

RM80

FORMATTER
CZRNJB0

AH-T123B-MC
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MADE IN USA



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IDENTIFICATION

PRODUCT CODE: AC-T122B-MC
PRODUCT NAME: CZRNJ80 RM80 FORMATTER
PRODUCT DATE: SEPTEMBER 15, 1982
MAINTAINER: CX DIAGNOSTIC GROUP
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1.0 INTRODUCTION

1.1 ABSTRACT

THE RM80 FIELD FORMAT PROCESS FOR 16 BIT APPLICATIONS IS A RECONSTRUCTION PROCESS THAT RE-ESTABLISHES THE FACTORY FORMAT OF THE HDA. THE FORMATTER IS NOT INTENDED TO BE USED BY FIELD SERVICE AS RM80 TROUBLE SHOOTING TOOL; ALSO, HDAS SHOULD NOT BE FORMATTED UNLESS THE EXISTING FORMAT HAS BEEN DAMAGED BY HARDWARE OR SOFTWARE FAILURES.

BECAUSE OF THE TECHNOLOGY USED IN THE RM80 HDA, IT IS EXPECTED THAT THE NUMBER OF DEFECTS (BAD SECTORS) WILL EXCEED THE NUMBER OF BAD SECTORS THAT THE 16 BIT FILE SYSTEMS CAN ACCEPT. SKIP SECTORING WAS ADDED TO THE RM80 TO REDUCE THE APPARENT NUMBER OF BAD SECTORS: SKIPPED SECTORS ARE VISIBLE ONLY TO THE HOST OPERATING SYSTEM'S RM80 DEVICE DRIVER. (THE FILE SYSTEM VISIBLE DEFECTS ARE LISTED IN THE DEC STD 144 MFG AND USER'S FILES, MDBSF AND UDBSF, RESPECTIVELY.)

THE RM80 HDA MEDIA IS VERIFIED IN MANUFACTURING USING PARAMETERIC VERIFICATION EQUIPMENT. THE DEFECT LIST GENERATED BY THE MANUFACTURING VERIFICATION PROCESS IS THE MASTER LIST OF DEFECTS ON THE HDA. EXPERIENCE WITH PREVIOUS DISK PRODUCTS INDICATES THAT FUNCTIONAL FORMAT/VERIFICATION PROGRAMS CANNOT PERFORM ADEQUATE MEDIA VERIFICATION AND WILL MISS A LARGE NUMBER OF THE DEFECTS WHICH ARE PRESENT. SINCE ONLY A FEW OF THE ACTUAL DEFECTS WHICH ARE PRESENT ARE DETECTED BY A FUNCTIONAL FORMAT/VERIFICATION PROGRAM, MARKING THE ERRORS DISCOVERED BY SUCH A VERIFICATION PROGRAM WILL, IN EFFECT, CREATE AN HDA WHICH HAS A HIGHER APPARENT ERROR RATE THAN IT HAD INITIALLY. CONSEQUENTLY, THE FIELD FORMATTER WILL NOT RELY ON FUNCTIONAL MEDIA VERIFICATION ALONE. THE FIELD FORMAT OPERATION WILL BE BASED ON THE HDA'S 16 BIT MODE BAD SECTOR FILES SUPPORTED BY INCIDENTAL MEDIA VERIFICATION. FUNCTIONAL MEDIA VERIFICATION, ALTHOUGH LIMITED, WILL BE ATTEMPTED AS A MEANS OF DETECTING DEFECTS WHICH HAVE DEVELOPED SINCE THE HDA LEFT MANUFACTURING.

THE LOCATIONS OF SKIPPED SECTORS ARE LISTED IN A NEW BAD SECTOR SUPPORT FILE CALLED THE SKIPPED SECTOR FILE (SSF). THE LOCATIONS OF SKIPPED SECTORS ARE NECESSARY SO THAT A FIELD FORMAT PROGRAM CAN RECONSTRUCT (SEE SECTION 7) THE FACTORY FORMAT OF AN HDA. THE NON-SKIPPED SECTOR LOCATIONS ARE LISTED IN THE DEC STD 144 FILES. THESE FILES ARE CREATED/INITIALIZED BY THE MANUFACTURING FORMAT PROCESS.

2.0 OPERATING REQUIREMENTS

2.1 HARDWARE REQUIREMENTS

THE FOLLOWING MINIMUM HARDWARE CONFIGURATION, ASSUMED TO BE OPERATIONAL, IS REQUIRED TO LOAD AND EXECUTE THE RM80 SUBSYSTEM FORMATTER:

PDP-11/70 PROCESSOR
28K MEMORY

KW11-L OR KW11-P CLOCK
PROGRAM LOADING DEVICE
TERMINAL
RH70 CONTROLLER
1 TO 8 RM80 DISK DRIVES

2.2 PREREQUISITE DIAGNOSTIC PROGRAMS

RM80 DISKLESS TEST, PART 1 AND 2

3.0 OPERATING PROCEDURE

3.1 LOADING

THE PROGRAM MAY BE LOADED FROM ANY XXDP MEDIA.

3.2 SWITCH OPTIONS

THE PROGRAM DOES NOT SUPPORT ANY HARDWARE OR SOFTWARE SWITCH REGISTER OPTIONS.

3.3 STARTING

THE PROGRAM MUST BE STARTED AT LOCATION 200 . HOWEVER, BECAUSE LOCATION 200 GETS OVER WRITTEN BY THE RSX11 MONITOR, THE PROGRAM CANNOT BE RESTARTED AFTER ITS INITIAL STARTUP.

3.4 HALTING

THE PROGRAM CAN BE HALTED BY PRESSING THE HALT SWITCH ON THE PROCESSOR FRONT PANEL.

NOTE: ONCE THE PROGRAM IS HALTED, IT CAN ONLY BE RESTARTED BY PRESSING CONTINUE ON THE PROCESSOR FRONT PANEL OR RELOADING THE PROGRAM AND STARTING AT ADDRESS 200 .

3.5 RESTARTING

THE PROGRAM CAN ONLY BE RESTARTED BY RELOADING THE PROGRAM AND STARTING AT ADDRESS 200 .

4.0 OPERATOR INTERFACE

4.1 PROGRAM IDENTIFICATION

THE PROGRAM TYPES ITS TITLE THE FIRST TIME IT IS STARTED AFTER BEING LOADED.

4.2 CONSOLE DIALOGUE

THE PROGRAM ENTERS A CONSOLE DIALOGUE SEQUENCE AFTER TYPING THE PROGRAM IDENTIFICATION.

UPON STARTING THE PROGRAM, THE FOLLOWING PROMPT WILL ASK THE USER TO SPECIFY WHICH DRIVE IS TO BE FORMATTED.

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'DRIVE #: '

ENTER THE DRIVE ADDRESS NUMBER (0-7) FOLLOWED BY CARRIAGE RETURN.
IF THE SELECTED DRIVE IS NOT AVAILABLE, THE PROGRAM WILL TYPE AN
ERROR MESSAGE AND RETURN TO THE THIS PROMPT.

NOTE: ONLY ONE DRIVE CAN BE FORMATTED AT A TIME. THIS PROGRAM DOES
NOT ALLOW MULTIPLE DRIVE FORMATTING.

AFTER THE USER HAS SELECTED THE DRIVE TO BE FORMATTED, THE PROGRAM
WILL ASK FOR AN OPTION TO BE SELECTED WITH THE FOLLOWING PROMPT.

'OPTIONS: '

THE COMMANDS AVAILABLE FOR THE OPTION PROMPT ARE AS FOLLOWS:

IN INITIALIZE ALL THE BAD SECTOR FILES (DEC STD 144 AND
SSF).

NOTE: THE INITIALIZE COMMAND WILL DESTROY THE CONTENTS
OF ALL THE BAD SECTOR FILES (DEC STD 144 AND
SSF).

FO FORMAT THE DISK. (ALL CYLINDERS 0 - 560.)

<CR> SAME AS 'FO' COMMAND

FO:F FORMAT THE FE CYLINDERS ONLY. (CYL 559., TRK 2 - CYL
560., TRK 13.)

LI LIST THE PHYSICAL ADDRESSES OF THE DEFECTS IN ALL THE
BAD SECTOR FILES (DEC STD 144 FILES AND SSF).

LI:L LIST THE LOGICAL ADDRESSES OF THE DEFECTS IN THE DEC
STD 144 FILES. (SSF DOES NOT CONTAIN ANY LOGICAL
ADDRESSES)

VFL=N VERIFY SECTOR COUNT, WHERE 'N' IS THE NUMBER OF TIMES
TO RE-READ A TRACK DURING VERIFY OPERATION. THE
DEFAULT IS 1 (RANGE 1-256.). AFTER COMPLETING THE
FORMAT, 'N' WILL RETURN TO ITS DEFAULT VALUE.

ERL=N ERROR LIMIT COUNT, WHERE 'N' IS THE NUMBER OF ERRORS
ALLOWED BEFORE THE FORMAT IS ABORTED. THE DEFAULT IS
256 (RANGE 1-256.). AFTER COMPLETING THE FORMAT, 'N'
WILL RETURN TO ITS DEFAULT VALUE.

CSR=N RM BASE ADDRESS, WHERE 'N' IS THE ADDRESS OF RMCS1 IN
OCTAL. THE DEFAULT IS 176700. AFTER COMPLETING THE
FORMAT, 'N' WILL RETAIN ITS CHANGED VALUE.

VEC=N RM VECTOR ADDRESS, WHERE 'N' IS THE ADDRESS OF
INTERRUPT ADDRESS IN OCTAL. THE DEFAULT IS 254. AFTER
COMPLETING THE FORMAT, 'N' WILL RETAIN ITS CHANGED
VALUE.

THE USER MAY STRING ANY COMBINATION OF COMMAND OPTIONS TOGETHER BY USING A SLASH (/) TO SEPARATE THE COMMANDS. HOWEVER, IF ONLY A CARRIAGE RETURN IS TYPE FOR THE OPTION PROMPT, THE PROGRAM WILL GO INTO FORMAT (FO) MODE USING THE DEFAULT PARAMETERS.

EXAMPLE #1:

OPTION:FO/CSR=176000/VEC=260/VFL=3/ERL=10<CR>

THE ABOVE COMMAND INDICATES THAT THE ENTIRE DISK WILL BE FORMATTED, THE RMCS1 ADDRESS WILL BE SET TO 176000, THE VECTOR ADDRESS WILL BE SET TO 260, THE VERIFY COUNT WILL BE SET TO 3 AND ERROR LIMIT WILL BE SET TO 10.

THE FOLLOWING PROMPT WILL OCCUR IF THE OPTION SPECIFIED WAS AN INITIALIZE (IN) OR FORMAT (FO) COMMAND.

'CONTINUE (L) N ? '

IF THE RESPONSE TO THIS PROMPT IS A 'N' FOLLOWED BY A CARRIAGE RETURN OR JUST A CARRIAGE RETURN, THE PROGRAM WILL ABORT THE CURRENT COMMAND AND RETURN TO THE DRIVE PROMPT. IF THE RESPONSE IS A 'Y' FOLLOWED BY A CARRIAGE RETURN, THE PROGRAM WILL CONTINUE TO THE NEXT STEP IN THE CURRENT COMMAND OPTION.

THE FOLLOWING PROMPT WILL OCCUR IF THE OPTION SPECIFIED WAS A FORMAT (FO) COMMAND.

'UPDATE MODE (L) N ? '

IF THE RESPONSE TO THIS PROMPT IS A 'N' FOLLOWED BY A CARRIAGE RETURN OR JUST A CARRIAGE RETURN, THE PROGRAM WILL ABORT THE CURRENT COMMAND AND RETURN TO THE DRIVE PROMPT. IF THE RESPONSE IS A 'Y' FOLLOWED BY A CARRIAGE RETURN, THE PROGRAM WILL ENTER THE MANUAL BAD SECTOR UPDATE ROUTINE.

THE FOLLOWING TWO PROMPTS WILL OCCUR IF THE OPTION SPECIFIED WAS AN INITIALIZE (IN) OR FORMAT (FO) COMMAND.

'ENTER DATE (DD-MMM-YY): '

THE DATE IS ENTERED BY TYPING A DAY IN DECIMAL, THE FIRST 3 LETTERS OF THE MONTH AND THE LAST TWO DECIMAL DIGITS OF THE YEAR.

AFTER ENTERING THE DATE, THE PROGRAM WILL PROMPT THE USER FOR THE HDA SERIAL NUMBER AS FOLLOWS:

'HDA SERIAL NUMBER: '

THE HDA SERIAL NUMBER CAN BE ANY DECIMAL NUMBER UP TO 10. DIGITS IN LENGTH.

IF THE OPTION WAS A FORMAT (FO) COMMAND AND THE USER HAS ENTERED THE MANUAL UPDATE MODE, THE FOLLOWING PROMPT WILL BE TYPED TO ALLOW THE ENTERING OF SECTORS INTO THE BAD SECTOR FILES.

'ENTER BAD SECTR ADRS:
CYL,TRK,SEC = '

THE BAD SECTOR ENTRY IS ENTERED BY TYPING THE CYLINDER ADDRESS, TRACK ADDRESS AND SECTOR ADDRESS IN DECIMAL, FOLLOWED BY A CARRIAGE RETURN. TO TERMNATE THE BAD SECTOR ENTRY LIST, TYPE A CARRIAGE RETURN IN RESPONSE TO THE ENTRY PROMPT.

IF THE BAD SECTOR HAS A HEADER ERROR OR DRIVE TIMING ERROR (EXAMPLE #2), THE LETTER 'H' (HEADER DEFECT) MUST FOLLOW THE DEFECT INDICATED. THIS WILL INDICATE TO THE PROGRAM, WHICH FILE (SSF OR DEC STD 144) THE DEFECT MUST BE STORED IN.

EXAMPLE #1:

ENTER BAD SECTR ADRS:
CYL,TRK,SEC = 525,4,25<CR> ;DEFECT CYL 524., TRK 4., SEC 25.
CYL,TRK,SEC = <CR> ;TERMINATE INPUT

IF THIS DEFECT (EXAMPLE #1) IS NOT ALREADY IN THE SKIP SECTOR FILE (SSF), THE DEFECT WILL BE ENTERED AS A SKIP SECTOR ENTRY. (SEE SECTION 7.0 FOR MORE DETAILS)

EXAMPLE #2:

ENTER BAD SECTR ADRS:
CYL,TRK,SEC = 525,4,25H<CR> ;DEFECT CYL 524., TRK 4., SEC 25. (HEADER ERROR)
CYL,TRK,SEC = <CR> ;TERMINATE INPUT

THIS SECTOR (EXAMPLE #2) WILL NOT BE ENTERED AS A SKIPPED SECTOR, BECAUSE A HEADER ERROR WAS FLAGGED BY THE USER, BY PLACING THE LETTER 'H' AFTER THE DEFECT. THE DEFECT WILL BE ENTERED IN THE MANUFACTURES SECTION OF THE DEC STD 144 FILE. (SEE SECTION 7.0 FOR MORE DETAILS)

NOTE: THE LETTER LOCATED WITHIN THE BRACKETS () INDICATES THE TYPE OF RESPONSE REQUIRED BY THE USER, D=DECIMAL, O=OCTAL AND L=LETTER.

4.3 WARNING MESSAGES

WARNING MESSAGES WILL BE TYPED AT THE APPROPRIATE TIME DURING THE PROGRAM TO NOTIFY THE USER THAT THE CONTENTS OF THE HDA WILL BE LOST. THE FOLLOWING MESSAGE WILL BE TYPED BEFORE INITIALIZING OR FORMATTING THE HDA.

'** WARNING - DATA WILL BE LOST ON DRN: **'

TO FURTHER WARN THE USER, THE FOLLOWING MESSAGE WILL BE TYPED JUST BEFORE INITIALIZING THE HDA.

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'** WARNING - BAD SECTOR FILES WILL BE OVERWRITTEN ON DRN: **'

FOLLOWING EACH WARNING MESSAGE, THE USER IS ALLOWED THE OPPORTUNITY TO TERMINATE THE PROGRAM WITHOUT DESTROYING THE DATA ON HDA, BY RESPONDING TO A PROGRAM PROMPT MESSAGE. (SEE SECTION 4.2)

4.4 PROGRESS REPORTS

NO PROGRESS REPORTS ARE GIVEN DURING THE EXECUTION OF THE PROGRAM.

4.5 PERFORMANCE REPORT

NO PERFORMANCE REPORTS ARE GIVEN DURING THE EXECUTION OF THE PROGRAM.

4.6 PROGRAM HALTS

THERE ARE NO SCHEDULED HALTS DURING THE EXECUTION OF THE PROGRAM.

4.7 ERROR REPORTS

THE FIRST LINE CONTAINS THE ERROR MESSAGE: ONE LINE OF TEXT WHICH GIVES A BRIEF DESCRIPTION OF THE ERROR. THE ERROR MESSAGE IS FOLLOWED BY ONE LINE CONTAINING DATA HEADERS AND DATA PERTINENT TO THE ERROR. THE LAST LINE CONTAINS THE DECIMAL EQUIVALENT OF THE RMDC AND RMDA REGISTERS, WHICH INDICATE WHERE THE ERROR OCCURED.

THE FOLLOWING PRINTOUT SHOWS A TYPICAL ERROR MESSAGE FOR THIS PROGRAM:

HEADER/DATA ERROR DURING VERIFY
RMCS1=144252 RMCS2=040300 RMER1=100000 RMER2=000000 RMDA=001014
CYLINDER=559. TRACK=2. SECTOR=11.

4.8 EXECUTION TIME

ONE PASS OF THE PROGRAM TAKES ABOUT 20 MINUTES.

5.0 ENVIRONMENTAL SUPPORT

5.1 PROCESSOR COMPATIBILITY

THE RM80 SUBSYSTEM FORMATTER IS EXECUTABLE ON A PDP-11/70 PROCESSOR, PROVIDING PREVIOUSLY MENTIONED HARDWARE REQUIREMENTS ARE MET.

5.2 DUAL PORT CONFIGURATIONS

THE RM80 SUBSYSTEM FORMATTER DOES NOT SPECIFICALLY TEST DUAL PORT LOGIC IN THE RM80 ADAPTER BUT IS EXECUTABLE ON RM80 SUBSYSTEMS HAVING THE DUAL PORT OPTION PROVIDING THE DUAL PORT SWITCH IS SET TO THE APPROPRIATE PORT (A OR B).

5.3 MEMORY PARITY HARDWARE

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447 MEMORY PARITY HARDWARE IS NOT USED DURING THE EXECUTION OF THE RM80
448 SUBSYSTEM FORMATTER.
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450 5.4 MEMORY MANAGEMENT HARDWARE
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452 MEMORY MANAGEMENT HARDWARE IS NOT USED DURING THE RM80 SUBSYSTEM
453 FORMATTER.
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455 5.5 ACT11, APT11 COMPATIBILITY
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457 THE RM80 SUBSYSTEM FORMATTER IS COMPATIBLE WITH ACT11 AND APT11 IN
458 DUMP MODE ONLY.
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460 5.6 XXDP COMPATIBILITY
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462 THE RM80 SUBSYSTEM FORMATTER IS COMPATIBLE WITH XXDP IN DUMP MODE
463 ONLY.
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465 5.7 OPERATING SYSTEM COMPATIBILITY
466

467 THE PROGRAM IS NOT COMPATIBLE WITH ANY OPERATING SYSTEM WHEN IT IS
468 ASSEMBLED AS AN XXDP STANDALONE PROGRAM.
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470 6.0 FORMAT DESCRIPTION
471

472 6.1 FORMAT PROCESS
473

474 THE FORMATTER USES THE DEC STD 144 MFG AND USER FILES AND THE
475 SKIPPED SECTOR FILE TO RECONSTRUCT (SEE SECTION 7) AN HDA'S 16 BIT
476 FACTORY FORMAT AND ATTEMPTS TO FIND ADDITIONAL DEFECTS BY
477 PERFORMING A FUNCTIONAL MEDIA VERIFICATION.
478

479 BEFORE FORMATTING BEGINS, THE FORMATTER WILL READ AND VERIFY THE
480 DEC STD 144 FILES AND THE SSF FILE. THESE FILES CONTROL THE
481 MARKING OF KNOWN DEFECTS ON THE HDA. THE PROGRAM WILL READ AND
482 VERIFY THE DEFECT FILES USING THE FOLLOWING PROCEDURE:
483

- 484 1. EACH COPY OF THE SKIPPED SECTOR FILE (SSF) IS READ UNTIL A
485 GOOD READ OCCURS AND THE HEADER AND DATA FIELDS ARE VALIDATED
486 USING THE INTERNAL CHECKSUMS.
487
- 488 2. STARTING WITH THE PRIMARY DEC STD 144 TRACK (CYL 558., TRK
489 13.) AND CONTINUING TO THE SECONDARY DEC STD 144 TRACK (CYL
490 559., TRK 1.), THE PROGRAM WILL READ EACH COPY OF THE 16 BIT
491 MANUFACTURING AND USER'S DEC STD 144 FILE UNTIL A GOOD READ
492 OCCURS AND THE INTERNAL FORMAT OF EACH FILE IS VALIDATED.
493
- 494 3. VERIFY THAT THE HDA SERIAL NUMBERS IN THE DEC STD 144
495 (MANUFACTURING AND USER) FILE AGREE WITH THE SERIAL NUMBER IN
496 THE SSF. IF THE SERIAL NUMBER IN THE DEC STD 144
497 (MANUFACTURING OR USER) FILE DOES NOT COMPARE WITH THE SERIAL
498 NUMBER IN THE SSF, THEN THE NEXT COPY OF THE FILE IN ERROR IS
499 READ AND VALIDATED.
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- 501 4. VERIFY THAT THE DISK ADDRESSES IN THE DEC STD 144
502 (MANUFACTURING AND USER) FILE ARE VALID RM80 ADDRESSES. IF

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AN ADDRESS ERROR IS FOUND, THE FILE IN ERROR WILL BE CONSIDERED CORRUPTED AND THE NEXT COPY OF THE FILE IN ERROR WILL BE READ AND VALIDATED.

AFTER VERIFYING THE DEFECT FILES, THE PROGRAM WILL THEN FORMAT (WRITE HEADER AND DATA) AND VERIFY (WRITE CHECK HEADER AND DATA) ALL 32 SECTORS OF EACH TRACK IN 16 BIT MODE USING THE FOLLOWING 32 BIT DATA PATTERN TO FILL THE DATA FIELD OF EACH SECTOR.

155555 133333 (OCTAL) OR DB6DB6DB (HEX)

THE FOLLOWING SEQUENCE IS USED FOR FORMATTING:

1. THE SKIPPED SECTOR ERROR INHIBIT BIT (SSEI), BIT 09 IN THE RMOF REGISTER, IS SET BEFORE EACH WRITE OR READ OPERATION. SETTING THIS BIT, IN 16 BIT MODE, ALLOWS ACCESS TO ALL 32 SECTORS ON THE TRACK.

USING A WRITE HEADER AND DATA COMMAND, EACH TRACK (32 SECTORS) IS FORMATTED IN 16 BIT MODE USING THE ABOVE DATA PATTERN FOR THE DATA PORTION OF EACH SECTOR.

2. USING A WRITE CHECK HEADER AND DATA COMMAND, EACH TRACK IS READ 1 TIME. IF A DATA ERROR OCCURS AT A SECTOR WHICH IS NOT LISTED IN EITHER THE 16 BIT DEC STD 144 FILE OR THE SSF, THE SECTOR IS READ 20 TIMES. IF A DATA ERROR OCCURS DURING THE REREAD SEQUENCE, THE SEQUENCE IS DISCONTINUED, AND THE ADDRESS OF THE FAILING SECTOR IS SAVED IN THE APPROPRIATE DEFECT LIST. THE PROGRAM THEN CONTINUES CHECKING THE REMAINDER OF THE TRACK.

AFTER A TRACK HAS BEEN VERIFIED, THE TRACK IS REFORMATTED WITH THE BAD SECTOR MARKINGS BASED ON THE PREVIOUSLY DETECTED ERRORS AND ANY NEWLY DETECTED ERRORS.

THE PRIMARY AND SECONDARY DEC STD 144 TRACKS (CYL 558, TRK 13 AND CYL 559, TRK 1, RESPECTIVELY), THE SSF TRACK (CYL 559, TRK 0), AND THE FE AREA WILL BE REFORMATTED.

THE SSF REVISION NUMBER AND DATE WILL BE UPDATED ONLY IF THE SSF FILE HAS BEEN UPDATED.

BOTH THE SSF AND THE DEC STD 144 FILES WILL BE SORTED SO THAT THE DEFECT ENTRIES ARE IN ASCENDING ORDER. THE 16 BIT DEC STD 144 FILES AND THE SKIPPED SECTOR FILES WILL BE REWRITTEN.

NOTE: THE 18 BIT MODE DEFECT DEC STD 144 FILE RECORDS AND THE 18 BIT MODE SSF WILL BE REPLACED BY NULL RECORDS DURING A 16 BIT MODE FORMAT.

IF, DURING THE FORMAT, THE NUMBER OF NEWLY DETECTED DEFECTS CAUSES THE TOTAL NUMBER OF DEFECTS IN THE MDBSF AND THE UDBSF TO EXCEED THE MAXIMUM, THE PROGRAM DISCONTINUES THE FORMAT AND DISPLAYS AN ERROR MESSAGE TO THIS EFFECT. THE PROGRAM THEN RESTARTS THE FORMAT PROCESS USING ONLY THE BAD SECTOR INFORMATION ALREADY IN THE MDBSF, UDBSF, AND THE SSF. THE FORMATTER, UNDER THESE CIRCUMSTANCES, WILL

WRITE THE TRACK STRUCTURE AND VERIFY THAT THE WRITE OCCURED CORRECTLY, ONLY - NO MEDIA VERIFICATION WILL BE ATTEMPTED. THE OPERATOR WILL MAKE THE DETERMINATION IF THE HDA IS DEFECTIVE AND IF IT IS TO BE REPLACED.

7.0 RECONSTRUCTION DESCRIPTION

7.1 OLD DEFECTS

THE TRACK IS RECONSTRUCTED ACCORDING TO DEFECTS LISTED IN THE 16 BIT MDBSF, THE 16 BIT UDBSF, AND THE 16 BIT SSF.

1. THE SSF IS CHECKED FOR AN ENTRY ON THE CURRENT TRACK. IF AN ENTRY EXISTS, THE SSE BIT IS SET IN THE HEADER OF THE SECTOR LISTED AND IN ALL FOLLOWING SECTORS, TO THE END OF THE CURRENT TRACK. (SEE SECTION 9.2)
2. THE DEC STD 144 FILE IS CHECKED FOR ANY ENTRIES ON THE CURRENT TRACK.

FOR DEC STD 144 ENTRIES WHICH OCCUR BEFORE A SKIPPED SECTOR OR ON A TRACK WHICH DOES NOT HAVE A SKIPPED SECTOR, THE APPROPRIATE HEADER BIT IS RESET (MF OR UF, ACCORDING TO THE FILE CONTAINING THE DEFECT ADDRESS). ALSO, THE ACTUAL ADDRESS (PHYSICAL ADDRESS) OF THE DEFECT IS LISTED IN THE DEC STD 144 FILE. (SEE SECTION 9.1 AND 9.3)

FOR DEC STD 144 ENTRIES WHICH OCCUR AFTER A SKIPPED SECTOR, THE APPROPRIATE HEADER BIT IS RESET (MF OR UF, ACCORDING TO THE FILE CONTAINING THE DEFECT ADDRESS). ALSO, THE DEFECT IS LISTED IN THE DEC STD 144 FILE BY LOGICAL ADDRESS. (SEE SECTION 9.4 - 9.11) THE LOGICAL ADDRESS IS:

LOGICAL ADDRESS = PHYSICAL(CYL,TRK,SEC-1)

7.2 NEW DEFECTS

NEWLY DETECTED ERRORS ON TRACKS WHICH ALREADY HAVE ERRORS, ARE HANDLED AS FOLLOWS:

1. IF THE ERROR OCCURS BEFORE A SKIPPED SECTOR OR IF THERE IS NO SSF ENTRY FOR THE CURRENT TRACK, THE PHYSICAL ADDRESS OF THE SECTOR IS ENTERED IN THE 16 BIT UDBSF AND THE UF BIT IN THE HEADER OF EACH ERRORED SECTOR IS RESET. (SEE SECTION 9.1 AND 9.3)
2. IF THE ERROR OCCURS AFTER A SKIPPED SECTOR, THE LOGICAL ADDRESS OF THE SECTOR IS ENTERED IN THE 16 BIT UDBSF AND THE UF BIT IN THE HEADER OF EACH ERRORED SECTOR IS RESET. (SEE SECTION 9.4 - 9.10) THE LOGICAL ADDRESS IS:

LOGICAL ADDRESS = PHYSICAL(CYL,TRK,SEC-1)

ADDITIONALLY, IF THE DEFECT SECTOR HAS A HEADER RELATED ERROR, THE SECTOR'S PHYSICAL ADDRESS IS ALSO ENTERED IN THE 16 BIT UDBSF. (SEE SECTION 9.5) HOWEVER, IF THE HEADER ERROR

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IS SECTOR 31, ONLY THE SECTOR'S LOGICAL ADDRESS IS ENTERED IN THE UDBSF. (SEE SECTION 9.10)

FOR THE CASE OF A SECTOR WITH A HEADER FIELD DEFECT WHICH IS IMMEDIATELY FOLLOWED BY A SECTOR WITH A DATA FIELD DEFECT, THE LOGICAL ADDRESSES WILL BE ENTERED IN THE 16 BIT UDBSF FOR EACH SECTOR. (SEE SECTION 9.9)

NEWLY DETECTED ERRORS ON TRACKS WHICH WERE PREVIOUSLY HAD NO ERRORS, ARE HANDLED AS FOLLOWS:

1. SKIPPED SECTORING STARTS WITH THE FIRST (PRIMARY), NON-HEADER DEFECT ON THE TRACK. THE PHYSICAL ADDRESS OF THIS DEFECT IS ENTERED INTO THE SSF. (SEE SECTION 9.2)

NOTE: SKIPPED SECTORING CANNOT BEGIN WITH A SECTOR WHICH HAS A HEADER FIELD DEFECT.

THE HEADER OF THE SKIPPED SECTOR AND THE HEADERS OF THE SECTORS ON THE SAME TRACK FOLLOWING THE SKIPPED SECTOR WILL HAVE SSE (BIT 13) SET.

THE UF BIT WILL BE RESET IN THE HEADER OF ALL NON-SKIPPED SECTORS EVEN THOUGH THE HEADER OF THE ERROR SECTOR MAY NOT BE READABLE.

2. HEADER FIELD AND DATA FIELD DEFECTS PRECEDING A SKIPPED SECTOR WILL BE ENTERED IN THE 16 BIT MDBSF BY PHYSICAL ADDRESS. (SEE SECTION 9.3)
3. IF THE ONLY DEFECT ON A TRACK IS SECTOR 31, THE DEFECT WILL BE MARKED AS A SKIPPED SECTOR, EVEN IF THE DEFECT AFFECTS THE HEADER, AND ITS ADDRESS ENTERED IN THE SSF. (SEE SECTION 9.11)
4. MULTIPLE DEFECTS WITHIN A SECTOR WILL BE CONSIDERED A SINGLE DEFECT. IF BOTH THE HEADER AND THE DATA FIELD ARE AFFECTED BY DEFECTS, THE HEADER DEFECT WILL TAKE REPORTING PRECEDENCE.
5. NEW DEFECTS DETECTED ON PREVIOUSLY ERROR FREE TRACK. WITHIN THE DEC STD 144 AREA, THE SSF TRACK, OR THE FE TRACKS ARE NOT ENTERED IN THE 16 BIT UDBSF. IF APPROPRIATE, A DEFECT ON ANY OF THESE TRACKS IS SKIPPED AND ITS ADDRESS IS ENTERED IN THE 16 BIT SSF. IF A DEFECT WITHIN THIS ADDRESSING RANGE CANNOT BE SKIPPED, THE DEFECT WILL BE TREATED AS A DEC STD 144 ERROR (I.E., THE UF BIT IS RESET IN THE HEADER) EXCEPT THAT THE ADDRESS OF THE DEFECT IS NOT ENTERED IN THE 16 BIT UDBSF.

8.0 BAD SECTOR FILE LAYOUTS

8.1 SKIPPED SECTOR FILE (SSF)

THE SSF HAS STORAGE SPACE FOR THE PHYSICAL ADDRESSES OF 378 SKIPPED SECTORS. DEFECT ADDRESSES ARE STORED IN THE SSF IN ASCENDING SEQUENCE IN THE SAME FORMAT AS IN THE DEC STD 144 FILES, I.E.,

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CYLINDER ADDRESS FOLLOWED BY SECTOR AND TRACK ADDRESSES. THE SSF WILL BE FILLED WITH ONE'S BETWEEN THE LAST DEFECT ADDRESS AND THE CHECKSUM. NOTE THAT BOTH THE HEADER PORTION AND THE DATA PORTION OF THE SSF ARE PROTECTED BY CHECKSUMS. THE 16 BIT SSF IS REPEATED 5 TIMES ON THE FIRST TRACK OF THE FE AREA: CYLINDER 559, TRACK 0. THE SSF TRACK IS WRITTEN IN 16 BIT MODE.

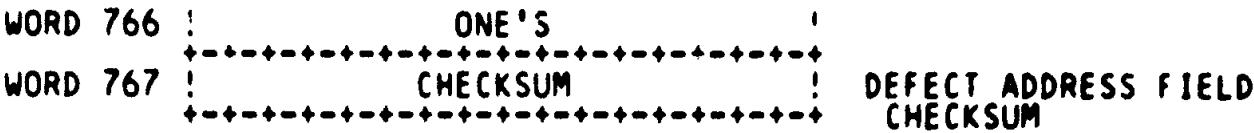
THE SERIAL NUMBER FIELD IN BOTH THE SSF AND THE DEC STD 144 FILE IS IN THE SAME FORMAT.

THE SSF FILE FOR 18 BIT MODE DEFECTS WILL BE REPEATED 5 TIMES FOLLOWING THE 16 BIT SSF FILE. SINCE SKIPPED SECTORING IS A MECHANISM WHICH IS INHIBITED WHEN THE RM80 IS BEING OPERATED IN 18 BIT MODE, THE USE OF THE SSF FOR 18 BIT MODE ADDRESSES IS ONLY TO PASS THE 18 BIT MODE ADDRESSES OF HDA DEFECTS WHICH DO NOT APPEAR IN THE DEC STD 144 FILE. THE 18 BIT SSF COPIES WILL NEITHER BE USED NOR PRESERVED DURING 16 BIT FIELD FORMATTING.

THE SSF FILE LAYOUT FOR BOTH 16 BIT MODE AND 18 BIT MODE FILES ARE AS FOLLOWS:

	15	0	
WORD 0	+	HDA SERIAL NUMBER (LSB)	SERIAL NUMBER IS A 31 BIT BINARY NUMBER
WORD 1	+	HDA SERIAL NUMBER (MSB)	
WORD 2	+	YEAR ! MON ! DAY	CREATION DATE (YEARS SINCE 1978)
WORD 3	+	YEAR ! MON ! DAY	REVISION DATE (YEARS SINCE 1978)
WORD 4	+	REVISION NO	
WORD 5	+	UNUSED ! FORMAT TYPE	FORMAT TYPE: 1= 16 BIT 0= 18 BIT
WORD 6	+	UNUSED	
WORD 7	+	UNUSED	UNUSED HEADER WORDS WILL BE ZERO FILLED
WORD 8	+	UNUSED	
WORD 9	+	NUMBER OF SSF ENTRIES	
WORD 10	+	CHECKSUM	SSF HEADER CHECKSUM
WORD 11	+	CYLINDER ADDRESS	PHYSICAL CYL. ADRS
WORD 12	+	TRACK ! SECTOR	PHYSICAL ADDRESSES
WORD 13	+	ONE'S	NULL ENTRIES WILL BE ONE'S FILLED
	/	/	
	/	/	
	+	+	

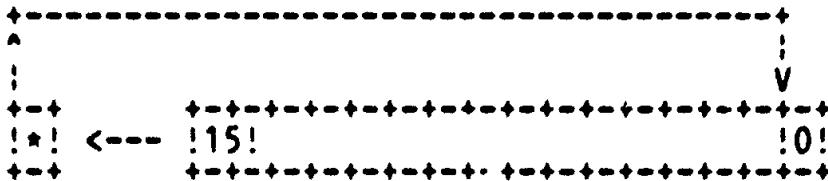
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THE CHECKSUM IS CALCULATED USING THE FOLLOWING ALGORITHM. THE CHECKSUM CALCULATION IS BASED ON 16 BIT QUANTITIES (WORDS) AND IS REPEATED ONCE FOR THE SSF HEADER FIELD AND ONCE FOR THE SSF DATA FIELD.

```
SIZE = FIELD_SIZE_IN_16_BIT_WORDS
CHECKSUM = 1
REPEAT
    CHECKSUM = CHECKSUM + (16 BIT WORD)
    CHECKSUM = CHECKSUM .ROTATED_LEFT_1_BIT.
    SIZE = SIZE - 1
UNTIL SIZE .EQ. 0
END_REPEAT
```

THE ROTATE REFERED TO ABOVE IS THE FOLLOWING:

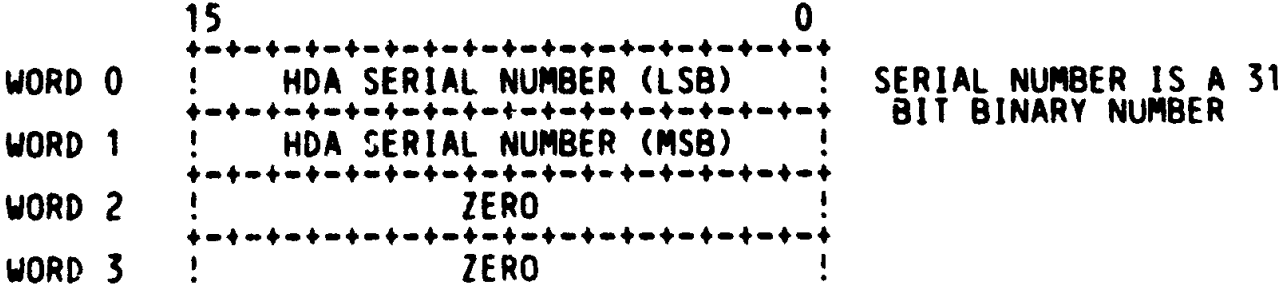


'*' REFERS TO EITHER THE 'C' BIT FCP PDP-11 OPERATION OR BIT 16 FOR MACHINES OTHER THAN THE PDP-11. NOTE THAT THE ROTATE OCCURS AFTER THE ADDITION; THE BIT SHIFTED INTO THE LSB POSITION OF THE ACCUMULATED CHECKSUM IS THE 'CARRY OUT' FROM THE 16 BIT ADDITION OPERATION.

8.2 DEC STD 144 MANUFACTURING AND USER BAD SECTOR FILES

THE DEC STD 144 FILE IS CONTAINED ON TWO TRACKS ON THE RM80. THE FIRST TRACK IS THE PRIMARY COPY OF THE FILE, THE SECOND TRACK IS THE SECONDARY COPY OF THE FILE. THE PRIMARY COPY OF THE DEC STD 144 FILE IS WRITTEN ON THE LAST ADDRESSABLE TRACK BEFORE THE FE CYLINDERS (CYL 558, TRK 13); THE SECONDARY COPY OF THE DEC STD 144 FILE IS WRITTEN AT CYL 559, TRK 1.

BOTH THE PRIMARY AND THE SECONDARY DEC STD 144 TRACKS ARE WRITTEN IN 16 BIT MODE. THE LAYOUT OF THE DEC STD 144 RECORD IS GIVEN BELOW. THE LAYOUT IS THE SAME FOR ALL COPIES OF THE FILE.



```

WORD 4      :      CYLINDER ADDRESS
WORD 5      :      TRACK      !      SECTOR
WORD 6      :      ONE'S
WORD 7      :      ONE'S
/
WORD 254    :      ONE'S
WORD 255    :      ONE'S

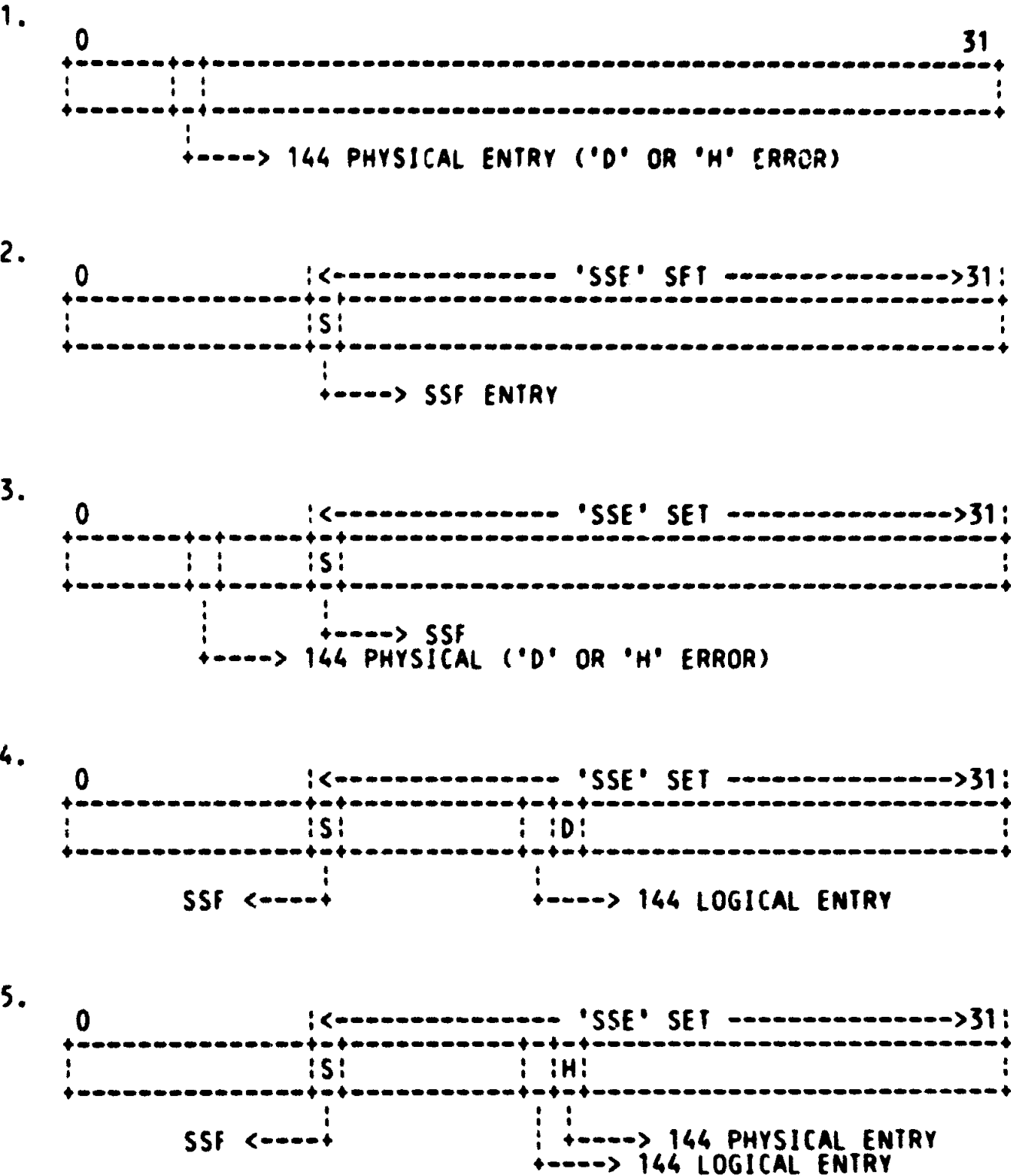
```

NULL ENTRIES WILL
BE ONE'S FILLED

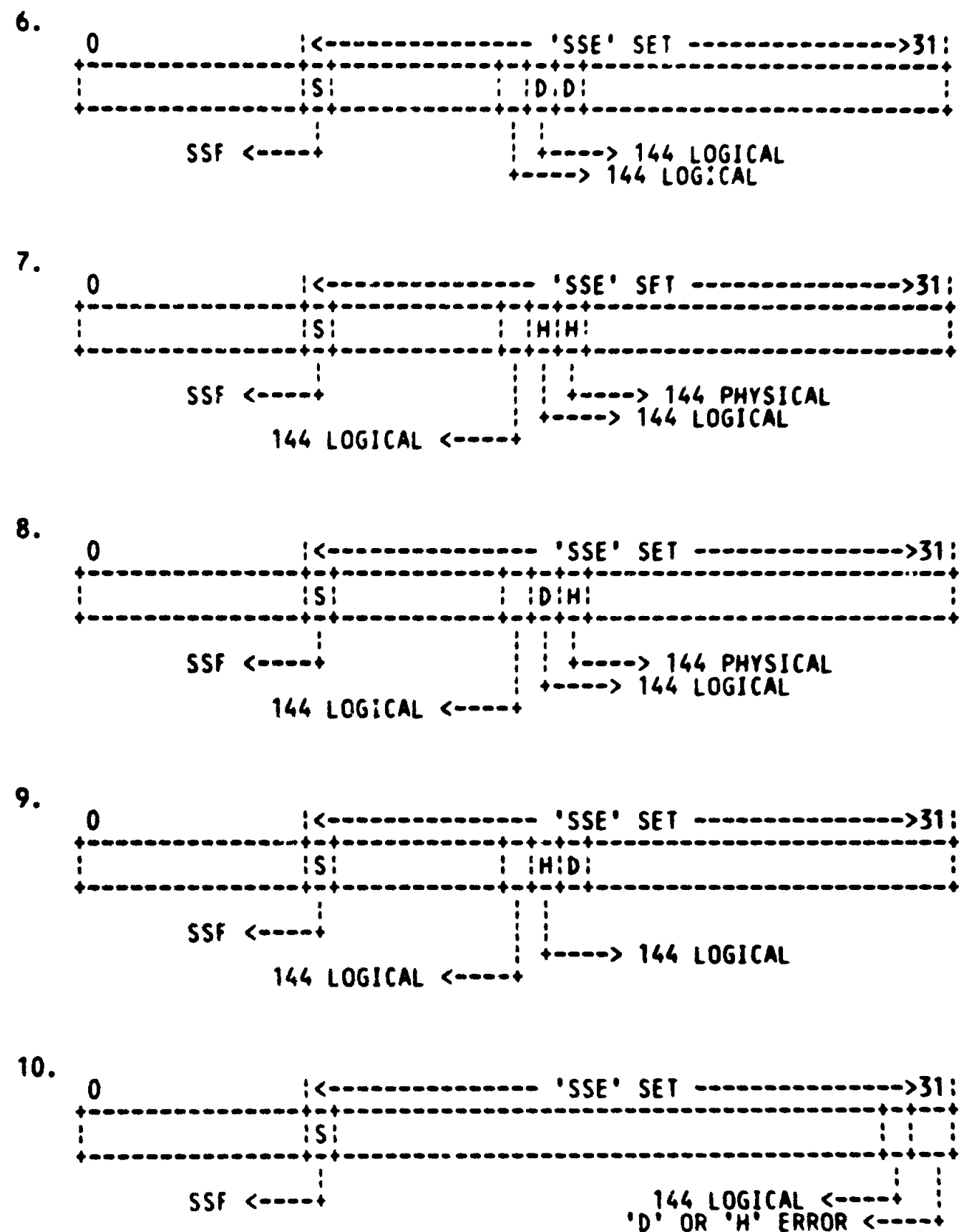
THE 16 BIT MDSF WILL BE WRITTEN IN SECTORS 0, 2, 4, 6, 8 OF THE PRIMARY AND SECONDARY DEC STD 144 TRACKS; THE 18 BIT MDSF IS BE WRITTEN IN SECTORS 1,3,5,7,9. THE 16 BIT UDSF IS WRITTEN IN SECTORS 10,12,14....30; THE 18 BIT UDSF IS WRITTEN IN SECTORS 11,13,15....29.

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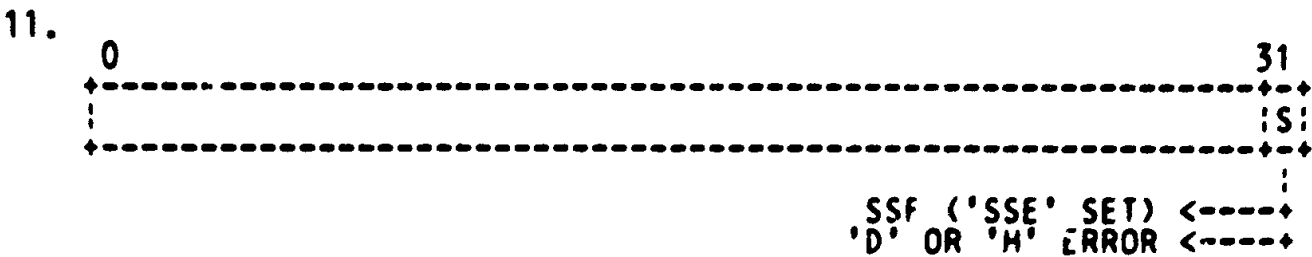
9.0 ERROR TYPE DESCRIPTIONS



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NOTE: 'D' IS A DATA FIELD DEFECT; 'H' IS A HEADER FIELD DEFECT;
'S' IS A SKIPPED SECTOR DEFECT

a

. ABS. 000000 000
000000 001
ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 19 WORDS (1 PAGES)
DYNAMIC MEMORY: 8206 WORDS (31 PAGES)
ELAPSED TIME: 00:00:23
,[300,30]CZRNJB=[300,10]BEG.DOC,CZRNJB.DOC,END.DOC

TASK NAME : CZRNJB
PARTITION NAME : GEN
IDENTIFICATION : 01.00
TASK UIC : [300,10]
TASK PRIORITY : 65.
STACK LIMITS: 026172 026501 000310 00200.
PRG XFR ADDRESS: 026502
TOTAL ADDRESS WINDOWS: 1.
TASK IMAGE SIZE : 14432. WORDS
TASK ADDRESS LIMITS: 026000 116263
R-W DISK BLK LIMITS: 000002 000072 000071 00057.

*** ROOT SEGMENT: FMTROT

R/W MEM LIMITS: 026000 116263 070264 28852.
DISK BLK LIMITS: 000002 000072 000071 00057.

MEMORY ALLOCATION SYNOPSIS:

SECTION	TITLE	IDENT	FILE
. BLK.: (RW,I,LCL,REL,CON)	026502 020460 08496.		
	026502 000276 00190.	FMTROT 01.00	FMTROT.OBJ;1
	027000 000444 00292.	FMTIO 01.00	FMTIO.OBJ;1
	027444 000152 00106.	FMTDAT 01.00	FMTDAT.OBJ;1
	027616 001666 00950.	FMTMSG 01.00	FMTMSG.OBJ;1
	031504 003032 01562.	FMTSUB 02.00	FMTSUB.OBJ;2
	034536 001026 00534.	FMTPRS 01.00	FMTPRS.OBJ;1
	035564 001104 00580.	FMTR80 01.00	FMTR80.OBJ;1
	036670 001246 00678.	FMTR8F 02.00	FMTR8F.OBJ;2
	040136 001516 00846.	FMTR8V 02.00	FMTR8V.OBJ;2
	041654 001316 00718.	FMTR8M 02.00	FMTR8M.OBJ;2
	043172 001270 00696.	FMTR8L 01.00	FMTR8L.OBJ;1
	044462 000370 00248.	FMTINT 01.00	FMTINT.OBJ;1
IMPURE: (RW,D,LCL,REL,CON)	047162 000016 00014.		
SKSTR : (RW,D,LCL,REL,CON)	047200 000031 00025.		
	047200 000031 00025.	FMTPRS 01.00	FMTPRS.OBJ;1
SKTAB : (RW,D,LCL,REL,CON)	047232 000016 00014.		
	047232 000016 00014.	FMTPRS 01.00	FMTPRS.OBJ;1
SSTATE: (RW,D,LCL,REL,CON)	047250 000166 00118.		
	047250 000166 00118.	FMTPRS 01.00	FMTPRS.OBJ;1
\$\$RESL: (RW,I,LCL,REL,CON)	047436 000246 00166.		
\$\$\$\$BF: (RW,D,LCL,REL,CON)	047704 046356 19694.		
	047704 046356 19694.	FMTDAT 01.00	FMTDAT.OBJ;1

GLOBAL SYMBOLS:

BASYR 000116	IE.BLK 177754	IE.OFL 177677	IO.DET 002000	IO.HMS 004000	IO.RLB 001000	IO.RTD 004120
DPARS 035740-R	IE.DAA 177770	IE.PRI 177760	IO.DGN 004150	IO.LPC 004100	IO.RNF 004060	IO.RVB 010400
DSKLUN 000003	IE.DNR 177775	IO.ATT 001400	IO.FER 004200	IO.OFF 004020	IO.RNR 004070	IO.TDD 004140
GENHDR 034400-R	IE.EOF 177766	IO.BLS 004010	IO.FEW 004210	IO.RDH 004030	IO.RPD 004170	IO.WCH 004110

IO.WCK 004050	\$DSKWC 027000-R	\$MGPRE 037632-R	\$MSG32 030714-R	\$MXTRK 027566-R	\$SRALL 033654-R	\$STVFL 035446-R
IO.WDH 004040	\$DSKWH 027014-R	\$MOVE 031744-R	\$MSG4 027662-R	\$NONSI 002416	\$SRFES 033726-R	\$SWERL 047715-R
IO.WPD 004160	\$DSTRB 042166-R	\$MSGRB 031366-R	\$MSG40 030742-R	\$PARSE 034536-R	\$SRMDF 033740-R	\$SWFFE 047721-R
IO.WTD 004130	\$DVICE 027446-R	\$MSGWR 031414-R	\$MSG41 031000-R	\$PAT 027462-R	\$SRSDF 033764-R	\$SWFMT 047720-R
IQ.UMD 000004	\$DVPRM 027560-R	\$MSG1 027634-R	\$MSG42 031026-R	\$PHYDV 027606-R	\$SRSSF 034046-R	\$SWINT 047722-R
MSGEB 042021-R	\$DVUNT 047734-R	\$MSG10 030122-R	\$MSG43 031056-R	\$PRINT 027256-R	\$SRTMF 034166-R	\$SWLOG 047717-R
OPTKT2 047232-R	\$EROCT 031600-R	\$MSG11 030143-R	\$MSG44 031103-R	\$PRMPT 031754-R	\$SRTRK 033612-R	\$SWLST 047716-R
OPTST2 047260-R	\$EROUT 031536-R	\$MSG12 030167-R	\$MSG45 031141-R	\$PRNT0 027262-R	\$SRTSF 034132-R	\$SWMOD 047723-R
SECSZ 027472-R	\$FEBSF 116062-R	\$MSG13 030177-R	\$MSG5 027707-R	\$RDBSF 032322-R	\$SRTUF 034222-R	\$SYSIZ 003456
SKPFRE 047724-R	\$FLCYL 047744-R	\$MSG15 030225-R	\$MSG58 031166-R	\$RDSSF 033156-R	\$SRUDF 033752-R	\$TRK 047754-R
SPEFN 000003	\$FLRGS 040024-R	\$MSG16 030237-R	\$MSG59 031233-R	\$READ 027342-R	\$SSF 113062-R	\$TSTDA 032160-R
TRKSZ 027470-R	\$FLSEC 047750-R	\$MSG17 030246-R	\$MSG6 027737-R	\$RETRY 027466-R	\$SSFDT 001365	\$TSTDV 035054-R
UNTKT1 047232-R	\$FLTRK 047746-R	\$MSG18 030256-R	\$MSG6A 027762-R	\$REVM 047712-R	\$SSFHD 000013	\$TSTMX 032216-R
UNTST 047250-R	\$FMTEP 026502-R	\$MSG19 030301-R	\$MSG6B 030004-R	\$RBUF 047760-R	\$SSFBL 027454-R	\$SUBSZ 027574-R
\$ALFLB 027450-R	\$FMTEX 031464-R	\$MSG2 027645-R	\$MSG7 030025-R	\$RM80 035746-R	\$SSFBN 000003	\$UCB 047704-R
\$BUF 050042-R	\$FUNC 027476-R	\$MSG20 030324-R	\$MSG70 031274-R	\$RM80F 037226-R	\$SSFBSZ 027460-R	\$UDBSF 112062-R
\$BUFRX 110242-R	\$HDRFG 047742-R	\$MSG21 030351-R	\$MSG71 031307-R	\$RM80I 044550-R	\$STARS 027620-R	\$UNTID 032266-R
\$BUFX 110242-R	\$HOMSK 031710-R	\$MSG22 030403-R	\$MSG72 031322-R	\$RM80L 043554-R	\$STATS 027444-R	\$UPDMX 032120-R
\$CONPB 027524-R	\$INADD 047710-R	\$MSG23 030427-R	\$MSG73 031344-R	\$RM80M 042104-R	\$STCSR 035222-R	\$VERIF 047725-R
\$CR 027616-R	\$IOBUF 027510-R	\$MSG24 030474-R	\$MSG8 030043-R	\$RM80V 040354-R	\$STERL 035500-R	\$WLKER 027250-R
\$CVTDA 031636-R	\$IOST 027554-R	\$MSG25 030502-R	\$MSG8A 030070-R	\$RTCNT 047732-R	\$STFFE 035544-R	\$WTBSF 032730-R
\$CYL 047752-R	\$LBNH 027516-R	\$MSG26 030510-R	\$MSG9 030076-R	\$R80SF 037156-R	\$STFOR 035550-R	\$WTSSF 033464-R
\$DEVHD 003334	\$LBNL 027520-R	\$MSG27 030540-R	\$MULT 032046-R	\$R80TF 037220-R	\$STIN 035556-R	\$XFRSZ 027512-R
\$DSKIO 027020-R	\$LOGDV 027576-R	\$MSG28 030574-R	\$MVPAI 031504-R	\$SCB 047706-R	\$STLIS 035536-R	\$YESNO 047714-R
\$DSKPB 027474-R	\$MBSSZ 027572-R	\$MSG29 030626-R	\$MXCYL 027564-R	\$SEC 047756-R	\$STLOG 035532-R	
\$DSKRH 027006-R	\$MDBSF 111062-R	\$MSG30 030650-R	\$MXLBN 047736-R	\$SMBSF 033774-R	\$STUNT 034736-R	
\$DSKRT 027030-R	\$MESAG 031422-R	\$MSG31 030671-R	\$MXSEC 027570-R	\$SNAME 047726-R	\$STVEC 035336-R	

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.TITLE FMTROT - RM80 FORMATTER ROOT MODULE
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VERSION 01.00

C. HESS 17-AUG-80
M. LEAVITT 09-JAN-81

.MCALL ALUN\$\$,UCBDF\$

UCBDF\$

;CALL MACRO TO DEFINE UCB OFFSETS

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43 000000 105067 000000G $FMTEP::CLRB $SWERL ; RESET ERROR LIMIT (DEFAULT IS 256.)
44 000004 105067 000000G CLRB $YESNO ; RESET YES/NO RESPONSE
45 000010 105067 000000G CLRB $SWLST ; RESET BAD BLOCK FILE LIST SWITCH
46 000014 105067 000000G CLRB $SWLOG ; RESET LOGICAL LIST SWITCH
47 000020 105067 000000G CLRB $SWFMT ; RESET FORMAT ENABLE SWITCH
48 000024 105067 000000G CLRB $SWFFE ; RESET FORMAT FE ENABLE SWITCH
49 000030 105067 000000G CLRB $SWINT ; RESET MDBSF, UDBSF, SSF GENERATION SWITCH
50 000034 105067 000000G CLRB $SWMOD ; RESET THE MDBSF, SSF, & FEBSF MODIFY SWITCH
51 000040 105067 000001G CLRB $STATS+1 ; CLEAR STATUS FLAGS
52 000044 005067 000000G CLR $REVN ; CLEAR TEMPORARY STORAGE FOR REVISION NUMBER
53 000050 012767 000001 000000G MOVB #1,$VERIF ; PRESET THE VERIFICATION COUNT
54 000056 012703 000400 MOV #256.,R3 ; LOCATIONS IN THE MDBSF BUFFER TO CLEAR
55 000062 012700 000000G MOV #MDBSF,R0 ; BUFFER POINTER
56 000066 012720 177777 1$: MOV #-1,(R0)+ ; CLEAR A LOCATION
57 000072 005303 DEC R3 ; COUNT THE LOCATION
58 000074 001374 BNE 1$ ; IF NE, NOT FINISHED
59 000076 012703 000400 MOV #256.,R3 ; LOCATIONS TO CLEAR IN THE UDBSF BUFFER
60 000102 012700 000000G MOV #UDBSF,R0 ; BUFFER POINTER
61 000106 012720 177777 2$: MOV #-1,(R0)+ ; CLEAR A LOCATION
62 000112 005303 DEC R3 ; COUNT THE LOCATION
63 000114 001374 BNE 2$ ; IF NE, NOT FINISHED
64 000116 012703 000100 MOV #64.,R3 ; LOCATIONS TO CLEAR IN THE FE BSF BUFFER
65 000122 012700 000000G MOV #FEBSF,R0 ; BUFFER POINTER
66 000126 012720 177777 3$: MOV #-1,(R0)+ ; CLEAR A LOCATION
67 000132 005303 DEC R3 ; COUNT THE LOCATION
68 000134 001374 BNE 3$ ; IF NE, NOT FINISHED
69 000136 012703 000000C MOV #256.*<$SSFN>,R3 ; NUMBER OF SSF LOCATIONS
70 000142 012700 000000G MOV #SSF,R0 ; BUFFER POINTER
71 000146 012720 177777 4$: MOV #-1,(R0)+ ; CLEAR A LOCATION
72 000152 005303 DEC R3 ; COUNT THE LOCATION
73 000154 001374 BNE 4$ ; IF NE, NOT FINISHED
74 000156 012706 000000' MOV #FMTEP,SP ; RESET STACK POINTER
75 000162 026727 000000G 001400 CMP $SYSIZ,#40*24. ; IS THERE AT LEAST 24K?
76 000170 103001 BHS 5$ ; IF HIS, YES
77 000172 CRASH ; ELSE CRASH THE SYSTEM!!
78
79 000174 5$: CALL $PARSE ; PROMPT AND PARSE COMMAND LINE
80 000200 ALUN$$ #DSKLUN,$DVICE,R1 ; ASSIGN LUN TO DISK
81 000220 012700 000000G MOV #MSG4,R0 ; ASSUME DEVICE NOT IN SYSTEM
82 000224 103002 BCC FMTPRM ; IF CC, DEVICE IN SYSTEM
83 000226 000167 000000G 6$: JMP $MSGWR ; EXIT WITH WARNING STATUS
84
85
86
87
88
89 000232 012703 000000C FMTPRM: MOV #IO.ATT!IQ.UMD,R3 ; ATTACH DISK FOR FORMATTING
90 000236 CALL $DSKIO
91
92

```

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93      ; PRESET THE DISK PARAMETERS, RETURN THE HEADS HOME AND
94      ; CALL THE ACTUAL FORMAT ROUTINE.
95      ;
96
97 000242 005067 000000G      CLR      $SEC      ; RESET DISK PARAMETERS
98 000246 005067 000000G      CLR      $TRK
99 000252 005067 000000G      CLR      $CYL
100 000256      CALL      $HOMSK      ; DO A RECALIBRATE
101 000262      CALL      $RM80      ; CALL THE FORMATTER
102 000266      CALL      $HOMSK      ; DO A RECAL
103 000272 000167 000000G      JMP      $FMTEX      ; EXIT GRACEFULLY
104
105      000000'      .END      $FMTEP

```

C\$SORE= 002000	S\$SYSZ= 001400	UC.ALG= 000200	U.CW3 000014	U2.NEC= 004000
C\$RSH= 177564	S1.BEL= 000400	UC.ATT= 000010	U.CW4 000016	U2.PRIV= 000010
C\$TTY= 177564	S1.CTO= 000040	UC.KIL= 000004	U.DCB 000000	U2.RMT= 020000
DSKLUN= ***** GX	S1.CTS= 010000	UC.LGH= 000003	U.FCDE= 000040	U2.R04= 100000
DV.CCL= 000002	S1.DEC= 002000	UC.NPR= 000100	U.FNUM= 000036	U2.SCS= 000004
DV.COM= 020000	S1.DPR= 001000	UC.PWF= 000020	U.FPS = 000044	U2.SLV= 000200
DV.DIR= 000010	S1.DSI= 004000	UC.QUE= 000040	U.KCSR= 000032	U2.VT5= 000002
DV.F11= 040000	S1.ESC= 000004	US.ABO= 000001	U.KCS6= 000034	U2.704= 010000
DV.ISP= 002000	S1.IBF= 100000	US.BSP= 000002	U.LUIC 177774	V\$SCTR= 000400
DV.MBC= 000400	S1.IBY= 000200	US.BSY= 000200	U.OWN 177776	V\$RSN= 000032
DV.MNT= 100000	S1.OBY= 000100	US.CRW= 000004	U.RED 000002	X\$SDBT= 000000
DV.MXD= 000100	S1.RAL= 000010	US.DSB= 000010	U.RPS = 000042	\$CYL = ***** GX
DV.OSP= 004000	S1.RNE= 000020	US.ECH= 000002	U.SCB 000020	\$DSKIO= ***** GX
DV.PSE= 010000	S1.RST= 000001	US.FOR= 000040	U.STS 000005	\$DVCE= ***** GX
DV.PEC= 000001	S1.RUB= 000002	US.FRK= 000002	U.ST2 000007	\$FEBSF= ***** GX
DV.SDI= 000020	S1.USI= 020000	US.KPF= 000001	U.TCHP 000042	\$FMTEP 000000RG
DV.SQD= 000040	S2.ACR= 000001	US.LAB= 000004	U.TCVP 000043	\$FMTEX= ***** GX
DV.SWL= 001000	S2.BRQ= 000020	US.MDE= 000002	U.TFLK 000040	\$HOMSK= ***** GX
DV.TTY= 000004	S2.CR = 000010	US.MDM= 000020	U.TFRQ 000037	\$MDBSF= ***** GX
DV.UMD= 000200	S2.FDX= 100000	US.MNT= 000100	U.TLPP 000036	\$MSGWR= ***** GX
D\$SIAG= 000000	S2.FLF= 040000	US.OFL= 000001	U.TMTI 000047	\$MSG4 = ***** GX
D\$SL11= 000001	S2.HFF= 020000	US.OUT= 000001	U.TSTA 000026	\$PARSE= ***** GX
FMTPRM 000232R	S2.HFL= 003400	US.PUB= 000004	U.TTAB 000034	\$REVM= ***** GX
H\$RTZ= 000074	S2.HHT= 010000	US.PWF= 000010	U.TTYP 000046	\$RM80 = ***** GX
IO.ATT= ***** GX	S2.IRQ= 000200	US.RED= 000002	U.TUX 000024	\$SEC = ***** GX
IO.UMD= ***** GX	S2.ORG= 000100	US.SHR= 000001	U.UIC 000044	\$SSF = ***** GX
K\$CNT= 177546	S2.SRQ= 000040	US.SPU= 000002	U.UNIT 000006	\$SSFLN= ***** GX
K\$CSR= 177546	S2.VFL= 004000	US.UMD= 000010	U.VCB = 000034	\$STATS= ***** GX
K\$IEN= 000115	S2.WRA= 000006	US.VV = 000001	U2.AT. = 000020	\$SWERL= ***** GX
K\$LDC= 000001	S2.WRB= 000002	US.WCK= 000010	U2.CRT= 002000	\$SWFFE= ***** GX
K\$TPS= 000074	S3.BCC= 020000	U.ACP = 000032	U2.DH1= 100000	\$SWFMT= ***** GX
LD\$TT = 000000	S3.DAO= 040000	U.ATT 000022	U2.DJ1= 040000	\$SWINT= ***** GX
L\$DRV= 000000	S3.PCU= 100000	U.BUF 000024	U2.DZ1= 000100	\$SWLOG= ***** GX
M\$CRB= 000124	S3.RAL= 000010	U.CBF = 000032	U2.ESC= 001000	\$SWLST= ***** GX
N\$LDV= 000001	S3.RCU= 000400	U.CLI 177772	U2.HFF= 010000	\$SWMOD= ***** GX
P\$NIC= 177564	S3.TAB= 000100	U.CNT 000030	U2.HLD= 000040	\$SYSIZ= ***** GX
R\$DER= 000000	S3.VER= 010000	U.CTL 000004	U2.LOG= 000400	\$TRK = ***** GX
R\$M11= 000001	S3.WAL= 004000	U.CTYP 000050	U2.LWC= 000001	\$UDBSF= ***** GX
R\$11M= 000000	S3.WES= 000040	U.CW1 000010	U2.L3S= 000004	\$VERIF= ***** GX
R\$11S= 000000	S3.8BC= 000200	U.CW2 000012	U2.L8S= 010000	\$YESNO= ***** GX
S\$WRG= 000000	T\$MIN= 000000			

. ABS. 177776 000
 000276 001
 ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 3572 WORDS (14 PAGES)

DYNAMIC MEMORY: 7942 WORDS (30 PAGES)

ELAPSED TIME: 00:00:18

[300,20]FMTROT,[300,30]FMTROT=[1,1]EXEMC/ML,[1,60]RSXMC/PA:1,[300,10]FMTROT

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.TITLE FMTIO - I/O ROUTINES
.IDENT /01.00/

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.: C. HESS 14-AUG-80
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.: .MCALL DIR\$

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*--$DSKIO-ISSUE QIO TO DISK
*--$DSKRH-ISSUE QIO TO READ HEADER & DATA
*--$DSKRT-RETRY QIO TO DISK
*--$DSKWH-ISSUE QIO TO WRITE HEADER & DATA
*--$DSKWC-ISSUE QIO TO WRITE CHECK HEADER & DATA

SUBROUTINES TO ISSUE I/O FUNCTIONS TO A DEVICE.

INPUTS:
R3 = I/O FUNCTION CODE (IF ENTRY IS AT $DSKIO)
R5 = BUFFER ADDRESS
ENTRY AT $DSKRT ASSUMES THAT THE DPB IS ALREADY SETUP.

OUTPUTS:
THE QIO DIRECTIVE IS ISSUED. IF THERE WERE NO ERRORS, THE
CARRY BIT WILL BE CLEARED. IF THERE WAS A PARITY ERROR
(IE.VER) OR A BAD BLOCK ERROR (IE.BBE) CARRY WILL BE SET.
IF WE ARE FORMATTING A 'DB' DISK A BLOCK NUMBER VIOLATION
(IE.BLK) MAY HAPPEN WHEN WE ARE FORMATTING THE LAST SECTOR.
FOR THIS CASE CARRY WILL BE RETURNED CLEAR. THE SAME APPLIES
IF WE ARE RE-WRITING THE LAST TRACK OF 'DM' AND 'DR' DISKS.
ALSO SPECIFIC ERROR MESSAGES WILL BE PRINTED WHEN THE
FOLLOWING ERRORS ARE DETECTED:

1. IE.HWR
2. IE.DNR
3. IE.DAA
4. IE.FHE
5. IE.PRI
6. IE.OFL

ANY OTHER ERROR CODE WILL BE REPORTED AS 'UNRECOVERABLE'.

NOTE: MOST FUNCTIONS ARE ISSUED WITH THE DIAGNOSTIC SUB-FUNCTION
BIT (IQ.UMD) SET. FOR THESE FUNCTIONS THE FUNCTION WILL
ALWAYS RETURN SUCCESS (CARRY CLEAR) AND THE USER MUST TEST
THE PROPER BIT IN THE REGISTER BUFFER ($RBUF) TO DETERMINE
IF THERE WAS ANY ERRORS.

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ENABL  LSB
$DSKWC: MOV    #IO.WCH:IQ.UMD,R3      ; WRITE CHECK HEADER & DATA
        BR     $DSKIO                ; GO TO THE COMMON QIO ROUTINE

$DSKRH: MOV    #IO.RDH:IQ.UMD,R3      ; READ DISK HEADER(S)
        BR     $DSKIO                ; BR INTO COMMON DISK ROUTINE

$DSKWH: MOV    #IO.WDH:IQ.UMD,R3      ; WRITE DISK HEADER(S)
$DSKIO: MOV    R3,$FUNC                ; STORE FUNCTION CODE IN DPB
        MOV    R5,$IOBUF              ; STORE BUFFER ADDRESS IN DPB
$DSKRT: DIR$   #SDSKPB                ; ISSUE THE QIOWS
        BCC    1$                    ; IF CC OK
        CMP    #IE.UPN,$DSW           ; POCL SPACE AVAILABLE?
        BEQ    $DSKRT                ; IF EQ NO, TRY AGAIN
        MOV    $DSW,$IOST             ; COPY DSW INTO STATUS BLOCK
        BR     2$

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```

90 000060 000241 1$: CLC ;ASSUME NO ERROR
91 000062 105767 000000G TSTB $IOST ;ERROR?
92 000066 100016 BPL 6$ ;IF PL NO
93 000070 105067 000001G CLRB $IOST+1 ;YES, CLEAR THE HIGH BYTE
94 000074 012700 000204' 2$: MOV #9$,R0 ;SET POINTER TO ERROR TABLE
95 000100 021067 000000G 3$: CMP (R0),$IOST ;SCAN ERROR TABLE TO FIND ERROR TYPE
96 000104 001403 BEQ 4$ ;IF EQ MATCH
97 000106 022020 CMP (R0)+,(R0)+ ;STEP TO NEXT ENTRY
98 000110 005710 TST (R0) ;END OF TABLE?
99 000112 001372 BNE 3$ ;IF NE NO
100 000114 016000 000002 4$: MOV 2(R0),R0 ;GET ADRS OF ERROR MESSAGE
101 000120 001002 BNE 7$ ;IF NE PRINT MESSAGE
102 000122 000261 5$: SEC ;ELSE JUST SET CARRY AND EXIT
103 000124 000207 6$: RETURN
104
105 000126 020027 000000G 7$: CMP R0,$MSG8 ;'UNRECOVERABLE' MESSAGE?
106 000132 001022 BNE 8$ ;IF NE NO
107 000134 022767 000000C 000000G CMP #IE.BLK&377,$IOST ;YES, IS THIS A BLOCK # VIOLATION?
108 000142 001767 5$: BEQ 5$ ;IF EQ YES
109 000144 012700 000000G MOV $MSG8A,R0 ;GET BUFFER ADDRESS FOR ERROR CODE
110 000150 005467 000000G NEG $IOST ;MAKE ERROR CODE POSITIVE
111 000154 116701 000000G MOVB $IOST,R1 ;GET ERROR CODE
112 000160 005002 CLR R2 ;SUPPRESS LEADING 0'S
113 000162 004767 000000G CALL $CBDMG ;CONVERT TO DECIMAL
114 000166 112720 000056 MOVB #'',(R0)+ ;STUFF DECIMAL INDICATOR
115 000172 105010 CLRB (R0) ;TERMINATE STRING
116 000174 012700 000000G MOV $MSG8,R0 ;GET ADDRESS OF 'UNRECOVERABLE' MESSAGE
117 000200 000167 000000G 8$: JMP $MESAG ;PRINT MESSAGE AND EXIT
118
119
120 ;+
121 ; ERROR CODE AND ERROR MESSAGE TABLE. A ZERO WORD
122 ; IN THE MESSAGE FIELD INDICATES THAT THE ERROR WILL
123 ; BE HANDLED BY THE CALLING ROUTINE.
124 ;+
125 000204 000000G 000000G 9$: .WORD IE.HWR, $MSG13 ; HANDLER NOT RESIDENT
126 000210 000000C 000000G .WORD IE.DNR&377, $MSG10 ; DEVICE NOT READY
127 000214 000000C 000000G .WORD IE.DAAR&377, $MSG5 ; DEVICE ALREADY ATTACHED
128 000220 000000C 000000 .WORD IE.VER&377, 0 ; PARITY ERROR
129 000224 000000C 000000 .WORD IE.BBE&377, 0 ; BAD BLOCK
130 000230 000000C 000000G .WORD IE.FHE&377, $MSG20 ; FATAL HARDWARE ERROR
131 000234 000000C 000000G .WORD IE.PRI&377, $MSG22 ; PRIVILEGE VIOLATION
132 000240 000000C 000000G .WORD IE.OFL&377, $MSG7 ; DEVICE OFFLINE
133 000244 000000 000000G .WORD 0, $MSG8 ; END OF TABLE
134
135
136 ;+
137 ; **-$WLKER-SET WRITE LOCK ERROR
138 ; THIS ROUTINE WILL SET THE WRITE LOCK ERROR MESSAGE AND EXIT
139 ; WITH A SEVERE ERROR STATUS SET.
140 ;
141 ; INPUTS:
142 ; NONE.
143 ;
144 ; OUTPUTS:
145 ; R0 = WRITE LOCK ERROR MESSAGE ADDRESS
146 ;-

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147
148 000250 012700 000000G $WLKER::MOV #MSG9,R0 ;SET WRITE LOCK MESSAGE ADDRESS
149 000254 000751 BR 8$ ;EXIT WITH SEVERE ERROR STATUS
150
151 .DSABL LSB
152
153
154
155 :+
156 : **-$PRINT-PRINT MESSAGE ON THE USERS TI:
157 : **-$PRNTO-PRINT MESSAGE ON THE USERS TI: (ALTERNATE ENTRY)
158 :
159 : INPUTS:
160 : R0 = MESSAGE ADDRESS
161 : R1 = CARRIAGE CONTROL (FOR $PRNTO ENTRY ONLY)
162 :
163 : OUTPUTS:
164 : MESSAGE SENT TO TI:
165 : -
166 000256 012701 000040 $PRINT::MOV #40,R1 ;SET 1 LINE FEED CARRIAGE CONTROL
167 000262 012705 000000G $PRNTO::MOV #CONPB,R5 ;GET OUTPUT DPB ADDRESS
168 000266 012765 000000G 000000G MOV #IO.WVB,Q.IOFN(R5) ;SET FUNCTION CODE
169 000274 010065 000000G MOV R0,Q.IOPL(R5) ;STORE MESSAGE ADDRESS IN DPB
170 000300 005065 000002G CLR Q.IOPL+2(R5) ;CLEAR MESSAGE LENGTH COUNTER IN DPB
171 000304 010165 000004G MOV R1,Q.IOPL+4(R5) ;SET CARRIAGE CONTROL
172 000310 105720 1$: TSTB (R0)+ ;END OF MESSAGE STRING?
173 000312 001403 BEQ 2$ ;IF EQ YES
174 000314 005265 000002G INC Q.IOPL+2(R5) ;NO, CALCULATE MESSAGE LENGTH
175 000320 000773 BR 1$ ;GET NEXT CHARACTER
176
177 000322 2$: DIRS R5 ;PRINT THE MESSAGE
178 000326 103004 BCC 3$ ;IF CC OK
179 000330 022767 000000G 000000G CMP #IE.UPN,$DSW ;POOL SPACE AVAILABLE?
180 000336 001771 BEQ 2$ ;IF EQ NO, TRY AGAIN
181 000340 000207 3$: RETURN
182
183
184
185 :+
186 : **-$READ-READ A LINE FROM THE TERMINAL
187 :
188 : THIS SUBROUTINE WILL READ A LINE FROM THE CONSOLE
189 : DEVICE.
190 :
191 : INPUTS:
192 : NONE.
193 :
194 : OUTPUTS:
195 : CARRY SET IF ANY ERROR AND
196 : R0 = ERROR MESSAGE ADDRESS
197 :
198 : CARRY CLEAR IF READ OK
199 : -
200
201 000342 012705 000000G $READ::MOV #CONPB,R5 ;GET INPUT DPB ADDRESS
202 000346 012765 000000G 000000G MOV #IO.RVB,Q.IOFN(R5) ;LOAD FUNCTION CODE
203 000354 012765 000000G 000000G MOV #BUFEX,Q.IOPL(R5) ;LOAD BUFFER ADDRESS

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204 000362 012765 000120 000002G      MOV      #80.,Q.IOPL+2(R5)      ;LOAD MAX NUMBER OF BYTES TO READ
205 000370                                DIR$      R5      ;READ IN THE LINE
206 000374 103414                        BCS      2$      ;IF CS DIRECTIVE ERROR
207 000376 122767 000000C 000000G      CMPB     #IE.EOF&377,$IOST  ;END OF FILE SEEN?
208 000404 001406                        BEQ      1$      ;IF EQ YES
209 000406 105767 000000G      TSTB     $IOST      ;I/O ERROR?
210 000412 002405                        BLT      2$      ;IF LT YES
211 000414 105767 000001G      TSTB     $IOST+1      ;CHECK FOR A TERMINATED LINE
212 000420 001405                        BEQ      3$      ;IF EQ BUFFER OVERFLOWED
213 000422 000241                        CLC      ;INDICATE READ WAS OK
214 000424 000207      1$:      RETURN
215
216 000426 012700 000000G      2$:      MOV      #MSG29,R0      ;COMMAND I/O ERROR
217 000432 000402                        BR      4$
218 000434 012700 000000G      3$:      MOV      #MSG30,R0      ;COMMAND TOO LONG
219 000440 000261      4$:      SEC      ;SET ERROR RETURN
220 000442 000207      RETURN
221
222      000001      .END

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IE.BBE= ***** GX	IE.VER= ***** GX	\$CBDMG= ***** GX	\$IOBUF= ***** GX	\$MSG5 = ***** GX
IE.BLK= ***** GX	IO.RDH= ***** GX	\$CONPB= ***** GX	\$IOST = ***** GX	\$MSG7 = ***** GX
IE.DAA= ***** GX	IO.RVB= ***** GX	\$DSKIO 000020RG	\$MESAG= ***** GX	\$MSG8 = ***** GX
IE.DNR= ***** GX	IO.WCH= ***** GX	\$DSKPB= ***** GX	\$MSG10= ***** GX	\$MSG8A= ***** GX
IE.EOF= ***** GX	IO.WDH= ***** GX	\$DSKRH 000006RG	\$MSG13= ***** GX	\$MSG9 = ***** GX
IE.FHE= ***** GX	IO.WVB= ***** GX	\$DSKRT 000030RG	\$MSG20= ***** GX	\$PRINT 000256RG
IE.HWR= ***** GX	IO.UMD= ***** GX	\$DSKWC 000000RG	\$MSG22= ***** GX	\$PRNT0 000262RG
IE.OFL= ***** GX	Q.IOFN= ***** GX	\$DSKWH 000014RG	\$MSG29= ***** GX	\$READ 000342RG
IE.PRI= ***** GX	Q.IOPL= ***** GX	\$DSW = ***** GX	\$MSG30= ***** GX	\$WLER 000250RG
IE.UPN= ***** GX	\$BUFRX= ***** GX	\$FUNC = ***** GX		

. ABS. 000000 000
 000444 001
 ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 481 WORDS (2 PAGES)
 DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
 ELAPSED TIME: 00:00:10
 [300,20]FMTIO,[300,30]FMTIO=[300,10]FMTIO

```

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27     .C. HESS      17-AUG-80
28     .M. LEAVITT   26-NOV-80
29
30
31     .MCALL  UMDIOS
32
33     000000          UMDIOS  DEF$G          ;CALL MACRO TO DEFINE DIAGNOSTIC FUNCTION
34                                     ;CODES GLOBALLY
35
36     ; SPECIAL OPCODES TO BE USED WITH THE FUNCTIONAL 'DR' DRIVER. NOTE
37     ; THAT THESE FUNCTIONS ARE DEFINED IN THE SPECIAL MANUFACTURING
38     ; 'DR' DRIVER.
39
40     004110          IO.WCH == 10*400+110      ; WRITE CHECK HEADER & DATA (DIAGNOSTIC)
41     004160          IO.WPD == 10*400+160      ; WRITE PHYSICAL BLOCKS (DIAGNOSTIC)
42     004170          IO.RPD == 10*400+170      ; READ PHYSICAL BLOCKS (DIAGNOSTIC)
43     004200          IO.FER == 10*400+200      ; READ FE BLOCKS (DIAGNOSTIC)
44     004210          IO.FEW == 10*400+210      ; WRITE FE BLOCKS (DIAGNOSTIC)
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47      000001      DSKEFN = 1 ; EVENT FLAG FOR DISK I/O
48      000002      CONEFN = 2 ; EVENT FLAG FOR CONSOLE I/O
49      000003      SPEFN == 3 ; EVENT FLAG FOR SPAWN DIRECTIVE
50      000002      CONLUN = 2 ; LUN FOR CONSOLE I/O
51      000003      DSKLUN == 3 ; LUN FOR DISK I/O
52      000037      DEFSEC = 31. ; DEFAULT SECTOR FOR SKIP FLAG
53      000003      $$$FLN == 3 ; BLOCK LENGTH OF SKIP SECTOR FILE
54      000013      $$$FHD == 11 ; NUMBER OF WORDS IN HEADER OF SKIP SECTOR FILE
55      001365      $$$FDT == <256.*$$$FLN>-$$$FHD ; NUMBER OF WORDS IN DATA OF SKIP SECTOR FILE
56
57 000000      000      377      $STATS:::BYTE 0,-1 ; FORMAT STATUS, MCR LINE FLAG
58 000002      104      122      $DVICE:::ASCII 'DR' ; DISK NAME (ASCII)
59 000004      000003      131715      $ALFLB:::WORD 3,131715 ; ADDRESS OF ALTERNATE DEC STD 144 TRACK
60 000010      000003      131656      $$$FLB:::WORD 3,131656 ; ADDRESS OF START OF SKIP SECTOR FILE
61 000014      000005      $$$FSZ:::WORD 5 ; NUMBER OF COPIES OF SKIP SECTOR FILE
62 000016      155555      133333      $PAT:::WORD 155555,133333 ; DISK FORMAT PATTERN
63 000022      000024      $RETRY:::WORD 20. ; NUMBER OF RE-VERIFICATION ATTEMPTS
64 000024      040200      TRKSZ:::WORD 516.*32. ; RM80 TRACK SIZE (IN BYTES)
65 000026      001004      SECSZ:::WORD 516. ; RM80 SECTOR SIZE (INCLUDING HEADER)
66
67 ;DISK I/O DIRECTIVE PARAMETER BLOCK (QIOW$ DIRECTIVE)
68
69 000030      003      014      $DSKPB:::BYTE 3,12. ; MACRO DIC, DPB SIZE
70 000032      000000      $FUNC:::WORD 0 ; FUNCTION CODE
71 000034      000003      :WORD DSKLUN ; LUN
72 000036      001      000      :BYTE DSKEFN,0 ; EVENT FLAG, PRIORITY
73 000040      000110      :WORD $IOST ; STATUS BLOCK ADDRESS
74 000042      000000      :WORD 0 ; AST ADDRESS
75 000044      000000      $IOBUF:::WORD 0 ; BUFFER ADDRESS
76 000046      000000      $XFRSZ:::WORD 0 ; TRANSFER SIZE IN BYTES
77 000050      000000      :WORD 0 ; NOT USED
78 000052      000000      $LBNH:::WORD 0 ; HIGH ORDER LOGICAL BLOCK NUMBER
79 000054      000000      $LBNL:::WORD 0 ; LOW ORDER LOGICAL BLOCK NUMBER
80 000056      000054      :WORD $RGRBUF ; REGISTER BUFFER ADDRESS
81
82 ;CONSOLE I/O DIRECTIVE PARAMETER BLOCK (QIOW$ DIRECTIVE)
83
84 000060      003      014      $CONPB:::BYTE 3,12. ; MACRO DIC, DPB SIZE
85 000062      000000      :WORD 0 ; FUNCTION CODE
86 000064      000002      :WORD CONLUN ; CONSOLE LUN
87 000066      002      000      :BYTE CONEFN,0 ; CONSOLE EVENT FLAG, PRIORITY ZERO
88 000070      000110      :WORD $IOST ; STATUS BLOCK ADDRESS
89 000072      000000      :WORD 0 ; AST ADDRESS
90 000074      000000      :WORD 0 ; BUFFER ADDRESS
91 000076      000000      :WORD 0 ; MESSAGE BYTE COUNT
92 000100      000000      :WORD 0 ; CARRIAGE CONTROL
93 000102      000000      000000      000000      :WORD 0,0,0 ; NOT USED
94
95 000110      000000      000000      $IOST:::WORD 0,0 ; I/O STATUS BLOCK
96
97 ;
98 ; DRIVE PARAMETER TABLE
99 ;
100
101 000114      000003      131656      $DVPRM:::WORD 3,131656 ; MAXIMUM LBN
102
103 ; THE ORDER OF THIS TABLE MUST NOT CHANGE

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```

104
105 000120 000000 $MXCYL::WORD 0 ; # OF CYLINDERS PER DISK
106 000122 000000 $MXTRK::WORD 0 ; # OF TRACKS PER CYLINDER
107 000124 000000 $MXSEC::WORD 0 ; # OF SECTORS PER TRACK
108 000126 000012 $MBSZ::WORD 10. ; # OF BLOCKS IN MBSF
109 000130 000024 $UBSZ::WORD 20. ; # OF BLOCKS IN UBSF
110
111
112 *
113 : MACRO FORMAT: LBN, CYL, TRK, SEC
114 : WHERE:
115 :     LBN = MAXIMUM NUMBER OF BLOCKS ON DEVICE (DOUBLE WORD)
116 :     CYL = MAXIMUM NUMBER OF CYLINDERS ON DEVICE
117 :     TRK = MAXIMUM NUMBER OF TRACKS ON DEVICE
118 :     SEC = MAXIMUM NUMBER OF SECTORS ON DEVICE
119 :
120 : MACRO DVPRM LBN, CYL, TRK, SEC
121 :     .WORD LBN
122 :     .WORD CYL
123 :     .BYTE SEC
124 :     .BYTE TRK
125 : .ENDM DVPRM
126
127 000132 $LOGDV::DVPRM <3,131656>, 559., 14., 31. ; LOGICAL DEVICE GEOMETRY
128 000142 $PHYDV::DVPRM <3,152700>, 561., 14., 32. ; PHYSICAL DEVICE GEOMETRY
129
130 000000 .PSECT $$$SBF,D
131
132 000000 000000 $UCB::WORD 0 ; ADDRESS OF CURRENT UCB
133 000002 000000 $SCB::WORD 0 ; ADDRESS OF CURRENT SCB
134 000004 000000 $INADD::WORD 0 ; ADDRESS OF INTERRUPT VECTOR
135 000006 000000 $REVM::WORD 0 ; TEMP. STORAGE FOR SSF REVISION NUMBER ($SSF+10)
136 000010 000 $YESNO::BYTE 0 ; YES/NO CONTINUE RESPONSE
137 000011 000 $SWERL::BYTE 0 ; ERROR LIMIT
138 000012 000 $SWLST::BYTE 0 ; LIST BAD BLOCK FILE CONTENTS
139 000013 000 $SWLOG::BYTE 0 ; LOGICAL LIST SWITCH
140 000014 000 $SWFMT::BYTE 0 ; ENABLE FORMAT FLAG
141 000015 000 $SWFFE::BYTE 0 ; ENABLE FORMAT FE CYLINDERS ONLY
142 000016 000 $SWINT::BYTE 0 ; CREATE THE MBSF, UBSF, AND SSF
143 000017 000 $SWMOD::BYTE 0 ; MODIFY THE SSF, UBSF, & FEBF
144 000020 000 $SKPFRE::BYTE 0 ; SKIP SECTOR FLAG
145 000021 000 $VERIF::BYTE 0 ; NUMBER OF TIMES TO VERIFY THE TRACK
146
147 .EVEN
148 000022 000000 000000 $SSNAME::WORD 0,0 ; HDA SERIAL NUMBER
149 000026 000000 $RTCNT::WORD 0 ; RETRY COUNT
150 000030 000000 $DVUNT::WORD 0 ; DISK UNIT NUMBER
151 000032 000000 000000 $MXLBN::WORD 0,0 ; MAXIMUM BLOCK NUMBER
152 000036 000000 $HDRFG::WORD 0 ; HEADER DEFECT FLAG
153 000040 000000 $FLCYL::WORD 0 ; FAILING CYLINDER ADDRESS
154 000042 000000 $FLTRK::WORD 0 ; " TRACK "
155 000044 000000 $FLSEC::WORD 0 ; " SECTOR "
156 000046 000000 $CYL::WORD 0 ; CURRENT CYLINDER
157 000050 000000 $TRK::WORD 0 ; CURRENT TRACK
158 000052 000000 $SEC::WORD 0 ; CURRENT SECTOR
159
160 ;BUFFERS AND DATA STORAGE AREA

```

```
161
162 000054          $RBUF::BLKW 25.          ; RMBO REGISTER RETURN BUFFER
163 000136          $BUF::BLKW 32.*258.      ; BUFFER FOR DISK I/O
164 040336          $BUFRX::BLKW 200.        ; DIRECTIVE BUFFER
165              040336' $BUFX=$BUFRX        ; BUFFER FOR DIRECTIVE USE
166
167              ;BAD SECTOR AND DEFECT STORAGE AREA
168
169 041156          $MDBSF::BLKW 256.         ; BUFFER FOR 16 BIT MDBSF
170 042156          $UDBSF::BLKW 256.         ; BUFFER FOR 16 BIT UDBSF
171 043156          $SSF::BLKW 256.*<$SSFLN>  ; BUFFER FOR 16 BIT SKIP SECTOR FILE
172 046156          $FEBSF::BLKW 64.         ; BUFFER FOR FE CYLINDER DEFECTS
173
174              000001 .END
```

CONEFN= 000002	IO.WCH= 004110 G	\$DVPRM 000114RG	\$MXLBN 000032RG	002 \$SSFSZ 000014RG
CONLUN= 000002	IO.WCK= 004050 G	\$DVUNT 000030RG	002 \$MXSEC 000124RG	\$STATS 000000RG
DEFSEC= 000037	IO.WDH= 004040 G	\$FEBSF 046156RG	002 \$MXTRK 000122RG	\$SWERL 000011RG 002
DSKEFN= 000001	IO.WPD= 004160 G	\$FLCYL 000040RG	002 \$PAT 000016RG	\$SWFFE 000015RG 002
DSKLUN= 000003 G	IO.WTD= 004130 G	\$FLSEC 000044RG	002 \$PHYDV 000142RG	\$SWFMT 000014RG 002
IO.BLS= 004010 G	IQ.UMD= 000004 G	\$FLTRK 000042RG	002 \$RETRY 000022RG	\$SWINT 000016RG 002
IO.DGN= 004150 G	SECSZ 000026RG	\$FUNC 000032RG	\$REVM 000006RG	002 \$SWLOG 000013RG 002
IO.FER= 004200 G	SKPFRE 000020RG	002 \$HDRFG 000036RG	002 \$RGRUF 000054RG	002 \$SWLST 000012RG 002
IO.FEW= 004210 G	SPEFN = 000003 G	\$INADD 000004RG	002 \$RTCNT 000026RG	002 \$SWMOD 000017RG 002
IO.HMS= 004000 G	TRKSZ 000024RG	\$IOBUF 000044RG	\$SCB 000002RG	002 \$TRK 000050RG 002
IO.LPC= 004100 G	\$ALFLB 000004RG	\$IOST 000110RG	\$SEC 000052RG	002 \$SUBSZ 000130RG
IO.OFF= 004020 G	\$BUF 000136RG	002 \$LBNH 000052RG	\$SNAME 000022RG	002 \$UCB 000000RG 002
IO.RDH= 004030 G	\$BUFRX 040336RG	002 \$LBNL 000054RG	\$SSF 043156RG	002 \$UDBSF 042156RG 002
IO.RNF= 004060 G	\$BUFX = 040336RG	002 \$LOGDV 000132RG	\$SSFDT= 001365 G	\$VERIF 000021RG 002
IO.RNR= 004070 G	\$CONPB 000060RG	\$MBSSZ 000126RG	\$SSFHD= 000013 G	\$XFRSZ 000046RG
IO.RPD= 004170 G	\$CYL 000046RG	002 \$MDBSF 041156RG	002 \$SSFLB 000010RG	\$YESNO 000010RG 002
IO.RTD= 004120 G	\$DSKPB 000030RG	\$MXCYL 000120RG	\$SSFLN= 000003 G	...GBL= 000001
IO.TDD= 004140 G	\$DVICE 000002RG			

. ABS. 000000 000
 000152 001
 \$\$\$\$BF 046356 002
 ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 898 WORDS (4 PAGES)
 DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
 ELAPSED TIME: 00:00:12
 [300,20]FMTDAT,[300,30]FMTDAT=[300,10]FMTDAT

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```
.TITLE FMTMSG - MESSAGE OUTPUT ROUTINES
IDENT /01.00/

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: VERSION 01.00

: C. HESS      15-AUG-80
: M. LEAVITT   23-OCT-80
:

.NLIST CND,BEX

.MCALL DIR$
```

```

35
38
39 000000 015 000 $CR:: .ASCIIZ <CR>
40 000002 052 052 $STARS:: .ASCIIZ /*****<LF>
41 000016 015 106 115 $MSG1:: .ASCIIZ <CR>/FMT -- /
42 000027 123 131 116 $MSG2:: .ASCIIZ /SYNTAX ERROR/
43 000044 104 105 126 $MSG4:: .ASCIIZ /DEVICE NOT IN SYSTEM/
44 000071 106 101 111 $MSG5:: .ASCIIZ /FAILED TO ATTACH DEVICE/
45 000121 012 012 123 $MSG6:: .ASCIIZ <LF><LF>/START FORMATTING/
46 000144 040 055 101 $MSG6A:: .ASCIIZ / -ALL CYLINDERS-<CR>
47 000166 040 055 106 $MSG6B:: .ASCIIZ / -FE CYLINDERS-<CR>
48 000207 104 122 111 $MSG7:: .ASCIIZ /DRIVE OFFLINE/
49 000225 125 116 122 $MSG8:: .ASCIIZ /UNRECOVERABLE ERROR -/
50 000252 040 040 040 $MSG8A:: .ASCIIZ / /
51 000260 104 105 126 $MSG9:: .ASCIIZ /DEVICE WRITE LOCKED/
52 000304 104 105 126 $MSG10:: .ASCIIZ /DEVICE NOT READY/
53 000325 012 123 124 $MSG11:: .ASCIIZ <LF>/START VERIFICATION/
54 000351 012 104 117 $MSG12:: .ASCIIZ <LF>/DONE !/
55 000361 104 105 126 $MSG13:: .ASCIIZ /DEVICE DRIVER MISSING/
56 000407 103 131 114 $MSG15:: .ASCIIZ /CYLINDER=/
57 000421 124 122 101 $MSG16:: .ASCIIZ /TRACK=/
58 000430 123 105 103 $MSG17:: .ASCIIZ /SECTOR=/
59 000440 115 104 102 $MSG18:: .ASCIIZ /MDBSF COPY CORRUPT/
60 000463 125 104 102 $MSG19:: .ASCIIZ /UDBSF COPY CORRUPT/
61 000506 106 101 124 $MSG20:: .ASCIIZ /FATAL HARDWARE ERROR/
62 000533 106 101 111 $MSG21:: .ASCIIZ /FAILED TO READ MDBSF COPY/
63 000565 120 122 111 $MSG22:: .ASCIIZ /PRIVILEGE VIOLATION/
64 000611 012 007 052 $MSG23:: .ASCIIZ <LF><07>/** WARNING - DATA WILL BE LOST ON /
65 000656 072 040 052 $MSG24:: .ASCIIZ /: **/<07>
66 000664 015 106 115 $MSG25:: .ASCIIZ <CR>/FMT>/
67 000672 125 116 101 $MSG26:: .ASCIIZ /UNABLE TO RECOVER MDBSF/
68 000722 126 105 103 $MSG27:: .ASCIIZ /VECTOR NOT MULTIPLE OF FOUR/
69 000756 103 123 122 $MSG28:: .ASCIIZ /CSR ADDRESS NOT IN SYSTEM/
70 001010 103 117 115 $MSG29:: .ASCIIZ @COMMAND I/O ERROR@
71 001032 103 117 115 $MSG30:: .ASCIIZ /COMMAND TOO LONG/
72 001053 012 103 117 $MSG31:: .ASCIIZ <LF>/CONTINUE (L) N ? /
73 001076 122 105 123 $MSG32:: .ASCIIZ /RESPONSE OUT OF RANGE/
74 001124 111 116 103 $MSG40:: .ASCIIZ /INCORRECT MDBSF SERIAL NUMBER/
75 001162 125 116 101 $MSG41:: .ASCIIZ /UNABLE TO RECOVER SSF/
76 001210 125 116 101 $MSG42:: .ASCIIZ /UNABLE TO RECOVER UDBSF/
77 001240 125 116 101 $MSG43:: .ASCIIZ /UNABLE TO READ UDBSF/
78 001265 111 116 103 $MSG44:: .ASCIIZ /INCORRECT UDBSF SERIAL NUMBER/
79 001323 105 122 122 $MSG45:: .ASCIIZ /ERROR LIMIT EXCEEDED/
80 001350 125 116 101 $MSG58:: .ASCIIZ /UNABLE TO READ SKIP SECTOR FILE COPY/
81 001415 123 113 111 $MSG59:: .ASCIIZ /SKIP SECTOR FILE COPY IS CORRUPT/
82 001456 015 104 122 $MSG70:: .ASCIIZ <CR>/DRIVE #: /
83 001471 015 117 120 $MSG71:: .ASCIIZ <CR>/OPTIONS: /
84 001504 104 122 111 $MSG72:: .ASCIIZ /DRIVE NOT PRESENT/
85 001526 104 122 111 $MSG73:: .ASCIIZ /DRIVE NOT AN RM80/
86 001550 125 120 104 $MSG78:: .ASCIIZ /UPDATE MODE (L) N ? /
87
88 .EVEN

```

```

90
91
92      :+
93      :*-SMESAG-OUTPUT MESSAGE WITH CURRENT EXIT STATUS
94      :*-SMSGWR-OUTPUT MESSAGE WITH WARNING EXIT STATUS
95      :
96      :INPUTS:
97      :      RO = ADDRESS OF "ASCIZ" MESSAGE STRING
98      :-
99 001576 112767 000000G 000000G $MSGWR::MOVB #EX$WAR,$STATS ;SET WARNING EXIT STATUS
100 001604 010046 $MESAG::MOV RO,-(SP) ;SAVE MESSAGE ADDRESS
101 001606 012700 000000G MOV #SBUF,RO ;GET PRINT BUFFER ADDRESS
102 001612 012703 000016' MOV #MSG1,R3 ;GET PREFIX ADDRESS
103 001616 004767 000000G CALL $MOVE ;STORE PREFIX
104 001622 012603 MOV (SP)+,R3 ;GET BASIC MESSAGE ADDRESS
105 001624 004767 000000G CALL $MOVE ;STORE BASIC MESSAGE
106 001630 112720 000012 MOVB #12,(RO)+ ;ADD AN ADDITIONAL LINE FEED
107 001634 105010 CLRB (RO) ;TERMINATE THE BUFFER
108 001636 012700 000000G MOV #SBUF,RO ;SET MESSAGE BUFFER ADDRESS
109 001642 004767 000000G CALL $PRINT ;PRINT THE MESSAGE
110
111 001646 012767 000000C 000000G $FMTEX::MOV #IO.DET!IO.UMD,$FUNC ;LOAD DETACH FUNCTION CODE
112 001654 DIRS #SDSKPB ;DETACH DISK (WHO CARES IF IT FAILS!!)
113 001662 000167 000000G JMP $FMTEP ;RESTART
114
115      000001 .END

```

CR = 000015	\$MSG8 001550RG	\$MSG20 000506RG	\$MSG4 000044RG	\$MSG6B 000166RG
EX\$WAR= ***** GX	\$MSGWR 001576RG	\$MSG21 000533RG	\$MSG40 001124RG	\$MSG7 000207RG
IO.DET= ***** GX	\$MSG1 000016RG	\$MSG22 000565RG	\$MSG41 001162RG	\$MSG70 001456RG
IQ.UMD= ***** GX	\$MSG10 000304RG	\$MSG23 000611RG	\$MSG42 001210RG	\$MSG71 001471RG
LF = 000012	\$MSG11 000325RG	\$MSG24 000656RG	\$MSG43 001240RG	\$MSG72 001504RG
\$BUF = ***** GX	\$MSG12 000351RG	\$MSG25 000664RG	\$MSG44 001265RG	\$MSG73 001526RG
\$CR 000000RG	\$MSG13 000361RG	\$MSG26 000672RG	\$MSG45 001323RG	\$MSG8 000225RG
\$DSKPB= ***** GX	\$MSG15 000407RG	\$MSG27 000722RG	\$MSG5 000071RG	\$MSG8A 000252RG
\$FMTEP= ***** GX	\$MSG16 000421RG	\$MSG28 000756RG	\$MSG58 001350RG	\$MSG9 000260RG
\$FMTEX 001646RG	\$MSG17 000430RG	\$MSG29 001010RG	\$MSG59 001415RG	\$PRINT= ***** GX
\$FUNC = ***** GX	\$MSG18 000440RG	\$MSG30 001032RG	\$MSG6 000121RG	\$STAPS 000002RG
\$MESAG 001604RG	\$MSG19 000463RG	\$MSG31 001053RG	\$MSG6A 000144RG	\$STATS= ***** GX
\$MOVE = ***** GX	\$MSG2 000027RG	\$MSG32 001076RG		

. ABS. 000000 000
001666 001

ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 618 WORDS (3 PAGES)
DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
ELAPSED TIME: 00:00:10
[300,20]FMTMSG,[300,30]FMTMSG=[300,10]FMTMSG

1 .TITLE FMTSUB - FORMAT SUBROUTINES
2 .IDENT /02.00/
3
4

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8

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25 VERSION 02.00
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27 C. HESS 21-AUG-80
28 M. LEAVITT 02-JUL-82
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43 000000 016701 000000G
44 000004 006201
45 000006 006201
46 000010 012700 000000G
47 000014 016720 000000G
48 000020 016720 000002G
49 000024 005301
50 000026 100372
51 000030 000207
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64 000032 012700 000000G
65 000036 004767 000176
66 000042 005002
67 000044 004767 000000G
68 000050 112720 000056
69 000054 112720 000040
70 000060 105010
71 000062 005001
72 000064 012700 000000G
73 000070 000167 000000G
74
75
76
77
78
79
80
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82
83
84 000074 012700 000000G
85 000100 004767 000134
86 000104 105202
87 000106 004767 000000G
88 000112 112720 000040

;+
; **-$MVPAT-LOAD THE DATA BUFFER WITH THE DISK DATA PATTERN
;
; INPUTS:
;     NONE
;
; OUTPUTS:
;     '$BUF' LOADED WITH '$PAT' & '$PAT+2'
;
; -
;
; $MVPAT: MOV     TRKSZ,R1           ; LOAD THE DISTRIBUTION COUNTER
;         ASR     R1               ; CONVERT BYTE COUNT TO WORD COUNT
;         ASR     R1               ; CONVERT TO 2 WORD COUNT
;         MOV     # $BUF,R0        ; BUFFER POINTER
; 1$:     MOV     $PAT,(R0)+        ; MOVE THE PATTERN
;         MOV     $PAT+2,(R0)+
;         DEC     R1               ; DECREMENT THE DISTRIBUTION COUNTER
;         BPL     1$              ; IF PL, MORE TO DO
;         RETURN
;
;+
; OUTPUT ERROR MESSAGE
;
; INPUTS:
;     R1 = VALUE TO CONVERT
;     R3 = ADDRESS OF BASIC MESSAGE
;
; OUTPUTS:
;     NONE.
;
; -
;
; $EROUT: MOV     # $BUFRX,R0      ; GET OUTPUT BUFFER ADDRESS
;         CALL    $MOVE            ; STORE BASIC MESSAGE
;         CLR     R2               ; SUPPRESS LEADING 0'S
;         CALL    $CBDMG          ; CONVERT TO DECIMAL
; ERROUT: MOVB    #'',(R0)+        ; STUFF DECIMAL INDICATOR
;         MOVB    #'',(R0)+        ; STUFF BLANK IN MESSAGE
;         CLRB    (R0)             ; TERMINATE STRING
;         CLR     R1               ; SET NULL CARRIAGE CONTROL
;         MOV     # $BUFRX,R0      ; GET OUTPUT BUFFER ADDRESS
;         JMP     $PRNT0           ; PRINT MESSAGE
;
;+
; **-$EROCT-CONVERT TO OCTAL AND PRINT
;
; INPUTS:
;     R1 = VALUE TO CONVERT
;     R3 = MESSAGE ADDRESS
;
; OUTPUTS:
;     MESSAGE PRINTED ON TI:
;
; -
;
; $EROCT: MOV     # $BUFRX,R0      ;
;         CALL    $MOVE            ;
;         INCB    R2               ; INCLUDE LEADING ZEROS
;         CALL    $CBDMG          ; CONVERT TO OCTAL
;         MOVB    #'',(R0)+        ; STUFF BLANK IN MESSAGE

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89 000116 105010          CLR      (R0)          ; TERMINATE STRING
90 000120 005001          CLR      R1           ; SET NULL CARRIAGE CONTROL
91 000122 012700 000000G  MOV      # $BUFRX,R0
92 000126 004767 000000G  CALL     $PRNTO       ; SEND MESSAGE
93
94
95
96      *--$CVTDA-CONVERT DISK ADDRESS TO LOGICAL BLOCK NUMBER
97
98      THIS SUBROUTINE CONVERTS A DISK ADDRESS TO A LOGICAL
99      BLOCK NUMBER. THE FORMULA USED IS:
100      BLK = ($CYL * $MXTRK + $TRK) * $MXSEC + $SEC
101
102      INPUTS:
103      $CYL = CYLINDER NUMBER
104      $TRK = TRACK NUMBER
105      $SEC = SECTOR NUMBER
106
107      OUTPUTS:
108      $LBNH = HIGH ORDER BLOCK NUMBER
109      $LBNL = LOW ORDER BLOCK NUMBER
110
111
112 000132 016701 000000G  $CVTDA: MOV      $CYL,R1          ; GET CYLINDER NUMBER
113 000136 016700 000000G  MOV      $MXTRK,R0         ; GET TRACKS PER CYLINDER
114 000142 004767 000174   CALL     $MULT             ; MULTIPLY
115 000146 016700 000000G  MOV      $TRK,R0           ; GET TRACK NUMBER
116 000152 060100         ADD      R1,R0              ; ADD TO PARTIAL TOTAL
117 000154 016701 000000G  MOV      $MXSEC,R1         ; GET SECTORS PER TRACK
118 000160 004767 000156   CALL     $MULT             ; MULTIPLY
119 000164 066701 000000G  ADD      $SEC,R1          ; ADD IN SECTOR
120 000170 005500         ADC      R0                 ; DON'T FORGET CARRY
121 000172 010067 000000G  MOV      R0,$LBNH          ; SAVE HIGH ORDER BLOCK NUMBER
122 000176 010167 000000G  MOV      R1,$LBNL          ; SAVE LOW ORDER BLOCK NUMBER
123 000202 000207         RETURN
124
125
126      *--$HOMSK-ISSUE A HOME SEEK FUNCTION
127
128      THIS SUBROUTINE WILL ISSUE A HOME SEEK FUNCTION.
129
130      INPUTS:
131      NONE.
132
133      OUTPUTS:
134      HOME SEEK ISSUED TO DISK.
135
136
137 000204 005067 000000G  $HOMSK: CLR      $LBNH          ; RESET BLOCK NUMBER
138 000210 005067 000000G  CLR      $LBNL
139 000214 012767 000010 000000G  MOV      #10,$XFRSZ      ; DUMMY UP BYTE COUNT
140 000222 012703 000000C  MOV      #10,$HMS!IQ.UMD,R5 ; SET HOME SEEK FUNCTION CODE
141 000226 012705 000000G  MOV      # $BUF,R5       ; SETUP DEFAULT BUFFER ADDRESS
142 000232 000167 000000G  JMP      $DSKIO        ; DO THE FUNCTION AND EXIT
143 000236 000207 1$:      RETURN
144
145

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159 000240 112320
160 000242 001376
161 000244 105740
162 000246 000207
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180 000250 012701 000044
181 000254 004767 000000G
182 000260 005067 000000G
183 000264 004767 000000G
184 000270 103422
185 000272 016703 000002G
186 000276 105063 000000G
187 000302 012700 000000G
188 000306 121027 000141
189 000312 103405
190 000314 121027 000172
191 000320 101002
192 000322 142710 000040
193 000326 105720
194 000330 001366
195 000332 005703
196 000334 000207
197 000336 000167 000000G
198
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202

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```

: *--$MOVE-MOVE ASCIZ STRING INTO BUFFER
: THIS SUBROUTINE WILL MOVE AN ASCIZ STRING INTO A BUFFER.
: INPUTS:
:   R0 = ADDRESS OF BUFFER.
:   R3 = ADDRESS OF ASCIZ TEXT TO MOVE.
: OUTPUTS:
:   R0 = POINTS TO NEXT PLACE IN BUFFER.
: -
$MOVE:: MOVB      (R3)+,(R0)+      ;STORE TEXT CHARACTER
        BNE      $MOVE           ;IF NE CONTINUE TO STORE
        TSTB     -(R0)           ;POINT TO NEXT BUFFER POSITION
        RETURN
:
: *--$PRMPT-PROMPT USER AND SOLICIT A RESPONSE
: THIS SUBROUTINE WILL PROMPT THE USER AND THEN WAIT FOR HIS
: RESPONSE.
: INPUTS:
:   R0 = ADDRESS OF PROMPT MESSAGE.
: OUTPUTS:
:   R3 = BYTE COUNT
:   BUFFER IS TERMINATED
:   Z = 1 IF BYTE COUNT IS ZERO
:   Z = 0 IF BYTE COUNT IS NON-ZERO
: -
$PRMPT::MOV      #'$,R1           ;SET CARRIAGE CONTROL
        CALL     $PRNTO           ;PROMPT THE USER
        CLR      $BUFRX          ;CLEAR USER'S RESPONSE BUFFER
        CALL     $READ           ;GET THE USERS RESPONSE
        BCS      MSG             ;IF CS ERROR
        MOV      $IOST+2,R3      ;GET BYTE COUNT
        CLRB     $BUFRX(R3)      ;TERMINATE THE LINE
        MOV      #$BUFRX,R0      ;GET INPUT BUFFER ADDRESS
1$:      CMPB     (R0),#141       ;LOWER CASE LETTER?
        BLO      2$             ;IF LO NO
        CMPB     (R0),#172       ;LOWER CASE LETTER?
        BHI      2$             ;IF HI NO
        BICB     #40,(R0)        ;YES, CONVERT TO UPPER CASE
2$:      TSTB     (R0)+          ;END OF INPUT BUFFER?
        BNE      1$             ;IF NE NO
        TST      R3             ;TEST FOR NULL LINE
        RETURN
MSG:      JMP      $MSGWR         ;EXIT WITH WARNING STATUS
:
: *--$MULT-INTEGGER MULTIPLY ROUTINE
: INPUTS:

```

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203      :      R0 = MULTIPLIER
204      :      R1 = MULTIPLICAND
205
206      :      OUTPUTS:
207      :      R0 = HIGH ORDER RESULT
208      :      R1 = LOW ORDER RESULT
209
210      :      ALL REGISTERS ARE PRESERVED
211      :
212      :
213
214      000342 010046      $MULT:: MOV      R0,-(SP)      ; SAVE MULTIPLIER FOR ADDS
215      000344 012746 000021      MOV      #21,-(SP)    ; SET LOOP COUNT
216      000350 005000      CLR      R0      ; CLEAR HIGH PART
217      000352 006000      1$:      ROR      R0      ; DOUBLE RIGHT SHIFT
218      000354 006001      ROR      R1
219      000356 103002      BCC      2$      ; IF CC, DO NOT ADD
220      000360 066600 000002      ADD      2(SP),R0    ; ADD MULTIPLIER TO RESULT
221      000364 005316      DEC      (SP)      ; DECREMENT THE LOOP COUNT
222      000366 003371      BGT      1$      ; IF GT, MORE TO DO
223      000370 022626      CMP      (SP)+,(SP)+      ; PRUNE STACK
224      000372 000207      RETURN
225
226      :
227      :+
228      :      **--SSFRCRC-COMPUTE CHECKSUM OVER SSF DATA
229      :
230      :      THIS ROUTINE WILL COMPUTE THE CHECKSUM OVER THE SPECIFIED
231      :      DATA AREA OF AN SSF COPY.
232
233      :      INPUTS:
234      :      R0 = STARTING ADDRESS
235      :      R1 = LENGTH OF DATA AREA
236
237      :      OUTPUTS:
238      :      R0 = POINTS TO CHECKSUM WORD
239      :      R1 = CHECKSUM
240      :
241      000374 012746 000001      SSFRCRC: MOV      #1,-(SP)      ; INITIALIZE CHECKSUM
242      000400 062016      1$:      ADD      (R0)+,(SP)    ; ADD DATA WORD TO CHECKSUM
243      000402 006116      ROL      (SP)      ; ROTATE CHECKSUM
244      000404 005301      DEC      R1      ; ALL DONE ?
245      000406 001374      BNE      1$      ; IF NE, NO
246      000410 012601      MOV      (SP)+,R1      ; GET CHECKSUM RESULT
247      000412 000207      RETURN
248
249      :
250      :+
251      :      **--$UPDMX-UPDATE MAXIMUM VALUES FOR DEVICE GEOMETRY
252      :
253      :      THIS ROUTINE WILL REPLACE THE CURRENT MAXIMUM VALUES FOR THE
254      :      RM80'S CURRENT GEOMETRY WITH THE VALUES SUPPLIED IN THE
255      :      SPECIFIED TABLE.
256
257      :      INPUTS:
258      :      R3 = POINTER TO SPECIFIED TABLE
259
260      :      OUTPUTS:

```

```

260      R3 = POINTS PAST END OF SPECIFIED TABLE
261      $MXLBN, $MXLBN+2, $MXCYL, $MXTRK, AND $MXSEC ARE ALL UPDATED
262
263      :-
264
265      000414 012367 000000G      SUPDMX::MOV      (R3)+,$MXLBN      ;SET UP MAX LBN
266      000420 012367 000002G      MOV      (R3)+,$MXLBN+2      ;...
267      000424 012367 000000G      MOV      (R3)+,$MXCYL      ;SET UP MAX CYLINDER
268      000430 112367 000000G      MOV      (R3)+,$MXSEC      ;SETUP MAX SECTOR
269      000434 112367 000000G      MOV      (R3)+,$MXTRK      ;SETUP MAX TRACK
270      000440 166767 000000G 000002G      SUB      $MXSEC,$MXLBN+2 ;DO NOT FORMAT LAST TRACK
271      000446 005667 000000G      SBC      $MXLBN      ;...
272      000452 000207
273      RETURN
274
275      *--$TSTDA-TEST FOR A VALID DISK ADDRESS (BLOCK NUMBER)
276
277      THIS SUBROUTINE WILL CONVERT THE DISK ADDRESS TO A LBN AND
278      CHECK IF THE LOGICAL BLOCK NUMBER IS WITHIN RANGE.
279
280      INPUTS:
281      $SEC, $TRK, $CYL SET TO A VALUE.
282
283      OUTPUTS:
284      CS      IF LBN OUT OF RANGE
285      CC      IF LBN IN RANGE
286      :-
287
288      000454 004767 177452      $TSTDA::CALL      $CVTDA      ;CONVERT PARAMETERS TO LBN
289      000460 126767 000000G 000000G      CMPB     $LBNH,$MXLBN      ;HIGH BLOCK # IN RANGE?
290      000466 101007      BHI      2$      ;IF HI NO
291      000470 103404      BLO      1$      ;IF LO YES
292      000472 026767 000000G 000002G      CMP      $LBNL,$MXLBN+2 ;LOW BLOCK # IN RANGE?
293      000500 101002      BHI      2$      ;IF HI NO
294      000502 000241      CLC      ;SHOW LBN OK
295      000504 000207      RETURN
296      000506 000261      1$:      SEC      ;SHOW LBN BAD
297      000510 000207      2$:      RETURN
298
299
300      *--$TSTMX-TEST FOR END OF DISK AND UPDATE DISK PARAMETERS
301
302      THIS SUBROUTINE WILL UPDATE THE DISK PARAMETERS AND TEST
303      IF THE PARAMETERS WILL OVERFLOW THE DISK.
304
305      INPUTS:
306      $CYL = CURRENT CYLINDER NUMBER
307      $TRK = CURRENT TRACK NUMBER
308      $SEC = CURRENT SECTOR NUMBER
309
310      OUTPUTS:
311      CS      IF UPDATED PARAMETERS EXCEED DISK LIMITS
312      CC      IF UPDATED PARAMETERS ARE STILL VALID.
313      $SEC = 0 IF NORMAL MODE.
314
315      :-
316

```

```

317 000512 005067 000000G $STMX::CLR $SEC ; START WITH SECTOR ZERO
318 000516 005267 000000G INC $TRK ; UPDATE TRACK NUMBER
329 000522 026767 000000G 000000G 10$: CMP $TRK,$MXTRK ; IS TRACK NUMBER EXCEEDED?
330 000530 103404 BLO 20$ ; IF LO, NO
331 000532 005067 000000G CLR $TRK ; RESET TRACK NUMBER
332 000536 005267 000000G INC $CYL ; UPDATE CYLINDER NUMBER
333 000542 026767 000000G 000000G 20$: CMP $CYL,$MXCYL ; IS CYLINDER NUMBER EXCEEDED?
334 000550 001402 BEQ 30$ ; IF EQ YES
335 000552 000241 CLC ; INDICATE VALID PARAMETERS
336 000554 000207 RETURN
337 000556 000261 30$: SEC ; INDICATE PARAMETERS EXCEEDED
338 000560 000207 RETURN
339
340
341
342
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348
349
350
351
352
353
354 000562 012700 000144G $UNTID::MOV # $BUF+100.,R0 ; SET BUFFER ADDRESS
355 000566 004767 177446 CALL $MOVE ; PUT MESSAGE INTO BUFFER
356 000572 116720 000000G MOVB $DVCE,(R0)+ ; STORE DEVICE NAME
357 000576 116720 000001G MOVB $DVCE+1,(R0)+ ;
358 000602 005001 CLR R1 ; GET READY FOR THE BISB
359 000604 156701 000000G BISB $DVUNT,R1 ; GET UNIT NUMBER
360 000610 005002 CLR R2 ; SUPPRESS LEADING 0'S
361 000612 000167 000000G JMP $CBOMG ; CONVERT UNIT NUMBER TO ASCII
362
363
364
365
366
367
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377
378
379 000616 012703 000000G $RDBSF::MOV # $LOGDV,R3 ; LOGICAL DEVICE ADDRESS POINDER
380 000622 004767 177566 CALL $UPDMX ; UPDATE THE ADDRESS VALUES
381 000626 016767 000000G 000000G MOV $MXLBN,$LBNH ; SET DISK ADDRESS OF MDBSF
382 000634 016767 000002G 000000G MOV $MXLBN+2,$LBNL ;
383

```

*--\$UNTID-PUT MESSAGE AND DEVICE/UNIT INTO BUFFER
 THIS SUBROUTINE WILL STORE THE MESSAGE AND THE DEVICE AND UNIT
 NUMBER INTO THE BUFFER.
 INPUTS:
 R3 = ADDRESS OF MESSAGE
 OUTPUTS:
 R0 = NEXT BUFFER POSITION
 --

*--\$RDBSF-READ MANUFACTURER'S & USER BAD SECTOR FILES
 THIS SUBROUTINE WILL READ THE MDBSF AND THE UDBSF.
 IF WE ARE RE-WRITING THE LAST TRACK, A EMPTY MDBSF AND UDBSF
 IS RETURNED.
 INPUTS:
 \$MXLBN = DISK ADDRESS OF START OF MDBSF.
 OUTPUTS:
 A GOOD SECTOR OF THE MDBSF AND THE UDBSF ARE READ INTO
 THEIR BUFFERS
 --

```

384                                     ; READ THE MDBSF
385
386 000642 016701 000000G 1$: MOV $MBSSZ,R1      ; GET NUMBER OF BLOCKS IN MDBSF
387 000646 006201      ASR R1                    ; DIVIDE BY 2
388 000650 000405      BR 3$
389 000652 062767 000002 000000G 2$: ADD #2,$LBNL  ; TRY NEXT USABLE MDBSF BLOCK
390 000660 005567 000000G      ADC $LBNH
391 000664 012705 000000G 3$: MOV # $MDBSF,R5     ; GET ADDRESS OF MDBSF BUFFER
392 000670 004767 000222      CALL RDBSF         ; READ THE MDBSF
393 000674 103017      BCC 6$                    ; IF CC OK
394 000676 012700 000000G      MOV # $MSG21,R0    ; CAN'T READ MDBSF
395 000702 005301      4$: DEC R1                ; MORE MDBSF BLOCKS AVAILABLE?
396 000704 001006      BNE 5$                    ; IF NE YES
397 000706 004767 000000G      CALL $PRINT        ; PRINT THE ERROR MESSAGE
398 000712 012700 000000G      MOV # $MSG26,R0    ; UNABLE TO RECOVER THE MDBSF
399 000716 000167 000000G      JMP $MSGWR        ; EXIT
400 000722 010146      5$: MOV R1,-(SP)          ; SAVE THE MDBSF COUNT
401 000724 004767 000000G      CALL $PRINT        ; PRINT THE MESSAGE
402 000730 012601      MOV (SP)+,R1              ; RESTORE R1
403 000732 000747      BR 2$                    ; TRY AGAIN
404 000734 004567 000176      6$: JSR R5,VYBSF    ; VERIFY THE MDBSF COPY
405 000740 000000G      .WORD $MDBSF             ; MDBSF BUFFER POINTER
406 000742 000000G      .WORD $MSG40             ; BAD S/N MSG POINTER
407 000744 000000G      .WORD $MSG18            ; MDBSF CORRUPT MSG POINTER
408 000746 103755      BCS 4$                    ; IF CS, MDBSF CORRUPT
409 000750 004767 001506      CALL $SRTHF        ; SORT THE MDBSF
410
411                                     ; READ THE UDBSF
412
413 000754 016767 000000G 000000G MOV $MXLBN,$LBNH ; SET DISK ADDRESS OF UDBSF
414 000762 016767 000002G 000000G MOV $MXLBN+2,$LBNL ; ADDRESS OF THE UDBSF
415 000770 066767 000000G 000000G ADD $MBSSZ,$LBNL
416 000776 005567 000000G      ADC $LBNH
417 001002 016701 000000G      MOV $UBSSZ,R1
418 001006 006201      ASR R1
419 001010 000405      BR 8$
420 001012 062767 000002 000000G 7$: ADD #2,$LBNL  ; TRY NEXT USABLE UDBSF BLOCK
421 001020 005567 000000G      ADC $LBNH
422 001024 012705 000000G 8$: MOV # $UDBSF,R5     ; GET ADDRESS OF UDBSF BUFFER
423 001030 004767 000062      CALL RDBSF         ; READ THE UDBSF
424 001034 103017      BCC 11$                   ; IF CC OK
425 001036 012700 000000G      MOV # $MSG43,R0    ; CAN'T READ UDBSF
426 001042 005301      9$: DEC R1                ; MORE UDBSF BLOCKS AVAILABLE?
427 001044 001006      BNE 10$                   ; IF NE, YES
428 001046 004767 000000G      CALL $PRINT        ; PRINT THE ERROR MESSAGE
429 001052 012700 000000G      MOV # $MSG42,R0    ; UNABLE TO RECOVER THE UDBSF
430 001056 000167 000000G      JMP $MSGWR        ; EXIT
431 001062 010146      10$: MOV R1,-(SP)          ; SAVE THE MDBSF COUNT
432 001064 004767 000000G      CALL $PRINT        ; PRINT THE MESSAGE
433 001070 012601      MOV (SP)+,R1              ; RESTORE R1
434 001072 000747      BR 7$                    ; TRY AGAIN
435 001074 004567 000036      11$: JSR R5,VYBSF    ; VERIFY THE UDBSF COPY
436 001100 000000G      .WORD $UDBSF             ; UDBSF BUFFER POINTER
437 001102 000000G      .WORD $MSG44             ; BAD S/N MSG POINTER
438 001104 000000G      .WORD $MSG19            ; UDBSF CORRUPT MSG POINTER
439 001106 103755      BCS 9$                    ; IF CS, UDBSF CORRUPT
440 001110 004767 001402      CALL $SRTHF        ; SORT THE UDBSF

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441 001114 000207          RETURN
442
443      :+
444      :*-RDBSF-READ THE SPECIFIED BSF FILE
445      :
446      : READ THE BSF (EITHER MDBSF OR UDBSF) SPECIFIED IN R5
447      : (ROUTINE USED BY '$RDBSF')
448      :
449      : INPUTS:
450      :     R5 = BUFFER ADDRESS
451      :     $LBNL,$LBNH LOADED WITH THE TRANSFER LBN
452      :
453      : OUTPUTS:
454      :     CC      IF TRANSFER WAS NOT SUCESSFUL
455      : -
456
457 001116 012767 001000 000000G RDBSF:  MOV    #512,$XFRSZ      ; SET SIZE OF ONE SECTOR (BYTES)
458 001124 012703 000000C          MOV    #10,RLB!10,X,R3      ; SET READ FUNCTION (WITHOUT RETRIES)
459 001130 004767 000000G          CALL    $DSKIO              ; READ 1 BLOCK FROM THE BSF
460 001134 000207          RETURN
461
462      :+
463      :*-VYBSF-VERIFY THE BSF COPY
464      : (ROUTINE USED BY '$RDBSF')
465      :
466      : VERIFY THE BSF COPY SPECIFIED BY THE INPUT PARAMETERS
467      :
468      : CALL: JSR      R5,VYBSF
469      :          BSF POINTER
470      :          POINTER TO 'XXBSF SERIAL NUMBER DOESN'T MATCH' MSG
471      :          POINTER TO 'XXBSF COPY CORRUPT' MSG
472      :
473      : OUTPUTS:
474      :     R0 = SPECIFIC ERROR MESSAGE POINTER
475      :     CC  0 IF BSF NOT CORRUPT
476      :     CS  1 IF BSF CORRUPT
477      : -
478
479 001136 012503          VYBSF:  MOV    (R5)+,R3      ; GET THE BUFFER POINTER
480 001140 012500          MOV    (R5)+,R0      ; BAD S/N MESSAGE POINTER
481 001142 105767 000C00G    TSTB    $SWLSF      ; LISTING THE MDBSF ?
482 001146 001010          BNE     1$      ; IF NE, YES
483 001150 021367 000000G    CMP     (R3),$SNAME      ; VERIFY THE SERIAL NUMBER
484 001154 001020          BNE     4$      ; IF NE, FIRST S/N WORD NOT CORRECT
485 001156 026367 000002 000002G    CMP     2(R3),$SNAME+2      ; CHECK THE SECOND WORD
486 001164 001014          BNE     4$      ; IF NE, SERIAL NUMBER DOESN'T MATCH
487 001166 000405          BR      2$      ; CHECK THE ALIGNMENT FLAG
488 001170 005713          1$:  TST     (R3)      ; IS SERIAL NUMBER NON-ZERO?
489 001172 001003          BNE     2$      ; IF NE YES
490 001174 005763 000002          TST     2(R3)      ; MAYBE?
491 001200 001403          BEQ     3$      ; IF EQ, NO
492 001202 005763 000006          2$:  TST     6(R3)      ; TEST THE ALIGNMENT DISK FLAG
493 001206 001403          BEQ     4$      ; IF EQ, BSF OK
494 001210 012500          3$:  MOV    (R5)+,R0      ; CORRUPT BSF MESSAGE POINTER
495 001212 000261          SEC          ; SET THE ERROR INDICATOR
496 001214 000402          BR      5$
497 001216 005725          4$:  TST     (R5)+      ; CORRECT THE RETURN

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498 001220 000241          CLC          ; SET THE GOOD INDICATOR
499 001222 000205          RTS          R5      ; RETURN
500
501      ;+
502      ;*-SWTBSF-WRITE THE MANUFACTURER'S AND USER'S BAD SECTOR FILES
503
504      ; THIS ROUTINE WILL WRITE THE 16 BIT MDBSF AND THE UDBSF ON THE
505      ; PRIMARY DEC STD 144 TRACK (558,13) AND ON THE ALTERNATE TRACK
506      ; (559,1).
507
508      ; INPUTS:
509      ;     NONE.
510
511      ; OUTPUTS:
512      ;     NONE.
513      ; -
514
515 001224 004767 001232      $WTBSF::CALL    $SRIMF          ; SORT THE MDBSF
516 001230 004767 001262          CALL    $SRITF          ; SORT THE UDBSF
517 001234 012703 000000G      MOV    #$LOGDV,R3          ; LOGICAL DEVICE ADDRESS POINTER
518 001240 004767 177150          CALL    $UPDMX          ; UPDATE THE ADDRESS VALUES
519 001244 012767 001000 000000G      MOV    #512,$XFRSZ          ; SET ONE BLOCK BYTE COUNT
520 001252 016767 000000G 000000G      MOV    $MXLBN,$LBNH          ; SETUP LBN
521 001260 016767 000002G 000000G      MOV    $MXLBN+2,$LBNL          ; ...
522
523      ; WRITE THE 16 BIT MDBSF
524
525 001266 012705 000000G      MOV    #$MDBSF,R5          ; SET MDBSF ADDRESS
526 001272 016701 000000G      MOV    $MBSSZ,R1          ; GET NUMBER OF BLOCKS IN MDBSF
527 001276 006201          ASR    R1          ; DIVIDE BY TWO
528 001300 012703 000000C      MOV    #IO.WLT!IO.X,R3          ; SET WRITE LAST TRACK FUNCTION CODE
529 001304 004767 000110          CALL    1$          ; WRITE THE MDBSF
530
531      ; WRITE THE 16 BIT UDBSF
532
533 001310 012705 000000G      MOV    #$UDBSF,R5          ; UDBSF ADDRESS
534 001314 016701 000000G      MOV    $UBSSZ,R1          ; GET NUMBER OF BLOCKS IN UDBSF
535 001320 006201          ASR    R1          ; DIVIDE BY TWO
536 001322 012703 000000C      MOV    #IO.WLT!IO.X,R3          ; SET WRITE LAST TRACK FUNCTION CODE
537 001326 004767 000066          CALL    1$          ; WRITE THE UDBSF
538
539      ; WRITE THE ALTERNATE DEC STD 144 TRACK (559,1)
540
541 001332 012703 000000G      MOV    #$PHYDV,R3          ; CHANGE TO PHYSICAL ADDRESSING
542 001336 004767 177052          CALL    $UPDMX          ; UPDATE THE MAX VALUES
543 001342 016767 000000G 000000G      MOV    $ALFLB,$LBNH          ; ALTERNATE DEC STD 144 ADDRESS
544 001350 016767 000002G 000000G      MOV    $ALFLB+2,$LBNL          ;
545
546      ; WRITE THE ALTERNATE MDBSF
547
548 001356 012705 000000G      MOV    #$MDBSF,R5          ; SET MDBSF ADDRESS
549 001362 016701 000000G      MOV    $MBSSZ,R1          ; NUMBER OF BLOCKS IN THE MDBSF
550 001366 006201          ASR    R1          ; DIVIDE BY TWO
551 001370 012703 000000C      MOV    #IO.FEW!IO.UMD,R3          ; SET WRITE FE CYLINDER FUNCTION
552 001374 004767 000020          CALL    1$          ;
553
554      ; WRITE THE ALTERNATE UDBSF

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555
556 001400 012705 000000G      MOV    #UDBSF,R5      ; UDBSF ADDRESS
557 001404 016701 000000G      MOV    SUBSZ,R1      ; UDBSF SIZE
558 001410 006201              ASR     R1              ; DIVIDE BY TWO
559 001412 012746 000000C      MOV    #IO.FEW!IQ.UMD,-(SP) ; SET WRITE FE CYLINDER FUNCTION
560 001416 000401              BR     2$              ;
561 001420 010346              1$: MOV    R3,-(SP)      ; SAVE THE FUNCTION CODE
562 001422 011603              2$: MOV    (SP),R3      ; LOAD THE FUNCTION CODE
563 001424 004767 000000G      CALL   $DSKIO        ; WRITE THE BLOCK
564 001430 062767 000002G 000000G ADD    #2,$LBNL      ; UPDATE BLOCK NUMBER
565 001436 005567 000000G      ADC     $LBNH          ;
566 001442 005301              DEC     R1              ; FINISHED WITH THE BSF ?
567 001444 001366              BNE    2$              ; IF NE NO
568 001446 005726              TST     (SP)+          ; CORRECT THE STACK
569 001450 000207              RETURN
570
571
572      :+
573      :*-SRDSSF-READ RM80 SKIP SECTOR FILE
574      :
575      : THIS ROUTINE WILL READ THE SKIP SECTOR FILE FOUND ON THE FIRST TRACK
576      : OF THE FE CYLINDER AREA ON THE RM80.
577      :
578      : INPUTS:
579      :     $$$FLB = DISK ADDRESS OF START OF SKIPPED SECTOR FILE
580      :
581      : OUTPUTS:
582      :     A GOOD COPY OF THE SSF IS READ INTO SSF BUFFER
583      :
584      :-
585 001452 012703 000000G      SRDSSF: MOV    #SPHYDV,R3      ; PHYSICAL DEVICE ADDRESS POINTER
586 001456 004767 176732      CALL   $UPDMX        ; UPDATE THE ADDRESS VALUES
587 001462 012767 000000C 000000G MOV    #512.*<$$$FLN>,$XFRSZ ; SET SIZE OF ONE COPY OF SSF (BYTES)
588 001470 016767 000000G 000000G MOV    $$$FLB,$LBNH      ; SET DISK ADDRESS OF SSF
589 001476 016767 000002G 000000G MOV    $$$FLB+2,$LBNL
590 001504 016701 000000G      MOV    $$$FSZ,R1      ; GET NUMBER OF COPIES OF SKIP SECTOR FILE
591 001510 010146              MOV    R1,-(SP)      ; SAVE THE COPY COUNT
592 001512 000405              BR     2$              ; CONTINUE
593 001514 062767 000000G 000000G 1$: ADD    #$$$FLN,$LBNL      ; TRY NEXT USABLE SSF COPY
594 001522 105567 000000G      ADCB    $LBNH          ;
595 001526 012705 000000G      2$: MOV    #$$$SF,R5      ; GET ADDRESS OF SKIP SECTOR FILE BUFFER
596 001532 012703 000000C      MOV    #IO.FER!IQ.UMD,R3      ; SET READ FE CYLINDER FUNCTION
597 001536 004767 000000G      CALL   $DSKIO        ; READ 1 COPY OF SSF
598 001542 103017              BCC     5$              ; IF CC, OK
599 001544 012700 000000G      MOV    #MSG58,R0      ; CAN'T READ SSF
600 001550 012601              3$: MOV    (SP)+,R1      ; GET THE SSF COPY COUNTER
601 001552 005301              DEC     R1              ; DECREMENT THE COPY COUNTER
602 001554 001006              BNE    4$              ; IF NE, TRY AGAIN
603 001556 004767 000000G      CALL   $PRINT        ; PRINT THE ERROR MESSAGE
604 001562 012700 000000G      MOV    #MSG41,R0      ; UNABLE TO RECOVER SSF
605 001566 000167 000000G      JMP     $MSGWR      ; EXIT, CAN'T READ SSF OR SSF CORRUPT
606 001572 010146              4$: MOV    R1,-(SP)      ; SAVE R1
607 001574 004767 000000G      CALL   $PRINT        ; PRINT THE MESSAGE
608 001600 000745              BR     1$              ; TRY AGAIN
609 001602 012700 000000G      5$: MOV    #$$$SF,R0      ; START WITH HEADER
610 001606 012701 177777G      MOV    #$$$SFHD-1,R1      ; AND ITS LENGTH
611 001612 004767 176556      CALL   SSFCRC        ; COMPUTE HEADER CHECKSUM

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612 001616 020120      CMP      R1,(R0)+      ; CHECK THE CHECKSUM WORD
613 001620 001020      BNE      6$          ; IF NE, BAD CHECKSUM
614 001622 012701 177777G  MOV      #SSFD-1,R1      ; DATA FIELD LENGTH
615 001626 004767 176542  CALL     SSFCRC      ; COMPUTE CHECKSUM OVER DATA AREA
616 001632 020110      CMP      R1,(R0)      ; CHECKSUM OK?
617 001634 001012      BNE      6$          ; IF NE, NO
618 001636 005767 000004G  TST      $SSF+4      ; CREATION DATE PRESENT
619 001642 001407      BEQ      6$          ; IF EQ, NO
620 001644 005767 000006G  TST      $SSF+6      ; REVISION DATE PRESENT
621 001650 001404      BEQ      6$          ; IF EQ, NO
622 001652 122767 000001 000012G  CMPB     #1,$SSF+12      ; 16 BIT MODE SSF ?
623 001660 001403      BEQ      7$          ; IF EQ, YES
624 001662 012700 000000G      6$:  MOV      #MSG59,R0      ; SSF CORRUPT
625 001666 000730      BR       3$          ; TRY AGAIN
626 001670 005726      7$:  TST      (SP)+      ; CORRECT THE STACK
627 001672 105767 000000G  TSTB     $SWLST      ; LISTING THE BSF'S ?
628 001676 001026      BNE      10$         ; IF NE, YES
629 001700 105767 000000G  TSTB     $SWMOD      ; MODIFYING THE BSF'S
630 001704 001007      BNE      8$          ; IF NE, YES
631 001706 016767 000000G 000000G  MOV      $SSF,$$NAME      ; COPY THE SERIAL NUMBER
632 001714 016767 000002G 000002G  MOV      $SSF+2,$$NAME+2
633 001722 000414      BR       10$
634 001724 026767 000000G 000000G 8$:  CMP      $SSF,$$NAME      ; CHECK THE SERIAL NUMBER
635 001732 001004      BNE      9$          ; IF NE, DOESN'T MATCH
636 001734 026767 000002G 000002G  CMP      $SSF+2,$$NAME+2      ; CHECK THE SECOND S/N WORD
637 001742 001404      BEQ      10$         ; IF EQ, S/N OK
638 001744 012700 000000G      9$:  MOV      #MSGER8,R0      ; HDA AND ENTERED SERIAL NUMBER DON'T MATCH
639 001750 000167 000000G  JMP      $MSGWR      ; EXIT
640 001754 000167 000446      10$:  JMP      $SRTSF      ; SORT THE SSF AND RETURN
641
642
643      ;+
644      ;*-SWTSSF-WRITE RM80 SKIP SECTOR FILE
645      ;
646      ; THIS ROUTINE WILL WRITE THE SKIP SECTOR FILE FIVE TIMES ON THE FIRST
647      ; TRACK OF THE FE CYLINDER AREA OF THE RM80 (559,0).
648      ;
649      ; INPUTS:
650      ;     $SSFLB = DISK ADDRESS OF START OF SKIP SECTOR FILE
651      ;
652      ; OUTPUTS:
653      ;     WRITE SKIP SECTOR FILE
654      ;
655      ;-
656 001760 004767 000442      SWTSSF::CALL     $SRTSF      ; SORT THE SSF
657 001764 012703 000000G  MOV      #PHYDV,R3      ; PHYSICAL DEVICE ADDRESS POINDER
658 001770 004767 176420      CALL     $UPDMX      ; UPDATE THE ADDRESS VALUES
659 001774 012700 000000G  MOV      #SSF,R0      ; GET POINTER TO SKIP SECTOR FILE
660 002000 012701 177777G  MOV      #SSFD-1,R1      ; GET LENGTH OF HEADER
661 002004 004767 176364      CALL     SSFCRC      ; COMPUTE HEADER CHECKSUM
662 002010 010120      MOV      R1,(R0)+      ; STORE CRC AWAY
663 002012 012701 177777G  MOV      #SSFD-1,R1      ; GET LENGTH OF SSF DATA AREA
664 002016 004767 176352      CALL     SSFCRC      ; GO COMPUTE CHECKSUM OVER DATA
665 002022 010110      MOV      R1,(R0)      ; STORE THE DATA FIELD CRC
666 002024 012767 000000C 000000G  MOV      #12,<$SSFLN>,$XFRSZ ; SET SIZE OF ONE COPY OF SSF (BYTES)
667 002032 012705 000000G  MOV      #SSF,R5      ; SET SKIP SECTOR FILE BUFFER ADDRESS
668 002036 012703 000000C  MOV      #IO.FEW!IO.UMD,R3      ; SET WRITE FE CYLINDER FUNCTION

```

```

669 002042 016767 000000G 000000G      MOV    $$$FLB,$LBNH      ;SETUP LBN
670 002050 016767 000002G 000000G      MOV    $$$FLB+2,$LBNL
671 002056 016701 000000G          MOV    $$$FSZ,R1      ;...
672 002062 004767 000000G          CALL   $DSKIO          ;GET NUMBER OF COPIES OF SKIP SECTOR FILE
673 002066 062767 000000G 000000G 1$:  ADD    $$$FLN,$LBNL      ;WRITE THE SSF
674 002074 105567 000000G          ADCB   $LBNH          ;UPDATE BLOCK NUMBER
675 002100 005301          DEC     R1                    ;FINISHED ?
676 002102 001367          BNE     1$                    ;IF NE, NO
677 002104 000207          2$:  RETURN
678
679      ;+
680      ;*-SSRTRK-SEARCH BSF OR SSF FOR ANY SECTOR ON A TRACK
681
682      ;THIS ROUTINE WILL SEARCH EITHER THE BSF OR THE SSF FOR ANY SECTOR
683      ;ON THE CURRENT TRACK AND CYLINDER. IF ONE IS FOUND, THEN NO ADDITIONAL
684      ;SECTORS MAY BE SKIPPED ON THE CURRENT TRACK AND CYLINDER.
685
686      ;INPUTS:
687      ;R1 = ADDRESS OF EITHER BSF OR SSF
688      ;R2 = MAXIMUM ADDRESS OF THE FILE SPECIFIED IN R1
689
690      ;OUTPUTS:
691      ;CC = SOME SECTOR ON THE CURRENT TRACK AND CYLINDER
692      ;R1 = ADDRESS OF BSF OR SSF ENTRY
693      ;CS = SPECIFIED FILE EXHAUSTED
694      ;R1 = POINTS TO NEXT ENTRY
695
696      ;-
697
698 002106 022121      SSRTRK::CMP    (R1)+,(R1)+      ; POINT OT NEXT ENTRY IN SPECIFIED FILE
699 002110 021127 177777      CMP    (R1),#-1          ; FILE EXHAUSTED
700 002114 001413      BEQ     3$                    ; IF EQ, YES
701 002116 021167 000000G      CMP    (R1),$CYL          ; CYLINDER NUMBER MATCH ?
702 002122 001006      BNE     2$                    ; IF NE, NO
703 002124 126167 000003 000000G      CMPEB 3(R1),$TRK      ; TRACK NUMBERS MATCH ?
704 002132 001002      BNE     2$                    ; IF NE, NO
705 002134 000241      1$:  CLC                      ; SHOW ENTRY WAS FOUND
706 002136 000207      RETURN
707 002140 020102      2$:  CMP    R1,R2                ; IS SPECIFIED FILE EXHAUSTED ?
708 002142 001361      BNE     $$$TRK              ; IF NE, NO
709 002144 000261      3$:  SEC                      ; SHOW SPECIFIED FILE EXHAUSTED
710 002146 000207      RETURN
711
712      ;+
713      ;*-SSRALL-SEARCH ALL THE BAD SECTOR FILES
714      ;SSRFES-SEARCH THE FE CYLINDER BUFFER
715      ;SSRMDF-SEARCH MANUFACTURER'S BAD SECTOR FILE
716      ;SSRUDF-SEARCH THE USER'S BAD SECTOR FILE
717      ;SSRSDF-SEARCH THE SKIPPED SECTOR FILE
718      ;SSMBSF-SEARCH THE FILE SPECIFIED BY R1 & R2
719
720      ;THIS ROUTINE WILL SEARCH THE SPECIFIED FILE FOR A MATCH.
721
722      ;INPUTS:
723      ;$SEC, $TRK, AND $CYL PRESET
724
725      ;'$SMBSF' !INPUTS:

```

```

726      :      R1 = ADDRESS OF LAST BSF ENTRY (INITIALLY $BSF+4)
727      :      R2 = LAST ADDRESS OF SPECIFIED FILE
728
729      :
730      :   OUTPUTS:
731      :   IF CC   R1 = ADDRESS OF MDBSF ENTRY.
732      :   IF CS   R3 = ISOLATED BAD SECTOR FLAGS.
733      :   IF CS   R1 = POINTS TO NEXT ENTRY (FILE EXHAUSTED)
734
735      :
736      :
737      :
738      :
739      :
740      :
741      :
742      :
743      :
744      :
745      :
746      :
747      :
748      :
749      :
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752      :
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774      :
775      :
776      :
777      :
778      :
779      :
780      :
781      :
782      :

```

002150	016746	000000G	\$SRALL:	MOV	\$SEC,-(SP)	:	SAVE THE SECTOR ADDRESS
002154	004767	000100		CALL	\$SRSDF	:	SEE IF ENTRY IN THE SSF
002160	103015			BCC	2\$	:	IF CC, IT IS
002162	004767	000154		CALL	\$SRSSF	:	SEE IF ERROR SECTOR IS WITHIN A SKIP REGION
002166	103402			BCS	1\$	:	IF CS, NO
002170	105367	000000G		DECB	\$SEC	:	DECREMENT THE SECTOR ADDRESS
002174	004767	000034	1\$:	CALL	\$SRMDF	:	SEARCH THE MDBSF
002200	103005			BCC	2\$	:	IF CC, ADDRESS PRESENT
002202	004767	000040		CALL	\$SRUDF	:	SEARCH THE UDBSF
002206	103002			BCC	2\$	:	IF CC, ADDRESS PRESENT
002210	004767	000006		CALL	\$SRFES	:	SEE IF ENTRY DUPLICATED IN THE FE AREA
002214	012667	000000G	2\$:	MOV	(SP)+,\$SEC	:	RESTORE THE SECTOR ADDRESS
002220	000207			RETURN		:	
002222	012701	177774G	\$SRFES:	MOV	#\$FEBSF-4,R1	:	FEBSF STARTING ADDRESS
002226	012702	000100G		MOV	#\$FEBSF+64.,R2	:	FEBSF LENGTH
002232	000416			BR	3\$	:	
002234	012701	000004G	\$SRMDF:	MOV	#\$MDBSF+4,R1	:	MDBSF STARTING ADDRESS
002240	012702	000774G		MOV	#\$MDBSF+1000-4,R2	:	MDBSF LENGTH
002244	000411			BR	3\$	:	
002246	012701	000004G	\$SRUDF:	MOV	#\$UDBSF+4,R1	:	UDBSF STARTING ADDRESS
002252	012702	000774G		MOV	#\$UDBSF+1000-4,R2	:	UDBSF LENGTH
002256	000404			BR	3\$	:	
002260	012701	000000C	\$SRSDF:	MOV	#\$SSF+<2*\$\$\$FHD>-4,R1	:	SSF STARTING ADDRESS (-4)
002264	012702	000000C		MOV	#\$SSF+<1000*\$\$\$FLN>-2,R2	:	SSF ENDING ADDRESS
002270			3\$:			:	
002270	022121		\$SMBSF:	CMP	(R1)+,(R1)+	:	POINT TO NEXT MDBSF ENTRY
002272	021127	177777		CMP	(R1),#-1	:	MDBSF EXHAUSTED?
002276	001417			BEQ	5\$	:	IF EQ YES
002300	021167	000000G		CMP	(R1),\$CYL	:	CYLINDER NUMBERS MATCH?
002304	001012			BNE	4\$	:	IF NE NO
002306	126167	000003 000000G		CMPB	3(R1),\$TRK	:	TRACK NUMBERS MATCH?
002314	001006			BNE	4\$	:	IF NE NO
002316	126167	000002 000000G		CMPB	2(R1),\$SEC	:	SECTOR NUMBERS MATCH?
002324	001002			BNE	4\$	:	IF NE NO
002326	000241			CLC		:	SHOW ENTRY WAS FOUND
002330	000207			RETURN		:	
002332	020102		4\$:	CMP	R1,R2	:	IS SPECIFIED FILE EXHAUSTED?
002334	001355			BNE	3\$	:	IF NE, NO
002336	000261		5\$:	SEC		:	SHOW MDBSF EXHAUSTED
002340	000207			RETURN		:	
			.DSABL	LSB		:	

```

783
784
785      *--$SRSSF-SEARCH SSF FOR AN TRACK ENTRY
786
787      THIS ROUTINE WILL SEARCH THE SSF FOR AN ENTRY ON THE CURRENT TRACK AND
788      CYLINDER. IF AN ENTRY IS FOUND WHICH IS LESS THAN THE SECTOR ADDRESS
789      IN '$SEC', THE ROUTINE WILL RETURN WITH THE 'C' BIT CLEAR.
790
791      INPUTS:
792      $CYL LOADED WITH THE CYLINDER ADDRESS
793      $TRK LOADED WITH THE TRACK ADDRESS
794      $SEC LOADED WITH THE SECTOR ADDRESS
795
796      OUTPUTS:
797      CC =      SSF ENTRY .LE. ADDRESS IN $CYL,$TRK,$SEC
798      CS =      NO SSF ENTRY .LE. ADDRESS IN $CYL,$TRK,$SEC
799      :-
800
801      002342 010146 $SRSSF: MOV R1, -(SP) ; SAVE R1
802      002343 012701 000000C      MOV #SSF+<2*SSSFHD>, R1 ; BEGINNING ADDRESS OF SSF DATA
803      002350 021167 000000G      1$: CMP (R1), $CYL ; CYLINDER NUMBERS MATCH ?
804      002354 001012      BNE 2$ ; IF NE, NO
805      002356 126167 000003 000000G      CMPB 3(R1), $TRK ; TRACK NUMBERS MATCH ?
806      002364 001006      BNE 2$ ; IF NE, NO
807      002366 126167 000002 000000G      CMPB 2(R1), $SEC ; CHECK FOR A SECTOR
808      002374 101011      BHI 3$ ; IF HI, SSF ENTRY
809      002376 000241      CLC ; SHOW '$SEC' IS WITHIN SKIP REGION
810      002400 000410      BR 4$ ; OK, EXIT
811
812      002402 020127 000000C      2$: CMP R1, #SSF+<1000*SSSFLN>-2 ; SSF BUFFER END ?
813      002406 001404      BEQ 3$ ; IF EQ, YES
814      002410 022121      CMP (R1)+, (R1)+ ; INCREMENT BUFFER POINTER
815      002412 021127 177777      CMP (R1), #-1 ; SEE IF END OF DATA
816      002416 001354      BNE 1$ ; IF NE, NO
817      002420 000261      3$: SEC ; SHOW '$SEC' NOT IN SKIP REGION
818      002422 012601      4$: MOV (SP)+, R1 ; RESTORE R1
819      002424 000207      RETURN
820
821
822      *--$SRTSF-SORT THE SSF BUFFER
823
824      INPUTS:
825      NONE
826
827      OUTPUTS:
828      SSF FILE SORTED IN ASCENDING SEQUENCE
829      :-
830
831
832      002426 012767 001061 000000G $SRTSF: MOV #561, $CYL ; LOAD A PHONY CYLINDER ADDRESS
833      002434 005067 000000G      CLR $TRK ; CLEAR THE TRACK ADDRESS
834      002440 005067 000000G      CLR $SEC ; CLEAR THE SECTOR ADDRESS
835      002444 004767 177610      CALL $SRSSF ; FIND THE END OF THE DATA
836      002450 010103      MOV R1, R3 ; COPY THE END OF DATA POINTER
837      002452 012701 000000C      MOV #SSF+<2*SSSFHD>, R1 ; SSF STARTING ADDRESS
838      002456 000167 000070      JMP $SORT ; SORT THE SSF
839

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```

840
841      *--$SRTMF-SORT THE MDBSF BUFFER
842
843      INPUTS:
844          NONE
845
846      OUTPUTS:
847          MDBSF SORTED IN ASCENDING SEQUENCE
848
849      -
850
851      002462 012767 001061 000000G $SRTMF: MOV    #561.,$CYL      ; LOAD A PHONY CYLINDER ADDRESS
852      002470 005067 000000G          CLR    $TRK          ; CLEAR THE TRACK ADDRESS
853      002474 005067 000000G          CLR    $SEC          ; CLEAR THE SECTOR
854      002500 004767 177530          CALL   $SRMDF         ; SEARCH THE MDBSF
855      002504 010103          MOV    R1,R3                ; COPY THE END OF DATA POINTER
856      002504 012701 000010G          MOV    #MDBSF+10,R1   ; MDBSF STARTING ADDRESS
857      002512 000167 000034          JMP     $SORT          ; SORT THE MDBSF
858
859
860      *--$SRTUF-SORT THE UDBSF BUFFER
861
862      INPUTS:
863          NONE
864
865      OUTPUTS:
866          UDBSF SORTED IN ASCENDING SEQUENCE
867
868      -
869
870
871      002516 012767 001061 000000G $SRTUF: MOV    #561.,$CYL      ; LOAD A PHONY CYLINDER ADDRESS
872      002524 005067 000000G          CLR    $TRK          ; CLEAR THE TRACK ADDRESS
873      002530 005067 000000G          CLR    $SEC          ; CLEAR THE SECTOR
874      002534 004767 177506          CALL   $SRUDF         ; SEARCH THE UDBSF
875      002540 010103          MOV    R1,R3                ; COPY THE END OF DATA POINTER
876      002542 012701 000010G          MOV    #UDBSF+10,R1   ; UDBSF STARTING ADDRESS
877      002546 000167 000000          JMP     $SORT          ; SORT THE UDBSF
878
879
880      *--$SORT-SORT THE INPUT TABLE
881      THIS ROUTINE SORTS THE INPUT TABLE IN ASCENDING ORDER
882      BASED ON DISK ADDRESSES.
883
884      INPUTS:
885          R1 = TABLE START ADDRESS
886          R3 = TABLE UPPER LIMIT ADDRESS
887
888      OUTPUTS:
889          SORTED TABLE
890
891      -
892
893      002552 010302          $SORT: MOV    R3,R2          ; R2 = CURRENT ENTRY POINTER
894      002554 160102          SUB     R1,R2              ; TEST FOR AT LEAST
895      002556 022702 000004          CMP     #4,R2        ; TWO ENTRIES IN TABLE
896      002562 103042          BHS     4$                ; IF NOT(HIS), NO NEED TO SORT

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```

897 002564 010102      MOV      R1,R2      ; INIT R2
898 002566 022222      CMP      (R2)+,(R2)+ ;
899 002570 010367 000076  MOV      R3,TEMP ; FORM AND SAVE
900 002574 162767 000004 000070  SUB      #4,TEMP ; UPPER LIMIT ON R1
901 002602 021112      CMP      (R1),(R2) ; CYL I = CYL I+1?
902 002604 002417      BLT      3$ ; IF LT YES
903 002606 001004      BNE      2$ ; IF NE CYL I > CYL I+1
904 002610 026162 000002 000002  CMP      2(R1),2(R2) ; CYL I = CYL I+1...TEST TRK/SEC
905 002616 003412      BLE      3$ ; IF LE NO SWAP NECESSARY
906 002620 011146      MOV      (R1),-(SP) ; SWAP ENTRIES
907 002622 016146 000002      MOV      2(R1),-(SP) ;
908 002626 011211      MOV      (R2),(R1) ;
909 002630 016261 000002 000002  MOV      2(R2),2(R1) ;
910 002636 012662 000002      MOV      (SP)+,2(R2) ;
911 002642 012612      MOV      (SP)+,(R2) ;
912 002644 022222      CMP      (R2)+,(R2)+ ; UPDATE R2
913 002646 020203      CMP      R2,R3 ; THIS PASS DONE?
914 002650 002754      BLT      1$ ; IF LT NO
915 002652 022121      CMP      (R1)+,(R1)+ ; UPDATE R1
916 002654 020167 000012      CMP      R1,TEMP ; ALL DONE?
917 002660 002003      BGE      4$ ; IF GE YES
918 002662 010102      MOV      R1,R2 ; RESET R2
919 002664 022222      CMP      (R2)+,(R2)+ ;
920 002666 000745      BR       1$ ;
921 002670 000207      4$:      RETURN ;
922
923 002672 000000      TEMP:    .WORD    0 ; SORT WORK LOCATION
924
925
926      *--GENHDR-GENERATE HEADER WORD PATTERN
927
928      THIS SUBROUTINE WILL GENERATE THE 2-WORD HEADER PATTERN.
929
930      INPUTS:
931      RO = BUFFER ADDRESS
932
933      OUTPUTS:
934      RO = UPDATED BUFFER ADDRESS
935
936      *-
937 002674 016710 000000G  GENHDR:  MOV      $CYL,(RO) ; SET CYLINDER NUMBER
938 002700 116760 000000G 000002  MOVB      $SEC,2(RO) ; SET SECTOR NUMBER
939 002706 116760 000000G 000003  MOVB      $TRK,3(RO) ; SET TRACK NUMBER
940 002714 052710 150000      BIS      #150000,(RO) ; SET GOOD SECTOR AND 16-BIT FORMAT BITS
941 002720 116746 000000G      MOVB      $SEC,-(SP) ; SAVE THE CURRENT SECTOR ADDRESS
942
943      ; SEARCH THE SKIP SECTOR FILE FOR A SECTOR ON THIS TRACK THE SAME AS
944      ; '$SEC'. IF A SECTOR IS FOUND, THEN SET THE SKIP SECTOR FLAG IN THE
945      ; REMAINING HEADERS AND NOTE THAT A SKIPPED SECTOR WAS FOUND.
946
947 002724 004767 177330      1$:      CALL      $SRSDF ; SEARCH FOR '$SEC' IN SKIP SECTOR FILE
948 002730 103403      BCS      2$ ; IF CS, NOT IN SSF
949 002732 052710 020000      BIS      #20000,(RO) ; SET SKIP SECTOR FLAG (BAD)
950 002736 000430      BR       6$ ; EXIT
951 002740 004767 177376      2$:      CALL      $SRSSF ; SEARCH FOR '$SEC' WITHIN SKIP REGION
952 002744 103404      BCS      3$ ; IF CS, NOT IN SSF
953 002746 052710 020000      BIS      #20000,(RO) ; SET SKIP SECTOR FLAG IN HEADER (BAD)

```

```

954 002752 105367 000000G          DECB    $SEC          ; DECREMENT THE SECTOR ADDRESS
955
956                                ; SEARCH THE MDBSF, UDBSF, & THE FE BSF BUFFER FOR A MATCH.  IF ONE IS
957                                ; FOUND, SET THE BAD SECTOR BITS IN THE APPROPRIATE HEADER.
958
959 002756 004767 177252          3$:    CALL    $SRMDF          ; SEARCH THE MDBSF
960 002762 103403                  BCS     4$                   ; IF CS, MDBSF EXHAUSTED
961 002764 042710 100000          BIC     #100000,(R0)          ; CLEAR THE MF BIT (BAD)
962 002770 000413                  BR      6$
963
964 002772 004767 177250          4$:    CALL    $SRUDF          ; SEARCH THE UDBSF
965 002776 103403                  BCS     5$                   ; IF CS, UDBSF EXHAUSTED
966 003000 042710 040000          BIC     #40000,(R0)          ; CLEAR THE UF BIT (BAD)
967 003004 000405                  BR      6$
968
969 003006 004767 177210          5$:    CALL    $SRFES          ; SEARCH THE FE BSF
970 003012 103402                  BCS     6$                   ; IF CS, FE BSF EXHAUSTED
971 003014 042710 140000          BIC     #140000,(R0)          ; CLEAR BOTH THE UF & MF BITS (BAD)
972 003020 112667 000000G          6$:    MOVB   (SP)+,$SEC      ; RESTORE THE SECTOR ADDRESS
973 003024 066700 000000G          ADD     SECSZ,R0             ; UPDATE BUFFER ADDRESS
974 003030 000207                  RETURN
975
976                                .END
000001

```

ERROUT 000050R	\$CBDMG= ***** GX	\$MSG18= ***** GX	\$PRINT= ***** GX	\$SRUDF 002246RG
GENHDR 002674RG	\$CBOMG= ***** GX	\$MSG19= ***** GX	\$PRMPT 000250RG	\$SSF = ***** GX
IO.FER= ***** GX	\$CVTDA 000132RG	\$MSG21= ***** GX	\$PRNTQ= ***** GX	\$SSFDT= ***** GX
IO.FEW= ***** GX	\$CYL = ***** GX	\$MSG26= ***** GX	\$RDBSF 000616RG	\$SSFHD= ***** GX
IO.HMS= ***** GX	\$DSKIO= ***** GX	\$MSG40= ***** GX	\$RDSSF 001452RG	\$SSFLLB= ***** GX
IO.RLB= ***** GX	\$DVILE= ***** GX	\$MSG41= ***** GX	\$READ = ***** GX	\$SSFLLN= ***** GX
IO.WLT= ***** GX	\$DVUNT= ***** GX	\$MSG42= ***** GX	\$SEC = ***** GX	\$SSFSSZ= ***** GX
IQ.UMD= ***** GX	\$EROCT 000074RG	\$MSG43= ***** GX	\$SMBSF 002270RG	\$SWLST= ***** GX
IQ.X = ***** GX	\$EROUT 000032RG	\$MSG44= ***** GX	\$SNAME= ***** GX	\$SWMOD= ***** GX
MSG 000336R	\$FEBBSF= ***** GX	\$MSG58= ***** GX	\$SORT 002552R	\$TRK = ***** GX
MSGERB= ***** GX	\$HOMSK 000204RG	\$MSG59= ***** GX	\$SRALL 002150RG	\$TSTDA 000454RG
RDBSF 001116R	\$IOST = ***** GX	\$MULT 000342RG	\$SRFES 002222RG	\$TSTMX 000512RG
SECSZ = ***** GX	\$LBNH = ***** GX	\$MVPAT 000000RG	\$SRMDF 002234RG	\$UBSSZ= ***** GX
SSFCRC 000374R	\$LBNL = ***** GX	\$MXCYL= ***** GX	\$SRSDF 002260RG	\$UDBSF= ***** GX
TEMP 002672R	\$LOGDV= ***** GX	\$MXLBN= ***** GX	\$SRSSF 002342RG	\$UNTID 000562RG
TRKSZ = ***** GX	\$MBSSZ= ***** GX	\$MXSEC= ***** GX	\$SRTMF 002462RG	\$UPDMX 000414RG
VYBSF 001136R	\$MDBSF= ***** GX	\$MXTRK= ***** GX	\$SRTRK 002106RG	\$WTBSF 001224RG
\$ALFLB= ***** GX	\$MOVE 000240RG	\$PAT = ***** GX	\$SRTSF 002426RG	\$WTSSF 001760RG
\$BUF = ***** GX	\$MSGWR= ***** GX	\$PHYDV= ***** GX	\$SRTUF 002516RG	\$XFRSZ= ***** GX
\$BUFRX= ***** GX				

. ABS. 000000 000
 003032 001
 ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 908 WORDS (4 PAGES)
 DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
 ELAPSED TIME: 00:00:31
 [300,20]FMTSUB,[300,30]FMTSUB=[300,10]FMTSUB

1
2
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.TITLE FMTPRS - GET AND PARSE COMMAND LINE
.IDENT /01.00/

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.C. HESS 14-AUG-80
.M. LEAVITT 14-OCT-80

.MCALL DIR\$, ISTAT\$, STATES\$, TRANS
.MCALL DEVDFS
DEVDFS

```

34
35
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42
43
44
45
46
47
48
49 000000 005227 177777 $PARSE::INC # -1 ; FIRST TIME THRU HERE ?
50 000004 001404 BEQ 1$ ; BR IF YES
51 000006 012700 000000G MOV # $STARS,R0 ; GET ADDRESS OF MESSAGE
52 000012 004767 000000G CALL $PRINT ; PRINT '*****'<LF>
53 000016 012700 000000G 1$: MOV # $MSG70,R0 ; GET PROMPT MESSAGE ADDRESS
54 000022 004767 000000G CALL $PRMPT ; PROMPT USER AND GET RESPONSE
55 000026 001006 BNE 2$ ; IF NE COMMAND LINE ENTERED
56 000030 122767 000000C 000000G CMPB # IE.EOF&377,$IOS ; ; END OF INPUT?
57 000036 001367 BNE 1$ ; IF NE NO
58 000040 000167 000000G JMP $FMTEX ; EXIT GRACEFULLY
59
60 ; SETUP TO CALL THE PARSE
61
62 000044 005001 2$: CLR R1 ; CLEAR OPTIONS WORD
63 000046 012702 000000' MOV # UNTKT1,R2 ; GET KEYWORD TABLE ADDRESS
64 000052 012704 000000G MOV # $BUFRX,R4 ; GET ADDRESS OF COMMAND LINE
65 000056 012705 000000' MOV # UNIT,R5 ; GET STARTING STATE ADDRESS
66 000062 012767 177777 000000G MOV # -1,$DVUNT ; RESET DEVICE NUMBER
67 000070 004767 000000G CALL .TPARS ; GO PARSE THE INPUT LINE
68 000074 103435 BCS SYNTAX ; IF CS SYNTAX ERROR
69 000076 005767 000000G TST $DVUNT ; NULL PARSE?
70 000102 100745 BMI 1$ ; IF MI, YES
71 000104 012700 000000G 3$: MOV # $MSG71,R0 ; GET PROMPT MESSAGE ADDRESS
72 000110 004767 000000G CALL $PRMPT ; PROMPT USER AND GET RESPONSE
73 000114 001006 BNE 4$ ; IF NE COMMAND LINE ENTERED
74 000116 122767 000000C 000000G CMPB # IE.EOF&377,$IOS ; ; END OF INPUT?
75 000124 001002 BNE 4$ ; IF NE NO
76 000126 000167 000000G JMP $FMTEX ; EXIT GRACEFULLY
77 000132 005001 4$: CLR R1 ; CLEAR OPTIONS WORD
78 000134 012702 000000' MOV # OPTKT2,R2 ; GET KEYWORD TABLE ADDRESS
79 000140 012704 000000G MOV # $BUFRX,R4 ; GET ADDRESS OF COMMAND LINE
80 000144 012705 000010' MOV # OPTION,R5 ; GET STARTING STATE ADDRESS
81 000150 004767 000000G CALL .TPARS ; GO PARSE THE INPUT LINE
82 000154 103405 BCS SYNTAX ; IF CS SYNTAX ERROR
83 000156 004767 000134 CALL $STDV ; MAKE A FINAL DEVICE TEST
84 000162 016701 000000G MOV $DVUNT,R1 ; SET SPECIFIED UNIT NUMBER
85 000166 000207 RETURN ; ALL IS OK
86
87 000170 012700 000000G SYNTAX: MOV # $MSG2,R0 ; SYNTAX ERROR
88 000174 000167 000000G JMP $MSGWR ; EXIT WITH WARNING STATUS
89
90

```

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91
92      : STATE TABLE FOR 'TPARS' PARSER
93      :
94
95      .NLIST MEB
96
97 000200          ISTAT$ UNTST1,UNTKT1
98
99      ; READ DEVICE AND UNIT NUMBER
100
101 000200          STATES UNIT
102 000200          TRANS $EOS,$EXIT
103 000200          TRANS $NUMBR,,$STUNT
104
105 000200          STATES ; TERMINATING STATE
106
107
108 000200          ISTAT$ OPTST2,OPTKT2
109
110      ; PROCESS SWITCH OPTIONS
111
112 000200          STATES OPTION
113 000200          TRANS $EOS,$EXIT
114 000200          TRANS "CSR",CSR
115 000200          TRANS "VEC",VEC
116 000200          TRANS "VFL",VFL
117 000200          TRANS "ERL",ERL
118 000200          TRANS "LI",LI
119 000200          TRANS "FO",FO
120 000200          TRANS "IN",IN
121
122      ; SET NEW CSR ADDRESS
123
124 000200          STATES CSR
125 000200          TRANS '='
126
127 000200          STATES
128 000200          TRANS $NUMBR,SWITCH,$STCSR
129
130      ; SET NEW VECTOR ADDRESS
131
132 000200          STATES VEC
133 000200          TRANS '='
134
135 000200          STATES
136 000200          TRANS $NUMBR,SWITCH,$STVEC
137
138      ; SET VERIFY LIMIT (NUMBER OF TIMES TO VERIFY A SECTOR)
139
140 000200          STATES VFL
141 000200          TRANS '='
142
143 000200          STATES
144 000200          TRANS $DNUMB,SWITCH,$STVFL
145
146      ; SET ERROR LIMIT
147

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```

148 000200          STATES ERL
149 000200          TRANS '='
150
151 000200          STATES
152 000200          TRANS $DNUMB,SWITCH,$STERL
153
154          ; SET BAD BLOCK FILE/SKIP SECTOR FILE LIST
155
156 000200          STATES LI
157 000200          TRANS ':,LOG
158 000200          TRANS $LAMDA,SWITCH,$STLIS
159
160 000200          STATES LOG
161 000200          TRANS 'L,SWITCH,$STLOG
162
163          ; SET FORMAT ENABLE
164
165 000200          STATES FO
166 000200          TRANS ':,FE
167 000200          TRANS $LAMDA,SWITCH,$STFOR
168
169 000200          STATES FE
170 000200          TRANS 'F,SWITCH,$STFFE
171
172          ; SET BSF/SSF INITIALIZATION
173
174 000200          STATES IN
175 000200          TRANS $LAMDA,SWITCH,$STIN
176
177          ; CHECK FOR ANOTHER OPTION
178
179 000200          STATES SWITCH
180 000200          TRANS $EOS,$EXIT
181 000200          TRANS '/,OPTION
182
183 000200          STATES          ; NULL (TERMINATING) STATE
184
185          .ENABL LSB
186
187          ;
188          ; DEVICE UNIT NUMBER
189          ;
190
191 000200 016767 000000G 000000G $STUNT::MOV .PNUMB,$DVUNT ; STORE UNIT NUMBER
192 000206 026727 000000G 000007 CMP $DVUNT,#7 ; IS DRIVE NUMBER WITHIN RANGE ?
193 000214 101402 BLOS 1$ ; IF LOS, YES
194 000216 000167 177746 JMP SYNTAX ; SYNTAX ERROR
195
196          ;
197          ; DETERMINE DEVICE VALIDITY
198          ;
199
200 000222 016702 000000G 1$: MOV $DEVHD,R2 ; ADDRESS OF 1ST DCB IN SYSTEM
201 000226 026762 000000G 000004 2$: CMP $DVICE,D.NAM(R2) ; IS THIS THE RIGHT DCB?
202 000234 001407 BEQ 4$ ; IF EQ YES
203 000236 016202 000000 MOV D.LNK(R2),R2 ; POINT TO NEXT DCB
204 000242 001371 BNE 2$ ; LOOP TILL END OF LIST

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205 000244 012700 000000G 3$: MOV #MSG4,R0 ; DEVICE NOT IN SYSTEM
206 000250 000167 000000G JMP $MESAG ;
207 000254 116762 000000G 000006 4$: MOV $DVUNT,D.UNIT(R2) ; SET UNIT NUMBER RANGE
208 000262 116762 000000G 000007 MOV $DVUNT,D.UNIT+1(R2) ;
209 000270 016201 000002 MOV D.UCB(R2),R1 ; GET UCB ADDRESS
210 000274 116761 000000G 000006 MOV $DVUNT,U.UNIT(R1) ; SAVE SPECIFIED UNIT NUMBER
211 000302 010167 000000G MOV R1,$UCB ; SAVE UCB ADDRESS
212 000306 016167 000020 000000G MOV U.$CB(R1),$SCB ; SAVE SCB ADDRESS
213 000314 000207 RETURN ;
214 ;
215 ;
216 ; TEST DEVICE CHARACTERISTICS
217 ;
218 ;
219 000316 016701 000000G $STDV: MOV $UCB,R1 ; FETCH UCB ADDRESS
220 000322 016702 000000G MOV $SCB,R2 ; FETCH SCB ADDRESS
221 000326 016202 000012 MOV S.CSR(R2),R2 ; GET CSR ADDRESS
222 000332 013746 000004 MOV @#4,-(SP) ; SAVE TRAP VECTOR
223 000336 012737 000570' 000004 MOV #INTR,@#4 ; PUT OUR OWN IN ITS PLACE
224 000344 005712 TST (R2) ; DOES CSR ADDRESS EXIST?
225 000346 103003 BCC 5$ ; IF CC YES
226 000350 012637 000004 MOV (SP)+,@#4 ; RESTORE TRAP ADDRESS
227 000354 000733 BR 3$ ; PRINT ERROR MESSAGE
228 000356 012637 000004 5$: MOV (SP)+,@#4 ; RESTORE TRAP ADDRESS
229 000362 012762 000040 000010 6$: MOV #40,10(R2) ; CLEAR THE SUBSYSTEM
230 000370 116162 000006 000010 MOV $U.UNIT(R1),10(R2) ; SELECT UNIT
231 000376 016200 000026 MOV 26(R2),R0 ; GET DRIVE TYPE REGISTER
232 000402 032762 010000 000010 BIT #10000,10(R2) ; SEE IF DRIVE PRESENT
233 000410 001016 BNE 9$ ; IF NE, NO - 'NED' SET
234 000412 022700 024026 CMP #24026,R0 ; IS IT AN RM80 ?
235 000416 001403 BEQ 7$ ; IF EQ, YES
236 000420 022700 020026 CMP #20026,R0 ; CHECK OTHER DEVICE TYPE CODE
237 000424 001013 BNE 10$ ; IF NE, NO
238 000426 032762 010000 000012 7$: BIT #10000,12(R2) ; IS DRIVE ONLINE (MOL SET) ?
239 000434 001401 BEQ 8$ ; IF EQ, NO
240 000436 000207 RETURN ;
241 000440 012700 000000G 8$: MOV #MSG7,R0 ; DRIVE OFFLINE
242 000444 000405 BR 11$ ;
243 000446 012700 000000G 9$: MOV #MSG72,R0 ; DRIVE NOT PRESENT
244 000452 000402 BR 11$ ;
245 000454 012700 000000G 10$: MOV #MSG73,R0 ; DRIVE NOT AN RM80
246 000460 000167 000000G 11$: JMP $MESAG ;
247 ;
248 .DSABL LSB
249 ;
250 ;
251 ; SET NEW CSR ADDRESS
252 ;
253 ;
254 000464 016702 000000G $STCSR: MOV $UCB,R2 ; FETCH UCB ADDRESS
255 000470 026727 000000G 160000 CMP .PNUMB,#160000 ; CSR ADDRESS WITHIN RANGE?
256 000476 103003 BHIS 1$ ; IF HIS YES
257 000500 012700 000000G MOV #MSG2,R0 ; SYNTAX ERROR
258 000504 000414 BR 2$ ;
259 000506 013746 000004 1$: MOV @#4,-(SP) ; SAVE INTERRUPT VECTOR
260 000512 012737 000570' 000004 MOV #INTR,@#4 ; SET UP OUR OWN VECTOR
261 000520 005777 000000G TST @.PNUMB ; SEE IF IT'S ON THE BUS

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262 000524 103006          BCC 3$          ; IF CC IT'S THERE
263 000526 012637 000004    MOV (SP)+, @#4    ; RESTORE VECTOR
264 000532 012700 000000G   MOV #MSG28,R0    ; CSR NOT IN SYSTEM
265 000536 000167 000000G   JMP $MESAG      ;
266 000542 142762 000001 000007 2$: BICB #US.OFL,U.ST2(R2) ; SET DEVICE ON-LINE
267 000550 012637 000004    MOV (SP)+, @#4    ; RESTORE INTERRUPT VECTOR
268 000554 016702 000000G   MOV $SCB,R2      ; GET SCB ADDRESS
269 000560 016762 000000G 000012 MOV .PNUMB,S.CSR(R2) ; SET CSR ADDRESS
270 000566 000207          RETURN              ;
271
272          ; INTERRUPTS COME HERE ON NON-EXISTANT MEMORY TRAPS
273
274 000570 052766 000001 000002 INTR: BIS #1,2(SP) ; SET CARRY BIT IN SAVED PS
275 000576 000002          RTI                  ; RETURN
276
277          ; SET NEW VECTOR ADDRESS
278
279
280
281 000600 016700 000000G   $STVEC::MOV .PNUMB,R0 ; FETCH NEW VECTOR ADDRESS
282 000604 020027 001000    CMP R0,#1000      ; IS THE VECTOR IN A REASONABLE PLACE?
283 000610 103006          BHS 2$              ; IF HIS NO GOOD
284 000612 032700 000003    BIT #3,R0          ; MULTIPLE OF 4?
285 000616 001407          BEQ 4$              ; IF EQ YES
286 000620 012700 000000G   1$: MOV #MSG27,R0 ; NOT MULTIPLE OF FOUR
287 000624 000402          BR 3$
288 000626 012700 000000G   2$: MOV #MSG2,R0   ; SYNTAX ERROR
289 000632 000167 000000G   3$: JMP $MESAG
290 000636 016702 000000G   4$: MOV $SCB,R2   ; PICK UP SCB ADDRESS
291 000642 116202 000005    MOVB S.VCT(R2),R2 ; FETCH OLD VECTOR ADDRESS
292 000646 042702 177400    BIC #177400,R2   ; THIS IS CHEAPER THAN ANOTHER WAY
293 000652 006302          ASL R2              ; COMPUTE ABSOLUTE ADDRESS
294 000654 006302          ASL R2
295 000656 011267 000000G   MOV (R2),$INADD    ; GET RM80 DRIVER ISR ADDRESS
296 000662 012712 000000G   MOV #NONSI,(R2)   ; IGNORE INTERRUPT TO OLD VECTOR
297 000666 016710 000000G   MOV $INADD,(R0)    ; NEW INTERRUPT VECTOR
298 000672 006200          ASR R0              ; FORM NEW VECTOR MOD4
299 000674 006200          ASR R0
300 000676 016702 000000G   MOV $SCB,R2        ; GET SCB ADDRESS
301 000702 110062 000005    MOVB R0,S.VCT(R2) ; SET NEW VECTOR ADDRESS
302 000706 000207          RETURN
303
304          ; SET VERIFY COUNT
305
306
307
308 000710 022767 000377 000000G $STVFL::CMP #377,.PNUMB ; LIMIT WITHIN RANGE?
309 000716 103407          BLO 1$              ; IF LO NO
310 000720 005767 000000G   TST .PNUMH        ; STILL?
311 000724 001004          BNE 1$              ; IF NE NO
312 000726 116767 000000G 000000G   MOVB .PNUMB,$VERIF ; SET VERIFICATION COUNT
313 000734 000207          RETURN
314 000736 000167 177226    1$: JMP SYNTAX     ; SYNTAX ERROR
315
316          ; SET ERROR LIMIT
317
318
```

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319
320 000742 022767 000377 000000G $STERL::CMP #377,.PNUMB ; LIMIT WITHIN RANGE?
321 000750 103407 ; BLO 1$ ; IF LO NO
322 000752 005767 000000G ; TST .PNUMH ; STILL?
323 000756 001004 ; BNE 1$ ; IF NE NO
324 000760 116757 000000G 000000G ; MOVB .PNUMB,$SWERL ; SET ERROR LIMIT
325 000766 000207 ; RETURN ;
326 000770 000167 177174 1$: JMP SYNTAX ; SYNTAX ERROR
327
328 ;
329 ; SET LIST MODE
330 ;
331
332 000774 105267 000000G $STLOG::INCB $SWLOG ; SET THE 'LIST LOGICAL' SWITCH
333 001000 105267 000000G $STLIS::INCB $SWLST ; SET THE 'LIST' SWITCH
334 001004 000207 ; RETURN ;
335
336 ;
337 ; SET ENABLE FORMAT SWITCH
338 ;
339
340 001006 105267 000000G $STFFE::INCB $SWFFE ; SET THE 'FORMAT FE' SWITCH
341 001012 105267 000000G $STFOR::INCB $SWFMT ; SET THE 'FORMAT' SWITCH
342 001016 000207 ; RETURN ;
343
344 ;
345 ; SET BSF/SSF INITIALIZATION SWITCH
346 ;
347
348 001020 105267 000000G $STIN:: INCB $SWINT ; SET THE 'INITIALIZATION' SWITCH
349 001024 000207 ; RETURN ;
350
351 000001 .END

```


\$STATE 000166 002
\$KTAB 000016 003
\$KSTR 000031 004
ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 3819 WORDS (15 PAGES)
DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
ELAPSED TIME: 00:01:21
[300,20]FMTPRS,[300,30]FMTPRS=[1,1]EXEMC/ML,[300,10]FMTPRS

.TITLE FMTR80 - FORMAT/VERIFY RM80 DISKS
.IDENT /01.00/

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VERSION 01.00

C. HESS 18-AUG-80
M. LEAVITT 24-DEC-80

.NLIST CND,BEX

; MESSAGES

MSG1R8: .ASCIZ <LF>/ENTER DATE (DD-MMM-YY): /
MSG2R8: .ASCIZ /HDA SERIAL NUMBER: /
.EVEN

; DATE FIELDS

DAT: .ASCIZ /JAN/
.ASCIZ /FEB/
.ASCIZ /MAR/
.ASCIZ /APR/
.ASCIZ /MAY/
.ASCIZ /JUN/
.ASCIZ /JUL/
.ASCIZ /AUG/
.ASCIZ /SEP/
.ASCIZ /OCT/
.ASCIZ /NOV/
.ASCIZ /DEC/
.WORD 0

.EVEN

; VALID LIMITS FOR DATE FIELDS

60 000140 000001 000014
 61 000144 000001 000037
 62 000150 000000 000143
 63 000154
 64
 65 000116
 66

DATLMT: .WORD 1,12.
 .WORD 1,31.
 .WORD 0,99.
 DPARS:: .BLKW 3
 BASYR == 78.

; FOR MONTH
 ; FOR DAY
 ; FOR YEAR
 ; STORAGE FOR DATE CONVERSION
 ; BASE YEAR = 1978

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68
69
70
71
72
73
74
75
76
77
78
79
80
81 000162 105767 000000G $RM80:: TSTB $SWINT ; SEE IF SSF/BSF INITIALIZATION MODE
82 000166 001022 BNE 1$ ; IF NE, YES
83 000170 004767 000000G CALL $RDSSF ; READ SKIP SECTOR FILE
84 000174 004767 000000G CALL $RDBSF ; READ BAD SECTOR FILES
85 000200 016767 000010G 000000G MOV $$$+10,$PREVNM ; GET CURRENT REVISION NUMBER
86 000206 005767 000310 TST 8$ ; HAS DATE BEEN ENTERED AT LEAST ONCE ?
87 000212 001010 BNE 1$ ; BR IF YES
88 000214 012700 000000' MOV #MSG1R8,R0 ; 'ENTER DATE (DD-MMM-YY): '
89 000220 004767 000000G CALL $PRMPT ; PROMPT THE USER - USER'S RESPONSE MAY BE EITHER:
90 ; 'MM/DD/YY' OR 'DD-MMM-YY'
91 000224 004767 000274 CALL DATE ; CONVERT USER'S ENTRY TO A BINARY DATE
92 000230 005267 000266 INC 8$ ; INDICATE THAT DATE HAS BEEN ENTERED ONCE
93
94 000234 105767 000000G 1$: TSTB $SWLST ; DISPLAY THE DEC STD 144 AND SSF FILES ?
95 000240 001405 BEQ 2$ ; IF EQ, NO
96 000242 004767 000000G CALL $RM80L ; DISPLAY THE FILES
97 000246 105767 000000G TSTB $SWFMT ; FORMAT THE HDA ALSO ?
98 000252 001522 BEQ 7$ ; IF EQ, NO
99
100 ; INFORM THE OPERATOR THAT DATA WILL BE DESTROYED
101
102 000254 012703 000000G 2$: MOV #MSG23,R3 ; WARNING MESSAGE ADDRESS
103 000260 004767 000000G CALL $UNTID ; STORE MESSAGE AND DEVICE/UNIT
104 000264 012703 000000G MOV #MSG24,R3 ; ADDRSS OF MESSAGE SUFFIX
105 000270 004767 000000G CALL $MOVE ; MOVE THE SUFFIX
106 000274 012700 000144G MOV #BUF+100.,R0 ; PRINT WARNING MESSAGE
107 000300 004767 000000G CALL $PRINT ;
108 000304 012700 000000G MOV #MSG31,R0 ; GET CONFIRMATION ADDRESS
109 000310 004767 000000G CALL $PRMPT ; PROMPT AND GET OPERATOR'S RESPONSE
110 000314 001501 BEQ 7$ ; IF EQ, RESPONSE WAS 'NO'
111 000316 122767 000131 000000G CMPB #'Y,$BUFRX ; SEE IF RESPONSE WAS 'YES'
112 000324 001075 BNE 7$ ; IF NE, RESPONSE WAS 'NO'
113 000326 105767 000000G TSTB $SWINT ; SEE IF SSF/BSF INITIALIZATION MODE
114 000332 001013 BNE 3$ ; IF NE, YES
115 000334 012700 000000G MOV #MSGR8,R0 ; GET UPDATE MODE MESSAGE
116 000340 004767 000000G CALL $PRMPT ; PROMPT AND GET RESPONSE
117 000344 001451 BEQ 6$ ; IF EQ, NO
118 000346 122767 000131 000000G CMPB #'Y,$BUFRX ; WAS RESPONSE 'Y'?
119 000354 001045 BNE 6$ ; IF NE, NO
120 000356 105267 000000G INCB $SWMOD ; SET THE MODIFY FLAG
121 000362 012700 000000' 3$: MOV #MSG1R8,R0 ; 'ENTER DATE (DD-MMM-YY): '
122 000366 004767 000000G CALL $PRMPT ; PROMPT THE USER - USER'S RESPONSE MAY BE EITHER:
123 ; 'MM/DD/YY' OR 'DD-MMM-YY'
124 000372 004767 000126 CALL DATE ; CONVERT USER'S ENTRY TO A BINARY DATE

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125 000376 005267 000120          INC      8$          ; INDICATE THAT DATE HAS BEEN ENTERED ONCE
126
127 000402 012700 000032'        4$:  MOV      #MSG2R8,R0      ; 'HDA SERIAL NUMBER: '
128 000406 004767 000000G        CALL     $PRMPT          ; PROMPT OPERATOR
129 000412 010304                MOV      R3,R4          ; NUMBER OF BYTES ENTERED TO R4
130 000414 012705 000000G        MOV      #SBUFEX,R5      ; INPUT BUFFER ADDRESS
131 000420 012703 000000G        MOV      #SSNAME,R3      ; OUTPUT BUFFER ADDRESS
132 000424 004767 000000G        CALL     .DD2CT          ; CONVERT THE S/N TO BINARY
133 000430 103764                BCS      4$              ; IF CS, BAD S/N ENTRY
134 000432 016746 000000G        MOV      SSNAME,-(SP)      ; CORRECT THE SERIAL NUMBER ORDER
135 000436 016767 000002G 000000G MOV      SSNAME+2,SSNAME ; ...
136 000444 012667 000002G        MOV      (SP)+,SSNAME+2
137 000450 105767 000000G        TSTB     $SWINF          ; INITIALIZE THE BAD SECTOR FILES ?
138 000454 001403                BEQ      5$              ; IF EQ, NO
139 000456 004767 000000G        CALL     $RM80I          ; INIT THE DEC STD 144 AND SKIP SECTOR FILES
140 000462 000416                BR       7$              ; EXIT
141
142 000464 004767 000000G        5$:  CALL     $RM80M          ; GET UPDATE MODE INFORMATION
143 000470 004767 000000G        6$:  CALL     $RDSSF          ; READ SKIP SECTOR FILE
144 000474 004767 000000G        CALL     $RDBSF          ; READ BAD SECTOR FILES
145 000500 004767 000000G        CALL     $RM80F          ; FORMAT THE DISK
146 000504 004767 000000G        CALL     $RM80V          ; VERIFY THE DISK FORMAT
147 000510 012700 000000G        MOV      #MSG12,R0      ; GET ADDRESS OF MESSAGE
148 000514 004767 000000G        CALL     $PRINT          ; PRINT 'DONE !' MESSAGE
149 000520 000207                7$:  RETURN
150
151 000522 000000                8$:  .WORD    0          ; ONCE DATE FLAG
152

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154
155
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161
162
163
164
165
166
167
168
169
170
171 000524 012701 000154'
172 000530 012702 000003
173 000534 005021
174 000536 005302
175 000540 001375
176 000542 012700 000000G
177 000546 004767 000000G
178 000552 120227 000057
179 000556 001466
180 000560 120227 000055
181 000564 001404
182 000566 012700 000000G
183 000572 000167 000000G
184
185
186
187 000576 012705 000144'
188 000602 004767 000256
189 000606 103446
190 000610 010167 177342
191 000614 010003
192 000616 012701 000056'
193 000622 005002
194 000624 105711
195 000626 001411
196 000630 122021
197 000632 001774
198 000634 105721
199 000636 001376
200 000640 010300
201 000642 005202
202 000644 105711
203 000646 001366
204 000650 000425
205 000652 005202
206 000654 010267 177274
207 000660 112002
208 000662 120227 000055
209 000666 001401
210 000670 000415

```

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: *--DATE-CONVERT USER'S RESPONSE TO BINARY DATE
:
: THIS ROUTINE WILL CONVERT THE ASCII DATE INPUTTED
: INTO 'SBUFRX' AS EITHER [MM/DD/YY] OR [DD-MMM-YY] AND
: CONVERT IT TO BINARY AND PUT IT IN DATE PARAMETER
: STORAGE AREA.
:
: INPUTS:
:   'SBUFRX' CONTAINS ASCII STRING FOR DATE
:
: OUTPUTS:
:   DPARS CONTAINS BINARY REPRESENTATION
:   OF DATE
:
:
DATE:  MOV    #DPARS,R1      ; POINT TO PARAMTER AREA
      MOV    #3,R2         ; SET WORD COUNT
1$:   CLR    (R1)+          ; ZERO NEXT WORD
      DEC    R2            ; DONE ?
      BNE    1$            ; IF NE NO
      MOV    #SBUFRX,R0    ; GET BUFFER FOR USER'S RESPONSE
2$:   CALL   $CDTB         ; GET A NUMBER
      CMPB   R2,#'/        ; TERMINATOR FOR DATE ?
      BEQ    10$           ; IF EQ YES
      CMPB   R2,#'-        ; POSSIBLY DIFFERENT FORMAT ?
      BEQ    3$            ; IF EQ YES
      MOV    #MSG2,R0      ; NO, SYNTAX ERROR
      JMP    MSGWR        ; EXIT WITH WARNING STATUS
:
: GET DATE FIELD IN FORMAT [DD-MMM-YY]
3$:   MOV    #DATLMT+4,R5  ; POINT TO DAY LIMITS
      CALL   TMTSTL        ; TEST LIMITS
      BCS    9$            ; IF CS ERROR
      MOV    R1,DPARS+2    ; STORE DAY
      MOV    R0,R3         ; COPY BUFFER POINTER
      MOV    #DAT,R1       ; POINT TO VALID MONTH NAMES
      CLR    R2            ; ZERO MONTH NUMBER
4$:   TSTB   (R1)           ; END OF TABLE ?
      BEQ    6$            ; IF EQ YES, GOOD MONTH
      CMPB   (R0)+,(R1)+   ; NO, CHECK NEXT CHARACTER
      BEQ    4$            ; AND LOOP IF GOOD MATCH
5$:   TSTB   (R1)+         ; END OF MONTH STRING ?
      BNE    5$            ; IF NE NO, LOOP
      MOV    R3,R0         ; YES, RESET BUFFER POINTER
      INC    R2            ; UPDATE MONTH INDEX
      TSTB   (R1)         ; END OF TABLE ?
      BNE    4$            ; IF NE NO, LOOP
      BR     9$            ; ZERO IS END OF MONTH LIST
6$:   INC    R2            ; INCREMENT MONTH INDEX
      MOV    R2,DPARS      ; SAVE IT
      MOVB   (R0)+,R2      ; GET NEXT CHARACTER
      CMPB   R2,#'-        ; LEGAL TERMINATOR ?
      BEQ    7$            ; IF EQ YES
      BR     9$            ; NO, IT'S A SYNTAX ERROR

```

```

211 000672 004767 000000G      7$: CALL $CDTB      : YES, GET YEAR
212 000676 012705 000150'      MOV #DATLMT+10,R5 : GET LIMIT ON YEAR
213 000702 004767 000156      CALL TMTSTL      : TEST LIMIT ON YEAR
214 000706 103406      BCS 9$      : IF CS ERROR
215 000710 020127 000116      CMP R1,#BASYR      : CHECK YEAR ENTRY
216 000714 103403      BLO 9$      : IF LO, INVALID YEAR ENTRY
217 000716 010167 177236      8$: MOV R1,DPARS+4      : SAVE YEAR
218 000722 000436      BR 12$      : EXIT
219 000724 012700 000000G      9$: MOV #MSG2,R0      : GET SYNTAX ERROR MESSAGE
220 000730 000167 000000G      JMP MSGWR      : EXIT WITH WARNING STATUS
221
222      : GET DATE FIELD IN FORMAT [MM/DD/YY]
223
224 000734 012703 000154'      10$: MOV #DPARS,R3      : POINT TO DATE STORAGE FIELD
225 000740 012705 000140'      MOV #DATLMT,R5      : GET POINTER TO MONTH LIMITS
226 000744 004767 000114      11$: CALL TMTSTL      : TEST LIMITS
227 000750 103765      BCS 9$      : IF CS ERROR, OUT OF BOUNDS
228 000752 010123      MOV R1,(R3)+      : STORE IT
229 000754 120227 000057      CMPB R2,#'/      : GOOD TERMINATOR ?
230 000760 001361      BNE 9$      : IF NE NO, SYNTAX ERROR
231 000762 004767 000000G      CALL $CDTB      : GET NEXT TWO DIGITS
232 000766 004767 000072      CALL TMTSTL      : TEST LIMITS
233 000772 103754      BCS 9$      : IF CS ERROR, OUT OF BOUNDS
234 000774 010123      MOV R1,(R3)+      : STORE IT
235 000776 120227 000057      CMPB R2,#'/      : GOOD TERMINATOR ?
236 001002 001350      BNE 9$      : IF NE NO
237 001004 004767 000000G      CALL $CDTB      : GET NEXT TWO DIGITS
238 001010 004767 000050      CALL TMTSTL      : TEST LIMITS
239 001014 103743      BCS 9$      : IF CS ERROR, OUT OF BOUNDS
240 001016 010113      MOV R1,(R3)      : STORE IT
241 001020 012703 000154'      12$: MOV #DPARS,R3      : DATE STORAGE FIELD
242 001024 162763 000116 000004      SUB #BASYR,4(R3)      : SUBTRACT THE STARTING YEAR
243 001032 000363 000004      SWAB 4(R3)      : POSITION YEAR IN UPPER BYTE
244 001036 006363 000004      ASL 4(R3)      : SHIFT INTO BITS 9 - 15
245 001042 000313      SWAB (R3)      : POSITION MONTH
246 001044 006213      ASR (R3)      : SHIFT INTO BITS 5 - 8
247 001046 006213      ASR (R3)
248 001050 006213      ASR (R3)
249 001052 056313 000004      BIS 4(R3),(R3)      : MERGE YEAR WITH MONTH
250 001056 056313 000002      BIS 2(R3),(R3)      : MERGE DAY
251 001062 000207      RETURN      : EXIT
252
253      *+
254      ***TMTSTL - TEST DATE LIMITS
255
256      THIS ROUTINE WILL TEST THE DATE AGAINST LIMITS SPECIFIED
257      BY A TWO WORD LIMIT ENTRY.
258
259      INPUTS:
260      R1 = CONTAINS VALUE TO BE TESTED
261      R5 = POINTS TO TWO WORD LIMIT ENTRY
262      WORD 1 - LOW LIMIT OF VALUE
263      WORD 2 - HIGH LIMIT OF VALUE
264
265      OUTPUTS:
266      R1 = UNCHANGED
267      R5 = UPDATED TO NEXT LIMIT ENTRY

```


SYMBOL TABLE

BASR = 000116 G	MSG2R8 000032R	\$MSG12= ***** GX	\$RDSSF= ***** GX	\$SNAME= ***** GX
CR = 000015	TMTSTL 001064R	\$MSG2 = ***** GX	\$REVM= ***** GX	\$SSF = ***** GX
DAT 000056R	\$BUF = ***** GX	\$MSG23= ***** GX	\$RM80 000162RG	\$SWFMT= ***** GX
DATE 000524R	\$BUFRX= ***** GX	\$MSG24= ***** GX	\$RM80F= ***** GX	\$SWINT= ***** GX
DATLMT 000140R	\$CDTB = ***** GX	\$MSG31= ***** GX	\$RM80I= ***** GX	\$SWLST= ***** GX
DPARS 000154RG	\$MOVE = ***** GX	\$PRINT= ***** GX	\$RM80L= ***** GX	\$SWMOD= ***** GX
LF = 000012	\$MSGR8= ***** GX	\$PRMPT= ***** GX	\$RM80M= ***** GX	\$UNTID= ***** GX
MSG1R8 000000R	\$MSGk' = ***** GX	\$RDBSF= ***** GX	\$RM80V= ***** GX	.DD2CT= ***** GX

. ABS. 000000 000
001104 001

ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 456 WORDS (2 PAGES)
DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
ELAPSED TIME: 00:00:11
[300,20]FMTR80,[300,30]FMTR80=[300,10]FMTR80

```

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27     .C. HESS      17-AUG-80
28     .M. LEAVITT   02-JUL-82
29
30
31     .NLIST BEX
32
33     000000      104      122      111 MSG50R: .ASCIIZ /DRIVE ERROR DURING FORMAT/
34     000032      106      117      122 MSG51R: .ASCIIZ /FORMAT CONTINUING/
35     000054      106      117      122 MSG53R: .ASCIIZ /FORMAT TERMINATING/
36     000077      122      115      103 MSG61R: .ASCIIZ /RMCS1=/
37     000106      122      115      103 MSG62R: .ASCIIZ /RMCS2=/
38     000115      122      115      105 MSG63R: .ASCIIZ /RMER1=/
39     000124      122      115      105 MSG64R: .ASCIIZ /RMER2=/
40     000133      122      115      104 MSG65R: .ASCIIZ /RMDA=/
41     000141      124      122      101 MSG66R: .ASCIIZ /TRACK RE-WRITE SUCCESSFUL/
42     000173      124      122      101 MSG67R: .ASCIIZ /TRACK RE-WRITE FAILURE/
43     000222      123      125      103 MSG68R: .ASCIIZ /SUCCESSIVE SEEK ERRORS/
44
45     .EVEN
46
47     .WORKING LOCATIONS
48
49
50     000252      000000      $ERCS1: .WORD 0 ; CONTROL STATUS REG 1
51     000254      000000      $ERCS2: .WORD 0 ; STATUS REG 2
52     000256      000000      $ERER1: .WORD 0 ; ERROR REGISTER 1
53     000260      000000      $ERER2: .WORD 0 ; ERROR REGISTER 2
54     000262      000000      $ERDA: .WORD 0 ; TRACK/SECTOR ADDRESS
55     000264      000000      $FLBUF: .WORD 0 ; BUFFER ADDRESS
56

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79
80 000266 012767 001056 000000G $R80SF::MOV #558.,$CYL : STARTING CYLINDER
81 000274 012767 000015 000000G      MOV #13.,$TRK : " TRACK
82 000302 004767 000212      CALL FMTDSK : FORMAT THE DEC STD 144 TRACK
83 000306 012767 001057 000000G      MOV #559.,$CYL : STARTING CYLINDER
84 000314 005067 000000G      CLR $TRK : " TRACK
85 000320 004767 000174      CALL FMTDSK : FORMAT THE SSF TRACK
86 000324 005267 000000G      INC $TRK : FORMAT THE ALTERNATE DEC144 TRACK
87
88 : FORMAT A SINGLE TRACK
89
90 000330 004767 000000G $R80TF::CALL $MVPAT : LOAD THE DATA PATTERN
91 000334 000471      BR FMTDSK : FORMAT THE TRACK $CYL,$TRK
92
93
94 : FORMAT ALL CYLINDERS (0,0 TO 560.,13.) OR BSF/SSF/FE CYLINDERS (558.,13.- 560.,13.)
95
96 000336 005001 $RM80F::CLR R1 : SET NULL CARRIAGE CONTROL
97 000340 012700      MOV #MSG6,RO : TELL OPERATOR
98 000344 004767 000000G      CALL $PRNTO : 'START FORMATTING'
99 000350 005001      CLR R1 : SET NULL CARRIAGE CONTROL
100 000352 105767 000000G      TSTB $SWFFE : FORMAT FE CYLINDERS ONLY ?
101 000356 001011      BNE 1$ : BR IF YES
102 000360 012700 000000G      MOV #MSG6A,RO : TELL OPERATOR WHICH CYLINDERS
103 000364 004767 000000G      CALL $PRNTO : ' -ALL CYLINDERS- '
104 000370 005067 000000G      CLR $CYL : START CYLINDER=0
105 000374 005067 000000G      CLR $TRK : START TRACK=0
106 000400 000412      BR 2$ : FORMAT THE TRACKS
107
108 000402 012700 000000G 1$: MOV #MSG6B,RO : TELL OPERATOR WHICH CYLINDERS
109 000406 004767 000000G      CALL $PRNTO : ' -FE CYLINDERS- '
110 000412 012767 001056 000000G      MOV #558.,$CYL : START CYLINDER=558. (BSF/SSF/FE CYLINDERS)
111 000420 012767 000015 000000G      MOV #13.,$TRK : START TRACK=13.
112 000426 004767 000000G 2$: CALL $MVPAT : LOAD THE DATA PATTERN
113 000432 004767 000062 3$: CALL FMTDSK : FORMAT THE DISK
114 000436 004767 000000G      CALL $TSTMX : UPDATE DISK ADDRESSES

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115 000442 103001          BCC      4$          : IF CS, NOT FINISHED, ELSE
116 000444 000207          RETURN          : EXIT FORMAT
117
118 000446 022767 001057 000000G 4$:  CMP      #559.,$CYL          : WAS SSF JUST WRITTEN ?
119 000454 001366          BNE      3$          : BR IF NO
120 000456 022767 000002 0000C0G      CMP      #2,$TRK          : WERE BSF/SSF TRACKS JUST WRITTEN ?
121 000464 001362          BNE      3$          : BR IF NO, ELSE
122 000466 016746 000000G      MOV      $CYL,-(SP)          : SAVE CURRENT CYLINDER ADDRESS
123 000472 016746 000000G      MOV      $TRK,-(SP)          : SAVE CURRENT TRACK ADDRESS
124 000476 004767 000000G      CALL     $WTSSF          : RE-WRITE THE SSF
125 000502 004767 000000G      CALL     $WTBSF          : RE-WRITE ALL THE DEC144 TRACKS
126 000506 012667 000000G      MOV      (SP)+,$TRK          : RESTORE TRACK ADDRESS
127 000512 012667 000000G      MOV      (SP)+,$CYL          : RESTORE CYLINDER ADDRESS
128 000516 000745          BR       3$          : WRITE NEXT TRACK
129
130          : ACTUAL FORMAT ROUTINE
131
132 000520 012703 000000G      FMTDSK: MOV      #$PHYDV,R3          : 'FORMAT' DEVICE PARAMETERS
133 000524 004767 000000G      CALL     $UPDMX          : UPDATE THE MAX VALUES
134 000530 005067 000000G      CLR      $SEC          : START AT SECTOR ZERO
135 000534 012700 000000G      MOV      #$BUF,R0          : RELOAD THE BUFFER ADDRESS
136
137          : CREATE THE HEADER PATTERN
138
139 000540 004767 000000G      1$:  CALL     GENHDR          : GENERATE HEADER PATTERN
140 000544 005267 000000G      INC      $SEC          : UPDATE SECTOR NUMBER
141 000550 026767 000000G 000000G      CMP      $SEC,$MXSEC          : ALL SECTORS DONE?
142 000556 001370          BNE      1$          : IF NE NO
143 000560 005067 000000G      CLR      $SEC          : RESET SECTOR NUMBER
144
145          : NOW WRITE THE HEADER AND DATA ONTO THE DISK.
146
147 000564 016767 000000G 000000G 2$:  MOV      TRKSZ,$XFRSZ          : LOAD BYTE COUNT FOR ONE TRACK
148 000572 004767 000000G      CALL     $CVTDA          : CONVERT DISK ADDRESS TO LBN
149 000576 012705 000000G      MOV      #$BUF,R5          : SET BUFFER ADDRESS
150 000602 004767 000000G      3$:  CALL     $DSKWH          : WRITE HEADER/DATA FOR THIS TRACK
151 000606 005767 000000G      4$:  TST      $RGRB          : ANY DISK ERRORS?
152 000612 100401          BMI      5$          : IF MI, YES
153 000614 000207          RETURN          : OTHERWISE, RETURN
154
155          : HANDLE THE ERROR
156
157 000616 032767 004000 000014G 5$:  BIT      #4000,$RGRB+14          : WRITE LOCK ERROR?
158 000624 001402          BEQ      6$          : IF EQ NO
159 000626 000167 000000G      JMP      $WLKER          : INFORM THE USER
160
161          : SEND ERROR MESSAGE
162
163 000632 004767 000276      6$:  CALL     $FLRGS          : SAVE FAILING DATA
164 000636 012700 000000'      MOV      $MSG50R,R0          : 'DRIVE ERROR DURING FORMAT'
165 000642 012701 000060      MOV      #60,R1          : CARRIAGE CONTROL CHARACTER
166 000646 004767 000000G      CALL     $PRNTO          : SEND MESSAGE
167 000652 004767 000064      CALL     $MGPRE          : SEND DISK ADDRESSES
168 000656 105367 000000G      DECB     $SWERL          : DECREMENT THE ERROR LIMIT
169 000662 001014          BNE      7$          : IF NE, ERROR LIMIT NOT EXCEEDED
170 000664 012700 000000G      MOV      $MSG45,R0          : 'ERROR LIMIT EXCEEDED'
171 000670 012701 000060      MOV      #60,R1          : CARRIAGE CONTROL CHARACTER

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172 000674 004767 000000G          CALL    $PRNTO          ; SEND MESSAGE
173 000700 012700 000054'          MOV     #MSG53R,R0        ; 'FORMAT TERMINATING'
174 000704 004767 000000G          CALL    $PRINT          ; PRINT THE MESSAGE
175 000710 000167 000000G          JMP     $FMTEX          ; EXIT THE FORMATTER
176
177                                ; IF THE ERROR IS A 'SKI', DO A RECAL
178
179 000714 012700 000032'          7$: MCV     #MSG51R,R0        ; 'FORMAT CONTINUING'
180 000720 004767 000000G          CALL    $PRINT          ; SEND MESSAGE
181 000724 032767 040000 000042G  BIT     #40000,$RBUF+42    ; SEE IF ERROR WAS A SEEK INCOMPLETE
182 000732 001714 000000G          BEQ     2$                ; IF EQ, NO
183 000734 004767 000000G          CALL    $HOMSK          ; ENTRY POINT FOR RETRY WITH RECAL
184 000740 000711 000000G          BR      2$                ; TRY AGAIN
185
186                                ;+
187                                ;*- $MGPRE-PREPARE AND SEND DISK ADDRESSES TO OPERATOR
188
189                                INPUTS:
190                                $FLCYL,$FLTRK,$FLSEC LOADED
191
192                                OUTPUTS:
193                                ERROR MESSAGE
194                                -
195
196 000742 012700 000000G          $MGPRE: MOV    # $SCR,R0          ; ADDRESS OF MESSAGE
197 000746 004767 000000G          CALL    $PRINT          ; CR-LF
198 000752 016701 177274          MOV     $ERCS1,R1          ; GET RMCS1 AND
199 000756 012703 000077'          MOV     #MSG61R,R3          ; ADDRESS OF MESSAGE
200 000762 004767 000000G          CALL    $EROCT          ; 'RMC1 = XXXXX'
201 000766 016701 177262          MOV     $ERCS2,R1          ; GET RMCS2 AND
202 000772 012703 000106'          MOV     #MSG62R,R3          ; ADDRESS OF MESSAGE
203 000776 004767 000000G          CALL    $EROCT          ; 'RMC2 = XXXXX'
204 001002 016701 177250          MOV     $ERER1,R1          ; GET RMER1 AND
205 001006 012703 000115'          MOV     #MSG63R,R3          ; ADDRESS OF MESSAGE
206 001012 004767 000000G          CALL    $EROCT          ; 'RMER1 = XXXXX'
207 001016 016701 177236          MOV     $ERER2,R1          ; GET RMER2 AND
208 001022 012703 000124'          MOV     #MSG64R,R3          ; ADDRESS OF MESSAGE
209 001026 004767 000000G          CALL    $EROCT          ; 'RMER2 = XXXXX'
210 001032 016701 177224          MOV     $ERDA,R1          ; GET RMDA AND
211 001036 012703 000133'          MOV     #MSG65R,R3          ; ADDRESS OF MESSAGE
212 001042 004767 000000G          CALL    $EROCT          ; 'RMDA = XXXXX'
213 001046 012700 000000G          MOV     # $SCR,R0          ; ADDRESS OF MESSAGE
214 001052 004767 000000G          CALL    $PRINT          ; CR-LF
215
216                                ;PRINT ERROR POSITION, CYLINDER, TRACK AND SECTOR IN DECIMAL
217
218 001056 016701 000000G          MOV     $FLCYL,R1          ; GET FAILING CYLINDER AND
219 001062 012703 000000G          MOV     #MSG15,R3          ; ADDRESS OF MESSAGE
220 001066 004767 000000G          CALL    $EROUT          ; 'CYLINDER = XXX.'
221 001072 016701 000000G          MOV     $FLTRK,R1          ; GET FAILING TRACK AND
222 001076 012703 000000G          MOV     #MSG16,R3          ; ADDRESS OF MESSAGE
223 001102 004767 000000G          CALL    $EROUT          ; 'TRACK = XX.'
224 001106 016701 000000G          MOV     $FLSEC,R1          ; GET FAILING SECTOR AND
225 001112 012703 000000G          MOV     #MSG17,R3          ; ADDRESS OF MESSAGE
226 001116 004767 000000G          CALL    $EROUT          ; 'SECTOR = XX.'
227 001122 012700 000000G          MOV     # $SCR,R0          ; GET ADDRESS OF MESSAGE
228 001126 004767 000000G          CALL    $PRINT          ; CR-LF

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229 001132 000207          RETURN
230
231
232      :+
233      : **-$FLRGS-ROUTINE TO SAVE FAILING DISK ADDRESSES AND REGISTERS
234      :
235      : INPUTS:
236      :     $CYL, $TRK SET TO CURRENT CYLINDER AND TRACK
237      :     $RGRBUF CONTAINS IMAGE OF LATEST H/W REGS (SET BY DRIVER)
238      :
239      : OUTPUTS:
240      :     $ERCS1 - CONTROL STATUS REG 1
241      :     $ERCS2 - CONTROL STATUS REG 2
242      :     $ERER1 - ERROR REG 1
243      :     $ERER2 - ERROR REG 2
244      :     $ERDA  - TRK/SECTOR REG
245      :     $FLCYL - FAILING CYLINDER
246      :     $FLTRK - FAILING TRACK
247      :     $FLSEC - FAILING SECTOR
248      : -
249 001134 016705 000006G      $FLRGS: MOV      $RGRBUF+6,R5      : RECOVER FAILING SECTOR ADDRESS
250 001140 042705 177740      BIC      #177740,R5      : ISOLATE SECTOR NO.
251 001144 001004      BNE      1$
252 001146 012767 000037 000000G      MOV      #31.,$FLSEC      : MUST HAVE BEEN LAST SECTOR
253 001154 000403      BR      2$
254 001156 005305      1$: DEC      R5      : BACKUP ONE
255 001160 010567 000000G      MOV      R5,$FLSEC      : SET SECTOR NUMBER
256 001164 016767 000000G 000000G 2$: MOV      $CYL,$FLCYL      : " CYLINDER
257 001172 016767 000000G 000000G      MOV      $TRK,$FLTRK      : " TRACK
258
259      : SAVE THE RM80 REGISTERS
260
261 001200 012705 000000G      MOV      #RGRBUF,R5      : REGISTER BUFFER
262 001204 011567 177042      MOV      (R5),$ERCS1      : RMCS1
263 001210 016567 000010 177036      MOV      10(R5),$ERCS2      : RMCS2
264 001216 016567 000014 177032      MOV      14(R5),$ERER1      : RMER1
265 001224 016567 000042 177026      MOV      42(R5),$ERER2      : RMER2
266 001232 016567 000006 177022      MOV      6(R5),$ERDA      : RMDA
267 001240 005067 000000G      CLR      $RGRBUF      : CLEAR ERROR INDICATOR
268 001244 000207          RETURN
269
270          000001          .END

```

FMTDSK 000520R	MSG68R 000222R	\$EROCT= ***** GX	\$MSG17= ***** GX	\$R80SF 000266RG
GENHDR= ***** GX	TRKSZ = ***** GX	\$EROUT= ***** GX	\$MSG45= ***** GX	\$R80TF 000330RG
MSG50R 000000R	\$BUF = ***** GX	\$FLBUF 000264R	\$MSG6 = ***** GX	\$SEC = ***** GX
MSG51R 000032R	\$CR = ***** GX	\$FLCYL= ***** GX	\$MSG6A= ***** GX	\$SWERL= ***** GX
MSG53R 000054R	\$CVTDA= ***** GX	\$FLRGS 001134RG	\$MSG6B= ***** GX	\$SWFFE= ***** GX
MSG61R 000077R	\$CYL = ***** GX	\$FLSEC= ***** GX	\$MVPAT= ***** GX	\$T'K = ***** GX
MSG62R 000106R	\$DSKWH= ***** GX	\$FLTRK= ***** GX	\$MXSEC= ***** GX	\$TSTMX= ***** GX
MSG63R 000115R	\$ERCS1 000252R	\$FMTEX= ***** GX	\$PHYDV= ***** GX	\$UPDMX= ***** GX
MSG64R 000124R	\$ERCS2 000254R	\$HOMSK= ***** GX	\$PRINT= ***** GX	\$WAKER= ***** GX
MSG65R 000133R	\$ERDA 000262R	\$MGPRE 000742RG	\$PRNT0= ***** GX	\$WTBSF= ***** GX
MSG66R 000141R	\$ERER1 000256R	\$MSG15= ***** GX	\$RBUF= ***** GX	\$WTSSF= ***** GX
MSG67R 000173R	\$ERER2 000260R	\$MSG16= ***** GX	\$RM80F 000336RG	\$XFRSZ= ***** GX

. ABS. 000000 000
 001246 001
 ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 517 WORDS (3 PAGES)
 DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
 ELAPSED TIME: 00:00:11
 [300,20]FMT8F,[300,30]FMT8F=[300,10]FMT8F

```

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29
30
31     .NLIST  BEX
32
33     000000      126      105      122 MSG2V: .ASCII /VERIFY TERMINATING/
34     000023      116      117      116 MSG3V: .ASCII /NON DATA ERROR DURING VERIFY/
35     000060      126      105      122 MSG4V: .ASCII /VERIFY CONTINUING/
36     000102      110      105      101 MSG5V: .ASCII @HEADER/DATA ERROR DURING VERIFY@
37     .EVEN
38
39
40     .WORKING LOCATIONS
41
42
43     000142      000000      TRKER: .WORD      0      : TRACK ERROR COUNT
44     000144      .SECTBL: .BLKB      32.      : SECTOR ERROR TABLE
45     000204      000000      LASTER: .WORD      0      : LAST SECTOR IN ERROR DURING CURRENT VERIFICATION
46     .PASS
47     000206      000000      XFRSEC: .WORD      0      : NUMBER OF SECTORS ACTUALLY VERIFIED
48     000210      000000      ENDSEC: .WORD      0      : ENDING SECTOR ADDRESS
49     000212      000000      BEGSEC: .WORD      0      : STARTING SECTOR ADDRESS
50     000214      000000      VFYCNT: .WORD      0      : VERIFICATION PASSES
51

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87 000216 012700 000000G
88 000222 004767 000000G
89 000226 012703 000000G
90 000232 004767 000000G
91 000236 004767 000000G
92
93 000242 105767 000000G
94 000246 001005
95 000250 005067 000000G
96 000254 005067 000000G
97 000260 000406
98 000262 012767 001056 000000G 1$:
99 000270 012767 000015 000000G
100
101 000276 005067 177710 2$:
102 000302 005067 177634
103 000306 005067 177672
104 000312 016767 000000G 177670
105 000320 005367 177664
106 000324 004767 000000G
107
108 000330 026727 000000G 001056 3$:
109 000336 001016

```

```

*--$RM80V-VERIFICATION ROUTINE FOR RM80 DISK PACKS
TRACK COMPLETE <= 1
REPEAT PROCESS UNTIL PHYSICAL DISK ADDRESS .EQ. (561,0,0) ($1$1MX)
  IF TRACK COMPLETE .NE. 0
    THEN START SECTOR <= 0
    END SECTOR <= $MXSEC
  TRACK ERROR COUNT ('TRKER') <= 0
  CLEAR SECTOR ERROR TABLE
  GENERATE TRACK BUFFER
  WORD COUNT <= ((END SECTOR)-(START SECTOR)+1)*258
  VERIFICATION PASS COUNT ('VFYCNT') <= $VERIF
  REPEAT WRITE CHECK UNTIL ('VFYCNT' .EQ. 0 .OR. SECTORS TRANSFERED .EQ. 0)
    IF ERROR
      THEN CALL $CKERR
      IF ERROR IS A NON DATA ERROR
        THEN RETRY ERROR
      'VFYCNT' = 'VFYCNT' - 1
    ENDREPEAT
  IF TRKER .NE. 0
    THEN CALL 'VFYSEC'
    REGENERATE THE TRACK BUFFER (GENHDR)
    RE-FORMAT TRACK FROM SECTOR 0 TO SECTOR 31
  IF ENDSEC .NE. 31
    THEN START SECTOR <= LAST ERROR SECTOR + 1
    END SECTOR <= 31
    ELSE PHYSICAL ADDRESS = PHYSICAL ADDRESS + 32 SECTORS
  ENDREPEAT
RE-WRITE BSF & SSF
EOJ

```

```

$RM80V: MOV    #MSG11,R0      ; GET VERIFICATION STARTING MESSAGE
        CALL   $PRINT        ; PRINT THE MESSAGE
        MOV    #SPHYDV,R3    ; PHYSICAL DEVICE GEOMETRY POINTER
        CALL   $UPDMX        ; UPDATE THE LIMITS
        CALL   $HOMSK        ; ISSUE A RECAL
        TSTB   $SWFFE        ; VERIFY FE CYLINDERS ONLY ?
        BNE    1$           ; BR IF YES
        CLR    $CYL          ; STARTING CYLINDER=0
        CLR    $TRK          ; STARTING TRACK=0
        BR     2$
        MOV    #558,$CYL     ; STARTING CYLINDER=558.
        MOV    #13,$TRK      ; STARTING TRACK=13.
        CLR    BEGSEC        ; START WITH SECTOR 0
        CLR    TRKER         ; CLEAR THE TRACK ERROR COUNT
        CLR    LASTER        ; CLEAR LAST ERRORRED SECTOR
        MOV    $MXSEC,ENDSEC  ; LOAD THE ENDING SECTOR ADDRESS
        DEC    ENDSEC        ; CORRECT THE VALUE
        CALL   $MVPAT        ; LOAD THE DATA PATTERN
        CMP    $CYL,#558     ; IS THIS THE BSF CYLINDER ADDRESS ?
        BNE    4$           ; BR IF NO

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110 000340 026727 000000G 000015      CMP      $TRK,#13.      ; IS THIS THE BSF TRACK ADDRESS ?
111 000346 001012                      BNE      4$              ; BR IF NO
112 000350 016746 000000G              MOV      $CYL,-(SP)      ; SAVE CURRENT CYLINDER ADDRESS
113 000354 016746 000000G              MOV      $TRK,-(SP)      ; SAVE CURRENT TRACK ADDRESS
114 000360 004767 000000G              CALL     $R80SF        ; RE-FORMAT BSF/SSF HEADERS AND DATA
115 000364 012667 000000G              MOV      (SP)+,$TRK      ; RESTORE TRACK ADDRESS
116 000370 012667 000000G              MOV      (SP)+,$CYL      ; RESTORE CYLINDER ADDRESS
117
118 000374 012701 000020      4$:      MOV      #16.,R1        ; LOOP CONSTANT
119 000400 012700 000144      MOV      #SECTBL,R0      ; TABLE ADDRESS
120 000404 005020      5$:      CLR      (R0)+        ; CLEAR TWO LOCATIONS
121 000406 005301                      DEC      R1          ; DECREMENT THE LOOP COUNTER
122 000410 001375                      BNE      5$          ; IF NE, NOT FINISHED
123
124 000412 116767 000000G 177574      MOV      $VERIF,VFYCNT    ; LOAD THE VERIFICATION COUNT
125 000420 016767 177566 000000G 6$:  MOV      BEGSEC,$SEC      ; LOAD THE SECTOR ADDRESS
126 000426 012700 000000G              MOV      #B$BUF,R0      ; BUFFER ADDRESS
127 000432 004767 000000G      7$:      CALL     GENHDR        ; GENERATE A HEADER FOR WRITE CHECK HEADER & DATA
128 000436 005267 000000G              INC      $SEC          ; INCREMENT THE SECTOR
129 000442 026767 000000G 177540      CMP      $SEC,ENDSEC    ; SEE IF FINISHED
130 000450 101770                      BLOS     7$          ; IF LOS, NO
131
132 000452 016767 177534 000000G 8$:  MOV      BEGSEC,$SEC      ; RESET THE BEGINNING SECTOR ADDRESS
133 000460 016700 177524                      MOV      ENDSEC,R0      ; ENDING SECTOR ADDRESS
134 000464 166700 177522                      SUB      BEGSEC,R0      ; SUBTRACT STARTING ADDRESS
135 000470 005200                      INC      R0          ; CALCULATE # OF SECTORS TO XFER
136 000472 012701 001004                      MOV      #256.*2.,R1    ; GET ONE SECTOR SIZE (IN BYTES)
137 000476 004767 000000G              CALL     $MULT        ; CALCULATE THE BYTE COUNT
138 000502 010167 000000G              MOV      R1,$XFRSZ      ; LOAD THE BYTE COUNT
139 000506 004767 000000G              CALL     $CVTDA        ; CONVERT DISK ADDRESS TO AN LBN
140 000512 105067 000000G      9$:      CLRB     $HDRFG        ; CLEAR HEADER ERROR FLAG
141 000516 012705 000000G              MOV      #B$BUF,R5      ; BUFFER ADDRESS
142 000522 004767 000000G              CALL     $DSKWC        ; DO WRITE CHECK HEADER & DATA
143 000526 005767 000000G              TST      $R$BUF        ; SEE IF ANY ERRORS ?
144 000532 100404                      BMI      10$         ; IF MI, YES
145 000534 005367 177454                      DEC      VFYCNT        ; DONE VERIFY PASS ?
146 000540 001364                      BNE      9$          ; IF NE, NO FINISHED
147 000542 000420                      BR       12$         ; SEE IF FINISHED WITH THIS TRACK
148
149      ; PROCESS THE ERROR
150
151 000544 004767 000326      10$:      CALL     CKERR          ; SEE WHICH TYPE OF ERROR IT IS
152 000550 103740                      BCS      8$          ; IF CS, NON-DATA ERROR - RETRY
153 000552 005767 177430                      TST      XFRSEC        ; SEE IF ANY SECTORS WERE TRANSFERED
154 000556 001404                      BEQ      11$         ; IF EQ, NO
155 000560 005367 177430                      DEC      VFYCNT        ; DECREMENT THE VERIFICATION COUNT FOR THIS PASS
156 000564 001315                      BNE      6$          ; IF NE, MORE TO DO
157 000566 000406                      BR       12$         ; SEE IF FINISHED WITH THE CURRENT TRACK
158 000570 016746 177416      11$:      MOV      BEGSEC,-(SP)      ; SEE IF THE ERROR IS THE LAST SECTOR
159 000574 005216                      INC      (SP)          ; CORRECT VALUE FOR THE COMPARE
160 000576 026726 000000G              CMP      $MXSEC,(SP)+  ; ERROR ON SINGLE SECTOR TRANSFER BEGINNING
161                                ; WITH SECTOR 31 ?
162 000602 001306                      BNE      6$          ; IF NE, NO
163 000604 005767 177332      12$:      TST      $TRKER        ; ANY NEW ERRORS ON THIS TRACK ?
164 000610 001404                      BEQ      13$         ; IF EQ, NO
165 000612 004767 000106                      CALL     VFYSEC        ; VERIFY THE SECTORS IN ERROR
166 000616 004767 000000G              CALL     $R80TF        ; REFORMAT THE TRACK AND MARK NEW DEFECTS

```

```

167 000622 016700 177362      13$:  MOV    ENDSEC,RO      ; CHECK THE ENDING SECTOR
168 000626 005200              INC    RO              ; CORRECT IT
169 000630 020067 000000G      CMP    RO,$MXSEC      ; SEE IF FINISHED
170 000634 001421              BEQ    14$             ; IF EQ, YES
171 000636 016700 177342      MOV    LASTER,RO        ; GET THE LAST ERROR SECTOR ADDRESS
172 000642 005200              INC    RO              ; CORRECT VALUE
173 000644 020067 000000G      CMP    RO,$MXSEC      ; SEE IF AT MAX SECTOR
174 000650 001413              BEQ    14$             ; IF EQ, YES
175 000652 016767 177326 177332 MOV    LASTER,BEGSEC    ; RELOAD THE STARTING SECTOR
176 000660 005267 177326      INC    BEGSEC          ; START WITH THE FIRST GOOD SECTOR
177 000664 016767 000000G 177316 MOV    $MXSEC,ENDSEC    ; RELOAD THE ENDING SECTOR
178 000672 005367 177312      DEC    ENDSEC          ; CORRECT THE VALUE
179 000676 000536              BR     4$              ; CONTINUE
180
181 000700 004767 000000G      14$:  CALL    $TSTMX        ; INCREMENT THE PHYSICAL ADDRESS
182 000704 103402              BCS    15$             ; IF CS, FINISHED
183 000706 000167 177364      JMP     2$              ; TEST NEXT TRACK
184
185 000712 004767 000000G      15$:  CALL    $WTSSF        ; RE-WRITE THE SSF
186 000716 004767 000000G      CALL    $WTBSF        ; RE-WRITE ALL THE DEC STD 144 TRACKS
187 000722 000207              RETURN
188
189
190      *--VFYSEC-VERIFY THE SECTOR(S) IN ERROR
191
192      THIS ROUTINE WILL RE-READ THE SECTORS WHICH GAVE ERRORS DURING THE VERIFY
193      PASS ON THE CURRENT TRACK. ANY SECTOR FAILING DURING THE RE-READ PASS
194      WILL BE CONSIDERED DEFECTIVE.
195
196      REPEAT PROCESS UNTIL TRACK ERROR COUNT ('TRKER') .EQ. 0
197      FIND NEXT SECTOR IN SECTOR ERROR TABLE ('SECTBL')
198      REPEAT WRITE CHECK FOR SECTOR ENTRY IN 'SECTBL'
199      UNTIL ('SECTBL'(SECTOR) .LT. 0) .OR. (HEADER FIELD OR DATA FIELD ERROR FOR SECTOR)
200      IF 'SECTBL'(SECTOR) .GE. 0
201      THEN IF NO SKIP SECTOR ON TRACK .AND. '$HDRFG' = 0
202      THEN PUT SECTOR IN SSF
203      ELSE IF SECTOR IS NOT IN THE FE CYLINDERS
204      THEN PUT SECTOR IN FEBSF
205      ELSE PUT SECTOR IN UDBSF
206      LAST ERROR SECTOR ON TRACK 'LASTER' <= CURRENT ERROR SECTOR
207      TRKER = TRKER - 1
208      ENDREPEAT
209
210      INPUTS:
211      SECTBL - CONTAINS ADDRESSES OF SECTORS IN ERROR
212      $CYL,$TRK,$SEC CONTAINS ADDRESS OF CURRENT TRACK
213      TRKER .NE. 0
214
215      OUTPUTS:
216      SECTBL CLEARED
217      ENTRIES MADE IN THE MDBSF,UDBSF,& SSF'S
218      'LASTER' CONTAINS THE ADDRESS OF THE LAST SECTOR IN ERROR ON
219      THE TRACK
220
221
222
223 000724 012700 177777      VFYSEC: MOV    #-1,RO      ; USE RO AS THE INDEX INTO 'SECTBL'

```

```

224 000730 005200      1$: INC      R0      ; INCREMENT THE INDEX
225 000732 105760 000144' TSTB     SECTBL(R0) ; ENTRY ?
226 000736 001774      BEQ      1$      ; IF EQ, NO
227 000740 010046      2$: MOV      R0,-(SP) ; SAVE THE INDEX
228 000742 010067 000000G MOV      R0,$SEC ; RELOAD THE SECTOR ADDRESS
229 000746 016767 000000G 000000CG MOV      $CYL,$BUF ; SETUP A SECTOR IMAGE
230 000754 052767 150000 000000G BIS      #150000,$BUF ; SET THE MF, UF, AND FMT16 BITS
231 000762 116767 000000G 000003G MOV      $TRK,$BUF+3 ; LOAD THE TRACK ADDRESS
232 000770 116767 000000G 000002G MOV      $SEC,$BUF+2 ; LOAD THE SECTOR ADDRESS
233 000776 012705 000000G 3$: MOV      # $BUF,R5 ; BUFFER ADDRESS
234 001002 012767 001004 000000G MOV      #516,$XFRSZ ; SECTOR - INCLUDING HEADER BYTE COUNT
235 001010 004767 000000G CALL      $CVTDA ; CONVERT THE PHYSICAL ADDRESS TO LBN
236 001014 004767 000000G CALL      $DSKWC ; WRITE CHECK THE SECTOR
237 001020 005767 000000G TST      $RBUF ; ANY ERRORS ?
238 001024 100007      BPL      4$      ; IF PL, NO
239 001026 004767 000044      CALL   CKERR ; PROCESS THE ERROR
240 001032 103761      BCS      3$      ; IF CS, NON-DATA ERROR - RETRY
241 001034 004767 000000G CALL      $DSTRB ; PUT THE SECTOR INTO THE PROPER BSF
242 001040 012600      MOV      (SP)+,R0 ; RESTORE THE SECTOR TABLE INDEX
243 001042 000406      BR       5$      ;
244 001044 012600      4$: MOV      (SP)+,R0 ; RESTORE THE SECTOR TABLE POINTER
245 001046 105360 000144' DEC      SECTBL(R0) ; COUNT THE SUCCESSFUL RE-READ
246 001052 100332      BPL      2$      ; IF PL CONTINUE
247 001054 105060 000144' CLRB     SECTBL(R0) ; CLEAR THE SECTOR ENTRY, ERROR WAS NOT
248                                     REPEATED
249 001060 016767 000000G 177116 5$: MOV      $SEC,LASTER ; ASSUME CURRENT ERROR IS LAST ERROR ON THIS TRACK
250 001066 005367 177050      DEC      TRKER ; DECREMENT THE ERROR COUNTER
251 001072 001316      BNE      1$      ; IF NE, NOT FINISHED
252 001074 000207      RETURN ;
253
254
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```

***CKERR-VERIFY MODULE DEVICE ERROR ANALYSIS ROUTINE

THIS ROUTINE WILL ANALYZE THE DISK ERROR AND REPORT THE ERROR AS REQUIRED.

```

IF SKI
  THEN REPORT & RECALIBRATE
  ELSE REPORT ERROR
    IF NOT DATA ERROR
      THEN RETRY UNTIL SUCCESSFUL OR RETRY LIMIT EXCEEDED
      ELSE DETERMINE SECTOR IN ERROR
        IF TRACK ERROR COUNT ('TRKER') .EQ 0
          THEN LAST ERROR SECTOR ('LASTER') <= ERROR SECTOR
        IF ERROR IS HEADER ERROR
          THEN ERROR TYPE ('$HDRFG') <= 1
          ELSE 'HDRFG' <= 0
        IF VERIFY COUNT ('VFYCNT') .NE. 0
          THEN IF SECTOR IN ERROR NOT LISTED IN BSF, SSF, OR FEBSF ($SRALL)
            THEN LOAD SECTOR RETRY COUNT IN SECTOR ERROR TABLE ('SECTBL')
              'TRKER' = 'TRKER' + 1
          TRANSFERRED SECTOR COUNT ('XFRSEC') = ((ERROR SECTOR)-(START SECTOR))-1
          IF 'XFRSEC' .NE. 0
            THEN END SECTOR <= (ERROR SECTOR-1)
            WORD COUNT <= ((END SECTOR)-(START SECTOR + 1) + 1) * 258

```

INPUTS:
\$RBUF - CONTAINS THE RM80 REGISTER CONTENTS

```

281      VFYCNT - CONTROLS UPDATING 'SECTBL'
282
283      RETURNS:
284      CS - IF THE ERROR WAS A NON DATA ERROR
285
286      OUTPUTS:
287      'SECTBL' - UPDATED IF ERROR IS A DATA ERROR AND 'VFYCNT' .NE. 0
288
289      NOTE:
290      THIS ROUTINE WILL RETURN TO '$FMTEX' IF THE DRIVE EXCEEDS THE
291      ERROR LIMIT.
292
293      -
294
295      CKERR:  CALL  $FLRGS      ; SAVE THE REGISTERS
296              MOV   $RBUF+6,-(SP) ; GET THE SECTOR ADDRESS
297              DEC   (SP)          ; BACK UP TO FAILING SECTOR
298              BIC   #^C37,(SP)    ; JUST IN CASE FAILING SECTOR WAS 31.
299              MOV   (SP),LASTER   ; GET LAST ERRORED SECTOR
300              MOV   $RBUF,-(SP)   ; GET RMCS1
301              BIC   #^C20000,(SP) ; LEAVE 'MCPE'
302              MOV   $RBUF+10,-(SP) ; GET RMCS2
303              BIC   #40000,(SP)   ; CLEAR 'WCE'
304              BISB  1(SP),2(SP)   ; 'OR' THE ERROR BITS FROM RMCS2
305              MOV   $RBUF+42,(SP) ; GET RMER2
306              BIC   #100000,(SP)  ; CLEAR 'BSE'
307              BIS   (SP)+,(SP)    ; 'OR' WITH 'MCPE' & RMCS2 ERROR BITS
308              TST   (SP)+         ; SEE IF ANY ERROR BITS SET
309              BNE   1$            ; IF NE, YES - NON DATA ERROR
310              BIT   #110400,$RBUF+14 ; TEST 'DCK!DTE!HCRC'
311              BNE   4$            ; IF NE, MUST BE A DATA OR HEADER ERROR
312              BIT   #40000,$RBUF+10 ; TEST 'WCE'
313              BNE   4$            ; IF NE, MUST BE DATA ERROR
314              MOV   $RBUF+14,-(SP) ; COPY RMER1
315              BIC   #110400,(SP)   ; CLEAR THE DATA/HEADER ERROR BITS
316              TST   (SP)+         ; SEE IF ANY OTHER ERROR BITS ARE SET
317              BEQ   6$            ; IF EQ, NO MUST BE 'BSE' ERROR, ELSE
318                                  ; REPORT NON DATA ERROR
319
320      ; SEND NON DATA ERROR MESSAGE
321
322      1$:  MOV   #MSG3V,R0          ; 'NON DATA ERROR DURING VERIFY'
323              MOV   #60,R1         ; CARRIAGE CONTROL CHARACTER
324              CALL  $PRNTO         ; SEND MESSAGE
325              CALL  $MGPRE         ; TYPE THE DEVICE REGISTERS
326              DECB  $SWERL         ; SEE IF ERROR LIMIT EXCEEDED
327              BNE   2$            ; IF NE, NO
328              MOV   #MSG45,R0      ; 'ERROR LIMIT EXCEEDED'
329              MOV   #60,R1         ; CARRIAGE CONTROL CHARACTER
330              CALL  $PRNTO         ; SEND MESSAGE
331              MOV   #MSG2V,R0      ; 'VERIFY TERMINATING'
332              CALL  $PRNTO         ; PRINT THE MESSAGE
333              JMP   $FMTEX        ; ABORT THE FORMATTER
334      2$:  MOV   #MSG4V,R0         ; 'VERIFY CONTINUING'
335              CALL  $PRNTO         ; SEND MESSAGE
336              BIT   #40000,$RBUF+42 ; SEE IF 'SKI'
337              BEQ   3$            ; IF EQ, NO

```

```

338 001316 004767 000000G          CALL    $HOMSK          : DO A RECAL
339 001322 005726          3$:    TST      (SP)+          : CORRECT THE STACK
340 001324 000261          SEC                      : SHOW NON-DATA ERROR
341 001326 000207          RETURN
342
343          : PROCESS THE DATA ERROR AND EXIT
344
345 001330 032767 000400 000014G 4$:    BIT      #400,$RBUF+14 : SEE IF ERROR IS A HEADER ERROR ('HCRC')
346 001336 001402          BEQ      5$                  : IF EQ, DATA ERROR
347 001340 105267 000000G          INCB     $HDRFG        : SET HEADER ERROR FLAG
348 001344 005767 176644          5$:    TST      VFYCN       : SEE IF VERIFYING THE ENTIRE TRACK OR IF
349                                     : PROCESSING A SINGLE SECTOR
350 001350 001457          BEQ      9$                  : IF EQ, VERIFYING SINGLE SECTORS
351 001352 011667 000000G          MOV      (SP),$SEC      : PUT THE BAD SECTOR ADDRESS IN '$SEC'
352 001356 004767 000000G          CALL     $SRALL        : SEE IF THE ERROR IS IN ANY OF THE BAD SECTOR FILES
353 001362 103022          BCC      6$                  : IF CC, DEFECT IS ALREADY ACCOUNTED FOR
354 001364 005267 176552          INC      TRKER         : INCREMENT THE TRACK ERROR COUNT
355 001370 011600          MOV      (SP),R0             : GET THE BAD SECTOR ADDRESS
356 001372 116760 000000G 000144'  MOVB     $RETRY,SECTBL(R0) : ; LOAD RETRY COUNT AND FLAG A BAD SECTOR
357 001400 012700 000102'          MOV      #MSG5V,R0      : 'HEADER/DATA ERROR DURING VERIFY
358 001404 012701 000060          MOV      #60,R1         : CARRIAGE CONTROL CHARACTER
359 001410 004767 000000G          CALL     $PRNT0        : SEND MESSAGE
360 001414 004767 000000G          CALL     $MGPRE        : TYPE THE DEVICE REGISTERS
361 001420 012700 000060'          MOV      #MSG4V,R0      : 'VERIFY CONTINUING'
362 001424 004767 000000G          CALL     $PRINT        : PRINT IT
363
364 001430 011667 176552          6$:    MOV      (SP),XFRSEC : COPY THE ADDRESS OF THE ERROR SECTOR
365 001434 166767 176552 176544  SUB      BEGSEC,XFRSEC : CALCULATE THE NUMBER OF SECTORS TRANSFERED
366 001442 001003          BNE      7$                  : IF NE, AT LEAST ONE SECTOR TRANSFERED
367 001444 005267 176542          INC      BEGSEC        : STEP AROUND THE ERROR SECTOR
368 001450 000404          BR       8$
369 001452 011667 176532          7$:    MOV      (SP),ENDSEC : CHANGE THE ENDING SECTOR ADDRESS
370 001456 005367 176526          DEC      ENDSEC        : POINT TO LAST ERROR FREE SECTOR
371 001462 016700 176522          8$:    MOV      ENDSEC,R0  : COPY THE ENDING SECTOR
372 001466 166700 176520          SUB      BEGSEC,R0      : CALCULATE THE NEW BYTE COUNT
373 001472 005200          INC      R0                  : CORRECT THE DIFFERENCE
374 001474 012701 001004          MOV      #516.,R1       : NUMBER BYTES/SECTOR
375 001500 004767 000000G          CALL     $MULT        : MULTIPLY THE SECTORS * SIZE
376 001504 010167 000000G          MOV      R1,$XFRSZ     : UPDATE THE BYTE COUNT
377 001510 005726          9$:    TST      (SP)+          : CORRECT THE STACK
378 001512 000241          CLC                      : SET THE DATA ERROR INDICATOR
379 001514 000207          RETURN
380
381          000001          .END

```

BEGSEC 000212R	TRKER 000142R	\$FMTEX= ***** GX	\$PRINT= ***** GX	\$SWERL= ***** GX
CKERR 001076R	VFYCNT 000214R	\$HDRFG= ***** GX	\$PRNT0= ***** GX	\$SWFFE= ***** GX
ENDSEC 000210R	VFYSEC 000724R	\$HOMSK= ***** GX	\$RETRY= ***** GX	\$TRK = ***** GX
GENHDR= ***** GX	XFRSEC 000206R	\$MGPRE= ***** GX	\$RBUF= ***** GX	\$STMX= ***** GX
LASTR 000204R	\$BUF = ***** GX	\$MSG11= ***** GX	\$RM8OV 000216RG	\$UPDMX= ***** GX
MSG2V 000000R	\$CVTDA= ***** GX	\$MSG45= ***** GX	\$R8OSF= ***** GX	\$VERIF= ***** GX
MSG3V 000023R	\$CYL = ***** GX	\$MULT = ***** GX	\$R8OTF= ***** GX	\$WTBSF= ***** GX
MSG4V 000060R	\$DSKWC= ***** GX	\$MVPAT= ***** GX	\$SEC = ***** GX	\$WTSSF= ***** GX
MSG5V 000102R	\$DSTRB= ***** GX	\$MXSEC= ***** GX	\$SRALL= ***** GX	\$XFRSZ= ***** GX
SECTBL 000144R	\$FLRGS= ***** GX	\$PHYDV= ***** GX		

. ABS. 000000 000
 001516 001

ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 567 WORDS (3 PAGES)
 DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
 ELAPSED TIME: 00:00:15
 [300,20]FMTR8V,[300,30]FMTR8V=[300,10]FMTR8V

```

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26
27     .C. HESS      18-AUG-80
28     .M. LEAVITT   02-JUL-82
29
30
31     .
32     .MESSAGES
33     .
34
35     .NLIST  BEX
36
37     000000      125      104      102 MSG1R8: .ASCIZ  /UDBSF /
38     000007      115      123      102 MSG2R8: .ASCIZ  /MSBSF/
39     000015      123      123      106 MSG3R8: .ASCIZ  /SSF/
40     000021      106      105      040 MSG4R8: .ASCIZ  /FE BAD SECTORS/
41     000040      104      125      120 MSG7R8: .ASCIZ  /DUPLICATE ENTRY - /
42     000063      106      111      114 MSG8R8: .ASCIZ  /FILE FULL - /
43     000100      105      116      124 MSGCR8: .ASCIZ  /ENTER BAD SECTR ADRS:/
44     000126      103      131      114 MSGDR8: .ASCIZ  /CYL,TRK,SEC = /
45     000145      110      104      101 MSGER8: .ASCIZ  @HDA S/N DOESN'T MATCH CURRENT S/N@
46     .EVEN
47
48     .LBN CONSTANTS
49
50     000210      000003      151040      FELBN: .WORD      3,151040      ; BEGINNING OF THE DEC144 / FE CYLINDERS
51     .(558.,13,0)
52     000214      000003      151037      USRLBN: .WORD      3,151037      ; END OF USER SPACE
53     .(558.,12.,31.)
54
55     .MINIMUM/MAXIMUM STORAGE FOR INPUT ROUTINE
56
57     000220      000000      MINCYL: .WORD      0      ;STORE MIN. CYLINDER ADDRESS HERE

```

58 000222 000000
 59 000224 000000
 60 000226 000000
 61

MINTRK: .WORD 0
 MAXCYL: .WORD 0
 MAXTRK: .WORD 0

; STORE MAX. TRACK
 ; CYLINDER ADDRESS HERE
 ; TRACK

```

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77 000230 004767 000000G
78 000234 004767 000000G
79 000240 012701 000060
80 000244 012700 000100
81 000250 004767 000000G
82
83 000254 004767 000554
84 000260 001403
85 000262 004767 000024
86 000266 000772
87
88 000270 004767 000000G
89 000274 004767 000000G
90 000300 004767 000000G
91 000304 105067 000000G
92 000310 000207
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110 000312 105067 000000G
111 000316 004767 000000G
112 000322 103405
113 000324 012704 000015
114 000330 004767 000410
115 000334 000556
116 000336 105767 000000G
117 000342 001041
118 000344 012701 000000C
119 000350 012702 000000C

```

```

: *--$SRM80M-MANUAL INPUT OF UDBSF OR SSF DATA
:
: THIS ROUTINE WILL ACCEPT MANUALLY INPUTTED DATA FOR EITHER THE
: UDBSF OR SSF FILES AND RE-WRITE THESE FILES TO THE RM80 DISK.
:
: INPUTS:
:     NONE
:
: OUTPUTS:
:     RE-WRITTEN UDBSF OR SSF
:
:
$SRM80M: CALL $RDSSF          ; READ SKIP SECTOR FILE
          CALL $RDBSF          ; READ THE MDBSF & UDBSF
          MOV  #60,R1          ; SET 2 LINE FEED CONTROL
          MOV  #MSGCR8,R0      ; GET ADDRESS OF MESSAGE
          CALL $PRNTO          ; PRINT 'ENTER BAD SECTR ADRS:'
:
1$: CALL INPUT                ; GET SSF ENTRIES
   BEQ 2$                    ; IF EQ, FINISHED
   CALL $DSTRB                ; DISTRIBUTE ENTERED ADDRESS INTO CORRECT FILE
   BR 1$                      ; CONTINUE
:
2$: CALL $R80SF                ; FORMAT THE BSF/SSF TRACKS
   CALL $WTSSF                ; RE-WRITE THE SSF
   CALL $WTBSF                ; RE-WRITE THE BSF
   CLRB $SWMOD                ; CLEAR THE MODIFY FLAG
   RETURN
:
: *--$DSTRB-ROUTINE WILL DISTRIBUTE THE DEFECT ADDRESSES
:
: THIS ROUTINE DISTRIBUTES THE OPERATOR ENTERED ADDRESS TO THE CORRECT
: DEFECT FILE AND CHECKS FOR DUPLICATION IN THE SSF.
:
: INPUTS:
:     $CYL = OPERATOR ENTERED CYLINDER ADDRESS
:     $TRK = OPERATOR ENTERED TRACK ADDRESS
:     $SEC = OPERATOR ENTERED SECTOR ADDRESS
:     $HDRFG = 1 IF DEFECT IS A HEADER DEFECT
:
: OUTPUTS:
:     NONE
:
:
$DSTRB: CLRB SKPFRE            ; CLEAR THE SKIP SECTOR FLAG
          CALL $SRSDF          ; SEE IF ENTRY IN THE SSF
          BCS 1$              ; IF CS, NO
          MOV  #MSG3R8,R4      ; DUPLICATE ENTRY MESSAGE
          CALL DUP              ; TYPE THE MESSAGE
          BR 1$                ; TRY AGAIN
1$: TSTB $HDRFG                ; SEE IF DEFECT IS A HEADER DEFECT
   BNE 4$                    ; IF NE, IT IS
   MOV  #$$SF+(2*$$SFHD)-4,R1 ; SSF ADDRESS
   MOV  #$$SF+(1000*$$SFLEN)-2,R2 ; SSF LENGTH

```

```

120 000354 004767 000000G      CALL    $SRTRK      : SEARCH THE SSF
121 000360 103032      BCC      4$          : IF CL TRACK IS IN THE SSF
122 000362 020127 000000C      CMP      R1,#SSF+<1000*SSFLN>-2 : IS SSF FULL?
123 000366 001005      BNE      2$          : IF NE NO
124 000370 012704 000015'      MOV      #MSG3R8,R4      : GET SSF MESSAGE
125 000374 004767 000400      CALL    FULL          : ISSUE FILE FULL MESSAGE
126 000400 000534      BR       13$         : GET NEXT ENTRY
127
128      : LOAD SSF WITH NEW BAD SECTOR ADDRESS, REVISION DATE, REVISION NUMBER
129      : AND UPDATED ENTRY NUMBER
130
131 000402 016721 000000G      2$:  MOV      $CYL,(R1)+      : PUT CYLINDER ADDRESS INTO SSF
132 000406 116721 000000G      MOV      $SEC,(R1)+      : PUT SECTOR ADDRESS INTO SSF
133 000412 116721 000000G      MOV      $TRK,(R1)+      : PUT TRACK ADDRESS INTO SSF
134 000416 016767 000000G 000006G  MOV      DPARS,$SSF+6      : LOAD SSF REVISION DATE IN TABLE
135 000424 026767 000000G 000010G  CMP      $REVM,$SSF+10      : HAS REVISION NUMBER BEEN UPDATED YET ?
136 000432 001002      BNE      3$          : BR IF YES
137 000434 005267 000010G      INC      $SSF+10          : UPDATE REVISION NUMBER
138 000440 005267 000022G      3$:  INC      $SSF+22          : INCREMENT NUMBER OF ENTRIES
139 000444 000512      BR       13$         : CONTINUE
140
141      : SEE IF THE DEFECT CAN GO INTO THE UDBSF OR FEBSF
142
143 000446 004767 000000G      4$:  CALL    $SRSSF      : SEE IF ENTERED SECTOR IS WITHIN A SKIP REGION
144 000452 103404      BCS      5$          : IF CS, NO
145 000454 105367 000000G      DECB     $SEC          : DECREMENT THE SECTOR ADDRESS
146 000460 105267 000000G      INCB     SKPFRE         : SHOW SECTOR WITHIN A SKIP REGION
147 000464 012704 000007'      5$:  MOV      #MSG2R8,R4      : ASSUME DUPLICATE MDBSF ENTRY
148 000470 004767 000000G      CALL    $SRMDF      : SEARCH THE MDBSF
149 000474 103012      BCC      6$          : IF CC, ENTRY DUPLICATED
150 000476 012704 000021'      MOV      #MSG4R8,R4      : ASSUME DUPLICATE ENTRY
151 000502 004767 000000G      CALL    $SRFES      : SEE IF ENTRY DUPLICATED IN THE FE AREA
152 000506 103005      BCC      6$          : IF CC, ENTRY DUPLICATED
153 000510 012704 000000'      MOV      #MSG1R8,R4      : ASSUME DUPLICATE UDBSF
154 000514 004767 000000G      CALL    $SRUDF      : SEARCH THE UDBSF
155 000520 103406      BCS      7$          : IF CS, ENTRY NOT DUPLICATED
156 000522 105767 000000G      6$:  TSTB     SKPFRE         : SEE IF IN A SKIP REGION
157 000526 001051      BNE      12$         : IF NE, YES
158 000530 004767 000210      CALL    DUP          : REPORT IT
159 000534 000456      BR       13$         : GET ANOTHER ENTRY
160 000536 004767 000156      7$:  CALL    CKUSR          : SEE IF ENTRY IF FOR THE USER ADDRESSES
161 000542 103020      BCC      9$          : IF CC, YES
162 000544 004767 000124      CALL    CHKFE         : SEE IF ENTRY IS FOR FE CYLINDERS
163 000550 103005      BCC      8$          : IF CC, YES
164 000552 012700 000000G      MOV      #MSG32,R0      : 'INVALID ENTRY'
165 000556 004767 000000G      CALL    $PRINT      : PRINT THE MESSAGE
166 000562 000443      BR       13$         :
167 000564 004767 000000G      8$:  CALL    $SRFES      : LOCATE WHERE TO PUT THE ENTRY
168 000570 012704 000021'      MOV      #MSG4R8,R4      : FE BSF MESSAGE SUFFIX
169 000574 020127 000100G      CMP      R1,$FEBF+64.      : IF THE FE BSF FULL ?
170 000600 001013      BNE      11$         : IF NE, NO
171 000602 000407      BR       10$        : REPORT FILE FULL
172 000604 004767 000000G      9$:  CALL    $SRUDF      : LOCATE LAST ENTRY IN THE UDBSF
173 000610 020127 000774G      CMP      R1,$UDBF+1000-4      : IS UDBSF FULL?
174 000614 001005      BNE      11$         : IF NE, NO
175 000616 012704 000000'      MOV      #MSG1R8,R4      : UDBSF MESSAGE SUFFIX
176 000622 004767 000152      10$: CALL    FULL          : ISSUE FILE FULL MESSAGE

```

```

177 000626 000421
178 000630 016721 000000G
179 000634 116721 000000G
180 000640 116721 000000G
181 000644 105767 000000G
182 000650 001410
183 000652 105767 000000G
184 000656 001405
185 000660 105067 000000G
186 000664 105267 000000G
187 000670 000675
188 000672 000207
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201 000674 004767 000000G
202 000700 026767 000000G 177302
203 000706 103403
204 000710 026767 000000G 177274
205 000716 000207
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217
218 000720 004767 000000G
219 000724 026767 177264 000000G
220 000732 101003
221 000734 026767 177256 000000G
222 000742 000207
223
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233

11$: BR 13$ ; TRY AGAIN
MOV $CYL,(R1)+ ; PUT CYLINDER ADDRESS INTO UDBSF
MOV $SEC,(R1)+ ; PUT SECTOR ADDRESS INTO UDBSF
MOV $TRK,(R1)+ ; PUT TRACK ADDRESS INTO UDBSF
TSTB SKPFRE ; SEE IF SECTOR WITHIN A SKIP REGION
BEQ 13$ ; IF EQ, NO
12$: TSTB $HDRFG ; WAS ENTRY FOR A HEADER DEFECT ?
BEQ 13$ ; IF EQ, NO - GET NEXT ENTRY
CLRB $HDPFG ; CLEAR THE HEADER DEFECT FLAG
INCB $SEC ; INCREMENT SECTOR ADDRESS
BR 5$ ; CONTINUE
13$: RETURN ;

*--CHKFE-SEE IF THE DEFECT ADDRESS ENTRY IS FOR THE FE CYLINDERS
INPUTS:
$CYL,$TRK,$SEC LOADED
RETURNS:
CS ENTRY IS NOT FOR THE FE CYLINDERS
CC ENTRY IS FOR FE CYLINDERS
-
CHKFE: CALL $CVTDA ; CONVERT THE PHYSICAL ADDRESS TO AN LBN
CMP $LBNH,$ELBN ; CHECK HIGH LBN
BLO 1$ ; IF LO, DON'T LOOK ANY MORE
CMP $LBNL,$ELBN+2 ; CHECK THE LOW LBN
1$: RETURN ;

*--CKUSR-SEE IF THE DEFECT ADDRESS ENTRY IS FOR THE USER CYLINDERS
INPUTS:
$CYL,$TRK,$SEC LOADED
RETURNS:
CS ENTRY IS NOT FOR THE USER CYLINDERS
CC ENTRY IS FOR USER CYLINDERS
-
CKUSR: CALL $CVTDA ; CONVERT THE PHYSICAL ADDRESS TO AN LBN
CMP $USRLBN,$LBNH ; CHECK HIGH LBN
BHI 1$ ; IF LO, DON'T LOOK ANY MORE
CMP $USRLBN+2,$LBNL ; CHECK THE LOW LBN
1$: RETURN ;

*--DUP-DUP ROUTINE WILL ISSUE THE DUPLICATE ENTRY MESSAGE FOR SPECIFIED FILE
THIS ROUTINE WILL ISSUE THE DUPLICATE ENTRY MESSAGE FOR THE SPECIFIED FILE
INPUTS:
R4 = ADDRESS OF SPECIFIED FILE MESSAGE
OUTPUTS:
NONE

```

```

234
235
236
237 000744 012703 000040' DUP: MOV MSG7R8,R3 ;GET DUPLICATE ENTRY MESSAGE
238 000750 012700 000000G MOV $BUFRX,R0 ;GET ADDRESS OF OUTPUT BUFFER
239 000754 004767 000000G CALL $MOVE ;PUT MESSAGE IN OUTPUT BUFFER
240 000760 010403 MOV R4,R3 ;GET ADDRESS OF SPECIFIED FILE
241 000762 004767 000000G CALL $MOVE ;PUT THAT IN OUTPUT BUFFER
242 000766 012700 000000G MOV $BUFRX,R0 ;GET ADDRESS OF MESSAGE BUFFER
243 000772 004767 000000G CALL $PRINT ;PRINT IT
244 000776 000207 RETURN
245
246
247
248
249
250
251
252
253
254
255
256
257 001000 012703 000063' FULL: MOV MSG8R8,R3 ;GET FILE FULL MESSAGE
258 001004 012700 000000G MOV $BUFRX,R0 ;GET ADDRESS OF OUTPUT BUFFER
259 001010 004767 000000G CALL $MOVE ;PUT MESSAGE IN OUTPUT BUFFER
260 001014 010403 MOV R4,R3 ;GET ADDRESS OF FILE NAME MESSAGE
261 001016 004767 000000G CALL $MOVE ;PUT THAT IN OUTPUT BUFFER
262 001022 012700 000000G MOV $BUFRX,R0 ;GET ADDRESS OF MESSAGE BUFFER
263 001026 004767 000000G CALL $PRINT ;PRINT IT
264 001032 000207 RETURN
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267
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282
283 001034 105067 000000G INPUT: CLRB $HDRFG ; CLEAR THE HEADER FLAG
284 001040 012703 000000G MOV $PHYDV,R3 ; POINTER TO PHYSICAL DEVICE GEOMETRY
285 001044 004767 000000G CALL $UPDMX ; UPDATE MAX VALUES
286 001050 012700 000126' 1$: MOV MSGDR8,R0 ; OPERATOR PROMPT
287 001054 004767 000000G CALL $PRMPT ; GET INPUT FROM THE USER
288 001060 001001 BNE 2$ ; IF NE, INPUT FROM USER
289 001062 000207 RETURN
290

```

**--FULL-FULL ROUTINE WILL ISSUE THE FILE FULL MESSAGE FOR SPECIFIED FILE
 INPUTS:
 R4 = ADDRESS OF FILE NAME MESSAGE
 OUTPUTS:
 NONE

**--INPUT-INPUT DATA FOR SPECIFIED FILE
 THIS ROUTINE WILL PROMPT THE USER FOR THE DESIRED CYLINDER, TRACK, AND SECTOR ADDRESS.
 INPUTS:
 NONE
 OUTPUTS:
 \$CYL, \$TRK, AND \$SEC SET TO SPECIFIED VALUES
 \$HDRFG = 1 IF THE ENTRY HAD AN 'H' SUFFIX
 IF Z = 1 NO MORE DATA TO INPUT
 IF Z = 0 MORE DATA TO INPUT

```

291 001064 004767 000150      2$: CALL LDLMTS      ; INITIALIZE DISK ADDRESS LIMITS
292 001070 012700 000000G      MOV #SBUFEX,R0      ; BUFFER POINTER
293 001074 122710 000043      CMPB #'',(R0)      ; SEE IF OCTAL INPUT
294 001100 001452      BEQ 4$      ; IF EQ, ERROR
295 001102 004767 000000G      CALL $CDTB      ; CONVERT THE CYLINDER ADDRESS
296 001106 122702 000054      CMPB #'',R2      ; CHECK PROPER SEPARATOR
297 001112 001045      BNE 4$      ; IF NE, ERROR
298 001114 004767 000120      CALL LDLMTS      ; LOAD NEW TRACK ADDRESS LIMITS
299 001120 020167 177100      CMP R1,MAXCYL      ; LOOK FOR VALID CYLINDER ADDRESS
300 001124 101040      BHI 4$      ; IF HI, INVALID CYLINDER ADDRESS
301 001126 020167 177066      CMP R1,MINCYL      ; LOOK FOR VALID CYLINDER ADDRESS
302 001132 002435      BLT 4$      ; IF LT, INVALID CYLINDER ADDRESS
303 001134 010167 000000G      MOV R1,$CYL      ; LOAD THE CYLINDER ADDRESS
304
305 001140 004767 000000G      CALL $CDTB      ; CONVERT THE TRACK ADDRESS
306 001144 122702 000054      CMPB #'',R2      ; CHECK FOR PROPER SEPARATOR
307 001150 001026      BNE 4$      ; IF NE, ERROR
308 001152 020167 177050      CMP R1,MAXTRK      ; LOOK FOR VALID TRACK ADDRESS
309 001156 101023      BHI 4$      ; IF HI, INVALID TRACK ADDRESS
310 001160 020167 177036      CMP R1,MINTRK      ; LOOK FOR VALID TRACK ADDRESS
311 001164 002420      BLT 4$      ; IF LT, INVALID TRACK ADDRESS
312 001166 010167 000000G      MOV R1,$TRK      ; LOAD THE TRACK ADDRESS
313
314 001172 004767 000000G      CALL $CDTB      ; CONVERT THE SECTOR ADDRESS
315 001176 020127 000037      CMP R1,$31      ; LOOK FOR VALID SECTOR ADDRESS
316 001202 101011      BHI 4$      ; IF HI, INVALID SECTOR ADDRESS
317 001204 010167 000000G      MOV R1,$SEC      ; LOAD THE SECTOR ADDRESS
318 001210 122702 000110      CMPB #'H',R2      ; HEADER ERROR ADDRESS ?
319 001214 001002      BNE 3$      ; IF NE, NO
320 001216 105267 000000G      INCB $HDRFG      ; SET THE HEADER ERROR FLAG
321 001222 000244      3$: CLZ      ; SHOW MORE INPUT
322 001224 000207      RETURN      ; EXIT
323 001226 012700 000000G      4$: MOV #MSG32,R0      ; INVALID RESPONSE
324 001232 004767 000000G      CALL $PRINT      ; TYPE THE MESSAGE
325 001236 000704      BR 1$      ; CONTINUE
326
327
328      ;+
329      ;*-LDLMTS-LOAD LIMITS
330      ; THIS ROUTINE LOADS THE MINIMUM AND MAXIMUM DISK ADDRESS LIMITS
331      ; USED BY THE 'INPUT' SUBROUTINE.
332      ;-
333
334
335 001240 005067 176754      LDLMTS: CLR MINCYL      ; ASSUME MIN. CYLINDER= 0.
336 001244 005067 176752      CLR MINTRK      ; TRACK= 0.
337 001250 012767 001060 176746      MOV #560.,MAXCYL      ; ASSUME MAX. CYLINDER= 560.
338 001256 012767 000015 176742      MOV #13.,MAXTRK      ; TRACK= 13.
339 001264 105767 000000G      TSTB $SWFFE      ; FORMATTING FE CYLINDERS ONLY ?
340 001270 001411      BEQ 1$      ; BR IF NO
341 001272 012767 001056 176720      MOV #558.,MINCYL      ; MIN. CYLINDER= 558.
342 001300 020127 001056      CMP R1,$558.      ; IS CYLINDER INPUT 558. ?
343 001304 001003      BNE 1$      ; BR IF NO
344 001306 012767 000015 176706      MOV #13.,MINTRK      ; MIN. TRACK= 13.
345 001314 000207      1$: RETURN
346
347      000001      .END

```

CHKFE	000674R	MSGCR8	000100R	\$CDTB =	***** GX	\$PRMPT=	***** GX	\$SRTRK=	***** GX
CKUSR	000720R	MSGDR8	000126R	\$CVTDA=	***** GX	\$PRNT0=	***** GX	\$SRUDF=	***** GX
DPARS =	***** GX	MSGER8	000145RG	\$CYL =	***** GX	\$RDBSF=	***** GX	\$SSF =	***** GX
DUP	000744R	MSG1R8	000000R	\$DSTRB	000312RG	\$RDSSF=	***** GX	\$SSFMD=	***** GX
FELBN	000210R	MSG2R8	000007R	\$FEBSF=	***** GX	\$REVM=	***** GX	\$SSF LN=	***** GX
FULL	001000R	MSG3R8	000015R	\$HDRFG=	***** GX	\$RMBOM	000230RG	\$SWFFE=	***** GX
INPUT	001034R	MSG4R8	000021R	\$LBNH =	***** GX	\$RBSF=	***** GX	\$SUMCD=	***** GX
LDLMTS	001240R	MSG7R8	000040R	\$LBNL =	***** GX	\$SEC =	***** GX	\$TRK =	***** GX
MAXCYL	000224R	MSG8R8	000063R	\$MOVE =	***** GX	\$SRFES=	***** GX	\$UDBSF=	***** GX
MAXTRK	000226R	SKPFRE=	***** GX	\$MSG32=	***** GX	\$SRMDF=	***** GX	\$UPDMX=	***** GX
MINCYL	000220R	USRLBN	000214R	\$PHYDV=	***** GX	\$SRSDF=	***** GX	\$WTBSF=	***** GX
MINTRK	000222R	\$BUFRX=	***** GX	\$PRINT=	***** GX	\$SRSSF=	***** GX	\$WTSSF=	***** GX

. ABS. 000000 000
 001316 001
 ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 602 WORDS (3 PAGES)
 DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
 ELAPSED TIME: 00:00:13
 [300,20]FMTR8M,[300,30]FMTR8M=[300,10]FMTR8M

.TITLE FMTR8L - DISPLAY BAD SECTOR FILE CONTENTS
.IDENT /01.00/

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VERSION 01.00

C. HESS 9-JUL-80
M. LEAVITT 22-OCT-80

.NLIST BEX

106	MSG1L:	.ASCIZ	/SSF (SKIPPED SECTOR FILE) CONTENTS/
102	MSG2L:	.ASCIZ	/MDBSF CONTENTS/
102	MSG3L:	.ASCIZ	/UDBSF CONTENTS/
105	MSG4L:	.ASCIZ	@CREATION DATE: @
101	MSG5L:	.ASCIZ	@HDA S/N: @
114	MSG6L:	.ASCIZ	/CYL,TRK,SEC/
111	MSG7L:	.ASCIZ	/* INVALID DATE */
116	MSG8L:	.ASCIZ	/* NO ENTRIES */
126	MSG9L:	.ASCIZ	/REVISION DATE: /
126	MSG10L:	.ASCIZ	/REVISION NUMBER: /
102	MSG11L:	.ASCIZ	/MDBSF 'LOGICAL' CONTENTS/
102	MSG12L:	.ASCIZ	/UDBSF 'LOGICAL' CONTENTS/
	SPACE:	.ASCIZ	/ /

SSFLST: .BYTE 0 ; LIST SSF SWITCH
.EVEN

DPARS: .BLKW 10. ; OUTPUT CONVERSION BUFFER

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69 000362 004767 000000G
70 000366 004767 000000G
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74 000372 012700 000000'
75 000376 012701 000060
76 000402 004767 000000G
77 000406 012701 000000G
78 000412 004767 000600
79 000416 012700 000000G
80 000422 012703 000101'
81 000426 004767 000000G
82 000432 012703 000004G
83 000436 004767 000240
84 000442 012700 000000G
85 000446 012703 000207'
86 000452 004767 000000G
87 000456 012703 000006G
88 000462 004767 000214
89 000466 012700 000000G
90 000472 012703 000227'
91 000476 004767 000000G
92 000502 016701 000010G
93 000506 005002
94 000510 004767 000000G
95 000514 105010
96 000516 012700 000000G
97 000522 004767 000000G
98 000526 012703 000000C
99 000532 112767 177777 177575
100 000540 004767 000270
101 000544 105067 177565
102
103
104
105 000550 012700 000043'
106 000554 105767 000000G
107 000560 001402
108 000562 012700 000251'
109 000566 012701 000060

; **-$RM80L-DISPLAY THE CONTENTS OF THE MDBSF, UDBSF, AND SSF
; THIS ROUTINE WILL DISPLAY THE CONTENTS OF THE MDBSF, THE UDBSF
; AND THE SSF FILES.
; INPUTS:
; NONE
; OUTPUTS:
; THE CONTENTS OF THE MDBSF, UDBSF, AND SSF PRINTED ON 'TI:'
; '$SWLST' CLEARED
; -
; .ENABL LSB
$RM80L::CALL $RDSSF ; READ THE SKIPPED SECTOR FILE (SSF)
CALL $RDBSF ; READ THE MDBSF AND THE UDBSF
; DISPLAY THE SSF CONTENTS
; 'SSF (SKIPPED SECTOR FILE) CONTENTS'
; CARRIAGE CONTROL CHARACTER
; SERIAL NUMBER POINTER
; PRINT THE HDA SERIAL NUMBER
; BUFFER POINTER
; 'CREATION DATE: '
; LOAD THE BUFFER
; DATE FIELD POINTER
; PRINT THE SSF DATE FIELDS
; BUFFER POINTER
; 'REVISION DATE: '
; LOAD THE BUFFER
; DATE FIELD POINTER
; PRINT THE SSF DATE FIELDS
; BUFFER POINTER
; 'REVISION NUMBER: '
; LOAD THE BUFFER
; REVISION NUMBER
; ENABLE ZERO SUPPRESSION
; CONVERT
; ASCII TERMINATOR
; OUTPUT POINTER
; BEGINNING OF SSF DATA FIELD
; SET SSF LIST FLAG
; PRINT THE SSF FILE CONTENTS
; RESET THE SSF LIST FLAG
; DISPLAY THE MDBSF CONTENTS
; 'MDBSF CONTENTS'
; SEE IF LOGICAL DISPLAY
; IF EQ, NO
; CHANGE TO 'MDBSF LOGICAL CONTENTS'
; CARRIAGE CONTROL CHARACTER
10$: MOV #60,R1

```

```

110 000572 004767 000000G      CALL    $PRNTO      :
111 000576 012701 000000G      MOV     #MDBSF,R1      : MDBSF S/N POINTER
112 000602 004767 000410      CALL    HDASN      : TYPE THE SERIAL NUMBER
113 000606 012703 000010G      MOV     #MDBSF+10,R3      : MDBSF DATA POINTER
114 000612 004767 000216      CALL    BSFDAT      : DISPLAY THE MDBSF
115
116                               : DISPLAY THE UDBSF CONTENTS
117
118 000616 012700 000062'      MOV     #MSG3L,R0      : 'UDBSF CONTENTS'
119 000622 105767 000000G      TSTB    $SWLOG      : SEE IF LOGICAL DISPLAY
120 000626 001402              BEQ     20$      : IF EQ, NO
121 000630 012700 000302'      MOV     #MSG12L,R0      : CHANGE TO 'UDBSF LOGICAL CONTENTS'
122 000634 012701 000060      20$: MOV     #60,R1      : CARRIAGE CONTROL CHARACTER
123 000640 004767 000000G      CALL    $PRNTO      :
124 000644 012701 000000G      MOV     #UDBSF,R1      : UDBSF S/N POINTER
125 000650 004767 000342      CALL    HDASN      : TYPE THE SERIAL NUMBER
126 000654 012703 000010G      MOV     #UDBSF+10,R3      : UDBSF DATA POINTER
127 000660 004767 000150      CALL    BSFDAT      : DISPLAY THE UDBSF
128 000664 012700 000333'      MOV     #SPACE,R0      : BLANK LINE
129 000670 004767 000000G      CALL    $PRINT      : PRINT THE LINE
130 000674 105067 000000G      CLRB    $SWLST      : CLEAR THE 'LIST' FLAG
131 000700 000207      RETURN
132
133 .DSABL  LSB
134
135 :+
136 : **--SFDATE-DISPLAY THE SSF DATE FIELD CONTENTS
137 :
138 : THIS ROUTINE PRINTS THE CREATION AND REVISION DATE FIELDS
139 : FROM THE SSF
140 :
141 : INPUT:
142 :       R0 = BUFFER POINTER
143 :       R3 = DATE FIELD POINTER
144 :
145 : OUTPUT:
146 :       NONE
147 :
148 : -
149
150 000702 011301              SFDATE: MOV     (R3),R1      : DATE
151 000704 042701 177037      BIC     #^C740,R1      : LEAVE MONTH CODE
152 000710 005701              TST     R1      : LOOK FOR VALID MONTH
153 000712 001436              BEQ     10$      : IF EQ, MONTH CODE OF ZERO
154 000726 020127 000014      CMP     R1,#12.      : CHECK MONTH UPPER LIMIT
155 000732 101026              BHI     10$      : IF HI, MONTH CODE ERROR
156 000734 010167 177400      MOV     R1,DPARS+2      : MOVE MONTH
157 000740 011301              MOV     (R3),R1      : GET THE DATE AGAIN
158 000742 042701 177740      BIC     #^C37,R1      : LEAVE THE DAY CODE
159 000746 020127 000037      CMP     R1,#31.      : CHECK VALIDITY
160 000752 101016              BHI     10$      : IF HI, INVALID DAY
161 000754 010167 177362      MOV     R1,DPARS+4      : MOVE DAY
162 000760 116301 000001      MOVB    1(R3),R1      : GET THE YEAR CODE
163 000764 006201              ASR     R1      : RIGHT JUSTIFY
164 000766 062701 000000G      ADD     #BASR,R1      : ADD THE BASE YEAR
165 000772 010167 177340      MOV     R1,DPARS      : YEAR
166 000776 012701 000336'      MOV     #DPARS,R1      : INPUT BUFFER POINTER

```

```

174 001002 004767 000000G          CALL  $DAT          : CONVERT THE DATE
175 001006 000404          BR      20$          : CONTINUE
176 001010 012703 000147'      10$: MOV    #MSG7L,R3      : '** INVALID DATE **'
177 001014 004767 000000G          CALL  $MOVE          : LOAD THE TEXT
178 001020 105010          CLR      (R0)          : ASCII TERMINATOR
179 001022 012700 000000G          MOV    #SBUFEX,R0      : BUFFER POINTER
180 001026 004767 000000G          CALL  $PRINT          : PRINT THE DATE
181 001032 000207          RETURN          :
182
183
184      :+
185      : **-BSFDAT-DISPLAY THE BAD SECTOR FILE CONTENTS
186      : THIS ROUTINE PRINTS THE DEFECT ADDRESS ENTRIES IN THE MDBSF
187      : INPUT:
188      :       R3 = START OF THE BAD SECTOR FILE DATA AREA
189      :       SSFLST = -1 IF THE SSF IS BEING LISTED
190      : OUTPUT:
191      :       NONE
192      : -
193
194
195
196
197 001034 005713          BSFDAT: TST    (R3)          : LOOK FOR END OF ENTRIES
198 001036 100005          BPL      10$          : IF PL, FILE ENTRIES PRESENT
199 001040 012700 000170'          MOV    #MSG8L,R0      : '** NO ENTRIES **'
200 001044 004767 000000G          CALL  $PRINT          :
201 001050 000461          BR      40$          : EXIT
202 001052 012700 000133'      10$: MOV    #MSG6L,R0      : 'CYL,TRK,SEC'
203 001056 004767 000000G          CALL  $PRINT          :
204 001062 012700 000000G      20$: MOV    #SBUFEX,R0      : OUTPUT BUFFER POINTER
205 001066 011367 000000G          MOV    (R3),R1      : LOAD THE CYLINDER ADDRESS
206 001072 116367 000003 000000G  MOV    3(R3),R1      : LOAD THE TRACK ADDRESS
207 001100 116367 000002 000000G  MOV    2(R3),R1      : LOAD THE SECTOR ADDRESS
208 001106 012301          MOV    (R3)+,R1      : GET THE CYLINDER ADDRESS
209 001110 100441          BMI      40$          : IF MI, NO MORE ENTRIES
210 001112 005002          CLR      R2          : ENABLE ZERO SUPPRESSION
211 001114 004767 000000G          CALL  $CBDMG          : CONVERT
212 001120 112720 000054          MOV    #'',(R0)+      : SEPARATOR
213 001124 116301 000001          MOV    1(R3),R1      : TRACK ADDRESS
214 001130 005002          CLR      R2          : ENABLE ZERO SUPPRESSION
215 001132 004767 000000G          CALL  $CBDMG          : CONVERT
216 001136 112720 000054          MOV    #'',(R0)+      : SEPARATOR
217 001142 111301          MOV    (R3),R1      : SECTOR ADDRESS
218 001146 105767 177165          TST    SSFLST        : LISTING THE SSF CONTENTS ?
219 001150 001007          BNE      30$          : IF NE, YES
220 001152 105767 000000G          TST    $SWLOG        : PRINT BSF LOGICAL ADDRESSES ?
221 001156 001004          BNE      30$          : IF NE, YES
222 001160 004767 000000G          CALL  $SRSSF        : CHECK THE SSF
223 001164 103401          BCS      30$          : IF CS, SECTOR ENTRY PHYSICAL VALUE
224 001166 005201          INC      R1          : INCREMENT THE SECTOR ADDRESS
225 001170 005723      30$: TST    (R3)+          : INCREMENT THE INPUT POINTER
226 001172 005002          CLR      R2          : ENABLE ZERO SUPPRESSION
227 001174 004767 000000G          CALL  $CBDMG          : CONVERT
228 001200 105010          CLR      (R0)          : ASCII TERMINATOR
229 001202 012700 000000G          MOV    #SBUFEX,R0      : OUTPUT BUFFER POINTER
230 001206 004767 000000G          CALL  $PRINT          : PRINT THE ADDRESS

```

```

231 001212 000723
232 001214 000207
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248 001216 012167 177116
249 001222 011167 177110
250 001226 012701 000336'
251 001232 012703 000121'
252 001236 012700 000000G
253 001242 004767 000000G
254 001246 005002
255 001250 004767 000000G
256 001254 105010
257 001256 012700 000000G
258 001262 004767 000000G
259 001266 000207
260
261 000001

40$: BR 20$ ; LOOP
RETURN ;

:
: **--HDASN-DISPLAY THE HDA SERIAL NUMBER
:
: THIS ROUTINE CONVERTS THE HDA SERIAL NUMBER FROM THE DEC STD 144
: FILES OR THE SSF TO ASCII AND PRINTS IT.
:
: INPUTS:
: R1 = SERIAL NUMBER FIELD POINTER
:
: OUTPUTS:
: NONE
:
:
HDASN: MOV (R1)+,DPARS+2 ; EXCHANGE S/N MSB & LSB
MOV (R1),DPARS ;
MOV #DPARS,R1 ; RELOAD THE SERIAL NUMBER POINTER
MOV #MSG5L,R3 ; 'HDA S/N: '
MOV #SBUFEX,R0 ; BUFFER POINTER
CALL $MOVE ; LOAD THE BUFFER
CLR R2 ; SUPPRESS LEADING ZEROS
CALL $CDDMG ; CONVERT THE SERIAL NUMBER TO ASCII
CLRB (R0) ; ASCII TERMINATOR
MOV #SBUFEX,R0 ; BUFFER ADDRESS
CALL $PRINT ; PRINT THE SERIAL NUMBER
RETURN ;

.END

```

BASYR = ***** GX	MSG2L 000043R	SFDATE 000702R	\$MDBSF= ***** GX	\$SRSSF= ***** GX
BSF DAT 001034R	MSG3L 000062R	SPACE 000333R	\$MOVE = ***** GX	\$SSF = ***** GX
DPARS 000336R	MSG4L 000101R	SSFLST 000335R	\$PRINT= ***** GX	\$SSFHD= ***** GX
HDASN 001216R	MSG5L 000121R	\$BUFRX= ***** GX	\$PRNT0= ***** GX	\$SWLOG= ***** GX
MSG1L 000000R	MSG6L 000133R	\$CBDMG= ***** GX	\$RDBS= ***** GX	\$SWLST= ***** GX
MSG10L 000227R	MSG7L 000147R	\$CDDMG= ***** GX	\$RDSSF= ***** GX	\$TRK = ***** GX
MSG11L 000251R	MSG8L 000170R	\$CYL = ***** GX	\$RM80L 000362RG	\$UDBSF= ***** GX
MSG12L 000302R	MSG9L 000207R	\$DAT = ***** GX	\$SEC = ***** GX	

. ABS. 000000 000
001270 001
ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 471 WORDS (2 PAGES)
DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
ELAPSED TIME: 00:00:10
[300,20]FMTR8L,[300,30]FMTR8L=[300,10]FMTR8L

1 .TITLE FMTINT - INITIALIZE MDBSF, UDBSF, SSF
2 .IDENT /01.00/
3
4
5

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25 .VERSION 01.00
26

27 C. HESS 15-AUG-80
28 M. LEAVITT 14-JAN-81
29
30

31 .NLIST BEX
32

33 000000 052 052 040 MSGIRI: .ASCII /** WARNING - BAD SECTOR FILES WILL BE OVERWRITTEN ON /
34 .EVEN
35

```

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38
39
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42
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45
46
47
48
49
50 000066 012703 000000' $RM801: MOV #MSG1R1,R3 : WARNING MESSAGE ADDRESS
51 000072 004767 000000G CALL $UNTID : STORE MESSAGE AND DEVICE/UNIT
52 000076 012703 000000G MOV #MSG24,R3 : MESSAGE SUFFIX
53 000102 004767 000000G CALL $MOVE : LOAD THE SUFFIX INTO THE MESSAGE BUFFER
54 000106 012700 000144G MOV #BUF+100.,R0 : PRINT THE WARNING MESSAGE
55 000112 012701 000060 MOV #60,R1 : 2 LINE FEED CARRIAGE CONTROL
56 000116 004767 000000G CALL $PRNTO : PRINT WARNING MESSAGE
57 000122 012700 000000G MOV #MSG31,R0 : 'YES-NO' MESSAGE POINTER
58 000126 004767 000000G CALL $PRMPT : PROMPT AND GET RESPONSE
59 000132 001404 BEQ 1$ : IF EQ, RESPONSE WAS 'NO'
60 000134 122767 000131 000000G CMPB #'Y,$BUFRX : SEE IF RESPONSE WAS 'YES'
61 000142 001402 BEQ 2$ : IF EQ, RESPONSE WAS 'YES'
62 000144 000167 000000G 1$: JMP $FMTEX : EXIT
63 000150 012703 000374 2$: MOV #256.-4,R3 : GET NUMBER OF ENTRIES TO RESET
64 000154 012700 000000G MOV #MDBSF,R0 : GET START OF MDBSF
65 000160 016720 000000G MOV $NAME,(R0)+ : STUFF THE NEW SERIAL NUMBER
66 000164 016720 000002G MOV $NAME+2,(R0)+
67 000170 005020 CLR (R0)+ : BLANK WORD
68 000172 005020 CLR (R0)+ : SHOW NOT AN ALIGNMENT DISK
69 000174 012720 177777 3$: MOV #-1,(R0)+ : EMPTY THE MDBSF
70 000200 005303 DEC R3 : FINISHED?
71 000202 001374 BNE 3$ : IF NE NO
72 000204 012700 000000G MOV #UDBSF,R0 : GET START OF UDBSF
73 000210 016720 000000G MOV $NAME,(R0)+ : STUFF THE NEW SERIAL NUMBER
74 000214 016720 000002G MOV $NAME+2,(R0)+
75 000220 005020 CLR (R0)+ : BLANK WORD
76 000222 005020 CLR (R0)+ : SHOW NOT AN ALIGNMENT DISK
77 000224 012703 000374 4$: MOV #256.-4,R3 : GET NUMBER OF ENTRIES TO RESET
78 000230 012720 177777 4$: MOV #-1,(R0)+ : EMPTY THE UDBSF
79 000234 005303 DEC R3 : FINISHED?
80 000236 001374 BNE 4$ : IF NE NO
81 000240 012703 000000C MOV #256.*<$SSFLN>,R3 : SSF SIZE
82 000244 012700 000000G MOV #SSF,R0 : SSF BUFFER POINTER
83 000250 012720 177777 5$: MOV #-1,(R0)+ : CLEAR A LOCATION
84 000254 005303 DEC R3 : COUNT THE LOCATION
85 000256 001374 BNE 5$ : IF NE, NOT FINISHED
86 000260 016767 000000G 000000G MOV $NAME,$SSF : SERIAL NUMBER LSB
87 000266 016767 000002G 000002G MOV $NAME+2,$SSF+2 : SERIAL NUMBER MSB
88 000274 016767 000000G 000004G MOV DPARS,$SSF+4 : CREATION DATE
89 000302 016767 000000G 000006G MOV DPARS,$SSF+6 : REVISION DATE
90 000310 005067 000010G CLR $SSF+10 : REVISION NUMBER
91 000314 012767 000001 000012G MOV #1,$SSF+12 : SSF DATA TYPE INDICATOR (16 BIT)
99 000336 005067 000022G CLR $SSF+22 : NUMBER OF SSF ENTRIES
100 000342 005067 000024G CLR $SSF+24 : CHECKSUM

```

101	000346	004767	000000G		CALL	\$R80SF	:	CALL THE 'SPECIAL FORMATTER'
102	000352	004767	000000G		CALL	\$WTBSF	:	WRITE THE DEC STD 144 INFORMATION
103	000356	004767	000000G		CALL	\$WTSSF	:	WRITE THE SSF
104	000362	105067	000000G		CLRB	\$SWINT	:	CLEAR THE INITIALIZATION FLAG
105	000366	000207		68:	RETURN		:	
106							:	
107		000001		.END			:	

DPARS = ***** GX
MSG1RI 000000R
\$BUF = ***** GX
\$BUFRX= ***** GX
\$FMTEX= ***** GX

\$MDBSF= ***** GX
\$MOVE = ***** GX
\$MSG24= ***** GX
\$MSG31= ***** GX

\$PRMPT= ***** GX
\$PRNT0= ***** GX
\$RM801 000066RG
\$R80SF= ***** GX

\$SNAME= ***** GX
\$SSF = ***** GX
\$SSFLN= ***** GX
\$SWINT= ***** GX

\$UDBSF= ***** GX
\$UNTID= ***** GX
\$WTBSF= ***** GX
\$WTSSF= ***** GX

. ABS. 000000 000
000370 001
ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 489 WORDS (2 PAGES)
DYNAMIC MEMORY: 7942 WORDS (30 PAGES)
ELAPSED TIME: 00:00:07
[300,20]FMTINT,[300,30]FMTINT=[300,10]FMTINT