OF THESE COMMANDS MAY BE FOUND IN CCRM, CHAPTER 9.

AUDIT INTERCOM AUDIT (SEE 2-3)
FOR A SORTED AUDIT, USE BEGIN,AUDIT,AI=I.

BATCH,LFN,INPUT
BATCH,LFN,INPUT,XX

INITIATE A BATCH JOB FROM INTERCOM.
LFN - FILE CONTAINING A COMPLETE BATCH JOB (CONTROL CARDS IN FIRST RECORD)
XX - THE INPUT QUEUE, IS ONE OF:
OMITTED - CENTRAL SITE
HERE - THIS TERMINAL
2-CHARACTER TERMINAL ID OF A 1700, 200-UT-TYPE OR ANOTHER TELETYPE.
OUTPUT WILL GO TO THAT TERMINAL. SEE 3-9: EXAMPLE 7.

BATCH,LFN,LOCAL

MOVE A FILE FROM THE TERMINAL'S OUTPUT QUEUE TO A LOCAL FILE. IT CAN THEN BE 'PAGE'D AND/OR 'ROUTE'D TO A PRINTER.

CONNECT,LFN1,LFN2,...

CONNECT FILES TO THE TERMINAL. INPUT AND OUTPUT ARE ROUTED TO AND FROM THE TERMINAL WHEN THE NAMED FILES ARE READ OR WRITTEN. IN EFFECT, THE FILE NAMES ARE EQUATED TO THE TERMINAL. (SEE DISCONT)

DISCARD,LFN

DISCARD,LFN,XXXX

SAME AS PURGE,LFN,ID=XXXX.
RETURN,LFN.

IF XXXX IS OMITTED, IT IS TAKEN FROM LOGIN.
IF LFN IS A LOCAL FILE, OMIT XXXX.
(SEE FETCH/STORE)

DISCONT,LFN1,LFN2,...

DISCONNECT FILES FROM THE TERMINAL. THE FILE NAMES ARE NO LONGER EQUATED TO THE TERMINAL. (SEE CONNECT)

EDITOR

PROGRAM TO CREATE/MODIFY FILES (DESCRIBED BELOW)

FETCH,LFN

FETCH,LFN,XXXX

SAME AS ATTACH,LFN,ID=XXXX.
(SEE DISCARD/STORE)

FILES LIST LOCAL, INPUT, EXECUTING AND OUTPUT FILES.
IF LOCAL FILE IS PRECEDED BY *, IT IS AN ATTACHED PF.
IF LOCAL FILE IS PRECEDED BY \$, IT IS CONNECTED TO THE
TERMINAL (SEE CONNECT).

PAGE SCAN A FILE. SEE CCRM, 9-17 FOR PAGE COMMANDS.

Q LIST NUMBER OF JOBS IN INPUT, EXECUTE, OUTPUT, PUNCH AND
JANUS (CENTRAL SITE) QUEUES.

Q,JBN JBN IS FIRST 3-7 CHARACTERS OF A JOBNAME. FOR ALL QUEUES,
LIST ALL JOBS BEGINNING WITH THESE CHARACTERS. USED TO
FOLLOW A JOB THROUGH THE SYSTEM. WHEN JBN REACHES THE
TERMINAL'S OUTPUT QUEUE, IT MAY BE 'BATCH'ED LOCAL AND
'PAGE'D AND/OR 'ROUTE'D TO A PRINTER.

Q,JBN,X CHECK FOR JBN IN A SPECIFIED QUEUE. 'X' IS ONE OF:
A - ALL QUEUES (LIST OF JOB NAME(S) ONLY)
E - EXECUTE QUEUE
I - INPUT QUEUE
J - JANUS (CENTRAL SITE READER/PRINTER/PUNCH)
O - OUTPUT QUEUE
P - PUNCH QUEUE
EXCEPT FOR 'A', STATISTICS ARE GIVEN FOR THE JOB(S)
LISTED.

SEND,XXXXXXXXXX
SEND MESSAGES TO ANOTHER TERMINAL. XXXXXXXXXX IS THE 5-
TO 10-CHARACTER USER ID (SEE SITUATE). END MESSAGES WITH
A SEPARATE ENTRY OF END . FOR EXAMPLE,
SEND,USERSERVIC
PLEASE CALL 555-1234 TO HELP USER
EDITOR PROBLEMS WITH PERM FILE
END

SITUATE LIST ALL CURRENTLY LOGGED IN USERS. AN ASTERISK BEFORE
INDICATES USER CANNOT RECEIVE MESSAGES.

STORE,LFN
STORE,LFN,XXXX
SAME AS CATALOG,LFN,ID=XXXX.
(SEE DISCARD/FETCH)

XEQ,... LOAD AND/OR EXECUTE A PROGRAM REQUIRING MORE THAN ONE
LOADER CONTROL CARD. (SEE CCRM, 9-15)

*** CORRECTING AND INTERRUPTING ***

- PERCENT A** ABORT THE CURRENT COMMAND. IF THE INTERCOM TERMINAL IS TYPING, THE ESC KEY (OR ANY OTHER CHARACTER) MUST BE ENTERED FIRST TO INTERRUPT THE PRINTING. THEN ENTER THE PERCENT KEY, FOLLOWED BY THE LETTER A, FOLLOWED BY CARRIAGE RETURN. NO OTHER CHARACTER MAY APPEAR IN THE LINE.
- CTRL-H** TO DELETE THE CHARACTER JUST ENTERED (BACKSPACE), HOLD THE CTRL KEY WHILE TYPING LETTER 'H'. REPEATING WILL REMOVE MORE CHARACTERS, BUT NEVER MORE THAN THE COMPLETE LINE. ON TELETYPES AND SOME OTHER TERMINALS, THE CARRIAGE WILL NOT MOVE.
- CTRL-X** TO DELETE THE LINE BEING ENTERED, HOLD THE CTRL KEY WHILE TYPING LETTER 'X'. REPEATING WILL HAVE NO ADDITIONAL EFFECT. THE CARRIAGE DOES NOT MOVE.

*** EDITOR ***

EDITOR IS A PROGRAM FOR CREATING AND MODIFYING SOURCE PROGRAMS AND DATA FILES. LINES ARE NUMBERED EITHER BY THE USER OR EDITOR. TABS ARE PROVIDED FOR EASY SPACING OF INFORMATION.

EDITOR COMMANDS ARE SUMMARIZED BELOW. MOST COMMANDS AND PARAMETERS MAY BE ABBREVIATED BY THE FIRST CHARACTER (SEE EXAMPLES 4, 5, 7).

BYE EXIT EDITOR. EDIT FILE AND FORMAT INFORMATION ARE RETAINED. IF THE EDIT FILE HAS NOT BEEN SAVED, AN ERROR MESSAGE WILL BE TYPED. THE USER SHOULD THEN SAVE THE FILE AND ENTER BYE AGAIN.

CREATE
CREATE, SUP
CREATE, N1, N2, SUP

CLEAR CURRENT CONTENTS OF EDIT FILE AND BEGIN CREATION OF A NEW EDIT FILE STARTING WITH LINE NUMBER N1 (DEFAULT: 100), INCREMENTING BY N2 (DEFAULT: 10). IF SUP IS SPECIFIED, LINE NUMBER PROMPTING WILL BE SUPPRESSED.

WHEN ALL LINES HAVE BEEN ENTERED, END WITH = (FOLLOWED BY CARRIAGE RETURN).

DELETE,ALL DELETE ALL LINES

DELETE,N1

DELETE,N1,N2

DELETE,N1,N2,/<STRING>/

DELETE LINE N1 OR LINES N1 THRU N2, INCLUSIVE. IF N1 IS 'LAST' AND N2 IS OMITTED, DELETE LAST LINE. IF N2 IS 'LAST', DELETE FROM LINE N1 THRU LAST LINE. IF SPECIFIED, ONLY THOSE LINES WITH MATCHING CHARACTER STRING WILL BE DELETED.

EDIT,LFM

EDIT,LFM,SEQ

BRING EXISTING LOCAL FILE LFM INTO EDIT FILE AND ADD LINE NUMBERS (START WITH 100, INCREMENT BY 10). IF SEQ IS OMITTED, LFM ALREADY CONTAINS EDITOR SEQUENCING. IF ONE OR MORE LINES IN LFM EXCEEDS THE CURRENT LINE LENGTH, A MESSAGE IS TYPED BY EDITOR. A USER RESPONSE OF 'Y' OR 'YES' WILL CONTINUE EDITING, TRUNCATING ALL LONG LINES. ANY OTHER RESPONSE WILL TERMINATE THE EDIT COMMAND. IF SEQ IS OMITTED AND LFM DOES NOT HAVE EDITOR SEQUENCING, AN ERROR MESSAGE WILL BE TYPED BY EDITOR.

FORMAT,FORTRAN

FORMAT,COBOL

FORMAT,BASIC

CHANGE FORMATTING (DEFAULT: FORMAT,FORTRAN)

CERTAIN PREDEFINED SETTINGS ARE PROVIDED (FOR THESE, THE TAB CHARACTER IS ;):

F,F - FORTRAN (LINE LENGTH (CH)=72, TAB AT COLUMN 7)

F,COB - COBOL (CH=72, TABS AT 8,12,16,20,24)

F,B - BASIC (CH=999, NO TABS - REQUIRED FOR ENTERING AND RUNNING 'BASIC' PROGRAMS)

FORMAT,SHOW TYPE THE CURRENT VALUES OF CH, TAB CHARACTER AND THE TAB SETTINGS.

LIST

LIST,SUP

LIST CURRENT LINE. IF SUP SPECIFIED, DO NOT LIST LINE NUMBER

LIST,ALL

LIST,ALL,SUP

LIST,ALL,/<STRING>/

LIST,N1

LIST,N1,N2

LIST,N1,N2,/<STRING>/

LIST LINES. PARAMETERS ARE AS DESCRIBED ABOVE.

N1=<TEXT>

(RE)DEFINE LINE N1. UNTIL ANOTHER, DIFFERENT COMMAND IS ENTERED, NO FURTHER PROMPTING IS GIVEN. SEE 3-8: EXAMPLE 4.

RUN,BASIC,NOEX
RUN,COBOL,NOEX
RUN,FTM,NOEX

COMPILE BASIC/COBOL/FORTRAN PROGRAM (LFN 'OUTPUT' IS CONNECTED AUTOMATICALLY). IF NOEX OMITTED AND NO ERRORS, LOAD AND EXECUTE (LFNS 'INPUT' AND 'OUTPUT' ARE CONNECTED AUTOMATICALLY).

SAVE,LFN,NOSEQ,OVERWRITE

PUT EDIT FILE INTO LOCAL FILE LFN WITH/WITHOUT SEQUENCING. IF OVERWRITE IS SPECIFIED, CURRENT LOCAL FILE LFN IS REPLACED (OVERWRITTEN) BY THE CURRENT EDIT FILE (PERMANENT FILES MAY NOT BE OVERWRITTEN). LFN IS REWOUND BEFORE AND AFTER THE SAVE.

/<STRING1>/=<STRING2>/,N1,N2,(<COLS>)

/<STRING1>/=<STRING2>/,N1,N2,(<COLS>),UNIT

CHANGE ALL OCCURRENCES OF <STRING1> TO <STRING2> IN LINE RANGE SPECIFIED. N1, N2, (<COLS>) ARE AS DESCRIBED ABOVE. <STRING1> IS 1-20 CHARACTERS; <STRING2> IS 0-20 CHARACTERS. STRING DELIMITERS MAY BE / OR ANY CHARACTER OTHER THAN BLANK, COMMA, PARENTHESIS, EQUAL, LETTER OR DIGIT. IF UNIT IS SPECIFIED, <STRING1> MUST HAVE A NON-ALPHAMERIC CHARACTER ON BOTH SIDES OF THE STRING TO BE RECOGNIZED. SEE 3-9: EXAMPLE 4.

*EOF

WHEN ENCOUNTERED AS TEXT DURING SAVE, WILL GENERATE A SYSTEM END-OF-FILE.

*EOR

WHEN ENCOUNTERED AS TEXT DURING SAVE, WILL GENERATE A SYSTEM END-OF-RECORD. A TYPICAL USE IS BETWEEN JOB CONTROL AND DATA WHEN CREATING A BATCH JOB.

*** EXAMPLES ***

1. LOGIN/LOGOUT (UNDERLINED ITEMS ARE TO BE ENTERED BY THE USER).
-CR- IS THE CARRIAGE RETURN. ALL USER ENTRIES MUST END WITH -CR-.

DIAL THE COMPUTER (229-6000 FOR 6700)

-CR- (ENTER ON 6700 ONLY)

NSRDC 6700 INTERCOM 4.5

DATE MM/DD/YY

TIME MM.MM.SS.

LOGIN

ENTER USER ID-XXXXXXXXXX

XXXXXXXXXX ENTER PASSWORD

JJJJJJJJJJ (ENTERED IN BLACKENED OUT SPACE ON PREVIOUS LINE)

(TERMINAL ID AND SYSTEM BULLETIN WILL BE TYPED, FOLLOWED BY:)

COMMAND- (LOGIN IS COMPLETE. ENTER COMMANDS)

...
LOGOUT

(SEVERAL LINES OF SESSION STATISTICS ARE TYPED)

2. CREATE, EXECUTE AND CATALOG FORTRAN PROGRAM. (SYSTEM-PRODUCED PRINTING HAS BEEN OMITTED IN THIS AND LATER EXAMPLES. PHRASES STARTING WITH ** ARE JUST COMMENTS AND ARE NOT TO BE ENTERED BY THE USER.)

EDITOR

CREATE ** SET AUTOMATIC LINE NUMBER GENERATION

:PROGRAM TEST2 (INPUT=128, OUTPUT=128, TAPE5=INPUT)

C AUTHOP AND ADDRESS

C USES LIST-DIRECTED I/O (COMMA-SEPARATED, UNFORMATTED DATA)

:CALL CONNED (5)

:PRINT *, "TYPE IN A, K, B --"

2:READ (5,*) A, K, B

:IF (A .EQ. 0.) STOP

:C = A ** K + B

:PRINT 4, A, K, B, C

4:FORMAT (1X, F7.2, " ** ", I3, " + ", F7.2, " = ", F7.2)

:GO TO 2

:END

=

LIST,ALL

SAVE,MYPROG

RUN,FTN

BYE

STORE,MYPROG

** TERMINATE CREATE COMMAND

** LIST FOR PROOFREADING

** MAKE LOCAL FILE

** COMPILE AND EXECUTE (IF NO ERRORS)

** LEAVE EDITOR

** CATALOG FOR LATER USE

3. CREATE AND EXECUTE BASIC PROGRAM.

```

EDITOR
DELETE,ALL          ** CLEAR EDIT FILE
FORMAT,BASIC       ** ESTABLISH BASIC EDITING FORMAT
100 REM COMPUTE AND PRINT
110 REM AUTHOR AND ADDRESS
120 LET P = 3.14159267
130 PRINT " ENTER X":
140 INPUT X
150 IF X<=0 THEN 200
160 LET W = SQR(P * X)
170 PRINT " ROOT IS" _
180 GO TO 130
200 END
RUN,BASIC          ** COMPILE AND EXECUTE

```

4. A FORTRAN PROGRAM WAS CATALOGED PREVIOUSLY. ADD A PROGRAM STATEMENT, MAKE A FEW MODIFICATIONS, CATALOG THE NEW SOURCE CODE AND EXECUTE THE REVISED PROGRAM.

```

ATTACH,OLDPROG,ID=XXXX ** MAKE PERMANENT FILE A LOCAL FILE
EDITOR
EDIT,OLDPROG,SEQ      ** SEQUENCE THE DECK FOR EDITING
90=:PROGRAM TEST (INPUT=128, OUT=128)
/SIN=/COS/,A,U       ** TEXT REPLACEMENT, CHANGE SIN TO COS
/OUT/=OUTPUT/,90    ** CORRECT FILE NAME IN PROGRAM CARD
D,210,220           ** DELETE LINES
L,A                 ** LIST FOR PROOFREADING
S,NEWPROG           ** MAKE LOCAL FILE
RUN,F               ** COMPILE AND EXECUTE REVISED PROGRAM
BYE                 ** LEAVE EDITOR
STORE,NEWPROG      ** CATALOG CORRECTED PROGRAM

```

5. EXECUTE A PROGRAM WHICH REQUIRES AN EXTERNAL FILE.

```

EDITOR
...                 ** CREATE OR EDIT USER PROGRAM
RUN,F,N             ** COMPILE WITHOUT LOAD OR EXECUTE
BYE                 ** LEAVE EDITOR
ATTACH,NSRDC.       ** GET NEEDED LIBRARY ('.' OPTIONAL)
XEQ,LOSET,LIB=NSRDC,LOAD=LGO ** LOAD AND EXECUTE

```

6. AUDIT USER FILES.

```

CONNECT,OUTPUT
AUDIT

```

7. CREATE A BATCH JOB (NEEDED BECAUSE THE EXECUTION COPE REQUIREMENT PROHIBITS RUNNING ON INTERCOM).

```

EDITOR
C,S                               ** SUPPRESS LINE NUMBER GENERATION
AMDSBIG,CM62000.
CHARGE,AMDS,JJJJJJJJJJ,PR.
ATTACH,BIGPROG,ID=AMDS.
BIGPROG.
*FOR
    2  15  7
10.      15.
20.
346.2
=
L,A                               ** TERMINATE CREATE COMMAND
S,JOB,N                           ** LIST FOR PROOFREADING
BYE                                ** SAVE WITHOUT SEQUENCING
STORE,JOB                          ** LEAVE EDITOR
BATCH,JOB,INPUT                    ** CATALOG FILE
Q,AMDSB                            ** PUT INTO CENTRAL SITE INPUT QUEUE
** FOLLOW PROGRESS OF JOB, IF DESIRED

```

***** OTHER FEATURES *****

*** USER SOURCE AND OBJECT PROGRAM LIBRARIES ***

NOS/BE HAS UTILITIES FOR MAINTAINING SOURCE PROGRAMS AND DATA (UPDATE) AND OBJECT ROUTINES (EDITLIB) IN LIBRARIES. SEE CCRM, CHAPTER 7.

*** COMPUTER CENTER LIBRARIES ***

MANY LIBRARIES OF PROGRAMS AND SUBPROGRAMS ARE MAINTAINED BY THE COMPUTER CENTER. CCRM, CHAPTER 10, AND CCLIB DESCRIBE THEIR CONTENTS AND USE. MANY PROCEDURES (PREDEFINED SETS OF CONTROL CARDS FOR PERFORMING STANDARD TASKS) ARE ALSO AVAILABLE (SEE CCRM, CHAPTER 7, AND CCLIB).

*** OTHER SOFTWARE ***

SEVERAL ADDITIONAL COMPILERS, TRANSLATORS AND OTHER SOFTWARE SYSTEMS ARE AVAILABLE, AMONG THEM: ALGOL, APT, CHECKPOINT, COMPASS, COMRADE, DDL/QUERY UPDATE, GPSS, MARS VI, MIMIC, NASTRAN, PERT, QUICK QUERY, RIQS, SCORE, SHARP DATA BASE MANAGEMENT SYSTEM, SIMSCRIPT, SNOBOL, SORT/MERGE, SPSS, SYSTEM 2000. SEE CCRM, CHAPTER 11.

*** GRAPHICS ***

BOTH INTERACTIVE (CCRM, CHAPTER 8) AND PASSIVE (CCRM, CHAPTERS 10, 13) GRAPHICS ARE AVAILABLE. SOFTWARE PACKAGES ARE AVAILABLE FOR THE CDC 274 INTERACTIVE GRAPHICS TERMINAL AND THE CALCOMP, SC4020/4060 AND TEKTRONIX PLOTTERS AND PLOTTING TERMINALS.

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***** USER HELP *****

CONSULTATION IS AVAILABLE FROM THE USER SERVICES BRANCH:
CARDEROCK: BLDG 17, ROOM 100 (202) 227-1907
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*** COMPUTER STATUS PHONE ***

FOR A RECORDED MESSAGE ON THE STATUS OF THE THREE CDC COMPUTERS,
CALL (301) 229-6622.

*** USER TROUBLE FORM ***

A USER TROUBLE FORM IS USED FOR REFUND REQUESTS, PROBLEMS,
SUGGESTIONS, GRIPES, ETC. GRIPES OR OTHER COMMENTS MAY BE ENTERED
DIRECTLY INTO THE COMPUTER FROM INTERCOM BY ENTERING 'BEGIN,GRIPES'.
THERE IS PROMPTING FOR ALL INFORMATION.

*** TRAINING ***

SEVERAL CLASSES (FORTRAN, COBOL, OPERATING SYSTEM, ETC.) ARE
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