

BRS MANUAL

AS OF 12-2-69

CONTENTS

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SECTION 0.0 SYSPOP INDEX
SECTION 0.1 INDEX OF SYSPOPS BY TYPE

FILE INPUT/OUTPUT

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CIO(161)	CHARACTER INPUT/OUTPUT
WIO(160)	WORD INPUT/OUTPUT
BIO(176)	BLOCK INPUT/OUTPUT

RANDOM FILE OPERATORS

RSP(125)	READ SIZE PARAMETERS
SSP(126)	SET SIZE PARAMETERS
RCP(131)	READ CURSOR POSITION
SCP(132)	SET CURSOR POSITION
PCE(133)	POSITION CURSOR AND ERASE

TELETYPE INPUT/OUTPUT

TCI(174)	TELETYPE CHARACTER INPUT
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CHARACTER STRING MANIPULATION

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ISC(140)	INTERNAL TO STRING CONVERSION
SIC(141)	STRING TO INTERNAL CONVERSION
WCD(135)	WRITE CHARACTER AND DECREMENT
GCD(137)	GET CHARACTER AND DECREMENT

WCI(157)	WRITE CHARACTER AND INCREMENT
GCI(165)	GET CHARACTER AND INCREMENT
SKSG(162)	SKIP IF STRING GREATER
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WCH(164)	WRITE CHARACTER TO MEMORY BY TABLE

FLOATING POINT OPERATIONS

FAD(156)	FLOATING ADD
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FDV(153)	FLOATING DIVIDE

MISCELLANEOUS

SBRM(170)	SYSTEM BRM FOR INDIRECT LINKAGE
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SECTION 0.2 SEQUENTIAL INDEX OF SYSTEM OPERATORS - SYSPOPS

125 RSP	READ FILE SIZE PARAMETERS
126 SSP	SET FILE SIZE PARAMETERS
131 RCP	READ CURSOR POSITION
132 SCP	SET CURSOR POSITION
133 PCE	POSITION CURSOR AND ERASE
134 CIT	CHARACTER INPUT AND TEST
135 WCD	WRITE CHARACTER AND DECREMENT
137 GCD	GET CHARACTER AND DECREMENT
140 ISC	INTERNAL TO STRING CONVERSION
141 SIC	STRING TO INTERNAL CONVERSION
153 FDV	FLOATING POINT DIVIDE
154 FMP	FLOATING POINT MULTIPLY
155 FSB	FLOATING POINT SUBTRACT
156 FAD	FLOATING POINT ADD
157 WCI	WRITE CHARACTER AND INCREMENT
160 WIO	WORD INPUT/OUTPUT
161 CIO	CHARACTER INPUT/OUTPUT
162 SKSG	SKIP IF STRING GREATER
163 SKSE	SKIP IF STRING EQUAL
164 WCH	WRITE CHARACTER TO MEMORY BY TABLE
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166 LDP	LOAD STRING POINTER
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SECTION 1.0 SEQUENTIAL BRS INDEX

NOTE: BRS'S MARKED WITH AN ASTERISK ARE EXECUTIVE BRS'S. ALL OTHERS ARE MONITOR BRS'S. BRS'S IN SECTION 5 ARE RESTRICTED TO SYSTEM OR SUBSYSTEM USE.

BRS.	SECT.	DESCRIPTION
1	5	OPEN A FILE
2	5	CLOSE A FILE
3	3	MAKE PMT POINTER INDIRECT
4	3	RELEASE A PAGE OF MEMORY
5	3	REPORT CALLING FORK STATUS
*6	3	SET FILE PARAMETERS
7	5	READ TABLE
8	5	CLOSE ALL FILES
9	3	START FORK
10	3	TERMINATE FORK
11	3	CLEAR INPUT BUFFER
12	3	DECLARE ECHO TABLE OR SET 8-LEVEL
13	3	TEST INPUT BUFFER FOR EMPTY
14	3	DISMISS UNTIL OUTPUT BUFFER EMPTY
*15	3	READ INPUT FILE NAME
*16	3	OPEN INPUT FILE
17	3	CLOSE ALL FILES
*18	3	READ OUTPUT FILE NAME
*19	3	OPEN OUTPUT FILE
20	3	CLOSE A FILE
21	3	FLOATING POINT NEGATE
22	5	PREVENT TERMINATION
23	5	ALLOW TERMINATION
24	3	CHANGE TERMINAL CHARACTERISTICS
25	5	GRAB BIT MAP BIT
26	5	SKIP IF ESCAPE WAITING
27	5	START STATISTICS
28	5	STOP STATISTICS
29	3	CLEAR OUTPUT BUFFER
30	5	GIVE BIT TO BIT MAP
31	3	WAIT FOR SPECIFIED FORK TO CAUSE A PANIC
33	3	READ STRING
34	3	OUTPUT MESSAGE
35	3	OUTPUT STRING
36	3	OUTPUT NUMBER IN SPECIFIED RADIX
*37	3	RENAME A FILE
38	3	INPUT NUMBER IN SPECIFIED RADIX
39	3	READ CPARW AND AUNN
40	3	READ ECHO TABLE
41	5	RETURN DISC ADDRESS OF CURRENT DATA BLOCK
42	3	READ REAL TIME CLOCK
43	3	READ PSEUDO-RELABELING
44	3	SET PSEUDO-RELABELING
45	3	DISMISS ON QUANTUM OVERFLOW
46	5	TURN ESCAPE OFF
47	5	TURN ESCAPE ON
*48	3	LOOK UP FILE NAME
49	3	READ INTERRUPTS ARMED
50	3	FLOATING TO FIXED CONVERSION
51	3	FIXED TO FLOATING CONVERSION
*52	3	FORMATTED FLOATING POINT INPUT
*53	3	FORMATTED FLOATING POINT OUTPUT
54	5	GRAB BIT FROM MAP AND RETURN DISC ADDRESS

55	5	DISMISS IF JOB IS USING DISC
56	5	RECOVER PMT BYTE
58	5	COPY MEMORY FROM 940 TO 940
*60	3	LOOK UP FILE NAME AND INSERT IF NECESSARY
61	5	CHANGE TELETYPE WORKING SET
*62	3	OPEN FILE FOR INPUT
*63	3	OPEN FILE FOR OUTPUT
*64	3	OPEN FILE FOR INPUT WITH STRING POINTERS
*65	3	OPEN FILE FOR OUTPUT WITH STRING POINTERS
66	5	DELETE DISK FILE
*67	3	READ USER TS PAGE
*68	3	READS FILE NAME FROM FILE DIRECTORY
*69	3	DELETE A FILE
70	3	COUNT FREE USER PAGES
71	3	SKIP IF SYSTEM STATUS SET
72	5	EXEC DISMISS
73	3	READ AND RESET ERCODE
74	3	SET 1/2 DUPLEX MODE
75	3	SET FULL DUPLEX MODE
76	3	SKIP ON 1/2 DUPLEX MODE
78	3	ARM/DISARM SOFTWARE INTERRUPTS
80	3	MAKE PAGE READ ONLY
81	3	DISMISS FOR SPECIFIED AMOUNT OF TIME
85	3	SET 8-LEVEL OUTPUT
86	3	CLEAR 8-LEVEL OUTPUT
88	3	READ EXECUTION TIME
89	3	READ RESOURCE METERING
90	3	DECLARE A FORK FOR TERMINATION ON "ESCAPE"
*91	3	READ DATE AND TIME TO STRING
93	5	RESET RESOURCE METERING
*95	5	ACQUIRE AND RELEASE OVERFLOW GROUPS
*96	3	REPORT FILE DIRECTORY DATA
97	5	RESET SUBSYSTEM COUNTER
98	5	INCREMENT SUBSYSTEM COUNTER
99	5	READ SUBSYSTEM COUNTER
100	5	ASSIGN DEVICE
101	5	UNASSIGN DEVICE
102	3	READ TAPE
103	3	WRITE TAPE
104	3	WHO HAS DEVICE
105	3	CONTROLS FOR TAPE
106	3	PRINT
107	3	SET TAPE PARITY
108	3	TEST TAPE DENSITY
109	5	DISMISS
110	3	TEST TAPE READY
111	5	TERMINATE CLASS 3 BRS FORK
112	5	TURN OFF TELETYPE STATION
115	5	TERMINATE CLASS 3 BRS FORK WITH RUBOUT
116	3	READ PROGRAM RELABELING
117	3	SET PROGRAM RELABELING
120	5	ASSIGN PMT ENTRY
121	3	RELEASE PAGE
123	5	WRITE DISC WITHOUT DISMISS
124	5	READ DISK
125	5	WRITE DISK

126	5	TEST FOR CARRIER PRESENCE
127	5	LOOK AT MEMORY
128	5	SET DISK BIT MAP
129	5	TURN CTE CHANNEL ON OR OFF
130	5	TEST BREAKPOINT SWITCH
131	5	CRASH SYSTEM
134	3	SET TO IGNORE LINE FEED OR CARRIAGE RETURN
135	3	CAUSE PROGRAM INTERRUPT AFTER SPECIFIED PERIOD OF TIME
136	5	SET EXEC SWITCHES
*141	5	GET EXEC SUBROUTINES
144	5	GET A BUFFER
145	5	RETURN A BUFFER
147	3	CLOSE ALL EXCEPT COMMANDS FROM FILE
*151	3	CHANGE A COMMANDS FROM FILE
152	5	IGNORE OFF INTERRUPTS

SECTION 2.0 BRS AND SYSPOP INDEX BY TYPE

FILE INPUT/OUTPUT OPERATIONS

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64	OPEN FILE FOR INPUT WITH STRING POINTERS
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CLOSE FILES

20	CLOSE A FILE
17	CLOSE ALL FILES
147	CLOSE ALL EXCEPT COMMANDS FROM FILE

FILE INPUT/OUTPUT OPERATIONS

CIO (161)	CHARACTER INPUT/OUTPUT
WIO (160)	WORK INPUT/OUTPUT
BIO (176)	BLOCK INPUT/OUTPUT
CIT (134)	CHARACTER INPUT AND TEST

FILE NAME MANIPULATION

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68	READ FILE NAME FROM FILE DIRECTORY
48	LOOK UP FILE NAME

FORK MANAGEMENT

5	READ CALLING FORK STATUS
9	START FORK
10	TERMINATE FORK
90	DECLARE FORK FOR TERMINATION ON "ESCAPE"

DEVICE INPUT/OUTPUT

102 READ TAPE
103 WRITE TAPE
104 WHO HAS DEVICE
105 CONTROLS FOR TAPE
106 PRINT
107 SET TAPE PARITY
108 TEST TAPE DENSITY
110 TEST TAPE READY

RANDOM FILE OPERATIONS

RSP (125) READ FILE SIZE PARAMETERS
SSP (126) SET FILE SIZE PARAMETERS
RCP (131) READ CURSOR POSITION
SCP (132) SET CURSOR POSITION
PCE (133) POSITION CURSOR AND ERASE

MISCELLANEOUS FILE OPERATIONS

69 DELETE A FILE
96 REPORT FILE DIRECTORY DATA
6 SET FILE PARAMETERS

TELETYPE INPUT/OUTPUT OPERATIONS

TCI TELETYPE CHARACTER INPUT
TCO TELETYPE CHARACTER OUTPUT
13 TEST INPUT BUFFER FOR EMPTY
11 CLEAR INPUT BUFFER
14 DISMISS UNTIL OUTPUT BUFFER EMPTY
29 CLEAR OUTPUT BUFFER
12 DECLARE ECHO TABLE OR SET 8-LEVEL INPUT
40 READ ECHO TABLE
85 SET 8-LEVEL OUTPUT
86 CLEAR 8-LEVEL OUTPUT
134 SET LINE FEED OR CARRIAGE RETURN IGNORE
74 SET 1/2 DUPLEX MODE
75 SET FULL DUPLEX MODE
76 SKIP ON 1/2 DUPLEX MODE
24 CHANGE TERMINAL CHARACTERISTICS

MEMORY OPERATIONS

3 MAKE PMT POINTER INDIRECT
4 RELEASE A PAGE OF MEMORY
121 RELEASE A PAGE OF MEMORY
43 READ PSEUDO-RELABELING
44 SET PSEUDO-RELABELING
116 READ PROGRAM RELABELING
117 SET PROGRAM RELABELING
80 MAKE PAGE READ ONLY
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STRING PROCESSING OPERATIONS

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STRING MANIPULATION

STP STORE STRING POINTER
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SKSE SKIP IF STRING EQUAL
SKSG SKIP IF STRING GREATER

CHARACTER MANIPULATION

GCI GET CHARACTER FROM BEGINNING OF STRING AND
INCREMENT BEGINNING POINTER.
WCI PUT CHARACTER ON END OF STRING AND INCREMENT
END POINTER.
GCD GET CHARACTER FROM END OF STRING AND DECREMENT
END POINTER
WCD PUT CHARACTER ON BEGINNING OF STRING AND DECREMENT
BEGINNING POINTER

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52 FORMATTED FLOATING POINT INPUT
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50 CONVERSION FROM FLOATING POINT TO FIXED POINT
51 CONVERSION FROM FIXED POINT TO FLOATING POINT
21 FLOATING POINT NEGATE
FAD FLOATING POINT ADDITION
FSB FLOATING POINT SUBTRACT
FMP FLOATING POINT MULTIPLICATION
FDV FLOATING POINT DIVISION

MISCELLANEOUS

42 READ REAL TIME CLOCK
91 READ DATE AND TIME INTO A STRING
39 READ CPARW AND AUNN
SBRM PROVIDES INDIRECT SUBROUTINE LINKAGE
71 SKIP IF SYSTEM STATUS SET
67 READ USERS TS PAGE
73 READ AND RESET ERCODE
88 READ EXECUTION TIME
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SYSTEM AND SUBSYSTEM RESTRICTED BRS'S

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47 TURN ESCAPE OFF
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FORK MANAGEMENT

72 EXEC DISMISS
22 PREVENT TERMINATION
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115 TERMINATE CLASS 3 BRS FORK WITH RUBOUT

INPUT/OUTPUT

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95 ACQUIRE AND RELEASE OVERFLOW GROUPS

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141 GET EXEC SUBROUTINES

144 GET A BUFFER

145 RETURN A BUFFER

97 RESET SUBSYSTEM COUNTER

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BRS 4

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BRS 6

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BRS 9

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CONVERSION

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MAG TAPE
BCD

BRS 108

MAG TAPE
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RELABELING

BRS 117

RELABELING

BRS 121

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BRS 134

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BRS 142

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FILE

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BRS 22

FORK
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BRS 23

FORK
TERMINATE

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BRS 27

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START

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BRS 30

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PMT INFORMATION

APPENDIX A

TOGGLE SWITCH
SECTORS
INDEX BLOCK
NOTHING
TRAP
TRAP

TIME
TIME

APPENDIX B

APPENDIX C

APPENDIX D

APPENDIX E

SECTION 3.0 USER BRS'S IN NUMERICAL SEQUENCE

BRS 3

DATE: 69/11/11

FUNCTION: MAKE POINTER INDIRECT

STATUS: USER

INPUT:

A = PMT BYTE NUMBER OF PMT OR SMT POINTED AT

IF BIT 0 OF A = 1, MAKE PAGE READ ONLY

X = CHANNEL NUMBER FOR SECOND BYTE

OUTPUT: A = NEW PMT BYTE NO.

DESCRIPTION: THIS BRS TAKES THE CONTENTS OF THE A REGISTER AND STORES IT AS A POINTER TO A PMT/SMT BYTE. THE BRS 3 DELIVERS IN THE A REGISTER THE PMT BYTE TO BE RELABELED OVER USING THE BRS 44. NOTE: THE BRS 3 DOES NOT CHANGE THE CURRENT RELABELING. BIT 0 OF A MUST BE SET IF THE USER IS TO POINT TO ANY SUBSYSTEM PAGES.

	OLD BYTE NUMBERS							NEW BYTE NUMBERS						
SBASIC	17	22	23	31	32	33	34	101	102	103	104	105	106	107
EDITOR	41	42	--	--	--	--	--	110	111	---	---	---	---	---
CAL	24	25	26	27	30	--	--	112	113	114	115	116	---	---
CCS	35	36	37	40	43	44	50	117	120	121	122	123	124	125
	51	52	--	--	--	--	--	126	127	---	---	---	---	---
FTC	20	21	--	--	--	--	--	130	131	---	---	---	---	---
SFOR	--	--	--	--	--	--	--	135	136	137	140	141	142	143
	--	--	--	--	--	--	--	144	---	---	---	---	---	---
COMMON	45	46	47	--	--	--	--	132	133	134	---	---	---	---
FOS	53	54	55	--	--	--	--	150	151	152	---	---	---	---

NOTE: DDT PAGES ARE NOT INDIRECT SMTS. THEY ARE SMT NUMBERS 41 AND 42. THE TS PAGE IS 43. FOS PAGES (INDIRECT BYTES 150,151,152) DO NOT NEED SUBSYSTEM STATUS TO RELABEL IN.

REGISTERS AFFECTED: A,X

BRS 4

DATE: 69/05/13

FUNCTION: RELEASE A PAGE OF MEMORY

STATUS: USER

INPUT: A=ANY ADDRESS IN THE PAGE TO BE RELEASED

DESCRIPTION: THE PMT ENTRY FOR THE BLOCK IS CLEARED AND IN ANY OTHER FORK WHICH HAS THIS PMT BYTE IN ITS RELABELING, THE BYTE IS CLEARED TO 0.

REGISTERS AFFECTED: NONE

BRS 5

DATE: 69/05/13

FUNCTION: RETURN STATUS OF CALLING FORK

STATUS: USER

OUTPUT: A=0 FOR NO STATUS

A=1 FOR SUBSYSTEM STATUS
A=3 FOR SYSTEM STATUS
A=7 FOR EXEC STATUS

REGISTERS AFFECTED: A

BRS 6

DATE: 69/05/13

FUNCTION: SET [FILE ATTRIBUTES] IN [FILE DIRECTORY]

STATUS: USER

INPUT: A = FILE DIRECTORY POINTER ADDRESS (FROM BRS 15 OR 48)

X = 0-11=ATTRIBUTES TO CHANGE, 12-23=NEW ATTRIBUTES

RETURNS: NO SKIP = ERRORS

SKIP = NORMAL

DESCRIPTION: PLACES IN THE FILE DIRECTORY FOR THE FILE SPECIFIED THE STATUS SELECTED; THE STATUS WILL BE USED TO START THE FORK IF THE FILE IS CALLED WITH THE GOTO COMMAND. THE ERROR RETURN IS TAKEN IF THE FILE CANNOT BE LOCATED IN THE FILE DIRECTORY OR IF THE FILE IS NOT VALID FOR PRIVATE WRITE ACCESS.

REGISTERS AFFECTED: ALL.

SEE BRS 96

BRS 9

DATE: 69/05/13

FUNCTION: START FORK

STATUS: USER

INPUT: A=ADDRESS OF A "PANIC TABLE" (SEE APPENDIX A, GLOSSARY).

BITS 0 THROUGH 7 OF REGISTER A HAVE THE FOLLOWING SIGNIFICANCE:

0=GIVE [FORK] EXEC STATUS IF CURRENT FORK HAS EXEC STATUS

1=SET FORK RELABELING FROM PANIC TABLE. OTHERWISE USE CURRENT RELABELING.

2=PROPOGATE [ESCAPE ASSIGNMENT] TO FORK IF ISSUING FORK HAS IT. (SEE BRS 90).

3=MAKE FORK [FIXED MEMORY]. IT IS NOT ALLOWED MORE MEMORY THAN IT STARTED WITH.

4=MAKE FORK [LOCAL MEMORY]. NEW MEMORY WILL BE ASSIGNED TO IT INDEPENDENT OF THE CONTROLLING FORK.

5=GIVE FORK SUBSYSTEM STATUS IF CURRENT FORK HAS SUBSYSTEM STATUS.

6=GIVE FORK SYSTEM STATUS IF CURRENT FORK HAS SYSTEM STATUS.

7=SUBSYSTEM INDEX IN PANIC TABLE.

DESCRIPTION: BRS 9 IS USED TO CREATE DEPENDENT ENTRIES IN THE PAC TABLE. THE [PANIC TABLE] INDICATED BY REGISTER A MUST NOT BE THE SAME FOR TWO FORKS OF THE SAME JOB OR OVERLAP A PAGE BOUNDARY; IF IT IS BRS 9 IS ILLEGAL. BRS 9 CREATES A NEW FORK AS A FORK OF THE FORK CREATING IT, WHICH IS CALLED THE CONTROLLING FORK. THE FORK IS LOWER IN THE HIERARCHY OF FORKS THAN THE CONTROLLING FORK. THE CONTROLLING FORK MAY ITSELF BE A FORK OF SOME STILL HIGHER FORK. WHEN BRS 9 IS EXECUTED, THE CONTROLLING FORK IS DISMISSED UNTIL THE LOWER FORK TERMINATES. A USER MAY NOT HAVE MORE THAN EIGHT FORKS

IN HIS FORK STRUCTURE. THIS INCLUDES THE EXEC FORK AND ONE FORK FOR EACH EXEC BRS THAT IS ACTIVE. ONLY ONE EXEC BRS CAN BE ACTIVE AT A TIME.

REGISTERS AFFECTED: NONE

BRS 10

DATE: 69/05/13

FUNCTION: PROGRAMMED PANIC. TERMINATES A FORK.

STATUS: USER

DESCRIPTION: TERMINATES A FORK. THIS CONDITION CAN BE DISTINGUISHED FROM A PANIC CAUSED BY THE ESCAPE KEY ONLY BY THE FACT THAT IN THE FORMER CASE THE PROGRAM COUNTER IN THE PANIC TABLE POINTS TO A WORD CONTAINING BRS 10. THIS BRS WOULD NORMALLY BE USED TO TERMINATE A FORK WHEN IT IS FINISHED.

REGISTERS AFFECTED: NONE

BRS 11

DATE: 69/05/13

FUNCTION: CLEAR THE TELETYPE INPUT BUFFER

STATUS: USER

INPUT: X=TELETYPE NUMBER (-1 INDICATES THE CONTROLLING TELETYPE)

DESCRIPTION: SETS THE BUFFER POINTERS TO INDICATE THERE ARE NO CHARACTERS IN THE [TELETYPE] [INPUT BUFFER].

REGISTERS AFFECTED: NONE

BRS 12

DATE: 69/05/13

FUNCTION: DECLARE ECHO TABLE OR SET [8-LEVEL INPUT] MODE

STATUS: USER

INPUT: X=TELETYPE NUMBER (-1 INDICATES THE CONTROLLING TELETYPE)

A=0,1,2, OR 3 TO INDICATE THE PROPER ECHO TABLE.

A MAY ALSO CONTAIN ANY EIGHT-BIT CHARACTER IF THE SIGN BIT IS ON.

IN THIS CASE, EACH EIGHT-BIT CHARACTER READ FROM

THE [TELETYPE] IS TRANSMITTED UNCHANGED

TO THE USERS PROGRAM. NO ECHOES ARE GENERATED WHILE IN THIS SPECIAL EIGHT-LEVEL MODE. THE EIGHT BIT CHARACTER IS THE CHARACTER ON WHICH

EIGHT LEVEL MODE WILL TERMINATE. IF THE SIGN BIT IS ON AND BIT 15

IS ON, THERE WILL BE NO TERMINATING CHARACTER. THE PROGRAM MUST

STOP THE READING ITSELF. IF IT FAILS TO DO THIS, THE USER

MAY HANG UP HIS PHONE. NEITHER THE ESCAPE NOR HIGH SPEED ESCAPE WILL

TERMINATE THE PROGRAM. OTHERWISE, THIS IS LIKE REGULAR EIGHT LEVEL

MODE.

DESCRIPTION: BRS 12 SETS THE [ECHO TABLE] FOR THE TELETYPE

INDICATED BY REGISTER X. ECHO TABLES ARE AS FOLLOWS:

0=ECHO EACH CHARACTER JUST AS IT WAS RECEIVED AND BREAK ON ALL CHARACTERS.

1=SAME ECHO AS 0 BUT ALL CHARACTERS EXCEPT LETTERS, DIGITS AND SPACES ARE BREAK CHARACTERS.

2=SAME ECHO AS 0, BUT THE ONLY [BREAK CHARACTERS] ARE CONTROL CHARACTERS (INCLUDING CARRIAGE RETURN AND LINE FEED.)

NOTE: THE EXEC SETS THIS FOR THE USER.

3=NO [ECHO] FOR ANY CHARACTER AND BREAK ON ALL CHARACTERS.

REGISTERS AFFECTED: NONE

BRS 13

DATE: 69/05/13

FUNCTION TEST INPUT BUFFER FOR EMPTY.

STATUS: USER

INPUT:

X=[TELETYPE] NUMBER (-1 INDICATES THE CONTROLLING TELETYPE)

RETURNS: NO SKIP=CHARACTERS IN THE INPUT BUFFER

SKIP=NO CHARACTERS IN THE INPUT BUFFER

DESCRIPTION: THIS BRS TESTS FOR THE PRESENCE OF INPUT CHARACTERS IN THE BUFFER. IF THE BUFFER IS EMPTY, THERE IS A SKIP RETURN.

IF THERE ARE ANY CHARACTERS IN THE [INPUT BUFFER], CONTROL IS TRANSFERED TO THE "NORMAL" RETURN.

REGISTERS AFFECTED: NONE

BRS 14

DATE: 69/05/13

FUNCTION: DISMISS UNTIL THE TELETYPE OUTPUT BUFFER IS EMPTY

STATUS: USER

INPUT: X= TELETYPE NUMBER (-1 INDICATES THE CONTROLLING TELETYPE)

DESCRIPTION: DISMISS THIS FORK UNTIL THE [TELETYPE] [OUTPUT BUFFER] INDICATED IS EMPTY. IT IS DISMISSED UNTIL THE LAST INTERRUPT IS RECEIVED.

REGISTERS AFFECTED: NONE

BRS 15

DATE: 69/11/11

ATTENTION: THIS BRS IS OBSOLETE AND WILL SOON BE DELETED.

FUNCTION: READS INPUT FILE NAME FROM A COMMAND FILE AND LOOKS UP THE FILE NAME IN THE USER'S FILE DIRECTORY

STATUS: USER

INPUT: A=COMMAND FILE NUMBER - 0 FOR TELETYPE INPUT

RETURNS: NO SKIP = FILE CANNOT BE LOCATED IN DIRECTORY

SKIP = NORMAL RETURN

DESCRIPTION: THE ROUTINE IGNORES LEADING SPACES, LEADING MULTI-BLANKS, AND LEADING COMMA'S, LINE FEEDS AND CARRIAGE RETURNS. THE EXCEPTION RETURN IS TAKEN IF THE FILE NAME CANNOT BE LOCATED IN THE [FILE DIRECTORY].

EXCEPTION RETURN: X: EXEC ERCODE

A & B: DESTROYED.

NORMAL RETURN: A: FILE DIRECTORY POINTER ADDRESS

B: DESTROYED

X: FILE DIRECTORY POINTER ADDRESS

NOTE: THE INFORMATION CONTAINED IN THE REGISTERS CANNOT BE USED DIRECTLY BY THE USER SINCE THE ADDRESSES ARE IN THE T.S. BLOCK; THIS BRS IS NORMALLY FOLLOWED BY THE BRS 16.

IF THE INPUT FILE NAME STRING BEGINS WITH A LEFT PAREN, OR WITH THE FULL QUOTE, THE FILE NAME WILL BE LOCATED IN ANOTHER USER'S FILE DIRECTORY OR IN THE PUBLIC FILE DIRECTORY, RESPECTIVELY.

REGISTERS AFFECTED: ALL

BRS 16

DATE: 69/05/13

ATTENTION: THIS BRS IS OBSOLETE AND WILL SOON BE DELETED.

FUNCTION: [OPEN] [INPUT FILE]

STATUS: USER

INPUT: A= FILE DIRECTORY POINTER ADDRESS

RETURNS: NO SKIP = FILE CANNOT BE OPENED

SKIP = NORMAL RETURN

DESCRIPTION: OPENS AN INPUT FILE. THE BRS REQUIRES IN A THE VALUE RETURNED IN A BY A BRS 15, 48, OR 60. THE EXCEPTION RETURN IS TAKEN IF THE POINTER IN A IS NOT POINTING TO A PROPER LOCATION OR IF THE FILE CANNOT BE OPENED FOR ANY REASON.

EXCEPTION RETURN: ALL REGISTERS DESTROYED

NORMAL RETURN: A: FILE NUMBER

B: FILE TYPE (0-4)

X: FILE SIZE

REGISTERS AFFECTED: ALL

BRS 17

DATE: 69/05/13
FUNCTION: [CLOSE] ALL FILES
STATUS: USER
REGISTERS AFFECTED: ALL

BRS 18

DATE: 69/11/11
ATTENTION: THIS BRS IS OBSOLETE AND WILL SOON BE DELETED.
FUNCTION: READS FILE NAME FROM A COMMAND FILE AND LOOKS UP THE
FILE NAME IN THE USER'S FILE DIRECTORY. THE COMMAND
FILE MUST BE AN INPUT FILE.
STATUS: USER
INPUT: A = COMMAND FILE NUMBER = 0 FOR TELETYPE INPUT.
IF BIT 1 = 1 IN THE A REGISTER, THE BRS ASSUMES A FILE
NAME IS CORRECT AND DOES NOT TYPE "OLD FILE" OR "NEW FILE".
RETURNS: NO SKIP: ERROR RETURN
SKIP: NORMAL RETURN
DESCRIPTION: THIS BRS IGNORES LEADING SPACES, LEADING MULTI-
BLANKS AND LEADING COMMA'S, LINE FEEDS AND CARRIAGE RETURNS.
IF THE STRING BEGINS WITH A SINGLE QUOTE OR SLASH, IT MUST BE
TERMINATED BY THE SAME CHARACTER WHICH MUST THEN BE FOLLOWED BY A
CONFIRMING CARRIAGE RETURN. THE EXCEPTION EXIT IS TAKEN IF THESE
REQUIREMENTS ARE NOT MET. IF THE STRING IS FOUND IN THE FILE DIRECTORY,
THE MESSAGE OLD FILE IS TYPED, OTHERWISE, THE MESSAGE NEW FILE IS
TYPED. IF THE NEXT CHARACTER IN THE INPUT STRING IS A LINE FEED,
CARRIAGE RETURN, OR PERIOD, THE NORMAL RETURN WILL BE TAKEN;
OTHERWISE, THE EXCEPTION RETURN IS TAKEN. IN THE CASE OF A NEW FILE,
THE FILE NAME IS INSERTED CONDITIONALLY INTO THE FILE DIRECTORY.
IF THE FILE IS READ-ONLY, THE EXCEPTION RETURN IS TAKEN.
EXCEPTION RETURN: ALL DESTROYED.
NORMAL RETURN: A: LOCATION OF THE FILE IN THE DIRECTORY
HASH TABLE.
B: CONFIRMING CHARACTER IN CASE OF A QUOTE
OR SLASH FILE; OTHERWISE, THE FILE DIRECTORY.
X: DESTROYED.
REGISTERS AFFECTED: ALL

BRS 19

DATE: 69/05/13
ATTENTION: THIS BRS IS OBSOLETE AND WILL SOON BE DELETED.
FUNCTION: OPENS AN [OUTPUT FILE]
STATUS: USER
CALLING SEQUENCE:
INPUT: A = INFORMATION SUPPLIED IN A BY BRS 18, BRS 48 OR BRS 60.
(LOCATION IN FILE DIRECTORY.)
B = INFORMATION SUPPLIED IN X BY BRS 16.
X = FILE TYPE. (SEE APPENDIX A, GLOSSARY.)
RETURNS: NO SKIP: ERROR
SKIP: NORMAL RETURN
DESCRIPTION: OPENS AN OUTPUT FILE. ON THE NORMAL RETURN, A =
THE FILE NUMBER. THE EXCEPTION RETURN IS TAKEN IF:

1) THE WORD IN A IS NOT A VALID POINTER.
2) THE FILE CANNOT BE OPENED. (SUCH AS A PHYSICAL DEVICE THAT CANNOT BE USED FOR OUTPUT.)
3) THE FILE DIRECTORY IS ALREADY FULL.
IN THESE CASES AN APPROPRIATE MESSAGE IS TYPED.
REGISTERS AFFECTED: EXCEPTION RETURN: ALL DESTROYED.
NORMAL RETURN: A = FILE NUMBER
B AND X ARE DESTROYED.

BRS 20

DATE: 69/05/13
FUNCTION: [CLOSE] A [FILE]
STATUS: USER
INPUT: A = FILE NUMBER
DESCRIPTION: THE "CLOSE FILE" BRS IS USED TO INDICATE TO THE SYSTEM ALL PROCESSING IS COMPLETED ON THIS FILE. ALL REGISTERS ARE DESTROYED.
REGISTERS AFFECTED: ALL

BRS 21

DATE: 69/05/13
NAME: FNA
FUNCTION: USER
DESCRIPTION: THE DOUBLE WORD [FLOATING POINT] VALUE IN THE A AND B REGISTERS IS NEGATED.
REGISTERS AFFECTED: A, B

BRS 24

DATE: 69/05/13
FUNCTION: CHANGE [TERMINAL CHARACTERISTICS]
STATUS: USER
INPUT: A = TTYTBL MASK
X = TTY NUMBER OR -1
TTYTBL MASK: BIT 1 = 1 FOR AUTOMATIC LINE FEED FOR [MODEL 37].
BIT 7 = 1 FOR [HALF DUPLEX]
ALL OTHER BITS MUST BE 0
REGISTERS AFFECTED: NONE

BRS 29

DATE: 69/05/13
FUNCTION: CLEAR THE [OUTPUT BUFFER]
STATUS: USER
INPUT: X = TELETYPE NUMBER (-1 INDICATES THE CONTROLLING TELETYPE)
REGISTERS AFFECTED: NONE

BRS 31

DATE: 69/05/13
ATTENTION: THIS BRS IS OBSOLETE, AND WILL SOON BE DELETED.
FUNCTION: PUTS THE STATUS WORD INTO THE X REGISTER.
STATUS: USER
INPUT: A = PANIC TABLE ADDRESS

DESCRIPTION: PUTS THE STATUS WORD FROM THE PANIC TABLE INTO THE X REGISTER. THIS COULD BE DONE MORE EASILY BY THE USER.
REGISTERS AFFECTED: X,A

BRS 33

DATE: 69/05/13
FUNCTION: READ [STRING]
STATUS: USER
INPUT: A = ADDRESS OF STRING POINTER
B = TERMINAL CHARACTER
X = FILE NUMBER
BIT 0 OF A ON = THE STRING IS TAKEN AS NULL WITH THE SECOND POINTER EQUAL TO THE FIRST.
DESCRIPTION: THIS BRS READS CHARACTERS FROM THE FILE AND APPENDS THEM TO THE STRING UNTIL THE TERMINAL CHARACTER IS REACHED. THE TERMINAL CHARACTER IS NOT APPENDED TO THE STRING. IT RETURNS THE UPDATED STRING POINTERS IN THE A AND B REGISTERS AND UPDATES THE END STRING POINTER IN MEMORY.
REGISTERS AFFECTED: A, B

BRS 34

DATE: 69/05/13
FUNCTION: OUTPUT MESSAGE
STATUS: USER
INPUT: X = FILE NUMBER
A = BEGINNING WORD ADDRESS
B = CHARACTER COUNT OR -1
DESCRIPTION: THIS BRS OUTPUTS N CONSECUTIVE CHARACTERS STARTING WITH THE FIRST CHARACTER OF THE SPECIFIED WORD. IF B = -1, CHARACTERS ARE OUTPUT UNTIL A / IS ENCOUNTERED; THE CHARACTER S IS INTERPRETED AS A CARRIAGE RETURN AND LINE FEED.
REGISTERS AFFECTED: NONE

BRS 35

DATE: 69/05/13
FUNCTION: OUTPUT STRING
STATUS: USER
INPUT : X = FILE NUMBER
A,B = A STRING POINTER PAIR
DESCRIPTION: OUTPUTS THE [STRING] INDICATED BY THE STRING POINTERS IN REGISTERS A AND B TO THE SPECIFIED FILE.
REGISTERS AFFECTED: NONE

BRS 36

DATE: 69/05/13
FUNCTION: OUTPUT NUMBER
STATUS: USER
INPUT: X = FILE NUMBER
A = NUMBER TO BE OUTPUT
B = RADIX
DESCRIPTION: OUTPUTS A NUMBER IN THE RADIX R. THE NUMBER WILL

BE OUTPUT AS AN UNSIGNED 24 BIT INTEGER. IF THE RADIX IS LESS THAN 2, AN INSTRUCTION TRAP WILL BE GIVEN.
REGISTERS AFFECTED: NONE

BRS 37

DATE: 69/05/13

FUNCTION: [RENAME] A [FILE]

STATUS: USER

CALLING SEQUENCE: LDP PTRS (OLD FILE NAME)
BRS 48
BRU ERROR
LDP NPTRS (NEW FILE NAME)
BRS 37
BRU ERROR2

INPUT: A, B = NEW STRING POINTERS
X = OUTPUT OF BRS 48

OUTPUT: IF ERROR RETURN TAKEN, X = EXEC ERCODE

DESCRIPTION: REPLACES OLD FILE NAME WITH NEW FILE NAME.
NEW NAME MUST HAVE SAME NUMBER OF CHARACTERS AS OLD NAME.

RETURNS: SKIP = NORMAL RETURN

NO SKIP = NEW NAME INVALID (SAME AS OLD, ILLEGAL CHAR., ETC.)

REGISTERS AFFECTED: ALL

BRS 38

DATE: 69/05/13

FUNCTION: READ NUMBER

STATUS: USER

INPUT: X = FILE NUMBER (0 FOR TELETYPE)
B = RADIX

OUTPUT: A = NUMBER
B = TERMINATING CHARACTER

DESCRIPTION: INPUTS AN INTEGER TO ANY RADIX. THE NUMBER MAY BE PRECEDED BY A PLUS OR MINUS SIGN. LEADING CARRIAGE RETURNS AND BLANKS ARE IGNORED. ON EXIT THE NUMBER WILL BE IN THE A REGISTER. THE CONVERSION IS TERMINATED BY ANY NON-NUMERIC CHARACTER WHICH WILL BE IN THE B REGISTER ON EXIT. THE NUMBER IS COMPUTED BY MULTIPLYING THE NUMBER OBTAINED AT EACH STAGE BY THE RADIX AND ADDING THE NEW DIGIT.

REGISTERS AFFECTED: A, B

BRS 39

DATE: 69/05/13

FUNCTION: READS [CONTROL PARAMETER WORD] AND AUNN

STATUS: USER

OUTPUT: A = CONTROL PARAMETER WORD
B = AUNN

CONTROL PARAMETER WORD:

DDT:	2B5
ACCOUNT SUPERVISOR:	2B6
SYSTEM:	4B6
OPERATOR:	1B7
PREMIUM CHARGE:	2B7

PROPRIETARY:

4B7

REGISTERS AFFECTED: A,B

BRS 40

DATE: 69/05/13

FUNCTION: READ [ECHO TABLE]

STATUS: USER

INPUT: X = TELETYPE NUMBER OR -1

OUTPUT: A = ECHO TABLE NUMBER OR TERMINATING CHARACTER AND SIGN BIT.

DESCRIPTION: READS THE ECHO TABLE NUMBER (0,1,2,3,) INTO THE A REGISTER.

IF THE [TELETYPE] IS NOT IN EIGHT-LEVEL INPUT MODE, READS THE ECHO TABLE NUMBER (0,1,2,3) INTO THE A REGISTER. IF THE TELETYPE IS IN EIGHT-LEVEL MODE, THE SIGN BIT OF A IS SET, THE ADDRESS FIELD CONTAINS THE TERMINAL CHARACTER.

REGISTERS AFFECTED: A

BRS 42

DATE: 69/10/31

FUNCTION: READ REAL [TIME] CLOCK

STATUS: USER

OUTPUT: A = REAL

B = DMIN

X = YEAR-1964

DESCRIPTION: SETS THE CONTENTS OF THE A REGISTER EQUAL TO THE VALUE OF THE REAL TIME CLOCK. TIME IS GIVEN AS A 24 BIT BINARY NUMBER REPRESENTING 60THS OF A SECOND. THE CLOCK IS SET TO ZERO WHEN THE SYSTEM IS STARTED AND IT IS INCREMENTED BY ONE AT EVERY 1/60TH SECOND. A BINARY FORM OF THE START-UP TIME IS PUT IN B. THE FIRST SIX BITS OF B ARE THE MONTH NUMBER. THE REST OF THE BITS ARE THE MINUTE OF THE MONTH. FROM A AND B THE USER CAN CALCULATE THE MONTH, DATE AND TIME.

REGISTERS AFFECTED: A, B

BRS 43

DATE: 69/05/13

FUNCTION: READ PSEUDO-RELABELING

STATUS: USER

OUTPUT: A,B = PSEUDO-RELABELING REGISTERS.

DESCRIPTION: READS THE CURRENT PSEUDO-[RELABELING] REGISTERS INTO REGISTERS A AND B.

REGISTERS AFFECTED: A, B

BRS 44

DATE: 69/05/13

FUNCTION: SET PSEUDO-RELABELING

STATUS: USER

A & B = RELABELING REGISTERS

DESCRIPTION: THIS BRS TAKES THE CONTENTS OF REGISTERS A AND B AND STORES THEM INTO THE CURRENT PSEUDO-[RELABELING] REGISTERS. IT ALSO CAUSES THE REAL RELABELING TO BE RESET TO CORRESPOND

TO THE NEW PSEUDO-RELABELING.

THIS BRS WILL RESULT IN AN INSTRUCTION TRAP FOR ANY OF THE FOLLOWING REASONS:

- 1) SWAPPING IN THE NEW PAGES WAS NOT COMPLETED. (USUALLY BECAUSE OF A RAD FAILURE.)
- 2) THE USER TRIED TO RELABEL OVER A SYSTEM PAGE.
- 3) THE USER TRIED TO RELABEL OVER A PAGE HE DID NOT HAVE. (THIS IS NOT THE WAY TO OBTAIN MORE MEMORY.)

REGISTERS AFFECTED: NONE

BRS 45

DATE: 69/05/13

FUNCTION: DISMISS ON QUANTUM OVERFLOW

STATUS: USER

DESCRIPTION: THIS BRS CAUSES THE USER TO BE DISMISSED AS THOUGH HE HAD OVERFLOWED HIS QUANTUM. IT GUARANTEES THAT THE NEXT TIME HE IS STARTED HE WILL HAVE A COMPLETE SHORT TIME QUANTUM.

REGISTERS AFFECTED: NONE

BRS 48

DATE: 69/05/13

FUNCTION : LOOK UP INPUT/OUTPUT [FILE] NAME

STATUS: USER

INPUT: A, B = STRING POINTERS FOR THE FILE NAME.

RETURNS: NO SKIP = ERROR. COULDN'T FIND FILE NAME IN DIRECTORY.
SKIP = NORMAL RETURN

DESCRIPTION: THE FILE NAME IS LOOKED UP IN THE [FILE DIRECTORY]. IF IT IS NOT THERE, THE EXCEPTION RETURN IS TAKEN.

EXCEPTION RETURN: A & B : NO CHANGE.

X : THE NUMBER OF MATCHES.

NORMAL RETURN: A & B : LOCATION IN FILE DIRECTORY. CAN BE USED BY BRS 16 OR BRS 19.

X : DESTROYED.

REGISTER AFFECTED: ALL

BRS 49

DATE: 69/05/13

FUNCTION: READ INTERRUPTS ARMED

STATUS: USER

OUTPUT: A = INTERRUPT MASK

DESCRIPTION: READS THE [INTERRUPT MASK] INTO THE A REGISTER. BIT 4 CORRESPONDS TO [INTERRUPT] NUMBER 1, 5 TO NUMBER 2 AND ETC.

THERE ARE 11 PROGRAMMABLE INTERRUPTS. SEE ALSO BRS 78.

ASSIGNED INTERRUPTS: 1 = (2B6) = BRS 10 OR ESCAPE
2 = (1B6) = MEMORY PANIC
3 = (4B5) = LOWER FORK TERMINATES
4 = (2B5) = I/O EXCEPTION CONDITIONS
11 = (1B3) = DISK ERROR

REGISTERS AFFECTED: A

BRS 50

DATE: 69/05/13

FUNCTION: [CONVERSION] FROM [FLOATING POINT] TO FIXED POINT

STATUS: USER

DESCRIPTION: FIXES THE DOUBLE WORD FLOATING POINT VALUE IN (A,B). THE INTEGER PART IS LEFT IN A. THE FRACTIONAL PART IS LEFT ADJUSTED IN B.

REGISTERS AFFECTED: A, B

BRS 51

DATE: 69/05/13

FUNCTION: [CONVERSION] FROM FIXED POINT TO [FLOATING POINT]

STATUS: USER

DESCRIPTION: THE INTEGER IN A IS CONVERTED TO A NORMALIZED FLOATING POINT VALUE IN A,B.

REGISTERS AFFECTED: A,B

BRS 52

DATE: 69/05/13

FUNCTION: FORMATTED INPUT

STATUS: USER

CALLING SEQUENCE: LDX FORMAT
BRS 52
BRU NFLOAT NO FLOATING POINT AND FREE FORM INPUT
BRU FREE FLOATING POINT AND FREE FORM INPUT

DESCRIPTION: THIS ROUTINE READS CHARACTERS FROM A FILE SPECIFIED IN THE FORMAT WORD, FORMAT. (APPENDIX E) FORMAT ALSO SPECIFIES THE FORMAT OF THE INPUT. FREE FORM INPUT FROM THE TELETYPE RESULTS WHEN FORMAT = 0. A SKIP RETURN IS GIVEN IF AND ONLY IF (1) THE INPUT IS FREE FORM, AND (2) THE INPUT IS FLOATING POINT. THE INTERNAL TRANSLATION OF THE INPUT FILE IS STORED IN A, B.

REGISTERS AFFECTED: A, B, X

BRS 53

DATE: 69/05/13

FUNCTION: FORMATTED OUTPUT
STATUS: USER
CALLING SEQUENCE: LDX FORMAT
BRS 53

DESCRIPTION: THE INTEGER IN A OR THE DOUBLE WORD FLOATING
POINT VALUE IN A, B IS OUTPUT TO THE FILE ACCORDING TO THE
FILE NUMBER AND FORMAT SPECIFIED IN FORMAT. (APPENDIX E)
REGISTERS AFFECTED: NONE

BRS 60

DATE: 69/05/13
ATTENTION: THIS BRS IS OBSOLETE AND WILL SOON BE DELETED.
FUNCTION: LOOKS UP A FILE NAME IN THE FILE DIRECTORY AND IN-
SERTS IT IF IT IS NOT THERE
STATUS: USER
INPUT: A, B = STRING POINTERS FOR THE FILE NAME
RETURNS: NO SKIP = FILE DIRECTORY FULL
SKIP = NORMAL RETURN
DESCRIPTION: THE FILE NAME IS LOOKED UP IN THE FILE DIRECTORY.
IF IT IS NOT THERE, THE NAME IS INSERTED. THE EXCEPTION RETURN
IS TAKEN IF THE FILE DIRECTORY IS FULL.
EXCEPTION RETURN: A & B= NO CHANGE
X= -1
NORMAL RETURN: A & B= LOCATION IN FILE DIRECTORY.
X= DESTROYED.
REGISTERS AFFECTED: ALL

BRS 62

DATE: 69/11/11
FUNCTION: [OPEN] A [FILE] FOR [INPUT]
STATUS: USER
INPUT: A = COMMAND FILE NUMBER OR 0 FOR TELETYPE
SKIP RETURN OUTPUT: A= FILE NUMBER
B= FILE TYPE
X= FILE SIZE
NO SKIP RETURN OUTPUT: A,B, ARE DESTROYED
X=EXEC ERCODE (APPENDIX D)
DESCRIPTION: READS THE INPUT FILE NAME FROM THE SPECIFIED COMMAND
FILE AND THEN OPENS THE FILE. THE BRS IGNORES LEADING SPACES,
LEADING MULTIBLANKS, AND LEADING COMMA'S, LINE FEEDS AND CARRIAGE
RETURN. IF THE INPUT FILE NAME BEGINS WITH A LEFT PAREN, ASTERISK
OR A CROSSHATCH THE FILE NAME WILL BE LOCATED IN ANOTHER USER'S
DIRECTORY OR IN THE PUBLIC FILE DIRECTORY, RESPECTIVELY.
ERROR CODES IN X OUTSIDE INDICATED RANGE ARE RESERVED.
REGISTERS AFFECTED: ALL

BRS 63

DATE: 69/05/13
FUNCTION: [OPEN] A [FILE] FOR [OUTPUT]
STATUS: USER
INPUT: A: 0-7=0 OR RANDOM FILE OPTIONS
8-23= COMMAND FILE NUMBER OR 0 FOR TELETYPE
X = FILE TYPE IF BITS 0-7 OF A=0 (SEE APPENDIX)

OUTPUT: A = FILE NUMBER
B = FILE TYPE
RETURNS: SKIP = NORMAL RETURN
NO SKIP = ERROR. ERROR MESSAGE IS TYPED OR THE
ERCODE IS RETURNED IN X. (APPENDIX D)
DESCRIPTION: THE BRS IGNORES LEADING SPACES, LEADING MULTIBLANKS,
AND LEADING CARRIAGE RETURNS. IF A NAME BEGINS WITH A SLASH OR
SINGLE QUOTE, IT MUST TERMINATE WITH THE SAME CHARACTER.
NAMES SURROUNDED BY SLASHES OR SINGLE QUOTES MAY CONTAIN ANY
CHARACTER EXCEPT A LINE FEED OR CARRIAGE RETURN. OTHER NAMES ARE
RESTRICTED TO ALPHANUMERICS AND @.
ANY NAME MAY BE FOLLOWED BY A DASH AND ANOTHER STRING. THE CHARACTERS
FOLLOWING A DASH ARE CONSIDERED A COMMENT AND ARE NOT USED WHEN
LOOKING UP A NAME IN A FILE DIRECTORY. COMMENTS SURROUNDED BY
SLASHES OR SINGLE QUOTES MAY CONTAIN ANY CHARACTER EXCEPT LINE
FEED AND CARRIAGE RETURN. OTHER COMMENTS ARE RESTRICTED TO
ALPHANUMERICS, @ AND DASH.
REGISTERS AFFECTED: ALL

BRS 64

DATE: 69/05/13
FUNCTION: [OPEN] A [FILE] FOR [INPUT] USING STRING POINTERS
STATUS: USER
INPUT: A,B= STRING POINTERS FOR THE FILE NAME.
OUTPUT: A= FILE NUMBER
B= FILE TYPE
X= FILE SIZE
RETURNS: SKIP = NORMAL
NO SKIP = ERROR. FILE COULD NOT BE OPENED.
REGISTERS AFFECTED: ALL

BRS 65

DATE: 69/05/13
FUNTION: OPEN A FILE FOR OUTPUT USING STRING POINTERS.
STATUS: USER
INPUT: A: 0-7=RANDOM FILE OPTIONS
A,B ADDRESSES: STRING POINTERS TO [FILE NAME]
IF THE "OLD FILE" OR "NEW FILE" MESSAGE IS NOT TO BE TYPED,
SET BITS 0-7 OF X=0 AND BITS 10-23 = FILE TYPE
IF THE "OLD FILE" OR "NEW FILE" MESSAGE IS TO BE TYPED BY THE EXEC,
SET BITS 0-11 OF X = FILE TYPE AND BITS 12-23 OF X = COMMAND FILE
(SEE APPENDIX)
OUTPUT: A= FILE NUMBER
B= FILE TYPE
RETURNS: SKIP= NORMAL RETURN
NO SKIP = ERROR. ERROR MESSAGE IS TYPED OR THE
ERCODE IS RETURNED IN X.
DESCRIPTION: IF A NAME BEGINS WITH A SLASH OR SINGLE QUOTE, IT
MUST TERMINATE WITH THE SAME CHARACTER.
STRINGS SURROUNDED BY SLASHES OR SINGLE QUOTES ARE CALLED PROTECTED
STRINGS. THEY MAY CONTAIN ANY CHARACTER EXCEPT A LINE FEED OR
CARRIAGE RETURN. OTHER STRINGS ARE RESTRICTED TO ALPHANUMERICS
AND @.
ANY NAME MAY BE FOLLOWED BY A DASH AND ANOTHER STRING. THE STRING

FOLLOWING THE DASH IS TREATED AS A COMMENT AND IS NOT CONSIDERED WHEN LOOKING UP THE NAME. A COMMENT MAY BE A PROTECTED OR UNPROTECTED STRING. DASHES MAY BE USED IN UNPROTECTED STRINGS IN COMMENTS.
REGISTERS AFFECTED: ALL

BRS 67

DATE: 69/11/21

FUNCTION: READ A USER'S TS PAGE

STATUS: USER

INPUT: A=KEY

B=BUFFER LOCATION

X=NUMBER OF WORDS TO BE READ INTO CORE

DESCRIPTION: THE BRS WILL READ INTO CORE A SECTION OF THE USER'S TS PAGE. THE KEY WILL ALLOW THE USER TO LOOK AT A SELECTED PIECE OF THE BLOCK.

EXAMPLE: TO GET THE USER'S PROJECT CODE INTO LOCATION 1000B

PROJ	LDA	=59
	LDB	=1000B
	LDX	=4
	BRS	67

LIST OF KEYS:

A REG. DESC.

0-5	EXEC BRS PANIC TABLE, WORDS 2-6
6	COMMANDS FROM FILE NUMBER
7	COMMANDS TO FILE NUMBER
8	USER NUMBER
9	STATUS FLAG WORD
17,18	PROGRAM RELABELING WORDS
19,20	SUBSYSTEM RELABELING WORDS
21	CLOCK TICKS AT LOGIN
29	ERROR CODE WORD (USED BY 'WHY')
32	FORCED LOGOUT SWITCH
37	LAST EXEC COMMAND I.D.
43	PROPRIETARY PROGRAM SWITCH
45	FILE DIRECTORY ACCOUNT NUMBER (SET BY GFD)
46	INIT SWITCH
59-62	PROJECT CODE
63	FILE POSITION IN DIRECTORY
64	FILE INDEX
65	CURRENT FILE DIRECTORY GROUP NUMBER
66	ACCOUNT PARAMETERS

REGISTERS AFFECTED: A

BRS 68

DATE: 69/05/13

FUNTION: READS [FILE] NAME FROM [FILE DIRECTORY] INTO USERS MEMORY AND RETURNS FILE PARAMETER FOR OTHER EXEC FILE BRS'S.

STATUS: USER

INPUT: A,B = NULL STRING POINTERS
X = INDEX TO FILE IN FILE DIRECTORY
RETURNS: SKIP RETURN OUTPUT:
A= INPUT FOR BRS 16 AND 19
B= ENDING STRING POINTER
FILE NAME IS IN USERS MEMORY.
OR
A=B=0 IF INDEX IS INVALID
NO SKIP = INDEX IS TOO LARGE FOR FILE DIRECTORY.
REGISTERS AFFECTED: A,B
SAMPLE PROGRAM: (TYPES ALL FILE NAMES)

```
START LDX =1
      LDP P
      BRS 68
      BRS 10    END OF FILE DIRECTORY
      SKE =0
      BRU **3
S1    EAX 1,2
      BRU START+1
      STX SV
      LDX =1
      LDA P
      BRS 35
      LDX SV
      TCO =155B
      BRU S1
```

NOTE: THE BRS WILL TRAP IF THE FILE DIRECTORY IS NOT DECLARED "LISTABLE"

BRS 69

DATE: 69/11/11
FUNCTION: DELETE A FILE
STATUS: USER
INPUT: A = FILE DIRECTORY POINTER ADDRESS (FROM BRS 15 OR 48)
RETURNS: NO SKIP = ERROR OR WRITE PROTECTED
SKIP = FILE DELETED
DESCRIPTION: DELETES THE FILE WHOSE INDEX POINTER IS IN A. IF THE
FILE IS WRITE PROTECTED, THE MESSAGE "WRITE PROTECTED" IS PRINTED
AND THE ERROR RETURN TAKEN. ALL REGISTERS ARE DESTROYED.

REGISTERS AFFECTED: ALL

BRS 70

DATE: 69/05/13

FUNCTION: COUNTS NUMBER OF FREE USER PAGES

STATUS: USER

OUTPUT: A= NUMBER OF FREE PAGES.

DESCRIPTION: RETURNS THE NUMBER OF FREE USER PAGES IN THE A REGISTER. THIS IS THE NUMBER OF PAGES THAT ARE AVAILABLE TO ONE USER.

REGISTERS AFFECTED: A

BRS 71

DATE: 69/05/13

FUNCTION: SKIP IF SYSTEM STATUS SET

STATUS: USER

OUTPUT: THE B REGISTER IS SET TO THE VALUE OF THE USE CODE WHICH THE USER HAS SET FOR THE JOB. THESE VALUES ARE:

VALUE OF B	USE CODE
0	USER
2B7	SUBSYSTEM
4B7	SYSTEM
6B7	EXEC

RETURNS: NO SKIP = B IS POSITIVE

SKIP = B IS NEGATIVE

REGISTERS AFFECTED: B

BRS 73

DATE: 69/10/29

FUNCTION: READ AND RESET ERCODE

STATUS: USER

OUTPUT: THE A REGISTER WILL CONTAIN THE LAST EXEC ERCODE NUMBER (APPENDIX D). IN CASE OF A MONITOR ERROR, A WILL CONTAIN THE MONITOR ADDRESS THAT DISCOVERED THE ERROR. THE ERCODE WILL BE RESET TO ZERO.

REGISTERS AFFECTED: A

BRS 74

DATE: 69/05/13

FUNCTION: PUTS USERS [TELETYPE] INTO [HALF DUPLEX] MODE

STATUS: USER

REGISTERS AFFECTED: NONE

BRS 75

DATE: 69/05/13

FUNCTION: PUTS USERS [TELETYPE] INTO [FULL DUPLEX] MODE

STATUS: USER

REGISTERS AFFECTED: NONE

BRS 76

DATE: 69/05/13

FUNCTION: TEST [TELETYPE] FOR [HALF DUPLEX] MODE.

STATUS: USER
RETURNS: NO SKIP: FULL DUPLEX MODE
 SKIP: 1/2 DUPLEX MODE
REGISTERS AFFECTED: NONE

BRS 78

DATE: 69/05/13

FUNCTION: ARM/DISARM SOFTWARE INTERRUPTS

STATUS: USER

INPUT: A= THE COMPLETE NEW INTERRUPT MASK.

DESCRIPTION: THE NEW [INTERRUPT] MASK IS SUBSTITUTED FOR THE OLD ONE. A USER MAY ARM INTERRUPTS 1-10. A SYSTEM STATUS FORK MAY ARM INTERRUPT 11 ALSO. INTERRUPT 1 IS IN BIT 4 OF THE MASK WORD.

THE INTERRUPTS ARE AS FOLLOWS:

- 1 INTERRUPT IF PROGRAM PANIC (BRS 10 OR ESCAPE)
- 2 INTERRUPT IF MEMORY PANIC
- 3 INTERRUPT IF LOWER FORK TERMINATES
- 4 INTERRUPT ON UNUSUAL I/O CONDITION.

A REGISTER CONTENTS:

BITS	MEANING
0	1
5	QUANTUM OVERFLOW
6	I/O ERROR
7	END OF FILE
18-23	FILE NUMBER

- 5 INTERRUPT ON TIME OUT. BRS 135
- 6 INTERRUPT ON FLOATING POINT OVERFLOW. (NOT IMPLEMENTED)
- 7 INTERRUPT ON FLOATING POINT UNDERFLOW (NOT IMPLEMENTED)
- 8 INTERRUPT ON ZERO DIVIDE. (NOT IMPLEMENTED)
- 11 INTERRUPT IF DISK ERROR

LOCATION 200 OCTAL PLUS THE INTERRUPT NUMBER MUST BE SET TO POINT TO A ROUTINE TO PROCESS THE INTERRUPT. WHEN THE INTERRUPT OCCURS AN SBRM* IS EXECUTED TO THE LOCATION POINTED TO. IF IT IS DESIRED TO RETURN TO THE POINT IN THE PROGRAM INTERRUPTED, THE USER MUST BRR TO THE LOCATION WHERE THE RETURN WAS SAVED.

EXAMPLE:

```
      SET      INTERRUPT ROUTINE      RETURN
LDA=ESCAPE  ESCAPE ZRO ESCRTM  BRR ESCRTM
STA 201B      .
.             .
.             .
```

REGISTERS AFFECTED: NONE

SEE BRS 49

BRS 80

DATE: 69/05/13

FUNCTION: MAKE PAGE [READ ONLY]

STATUS: USER

INPUT: A = PMT/SMT NUMBER

IF BIT 0 OF A = 1, MAKE PAGE READ ONLY.

IF BIT 0 OF A = 0, MAKE PAGE READ-WRITE.

DESCRIPTION: SETS THE READ-WRITE STATUS OF THE ENTRY ACCORDING TO THE VALUE OF A. AN SMT ENTRY CAN ONLY BE CHANGED BY A SYSTEM

STATUS FORK. THE FORMER STATUS OF THE ENTRY IS RETURNED IN A.
AN INSTRUCTION TRAP IS CAUSED IF THE SPECIFIED ENTRY IS NOT IN USE.
REGISTERS AFFECTED: A

BRS 81

DATE: 69/05/13
FUNCTION: DISMISS FOR SPECIFIED AMOUNT OF [TIME]
STATUS: USER
INPUT: A = DISMISSAL TIME IN MILLISECONDS.
DESCRIPTION: THE FORK IS DISMISSED FOR THE NUMBER OF MILLISEC-
ONDS SPECIFIED IN A. THE FORK IS NEVER ACTIVATED SOONER THAN
THE DELAY REQUESTED, BUT IT WILL GENERALLY NOT BE ACTIVATED AT
EXACTLY THE TIME REQUESTED. THE MINIMUM DISMISAL TIME IS 2 SECONDS.
REGISTERS AFFECTED: A

BRS 85

DATE: 69/05/13
FUNCTION: SET 8-LEVEL TELETYPE OUTPUT
STATUS: USER
INPUT: X = TELETYPE NUMBER OR -1 FOR CONTROLLING TELETYPE.
DESCRIPTION: SETS [TELETYPE] TO [EIGHT-LEVEL OUTPUT] MODE. THE
TELETYPE SPECIFIED MUST BE THE CONTROLLING TELETYPE. EIGHT-
LEVEL IS TRANSMITTED TO THE TELETYPE EXACTLY AS IT IS RECEIVED
FROM THE USER PROGRAM. A FORK SENDING EIGHT-LEVEL CODE SHOULD
DO A BRS 14 BEFORE TERMINATING.
REGISTERS AFFECTED: NONE

BRS 86

DATE: 69/05/13
FUNCTION: CLEAR [8-LEVEL] [TELETYPE] OUTPUT MODE
STATUS: USER
INPUT: X = TELETYPE NUMBER OR -1 FOR CONTROLLING TELETYPE.
DESCRIPTION: PUTS THE [TELETYPE] OUTPUT BACK INTO NORMAL MODE.
THE TELETYPE SPECIFIED MUST BE THE CONTROLLING TELETYPE.
REGISTERS AFFECTED: NONE

BRS 88

DATE: 69/11/11
FUNCTION: READ EXECUTION TIME
STATUS: USER
DESCRIPTION: RETURNS THE EXECUTION TIME FOR THE JOB IN A.
REGISTERS AFFECTED: A

BRS 89

DATE: 69/11/23
FUNCTION: READ USER METERING
STATUS: USER
INPUT: A=BUFFER ADDRESS
DESCRIPTION: THE BRS WILL READ INTO CORE SIX WORDS AT THE
LOCATION SPECIFIED BY THE A REGISTER.

EXAMPLE:
TO READ IN THE USER'S RESOURCE METERING

METER LDA =1000B
BRS 89

WORDS IN CORE:

1ST WORD: DISC USE
2ND WORD: SWAP COUNT
3RD WORD: TOTAL NUMBER OF CHARACTERS TO AND FROM TERMINAL
4TH WORD: PAGE COUNT
5TH WORD: CPU TIME (CLOCK TICKS)
6TH WORD: CLOCK TICKS SINCE LOGIN

REGISTERS AFFECTED: NONE

BRS 90

DATE: 69/05/13
FUNCTION: DECLARE A FORK FOR "ESCAPE"
STATUS: USER
DESCRIPTION: IN CASE THE USER TYPES [ESCAPE], THIS IS THE HIGHEST
FORK TO TERMINATE. IF THIS FORK HAS ARMED INTERRUPT 1, THAT
INTERRUPT WILL BE TAKEN INSTEAD OF TERMINATING THE FORK.
REGISTERS AFFECTED: NONE

BRS 91

DATE: 69/05/13
FUNCTION: READ [DATE] AND [TIME] INTO A STRING
STATUS: USER
INPUT: A = BEGINNING STRING POINTER
B = ENDING STRING POINTER
DESCRIPTION: THE CURRENT DATE AND TIME ARE APPENDED TO THE
STRING PROVIDED IN A AND B REGISTERS AND THE RESULTING STRING
POINTERS ARE RETURNED IN THE A AND B REGISTERS. THE CHARACTERS
APPENDED TO THE STRING HAVE THE FORM:
MM/DD HH:MM
MM = MONTH
DD = DAY
HH = HOURS COUNTED FROM 0 TO 24
MM = MINUTES
REGISTERS AFFECTED: B

BRS 96

DATE: 69/10/30
FUNCTION: REPORTS [FILE DIRECTORY] DATA AND [FILE ATTRIBUTES]
STATUS: USER
INPUT: A = FILE DIRECTORY POINTER ADDRESS (FROM BRS 15 OR 48)
B = BUFFER ADDRESS
X = WORD COUNT
OUTPUT: PLACES THE FOLLOWING IN THE BUFFER:
WORD 1: GROUP USER NUMBER IN BITS 0-11

GROUP NUMBER IN BITS 12-23
WORDS 2-5: FILE DIRECTORY DATA WORDS
WORDS 6-N: FILE NAME WITH SIGN BIT ON IN LAST WORD OF NAME.
FILE DIRECTORY DATA WORDS:

WORD 2: OAA AAA AAA AAY YYY EEE EDD DDD
WORD 3: BCO HHH HHH HHH FFF FFF FFF FFF
WORD 4: GGG TTT 000 00Z XWV USR QNM LKJ
WORD 5: PPP PPP PPP PPP PPP PPP PPP PPP

A= ACCESS COUNT
B= CHANGED FILE
C= EXTRA CHANGED FILE
D= CREATION DATE, DAY-1
E= CREATION DATE, MONTH-1
F= SIZE WHERE 1=256 WORDS
G= GOOD DISC FILE IF 010, BAD IF 100, INIT FILE DUMMY 000
H= MAPPING CONTROL
J= INIT. FLAG 1
K= EXEC STATUS 2
L= SYSTEM STATUS 4
M= SUBSYSTEM STATUS 10B
N= PROPRIETARY 20B
P= INDEX BLOCK POINTER
Q= ACCOUNT PUBLIC 40B
R= APPEND ONLY 1B2
S= NOT PRIVATE WRITE 2B2
T= FILE TYPE (1 TO 4)
U= NOT PRIVATE READ 4B2
V= RESERVED 1B3
W= PUBLIC WRITE 2B3
X= PUBLIC REMOTE 4B3
Y= CREATION DATE, YEAR-1964
Z= PREMIUM CHARGE 1B4

SEE BRS 6

BRS 102

DATE: 69/05/31

FUNCTION: READ (MAG TAPE)

STATUS: USER

INPUT: A= CORE ADDRESS, B= WORD COUNT

X= NUMBER OF RECORDS (64)

OUTPUT: ONE WORD AT BEGINNING OF EACH RECORD. THE ADDRESS OF THIS WORD CONTAINS THE WORD COUNT OF THE RECORD, AND THE OP CODE FIELD HAS ONE OF THE FLAGS LISTED BELOW.

DESCRIPTION: ALL THE DATA READ FROM THE TAPE AS WELL AS THE STATUS WORD FOR EACH RECORD MUST FIT IN ONE PAGE.

SEE APPENDIX C FOR MEANINGS OF THE VALUES OF THE OP-CODES.

BRS 103

DATE: 69/05/31

FUNCTION: WRITE (MAG TAPE)

STATUS: USER

INPUT: A= CORE ADDRESS OF DATA IN THE FOLLOWING FORMAT.

(A) COMMUNICATION FROM SYSTEM TO USER.

(A)+1 1ST RECORD WORD COUNT

(A)+2 THROUGH (A)+N+1 RECORD DATA.

(A)+N+2 NEXT RECORD WORD COUNT.

ETC. COUNT =0 AFTER LAST RECORD.

OUTPUT: (A) CONTAINS ADDRESS OF "WORD COUNT" WORD FOR LAST RECORD WRITTEN. THE OP CODE OF (A) CONTAINS ONE OF THE FLAGS LISTED UNDER BRS 102.

DESCRIPTION: ALL THE DATA AND COMMUNICATIONS WORDS MUST BE IN ONE PAGE. USER MUST ERASE TAPE AT LOAD POINT AND MAY NOT WRITE BEYOND THE REFLECTIVE SPOT EXCEPT FOR END OF FILE MARKS.

REGISTERS AFFECTED: NONE

BRS 104

DATE: 69/05/13

FUNCTION: REPORTS WHO HAS DEVICE

STATUS: USER

OUTPUT: A= DEVICE

X= CHANNEL

DESCRIPTION: CAN BE USED TO DETERMINE WHAT W-BUFFER DEVICE IS ASSIGNED AND WHAT CHANNEL THE USER IS ON WHO IS USING THE DEVICE. DEVICE NUMBERS ARE 0=TAPE 0, 1=TAPE 1, 2=PRINTER.

A -1 IN THE A REGISTER MEANS NO DEVICE IS ASSIGNED.

REGISTERS AFFECTED: A,X.

BRS 105

DATE: 69/05/31

FUNCTION: [MAG TAPE] CONTROLS

STATUS: USER

INPUT: A= CONTROL NUMBER.

1= WAIT UNTIL TAPE IS READY, 2= BACKSPACE RECORD

3= FORWARD SPACE FILE, 4= BACKSPACE FILE

5= WRITE 3 INCHES OF BLANK TAPE, 6= REWIND

7= WRITE END OF FILE.

OUTPUT: THE OP CODE OF A HAS ONE OF THE FLAGS LISTED UNDER APPENDIX C. THE ADDRESS OF A IS DESTROYED.

BRS 106

DATE: 69/05/31

FUNCTION: PRINT ON [PRINTER]

STATUS: USER

INPUT: A= CORE ADDRESS OF DATA IN THE FOLLOWING FORMAT, X= WORD COUNT

(A) COMMUNICATION WORD FROM SYSTEM TO USER. SEE APPENDIX C

(A)+1 PAPER CONTROL. NEG FOR SKIP, POSITIVE FOR UPSPACE.

(A)+2-(A)+34 ONE LINE OF DATA

(A)+35 PAPER CONTROL

ETC.

OUTPUT: (A) CONTAINS ONE OF THE OP CODE FLAGS LISTED UNDER BRS 102.

DESCRIPTION: ALL DATA AND COMMUNICATIONS WORDS MUST BE IN ONE PAGE. ALL LINES MUST BE COMPLETE.

REGISTERS AFFECTED: NONE

BRS 107

DATE: 69/05/13
FUNCTION: SET [MAG TAPE] [PARITY]
STATUS: USER
INPUT: A IS NEG. FOR [BCD] (EVEN PARITY).
A IS POSITIVE FOR BINARY (ODD PARITY).
DESCRIPTION: IF THIS BRS IS NOT USED, TAPE WILL BE READ IN BINARY.

BRS 108

DATE: 69/05/13
FUNCTION: TEST [MAG TAPE] [DENSITY]
STATUS: USER
OUTPUT: A=0 FOR 200
A=1 FOR 556
A=2 FOR 800

BRS 110

DATE: 69/05/13
FUNCTION: TEST [MAG TAPE] READY
STATUS: USER
RETURNS: NO SKIP = NOT READY
SKIP = READY
DESCRIPTION: TESTS THE TAPE THAT IS ASSIGNED.

BRS 116

DATE: 69/05/13
FUNCTION: READ PROGRAM RELABELING
STATUS: USER
OUTPUT: A,B = PROGRAM PSEUDO-RELABELING.
DESCRIPTION: PUTS THE PROGRAM RELABELING INTO A AND B. THIS IS WHAT THE SYSTEM EXECUTIVE USES AS PROGRAM RELABELING. IT IS KEPT IN THE TS BLOCK.
REGISTERS AFFECTED: A, B

BRS 117

DATE: 69/05/13
FUNCTION: SET PROGRAM RELABELING
STATUS: USER
INPUT: A,B= THE NEW VALUES FOR THE PROGRAM RELABELING
DESCRIPTION: SETS THE PROGRAM RELABELING IN THE TS BLOCK AS SPECIFIED. USER PROGRAMS SHOULD USE BRS 44 TO SET RELABELING FOR A FORK.

INSTRUCTION TRAP:

- 1) A SPECIFIED RELABELING BYTE WAS NOT ASSIGNED.
- 2) A USER FORK TRIED TO RELABEL A SYSTEM BYTE.

THIS IS THE PROGRAM RELABELING TYPED BY THE STATUS COMMAND. IT SHOULD CORRESPOND TO THE RELABELING OF THE FIRST NON-SUBSYSTEM FORK BELOW THE EXECUTIVE. IF THE FORK IS RUNNING UNDER DDT, DDT WILL UPDATE THIS RELABELING. OTHERWISE, IT IS THE RESPONSIBILITY OF THE USER. IT IS PARTICULARLY IMPORTANT THAT THIS RELABELING BE SET CORRECTLY BEFORE ISSUING A DUMP COMMAND.

REGISTERS AFFECTED: NONE

BRS 121

DATE: 69/05/13

FUNCTION: RELEASE SPECIFIED (PMT) ENTRY

STATUS: USER

INPUT: A= RELABELING BYTE OF THE PAGE TO BE RELEASED

DESCRIPTION: RELEASES THE SPECIFIED PAGE FROM THE PMT. IT IS EXACTLY LIKE A BRS 4 EXCEPT THAT IT TAKES A BYTE NUMBER INSTEAD OF AN ADDRESS.

INSTRUCTION TRAP:

1) BYTE NOT IN PMT.

2) A USER FORK TRIED TO RELEASE A SYSTEM PAGE.

REGISTERS AFFECTED: NONE

BRS 134

DATE: 69/05/13

FUNCTION: TO ALLOW THE USER TO IGNORE LINE FEED OR CARRIAGE RETURN WHEN IT FOLLOWS A CARRIAGE RETURN OR LINE FEED

STATUS: USER

DESCRIPTION: THE CONTENTS OF THE A REGISTER WILL GIVE THE FOLLOWING RESULTS. IF A IS NEGATIVE, ALL LINE FEEDS AND CARRIAGE RETURNS RECEIVED FROM THE TELETYPE WILL BE SENT TO THE PROGRAM AND ECHOED. IF A IS POSITIVE, A LINE FEED AFTER A CARRIAGE RETURN RECEIVED FROM THE (TELETYPE) WILL BE IGNORED (NOT SENT TO THE PROGRAM AND NOT ECHOED) AND A CARRIAGE RETURN AFTER A LINE FEED WILL BE IGNORED (NOT SENT TO THE PROGRAM AND NOT ECHOED). IN ALL CASES THE FIRST LINE FEED OR CARRIAGE RETURN RECEIVED WILL BE SENT TO THE PROGRAM AND ECHOED PLUS ECHO ITS COMPLIMENT.

USED TO READ PAPER TAPE WHICH HAS BEEN PUNCHED OFF LINE.

BRS 135

DATE: 69/05/13

FUNCTION: INTERRUPTS A FORK AFTER A SPECIFIED PERIOD OF [TIME]

STATUS: USER

A= THE NEW [INTERRUPT] MASK.

B= THE TIME IN MILLISECONDS AFTER WHICH THE FORK WILL BE INTERRUPTED.

X= 5

DESCRIPTION: THE FORK ISSUING THIS BRS WILL BE INTERRUPTED AFTER THE DELAY IF INTERRUPT NUMBER 5 IS ARMED AT THAT TIME. IF A FORK GIVES THIS BRS AGAIN BEFORE THE TIME HAS PASSED, THE NEW TIME WILL BE SET. ALL FORKS BELOW THE ONE RECEIVING THE INTERRUPT WILL BE TERMINATED. SEE ALSO BRS 81.

REGISTERS AFFECTED: NONE

BRS 147

DATE: 69/05/13

FUNCTION: [CLOSES] ALL EXCEPT COMMANDS-FROM [FILE]

STATUS: USER

REGISTERS AFFECTED: NONE

BRS 151

DATE: 69/05/13

FUNCTION: CHANGE COMMANDS-FROM FILE

STATUS: USER

INPUT: A = FILE NUMBER OF COMMANDS-FROM FILE.

DESCRIPTION: CLOSES THE COMMANDS-FROM FILE IF ONE IS OPEN AND SETS THE COMMANDS-FROM FILE TO THE FILE SPECIFIED IN A.

REGISTERS AFFECTED: NONE

RSP (125)

DATE: 69/05/13

FUNCTION: READ SIZE PARAMETERS: ADDRESS OF HIGHEST LOCATION
WRITTEN, PHYSICAL SIZE, REMAINING FILE SIZE QUANTUM.

STATUS: USER

CALLING SEQUENCE: RSP =FILE NUMBER

OUTPUT: A= ADDRESS OF HIGHEST LOCATION WRITTEN.

B= TOTAL CURRENT PHYSICAL SIZE.

X= REMAINING FILE SIZE QUANTUM.

REGISTERS AFFECTED: ALL

SSP (126)

DATE: 69/05/13

FUNCTION: SET SIZE PARAMETERS

STATUS: EXEC

INPUT: A= SIZE QUANTUM IN CHARACTERS

CALLING SEQUENCE: SSP =FILE NUMBER

REGISTERS AFFECTED: NONE

RCP (131)

DATE: 69/05/13

FUNCTION: READ CURSOR POSITION

STATUS: USER

CALLING SEQUENCE: RCP =FILE NUMBER

OUTPUT: A: BIT 0=0 IF FILE IS IN READ MODE

BIT 0=1 IF FILE IS IN WRITE MODE

BITS 1-23=CP

X: BITS 0,9-23 ARE UNCHANGED

BITS 1-8=FILE OPTION MASK OR 0.

B IS UNCHANGED.

SCP (132)

DATE: 69/05/13

FUNCTION: SET CURSOR POSITION

STATUS: USER

INPUT: A=NEW CURSOR POSITION

SETS FILE TO READ MODE IF SIGN BIT OF A=0

SETS FILE TO WRITE MODE IF SIGN BIT OF A=1.

CALLING SEQUENCE: SCP =FILE NUMBER

RETURNS: NO SKIP = ERROR

A,B ARE UNCHANGED

X = ERROR NUMBER.

X = 1 = CANNOT SET MODE SPECIFIED BY SIGN BIT OF A.

X = 2 = ARGUMENT OUTSIDE OF FILE RANGE.

SKIP = NORMAL RETURN

A,B,X ARE UNCHANGED. CIO,WIO,BIO WILL OPERATE ON UPDATED CP.

PCE (133)

DATE: 69/05/13

FUNCTION: POSITIONS CURSOR AND ERASES.

STATUS: USER

INPUT: A=NEW CURSOR POSITION
CALLING SEQUENCE: PCE =FILE NUMBER
RETURNS: NO SKIP = ERROR
A,B ARE UNCHANGED
X = ERROR NUMBER
X = 1 FILE NOT IN OUTPUT MODE
X = 2 ERASE PRIVILEGE IS DISABLED
X = 3 A WAS LESS THAN CURRENT CP.
X = 4 A GREATER THAN CURRENT CP.
SKIP = NORMAL RETURN

DESCRIPTION: A,B,X ARE UNCHANGED
DEFINITIONS: CP1 = CURRENT CP. CP2 = FINAL CP.
FILE CHANGES: ALL CHARACTERS FROM CP1 TO CP2-1 ARE SET TO ZERO.
IF A < CPTOP, THEN THE NEW CP = CP2.
IF A GE CPTOP, THE ERASE IS FROM CP1 TO CPTOP-1, THE CP IS POSITIONED
TO CP1, CPTOP IS SET TO CP1. THIS IS THE ONLY WAY TO DECREASE CPTOP.

CIT (134)

DATE: 69/05/13
FUNCTION: CHARACTER INPUT AND TEST
STATUS: USER
INPUT: A = CHARACTER TO BE TESTED
CALLING SEQUENCE: CIT =FILE NUMBER
DESCRIPTION: THE CHARACTER IN THE A REGISTER IS COMPARED
AGAINST THE NEXT CHARACTER IN THE INPUT FILE. IF IT COMPARES,
THE NORMAL RETURN IS TAKEN AND THE CHARACTER IS REMOVED FROM
THE INPUT BUFFER. IF IT DOES NOT COMPARE, THE CHARACTER IS
LEFT IN THE INPUT BUFFER AND IS RETURNED IN A.
EXCEPTION RETURN: A - THE NEXT CHARACTER IN THE INPUT
BUFFER.
B & X - NO CHANGE.
NORMAL RETURN: A - THE CHARACTER SUPPLIED REMAINS
IN A (THE CHARACTER IS REMOVED
FROM THE INPUT BUFFER).

REGISTERS AFFECTED: A

WCD (135)

DATE: 69/05/13
FUNCTION: WRITE CHARACTER AND DECREMENT
STATUS: USER
CALLING SEQUENCE: WCD P
P=ADDRESS OF A STRING POINTER PAIR
DESCRIPTION: THIS SYSPOP WRITES THE CHARACTER IN THE A REGIS-
TER ON THE BEGINNING OF THE STRING AND DECREASES THE BEGINNING
STRING POINTER.
REGISTERS AFFECTED: B

GCD (137)

DATE: 69/05/13
FUNCTION: GET CHARACTER AND DECREMENT
STATUS: USER
CALLING SEQUENCE: GCD P
EXCEPTION RETURN

NORMAL RETURN

P = ADDRESS OF A STRING POINTER PAIR.

DESCRIPTION: A GCD IS, IN EVERY WAY, SIMILAR TO GCI EXCEPT THAT THAT THE CHARACTER IS TAKEN FROM THE END OF THE SPECIFIED STRING.

THE LAST CHARACTER ON THE STRING IS LOADED IN THE A REGISTER, THE END STRING POINTER IS DECREMENTED SO THAT IT POINTS TO THE PREVIOUS CHARACTER IN THE STRING. CONTROL IS TRANSFERRED TO THE EXCEPTION RETURN IF THE END POINTER IS NOT GREATER THAN THE BEGINNING POINTER BEFORE IT IS DECREMENTED.

REGISTERS AFFECTED: A,B

ISC (140)

DATE: 69/05/13

FUNCTION: CONVERTS INTERNAL NUMBERS TO FORMATTED OUTPUT STRINGS

STATUS: USER

CALLING SEQUENCE: LDP M
LDX FORMAT
ISC POINTER

DESCRIPTION: FORMAT DESCRIBES THE TYPE OF CONVERSION TO BE DONE. (APPENDIX E). THE CONTENTS OF THE POINTER POINT TO THE CHARACTER IMMEDIATELY PRECEDING THE CHARACTER STRING. POINTER+1 CONTAINS THE CHARACTER ADDRESS OF THE CHARACTER IMMEDIATELY PRECEDING THE POSITION WHERE THE FIRST CHARACTER OF OUTPUT IS TO GO. M,M+1 CONTAIN THE FLOATING POINT WORD TO BE CONVERTED. POINTER+1 IS INCREMENTED ONCE FOR EACH CHARACTER ADDED TO THE STRING.

REGISTERS AFFECTED: A, B, X

SIC (141)

DATE: 69/05/13

FUNCTION: STRING TO INTERNAL CONVERSION

STATUS: USER

CALLING SEQUENCE: LDX FORMAT
SIC POINTER
BRU INTEGER
BRU FLOATING

DESCRIPTION: FORMAT DESCRIBES THE TYPE OF CONVERSION TO BE DONE. (SEE APPENDIX E FOR DESCRIPTION OF FORMAT WORD) THE CONTENTS OF POINTER POINT TO THE CHARACTER IMMEDIATELY PRECEDING THE CHARACTER STRING. POINTER+1 CONTAINS THE CHARACTER ADDRESS OF THE LAST CHARACTER OF THE STRING. INTEGER AND FLOATING ARE ROUTINES THAT HANDLE THE CONVERTED INPUT. ERROR FLAGS, IF APPLICABLE, ARE IN THE INDEX REGISTER. A DOUBLE WORD VALUE CORRESPONDING TO THE STRING IS IN A,B UPON RETURN.

REGISTERS AFFECTED: A, B, X

FDV (153)

DATE: 69/05/13

FUNCTION: FLOATING POINT DIVIDE

STATUS: USER

CALLING SEQUENCE: FDV M

DESCRIPTION: (A,B)/(M,M+1)
THE CONTENTS OF THE A AND B REGISTERS ARE DIVIDED (FLOATING
DIVIDE) BY THE CONTENTS OF MEMORY LOCATIONS M AND M+1 WITH
THE QUOTIENT LEFT IN THE A AND B REGISTERS.
REGISTERS AFFECTED: A, B

FMP (154)

DATE: 69/05/13
FUNCTION: FLOATING POINT MULTIPLICATION
STATUS: USER
CALLING SEQUENCE: FMP M
DESCRIPTION: (A,B)*(M,M+1)
THE CONTENTS OF MEMORY LOCATIONS M AND M+1 ARE MULTIPLIED
(FLOATING MULTIPLICATION) BY THE A AND B REGISTERS AND THE
RESULTS LEFT IN THE A AND B REGISTERS.
REGISTERS AFFECTED: A, B

FSB (155)

DATE: 69/05/13
FUNCTION: FLOATING POINT SUBTRACTION
STATUS: USER
CALLING SEQUENCE: FSB M
DESCRIPTION: (A,B) - (M,M+1)
THE CONTENTS OF MEMORY LOCATIONS M AND M+1 ARE SUBTRACTED
(FLOATING SUBTRACTION) FROM THE CONTENTS OF THE A AND B REG-
ISTERS. THE RESULTS ARE LEFT IN THE A AND B REGISTERS.
REGISTERS AFFECTED: A, B

FAD (156)

DATE: 69/05/13
FUNCTION: FLOATING POINT ADDITION
STATUS: USER
CALLING SEQUENCE: FAD M
DESCRIPTION: (A,B)+(M,M+1)
A FLOATING ADDITION IS PERFORMED TO THE CONTENTS OF MEMORY LO-
CATION M AND M+1 AND THE A AND B REGISTERS. THE RESULTS ARE
LEFT IN THE A AND B REGISTERS.
REGISTERS AFFECTED: A, B

WCI (157)

DATE: 69/05/13
FUNCTION: WRITE CHARACTER AND INCREMENT
STATUS: USER
CALLING SEQUENCE: WCI P
P = ADDRESS OF STRING POINTER PAIR
DESCRIPTION: WCI WRITES THE CHARACTER IN THE A REGISTER ON THE
END OF THE STRING ADDRESSED BY THE END STRING POINTER. THE END
STRING POINTER IS INCREMENTED BY ONE.
REGISTERS AFFECTED: B

WIO (160)

DATE: 69/05/13
FUNCTION: WORD INPUT/OUTPUT
STATUS: USER
INPUT: A = WORD TO OUTPUT
CALLING SEQUENCE: WIO = FILE NUMBER
DESCRIPTION: WIO IS USED TO INPUT OR OUTPUT A WORD OF DATA TO OR FROM THE A REGISTER. ON INPUT AN END OF FILE CONDITION RETURNS A WORD OF THREE 137 OCTAL CHARACTERS AND SETS BITS 0 AND 7 IN THE FILE NUMBER WORD. IF INTERRUPT 4 IS ARMED, IT WILL OCCUR. IF AN END OF FILE CONDITION OCCURS WITH A PARTIALLY FILLED OUT WORD, THE WORD IS COMPLETED WITH 137 OCTAL CHARACTERS. IF AN ERROR OCCURS, BITS 0 AND 6 ARE SET IN N. IF INTERRUPT 4 IS ARMED IT WILL OCCUR.
CIO AND WIO SHOULD NOT BE MIXED TO READ OR WRITE A GIVEN FILE.
REGISTERS AFFECTED: A.

CIO (161)

DATE: 69/05/13
FUNCTION: CHARACTER INPUT/OUTPUT
STATUS: USER
INPUT: A=8 BIT CHARACTER RIGHT JUSTIFIED. (OUTPUT ONLY)
CALLING SEQUENCE: CIO =FILE NUMBER
DESCRIPTION: CIO IS USED TO INPUT OR OUTPUT A SINGLE CHARACTER FROM, OR TO, A FILE FROM THE A REGISTER. ON INPUT AN END OF FILE CONDITION WILL SET BITS 0 AND 7 IN THE FILE NUMBER AND RETURN A 137 OCTAL CHARACTER. IF INTERRUPT 4 IS ARMED (SEE BRS 78), IT WILL OCCUR. THE END OF FILE CONDITION OCCURS ON THE NEXT INPUT OPERATION AFTER THE LAST CHARACTER OF THE FILE. IF AN ERROR OCCURS, BITS 0 AND 6 WILL BE SET IN THE FILE NUMBER AND INTERRUPT 4 WILL OCCUR IF IT IS ARMED.
WIO AND BIO SHOULD NOT BE MIXED WITH CIO TO READ OR WRITE A GIVEN FILE.
REGISTERS AFFECTED: A

SKSG (162)

DATE: 69/05/13
FUNCTION: SKIP ON STRING GREATER
STATUS: USER
CALLING SEQUENCE: LDA B
LDB E
SKSG A
EXCEPTION RETURN
NORMAL RETURN

B = BEGINNING STRING POINTER
E = END STRING POINTER
A = ADDRESS OF A STRING POINTER PAIR

DESCRIPTION: THIS SYSPOP COMPARES THE STRING INDICATED BY A AND B REGISTERS WITH THE STRING INDICATED BY A OF THE CALLING SEQUENCE, CHARACTER BY CHARACTER AND TERMINATES WITH THE FIRST UNEQUAL CHARACTER. THE NUMERICAL INTERNAL CODE REPRESENTATION OF CHARACTERS IS USED TO DETERMINE INEQUALITY. IF THE STRINGS ARE EQUAL FOR THE ENTIRE LENGTH OF THE SHORTER ONE, THE LONGER ONE IS INDICATED AS GREATER. IF THE CONTENTS OF THE STRING ADDRESSED BY THE A AND B REGISTERS IS GREATER THAN THE CONTENTS

OF THE STRING ADDRESSED BY A, CONTROL WILL BE TRANSFERRED TO THE NORMAL RETURN. OTHERWISE, CONTROL IS TRANSFERRED TO THE EXCEPTION RETURN.

REGISTERS AFFECTED: NONE

SKSE (163)

DATE: 69/05/13

FUNCTION: SKIP ON STRING EQUAL

STATUS: USER

CALLING SEQUENCE: LDA B
LDB E
SKSE A
EXCEPTION RETURN
NORMAL RETURN

A = ADDRESS OF A STRING POINTER PAIR

B = BEGINNING STRING POINTER

E = END STRING POINTER

DESCRIPTION: IF THE STRING ADDRESSED BY THE POINTERS IN THE A AND B REGISTERS IS IDENTICAL WITH THE STRING ADDRESSED BY A OF THE CALLING SEQUENCE, CONTROL WILL BE TRANSFERRED TO THE NORMAL RETURN. OTHERWISE, CONTROL WILL BE TRANSFERRED TO THE EXCEPTION RETURN. IF THE STRINGS ARE OF DIFFERENT LENGTHS OR HAVE DIFFERENT CONTENTS, CONTROL WILL BE TRANSFERRED TO THE EXCEPTION RETURN.

REGISTERS AFFECTED: NONE

WCH (164)

DATE: 69/11/17

FUNCTION: WRITE CHARACTER

STATUS: USER

CALLING SEQUENCE: LDA C
WCH T

C = A CHARACTER RIGHT-JUSTIFIED IN THE A REGISTER.

T = THE ADDRESS OF A THREE WORD TABLE. THE TABLE IS AS FOLLOWS:

WORD 0 = A CHARACTER ADDRESS

WORD 1 = A CHARACTER ADDRESS

WORD 2 = A TRANSFER ADDRESS

DESCRIPTION: THIS SYSPOP TRIES TO WRITE A CHARACTER INTO THE AREA DEFINED BY THE CHARACTER ADDRESSES IN THE TABLE. PROVIDED THAT THE FIRST ADDRESS IS NOT ONE LESS THAN THE SECOND ADDRESS, WCH WILL WRITE THE CHARACTER IN THE A REGISTER INTO THE CHARACTER POSITION INDICATED BY THE FIRST CHARACTER ADDRESS PLUS ONE AND WILL INCREMENT THE FIRST CHARACTER ADDRESS IN THE TABLE. OTHERWISE THE CHARACTER IS NOT WRITTEN AND CONTROL IS TRANSFERRED TO THE TRANSFER ADDRESS SPECIFIED IN THE TABLE.

OF THE WCH IN THE B REGISTER. THE ADDRESS IN THE THIRD WORD OF THE TABLE CAN BE AN EXIT TO A ROUTINE WHICH ALLOCATES MORE MEMORY OR GARBAGE COLLECTS THE REMAINING CHARACTERS.

IN EITHER CASE THE LEFT 16 BITS OF A ARE SET TO ZERO.

REGISTERS AFFECTED: A,B

GCI (165)

DATE: 69/05/13
FUNCTION: GET CHARACTER AND INCREMENT
STATUS: USER
CALLING SEQUENCE: GCI A
 EXCEPTION RETURN
 NORMAL RETURN

A = ADDRESS OF A STRING POINTER PAIR
DESCRIPTION: THIS SYSPOP READS INTO THE A REGISTER THE FIRST CHARACTER FROM THE STRING INDICATED BY THE BEGINNING STRING POINTER GIVEN IN THE CALLING SEQUENCE. IF THE STRING IS NULL OR EMPTY, NOTHING IS DONE AND CONTROL IS TRANSFERRED TO THE EXCEPTION RETURN. IF THE STRING IS NOT NULL ITS FIRST CHARACTER IS LOADED INTO THE A REGISTER RIGHT-JUSTIFIED, AND THE BEGINNING STRING POINTER IS INCREMENTED BY ONE SO THAT THE BEGINNING STRING POINTER NOW POINTS TO THE STRING WITH THE FIRST CHARACTER DELETED. CONTROL IS TRANSFERRED TO THE NORMAL RETURN. UNLESS A COPY OF THE ORIGINAL POINTER IS SAVED, THE CONTENTS OF THE STRING ARE EFFECTIVELY DESTROYED.
REGISTERS AFFECTED: A

LDP (166)

DATE: 69/05/13
FUNCTION: LOAD POINTERS
STATUS: USER
CALLING SEQUENCE: LDP A

A = ADDRESS OF A STRING POINTER PAIR
DESCRIPTION: THIS SYSPOP LOADS THE STRING POINTERS INDICATED IN THE CALLING SEQUENCE INTO THE A AND B REGISTERS.
REGISTERS AFFECTED: NONE

STP (167)

DATE: 69/05/13
FUNCTION: STORE POINTERS
STATUS: USER
CALLING SEQUENCE: STP A

A = ADDRESS OF A STRING POINTER PAIR
DESCRIPTION: THIS SYSPOP IS GENERALLY USED IN CONJUNCTION WITH LDP. IT STORES THE CONTENTS OF THE A AND B REGISTERS INTO THE STRING POINTERS INDICATED IN THE CALLING SEQUENCE.
REGISTERS AFFECTED: NONE

SBRM (170)

DATE: 69/05/13
FUNCTION: EXECUTES A BRM INDIRECT
STATUS: USER
CALLING SEQUENCE: SBRM A

DESCRIPTION:
 LOC. INSTR. ADDRESS
 A ZRO B
THE LOCATION OF THE SBRM INSTRUCTION IS STORED IN B AND CONTROL IS TRANSFERRED TO LOCATION A+1.
REGISTERS AFFECTED: NONE

TCI (174)

DATE: 69/05/13

FUNCTION: TELETYPE CHARACTER INPUT

STATUS: USER

CALLING SEQUENCE: TCI M

M = MEMORY LOCATION

DESCRIPTION: THIS SYSDOP READS THE CHARACTER FROM THE TELETYPE INPUT BUFFER AND PLACES IT INTO THE LOCATION M RIGHT JUSTIFIED. THE REMAINDER OF LOCATION M IS CLEARED. THE CHARACTER IS ALSO PLACED IN THE A REGISTER RIGHT JUSTIFIED.

REGISTERS AFFECTED: A

TCO (175)

DATE: 69/05/13

FUNCTION: TELETYPE CHARACTER OUTPUT

STATUS: USER

CALLING SEQUENCE: TCO M

M = MEMORY ADDRESS

DESCRIPTION: THIS SYSDOP OUTPUTS THE CHARACTER FROM THE RIGHT-MOST EIGHT BITS OF LOCATION M TO THE CONTROLLING TELETYPE. IN ADDITION TO THE ORDINARY ASCII CHARACTERS, ALL TELETYPE OUTPUT OPERATIONS WILL ACCEPT 135 OCTAL AS A MULTIPLE BLANK CHARACTER. THE NEXT CHARACTER WILL BE TAKEN AS A BLANK COUNT, AND THE INDICATED NUMBER OF BLANKS WILL BE TYPED.

REGISTERS AFFECTED: NONE

BIO (176)

DATE: 69/05/13

FUNCTION: BLOCKED INPUT/OUTPUT

STATUS: USER

INPUT: A = NUMBER OF WORDS TO BE READ OR WRITTEN.

X = STARTING MEMORY ADDRESS.

CALLING SEQUENCE: BIO = FILE NUMBER

EXCEPTION RETURN

NORMAL RETURN

OUTPUT: A = FIRST MEMORY LOCATION NOT READ INTO OR OUT OF AT END OF OPERATION.

DESCRIPTION: BIO IS USED TO INPUT A BLOCK OF WORDS TO MEMORY OR OUTPUT A BLOCK OF WORDS FROM MEMORY. THE A REGISTER WILL CONTAIN THE FIRST MEMORY LOCATION NOT READ INTO OR OUT OF AT THE END OF THE OPERATION. IF THE OPERATION IS COMPLETED SUCCESSFULLY, CONTROL WILL BE TRANSFERRED TO THE NORMAL RETURN; OTHERWISE, CONTROL WILL BE TRANSFERRED TO THE EXCEPTION RETURN. ON INPUT AN END OF FILE CONDITION WILL SET BITS 0 AND 7 IN THE FILE NUMBER. AN ERROR WILL SET BITS 0 AND 6. INTERRUPT 4 WILL OCCUR IF ARMED WHEN ANY OF THESE BITS ARE SET.

EXCEPTION CONDITIONS ARE:

1. END OF FILE
2. BAD DATA

REGISTERS AFFECTED: A

SECTION 5.0

BRS 1

DATE: 69/05/13

FUNCTION: OPEN A FILE

STATUS: EXEC

INPUT: A= X BLOCK ADDRESS DIVIDED BY 4

B = PRIVELEGE BITS FOR RANDOM FILES.

BIT 18= USER MAY EFFECTIVELY EXECUTE SCP SYSPOP

BIT 19= 0

BIT 20= 0

BIT 21= USER MAY ERASE INFORMATION (MAY EXECUTE PCE).

BIT 22= USER MAY SET A FILE TO WRITE MODE.

BIT 23= USER MAY SET A FILE TO READ MODE.

OUTPUT: A= FILE NUMBER

X= X BLOCK ADDRESS DIVIDED BY 4 OR ERROR NUMBER.

RETURNS: SKIP = NORMAL RETURN

NO SKIP = ERROR RETURN.

ERROR NUMBERS ARE 1= FILE BUSY

2= TOO MANY FILES OPEN

3= BIT MAP NOT SET

4= FILE ERROR

DESCRIPTION: A FILE MAY BE OPENED FOR INPUT ANY NUMBER OF TIMES.
A FILE THAT IS OPEN CANNOT BE OPENED FOR OUTPUT AND A FILE THAT IS
OPEN FOR OUTPUT CANNOT BE OPENED AGAIN.

REGISTERS AFFECTED: A,X

BRS 2

DATE: 69/05/13

FUNCTION: CLOSE A FILE

STATUS: EXEC

INPUT: A= FILE NUMBER

DESCRIPTION: THE "CLOSE FILE" BRS IS USED TO INDICATE TO THE SYSTEM
ALL PROCESSING IS COMPLETED ON THIS FILE. ALL NECESSARY TERMINATION
PROCESSING WILL BE COMPLETED AND CONTROL WILL BE TRANSFERRED TO
THE NORMAL RETURN. SEE ALSO BRS'S 1, 8, 17, 20 AND 147

REGISTERS AFFECTED: NONE

BRS 7

DATE: 69/05/13

FUNCTION: READ TABLE

STATUS: SUBSYSTEM

INPUT: A= CORE ADDRESS

X= TABLE NUMBER

OUTPUT: A= ADDRESS OF FIRST WORD BEYOND TABLE IN USERS CORE.

TABLES:

0 MISCELLANEOUS COUNTERS

1 RAD ERROR LIST -20 WORDS

2 DISC ERROR LIST -10 WORDS

3 QTIGO -32 WORDS

REGISTERS AFFECTED: NONE

BRS 8

DATE: 69/05/13
FUNCTION: CLOSE ALL FILES
STATUS: EXEC
REGISTERS AFFECTED: NONE

BRS 22

DATE: 69/05/13
FUNCTION: PREVENTS FORK FROM TERMINATING ON QUANTUM OVERFLOW
STATUS: EXEC
REGISTERS AFFECTED: NONE

BRS 23

DATE: 69/05/13
FUNCTION: ALLOWS FORK TO TERMINATE ON QUANTUM OVERFLOW
STATUS: EXEC
DESCRIPTION: ALLOWS THE MONITOR TO TERMINATE THE CALLING FORK
ON QUANTUM OVERFLOW. IT IS USED TO RESET BRS 22.
REGISTERS AFFECTED: NONE

BRS 25

DATE: 69/05/13
FUNCTION: GRAB BIT MAP BIT
STATUS: EXEC
INPUT: A= DISC ADDRESS
RETURNS: NO SKIP-BIT USED OR OUT OF BOUNDS. SKIP-NORMAL RETURN
DESCRIPTION: TURNS OFF ONE BIT IN THE BIT MAP.
REGISTERS AFFECTED: NONE

BRS 26

DATE: 69/05/13
FUNCTION: SKIP IF ESCAPE WAITING
STATUS: EXEC
RETURNS: NO SKIP- NO ESCAPE WAITING
SKIP- ESCAPE WAITING
DESCRIPTION: SIGNIFICANT ONLY AFTER BRS 46 IS USED.
REGISTERS AFFECTED: NONE

BRS 27

DATE: 69/05/13
FUNCTION: START STATISTICS
STATUS: EXEC
OUTPUT: A= BUFFER NUMBER AT WHICH STATISTICS ARE STARTING.
REGISTERS AFFECTED: A

BRS 28

DATE: 69/05/13
FUNCTION: STOPS STATISTICS
STATUS: EXEC
REGISTERS AFFECTED: NONE

BRS 30

DATE: 69/05/13
FUNCTION: GIVE BITS TO BIT MAP
STATUS: EXEC
INPUT: A= DISC ADDRESS
RETURNS: NO SKIP-INPUT ERROR
SKIP- NORMAL RETURN
REGISTERS AFFECTED: NONE

BRS 41

DATE: 69/05/13
FUNCTION: RETURNS DISC ADDRESS OF CURRENT DATA BLOCK
STATUS: SYSTEM
OUTPUT: A= DISC ADDRESS OF CURRENT DATA BLOCK.
REGISTERS AFFECTED: NONE

BRS 46

DATE: 69/05/13
FUNCTION: TURN ESCAPE OFF
STATUS: EXEC
DESCRIPTION: THIS BRS WILL SET UP TO REMEMBER AN ESCAPE INTERRUPT, BUT NOT ALLOW THE PROGRAM TO BE INTERRUPTED. IT WILL STACK THE FIRST ESCAPE OCCURRING AND IGNORE ANY SUBSEQUENT ONES. IT WILL NOT ALLOW TERMINATION FOLLOWING OFF INTERRUPTS. SEE ALSO BRS 26 AND BRS 47.
REGISTERS AFFECTED: NONE

BRS 47

DATE: 69/05/13
FUNCTION: TURN ESCAPE ON
STATUS: EXEC
DESCRIPTION: THIS BRS REVERSES BRS 46; THAT IS, REACTIVATES THE ESCAPE INTERRUPT. IF AN ESCAPE INTERRUPT WAS STACKED (REMEMBERED) WHILE IN AN OFF CONDITION, THE INTERRUPT WILL OCCUR.
REGISTERS AFFECTED: NONE

BRS 54

DATE: 69/05/13
FUNCTION: GRAB BIT FROM MAP AND RETURN DISC ADDRESS.
STATUS: EXEC
OUTPUT: A= DISC ADDRESS
RETURN: ALWAYS SKIPS
REGISTERS AFFECTED: A

BRS 55

DATE: 69/11/18
FUNCTION: DISMISS IF JOB USING DISC
STATUS: USER
DESCRIPTION: JOB IS DISMISSED UNTIL THE DISC USE IS COMPLETED

REGISTERS AFFECTED: NONE

BRS 56

DATE: 69/11/11

FUNCTION: MAKE POINTER INDIRECT FOR RECOVER

STATUS: EXEC

INPUT: A = PMT BYTE NUMBER FOR PMT OR SMT BYTE POINTED AT.
BIT 0 OF A=1 TO MAKE PAGE READ ONLY.

B = PMT NO. IN BITS 18-23

X = CHANNEL NO. FOR SECOND BYTE IN BITS 18-23

OUTPUT: A = NEW PMT NO.

DESCRIPTION: RECOVERS THE PAGE POINTED AT IN A AND PLACES IT
IN THE PMT NO. SPECIFIED BY B. USED BY THE EXEC IN "RECOVER"

REGISTERS AFFECTED: A

BRS 58

DATE: 69/11/11

FUNCTION: COPY MEMORY FROM SLAVE 940 TO MASTER 940

STATUS: EXEC

INPUT: A = ADDRESS IN MASTER 940 (16 BITS)

B = ADDRESS IN SLAVE 940 (16 BITS)

X = WORD COUNT

BIT 0 OF A MUST BE ON TO COPY FROM MASTER 940 TO SLAVE 940

OUTPUT: IF ERROR RETURN IS TAKEN, X = ERROR NUMBER.

RETURNS: SKIP = NORMAL RETURN

NO SKIP = ERROR

DESCRIPTION: COPIES MEMORY FROM THE MASTER TO THE SLAVE 940
IF BIT 0 OF A = 1; IF BIT 0 IS ZERO, THEN COPIES SLAVE'S MEMORY
INTO THE MASTER 940. LIST OF ERROR CODES IN X REGISTER:

1: 940 BUSY

2: PAGE FAULT

3: BAD ARGUMENT

REGISTERS AFFECTED: X

BRS 61

DATE: 69/11/11

FUNCTION: CHANGE TELETYPE WORKING SET

STATUS: SYSTEM

INPUT: A = WORKING TELETYPE BITS

B = WORKING TELETYPE BITS

DESCRIPTION: USED TO HANG OR ANSWER DATA LINES IN PHASE II
MULTIPLEXING. EACH BIT IN A AND B REPRESENTS A TELETYPE
CHANNEL. BIT 0 OF A = CHANNEL 42, BIT 7 OF B = CHANNEL 0.

EXAMPLE: TO HANG ALL THE TELETYPE LINES:

HANG CLA
LDB =77B
BRS 61

REGISTERS AFFECTED: NONE

BRS 66

DATE: 69/05/13
FUNCTION: DELETE DISC FILE
STATUS: EXEC
INPUT: A= FILE NUMBER
RETURN: NO SKIP: ERROR - NO BIT MAP OR I/O ERROR.
SKIP: NORMAL RETURN
REGISTERS AFFECTED: NONE

BRS 72

DATE: 69/05/13
FUNCTION: SYSTEM FORK DISMISSAL
STATUS: EXEC
INPUT: X = THE NUMBER OF THE QUEUE THAT THE FORK IS TO BE PUT ON
B = DISMISS CONDITION
DESCRIPTION: DISMISSES A SYSTEM FORK AND PUTS IT ON THE SPECI-
FIED QUEUE. RETURNS TO CALL +1 WHEN REACTIVATED.
0 = TELETYPE INPUT QUEUE
1 = INPUT/OUTPUT QUEUE
2 = TELETYPE OUTPUT QUEUE
3 = SHORT TIME QUANTUM QUEUE
4 = LONG TIME QUANTUM QUEUE
REGISTERS AFFECTED: NONE

BRS 93

DATE: 69/10/31
FUNCTION: RESET RESOURCE METERING
STATUS: EXEC
DESCRIPTION: RESETS THE RESOURCE COUNTERS READ BY BRS 89.
REGISTERS AFFECTED: NONE

BRS 95

DATE: 69/05/13
FUNCTION: ACQUIRE AND RELEASE OVERFLOW GROUPS FOR FILE DIRECTORY.
STATUS: EXEC
INPUT: A=0 - RETURNS NEXT AVAILABLE OVERFLOW POINTER IN A AND
TURNS ON BIT IN FILE DIRECTORY BIT MAP.
A=OVERFLOW POINTER - RELEASES GROUP. TURNS OFF BIT
IN BIT MAP.
A = OVERFLOW POINTER AND BIT 0=1 - TURNS BIT ON IN BIT MAP.
REGISTERS AFFECTED: ALL

BRS 97

DATE: 69/05/13
FUNCTION: SETS SUBSYSTEM COUNTER TO 0
STATUS: SUBSYSTEM
INPUT: A = COUNTER NUMBER (0-31)
DESCRIPTION: SETS THE COUNTER SPECIFIED BY A TO 0.
REGISTERS AFFECTED: NONE

BRS 98

DATE: 69/05/13
FUNCTION: INCREMENT SUBSYSTEM COUNTER
STATUS: SUBSYSTEM
INPUT: A = COUNTER NUMBER (0-31)
DESCRIPTION: INCREMENTS THE COUNTER SPECIFIED BY A.
REGISTERS AFFECTED: NONE

BRS 99

DATE: 69/05/13
FUNCTION: READS THE SUBSYSTEM COUNTER
STATUS: SUBSYSTEM
INPUT: A = COUNTER NUMBER (0-31)
DESCRIPTION: RETURNS THE VALUE OF THE COUNTER SPECIFIED BY A
IN A.
REGISTERS AFFECTED: A

BRS 100

DATE: 69/05/13
FUNCTION: ASSIGNS A DEVICE TO A USER
STATUS: OPERATOR
INPUT: A= DEVICE NUMBER
X= CHANNEL NUMBER OR -1
DEVICE NUMBERS: 0=TAPE0, 1=TAPE1, 2=PRINTER
RETURNS: NO SKIP=ERROR, DEVICE ALREADY ASSIGNED.
SKIP=NORMAL RETURN
DESCRIPTION: THE DEVICE IS ASSIGNED TO THE USER. AFTER THAT THE
USER CAN DRIVE THE DEVICE DIRECTLY USING THE OTHER BRS'S. MAG TAPE
IS SET TO ODD PARITY.
ONLY ONE DEVICE CAN BE ASSIGNED AT A TIME.

BRS 101

DATE: 69/05/13
FUNCTION: UNASSIGN DEVICE
STATUS: OPERATOR
DESCRIPTIONS: RESETS DEVICE ASSIGNMENT. USER CAN NO LONGER ACCESS
DEVICE WITH BRS'S.
REGISTERS AFFECTED: NONE

BRS 109

DATE: 69/05/13
FUNCTION: DISMISS
STATUS: USER
CALLING SEQUENCE: BRS 109
DESCRIPTION: THE FORK IS DISMISSED. IT CAN ONLY BE ACTIVATED
AGAIN BY A PROGRAM INTERRUPT WHICH HAS BEEN ARMED BY THIS FORK
OR THE TERMINATION OF A LOWER FORK.
REGISTERS AFFECTED: NONE

BRS 111

DATE: 69/05/13
FUNCTION: RETURN FROM CLASS 3 BRS
STATUS: EXEC
DESCRIPTION: THIS BRS IS USED ONLY BY THE AUTHOR OF CLASS 3
BRS'S. IT IS THE ONLY NORMAL TERMINATION OF A CLASS 3 BRS. IT
CORRESPONDS TO A BRS 10 FOR OTHER FORKS.
INSTRUCTION TRAP:
BRS ISSUED BY A FORK WHICH WAS NOT A CLASS 3 BRS.
REGISTERS AFFECTED: NONE

BRS 112

DATE: 69/05/13
FUNCTION: REMOVE A JOB FROM THE SYSTEM
STATUS: EXEC
INPUT: A= JOB NUMBER
NO RETURNS
REGISTERS AFFECTED: ALL

BRS 115

DATE: 69/05/13
FUNCTION: TERMINATE CLASS 3 BRS FORK WITH RUBOUT
STATUS: EXEC BRS
DESCRIPTION: TERMINATES THE EXEC BRS AND CAUSES A RUBOUT FOR THE JOB.

BRS 120

DATE: 69/05/13
FUNCTION: ASSIGN PMT ENTRY
STATUS: EXEC
INPUT: A = RELABELING BYTE
DESCRIPTION: OBTAINS A NEW PAGE FOR THE RELABELING BYTE SPECI-
FIED. THIS BRS IS USED ONLY IN THE RECOVER ROUTINE IN THE EXEC.
INSTRUCTION TRAP:
1) PMT ENTRY IS ALREADY ASSIGNED.
2) THE RELABELING BYTE NUMBER WAS NOT IN THE PMT.
REGISTERS AFFECTED: NONE

BRS 123

DATE: 69/05/13
FUNCTION: WRITE DISC WITHOUT DISMISS
STATUS: EXEC
DESCRIPTION: WORKS EXACTLY LIKE A BRS 125 EXCEPT THAT CONTROL IS
RETURNED TO THE CALLING FORK IMMEDIATELY INSTEAD OF WAITING UNTIL
THE WRITE IS COMPLETED.

BRS 124

DATE: 69/07/06
FUNCTION: READ DISC
STATUS: SYSTEM
CALLING SEQUENCE: LDA =CORE ADDRESS
LDB =DISK ADDRESS

LDX =NUMBER OF WORDS
BRS 124
NORMAL RETURN

DESCRIPTION: READS FROM THE DISK AS SPECIFIED. ERRORS RESULT IN AN INSTRUCTION TRAP, OR PROGRAMMED INTERRUPT 11 IF IT IS ARMED. TWO FORKS THAT ARE TO RUN SIMULTANEOUSLY SHOULD NOT BOTH USE THIS BRS. THE NUMBER OF WORDS MUST BE A MULTIPLE OF 64 AND GREATER THAN 0. THE BRS WILL NOT READ OVER PAGE BOUNDARIES.

REGISTERS AFFECTED: NONE

BRS 125

DATE: 69/05/13
FUNCTION: WRITE DISC
STATUS: EXEC
CALLING SEQUENCE: A = CORE ADDRESS
B = DISK ADDRESS
X = NUMBER OF WORDS

DESCRIPTION: LIKE BRS 124. THE NUMBER OF WORDS MUST BE A MULTIPLE OF 64 AND GREATER THAN 0.

REGISTERS AFFECTED: NONE

BRS 126

DATE: 69/05/13
FUNCTION: TEST FOR CARRIER PRESENCE
STATUS: SYSTEM
INPUT: A=LINE NUMBER
RETURNS: NO SKIP = NO CARRIER
SKIP = CARRIER
REGISTERS AFFECTED: NONE

BRS 127

DATE: 69/05/13
FUNCTION: READS ONE WORD IN CORE
STATUS: SYSTEM
INPUT: X = 16 BIT CORE ADDRESS
DESCRIPTION: ALLOWS A SYSTEM PROGRAM TO READ THE CONTENTS OF ANY LOCATION IN THE MEMORY.
THE ORIGINAL CONTENTS OF THE LOCATION ARE ALWAYS RETURNED IN THE A REGISTER.
REGISTERS AFFECTED: A

BRS 128

DATE: 69/05/13
FUNCTION: SET DISK BIT MAP
STATUS: EXEC
CALLING SEQUENCE: LDA =ADDRESS OF X BLOCK DIVIDED BY 4
BRS 128
EXCEPTION RETURN
NORMAL RETURN

EXCEPTION RETURN - A CONTAINS ADDRESS THAT WAS IN CONFLICT.
DESCRIPTION: TURNS OFF BITS IN THE DISK BIT MAP FOR THE X

BLOCK AND EACH DATA BLOCK REFERENCED BY THE INDEX BLOCK. IF ANY CONFLICTS OCCUR (THE BIT IS ALREADY OFF), THE ADDRESS IS LEFT IN THE A REGISTER AND THE EXCEPTION RETURN IS TAKEN. A CONFLICT ALSO INCREMENTS ONE OF TWO COUNTERS, XBERR OR FDERR, FOR ERRORS IN THE X BLOCK OR THE FILE DIRECTORY RESPECTIVELY. WHEN THE BIT MAP HAS BEEN SET, ONE MORE CALL IS MADE TO THIS BRS WITH A NEGATIVE. AT THAT TIME A SWITCH IS SET ALLOWING OUTPUT FILES TO BE OPENED; THE NEW OVERFLOW POINTER IS SET FROM B AND THE ACCOUNTING AREA POINTER IS SET FROM X.
REGISTERS AFFECTED: A

BRS 129

DATE: 69/05/13
FUNCTION: TURNS A TELETYPE LINE ON OR OFF
STATUS: SYSTEM
INPUT: A =TELETYPE #
B =0 (OFF) OR -1 (ON)
REGISTERS AFFECTED: NONE

BRS 130

DATE: 69/05/13
FUNCTION: TEST A BREAKPOINT SWITCH
STATUS: SUBSYSTEM
CALLING SEQUENCE: LDX =SWITCH NUMBER
BRS 130
SWITCH UP RETURN
SWITCH DOWN RETURN
DESCRIPTION: TESTS THE BREAKPOINT SWITCH (1,2,3,4) INDICATED IN X. IF THE SWITCH IS DOWN, THE BRS SKIPS ON RETURN.
REGISTERS AFFECTED: NONE

BRS 131

DATE: 69/05/13
FUNCTION: TO CRASH THE SYSTEM
STATUS: EXEC
NO RETURN
DESCRIPTION: SAVES THE REGISTERS IN SS01, SS02, SS03. SAVES 0 IN MCRO. TURNS OFF THE CLOCK AND DISABLES THE INTERRUPTS. MOVES THE TS BLOCK INTO REAL PAGE 14.
REGISTERS AFFECTED: NONE

BRS 136

DATE: 69/05/13
FUNCTION: SETS SYSTEM EXEC SWITCHES IN SYMS
STATUS: EXEC
CALLING SEQUENCE: LDA V
LDX N
BRS 136
NORMAL RETURN
V = NEW SWITCH VALUE
N = SWITCH NUMBER
DESCRIPTION: THE SWITCH IS SET TO THE NEW VALUE AND THE OLD

VALUE IS RETURNED IN A.
REGISTERS AFFECTED: A

BRS 141

DATE: 69/05/13
FUNCTION: GETS EXEC SUBROUTINES
STATUS: EXEC
DESCRIPTION: CHECKS THAT THE ISSUING FORK HAS EXEC STATUS.
IF IT DOES, AN EXEC BRS IS ISSUED. THIS BRS IS USED TO ALLOW
SYSTEM STATUS FORKS TO ACCESS SUBROUTINES IN THE EXEC.
REGISTERS AFFECTED: NONE

BRS 144

DATE: 69/05/13
FUNCTION: GETS A BUFFER
STATUS: EXEC
OUTPUT: A = ADDRESS OF DATA AREA IN BUFFER.
RETURNS: NO SKIP: NO FREE BUFFERS
SKIP: NORMAL RETURN

BRS 145

DATE: 69/05/13
FUNCTION: RETURNS A BUFFER
STATUS: EXEC
INPUT: A = ADDRESS OF DATA AREA IN BUFFER TO BE RETURNED
DESCRIPTION: RETURNS THE BUFFER TO THE MONITOR.
REGISTERS AFFECTED: NONE

BRS 152

DATE: 69/05/13
FUNCTION: IGNORE OFF-INTERRUPTS
STATUS: SUBSYSTEM
CALLING SEQUENCE: LDB N
 BRS 152
 N = -1 TO TURN INTERRUPTS OFF
 N = 0 TO TURN INTERRUPTS ON
DESCRIPTION: IGNORES THE OFF INTERRUPTS FROM THE USER'S CHAN-
NEL UNTIL IT IS RESET.
REGISTERS AFFECTED: NONE

PSEUDO RELABELING

PMT INFORMATION

DATE: 69/11/16

PSEUDO RELABELING IS A MECHANISM WHEREBY A MACHINE LANGUAGE PROGRAM CAN ACCESS MORE STORAGE THAN 16K WORDS WITHOUT USING THE DISK.

A PAGE IS A UNIT OF INFORMATION COMPRISED OF 2048 WORDS. A PAGE IS SOMETIMES IN CORE, SOMETIMES ON THE DRUM(RAD) AND SOMETIMES ON BOTH AT ONCE.

WHEN A USER PROGRAM IS RUNNING IT HAS DIRECT ACCESS TO EIGHT PAGES OR LESS. A BRS 43 TELLS A USER WHICH OF THE USER'S EIGHT POSSIBLE PAGES ARE IN USE AND FOR THOSE IN USE IT GIVES A PAGE NAME WHICH CAN BE USED IN OTHER BRS'S.

WHEN A PROGRAM LOADS OR STORES AT AN ADDRESS WHICH DOESN'T CORRESPOND TO A PAGE, THE PROGRAM IS TRAPPED AND RESTARTED LATER WITH A REAL PAGE AT THAT ADDRESS.

A BRS 44 DIRECTS THE MONITOR TO PLACE PAGES AT SPECIFIED ADDRESSES IN THE USER'S PROGRAM. THESE PAGES ARE NAMED WITH THE NAMES GIVEN BY THE MONITOR IN PREVIOUS BRS 43'S.

APPENDIX A

DATE: 69/05/31

APPENDIX A
GLOSSARY

BREAKPOINT SWITCH

REFERS TO THE FOUR [TOGGLE SWITCHES] PHYSICALLY LOCATED ON THE COMPUTER CONSOLE.

COMMAND FILE

THE PARTICULAR FILE FROM WHICH THE COMMANDS TO THE SYSTEM EXECUTIVE AND SUBSYSTEMS ARE INPUT. FOR TELETYPE INPUT THE COMMAND FILE NUMBER IS ZERO.

CUSTOMER FILE DIRECTORY

THE NAMES OF ALL FILES FOR A PARTICULAR USER ARE RECORDED IN THIS DIRECTORY.

DISK BLOCK

FOUR CONSECUTIVE [SECTORS] ON THE DISK. A BLOCK CONSISTS OF 256 WORDS.

DISK DATA BLOCK

A DISK BLOCK WHICH CONTAINS DATA IN THE FILE.

DISK FILE

A FILE STORED ON THE DISK. EACH FILE CONSISTS OF AT LEAST AN [INDEX BLOCK] AND IF THE FILE CONTAINS DATA, THEN A SUFFICIENT NUMBER OF DISK DATA BLOCKS TO RECORD THE DATA.

EXECUTIVE BRS

AN EXECUTIVE BRS IS ONE WHICH STARTS A FORK TO EXECUTE.

FILE NUMBER

A FILE NUMBER IS ASSIGNED BY THE SYSTEM TO FILES AS THEY ARE OPENED. ALSO, THERE ARE FIXED FILE NUMBERS FOR CERTAIN DEVICES. THESE ARE AS FOLLOWS:

- 0 TELETYPE INPUT
- 1 TELETYPE OUTPUT
- 2 [NOTHING]

FILE TYPE

THERE ARE FOUR STANDARD FILE TYPES. THEY ARE AS FOLLOWS:

- 1 FILE WRITTEN BY THE SYSTEM EXECUTIVE AS COMMANDED BY THE "SAVE" COMMAND.
- 2 GENERAL BINARY FILE CREATED BY A SUBSYSTEM, I.E., A FORTRAN OBJECT PROGRAM.
- 3 SYMBOLIC FILE
- 4 DUMP FILE (INPUT ONLY)

FORK

A FORK IS ALL OR PART OF A PROGRAM. A PROGRAM MAY CONSIST OF ONE TO EIGHT FORKS AND THESE FORKS MAY BE IN A HIERARCHY ONE TO ANOTHER. AT LEAST ONE FORK IS ASSOCIATED WITH EACH ACTIVE USER IN THE SYSTEM.

FORK STATES

- 2 DISMISSED FOR INPUT/OUTPUT.
- 1 RUNNING.
- 0 DISMISSED ON ESCAPE KEY OR PROGRAMMED PANIC.
- 1 DISMISSED ON ILLEGAL INSTRUCTION PANIC.
- 2 DISMISSED ON MEMORY PANIC.

INSTRUCTION [TRAP]

A PANIC CAUSED BY ATTEMPTING TO EXECUTE AN INSTRUCTION

WHICH CANNOT BE EXECUTED IN THE USER MODE, SUCH AS A HALT OR DEVICE INPUT/OUTPUT INSTRUCTION OR A BRS WHICH IS NOT AVAILABLE TO THE USER.

MEMORY [TRAP]

A PANIC CAUSED BY A FORK ATTEMPTING TO ADDRESS MEMORY OUTSIDE ITS RANGE OR WRITE ON MEMORY WHICH IS SET TO READ ONLY.

PAC TABLE

EACH FORK IS DEFINED BY A PROGRAM ACTIVE TABLE. THIS TABLE CONTAINS MOST OF THE INFORMATION REQUIRED TO CONTROL SELECTION, EXECUTION AND INTERRUPTION OF THE FORK (ADDITIONAL INFORMATION IS STORED IN THE USER'S TS PAGE).

PAGE

A PAGE CAN EXIST ON RAD, DISK OR IN CORE MEMORY BUT IN ALL CASES REFERS TO 2048 WORDS.

PANIC

A PANIC IS A SIGNAL TO THE SYSTEM TO BREAK EXECUTION OF A FORK.

PANIC TABLE

WORD

- 0 = BITS 5-8=SUBSYSTEM INDEX, BITS 14-23=PROGRAM COUNTER
- 1 = A REGISTER
- 2 = B REGISTER
- 3 = X REGISTER
- 4 = FIRST RELABELING REGISTER
- 5 = SECOND RELABELING REGISTER
- 6 = STATUS

THE STATUS WORD MAY BE:

- 2 DISMISSED FOR INPUT/OUTPUT
- 1 RUNNING
- 0 DISMISSED ON ESCAPE OR BRS 10
- 1 DISMISSED ON ILLEGAL INSTRUCTION TRAP
- 2 DISMISSED ON MEMORY TRAP

A PANIC TABLE MUST NOT OVERLAP A PAGE BOUNDARY.

QUANTUM, LONG TIME

THE MAXIMUM LENGTH OF [TIME] A FORK CAN RUN BEFORE THE SCHEDULER CHECKS FOR OTHER FORKS TO BE RUN.

QUANTUM, SHORT TIME

THE MINIMUM LENGTH OF [TIME] A FORK WILL RUN BEFORE THE SCHEDULER CHECKS FOR OTHER FORKS TO BE RUN WHICH WERE DISMISSED FOR INPUT/OUTPUT.

RELABELING, PSEUDO

SEE RELABELING REGISTERS

RELABELING REGISTERS

THE RELABELING REGISTERS ARE USED TO INDICATE A PAGE NUMBER WHICH HAS BEEN ASSIGNED TO A USER FOR A PARTICULAR LOGICAL PAGE. THEY ARE OF THE FORM:

FIRST WORD	PAGE 0	PAGE 1	PAGE 2	PAGE 3
SECOND WORD	PAGE 4	PAGE 5	PAGE 6	PAGE 7

STRING POINTERS

A PAIR OF POINTERS WHICH CONTAIN A CHARACTER ADDRESS OF THE CHARACTER BEFORE THE FIRST CHARACTER OF A STRING AND A CHARACTER ADDRESS OF THE LAST CHARACTER OF THE STRING.

STRING, NULL

A PAIR OF STRING POINTERS WHOSE CHARACTER ADDRESSES ARE

THE SAME.

APPENDIX B

DATE: 69/05/31

APPENDIX B
RANDOM FILES

DEFINITIONS:

CP=CURSOR POSITION. THE ADDRESS OF THE NEXT CHARACTER, WORD OR BLOCK TO BE READ OR WRITTEN. THE LOWEST POSSIBLE CHARACTER ADDRESS IS 0. THE HIGHEST IS 14B6-1.

CPTOP=ADDRESS OF HIGHEST LOCATION WRITTEN.

OPENING RANDOM FILES:

USE NORMAL OPEN FILE BRS'S. THE HIGH ORDER BITS OF THE A REGISTER CONTAIN THE RANDOM FILE PRIVILEGE BITS.

PRIVILEGE

NUMBER	BIT	OPTION
P0	0	0
P1	1	0
P2	2	USER MAY EFFECTIVELY EXECUTE THE SCP SYSPOP.
P3	3	0
P4	4	0
P5	5	USER MAY ERASE INFORMATION FROM A FILE. (OUTPUT ONLY)
P6	6	USER MAY SET A FILE TO WRITE MODE. (OUTPUT ONLY)
P7	7	USER MAY SET A FILE TO READ MODE.

IF ALL BITS ARE 0, THE BRS WILL SET THE APPROPRIATE OPTIONS.

CLOSING RANDOM FILES:

USE NORMAL CLOSE FILE BRS'S. IF THE FILE IS CLOSED WHEN IN WRITE MODE, ALL INFORMATION FOLLOWING THE CURRENT CP IS ERASED. IF THE FILE IS CLOSED WHEN IN READ MODE, ALL THE FILE INFORMATION, INCLUDING UPDATES AND ERASURES, IS SAVED.

FILE SYSPOPS:

WIO - READ OR WRITE ONE WORD ON A FILE.
CIO - READ OR WRITE ONE CHARACTER ON A FILE.
BIO - READ OR WRITE A BLOCK OF WORDS ON A FILE.
RCP - READ CURSOR POSITION
SCP - SET CURSOR POSITION.
PCE - POSITION CURSOR AND ERASE.
SSP - SET PHYSICAL SIZE LIMIT.
RSP - READ PHYSICAL SIZE, SIZE LIMIT AND ADDRESS OF HIGHEST LOCATION WRITTEN.

FILE SIZE RESTRICTIONS:

FILE DATA IS STORED ON THE DISC IN 1400B CHARACTER BLOCKS AND THE CURSOR POSITION ASSOCIATED WITH THE BEGINNING OF ANY DATA BLOCK IS A MULTIPLE OF 1400B. THE MONITOR DOES NOT WRITE DATA BLOCKS THAT ARE ALL ZERO; HENCE, A FILE THAT COVERS A LARGE RANGE OF CURSOR POSITIONS MAY GRAB LESS DISC SPACE THAN A SMALL FILE THAT IS DENSELY PACKED WITH INFORMATION. EACH FILE HAS A MINIMUM OVERHEAD OF 1400B CHARACTERS TO MAP EACH FOUR PAGES OF NON-ZERO FILE DATA. THE DETAILS

OF THE MAPPING OVERHEAD ARE COMPLICATED AND ARE A FUNCTION OF THE DATA.

EACH FILE THAT IS OPENED FOR OUTPUT IS ASSIGNED A PHYSICAL FILE SIZE QUANTUM TO LIMIT THE AMOUNT OF ADDITIONAL DISC SPACE THAT THE USER MAY GRAB BEFORE CLOSING THE FILE. THIS QUANTUM, 1,364,000B CHARACTERS, IS REFRESHED EVERY TIME THE FILE IS OPENED REGARDLESS OF THE CURRENT SIZE. 1,364,000B CHARACTERS ARE ABOUT EQUAL TO ABOUT 60D PAGES OF DATA.

IF A FILE QUANTUM IS EXCEEDED, AN INSTRUCTION TRAP IS CAUSED.

APPENDIX C

DATE: 69/11/25

APPENDIX C

OP CODE FLAGS FOR BRS'S 102, 103, 105 AND 106:

- 00= THE FOLLOWING RECORD WAS READ OR WRITTEN CORRECTLY.
- 01= FOLLOWING RECORD WAS IN ERROR. NO FURTHER TAPE COMMANDS WERE ISSUED.
- 02= END OF FILE. NO MORE READING. THE PREVIOUS RECORD WAS THE LAST.
- 03= LAST TAPE RECORD DUE TO LACK OF CORE SPACE.
NO MORE RECORDS. FOLLOWING RECORD MAY HAVE BEEN TRUNCATED.
- 04= FOLLOWING RECORD WAS TRUNCATED DUE TO OVER RUN OF 3 SEC. TIME LIMIT.
- 05= NO MORE RECORDS DUE TO REACHING SPECIFIED RECORD COUNT.
THE FOLLOWING RECORD IS THE LAST.
- 06= END OF TAPE. NO MORE READING. THE PREVIOUS RECORD WAS THE LAST.
- 07= TAPE NOT READY. NO MORE READING. OR PRINTER NOT READY.
- 10= PAGE BOUNDARY ERROR ON WRITE.
- 11= TAPE WRITE PROTECTED
- 12= BEGINNING OF TAPE. NO WRITE.
- 13= DEVICE NO LONGER ASSIGNED.
- 14= RUBOUT

APPENDIX D

DATE: 69/11/11

APPENDIX D

ERROR DESCRIPTION OF ERROR
NO.

- 0 NO PREVIOUS ERRORS REPORTED
- 1 FILE BUSY
- 2 TOO MANY FILES OPEN
- 3 BIT MAP NOT SET
- 4 INPUT-OUTPUT ERROR RECEIVED FROM DISC STORAGE UNIT
- 5 DISC STORAGE UNIT FULL.
- 9 SET CURSOR POSITION ERROR ON APPEND ONLY FILE
- 10 FILE NAME NOT IN FILE DIRECTORY
- 11 ILLEGAL POSITION IN FILE NAME OF A FILE NAME TERMINATING CHARACTER (GENERALLY BLANK, COMMA, OR SEMI-COLON) AS FIRST CHARACTER.
- 12 UNEXPECTED END OF INPUT FILE NAME STRING.
- 13 FILE NAME STRING POINTERS INVALID OR INDICATE MORE THAN

75 CHARACTERS.

14 NO FILE NAME PRECEDING COMMENT PORTION (DASH)
15 END OF FILE NAME STRING DISCOVERED IN PROTECTED PORTION
OF STRING SUCH AS BETWEEN SLASHES
16 CARRIAGE-RETURN FOUND IN PROTECTED PORTION OF FILE NAME STRING
17 LINE-FEED FOUND IN PROTECTED PORTION OF FILE NAME STRING
18 ADDITIONAL CHARACTER FOUND AFTER SECOND FULL QUOTE
OF LIBRARY FILE NAME
19 ILLEGAL CHARACTER IN UNPROTECTED PORTION OF FILE NAME
USUALLY A PUNCTUATION MARK
20 ILLEGAL CHARACTER FOUND IMMEDIATELY AFTER RIGHT-
PARENTHESIS ON PUBLIC FILE.
21 STRING ENDS ON PUBLIC FILE RIGHT PARENTHESIS
22 FILE NAME AND COMMENT TOTAL MORE THAN 75 CHARACTERS.
23 INVALID PUBLIC FILE USER NAME OR ACCOUNT NUMBER
24 PROTECTED FILE (DECLARED NOT READABLE OR WRITABLE)
25 OLD FILE OR NEW FILE MESSAGE NOT CONFIRMED WITH
CARRIAGE RETURN OR LINE FEED
26 ATTEMPT TO ADDRESS LIBRARY FILE FOR OUTPUT
27 INVALID PARAMETER FOR BRS 16,19, ETC. (A REGISTER)
28 FILE TYPE WRONG (USUALLY FOR TELETYPE)
29 INVALID OR BAD FILE FOR OUTPUT
30 FILE DIRECTORY GROUP BECAME BUSY DURING OPERATION
31 GARBAGE GROUP POINTER IN FILE DIRECTORY
32 NUMBER OF FILES QUOTA EXCEEDED
33 ATTEMPT TO OPEN "INIT" FILE FOR OUTPUT.
34 FILE DIRECTORY GROUP CONFLICT BETWEEN TWO USERS
35 SAME AS ERROR NO. 27
36 ATTEMPT TO OPEN PROPRIETARY FILE FOR INPUT.
37 FILE NOT PRIVATE WRITABLE
38 FILE NOT PUBLIC WRITABLE
39 FILE NOT PRIVATE READABLE
40 NO INDEX BLOCK POINTER (NO DATA) IN FILE DIRECTORY
41 INVALID OR BAD FILE FOR INPUT.
42 LIBRARY FILE NAME USED ILLEGALLY
43 YOU USED THE PUBLIC FILE OPTION ON A FILE THAT IS NOT PUBLIC
44 UNEXPECTED ERROR FROM MONITOR ON FILE SYSPOPS
45 FILE DECLARED READ ONLY
46 GARBAGE IN FILE DIRECTORY
47 ATTEMPT TO ADDRESS A FILE ACROSS ACCOUNT BOUNDARIES ILLEGALLY
48 FILE DIRECTORY NOT ACCOUNT SHARABLE
50 SAME AS ERROR NO. 27
51 FILE DIRECTORY UNASSIGNED (THE F.D. GROUP IS ALL ZEROS)
52 END OF F.D. CHAIN WITHOUT FINDING FILE.
53 FILE DIRECTORY GROUP BEING CHANGED BY ANOTHER USER.
54 DUMP FILE MAY NOT BE CREATED BY USER PROGRAM.
61 FILE TYPE NOT "GO"
62 ATTEMPT TO CALL PREMIUM CHARGE PROGRAM ILLEGALLY
63 INVALID CONFIRMING CHARACTER
64 EXEC COMMAND USED WITHOUT PROPER STATUS
65 INIT FLAG ATTACHED TO FILE DIR. BUT NOT TO ANY FILE.
66 SYSTEM PARAMETERS ASSOCIATED WITH YOU HAVE BEEN CLOBBERED.
67 SUB-SYSTEM NOT CURRENTLY AVAILABLE.
68 NO SUB-SYSTEM OR GOTO PROGRAM IS CURRENTLY ASSIGNED TO YOU
69 TROUBLE WITH FILE SUCH AS: FILE SIZE DOES NOT AGREE WITH
HE START AND END LOCATIONS OF THE GO FILE. (FILE EMPTY?)

70 NO STARTING ADDRESS FOR GOTO PROGRAM
 71 DUMP FILE NOT COMPATIBLE WITH CURRENT SYSTEM
 72 APPARENT DISC ERROR
 73 INVALID SEPARATER BETWEEN PARAMETERS FOR AN EXEC COMMAND
 74 INVALID PARAMETERS FOR AN EXEC COMMAND
 75 MUST BE LOGGED INTO DIRECTORY TO USE THIS COMMAND.
 76 UNABLE TO LOCATE A FILE AT THE SPECIFIED POSITION IN DIRECTORY
 77 IMPROPER RESPONSE. PROPER RESPONSES ARE:
 Y FOR YES, N FOR NO, CARRIAGE RETURN OR LINE FEED
 78 SAME AS ERROR NO. 23
 79 FILE DIRECTORY CONTROLS SET WRONG
 80 INSUFFICIENT USER MEMORY FOR MAIL
 81 SAME AS ERROR NO. 79
 82 INVALID SUB-SYSTEM NAME
 83 FILE TYPE WRONG - NOT DUMP FILE
 84 SAME AS ERROR NO. 1

APPENDIX E

DATE: 69/12/02

APPENDIX E

THE FLOATING POINT SYSPOP'S AND BRS'S USE A FORMAT WORD IN THE X REGISTER. THIS FORMAT MUST BE "FREE FORM". TO DO SO, CLEAR X.

EXAMPLE:

INPUT	CLX	FREE FORM INPUT FORMAT
	BRS	52 INPUT FLOATING NUMBER

NOTES:

ON INPUT THE D FIELD IS OVERRIDDEN BY THE PRESENCE OF A DECIMAL POINT. IF A DECIMAL POINT AND/OR E ARE PRESENT, ANY FORM OF A NUMBER IS ACCEPTABLE TO ANY INPUT FORMAT. ILLEGAL CHARACTERS APPEARING ANYWHERE IN THE FIELD MAY BE IGNORED BY SETTING BIT 19. ALL BLANKS WILL BE CONVERTED TO ZERO.

THE MAXIMUM ALLOWABLE INPUT DIGITS = 12. IF MORE THAN 12 ARE USED, ONLY THE SIGNIFICANT 12 WILL BE USED. INSIGNIFICANT LEADING OR TRAILING ZEROES WILL BE IGNORED.

ERROR CODES:

ALL ERROR CODES WILL BE RETURNED IN THE X REGISTER.

OUTPUT	DESCRIPTION
X = 0	NO ERROR DETECTED.
X = 1	NUMBER OF DECIMAL DIGITS AFTER DECIMAL POINT EXCEEDS 12 FOR SINGLE PRECISION AND 18 FOR EXTENDED PRECISION ON FORMATTED INPUT.

- X = 2 FIELD TOO SHORT FOR E FORMAT ON OUTPUT. OVERFLOW ACTION WILL BE TAKEN DEPENDING ON THE VALUE OF BIT 15 OF THE FORMAT.
- X = 3 INPUT NUMBER EXCEEDS MAXIMUM ALLOWABLE BOUNDS.
- X = 4 FIELD TOO SHORT FOR F OR I FORMAT ON OUTPUT. OVERFLOW ACTION WILL BE TAKEN DEPENDING ON THE VALUE OF BIT 15 OF THE FORMAT WORD.
- X = 5 AN E FORMAT WAS SPECIFIED FOR INPUT BUT THE INPUT STRING DOES NOT CONTAIN AN "E" OR ".". THE NUMBER WILL BE CONVERTED USING AN EQUIVALENT F FORMAT.
- X = 6 AN ILLEGAL CHARACTER WAS ENCOUNTERED IN THE INPUT SCAN. THE CHARACTER WAS IGNORED.