

ADDRESS LENGTH BINARY CONTROL CARDS.

| | | | |
|-----|-----|-------|-------|
| 0 | 364 | IDENT | FILES |
| 364 | | END | |

| BLOCKS | TYPE | ADDRESS | LENGTH |
|-----------|----------|---------|--------|
| ABSOLUTE* | ABSOLUTE | 0 | 167 |
| PROGRAM* | LOCAL | 0 | 363 |
| LITERALS* | LOCAL | 363 | 1 |
| EFILES | COMMON | 0 | 112 |

ENTRY POINTS.

| | | | | | | | | | | | |
|----------|---|-----|---------|---|-----|---------|---|-----|--------|---|-----|
| CREABLEK | = | 0 | I.CRFIT | = | 53 | I.DLFIL | = | 7 | MOVEBK | = | 167 |
| READFIL | = | 240 | CHKBLK | = | 121 | P.RDSHP | = | 62 | | | |
| WRTFIL | = | 236 | DELBLK | = | 124 | L.RDSHP | = | 30 | | | |
| E.CRFIT | = | 0 | E.DLFIL | = | 53 | TRDB | = | 157 | | | |

EXTERNAL SYMBOLS.

| | | | | | | | |
|---------|---------|--------|--------|----------|--------|---------|-------|
| SYSRET | E.ERROR | CAPAB | FUNDX7 | TP.AWDS | DELOBJ | DISASTR | OJSIZ |
| SYSFRET | MAKEOBJ | PUTCAP | ALLOC | RTRNFILE | CHGPTR | BKPTR | E.ECS |

| | | |
|------|-----------|--------------------------------|
| | IDENT | FILES |
| | ENTRY | CREABLK |
| | ENTRY | READFIL, WRITFIL |
| | EXT | SYSRET, SYSFRET, E, EPROP |
| | EXT | MAKEOBJ, CAPAB, PUTCAP |
| | EXT | FUNDX7, ALLOC, IP, AWDS |
| RECS | MACRO | A |
| | RE | A |
| | RJ | =XE, ECS |
| | ENDM | |
| WECS | MACRO | A |
| | WE | A |
| | RJ | =XE, ECS |
| | ENDM | |
| | # | |
| 0 | INTSYS | XTEXT |
| 0 | # | |
| 0 | PROCSYM | XTEXT |
| 56 | P, CALL | EQU P, TEMP1 |
| 57 | P, START | EQU P, TEMP2 |
| 60 | P, LENGTH | EQU P, TEMP3 |
| 61 | P, INDEX | EQU P, TEMP4 |
| | # | MAKER SAVES POINTER INDEX HERE |
| 0 | TYPES | XTEXT |
| 0 | # | |
| 0 | ECSMAC | XTEXT |
| 0 | CRLOCK | MICRO 1,,*/EFILES/* |

| | | | | |
|--|-----------------|----------------|--------------|--------------|
| | | 1 S PTRBK EQU | G T PTRB | |
| | | 0 S DTABLK EQU | G T NRMR | |
| | | | CBFIL | |
| | 51 5111000070 | CREAFIL | SAT | |
| | 0331000352 + | | B1+P PARAM+2 | |
| | | NO | X1 NEGINDX | |
| | 52 51 1000155 | | SA2 | |
| | 53221 | | B1+P CLIST | |
| | 37112 | | SA2 | |
| | | IX1 | B1+X2 | |
| | 53 0331000056 | | NG | X1-X2 |
| | 54 5022000002 | CREAFILA | SA2 | |
| | 0407000353 + | | A2+2 | |
| | | ZR | X2 BIGINDX | |
| | 55 37112 | | IX1 | X1-X2 |
| | 0321000054 | | PL | X1 CREAFILE |
| | | | | |
| | 56 5111000071 | CREAFIL8 | SA1 | B1+P PARAM+3 |
| | 5121000072 | | SA2 | B1+P PARAM+4 |
| | 0332000332 + | | NG | X2 NEGADD |
| | 5131000137 | | SA3 | B1+P XPACK+2 |
| | 60 5141000136 | | SA4 | B1+P XPACK+1 |
| | 21344 | | AX3 | 34 |
| | 21444 | | AX4 | 36 |
| | 61 43773 | | MX7 | 59 |
| | 36117 | | IX1 | X1+X7 |
| | 0331000333 + | | NG | X1 BADCNT |
| | 62 7251777732 | | SX5 | X1-P SCRL+3 |
| | 0325000335 + | | PL | X6 BIGDSCR |
| | 63 36521 | | IX5 | X2+X1 |
| | 37353 | | IX3 | X8+X3 |
| | 0323000336 + | | PL | X2 BIGADD |
| | 64 36242 | | IX2 | X4+X2 |
| | 43053 | | MX6 | 65=17 |
| | 6221000004 | | SB2 | X7+4 |
| | 65 63610 | | SB6 | X7 |
| | 53126 | | SA1 | X5+B6 |
| | 36357 | | IX3 | X1+X7 |
| | 11401 | | BX4 | X5+X1 |
| | 66 0333000340 + | | NG | X5 NEGSIZ |
| | 0314000341 + | | NZ | X4 BIGSIZ |
| | 67 0460000116 | | ZR | B4 CREAFILE |
| | 17273 | | BX4 | X1+X3 |
| | 24541 | | NX5 | B4+X1 |
| | 0314000342 + | | NZ | X4 NOTPOW |
| | 5146000121 | | SA4 | CBEAFIL7 |
| | 71 6144777721 | | SB4 | B4=47 |
| | 67464 | | SB4 | =B4 |
| | 20336 | | LX3 | 35 |
| | 72 12643 | | BX6 | X4+X3 |
| | 5101000003 | | SA0 | B1+3 |
| | 54606 | | SA6 | A0+B6 |
| | 73 6150000073 | | SB5 | 59 |
| | 5136000122 | CREAFIL1 | SA3 | CREAFILE8 |
| | 74 63676 | | SB6 | X7+B6 |

* TEST CAPABILITY INDEX
 * ERROR, NEGATIVE INDEX GIVEN
 * INDEX OK
 * INDEX IS TOO LARGE
 * D NUMBER OF LEVELS
 * D+ ADDRESS OF SHAPE LIST
 * ERROR, NEGATIVE ADDRESS
 * SUBPROCESS FL
 * RA
 * -1
 * COUNT MUST BE > 0
 * FILE DESCRIPTION TOO LARGE
 * LWA OF LIST
 * ADDRESS SPACE EXCEEDED
 * ABS START ADDRESS OF LIST
 * FILE DESCRIPTION SIZE
 * NUMBER OF LEVELS = 1
 * LAST SHAPE NUMBER (DATA BLOCK LEN)
 * SIZE MUST BE > 0
 * SIZE MUST BE < 2 ** 17
 * THIS IS A SINGLE LEVEL FILE
 * B4 I = 47 - LOG2(N)
 * SIZE MUST = 2 ** I, SOME I
 * = SX6 0, JP B7+4 =
 * B4 I = -LOG2(N)
 * ADD DATA BLOCK LENGTH = I TO DOPE
 * ABS ADDRESS FOR FIRST DOPE WORD
 * STORE LAST LEVEL DOPE WORD
 * LOG2(FILE SIZE) MUST BE ≤ 60
 * = AX6 0, MX0 0, JP B7 =
 * DECREMENT LEVEL COUNT

FILES - CREATION, DELETION, AND ACCESSING
CREATE A FILE DESCRIPTION

COMPASS - VER 2. 07/24/71 16.19.42.
EFILES

PAGE 4

| | | | | |
|---|------------------|----------|--------------|--|
| | 53126 | SA1 | X2+B6 | • NEXT SHAPE NUMBER |
| | 36457 | IX4 | X1+X7 | |
| | 11501 | BX5 | X5*X1 | |
| L | 75 0334000340 * | NG | X5*NEGSIZ | |
| L | 76 0315000341 * | SX6 | B4 | |
| | 20655 | NZ | X5,BIGSIZ | |
| | 12636 | LX6 | 4 | |
| I | 77 24 31 | BX2 | X4+X6 | • ADD SHIFT COUNT TO DOPE WORD |
| | 11414 | NX2 | B2*X1 | • R3 I = 47 = LOG2(N) |
| | 0460000103 | BX4 | X1*X4 | |
| I | 100 6133777720 | ZR | B5,CREAFIL2 | • THIS IS FIRST LEVEL |
| | 0314000342 * | SB3 | R3=47 | • R3 I = -LOG2(N) |
| I | 101 67443 | NZ | X4,NOTPOW | |
| | 7153000074 | SB4 | B4=83 | • TOTAL I = TOTAL + NEW LOG2 |
| | 20536 | SX5 | B2+60 | • 60 = LOG2(N) |
| I | 102 12665 | LX5 | 3 | |
| | 54606 | BX6 | X2*X5 | • ADD MASK SIZE TO DOPE WORD |
| | 0400000074 | SA6 | A5+R6 | |
| | | EQ | CREAFIL1 | |
| L | 103 43015 | CREAFIL2 | MX0 | 1 |
| | 22531 | LX5 | R3,X1 | • NORMALIZE SHAPE NUMBER |
| | 15550 | BX5 | =X0*X5 | |
| | 54600 | SA6 | A5 | • STORE FIRST LEVEL DOPE WORD |
| I | 104 22641 | LX6 | B4*X1 | • SHAPE NUMBER 1 * 2 + (SUM(LOG2(SN(I))), I>1) |
| | 0305000105 | ZR | X5,CREAFIL4 | • N WAS A POWER OF TWO |
| | 63373 | SB3 | X1+B3 | • ONE MORE |
| I | 105 6133777720 | CREAFIL3 | SB3 | B7+47 |
| | 67443 | SB4 | B4=B3 | |
| I | 106 0754000343 * | GT | B4,B5,BIGFIL | • TOO LARGE |
| | 5161000002 | SA6 | B1+2 | • LENGTH OF FILE |
| I | 107 7170000040 | CREAFIL4 | SX7 | A5,FILE |
| | 6140000112 | SB4 | CREAFIL5 | • RETURN LINK FROM MAKEOBJ |
| L | 5151000067 | SAS | B7+P,PARAM+1 | • ALLOCATION BLOCK UN + NOT |
| | 15655 | BX6 | X5 | |
| I | 5161000001 | SA6 | B1+1 | • PUT AB IN FILE DESCRIPTION |
| | 0400000000 X | EQ | MAKEOBJ | |
| I | 112 13666 | CREAFIL5 | BX6 | X2=X6 |
| | 5661 | SA6 | B1 | • EMPTY FILE POINTER |
| | 56610 | SA0 | B1 | • FILE DESCRIPTION IS IN SCRATCH AREA |
| | 10055 | BX0 | X5 | |
| I | 113 0122000000 | WECS | B5 | • EOS ADDRESS |
| I | 114 6150000000 X | SB5 | CAPAB | • CAPABILITY FOR FILE |
| | 6160000000 X | SB6 | SYSRET | • RETURN LINK FROM PUTCAP |
| I | 115 5111000070 | SA1 | B1+P,PARAM+2 | • C-LIST INDEX |
| | 0400000000 X | EQ | PUTCAP | • PUT CAPABILITY IN FULL C-LIST |
| I | 116 5120000123 | CREAFIL6 | SA2 | CREAFIL9 |
| | 73710 | SX7 | X1 | • = SB5 0, JP B7+5= |
| | 20136 | LX1 | 3 | |

FILES - CREATION, DELETION, AND ACCESSING
CREATE A FILE DESCRIPTION

COMPASS - VER 2. 07/24/71 16.19.45.
EFILES

PAGE 5

| | | | | | |
|-------|------------|--------|--------|--------------------|----------------------------------|
| I 117 | 12621 | | Bx6 | X ₂ +X1 | |
| | 5161000003 | | SA6 | B ₁ +3 | * STORE DOPE WORD |
| I 120 | 5171000002 | | SA7 | B ₁ +2 | * LENGTH OF FILE |
| | 0400000107 | | EQ | CPEAFIL4 | |
| I 121 | 7160000000 | CREAFI | I7 | SX6 | 0 |
| | 0270000004 | | | JP | B ₇ +4 |
| I 122 | 21600 | CREAFI | I8 | AX6 | 0 |
| | 43000 | | | MX0 | 0 |
| | 0270000000 | | | JP | B ₇ |
| I 123 | 6150000000 | CREAFI | I9 | SB5 | 0 |
| | 0270000005 | | | JP | B ₇ +5 |
| I 124 | | | ENDECS | CRFIL | * DOPE WORD OF SINGLE LEVEL FILE |

FILES - CREATION, DELETION, AND ACCESSING
CREATE A DATA BLOCK

0 6121000070
71560000000
1 6170000111 +

CREABLK SB2 R1+P.PARAM+2
SX5
SB7 CREABLKI

COMPASS - VER 2. 07/24/71 16.19.46.

PAGE 6

- * FLAG SO MAKEP WILL FUND DATA BLOCK
- * RETURN↑ LINK FROM MAKEP

* MAKER IS USED TO CREATE (IF NECESSARY) THE POINTER BLOCKS WHICH WILL
* BE NEEDED WHEN A DATA BLOCK IS PLACED AT A PARTICULAR ADDRESS. IT FIRST
* ADDS UP THE AMOUNT OF SPACE NEEDED AND FUNDS THE PROSPECTIVE
* ALLOCATION. THEN EACH POINTER BLOCK IS ALLOCATED AND LINKED INTO THE
* FILE STRUCTURE.

PARAMETERS:

* X5 = FLAG, .NOT. 0 => DO NOT FIND THE DATA BLOCK
* B2 = ABS PTR TO (FILE, FILE ADDRESS) PAIR IN THE AP LIST.
* SPECIFICALLY IT POINTS TO THE FILE ADDRESS.
* B7 = RETURN

RETURNS:

* B5 = DATA BLOCK LENGTH
* X5 = ABS ECS ADDRESS OF WORD TO POINT TO DATA BLOCK

USES:

* P TEMP1, P TEMP2, P TEMP3 (ALIAS P CALL, P START, P LENGTH)
* P TEMP4 (AS P INDEX)
* ALL REGISTERS

CALLS: CHECK, FUNDX7, AND ALLOC

* ERROR EXIT: ISBLK = IF DATA BLOCK ALREADY EXISTS

2 76770
20722
74650
12776
3 5171000056
6166000032 +

MAKEP SX7 B7
LXT LX7 1A
SX8 BX7 X7+X6
SAT SB7 B7+P.CALL
SB6 MAKEP

- * SAVE RETURN AND PARAMETER
- * RETURN↑ LINK FROM CHECK

* CHECK IS USED TO FIND HOW MANY LEVELS OF A FILE EXIST AT A GIVEN
* ADDRESS. IT USES THE FILE DOPE VECTOR TO WALK DOWN THE TREE, AND
* THEN COUNT THE NUMBER OF MISSING LEVELS.

PARAMETERS:

* B2 = ABSOLUTE PTR TO (FILE, FILE ADDRESS) PAIR IN AP LIST.
* SPECIFICALLY IT POINTS TO THE FILE ADDRESS.
* B6 = RETURN

RETURNS:

* X7 = NUMBER OF MISSING LEVELS
 * X0 = ADDRESS OF LAST (EXISTING) POINTER
 * X2 = LENGTH OF FILE
 * X3 = START OF LAST (EXISTING) BLOCK
 * B3 = IF X7 .NE. 0, THE ABS ADDRESS (IN SCRATCH AREA)
 OF THE NEXT DOPE VECTOR WORD
 * B5 = IF X7 .EQ. 0, THE DATA BLOCK LENGTH
 A0 = =B1, THE SCRATCH AREA ADDRESS
 SCRATCH AREA = THE FILE DOPE VECTOR
 *
 * DOES NOT CHANGE:
 * A3, A5=X5, A6, A7, B1, B2, B3 (ONLY IF X7=0), B5 (ONLY IF
 X7.NE.0), AND B6
 *
 * ERROR EXITS:

* MISFILE - IF THE FILE DOES NOT EXIST
 * NEGX - IF THE FILE ADDRESS < 0
 * BIGX - IF THE FILE ADDRESS >= FILE SIZE

| | | | | | |
|----|--------------|--------|------|------------|--------------------------------|
| 4 | 5112777776 | CHECK | SA1 | R2-1 | • C1 X FILE |
| | 73010 | | SX0 | X1 | • NOT ENTRY ADDRESS |
| | 56010 | | SA0 | B1 | • SCRATCH AREA |
| 5 | 5110000001 | | RECS | 1 | |
| 6 | 43647 | | NX6 | 6A-21 | |
| | 54200 | | SA2 | A5 | |
| | 15056 | | BX0 | =X6*X2 | • EOS ADDRESS OF FILE |
| | 13112 | | BX1 | X1-X2 | • COMPARE UNIQUE NAMES |
| 7 | 10300 | | BX3 | X0 | • SAVE ADDRESS OF POINTER |
| | 11161 | | BX1 | X6*X1 | |
| | 0411000344 + | | NZ | X1-MISFILE | • ERROR, MISSING FILE |
| 10 | 76130 | | SKI | B3 | .. SAVE B3 |
| | 6130000012 + | | SB3 | CHECK0 | .. RETURN LINK |
| 11 | 6200000000 X | | JP | =X0BSIZ | |
| 12 | 62 2000000 | CHECK0 | SB4 | X2+0 | .. BSU SIZE |
| | 6231000000 | | SB3 | *1+0 | |
| 13 | 3114000000 | | RECS | R4 | .. READ IN FILE DESCRIPTOR |
| 14 | 6170000020 + | | SB7 | CHECK0 | • RETURN FROM DOPE VECTOR |
| | 6040000003 | | SB4 | A0+3 | • START OF DOEP |
| 15 | 56 20 | | SA1 | R2 | • FILE ADDRESS |
| | 0331000355 + | | NG | X1-NEGX | • ERROR - NEG ADDRESS |
| 16 | 50 0000002 | | SA2 | A0+2 | • LENGTH OF FILE |
| | 37672 | | IX6 | X1-X2 | |
| 17 | 0336000022 + | | NG | X6,CHECK1 | |
| | 0400000356 + | | EQ | B1GX | • ERROR - ADDRESS TOO LARGE |
| 20 | 15060 | CHECK0 | BX0 | =X0*X6 | • SELECT RELEVANT ADDRESS BITS |
| | 36004 | | IX0 | X0+X4 | • ADDRESS OF ... |
| | 6144000001 | | SB4 | B4+1 | |
| 21 | 01 0000001 | | RECS | 1 | • ... NEXT POINTER |
| 22 | 54400 | CHECK1 | SA4 | A5 | |

| | | | |
|---------------|-----|-----------|----------------------------------|
| 03040000026 + | ZR | X4,CHECK3 | • EMPTY BLOCK |
| 10344 | BX3 | X4 | • START OF BLOCK |
| 23 10611 | BX6 | X1 | |
| 02400000000 | JP | B4 | • EXECUTE NEXT LEVEL DESCRIPTION |

| | | | | |
|---------------|---|-----|------|---------------------|
| 24 6256000001 | + | SB5 | X4+1 | • DATA BLOCK LENGTH |
|---------------|---|-----|------|---------------------|

* * *
* * *
* * *
* * *
* * *
* * *
* * *
* * *
* * *
* * *

NOTE... THIS INSTRUCTION MUST BE EXACTLY 5 WORDS
FROM *CHECK0*

| | | | | |
|-----------------|--------|-----------|-----------------------------|--------------------------------|
| 25 76700 | + | SX7 | B4 | |
| 0260000000 | JP | B3 | | |
| 26 6134000000 | CHECK3 | SB3 | B4+0 | • THERE WERE NO MISSING LEVELS |
| 27 5144000000 | CHECK4 | SA4 | B4+0 | |
| 6144000001 | SB4 | B4+1 | | |
| 30 0324000027 + | PL | X4,CHECK4 | | |
| 77743 | SX7 | B4=B3 | • NOT YET TO LEVEL WITH SXA | |
| 31 0260000000 | JP | B4 | | |

| | | | | |
|-----------------|---------|------|-------------|-------------------------------|
| 32 0307000345 + | MAKEPO | ZR | X7,ISBLK | • DATA BLOCK EXISTS |
| 6170000040 + | | SB7 | MAKEPOA | • RETURN FROM DOPE VECTOR |
| 33 06430 | | SB4 | R3 | • SAVE INDEX IN DOPE |
| 43747 | | MX7 | 60-21 | . STRIP INDEX OFF POINTER |
| 15727 | | BX7 | X7*X3 | |
| 34 5171000057 | | SAT | R1+P,START | • START ADDRESS: LAST BLOCK |
| 7130000002 X | | SX3 | TIP,AWDS+1 | .. 1+ALLOC PREFIX+TRAILER |
| 35 37607 | | IX6 | X0=X7 | |
| 6366 | | SB6 | Y6 | • INDEX OF MISSING POINTER |
| 13777 | | BX7 | Y7-X7 | .. AMOUNT OF ECS NEEDED |
| 36 7140000001 | | SX4 | 1 | |
| 37654 | | IX6 | X2-X4 | .. LAST ADDRESS = LENGTH = 1 |
| 37 0230000000 | | JP | B3 | |
| 40 15060 | MAKEPOA | BX0 | =X0*X6 | • BLOCK LENGTH = 1 |
| 36770 | | IX7 | X7*X0 | |
| 34773 | | I | X7*X3 | • LENGTH WITH HEADER, TRAILER |
| 37624 | | IX6 | Y2-X4 | .. RESET X6 |
| 41 6133000001 | | SB3 | B3+1 | |
| 0230000000 | | JP | R3 | |
| 42 | | BSSZ | 4-*+MAKEPOA | |
| 44 6256000001 | | SB5 | X6+1 | • X6 = DATA BLOCK LENGTH = 1 |

* THE LAST INSTRUCTION MUST BE AT MAKEPOA+4 AND THE NEXT INSTRUCTION
* MUST BE AT MAKEPOA+5.

| | | | | |
|-----------------|---|-----|------------|--------------------------------|
| 45 76650 | + | SX6 | R5 | • AMOUNT NEEDED FOR DATA BLOCK |
| 6130000051 + | | SB3 | MAKEPOB | .. RETURN LINK FORM FUNDXT |
| 46 7140000000 X | | SX4 | TP,AWDS | |
| 36664 | | IX6 | X6+X4 | • ALLOCATORS SURCHARGE |
| 47 0315000050 + | | NZ | X5,MAKEPOC | • DO NOT FUND DATA BLOCK |
| 36776 | | IX7 | X7*X6 | |

FILES - CREATION, DELETION, AND ACCESSING
CREATE A DATA BLOCK

| | | | | | |
|-----|--------------|---------|------|---|------------------------------------|
| 50 | 5050000001 | MAKEPOC | SA5 | A0+1 | • AB IN + MOT |
| | 0400000000 X | | EQ | FUNDX7 | |
| 51 | 43473 | MAKEPOR | MX4 | 60=1 | • -1 |
| | 5111000057 | | SA1 | R1+P.START | |
| | 36014 | | IX0 | X1+X4 | • POINTER COUNT ADDRESS |
| 52 | 56010 | | SA0 | R1 | |
| | 76260 | | SX2 | R6 | • INDEX OF MISSING POINTER |
| | 36512 | | IX5 | X1+X2 | |
| 53 | 01 0000001 | | RECS | I | |
| 54 | 54100 | | SA1 | A0 | |
| | 6170000002 + | | SB7 | MAKEP2 | |
| 55 | 03 1000057 + | | NG | X1+MAKEPI | • THIS IS THE FILE DESCRIPTION |
| | 37614 | | IX6 | X1+X4 | • BUMP THE POINTER COUNT |
| | 54600 | | SA6 | A0 | |
| 56 | 0120000001 | | WECS | I | |
| 57 | 5010000002 | MAKEPI | SA1 | A0+2 | • LENGTH OF FILE |
| | 34674 | | IX6 | X1+X4 | • MAX ADDRESS |
| 60 | 7176000001 | | SX7 | R6+1 | .. POINTER INDEX (ROUGHLY) |
| | 20720 | | LX7 | I | |
| 61 | 5171000061 | | SA7 | R1+P.INDEX .. SAVE FOR MAKEP3, CREABLK AND MOVBLK | |
| | 0240000000 | | JP | R4 | • FIND LENGTH OF LAST BLOCK |
| 62 | 15060 | MAKEP2 | BX0 | =X0*X6 | • SIZE OF BLOCK (ALMOST) |
| | 6170000071 + | | SB7 | MAKEP3 | • RETURN LINK FROM ALLOC |
| | 37704 | | IX7 | X0=X4 .. NUMBER OF PTRS IN NEW BLOCK | |
| 63 | 5171000060 | | SA7 | R1+P.LENGTH | .. SAVE TO MAKE TRAILER WORD |
| | 7170000002 X | | SX7 | TP.AWDS+I+1 | .. GET TRUE SIZE OF BLOCK |
| 64 | 36707 | | IX7 | X0+X7 | IN X7 FOR ALLOC |
| | 6120000001 | | SB2 | S.PTRBLK | • GARBAGE TYPE IS PTR BLOCK |
| 65 | 04-0000000 X | | EQ | ALLOC | |
| 66 | | | BSSZ | 4=8+MAKEP2 | |
| 66 | 6256000001 | | SB6 | X6+1 | • LENGTH OF DATA BLOCK |
| 67 | 5111000056 | | SA1 | R1+P.CALL | |
| | 21152 | | AX1 | I8 | |
| | 63710 | | SB7 | X1 | |
| 70 | 0270000000 | | JP | R7 | • RETURN |
| 71 | 10055 | MAKEP3 | BX0 | X1 | • ADDRESS OF ONCE EMPTY POINTER |
| | 5121000041 | | SA2 | R1+P.INDEX .. PREPOSITIONED POINTER INDEX | |
| | 56010 | | SA0 | R1 | • RESTORE A0 AFTER ALLOC |
| 72 | 0110000001 | | RECS | I | • POINTER TO NEW BLOCK |
| 73 | 54 00 | | SA1 | A0 | |
| | 12712 | | BX7 | X1+X2 .. COMBINE INDEX WITH POINTER | |
| | 54700 | | SAT | A8 | |
| 74 | 0120000001 | | WECS | I | |
| 75 | 43473 | | MX4 | 60=1 | • -1 |
| | 5131000040 | | SA3 | R1+P.LENGTH | .. NUMBER OF POINTERS IN NEW BLOCK |
| | 36013 | | IX0 | X1+X3 | • ADDRESS OF TRAILER WORD |
| 76 | 14633 | | BX6 | =X3 .. -(NUMBER OF POINTERS) | |
| | 54600 | | SA6 | A0 | |
| 77 | 0120000001 | | WECS | I | • WRITE OUT BYPASS |
| 100 | 10511 | | BX5 | X1 .. START OF POINTER BLOCK | |
| | 5121000056 | | SA2 | R1+P.CALL | • ADDRESS OF POINTER COUNT WORD |
| | 36014 | | IX0 | X1+X4 | • FILE ADDRESS |
| 101 | 53220 | | SA2 | X2 | |

COMPASS - VER 2. 07/24/71 16.19.47.

PAGE 9

| | | | |
|------------------|----------|------------|---|
| 6170000106 + | SB7 | MAKEP4 | * RETURN FROM DV |
| 14744 | BX7 | -X4 | * INITIAL POINTER COUNT = 1 |
| 102 0110000001 | RECS | T | |
| 103 54100 | SA1 | A0 | |
| 12717 | BX7 | X1+X7 | |
| 54750 | SAT | A0 | |
| 10622 | BX6 | X2 | * FILE ADDRESS |
| 104 0120000001 | WECS | T | |
| 105 0240000000 | JP | R4 | |
| 106 6144000001 | MAKEP4 | SB4 | * ADVANCE TO NEXT LEVEL |
| 15660 | BX6 | -X0*X4 | |
| 36556 | IX5 | X5+X6 | * MISSING POINTER ADDRESS |
| 107 6266000000 | SB6 | X6+0 | * INDEX (= 1) IN BLOCK |
| 617000062 + | SB7 | MAKEP2 | |
| 110 0400000057 + | EQ | MAKEP1 | * DO ANOTHER LEVEL |
| 111 7175000000 X | CREABLK1 | SX7 | R5+IP,AWDS * LENGTH OF DATA BLOCK WITH ALLOC PREFIX |
| 617000113 + | * | | |
| 112 6120000000 | SB7 | CREABLK2 | .. RETURN LINK FROM ALLOC |
| 0400000000 X | SB2 | S.DTABLK | : GARBAGE TYPE IS &NORMAL& |
| | EQ | ALLOC | |
| | * | | |
| | * | | * ADD +INDEF EXPONENT TO THE ADATA BLOCK POINTER |
| | * | | |
| 113 10055 | CREABLK2 | BX0 | X5 .. ADDRESS OF POINTER |
| 56010 | | SA0 | R1 .. SCRATCH AREA |
| 43172 | | MX1 | T0 |
| 20172 | | LX1 | R0=2 |
| 114 01 0000001 | RECS | T | * MAKE 1777, LEFT ADJUSTED |
| 115 54200 | SA2 | A0 | |
| 5131000061 | SA3 | R1+P,INDEX | * PRE-POSITIONED INDEX |
| 12223 | BX2 | X2+X3 | |
| 116 12612 | BX6 | X1+X2 | |
| 5060000000 | SA4 | A0+0 | |
| 117 0120000001 | WECS | T | |
| 120 0400000000 X | EQ | SYSRET | * EXIT |

ENTRY CHKBLK
ENTRY DFLBLK
EXT RTRNFILE

* CHKBLK IS GIVEN AN ADDRESS WITHIN A FILE, AND RETURNS IN X6 OF THE
* CALLING SUBPROCESS THE NUMBER OF MISSING LEVELS AT THE GIVEN ADDRESS.
* THUS 0 IF THE BLOCK CONTAINING THE ADDRESS IS PRESENT, N IF THE N-
* LEVEL FILE IS COMPLETELY EMPTY.
*

121 6121000070 CHKBLK SB2 B1+P.PARAM+2 * FILE ADDRESS
6160000123 + SB6 CHKBLKI * RETURN LINK FROM CHECK
122 400000004 EQ CHECK
123 5171000153 CHKBLKI SA7 B1+P.XPACK+14 * STORE NUMBER OF MISSING LEVELS
0400000000 X EQ SYSRET

* DELBLK IS AN ECS ACTION TO DELETE A DATA BLOCK FROM A FILE. ANY NON-N
ECESSARY POINTER BLOCKS WILL ALSO BE DELETED.

*

* PARAMETERS: C: A FILE

* D: AN ADDRESS WITHIN THE BLOCK TO BE DESTROYED

*

| | | | | | |
|-----|--------------|---------|-----|--------------|------------------------------|
| 124 | 6121000070 | DELBLK | SB2 | B1+P.PARAM+2 | • FILE ADDRESS |
| | 6156000126 + | | SB6 | DELBLK1 | • RETURN FROM CHECK |
| 125 | 0400000004 + | | EQ | CHECK | |
| | | * | | | |
| 126 | 0317000346 + | DELBLK1 | NZ | X5,NOBLK | • NO BLOCK TO DELETE |
| | 5151000001 | | SAS | B1+1 | • ALLOCATION BLOCK FOR FILE |
| 127 | 10 00 | | BX6 | X0 | • ADDRESS OF LAST POINTER |
| | 5161000056 | | SA6 | B1+P.TEMP1 | • SAVE FOR DELEP TO USE |
| | 43073 | | MX0 | 50 | • =1 |
| 130 | 36030 | | IX0 | X2+X0 | • ADDRESS OF REFERENCE COUNT |
| 131 | 01 0000001 | RECS | I | | |
| 132 | 54100 | | SA1 | A1 | |
| | 7311 | | SX1 | X1 | .. CLEAR DIRTY BIT, ETC. |
| | 0317000347 + | | NZ | X1,INMAPS | • THIS BLOCK IS IN A MAP |
| 133 | 0170000134 + | | SB7 | DELBLK2 | • RETURN LINK |
| | 0400000000 X | | EQ | RTRNFILE | |
| 134 | 0140000000 X | DELBLK5 | SB4 | SYSRET | |

* DELEP IS GIVEN THE ADDRESS WHERE THE POINTER TO A DATA BLOCK WAS. IT
* THEN GOES UP THROUGH THE FILE DELETING AS MANY POINTER BLOCKS AS
* POSSIBLE.

*

* ENTRY: B4 = RETURN

* B1 = SCRATCH AREA, CONTAINING AT LEAST THE SECOND WORD OF THE
* FILE DESCRIPTOR (ALLOCATION BLOCK UN, NOT INDEX)

* P.TEMP1 = ADDRESS OF NOW=EMPTY POINTER

*

| | | | | | |
|-----|--------------|-------|------|------------|-----------------------------------|
| 135 | 5151000056 | DELEP | SAS | B1+P.TEMP1 | |
| | 16055 | | BX0 | X5 | • ECS ADDRESS OF POINTER |
| 136 | 5101000000 | | SA0 | B1+0 | |
| | 43473 | | MX4 | 50 | • =1 |
| | | | MX7 | 60=18 | |
| 137 | 0110000061 | | RECS | I | |
| 140 | 54100 | | SA1 | A1 | |
| | 21130 | | AX1 | 24 | |
| | 5106000363 + | | SA0 | 50 | |
| 141 | 0120000001 | | WECS | I | • ZERO POINTER WORD |
| 142 | 56010 | | SA0 | B1 | • RESET A0 TO SCRATCH AREA |
| | 15117 | | BX1 | =X7*X1 | • EXTRACT INDEX FIELD |
| | 37001 | | IX0 | X0=X1 | • ADDRESS OF POINTER COUNT |
| 143 | 01 0000001 | | RECS | I | |
| 144 | 54100 | | SA1 | A1 | |
| | 0331000160 + | | NG | X1,DELEP1 | • THIS IS A FILE DESCRIPTION |
| | 36614 | | IX6 | X1+X4 | • DECREMENT POINTER COUNT |
| 145 | 0306000151 + | | ZR | X6,DELEP2 | • THIS POINTER BLOCK IS NOW EMPTY |
| | 54600 | | SA6 | A0 | |

FILES - CREATION, DELETION, AND ACCESSING
DELETE A FILE BLOCK

COMPASS - VER 2. 07/24/71 16.19.49.

PAGE 13

| | | | |
|-----------------------------|--------|-----------------|-----------------------------------|
| 146 0120000001 | WECS | I | |
| 147 0336000156 * | NG | X6, PTRDIS | |
| 150 0240000000 | DELEPI | JP | 84 * RETURN |
| 151 07004 6160000153 * | DELEP2 | IX0 X6-X4 | * A(TOBJECT) |
| 152 0200000000 X | | SB6 DELEP3 | * GET BACK POINTER FROM ALLOCATOR |
| 153 10611 5161000066 | DELEP3 | JP =XBKPTR | |
| 154 5151000001 6770000135 * | | BX6 XI | * IT CAME BACK IN XI |
| 155 0400000000 X | | SA6 R1+P, TEMP1 | , SAVE FOR LATER |
| | | SA5 R1+1 | * ALLOCATION BLOCK FOR RTRNFILE |
| | | SB7 DPLEP | * RETURN+LINK |
| | | EQ RTRNFILE | |

THE COUNT ON A POINTER BLOCK BETTER NOT BE NEGATIVE
EVER AGAIN. VV, 17 JAN 71 AD

156 0100000000 X PTRDIS RJ *XDISASTR

FILES - CREATION, DELETION, AND ACCESSING
DELETE A FILE DESCRIPTOR

53

COMPASS - VER 2. 07/24/71 16.19.50.

PAGE 14

ECSCODE D'FIL

EXT DFLOBJ

* DEFFIL SHOULD BE CALLED WITH A FILE WHICH IS EMPTY AND IS TO BE DESTROY
* ED. IF THE FILE IS NOT EMPTY, AN ERROR IS GENERATED, OTHERWISE THE
* FILE IS DELETED.

*

* PARAMETER: CT A FILE

*

I 51 5151000067 DELFIL S45 BT+P.PARAM+1 . NOT INDEX AND U.N.

56010 SA0 B1

73050 SX0 X5

I 52 0110000001 RECS 1

I 53 54 00 SA1 A1

43647 MX6 6n=21

I 54 11161 BX0 =X6*X1

I 13151 BX1 X5-X1

I 55 0110000001 BX1 X4#X1

I 0311000344 + NZ X1,MISFIL

I 56 54100 RECS 1

I 03110003E0 + SA1 A1

I 57 6170000000 X NZ X1,NOTEMPTY . FILE MUST BE EMPTY

I 0400000000 X SB7 SYSRET

I 60 ENDECS DELOBJ

D'FIL

* READSHP IS AN ECS ACTION TO RETRIEVE THE SHAPE NUMBERS FOR A FILE. IT
* IS CALLED WITH THE ADDRESS AND LENGTH OF A BUFFER AREA IN SUBPROCESS
* MEMORY, INTO THE FIRST WORD OF WHICH WILL BE PLACED THE NUMBER OF SHAP
* E NUMBERS THE FILE POSSESSES. THE REMAINDER OF THE AREA WILL BE FILLED
* WITH SHAPE NUMBERS, UNTIL THE END OF THE BUFFER IS REACHED OR ALL
* SHAPE NUMBERS ARE RETURNED.

* PARAMETERS:

C: A FILE
D: AN ADDRESS IN SUBPROCESS MEMORY
D: A NUMBER EXPRESSING THE LENGTH OF THE BUFFER AP2

| | | | | |
|---|----|------------------------------|---------|---------------------------|
| | | | ECSCODE | RDSHP |
| I | 51 | 5111000070 0331000355 + | READSHP | SA1 NG |
| L | 52 | 50 1000001 42573 | | SA2 MX5 |
| I | 53 | 032000357 + 5131000137 | | IX2 NG |
| I | 54 | 21344 36472 56010 | | SA3 AX3 IX4 SA0 |
| L | 55 | 0323000356 + 5131000136 | | PL SA3 AX3 |
| L | 56 | 21344 36113 5131000067 | | IX1 SA3 AX3 |
| I | 57 | 7203000000 69470 43647 | | SX0 SB4 MX6 RECS |
| I | 60 | 3110000001 | | 1 SA4 |
| I | 61 | 54 00 15046 12374 | | A1 BX0 BX3 |
| I | 62 | 6213000344 + 6560000002 | | BX3 NZ SB6 |
| L | 63 | 6110000050 | | RECS |
| L | 64 | 6170000070 | | SB7 RSHP2 |
| I | 65 | 36335 6020000003 | | SA3 IX3 SB2 |
| I | 66 | 0302000077 16643 | RSHP1 | ZR BX6 JP |
| I | 67 | 0220000000 | | BX6 |
| I | 70 | 15660 37665 | RSHP2 | -X0*X6 IX6 SA6 |
| I | 71 | 37115 36225 6122000001 | | IX1 IX2 SB2 EQ |
| I | 72 | 0400000066 | | RSHP1 |

FILES - CREATION, DELETION, AND ACCESSING
READ THE SHAPE OF A FILE

COMPASS - VER 2. 07/24/71 16.19.50.
F FILES

PAGE 16

I 73 000000000

PS

* THE NEXT INSTRUCTIONS MUST BE AT RSHP2+4 AND +5.

I 74 6256000001

+ SB5 XA+1

I 75 76 50

+ SX6 B6

, DATA BLOCK LENGTH

5261000001

+ SA6 X1+1

I 76 77626

+ SX6 B2=B6

, NUMBER OF LEVELS

56640

+ SA6 B4

0400000000 X

EQ SYSRET

I 77 5112000000

RSHP3 SA1 B2+0

0331000076

NG X1=RSHP3

, END OF DOPE VECTOR

I 100 61 2000001

SB2 B2+1

0400000077

EQ RSHP4

I 101

ENDECS RSHP

ENTRY TRDB
* ACTION TO RESET THE DIRTY BIT OF A FILE BLOCK AND RETURN THE OLD VALUE.
* 0 OR 1, IN USER X6.
*

PARAMETERS:

#

| | | | | |
|-----|--------------|-------|----------|---|
| 66 | | ORG | R1+PARAM | |
| | 2 C: | EQU | 2 | .. CAPABILITY REQUIRES 2 WORDS IN AP LIST |
| | 1 D: | EQU | 1 | |
| | # | | | |
| 66 | TD.FIL | BSS | C: | .. FILE |
| 70 | TD.ADDR | BSS | D: | .. ADDRESS IN BLOCK TO TEST AND RESET |
| | | USE | 4 | |
| | # | | | |
| 157 | 6121000070 | TRDB | SB2 | R1+TD.ADDR .. PARAM FOR CHECK |
| | 616000161 + | | SB6 | TRDB1 .. RETURN LINK |
| 160 | 0200000004 + | | JP | CHECK |
| 161 | 03 7000000 X | TRDB1 | NZ | X7,SYSRET .. NO BLOCK TO TEST |
| | 42123 | | MX1 | |
| | 36031 | | IX0 | 59 .. ==1 |
| 162 | 0110000001 | | RECS | X3+X1 .. ADDR OF SECOND ALLOC WORD |
| 163 | 20165 | | LX1 | 54=1 .. MOVE HOLE TO 54 TH POSITION |
| | 54200 | | SA2 | A0 |
| | 11612 | | BX6 | X1*X2 .. RESET DIRTY BIT |
| | 54620 | | SA6 | A2 |
| 164 | 0120000001 | | WECS | 1 |
| 165 | 15621 | | BX6 | X1*X2 .. GET OLD DIRTY BIT |
| | 21665 | | AX6 | 53 |
| | 5161000153 | | SA6 | R1+P+XPACK+14 .. STORE IN USER X6 |
| 166 | 0200000000 X | | JP | SYSRET |

ENTRY MAVRLK

* MOVRALK IS AN ACTION WHICH MOVES A DATA BLOCK FROM A PLACE IN ONE FILE TO
 * A PLACE IN ANOTHER (OR POSSIBLY THE SAME) FILE. REQUIRED CONDITIONS: THE
 * DESTINATION MUST BE EMPTY, (AND OBVIOUSLY THE BLOCK TO BE MOVED MUST
 * EXIST). THE DATA BLOCK SIZE (I.E. THE LAST SHAPE NUMBER) OF BOTH FILES MUST
 * BE THE SAME, AND THE BLOCK TO BE MOVED MUST HAVE A ZERO MAP REFERENCE
 * COUNT.
 * MOVRALK FIRST CREATES ANY POINTER BLOCKS NEEDED AT THE DESTINATION BY CALLING
 * #MAKEP# (WHICH WILL NOT RETURN IF ERRORS OCCUR). THEN MOVBLK CALLS #CHECK#
 * TO FIND THE BLOCK TO BE MOVED.
 * IF EVERYTHING IS OK, MOVBLK UPDATES THE BLOCK'S BACKPOINTER, AND CALLS
 * #DLEP# TO DELETE ANY UNNECESSARY PTR BLOCKS.

* PARAMETERS:

| | | ORG | D. PARAM | |
|-----|--------------|---------|----------|--|
| 56 | | MB.F1 | BSS | C1 .. SOURCE FILE |
| 66 | | MB.A1 | BSS | C1 .. ADDRESS IN BLOCK TO BE MOVED |
| 70 | | MB.F2 | BSS | C1 .. DESTINATION FILE |
| 71 | | MB.A2 | BSS | C1 .. ADDRESS IN HOLE FOR BLOCK |
| 73 | | USF | | * |
| | | | | * |
| 167 | 6121000073 | MOVBLK | SB2 | R1+MB.A2 .. AP4 (AND AP3), FOR MAKEP |
| | 6170000174 * | | SB7 | MOVBLKI .. RETURN LINK |
| 170 | 5111000067 | | SA1 | R1+MB.F1+1 .. DETERMINE IF ONLY ONE FILE |
| | 5121000072 | | SA2 | R1+MB.F2+1 .. IS INVOLVED |
| 171 | 13712 | | BX7 | X1-X2 |
| | 5171000043 | | SAT | R1+P TEMP6 .. SAVE FLAG FOR LATER |
| 172 | 7150000001 | | SX5 | T .. FLAG TO AVOID FUNDING DATA BLOCK |
| | 0307000002 * | | ZR | X7,MAKEP .. ONLY ONE FILE, DONT FUND IT |
| 173 | 7150000000 | | SX5 | .. TWO FILES, DATA BLOCK MUST BE |
| | 0406000002 * | | EQ | .. FUNDED |
| 174 | 5111000001 | MOVBLKI | SA1 | R1+1 .. SAVE FUNDING AB OF SINK FILE IN |
| | 10711 | | BX7 | X1 .. CASE OF ABORTING FOR ERROR SO |
| | 66350 | | SR3 | R5 .. (SAVE SINK DATA BLOCK LENGTH) |
| 175 | 5171000064 | | SAT | R1+P TEMP7 .. UNCHARGING CAN PROCEED |
| | 77763 | | SX7 | =B3 .. SAVE BLOCK LENGTH IN CASE OF |
| 176 | 5171000062 | | SAT | R1+P TEMP6 .. ISNOBLK ERROR |
| | 6121000070 | | SB2 | R1+MB.A1 .. AP2 (AND AP1), FOR CHECK |
| 177 | 6160000200 * | | SB6 | MOVBLK2 .. RETURN LINK |
| | 0200000004 * | | JP | CHECK |
| 200 | 0317000220 * | MOVBLKP | NZ | X7,ISNOBLK .. ERROR, NO BLK TO MOVE |
| | 0535000221 * | | NE | R3,B5,MISMATCH .. ERROR, LENGTHS DIFFER |
| 201 | 43073 | | MX0 | R9 |
| | 36030 | | IX0 | X3+X0 .. A (OBJECT) TO GET BACK POINTER |
| | 5101000050 | | SA0 | R1+P SCR2 .. MUST NOT CLOBBER REGULAR SCRATCH AREA |
| 202 | 4110000001 | | RECS | .. |
| 203 | 54100 | | SA1 | A0 .. WORD WITH TYPE, DIRTY BIT, REF COUNT |
| | 73110 | | SX1 | X1 .. EXTRACT REF COUNT |
| | 0311000217 * | | NZ | X1,NOTZERO .. ERROR, BLOCK IS IN MAP(S) |
| 204 | 6140000205 * | | SB4 | #+1 .. GET BACK POINTER FROM ALLOCATOR |
| | 0206000000 X | | JP | =XCHGPTR .. AND SUBSTITUTE NEW POINTER |
| 205 | 10055 | | BX0 | X5 .. ADDRESS OF NEW POINTER |

FILES - CREATION, DELETION, AND ACCESSING

MOVE A DATA BLOCK

14711
235 7160000003
0400000000 X

BX7 X1
SX6 E FILES • ERROR CLASS
EQ E ERROR

COMPASS - VER 2. 07/24/71 16.19.53.

PAGE 20

FILES - CREATION, DELETION, AND ACCESSING
READ/WRITE A FILE

COMPASS - VER 2. 07/24/71 16.19.53.

PAGE

21

| | | | | | |
|-----|------------|--------|------|--------------|---------------------------------------|
| 236 | 6120000000 | WRITFI | SB2 | 0 | • OPERATION TO READ AND WRITE FILES |
| | 5111000067 | | SA1 | B1+P,PARAM+1 | • C:FILE, D:FILE AD, D:CM AD, D:COUNT |
| 237 | 0400000241 | + | EO | R#1 | |
| 240 | 6120000001 | READFI | SB2 | 1 | • NON-ZERO |
| | 5111000067 | | SA1 | B1+P,PARAM+1 | • AP1 |
| 241 | 56010 | RFI | SA0 | B1 | • SCRATCH AREA |
| | 73010 | | SX0 | X1 | • ECS ADDRESS OF NOT ENTRY |
| | 45767 | | MX7 | 6n-21 | |
| 242 | 0110000001 | | RECS | 1 | • READ NOT ENTRY OF THE FILE |
| 243 | 54200 | | SA2 | A# | |
| | 5141000071 | | SA4 | B1+P,PARAM+3 | • GET AP3 |
| 244 | 0334000332 | + | NG | X4,NEGADD | ERROR- NEGATIVE CM ADDR |
| | 16027 | | BX0 | =X7*X2 | • ECS ADDRESS OF FILE TO X0 |
| | | | BX1 | X1-X2 | • COMPARE UNIQUE NAMES |
| 245 | 5121000072 | | SA2 | B1+P,PARAM+4 | • GET AP4 |
| | 11117 | | BX1 | X7*X7 | |
| 246 | 5151000137 | | SA5 | B1+P,XPACK+2 | • SUBPROCESS FL TO X5 |
| | 0311000344 | + | NZ | X1,RFE1 | • ERROR, FILE HAS BEEN DELETED |
| 247 | 5111000136 | | SA1 | B1+P,XPACK+1 | • SUBPROCESS RA TO X1 |
| | 36742 | | IX7 | X4*X2 | • AP3 + AP4 + X7 |
| | 21544 | | AX5 | 36 | |
| 250 | 0332000337 | 2 | NG | X2*RFE2 | • ERROR, COUNT NEGATIVE |
| | 21144 | | AX1 | 32 | |
| | 37757 | | IX7 | X5-X7 | (THIS COST CHARLES 1\$) |
| 251 | 0337000335 | + | NG | X7*RFE3 | • ERROR, ADDRESS-SPACE VIOLATED |
| | 63330 | | SB3 | X2 | • COUNT TO B3 |
| | 36414 | | IX4 | X1+X4 | |
| 252 | 5111000070 | | SA7 | B1+P,PARAM+2 | • AP2 |
| | 0335000331 | + | NG | X1,NEGfad | ERROR- NEGATIVE FILE ADDRESS |
| 253 | 63440 | | SB4 | X4 | • RA + AP3 + B4 |

| RWECS | MACRO | 5 |
|-------|-----------|--------------------------------|
| LOCAL | READ,DONE | |
| NZ | RD2,READ | |
| MX6 | | |
| LX6 | RD4 | • DIRTY B1 |
| WECS | RD1 | • PERFORM WRITE |
| SA0 | R1+0 | • SCRATCH AREA |
| IX0 | X4*X7 | • ADDRESS OF SECOND ALLOC WORD |
| RECS | | |
| SA5 | A0 | |
| BX6 | X5*X6 | • MAKE DIRTY |
| SA6 | A5+0 | |
| WECS | RD | |
| UP | DONE | |
| READ | RECS | |
| DONE | BSS | |
| | ENDM | |
| | RWECS | |

* THE STATE OF THE REGISTERS IS AS FOLLOWS:

* X0 ECS ADDRESS OF THE FILE
 * X1 AP2, A LOGICAL FILE ADDRESS
 * X2 AP4, COUNT
 * B2 0 IF WRITE, NON-ZERO IF READ
 * B3 =X2
 * B4 AP3 + RA, ABSOLUTE CM ADDRESS

| | | |
|---|--|---|
| 36612 254 0110000050 255 5040000002 6170000260 + 256 37446 6060000002 43773 257 0324000262 + 0700000356 + | IX6 X1+X2 RECS P-SCRL SA4 A0+2 SB7 RFRET IX4 X4-X6 SB6 A0+2 MX7 E9 PL X4,RF5 EQ DFE6 | <ul style="list-style-type: none"> • AP2 + AP4 = X6 • READ FILE DESCRIPTION TO SCRATCH • FILE LENGTH • RETURN ADDRESS FROM DOPE VECTOR • ADDRESS OF FIRST LEVEL DESC. = 1 • =1 TO X7 • ERROR, X6 OUT OF BOUNDS |
|---|--|---|

* EXAMPLE OF A POINTER BLOCK LEVEL DESCRIPTION:

| | | |
|---------------------------|---|--|
| AX6 X MX0 Y JP B7+0 | RFRET BX0 =X0*X6 SB6 B4+1 IX0 X0+X4 RECS 1 SA4 A0+0 ZR X4,SYSFRET BX6 X1 JP B6+1 | <ul style="list-style-type: none"> • MASK OFF PART OF X1 RELEVANT • ECS ADDRESS OF NEXT POINTER • EMPTY BLOCK • GO TO NEXT LEVEL DESCRIPTION |
|---------------------------|---|--|

* EXAMPLE OF DATA BLOCK LEVEL DESCRIPTION:

| | | |
|---|-----------------------|--|
| SX6 LENGTH OF DATA BLOCK = 1 JP B7+4 | SB5 X6+1 BX6 X6*X1 | <ul style="list-style-type: none"> • LENGTH OF DATA BLOCK TO BS • USE LENGTH = 1 AS A MASK |
|---|-----------------------|--|

* EXAMPLE OF 1 LEVEL FILE DESCRIPTION:

| | | |
|-------------------------------------|---|---|
| SB5 LENGTH OF DATA BLOCK JP B7+5 | SB7 X6 BX1 X6 SB7 B6-B7 SA0 B4 SB6 B4-B7 IX0 X4+X6 GT B6,B0,RF5 | <ul style="list-style-type: none"> • START ADDRESS IN FIRST BLOCK • ADDRESS OF LAST POINTER TO X1 • NUMBER OF WORDS TO BE TRANSFERRED • CM ADDRESS • DECREASE COUNT • BRANCH IF NOT LAST TRANSFER |
|-------------------------------------|---|---|

| | | | | | |
|-----|---------------|-----|-------|-----------|------------------------------------|
| 267 | 05 0000276 + | RF4 | RWECS | R3 | LAST TRANSFER AND RETURN |
| 277 | 0400000000 X | | EQ | SYSRET | |
| 300 | 0520000307 + | RF5 | RWECS | B7 | • TRANSFER FIRST BLOCK |
| 316 | 66447 | | SB4 | B4+B7 | • BUMP CM ADDRESS |
| | 6136000000 | | SB3 | B6+0 | |
| 311 | 37017 | RF6 | IX0 | X1-X7 | • ADDRESS OF NEXT POINTER |
| | 5101000000 | | SA0 | B1+0 | |
| | 10100 | | BX1 | X0 | |
| 312 | 01 0000001 | | RECS | 1 | • REAR POINTER |
| 313 | 50400000000 | | SA4 | A6+0 | |
| | 03040000000 X | | ZR | X4+SYSRET | • EMPTY BLOCK |
| 314 | 0264000327 + | | DF | X4+RF7 | • BRANCH IF NOT DATA BLOCK NEXT |
| | 10044 | | BX0 | X4 | |
| | 67635 | | SB6 | B3-B5 | • DECREASE COUNT |
| 315 | 56040 | | SA0 | B4 | |
| | 0606000257 + | | GE | B5+86+RF4 | • BRANCH TO LAST TRANSFER |
| | 66360 | | SB3 | B6 | |
| 316 | 0520000325 + | | RWECS | B5 | • TRANSFER DATA BLOCK |
| 326 | 66445 | | SB4 | B4+B5 | • BUMP CM ADDRESS |
| | 0400000311 + | | EQ | R7+6 | |
| 327 | 30147 | RF7 | IX1 | X4+X7 | • PREPARE TO READ FIRST POINTER IN |
| | 0324000311 + | | PL | X4+RF6 | • POINTER BLOCK |
| | 36004 | | IX0 | X3+X4 | |
| 330 | 5160000311 + | | SB6 | R6 | • GET BACK POINTER FROM ALLOCATOR |
| | 0200000000 X | | JP | =XBKPTR | |

| | | ERRNUMS | XTEXT | |
|-----|--------------|---------|-------|----------|
| 331 | 7110000002 | NEGFAD | SX1 | 2 |
| | 0200000334 + | | JP | ERR20 |
| 332 | 7110000003 | NEGADD | SX1 | 3 |
| | 0400000334 + | | EQ | ERR20 |
| 333 | 71 0000002 | BADCNT | SX1 | 2 |
| 334 | 7170000000 | ERR20 | SX7 | E_NEGPAR |
| | 0400000361 + | | EQ | C1'2 |
| 335 | 7110000002 | BIGDSCR | SX1 | 2 |
| | 0400000337 + | | EQ | ERR21 |
| 336 | 7110000001 | BIGADD | SX1 | 1 |
| 337 | 71 0000001 | ERR21 | SX7 | E_BIGPAR |
| | 0400000361 + | | EQ | C1'2 |
| | 335 + RFE3 | | EQU | BIGDSCR |
| 340 | 7170000007 | NEGSIZ | SX7 | E_NEGSIZ |
| | 0400000351 + | | EQ | C1'3 |
| 341 | 7170000010 | BIGSIZ | SX7 | E_BIGSIZ |
| | 0400000351 + | | EQ | C1'3 |
| 342 | 7170000011 | NOTPOW | SX7 | E_NOTPOW |
| | 0400000351 + | | EQ | C1'3 |
| 343 | 7170000012 | BIGFIL | SX7 | E_BIGFIL |
| | 0400000351 + | | EQ | C1'3 |
| 344 | 7170000000 | MISFIL | SX7 | E_NOFIL |
| | 0400000351 + | | EQ | C1'3 |
| | 344 + RFE1 | | EQU | MISFIL |

NEGATIVE FILE ADDRESS

FILES - CREATION, DELETION, AND ACCESSING
READ/WRITE A FILE

COMPASS - VER 2. 07/24/71 16.19.56.

PAGE 24

| | | | | |
|-----|--------------|----------|-----|----------|
| 345 | 7170000001 | ISBLK | SX7 | E_ISBLK |
| | 0400000351 + | | EQ | CL3 |
| 346 | 7170000005 | N0BLK | SX7 | E_N0BLK |
| | 0400000351 + | | EQ | CL3 |
| 347 | 7170000002 | INMAPS | SX7 | E_INMAPS |
| | 0400000351 + | | EQ | CL3 |
| 350 | 7170000006 | NOTEMPTY | SX7 | E_NOTEMP |
| 351 | 7160000003 | CL3 | SX6 | E_FILES |
| | 0400000000 X | | EQ | E_ERROR |
| 352 | 7170000004 | NEGINDX | SX7 | E_NEGIX |
| | 0400000361 + | | EQ | CL2 |
| 353 | 7170000005 | BIGINDX | SX7 | E_BIGIX |
| | 54170 | | SA1 | A1 |
| 354 | 0400000361 + | | EQ | CL2 |
| 355 | 7110000001 | NEGX | SX1 | I |
| | 0400000334 + | | EQ | EZR20 |
| 356 | 7110000001 | BIGX | SX1 | I |
| | 0400000337 + | | EQ | EZR21 |
| | 356 + RFE4 | | EQU | BIGX |
| 357 | 71 0000000 | NEGLEN | SX7 | E_NEGPAR |
| | 7110000002 | | SX1 | R |
| 360 | 0400000361 + | | EQ | CL2 |
| | 357 + RFE2 | | EQU | NEGLEN |
| 361 | 20 22 | CL2 | LX1 | I |
| | 43352 | | MX3 | 43 |
| | 11173 | | BX1 | X1*X3 |
| | 12717 | | BX7 | X1+X7 |
| 362 | 7160000002 | | SX6 | E_PARMS |
| | 0400000000 X | | EQ | E_ERROR |
| 364 | | | END | |

36357 STORAGE USED
6600 ASSEMBLY

1807 STATEMENTS
9.606 SECONDS

509 SYMBOLS
427 REFERENCES

000006 INVENTED SYMBOLS

FILES - CREATION, DELETION, AND ACCESSING
SYMBOLIC REFERENCE TABLE

COMPASS - VER 2. 07/24/71 16.19.57.

PAGE 25

| | | | | | | | | |
|----------|-----|-----------|---------|---------------------------------|--|--|--|--|
| ALLOC | 0 | EXTERNAL* | 9/29 | 10/21 | | | | |
| ATFILE | 40 | | 4/24 | | | | | |
| BADCNT | 333 | PROGRAM* | 3/25 | 23/34 L | | | | |
| BIGADD | 336 | PROGRAM* | 3/30 | 23/39 L | | | | |
| BIGDSCR | 335 | PROGRAM* | 3/27 | 23/37 L 23/42 | | | | |
| BIGFIL | 343 | PROGRAM* | 4/31 | 23/49 L | | | | |
| BIGINDX | 353 | PROGRAM* | 3/11 | 24/12 L | | | | |
| BIGSIZ | 341 | PROGRAM* | 3/29 | 4/06 23/45 L | | | | |
| BIGX | 356 | PROGRAM* | 7/45 | 15/24 24/17 L 24/19 | | | | |
| RKPTR | 0 | EXTERNAL* | 13/07 | 23/26 | | | | |
| CAPAB | 0 | EXTERNAL* | 4/25 | | | | | |
| CHECK | 4 | PROGRAM* | 7/21 L | 11/11 12/09 17/17 18/41 | | | | |
| CHECK0 | 20 | PROGRAM* | 7/18 | 7/48 L | | | | |
| CHECK00 | 12 | PROGRAM* | 7/33 | 7/35 L | | | | |
| CHECK1 | 22 | PROGRAM* | 7/44 | 7/53 L | | | | |
| CHECK3 | 26 | PROGRAM* | 8/01 | 8/15 L | | | | |
| CHECK4 | 27 | PROGRAM* | 8/16 L | 8/18 | | | | |
| CHG PTR | 0 | EXTERNAL* | 18/52 | | | | | |
| CHKBLK | 121 | PROGRAM* | 11/01 E | 11/09 L | | | | |
| CHKBLK1 | 123 | PROGRAM* | 11/10 | 11/12 L | | | | |
| CL2 | 361 | PROGRAM* | 23/36 | 23/41 24/11 24/14 24/22 24/24 L | | | | |
| CL3 | 351 | PROGRAM* | 23/44 | 23/48 23/52 24/04 24/08 L | | | | |
| | | | 23/46 | 23/50 24/02 24/06 | | | | |
| CMBUFF | 50 | | 3/04 | 5/17 14/02 14/25 15/13 16/16 | | | | |
| CREABLK | 0 | PROGRAM* | 2/02 E | 6/01 L | | | | |
| CREABLK1 | 111 | PROGRAM* | 6/03 | 10/17 L | | | | |
| CREABLK2 | 113 | PROGRAM* | 10/19 | 10/25 L | | | | |
| CREAFTL | 51 | | 3/24 L | | | | | |
| CREAFTLA | 54 | | 3/10 L | 3/13 | | | | |
| CREAFTLB | 56 | | 3/09 | 3/16 L | | | | |
| CREAFTL1 | 74 | | 3/53 L | 4/19 | | | | |
| CREAFTL2 | 103 | | 4/11 | 4/22 L | | | | |
| CREAFTL3 | 105 | | 4/27 | 4/29 L | | | | |
| CREAFTL4 | 107 | | 4/34 L | 5/04 | | | | |
| CREAFTL5 | 112 | | 4/35 | 4/40 L | | | | |
| CREAFTL6 | 116 | | 3/40 | 4/51 L | | | | |
| CREAFTL7 | 121 | | 3/44 | 5/07 L | | | | |
| CREAFTL8 | 122 | | 3/52 | 5/10 L | | | | |
| CREAFTL9 | 123 | | 4/51 | 5/14 L | | | | |
| C: | 2 | | 17/08 D | 17/11 18/17 18/19 | | | | |
| DELBLK | 124 | PROGRAM* | 11/02 E | 12/07 L | | | | |
| DELBLK1 | 126 | PROGRAM* | 12/08 | 12/11 L | | | | |
| DELBLK2 | 134 | PROGRAM* | 12/21 | 12/23 L | | | | |
| DELEP | 135 | PROGRAM* | 12/35 L | 13/11 19/14 19/21 19/44 19/48 | | | | |
| DELEP1 | 150 | PROGRAM* | 12/50 | 13/03 L | | | | |
| DELEP2 | 151 | PROGRAM* | 12/52 | 13/05 L | | | | |
| DELEP3 | 153 | PROGRAM* | 13/06 | 13/08 L | | | | |
| DELFIL | 51 | | 14/09 L | | | | | |
| DELOBJ | 0 | EXTERNAL* | 14/23 | | | | | |
| DISASTR | 0 | EXTERNAL* | 13/18 | | | | | |
| D: | 1 | | 17/09 D | 17/12 18/18 18/20 | | | | |
| ERR20 | 334 | PROGRAM* | 23/31 | 23/33 23/35 L 24/16 | | | | |
| ERR21 | 337 | PROGRAM* | 23/38 | 23/40 L 24/18 | | | | |

FILES - CREATION, DELETION, AND ACCESSING
SYMBOLIC REFERENCE TABLE.

COMPASS - VER 2. 07/24/71 16.19.57.

PAGE 26

| | | | | | | | | | |
|----------|-----|-----------|---------|---------|---------|-------|---------|-------|-------|
| E.RIGFIL | 12 | | 23/49 | | | | | | |
| E.RIGIX | 5 | | 24/12 | | | | | | |
| E.RIGPAR | 1 | | 23/40 | | | | | | |
| E.RIGSIZ | 10 | | 23/45 | | | | | | |
| E.CRFIL | 0 | E FILES | 3/73 L | | | | | | |
| E.DLFIL | 53 | E FILES | 14/51 L | | | | | | |
| E.ECS | 0 | EXTERNAL* | | 4/45 | 9/40 | 10/36 | 14/13 | 18/48 | 22/29 |
| | | | | 7/25 | 9/44 | 12/18 | 14/20 | 19/03 | 23/02 |
| | | | | 7/38 | 9/50 | 12/41 | 15/33 | 19/13 | 23/02 |
| | | | | 7/52 | 10/04 | 12/45 | 15/40 | 19/39 | 23/02 |
| | | | | 9/10 | 10/09 | 12/49 | 17/22 | 21/11 | 23/02 |
| | | | | 9/16 | 10/30 | 13/02 | 17/27 | 22/11 | 23/05 |
| | | | | | | | | | 23/20 |
| E.ERROR | 0 | EXTERNAL* | | 20/63 | 24/09 | 24/29 | | | |
| E.FILES | 3 | | | 20/02 | 24/08 | | | | |
| E.INMAPS | 2 | | | 19/28 | 24/05 | | | | |
| E.ISBLK | 1 | | | 24/61 | | | | | |
| E.MTSMCH | 4 | | | 19/32 | | | | | |
| E.NEGIX | 4 | | | 24/10 | | | | | |
| E.NEGPAR | 0 | | | 23/95 | 24/20 | | | | |
| E.NEGSIZ | 7 | | | 23/43 | | | | | |
| E.NORKD | 5 | | | 24/63 | | | | | |
| E.NOBLK | 3 | | | 19/30 | | | | | |
| E.NOTFL | 0 | | | 23/51 | | | | | |
| E.NOTEMP | 6 | | | 24/67 | | | | | |
| E.NOTPOW | 11 | | | 23/47 | | | | | |
| E.PARMS | 2 | | | 24/28 | | | | | |
| E.RDSHP | 62 | E FILES | 15/12 L | | | | | | |
| FUNDX7 | 0 | EXTERNAL* | | 9/72 | 19/22 | 19/49 | | | |
| GT.NRMB | 0 | | | 3/62 | | | | | |
| GT.PTRB | 1 | | | 3/61 | | | | | |
| INMAPS | 347 | PROGRAM* | | 12/20 | 24/05 L | | | | |
| IP.AWDS | 0 | EXTERNAL* | | 8/29 | 8/50 | 9/26 | 10/17 | 19/17 | 19/45 |
| ISRLK | 345 | PROGRAM* | | 8/23 | 24/01 L | | | | |
| ISNOBLK | 220 | PROGRAM* | | 18/42 | 19/30 L | | | | |
| L.CRFIL | 53 | | | 5/17 D | | | | | |
| L.DLFIL | 7 | | | 14/25 D | | | | | |
| L.RDSHP | 30 | | | 16/16 D | | | | | |
| MAKEOBJ | 0 | EXTERNAL* | | 4/39 | | | | | |
| MAKEP | 2 | PROGRAM* | | 6/33 L | 18/30 | 18/32 | | | |
| MAKEP0 | 32 | PROGRAM* | | 6/38 | 8/23 L | | | | |
| MAKEP0A | 40 | PROGRAM* | | 8/24 | 8/36 L | 8/42 | | | |
| MAKEP0B | 51 | PROGRAM* | | 8/49 | 9/03 L | | | | |
| MAKEP0C | 59 | PROGRAM* | | 8/52 | 9/01 L | | | | |
| MAKEP1 | 57 | PROGRAM* | | 9/12 | 9/16 L | 10/15 | | | |
| MAKEP2 | 62 | PROGRAM* | | 9/11 | 9/22 L | 9/30 | 10/14 | | |
| MAKEP3 | 71 | PROGRAM* | | 9/23 | 9/36 L | | | | |
| MAKEP4 | 106 | PROGRAM* | | 10/01 | 10/10 L | | | | |
| MB.A1 | 70 | | | 18/18 L | 18/39 | | | | |
| MB.A2 | 73 | | | 18/20 L | 18/23 | | | | |
| MB.F1 | 66 | | | 18/17 L | 18/25 | | | | |
| MB.F2 | 71 | | | 18/19 L | 18/26 | | | | |
| MISFIL | 344 | PROGRAM* | | 7/31 | 14/18 | 15/37 | 23/51 L | 23/53 | |
| MISMATCH | 221 | PROGRAM* | | 18/43 | 19/32 L | | | | |

FILES - CREATION, DELETION, AND ACCESSING
SYMBOLIC REFERENCE TABLE.

COMPASS - VER 2. 07/24/71 16.19.58.

PAGE 27

| | | | | | | | | |
|----------|-----|-----------|---------|---------|---------|---------|---------|---------|
| MOVBLK | 167 | PROGRAM* | 18/01 E | 18/23 L | | | | |
| MOVBLK1 | 174 | PROGRAM* | 18/24 | 18/33 L | | | | |
| MOVBLK2 | 200 | PROGRAM* | 18/40 | 18/42 L | | | | |
| MOVEERR | 222 | PROGRAM* | 19/29 | 19/31 | 19/33 L | | | |
| MOVEERR1 | 234 | PROGRAM* | 19/39 | 19/53 L | | | | |
| NEGAUD | 332 | PROGRAM* | 3/18 | 21/13 | 23/32 L | | | |
| NEGFAU | 331 | PROGRAM* | 21/30 | 23/30 L | | | | |
| NEGINDX | 352 | PROGRAM* | 3/65 | 24/10 L | | | | |
| NEGLEN | 357 | PROGRAM* | 15/18 | 24/20 L | 24/23 | | | |
| NEGSIZ | 340 | PROGRAM* | 3/38 | 4/04 | 23/43 L | | | |
| NEAX | 355 | PROGRAM* | 7/41 | 15/14 | 24/15 L | | | |
| NOBLK | 346 | PROGRAM* | 12/11 | 24/03 L | | | | |
| NOTEMOTY | 350 | PROGRAM* | 14/21 | 24/07 L | | | | |
| NOTPOW | 342 | PROGRAM* | 3/43 | 4/13 | 23/47 L | | | |
| NOTZERO | 217 | PROGRAM* | 18/50 | 19/28 L | | | | |
| OBJSIZ | 0 | EXTERNAL* | 7/34 | | | | | |
| PTRDIS | 156 | PROGRAM* | 13/52 | 13/18 L | | | | |
| PUTCAP | 0 | EXTERNAL* | 4/48 | | | | | |
| P_CALL | 56 | | 2/19 D | 6/37 S | 9/32 | 9/57 | | |
| P_CLIST | 155 | | 3/16 | | | | | |
| P_INDEX | 61 | | 2/22 D | 9/20 S | 9/37 | 10/31 | 19/08 | 19/37 |
| P_LENGTH | 60 | | 2/21 D | 9/25 S | 9/45 | | | |
| P_PARAM | 66 | | 3/14 | 4/36 | 11/09 | 15/13 | 18/16 | 21/12 |
| | | | 3/16 | 4/47 | 12/07 | 15/28 | 21/02 | 21/16 |
| | | | 3/17 | 6/01 | 14/09 | 17/07 | 21/06 | 21/29 |
| | | | 3/26 | 15/39 | 22/10 | | | |
| P_SCROLL | 50 | | 18/46 | | | | | |
| P_SCR2 | 50 | | | | | | | |
| P_START | 57 | | 2/20 D | 8/28 S | 9/04 | | | |
| P_TEMP1 | 56 | | 2/19 | 12/14 S | 12/35 | 13/09 S | 19/01 S | 19/35 S |
| P_TEMP2 | 57 | | 2/20 | 19/33 S | 19/53 | | | |
| P_TEMP3 | 60 | | 2/21 | | | | | |
| P_TEMPO4 | 61 | | 2/22 | | | | | |
| P_TEMP5 | 62 | | 18/38 S | 19/46 | | | | |
| P_TEMP6 | 63 | | 18/58 S | 19/13 | 19/43 | | | |
| P_TEMP7 | 64 | | 18/36 S | 19/40 | | | | |
| P_XPACK | 135 | | 3/19 | 3/20 | 11/12 S | 15/19 | 15/25 | 17/29 S |
| READFIL | 240 | PROGRAM* | 2/03 E | 21/05 L | | | | 21/18 |
| READSHP | 51 | | 15/13 L | | | | | 21/26 |
| RFE1 | 344 | PROGRAM* | 21/19 | 23/53 D | | | | |
| RFE2 | 357 | PROGRAM* | 21/23 | 24/23 D | | | | |
| RFE3 | 335 | PROGRAM* | 21/26 | 23/42 D | | | | |
| RFE4 | 356 | PROGRAM* | 22/17 | 24/19 D | | | | |
| RFRET | 260 | PROGRAM* | 22/12 | 22/25 L | | | | |
| RF1 | 241 | PROGRAM* | 21/03 | 21/07 L | | | | |
| RF3 | 262 | PROGRAM* | 22/16 | 22/29 L | | | | |
| RF4 | 267 | PROGRAM* | 23/01 L | 23/17 | | | | |
| RF5 | 300 | PROGRAM* | 22/53 | 23/04 L | | | | |
| RF6 | 311 | PROGRAM* | 23/07 L | 23/21 | 23/23 | 23/25 | | |
| RF7 | 327 | PROGRAM* | 23/13 | 23/22 L | | | | |
| RSHP1 | 66 | | 15/44 L | 15/53 | | | | |
| RSHP2 | 70 | | 15/40 | 15/47 L | | | | |
| RSHP3 | 76 | | 16/08 L | 16/12 | | | | |
| RSHP4 | 77 | | 15/44 | 16/11 L | 16/14 | | | |

FILES - CREATION, DELETION, AND ACCESSING
SYMBOLIC REFERENCE TABLE.

COMPASS - VER 2. 07/24/71 16.19.58.

PAGE 28

| | | | | | | | |
|----------|-----|-----------|---------|---------|-------|-------|-------|
| PTRNFIL | 0 | EXTERNAL* | 12/22 | 13/12 | | | |
| SYSFRET | 0 | EXTERNAL* | 17/18 | 22/30 | 23/12 | | |
| SYSRET | 0 | EXTERNAL* | 4/46 | 11/14 | 14/22 | 17/30 | 23/02 |
| | | | 10/36 | 12/23 | 16/10 | 19/11 | |
| S.DTARLK | 0 | | 3/02 D | 10/20 | | | |
| S.PTRRLK | 1 | | 3/01 D | 9/28 | | | |
| TD.ADDR | 70 | | 17/12 L | 17/15 | | | |
| TD.FIL | 66 | | 17/11 L | | | | |
| TRDB | 157 | PROGRAM* | 17/01 E | 17/15 L | | | |
| TRDB1 | 161 | PROGRAM* | 17/16 | 17/18 L | | | |
| WRITFIL | 236 | PROGRAM* | 27/03 E | 21/01 L | | | |