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UDA FMTR DATA FILE
CZUDFAO

AH-S840A-MC
FICHE 1 OF 1

OCT 1981
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DATA FILE FOR PDP-11 UDA DISK D MACRO X04.00 23-JUL-81 15:08:54 PAGE 2
USER DOCUMENTATION

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IDENTIFICATION

PRODUCT CODE: AC-S839A-MC
PRODUCT NAME: CZUDFAO UDA FMTR DATA FILE
PRODUCT DATE: 10-JULY-81
MAINTAINER: DIAGNOSTIC ENGINEERING

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DEC	DECUS	DECTAPE	

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1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS DIAGNOSTIC HAS BEEN WRITTEN FOR USE WITH THE DIAGNOSTIC RUNTIME SERVICES SOFTWARE (SUPERVISOR). THESE SERVICES PROVIDE THE INTERFACE TO THE OPERATOR AND TO THE SOFTWARE ENVIRONMENT. THIS PROGRAM CAN BE USED WITH XXDP+, ACT, APT, SLIDE AND PAPER TAPE. FOR A COMPLETE DESCRIPTION OF THE RUNTIME SERVICES, REFER TO THE XXDP+ USER'S MANUAL. THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 2 OF THIS DOCUMENT.

THIS DOCUMENT DESCRIBES THE USAGE OF THE UNIBUS DISK ADAPTER (UDA) DISK FORMATTER FROM THE USER'S VIEWPOINT. THIS DOCUMENT DOES NOT DESCRIBE THE ACTUAL FORMATTING OF THE MEDIA, BUT RATHER THE POSSIBLE INTERACTIONS WITH A HUMAN OPERATOR.

THERE ARE FOUR GENERAL MODES OF FORMATTER OPERATION:

O BUILD - THIS MODE IS GENERALLY USED BY MANUFACTURING PERSONAL TO INITIALLY FORMAT A NEW MEDIA. IT USES DATA STORED ON THE MEDIA, FROM A LOCATION WHICH IS NORMALLY INACCESSABLE, TO LOCATE AND REVECTOR THE BAD BLOCKS ON THE MEDIA.

O REFORMAT - THIS MODE IS USED TO FORMAT A MEDIA WHICH HAS BEEN PREVIOUSLY FORMATTED, AND IS BEING REFORMATTED TO CLEAR EXISTING DATA OR TO CHANGE THE MODE OF THE MEDIA (512/576 BYTES PER SECTOR). IT IS ASSUMED THAT THE FACTORY CONTROL TABLE (FCT) IS STILL IN TACT.

O RESTORE - THIS MODE WILL ONLY BE RUN BY DIGITAL FIELD CIRCUS PERSONAL. IT PROVIDES AN EXTERNAL COPY OF THE FCT, PRODUCED AT BUILD TIME AND STORED OFFLINE BY DIGITAL, TO THE UDA FORMATTER.

O RECONSTRUCT - THIS MODE IS USED WHEN NONE OF THE OTHER MODES ARE POSSIBLE. IT DETECTS BAD BLOCKS BY PREFORMING REPETATIVE READ CHECKS OF EACH SECTOR. FOR THIS REASON, A RECONSTRUCT RUN TAKES CONSIDERABLY LONGER THAN THE OTHER MODES.

1.2 SYSTEM REQUIREMENTS

PDP-11 PROCESSOR
28K MEMORY
TERMINAL
PROGRAM LOAD DEVICE
UDA50 CONTROLLER
1 OR MORE SDI COMPATIBLE DISK DRIVE

1.3 RELATED DOCUMENTS AND STANDARDS

DEC STD 166

2.0 OPERATING INSTRUCTIONS

THIS SECTION CONTAINS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES.

FOR DETAILED INFORMATION, REFER TO THE XXDP+ USER'S MANUAL (CHOUS).

2.1 COMMANDS

THERE ARE ELEVEN LEGAL COMMANDS FOR THE DIAGNOSTIC RUNTIME SERVICES (SUPERVISOR). THIS SECTION LISTS THE COMMANDS AND GIVES A VERY BRIEF DESCRIPTION OF THEM. THE XXDP+ USER'S MANUAL HAS MORE DETAILS.

COMMAND	EFFECT
START	START THE DIAGNOSTIC FROM AN INITIAL STATE
RESTART	START THE DIAGNOSTIC WITHOUT INITIALIZING
CONTINUE	CONTINUE AT TEST THAT WAS INTERRUPTED (AFTER ^C)
PROCEED	CONTINUE FROM AN ERROR HALT
EXIT	RETURN TO XXDP+ MONITOR (XXDP+ OPERATION ONLY.)
ADD	ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE CONSIDERED TO BE ACTIVE AT START TIME)
DROP	DEACTIVATE A UNIT
PRINT	PRINT STATISTICAL INFORMATION (IF IMPLEMENTED BY THE DIAGNOSTIC - SECTION 4.0)
DISPLAY	TYPE A LIST OF ALL DEVICE INFORMATION
FLAGS	TYPE THE STATE OF ALL FLAGS (SEE SECTION 2.3)
ZFLAGS	CLEAR ALL FLAGS (SEE SECTION 2.3)

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. SO YOU MAY, FOR EXAMPLE, TYPE 'STA' INSTEAD OF 'START'.

2.2 SWITCHES

THERE ARE SEVERAL SWITCHES WHICH ARE USED TO MODIFY SUPERVISOR OPERATION. THESE SWITCHES ARE APPENDED TO THE LEGAL COMMANDS. ALL OF THE LEGAL SWITCHES ARE TABULATED BELOW WITH A BRIEF DESCRIPTION OF EACH. IN THE DESCRIPTIONS BELOW, A DECIMAL NUMBER IS DESIGNATED BY 'DDDD'.

SWITCH	EFFECT
/TESTS:LIST	EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS, FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO BE RUN. ALL OTHER TESTS WILL NOT BE RUN.
/PASS:DDDD	EXECUTE DDDDD PASSES (DDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3.
/EOP:DDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDD = 1 TO 64000)
/UNITS:LIST	TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10-12 USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-63)

EXAMPLE OF SWITCH USAGE:

START/TESTS:1-5/PASS:1000/EOP:100

THE EFFECT OF THIS COMMAND WILL BE: 1) TESTS 1 THROUGH 5 WILL BE EXECUTED, 2) ALL UNITS WILL TESTED 1000 TIMES AND 3) THE END OF PASS MESSAGES WILL BE PRINTED AFTER EACH 100 PASSES ONLY. A

SWITCH CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE "/TES:1-5" INSTEAD OF "/TESTS:1-5".

BELOW IS A TABLE THAT SPECIFIES WHICH SWITCHES CAN BE USED BY EACH COMMAND.

	TESTS	PASS	FLAGS	EOP	UNITS
START	X	X	X	X	X
RESTART	X	X	X	X	X
CONTINUE		X	X	X	
PROCEED			X		
DROP					X
ADD					X
PRINT					
DISPLAY					X
FLAGS					
ZFLAGS					
EXIT					

2.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

FLAG	EFFECT
HOE	HALT ON ERROR - CONTROL IS RETURNED TO RUNTIME SERVICES COMMAND MODE
LOE	LOOP ON ERROR
IER*	INHIBIT ALL ERROR REPORTS
IBR*	INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT)
IXR*	INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S)
PRI	DIRECT MESSAGES TO LINE PRINTER
PNT	PRINT TEST NUMBER AS TEST EXECUTES
BOE	'BELL' ON ERROR
UAM	UNATTENDED MODE (NO MANUAL INTERVENTION)
ISR	INHIBIT STATISTICAL REPORTS (DOES NOT APPLY TO DIAGNOSTICS WHICH DO NOT SUPPORT STATISTICAL REPORTING)
IDR	INHIBIT PROGRAM DROPPING OF UNITS
ADR	EXECUTE AUTODROP CODE
LOT	LOOP ON TEST
EVL	EXECUTE EVALUATION (ON DIAGNOSTICS WHICH HAVE EVALUATION SUPPORT)

*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, TO CAUSE THE PROGRAM TO LOOP ON ERROR, INHIBIT ERROR REPORTS AND TYPE A 'BELL' ON ERROR, YOU MAY USE THE FOLLOWING STRING:

/FLAGS:LOE:IER:BOE

2.4 HARDWARE QUESTIONS

THE DM PROGRAM (CURRENTLY KDUBAO.PAK) AND THE HOST PORTION OF THE FORMATTER (CURRENTLY ZDUBAO.BIN) MUST EXIST ON THE BOOT DEVICE. THE FORMATTER IS STARTED BY ENTERING:

RUN ZDUBAO

WHEN THE HOST PORTION HAS BEEN LOADED, SEVERAL UNINFORMATIVE STATEMENTS WILL BE PRINTED, AND THEN THE FOLLOWING PROMPT WILL APPEAR:

DR>

RESPOND WITH:

START/PASS:1

THE NEXT QUESTION LOGGED WILL BE AN OPTION TO CHANGE THE DEFAULT RUN PARAMETERS OF THE FORMATTER. THE QUESTION IS

CHANGE HW (L)?

THE CURRENT DEFAULTS ARE FOR ONE UDA AT ADDRESS 172150, FORMAT THE DRIVE WITH A UNIT PLUG NUMBER OF 0 USING THE EXISTING FCT, AND STOP IF THAT FCT IS BAD. IF THESE DEFAULTS ARE ACCEPTABLE ENTER 'N' AND THE FORMAT WILL BEGIN. IF YOU ENTER 'Y' THEN YOU WILL HAVE TO ANSWER THE FOLLOWING QUESTIONS

UNITS (D)?

THE ANSWER TO THIS QUESTION DEFINES HOW MANY UDAS ARE TO RUN FORMATTERS CONCURRENTLY. A VALID RESPONSE IS A DECIMAL NUMBER FROM 1 TO 64 (MEMORY AVAILABILITY PERMITTING). THE FOLLOWING BLOCK OF QUESTIONS WILL BE REPEATED ONCE FOR EACH UNIT (UDA).

QUESTION 1: UNIBUS ADDRESS OF UDA (A)? XXXXXX

WHERE XXXXXX IS THE CURRENT DEFAULT (INITIALLY 172150). ENTER THE APPROPRIATE EVEN ADDRESS OR ENTER <CR> TO TAKE THE DEFAULT.

QUESTION 2: UNIT NUMBER TO FORMAT (D)? X

X IS THE CURRENT DEFAULT (INITIALLY 0). ENTER THE NUMBER ON THE UNIT PLUG OF THE DRIVE TO BE FORMATTED (DO NOT CONFUSE THE UNIT NUMBER, 0-63, ASSIGNED BY XXDP+ WITH THE UNIT NUMBER OF THE DRIVE).

QUESTION 3: USE RESIDENT FCT (L)? X

Y IS THE CURRENT DEFAULT (INITIALLY Y). IF THIS QUESTION IS ANSWERED 'Y' THEN A REFORMAT MODE FORMAT WILL BE PERFORMED AND THE NEXT QUESTION POSED IS NUMBER 4. IF THIS QUESTION IS ANSWERED 'N' THE NEXT QUESTION POSED IS NUMBER 5.

QUESTION 4: STOP IF RESIDENT FCT IS BAD (L)? X

X IS THE CURRENT DEFAULT (INITIALLY Y). IF THIS QUESTION IS ANSWERED 'Y' A REFORMAT MODE FORMAT WILL BE PERFORMED, AND NO FURTHER QUESTIONS WILL BE ASKED. THE FORMAT (OF THIS DRIVE ONLY) WILL BE ABORTED IF THE FCT IS UNUSABLE. IF THIS QUESTION IS ANSWERED 'N' THEN A RECONSTRUCT MODE FORMAT WILL BE PERFORMED EVEN IF THE FCT CAN NOT BE USED. QUESTIONING CONTINUES WITH QUESTION 6.

QUESTION 5: DOWN LINE LOAD FCT (L)? X

X IS THE CURRENT DEFAULT (INITIALLY N). ANSWERING THIS QUESTION 'Y' RESULTS IN A RESTORE MODE FORMAT BEING RUN, AND NO MORE QUESTIONS WILL BE ASKED. ANSWERING 'N' CAUSES QUESTION 6 TO BE ASKED.

QUESTION 6:

SERIAL NUMBER TO BE ASSIGNED (TOTAL 4 WORDS) WORD 1? (D)
WORD 2? (D)
WORD 3? (D)
WORD 4? (D)

THIS IS THE SERIAL NUMBER TO BE ASSIGNED TO THE DISK IF THE FCT WAS NOT USED. THERE IS NO DEFAULT VALUE, A NON-ZERO VALUE SHOULD BE CHOSEN AND IT SHOULD BE UNIQUE WITHIN THE INSTALLATION. NO FURTHER QUESTIONS ARE ASK.

NOTE THAT ONCE THE QUESTIONS HAVE BEEN ANSWERED FOR EACH UNIT, THOSE ANSWERS BECOME THE DEFAULT FOR THAT UNIT.

IF QUESTION 5 WAS ANSWERED 'Y', THEN QUESTION 7 IS ASKED.

QUESTION 7: ENTER FILE NAME FOR DOWN LINE LOAD (A)? XXXXXX.YYY

XXXXXX.YYY IS THE FILE NAME AND EXTENTION OF THE BAD SECTOR FILE IS USED BY THE FORMATTER. IF A NONEXISTENT FILE IS SPECIFIED, THE THE FORMATTER PRONTS A LOOK UP ERROR AND RETURNS TO THE MONITOR.

2.5 SOFTWARE QUESTIONS

AFTER YOU HAVE ANSWERED THE HARDWARE QUESTIONS OR AFTER A RESTART OR CONTINUE COMMAND, THE RUNTIME SERVICES WILL ASK FOR SOFTWARE PARAMETERS. THESE PARAMETERS WILL GOVERN SOME DIAGNOSTIC SPECIFIC OPERATION MODES. YOU WILL BE PROMPTED BY "CHANGE SW (L) ?"
IF YOU WISH TO CHANGE ANY PARAMFTERS, ANSWER BY TYPING 'Y'. THE SOFTWARE QUESTIONS AND THE DEFAULT VALUES ARE DESCRIBED IN THE NEXT PARAGRAPH(S).

THE FOLLOWING QUESTION MUST BE ANSWERED.

DATE VAX FORMAT (TOTAL 4 WORDS) WORD 1? (D)
WORD 2? (D)
WORD 3? (D)
WORD 4? (D)

THIS IS THE DATE TO BE ASSIGNED TO THE MOST RECENT DATE OF FORMAT
FACT OF EACH DRIVE FORMATTED. THE DEFAULT IS ZERO.

2.6 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

1. BOOT XXDP+
2. GIVE THE DATE AND ANSWER THE LSI AND 50HZ (IF THERE IS A CLOCK) QUESTIONS
3. TYPE 'R NAME', WHERE NAME IS THE NAME OF THE BIN OR BIC FILE FOR THIS PROGRAM
4. TYPE 'STAR'
5. ANSWER THE 'CHANGE HW' QUESTION WITH 'Y'
6. ANSWER ALL THE HARDWARE QUESTIONS
7. ANSWER THE 'CHANGE SW' QUESTION WITH 'N'

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE
DEFAULTS FOR FLAGS AND SOFTWARE PARAMETERS. THESE DEFAULTS
ARE DESCRIBED IN SECTIONS 2.3 AND 2.5.

3.0 MESSAGES

3.1 ERROR MESSAGES

IF AN ERROR WAS ENCOUNTERED DURING FORMATTING, THE MESSAGE

UDA FORMATTER ERROR OCCURED
ERROR NUMBER REPORTED WAS XXX
ERROR CODE WAS YYYYYY DECIMAL
ERROR NUMBER MEANS:
EXPLANATION
UNIT X - REMOVED FROM TESTING FOR REMAINDER OF PASS.

IS LOGGED. XXX REPRESENTS THE INTERNAL FORMATTER ERROR NUMBER. IF
THIS ERROR NUMBER IS KNOWN BY THE HOST PORTION OF THE FORMATTER, THEN
THE ASCII MESSAGE DESCRIBING THIS ERROR IS ALSO LOGGED. YYYYYY IS AN
ADDITIONAL ERROR CODE. AN EXPLANATION IS REPORTED WITH EACH ERROR.

3.2 OTHER MESSAGES

ONCE THE FORMATTER BEGINS EXECUTING, THIS MESSAGE IS PRINTED.

FORMAT(S) BEGUN

ONCE A CYLINDER HAS BEEN FORMATTED, THIS MESSAGE APPEARS.

UNIT X - CYLINDER YYY COMPLETED

A CAUTIONARY MESSAGE APPEARS IF THE UDA50 HAS NOT COMMUNICATED WITH THE HOST.

THE UDA HAS NOT RESPONDED LATELY

THIS COULD OCCUR IF THE UDA IS DOING A LONG SERIES OF CALCULATIONS OR INDEED IS HUNG.

4.0 PERFORMANCE AND PROGRESS REPORTS

AT THE END OF EACH PASS, THE PASS COUNT IS GIVEN ALONG WITH THE TOTAL NUMBER OF ERRORS REPORTED SINCE THE DIAGNOSTIC WAS STARTED. THE 'EOP' SWITCH CAN BE USED TO CONTROL HOW OFTEN THE END OF PASS MESSAGE IS PRINTED. SECTION 2.2 DESCRIBES SWITCHES.

THE FORMAT HAS BEEN SUCCESSFULLY COMPLETED WHEN THE MESSAGE
FORMAT SUCCESSFULLY COMPLETED
IS LOGGED.

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.TITLE DATA FILE FOR PDP-11 UDA DISK DRV FMTR
.IDENT /01.00/

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VERSION 01.00

M. A. PARENTI 16-MAY-80

MODIFIED BY:

M. A. PARENTI 09-DEC-80
NEW DM INSTRUCTIONS (MEM -> MEM)
CODE OPTIMIZATION

31-MAR-81
M. A. PARENTI
ADDED DOUBLE WORD ADDRESSING FOR OVERLAY ADDRESSES

21-APR-81
M. A. PARENTI
FIX GROUP OFFSET CALCULATION

23-APR-81
M. A. PARENTI
FIX ZERO GROUP PROBLEM

24-APR-81
M. A. PARENTI
FIX LBN GROUP PROBLEM
FIX RECAL WAIT PROBLEM

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05-MAY-81
M. A. PARENTI
FIX SIZE PROBLEM FOR RA81.

13-MAY-81
M. A. PARENTI
ADD LIMITED DUP FUNCTIONALITY

15-MAY-81
M. A. PARENTI
FIX SUBUNIT MASK PROBLEM

15-MAY-81
M. A. PARENTI
ONLY WRITE NON-PAD BLOCKS OF FCT

15-MAY-81
M. A. PARENTI
FIX COMPUTATION OF NON-PAD FCT BLOCKS

15-MAY-81
M. A. PARENTI
FIX BLOCK ZERO FCT PROBLEM

28-MAY-81
M. A. PARENTI
FIX SUBUNIT PROBLEMS
WRITE ONLY NON-PAD BLOCKS OF RCT

01-JUN-81
M. A. PARENTI
FIX DOUBLE COMPARE PROBLEM

08-JUN-81
M. A. PARENTI
FIX EXISTING FCT FORMAT PROBLEM

17-JUN-81
M. A. PARENTI
FIX SUBUNIT WRITE PROTECT PROBLEM

17-JUN-81
M. A. PARENTI
ADD STATUS UPDATES AT VARIOUS PLACES

22-JUN-81
M. A. PARENTI
FIX RBN STARTING BITS PROBLEM

22-JUN-81
M. A. PARENTI
FIX NON-PAD RCT INITIALIZE PROBLEM

06-JUL-81
M. A. PARENTI

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FIX STATISTICS COUNT OF BAD BLOCKS TO NOT INCLUDE RBN
VERSION 1.0 FOR RELEASE
UDA50 DISK FORMATTER

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8
9          000001      LONG      -      1.          :COMPLETE MESSAGE ON CYL (1)
10         000000      PROD      -      0           :OR MOD 16 CYL (0)
11
12
13
14
15
16         000000      FT.BUF   -      0.          :BUFFER POINTER OFFSET
17         000001      FT.LOW  -      1.          :LOW ORDER HEADER OFFSET
18         000002      FT.HI   -      2.          :HI ORDER HEADER OFFSET
19
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26         000000      RW.STAT  =      0.          : STATUS (12-15), NEXT BUFR PTR (0-14)
27         000000      RW.ER1   -      0.          : ALSO USED AS ECC ERROR INDICATOR
28         000005      RW.DUM   -      5.          : POINTER TO DUMMY SDI CONTROL BLOCK
29         000001      RW.BUF   -      1.          : POINTER TO DATA BUFFER
30         000002      RW.LOW   =      2.          : 1ST HEADER WORD (LO ORDER LBN)
31         000003      RW.HI    =      3.          : 2ND HEADER WORD (HI ORDER LBN)
32         000004      RW.CMD   =      4.          : SDI RT CMD (8-15), HEAD ADDR (0-7)
33         000000      RW.DAT   =      0.          : 1ST WORD OF 256 WORD DATA BUFFER
34         000400      RW.EDC   =      256.        : EDC
35         000401      RW.ER2   =      257.        : 1ST ECC RESIDUE
36
37
38
39
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41
42
43
44         000000      RB.BUF   =      0           :BUFFER OFFSET
45         000001      RB.LOW  -      1.          :LOW ORDER BLOCK NUMBER
46         000002      RB.HI   -      2.          :HIGH ORDER BLOCK NUMBER
47         000003      RB.CMD  -      3.          :READ COMMAND AND TRACK NUMBER
48         000004      RB.IM   -      4.          :IMAGE COUNTER
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.SBTTL EQUATES

EQUATES

CONDITIONAL FLAGS

OFFSETS FOR FORMAT TRACK TABLE

OFFSETS FOR READ/WRITE BUFFERS

OFFSETS FOR CHECK PASS READ COMMANDS

XFC DEFINITION EQUATES

58	000007	STATUS	-	7.	:RETURN DRIVE STATUS XFC CODE
59	000010	ECHO	-	8.	:ECHO DATA TO DRIVE XFC CODE
60	000011	DINIT	-	9.	:DRIVE INITIALIZE XFC CODE
61	000012	SIP	-	10.	:WAIT FOR SECTOR/INDEX PULSE XFC CODE
62	000013	UREAD	-	11.	:READ UNIBUS MEMORY XFC CODE
63	000014	UWRITE	-	12.	:WRITE UNIBUS MEMORY XFC CODE
64	000015	ECC	=	13.	:DO ECC ON BUFFER XFC CODE
65	000016	MAINTR	-	14.	:SEND MAINT READ DATA XFC CODE
66	000017	MAINTW	=	15.	:RECEIVE MAINT WRITE DATA XFC CODE
67	000020	CVT	-	16.	:CONVERT TO PHYSICAL ADDRESS XFC CODE
68	000021	DONE	-	17.	:TERMINATE DM PROGRAM XFC CODE
69	000022	UPDATE	-	18.	:UPDATE DUP PROGRESS INDICATOR XFC
70		:			
71		:			
72		:			
73	000000	SHORTO	=	0.	:SHORT TIME OUT
74	000001	FRCPY	-	1.	:NUMBER OF F/RCT COPIES
75	000001	RTRY	-	1.	:NUMBER OF RETRIES
76	000001	LONGTO	-	1.	:LONG TIMEOUT
77	000002	ERRSYM	-	2.	:NUMBER OF ALLOWABLE ECC ERRORS
78	000002	FRCV	-	2.	:ERROR RECOVERY LEVELS SUPPORTED
79	000007	REVSEC	-	7.	:REVS/SECOND
80	000011	OFFS	-	9.	:GROUP OFFSET
81	000000	CYLBN	-	0.	:CYLINDERS IN LBN AREA
82	000002	STLBN	=	2.	:HIGH ORDER STARTING LBN
83	000003	STRBN	-	3.	:HIGH ORDER STARTING RBN
84	000002	STXBN	=	2.	:HIGH ORDER STARTING XBN
85	000003	STDBN	=	3.	:HIGH ORDER STARTING DBN
86	000001	STCYL	=	1.	:HIGH ORDER STARTING CYLINDER
87	000011	LBNTRK	=	9.	:NUMBER OF LBNS PER TRACK (512)
88	000004	RBNTRK	=	4.	:NUMBER OF RBNS PER TRACK
89	000021	XBNCYL	-	17.	:NUMBER OF CYLINDERS IN XBN AREA
90	000022	DBNCYL	=	18.	:NUMBER OF CYLINDERS IN DBN AREA
91	000012	LBNHOST	=	10.	:NUMBER OF LBN'S IN HOST AREA
92	000002	GRPCYL	=	2.	:GROUPS/CYLINDER
93	000003	TRKGRP	-	3.	:TRACKS/GROUP
94	000010	FCTS7	-	8.	:FCT SIZE IN SECTORS
95	000014	RCTSZ	=	12.	:RCT SIZE IN LBN'S
96	000005	DATA	-	5.	:DATA PREAMBLE SIZE
97	000005	HEAD	-	5.	:HEADER PREAMBLE SIZE
98		:			
99		:			
100		:			
101		:			
102		:			
103	000001	BIT0	=	000001	
104	000002	BIT1	-	000002	
105	000004	BIT2	-	000004	
106	000010	BIT3	-	000010	
107	000020	BIT4	-	000020	
108	000040	BIT5	-	000040	
109	000100	BIT6	=	000100	
110	000200	BIT7	-	000200	
111	000400	BIT8	-	000400	
112	001000	BIT9	-	001000	
113	002000	BIT10	-	002000	
114	004000	BIT11	-	004000	

115	010000	BIT12	=	010000	
116	020000	BIT13	=	020000	
117	040000	BIT14	=	040000	
118	100000	BIT15	=	100000	
119		:			
120		:			
121		:			
122		:			
123		:			
124		:			
125	177400	HIBYTE	-	177400	:HIGH BYTE MASK
126	000377	LOBYTE	-	000377	:LOW BYTE MASK
127	177700	HI2BYTE	-	177700	:HIGH BYTE PLUS 2 BITS
128	177600	HI1BYTE	-	177600	:HIGH BYTE PLUS 1 BIT
129	007777	LO	-	007777	:ALL BUT HEADER CODE
130	177760	FCLR	-	177760	:CLEAR FOR FRCPY
131	170377	STCLR	-	170377	:CLEAR FOR STARTING BITS
132	007777	BUFMSK	-	007777	:BUFFER CLEAR MASK
133	000017	SIXTN	-	BIT0+BIT1+BIT2+BIT3	:FOR CHECK OF MOD 16 CYLINDER
134	000004	VLD	-	BIT2	:STATUS VALID BIT(1=VALID)
135	000010	VLD1	-	BIT3	:STATUS VALID BIT(1=VALID)
136	000200	PARITY	-	BIT7	:STATUS PARITY BIT(1=PARITY ERROR)
137	000400	PARIT1	-	BIT8	:REAL TIME ERROR(1=ERROR)
138		:			
139		:			
140		:			
141	000175	UNSEC	-	000175	:UNSUCCESSFUL COMPLETION
142		:			
143		:			
144		:			
145	000000	HD.LBN	-	000000	:GOOD LBN
146	060000	HD.RBN	-	060000	:GOOD RBN, PERHAPS UNUSED
147	030000	HD.REV	-	030000	:REVECTORED LBN
148	110000	HD.BAD	-	110000	:BAD BLOCK
149	050000	HD.PRIV	=	050000	:PRIMARY REVECTORED BLOCK
150	170000	HD.CLR	=	170000	:CLEAR HDR CODE
151	140000	HD.DBN	-	140000	:GOOD DBN
152	120000	HD.XBN	=	120000	:GOOD XBN
153	100000	PRMY	-	BIT15	:PRIMARY BIT IN FCT
154	010000	FBDHD	=	BIT12	:BAD HEADER CODE IN FCT
155		:			
156		:			
157		:			
158	000000	RC.FRE	=	000000	:FREE REPLACEMENT BLOCK
159	020000	RC.PRIV	=	020000	:PRIMARY REVECTOR
160	030000	RC.SND	=	030000	:SECONDARY REVECTOR
161	040000	RC.UNU	=	040000	:BAD REPLACEMENT BLOCK
162	100000	RC.NUL	=	100000	:NULL(FILL) BLOCK
163		:			
164		:			
165		:			
166	100000	RWRDY	-	BIT15	:READ/WRITE READY BIT POSITION
167	000002	ATTN	-	BIT1	:ATTENTION
168	000001	RCVRDY	-	BIT0	:RECEIVER READY
169		:			
170		:			
171		:			

```

172          : GET STATUS BIT MASKS
173          :
174          000001 ST.RU - BIT0 :RUN/STOP SWITCH 1=IN
175          000002 ST.PS = BIT1 :PORT SWITCH 1=IN
176          000040 ST.DR = BIT5 :DIAGNOSTIC REQUESTED 1=YES
177          17000C ST.WP - BIT12+BIT13+BIT14+BIT15 :WRITE PROTECT SWITCH SU:0,1 1=IN
178          000020 ST.SR = BIT4 :SPINDLE READY 1=YES
179          001000 ST.DB - BIT9 :DIAG CYL ACCESS ENABLED 1=YES
180          002000 ST.FO - BIT10 :FORMAT CYL ACCESS ENABLED 1=YES
181          000004 ST.IN - BIT2 :DRIVE INITIALIZED 1=YES
182          000010 ST.WE - BIT3 :WRITE ERROR (WRITE LOCKED)
183          000020 ST.DF - BIT4 :DIAG FAILED - CANNOT DRIVE CLEAR
184          000374 ST.ERR - 000374 :COMBINED CLEARABLE ERRORS BITS SET
185          000002 ST.ERB - 2. :ERROR BYTE OFFSET (3RD WORD)
186          :
187          :
188          : OVERLAY TABLE OFFSETS
189          :
190          :
191          000021 OVCNT - 17. :NUMBER OF OVERLAYS
192          000003 OVLEN - 3 :LENGTH OF 1 OVERLAY BLOCK
193          000000 LEN - 0 :WORD COUNT OF OVERLAY
194          000001 HSTLO = 1 :LOW ORDER UNIBUS ADDRESS
195          000002 HSTHI - 2 :HI ORDER UNIBUS ADDRESS
196          000000 F1 = 0 :OFFSET INTO TABLE
197          000003 F2 = 3 :SECOND OVERLAY OFFSET INTO TABLE
198          000006 F3 - 6. :THIRD OVERLAY OFFSET INTO TABLE
199          000011 F4 - 9. :FOURTH OVERLAY OFFSET INTO TABLE
200          000014 F5 = 12. :FIFTH OVERLAY OFFSET INTO TABLE
201          000017 F6 - 15. :SIXTH OVERLAY OFFSET INTO TABLE
202          000022 F7 = 18. :SEVENTH OVERLAY OFFSET INTO TABLE
203          000025 F8 - 21. :EIGHTH OVERLAY
204          000030 F9 - 24. :NINTH OVERLAY
205          000033 G2 = 27. :ELEVENTH OVERLAY
206          000036 G3 - 30. :TWELVTH OVERLAY
207          000041 G4 = 33. :THIRTEENTH OVERLAY
208          000044 G5 - 36. :FOURTEENTH OVERLAY
209          000047 G7 = 39. :SIXTEENTH OVERLAY
210          000052 G8 = 42. :SEVENTEENTH OVERLAY
211          000055 H1 - 45. :NINETEENTH OVERLAY
212          000060 G1 - 48. :TENTH OVERLAY
213          :
214          :
215          : FLAG EQUATES
216          :
217          :
218          000001 FCTAVL - BIT0 :FCT AVAILABLE
219          000010 DBN - BIT3 :FORMAT DBN AREA
220          000100 REVECT - BIT6 :REVECTOR FLAG
221          001000 PRIM - BIT9 :PRIMARY FOUND FLAG
222          000002 FCTEMT - BIT1 :FCT EMPTY FLAG
223          000020 GOBAD - BIT4 :DO BEST GUESS IF FCT BAD
224          000040 RCINIT - BIT5 :RCT LAST BLOCK FIXED UP
225          000004 FCTBAD - BIT2 :FCT FOUND BAD (FOR STATS)
226          000200 MANU - BIT7 :MANUFACTURING FORMAT
227          000400 DLL - BIT8 :DOWN-LINE LOAD FLAG
228          002000 BSTGS - BIT10 :BEST GUESS FORMAT
    
```

```

229      00400C      NDLL      -      BIT11      : ONLY WRITE FCT SCRATCH
230      020000      INPCT     =      BIT13      : INIT RCT FLAG
231      040000      FIN      -      BIT14      : FORMAT FINISHED FLAG
232      010000      CHRDN     =      BIT12      : CHARACTERISTICS DONE FLAG
233      100000      RTY      -      BIT15      : RETRY FLAG
234      :
235      :
236      :          FLAG1  EQUATES
237      :
238      :
239      000001      WP      -      BIT0       : WRITE PROTECT FLAG
240      000002      RTYDN    -      BIT1       : RETRY DONE ON THIS SECTOR
241      000004      RPRIM    =      BIT2       : FLAG FOR PRIMARY GOOD EDC
242      000010      ERDN     =      BIT3       : FLAG FOR ERROR EXIT TRY
243      000020      DEAD     -      BIT4       : HOST GONE FLAG
244      000040      BDHD     -      BIT5       : BAD HEADER ON CHECK PASS READ
245      000100      RCINDN   =      BIT6       : RCT INIT DONE (WITH ONE FULL PAD BLK)
246      :
247      :
248      :          PHYSICAL CONVERSION XFC BLOCK EQUATES
249      :
250      000000      V1       =      0         : CYLINDER PARAMETER
251      000002      V2       -      2         : BLOCK NUMBER PARAMETER
252      000004      V3       -      4         : BLOCKS PER TRACK PARAMETER
253      000005      V4       -      5         : ONLY FOR RBN'S
254      000006      CYL     -      6         : CYLINDER RETURNED
255      000010      GRP     -      8         : GROUP RETURNED
256      000011      TRK     -      9         : TRACK RETURNED
257      000012      STSC    -      10        : STARTING SECTOR RETURNED
258      000013      INDSEC   -      11        : SECTOR FROM INDEX
259      :
260      :
261      :          DMBUF OFFSETS
262      :
263      :
264      000001      DMOST    =      1         : STARTING OVERLAY ADDRESS
265      000003      DMUNIT   =      3         : DESIRED UNIT NUMBER
266      000004      DMFLG    -      4         : FLAG WORD
267      000016      DMBUFL   =      14        : BUFFER LENGTH
268      :
269      :          FLAG FORMAT
270      :
271      :          BIT0 - 0      DO NOT USE FCT
272      :          BIT1 - 0      USE FCT
273      :          BIT2 - 0      CONTINUE IF FCT BAD
274      :          BIT3 - 0      STOP IF FCT BAD
275      :          BIT4 - 0      NO DLL OF FCT
276      :          BIT5 - 1      DLL FCT
277      :
278      000005      SER      -      5         : SERIAL NUMBER
279      000011      DAT      =      9         : DATE IN VAX/VMS FORMAT
280      :
281      000002      LBD      -      2         : LBN'S BAD
282      000003      SND1     =      3         : SECONDARY REVECTORS
283      000004      RBD      =      4         : RCT BLOCKS BAD
284      000006      DBC      -      6         : DBN BLOCKS BAD
285      000010      XBD      -      8         : XBN BLOCKS BAD
286      000012      RTCNT    -      10        : RETRY COUNT
    
```

EQUATES

```

286      000013      FCT      =      11.      ;FCT FLAG
287      :
288      :
289      :
290      :      FCT BLOCK OFFSETS
291      :
292      :
293      000002      FSER      -      2      ;SERIAL NUMBER
294      000001      INST      =      1      ;FORMAT IN INSTANCE NUMBER
295      000016      C512      =      14.     ;COUNT OF USED 512 ENTRIES IN FCT
296      000012      FDAT      -      10.     ;MOST RECENT FORMAT DATE
297      000025      FCTFLG    =      21.     ;FCT FLAG FOR GOOD/BAD FCT
298      100000      NOFCT     =      BIT15    ;FLAG - 0 - FCT GOOD
299      :           ;           1 - FCT KNOW BAD
300      :
301      :
302      :      RCT BLOCK OFFSETS
303      :
304      :
305      000000      RSER      =      0      ;SERIAL NUMBER OFFSET
306      :
307      :      MISC  DEFINITIONS
308      :
309      :
310      :
311      000006      TWOB      -      6.      ;LENGTH OF 2 IMAGE ENTRIES
312      000011      THREB     -      9.      ;LENGTH OF 3 IMAGE ENTRIES
313      000005      RDLEN     =      5.      ;LENGTH OF CHECK PASS READ BLOCK
314      000002      ERLN      -      2.      ;LENGTH OF REVECTOR TABLE ENTRY
315      000004      REVLEN    =      4.      ;LENGTH OF SECONDARY TABLE
316      013400      RWCMD     =      013400  ;SDI READ COMMAND
317      122400      WRCMD     =      122400  ;SDI WRITE COMMAND
318      100000      RDCMD     -      100000  ;SIGNAL TO XFC NO MORE BLOCKS
319      000003      ERRLN     -      3.      ;LENGTH OF ERROR LIST ENTRY
320      040000      FULL      -      BIT14    ;FULL BBUFFER BIT
321      010000      ECCF      =      BIT12    ;ECC ERROR BIT
322      000200      RBNRPT    -      128.    ;NUMBER OF RBN COPIES IN REVECTOR
323      000003      IMLN      -      3.      ;LENGTH OF IMAGE BLOCK
324      020000      BD        -      BIT13    ;BAD FLAG IN IMAGE BUFFER
325      100000      LAST      -      BIT15    ;LAST FLAG IN IMAGE BUFFER
326      040000      RECIR     =      BIT14    ;RECIRCULATE IN FORMAT IMAGE BUFFER
327      126736      M512      -      126736  ;FCT MODE INDICATOR FOR 512
328      074161      M576      -      074161  ;FCT MODE INDICATOR FOR 576
329      100000      TIMVAL    -      32768.  ;TIMER LOOP VALUE
330      000010      MAXTRY    -      8.      ;FINAL SECONDARY WRITE RETRY LIMIT
331      007774      DUPOVL    -      7774    ;OVERLAY STARTING ADDRESS FROM DUP
332      :
333      :
334      :      STATUS OFFSETS
335      :
336      :
337      000000      MASK      =      0      ;SUBUNIT OFFSET MASK
338      000000      UID       =      0      ;UNIT NUMBER OFFSET
339      :
340      :
341      :      BUFFER DEFINITIONS
342      :      BUFFERS ARE 269 WORDS LONG AND ARE LOCATED AT LOC 4535(8)-7777(8)

```


343		:			
344	004535	BUF1	-	004535	:BUFFER 1 AT LOCATION 4535(8)
345	005152	BUF2	-	005152	:BUFFER 2 AT LOCATION 5152(8)
346	005567	BUF3	-	005567	:BUFFER 3 AT LOCATION 5567(8)
347	006204	BUF4	-	006204	:BUFFER 4 AT LOCATION 6204(8)
348	006621	BUF5	-	006621	:BUFFER 5 AT LOCATION 6621(8)
349	007275	BUF6	-	007275	:BUFFER 6 AT LOCATION 7236(8)
350		:			
351		:			
352		:			
353	004535	RDBUF	-	BUF1	:READ/WRITE BUFFER
354	005152	PBNBUF	-	BUF2	:BUFFER OF BAD PBN'S
355	005567	GDBLK	-	BUF3	:DATA FOR GOOD SECTOR
356	006204	PRMBUF	-	BUF4	:DATA PATTERN FOR PRIMARY REVECTOR
357	006204	REVBUF	-	BUF4	:SECONDARY REVECTOR BUFFER
358	006621	CMDBUF	-	BUF5	:READ COMMAND BUFFERS
359	006621	RCTBUF	-	BUF5	:RCT BLOCK BUFFER
360	006621	RBNBUF	-	BUF5	:RBN FORMAT BUFFER
361	007275	IMAGE	-	BUF6	:FORMAT IMAGE BUFFER
362					:BUFFER EXCESS AFTER FORMAT IMAGE
363					:IS USED TO HOLD BLOCKS TO BE
364					:REVECTORED. MAX BLOCKS BEFORE
365					:REVECTOR ROUTINE IS CALLED VARIES
366					:WITH THE SIZE OF THE FORMAT BUFFER AREA
367	007775	BMAX	-	7775	:MAX BUFFER ADDRESS
368					
369					
370					

1		.SBTTL DATA STRUCTURES	
2		:	
3	000000	DMCODE KKDUB,0,714,13,255.	
4	000714 003047	ENTRY: JMP START	: JUMP TO START LOCATION
5		:	
6		DATA STRUCTURES	
7		:	
8		RETRY COUNTERS	
9		:	
10	000715 000000	UN.ERR: .WORD 0	: UNSUCCESSFUL CMD RETRY CNTR
11	000716 000000	UN.ERT: .WORD 0	: TRANSMISSION ERROR RETRY CNTR
12	000717 000000	UN.ERI: .WORD 0	: INITIALIZATION ERROR RETRY CNTR
13	000720 000000	UN.SEK: .WORD 0	: SEEK RETRY COUNT
14		:	
15		READ COMMAND BLOCK	
16		:	
17		:	
18		WRBLK:	
19	000721		
20	000721 100000	RDBLK: .WORD 100000	: STATUS POINTER
21	000722 000000	.WORD 0	: POINTER TO DATA BUFFER
22	000723 000000	.WORD 0	: FIRST WORD OF EXPECTED HDR
23	000724 000000	.WORD 0	: SECOND WORD
24	000725 000000	.WORD 0	: REAL-TIME SDI COMMAND
25	000726 000000	.WORD 0	: POINTER TO SDI BLOCK
26		:	
27		DUMMY DOUBLE WORDS AND DUMMY SDI COMMAND	
28		:	
29	000727 000200	HSLIM: .WORD 200	: HEADER CMP LIMIT
30	000730 001045	.WORD SCR-5	: POINTER TO SUBUNIT CHAR
31	000731 000000	DDUMMY: .WORD 0	: DUMMY DOUBLE WORD FOR ONE
32	000732 000000	.WORD 0	: BYTE OPERAND CONVERSION
33	000733	TEMP2:	: ALSO USE AS TEMP
34	000733	MULPC: .BLKW 2	: MULTIPLICATION BUFFER
35	000735 000000	.WORD 0	: RESERVED LOCATION (A+7)
36	000736	OFFSET:	: FOR EASIER REFERENCE
37	000736	TEMP: .BLKW 2	: USED FOR COMPUTATIONS
38		:	
39		:	
40		CURRENT UDA PORT	
41		:	
42		:	
43	000740 000000	UNIT: .WORD 0	: SDI INTERCONNECT
44		:	
45		MESSAGE TABLES	
46		:	
47	000741	CR.GST: MSG GST,1,ST,7	: GET STATUS
48	000745	CR.GCR: MSG GCR,1,CR,11.	: GET CHARACTERISTICS
49	000751	CR.GSR: MSG GSR,2,SCR,19.	: GET SUBUNIT CHARACTERISTICS
50	000755	CR.DIS: MSG DIS,2,ST,6	: UNLOAD DRIVE
51	000761	CR.RUN: MSG RUN,1,ST,6	: LOAD DRIVE
52	000765	CR.ACC: MSG ACC,3,ST,6	: SET FORMAT ACCESS
53	000771	CR.CLR: MSG DCLR,2,ST,6	: DRIVE CLEAR
54	000775	CR.SEK: MSG ISEEK,6,ST,6	: SEEK
55	001001	CR.RCL: MSG IRECAL,1,ST,6	: RECALIBRATE
56	001005	CR.ERV: MSG ERECOV,2,ST,6	: ERROR RECOVERY COMMAND
57	001011	CR.ONL: MSG ONLINE,2,ST,6	: ONLINE COMMAND

58					
59					
60				MESSAGES AND COMMANDS	
61	001015	004400	GST:	.WORD 000011*256.	:GET STATUS COMMAND
62	001016	103400	GCR:	.WORD 000207*256.	:GET CHARACTERISTICS
63	001017	104000	GSR:	.WORD 00210*256.	:GET SUBUNIT CHARACTERISTICS
64	001020	000000		.WORD 0	:SUBUNIT MASK
65	001021	102000	DIS:	.WORD 000204*256.	:UNLOAD DRIVE
67	001022	000000		.WORD 0	:NO SPIN DOWN MODIFIER
71	001023	006000	RUN:	.WORD 000014*256.	:INITIATE LOAD
72	001024	100400	ACC:	.WORD 000201*256.	:ACCESS DIAG AND FMT CYL
73	001025	003006		.WORD 3006	:MASK BYTE/MODE BYTE
74	001026	002400	DCLR:	.WORD 000005*256.	:DRIVE CLEAR
75	001027	000374		.WORD 374	:BITS TO CLEAR
76	001030		ST:	.BLKW 7	:STATUS MESSAGE BUFFER
77	001037		CR:	.BLKW 11.	:CHARACTERISTICS MESSAGE BUFF
78	001052		SCR:	.BLKW 19.	:SUBUNIT CHARACTERISTICS BUFF
79	001075	005000	ISEEK:	.WORD 000012*256.	:INITIATE SEEK
80	001076	000000		.WORD 0	:..
81	001077	000000		.WORD 0	:..
82	001100	000000		.WORD 0	:..
83	001101	107000	IRECAL:	.WORD 000216*256.	:INITIATE RECAL
84	001102	003000	ERECOV:	.WORD 000006*256.	:ERROR RECOVERY COMMAND
85	001103	000000		.WORD 0	:RECOVERY LEVEL
86	001104	105400	ONLINE:	.WORD 000213*256.	:ONLINE COMMAND
87	001105	000377		.WORD 377	:COMMAND TIMEOUT (SECS)
88					
89				DISK LOCATION POINTERS	
90					
91	001106	000000	CURRBN:	.WORD 0	:CURRENT RBN
92	001107	000000		.WORD 0	:..
93	001110	000000	CURPBN:	.WORD 0	:CURRENT PBN
94	001111	000000		.WORD 0	:..
95	001112	000000	CURTRK:	.WORD 0	:CURRENT TRACK
96	001113	000000	CURBN:	.WORD 0	:CURRENT BLOCK NUMBER
97	001114	000000		.WORD 0	:..
98	001115		CURLBN:		:FOR RCT INIT
99	001115	000000	CURXBN:	.WORD 0	:CURRENT XBN NUMBER
100	001116	000000		.WORD 0	:..
101	001117	000000	HOLDBN:	.WORD 0	:BLOCK NUMBER OF FIRST BLOCK ON CYL
102	001120	000000		.WORD 0	:..
103	001121	000000	HOLRBN:	.WORD 0	:BLOCK NUM OF FIRST RBN ON CYLINDER
104	001122	000000		.WORD 0	:..
105	001123	000000	HOLDPN:	.WORD 0	:PBN OF FIRST SECOTR ON TRACK
106	001124	000000		.WORD 0	:..
107	001125	000000	CYLNUM:	.WORD 0	:CURRENT CYLINDER NUMBER
108	001126	000000		.WORD 0	:..
109	001127	000000	SECTRK:	.WORD 0	:SECTORS/TRACK
110	001130	000000		.WORD 0	:..
111	001131	000000	SECTCY:	.WORD 0	:SECTORS/CYLINDER
112	001132	000000		.WORD 0	:..
113	001133		LBNLBN:	.BLKW 2	:LBN'S IN LBN AREA
114	001135		RBNLBN:	.BLKW 2	:RBN'S IN LBN AREA
115	001137		XBNSC:	.BLKW 2	:SECTORS IN LBN AREA
116	001141		TRKCYL:	.BLKW 2	:TRACKS/CYLINDER
117	001143		LBNCYL:	.BLKW 2	:NUMBER OF LBN CYLINDERS
118	001145		LBNPCY:	.BLKW 2	:LBN'S/CYLINDER

DATA STRUCTURES

119	001147		RBNPCY: .BLKW	2	:RBN'S/CYLINDER
120	001151	000000	REVRBN: .WORD	0	:REVECTORED RBN NUMBER
121	001152	000000		0	:
122	001153	000000	CURROVL: .WORD	0	:CURRENT OVERLAY
123	001154		HGHPBN: .BLKW	2	:HIGHEST PBN IN LBN AREA
124			:		
125			:		
126			:		
127			STACK		
128			:		
129			:		
130			:		
131	001156			31.	:STACK
132	001215	000000	STACK: .WORD	0	:TOP OF STACK
133	001216	000000	STCKSV: .WORD	0	:STACK PTR TEMP SAVE
134			:		
135			:		
136			MISC	DEFINITIONS	
137			:		
138			:		
139	001217	000000	FLAG: .WORD	0	:FLAG WORD
140	001220	000000	FLAG1: .WORD	0	:FLAG WORD
141	001221	000000	ERFLAG: .WORD	0	:RE-FORMAT FLAG
142	001222	000000	WRFLG: .WORD	0	:RCT WRAP FLAG
143	001223	000000	BADPBN: .WORD	0	:POINTER TO PENTAB ENTRY
144	001224	000000	ERRBUF: .WORD	0	:POINTER TO BEGINNING OF REVECTOR BUFFER
145	001225	000000	EMAX: .WORD	0	:MAX NUMBER OF REVECTORS BEFORE
146					:RCT UPDATE ROUTINE IS CALLED
147	001226	000000	ERR: .WORD	0	:NUMBER OF SECTORS IN ERROR
148	001227	000000	HOLD: .WORD	0	:DOUBLE WORD TEMP STORAGE
149	001230	000000		0	
150	001231	000000	EIMAGE: .WORD	0	:ADDRESS OF END IMAGE BLOCK
151	001232	000000	STARIT: .WORD	0	:STARTING ADDRESS OF THIS PASS
152	001233	000000	SKPCNT: .WORD	0	:OFFSET FOR FIRST READ CHECK
153	001234	000000	TBLK: .WORD	0	:INTERLEAVE
154					:6 - BI-LEAVE
155					:9 - TRI-LEAVE
156	001235		RCTTOT:		:ALSO RCT TOTAL HOLDING AREA
157	001235	005606	CUTOF: .WORD	2950.	:SECT/SECOND CUTOFF
158	001236	000000		0	:DOUBLE WORD
159	001237	000000	F CNT: .WORD	0	:COUNT OF USED FCT ENTRIES FOR FORMATTING
160	001240		FCTFMT: .BLKW	2	:SIZE OF ONE FCT COPY
161	001242		RCTFMT: .BLKW	2	:SIZE OF ONE RCT COPY
162	001244	000000	FCTCPY: .WORD	0	:NUMBER OF FCT COPIES
163	001245	000000	NEXT1: .WORD	0	:MULTI-COPY COUNTER
164	001246	000105	INI: .WORD	69.	:INITIAL VALUE FOR EDC
165	001247	000400	CNT: .WORD	256.	:COUNT FOR EDC
166	001250	000100	LTO: .WORD	100	:LONG TIMEOUT
167	001251	002000	STO: .WORD	1024.	:SHORT TIMEOUT (IN MILLESECS)
168	001252	000000	ERPNT: .WORD	0	:REVECTOR LIST POINTER
169	001253	000000	BUFPNT: .WORD	0	:BUFFER POINTER FOR FCT READ
170	001254	000000	REVCNT: .WORD	0	:REVECTOR COUNT
171	001255	000000	FCTPTR: .WORD	0	:POINT TO CURRENT LOCATION IN FCT LBLOCK
172	001256	000001	FCTCNT: .WORD	1	:CURRENT FCT BLOCK
173	001257	000000		0	
174	001260	000000	FCTNPD: .WORD	0	:NON-PAD FCT BLOCKS
175	001261	000000	RCTLBN: .WORD	0	:LBN'S IN RCT

176 001262 000000
 177 001263
 178 001301
 179 001305
 180 001311 000000
 181 001312 000000
 182 001313 000000
 183 001314 000000
 184 001315 000000
 185 001316 030000
 186 001317 103 040 000
 187 001321 010000
 188 001322 106 040 000
 189 001324 050000
 190 001325 105 040 000
 191 001327 040000
 192 001330 104 040 000
 193 001332 000000
 194 001333 000000
 195 001334 000000
 196 001335 000000
 197 001336 000000
 198 001337 000000
 199 001340 000000

MVCNT: .WORD 0
 DMBUF: .BLKW 14.
 DATE: .BLKW 4
 SERNUM: .BLKW 4
 FCTREV: .WORD 0
 LBNBAD: .WORD 0
 RCTBAD: .WORD 0
 DBBAD: .WORD 0
 XBBAD: .WORD 0
 CYLMSG: .WORD 30000
 FCMMSG: .WORD 10000
 EMSG: .WORD 50000
 DONMSG: .WORD 40000
 IMSTAR: .WORD 0
 HPREA: .WORD 0
 DPREA: .WORD 0
 ST.LBN: .WORD 0
 ST.RBN: .WORD 0
 ST.XBN: .WORD 0
 ST.DBN: .WORD 0

:USED FCT ENTRIES
 :MAINTENANCE BUFFER
 :DATE BUFFER
 :SERIAL NUMBER
 :FCT ENTRIES AT CERTAIN POINTS
 :TOTAL REVECTORED LBN'S
 :TOTAL BAD RCT BLOCKS
 :TOTAL DBN BAD BLOCKS
 :TOTAL LBN BAD BLOCKS
 :DUP CODE
 :SIGNAL CYLINDER COMPLET MESSAGE
 :DUP CODE
 :FCT DLL MSG
 :DUP CODE
 :ERROR MESSAGE
 :DUP CODE
 :DONE MESSAGE
 :POINTER TO START OF IMAGE
 :HEADER PREAMBLE LENGTH
 :DATA PREAMBLE LENGTH
 :STARTING LBN BITS
 :STARTING RBN BITS
 :STARTING XBN BITS
 :STARTING DBN BITS

OVERLAY POINTERS
 NOTE:

WHEN ADDING AN ENTRY TO THIS TABLE EQUATE
 OVCNT MUST BE INCREMENTED

200
 201
 202
 203
 204
 205
 206
 207
 208 001341 001103
 209 001342 010466
 210 001343 000000
 211 001344 001416
 212 001345 013570
 213 001346 000000
 214 001347 000423
 215 001350 020746
 216 001351 000000
 217 001352 000647
 218 001353 022014
 219 001354 000000
 220 001355 001202
 221 001356 024336
 222 001357 000070
 223 001360 000320
 224 001361 030054
 225 001362 000000
 226 001363 000445
 227 001364 026742
 228 001365 000000
 229 001366 000625
 230 001367 016624
 231 001370 000000
 232 001371 000202

OVL TBL: .WORD OVL.F1
 .WORD OVS.F1
 .WORD 0
 .WORD OVL.F2
 .WORD OVS.F2
 .WORD 0
 .WORD OVL.F3
 .WORD OVS.F3
 .WORD 0
 .WORD OVL.F4
 .WORD OVS.F4
 .WORD 0
 .WORD OVL.F5
 .WORD OVS.F5
 .WORD 0
 .WORD OVL.F6
 .WORD OVS.F6
 .WORD 0
 .WORD OVL.F7
 .WORD OVS.F7
 .WORD 0
 .WORD OVL.F8
 .WORD OVS.F8
 .WORD 0
 .WORD OVL.F9

:LENGTH OF FIRST OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF SECOND OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF THIRD OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF FOURTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF FIFTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF SIXTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF SEVENTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF EIGHTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF NINTH OVERLAY

233 001372 035330
 234 001373 000000
 235 001374 000052
 236 001375 030714
 237 001376 000000
 238 001377 000214
 239 001400 031040
 240 001401 000000
 241 001402 001720
 242 001403 031470
 243 001404 000000
 244 001405 000237
 245 001406 035734
 246 001407 000000
 247 001410 000336
 248 001411 012674
 249 001412 000000
 250 001413 000224
 251 001414 020276
 252 001415 000000
 253 001416 000302
 254 001417 023532
 255 001420 000000
 256 001421 001376
 257 001422 005472
 258 001423 000000
 259 001424

.WORD OVS.F9
 .WORD 0
 .WORD OVL.G2
 .WORD OVS.G2
 .WORD 0
 .WORD OVL.G3
 .WORD OVS.G3
 .WORD 0
 .WORD OVL.G4
 .WORD OVS.G4
 .WORD 0
 .WORD OVL.G5
 .WORD OVS.G5
 .WORD 0
 .WORD OVL.G7
 .WORD OVS.G7
 .WORD 0
 .WORD OVL.G8
 .WORD OVS.G8
 .WORD 0
 .WORD OVL.H1
 .WORD OVS.H1
 .WORD 0
 .WORD OVL.G1
 .WORD OVS.G1
 .WORD 0
 OVLBLK: .BLKW 4

:LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF EIGHTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF EIGHTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF EIGHTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF FOURTEENTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF SIXTEENTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF SEVENTEENTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF SEVENTEENTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :LENGTH OF SEVENTEENTH OVERLAY
 :LOW ORDER HOST ADDRESS
 :HIGH ORDER HOST ADDRESS
 :FOR BUFFER OVERLAYS

1					
2					
3					
4					
5					
6	001430	001045	CONBLK:	.WORD	1045
7	001431	000000		.WORD	0
8	001432	000000		.WORD	0
9	001433	000000		.WORD	0
10	001434	000040		.WORD	40
11	001435			.BLKW	6
12					
13					
14					
15					
16	001443	000377	NUM:	.WORD	255
17	001444	004536	CBUF:	.WORD	RDBUF+1
18	001445	155555	FWRD:	.WORD	155555
19	001446	133333	SWRD:	.WORD	133333
20	001447	155555	TWRD:	.WORD	155555
21	001450	167356	DWRD:	.WORD	167356
22					
23					
24	001451	125677	EDC:	.WORD	125677
25	001452	052100	BADEDC:	.WORD	52100
26					
27					
28					
29					
30	001453	000000	ERRCNT:	.WORD	0
31	001454	000000	SECCNT:	.WORD	0
32	001455	000000	N:	.WORD	0
33	001456	000000	N1:	.WORD	0
34	001457	000000	NN1:	.WORD	0
35	001460	000000	CNTCYL:	.WORD	0
36	001461	000000		.WORD	0
37	001462	000000	HD.CUR:	.WORD	0
38	001463	000000	CURGRP:	.WORD	0
39	001464	000000	GRPCNT:	.WORD	0
40	001465	000000	TRKCNT:	.WORD	0
41	001466	000001	ONE:	.WORD	1
42	001467	000000		.WORD	0
43	001470	000002	TWOC:	.WORD	2
44	001471	000000		.WORD	0
45	001472	000000	SNDCNT:	.WORD	0
46	001473	000000	RTYCNT:	.WORD	0
47	001474	000000	UPDPNT:	.WORD	0
48	001475	000000	TOTRCT:	.WORD	0
49	001476	000000		.WORD	0
50	001477	000000	RCTCNT:	.WORD	0
51	001500	000000	PCNT:	.WORD	0
52	001501	000000	COUNT:	.WORD	0
53	001502	000005	RETRY:	.WORD	5
54	001503	000000	RECOV:	.WORD	0
55	001504	000000	TMPTRY:	.WORD	0
56	001505	000000	RECTMP:	.WORD	0

CONVERSION BUFFER

:STARTING CYL PLUS LBN CYL
 :HIGH ORDER
 :LOW ORDER XBN-X
 :SECTORS PER TRACK
 :HIGH - BOTH FILLED IN DYNAMICALLY
 :FILLED IN BY XFC

COMPARE DATA XFC CONTROL BLOCK

:NUMBER OF WORDS IN PATTERN
 :BUFFER TO COMPARE (NOT FIRST WORD)
 :FIRST WORD OF PATTERN
 :SECOND WORD OF PATTERN
 :THIRD WORD OF PATTERN
 :DIAGNOSTIC WORD (FIRST IN SECTOR)

EDC: .WORD 125677
 BADEDC: .WORD 52100

:EDC FOR ABOVE DATA PATTERN
 :BAD EDC FOR RBN BLOCKS

COUNTERS

:FOR TESTING VERIFICATION
 :SECTOR COUNT
 :NUMBER OF ORIGINAL CHECK PASS READ
 :NUMBER OF ERROR READS
 :DITTO
 :NUMBER OF CYLINDERS TO FORMAT
 :CURRENT HEADER
 :CURRENT GROUP
 :NUMBER OF GROUPS TO DO
 :NUMBER OF TRACKS TO DO
 :WORD CONSTANT OF 1
 :DOUBLE WORD
 :WORD CONSTANT OF 2
 :DOUBLE WORD
 :COUNT OF SECONDARY REVECTORS
 :COUNT OF SECTORS RETRYED
 :POINTER FOR RCT UPDATE
 :TOTAL LBN'S IN RCT'S
 :CURRENT RCTi BLOCK
 :PBN BLOCK COUNTER
 :COUNT FOR XBN DLL
 :RETRIES FROM SDI
 :RECOVERY LEVELS SUPPORTED BY DRIVER
 :TEMP FOR RETRY COUNT
 :TEMP FOR ERROR RECOVERY LEVEL


```

1          .SBTTL  MATH SUBROUTINES
2          :
3          :
4          SUBROUTINES
5          :
6          :
7          DOUBLE ADD ROUTINE
8          :
9          INPUT PARAMETERS
10         :
11         R3      CONTAINS POINTER TO OPERAND 1
12         :
13         R4      CONTAINS POINTER TO OPERAND 2
14         :
15         OUTPUT PARAMETER
16         :
17         R4      CONTAINS THE RESULT
18         :
19 001506 100465  DADD:  MOV    R5,-(SP)      ;SAVE A SCRATCH REGISTER
20 001507 100461  MOV    R1,-(SP)      ;SAVE ANOTHER
21 001510 104235  MOV    (R3)+,R5      ;GET LOW ORDER OPERAND
22 001511 104131  MOV    (R3),R1      ;GET HIGH ORDER OPERAND
23 001512 105245  ADD    (R4)+,R5      ;ADD LOW ORDER OPERAND
24 001513 115155  BCC   DADD1         ;BRANCH IF NO CARRY
25 001514 115401  INC   R1            ;ADD ONE TO HIGH IF CARRY
26 001515 105141  DADD1: ADD   (R4),R1  ;ADD OP 2
27 001516 100141  MOV   R1,(R4)      ;SAVE HIGH ORDER
28 001517 100445  MOV   R5,-(R4)     ;SAVE LOW ORDER
29 001520 104261  MOV   (SP)+,R1     ;RESTORE R1
30 001521 104265  MOV   (SP)+,R5     ;RESTORE R5
31 001522 117403  DEC   R3           ;RESTORE R3
32 001523 000000  RETURN
33         :

```

```

1
2 001524      DSUB:
3              : **
4              : DOUBLE PRECISION FIXED POINT SUBTRACT ROUTINE
5
6              : INPUTS:
7              : R3   POINTER TO OPERAND 1 (SUBTRAHEND)
8              : R4   POINTER TO OPERAND 2 (MINUEND)
9
10             : OUTPUT:
11             : R4   POINTER TO RESULT WHERE (R4) = (R4) - (R3)
12             : --
13
14 001524      PUSH   R1,R5           ; SAVE REGISTERS
15 001526 104245  MOV    (R4)+,R5      ; GET LO ORDER MINUEND
16 001527 104141  MOV    (R4),R1       ; GET HI ORDER MINUEND
17 001530 107135  SUB    (R3),R5          ; SUBTRACT LOW ORDER OPERANDS
18 001531 041533  BCC   10$           ; POSITIVE RESULT
19 001532 117401  DEC    R1                 ; BORROW FROM HI ORDER OPERAND
20 001533 107631 000001  SUB    1(R3),R1          ; SUBTRACT HI ORDER OPERANDS
21 001535 100141  MOV    R1,(R4)         ; STORE HI ORDER RESULT
22 001536 100445  MOV    R5,-(R4)       ; STORE LO ORDER RESULT
23 001537      POP    R5,R1         ; RESTORE REGISTERS
24 001541 000000  RETURN
25
26 001542      DMUL:
27              : **
28              : DOUBLE PRECISION FIXED POINT MULTIPLY ROUTINE
29
30             : INPUTS:
31             : R3 = POINTER TO MULTIPLIER (SINGLE PRECISION)
32             : R4 = POINTER TO MULTIPLICAND (DOUBLE PRECISION)
33
34             : OUTPUT:
35             : R4 = POINTER TO RESULT WHERE (R4) = (R4) * (R3)
36             : --
37 001542      PUSH   R0,R3           ; SAVE R0 & R3
38 001544 104137  MOV    (R3),R0         ; GET MULTIPLIER
39 001545 051552  BNE   5$             ; MULTIPLIER NOT = 0
40 001546 100147  MOV    R0,(R4)       ; LOAD LO ORDER RESULT
41 001547 100647 000001  MOV    R0,1(R4)      ; LOAD HI ORDER RESULT
42 001551 001565  BR    20$           ; RETURN
43 001552 104140 000733 5$: MOV    (R4),MULPC    ; COPY MULTIPLICAND FOR DADD
44 001554 104640 000001 000734  MOV    1(R4),MULPC+1
45 001557 104203 000733  MOV    #MULPC,R3
46 001561 117407 10$: DEC    R0             ; ADJUST MULTIPLIER FOR *1
47 001562 011565  BEQ   20$           ; MULTIPLIER = 0, EXIT
48 001563 021506  CAL_  DADD          ; PERFORM ITERATIVE ADDS
49 001564 001561  BR    10$
50 001565 20$: POP    R3,R0         ; RESTORE R0 & R3
51 001567 000000  RETURN
52
53 001570      DDIV:
54              : **
55              : DOUBLE PRECISION FIXED POINT DIVIDE
56              : INPUTS:
57              : R3 = POINTER TO DIVISOR (SINGLE PRECISION)

```

```

58                                     : HIGH ORDER WORD MUST BE ZERO
59                                     : R4 = POINTER TO DIVIDENT (DOUBLE PRECISION)
60                                     :
61                                     : OUTPUT:
62                                     : R3 = POINTER TO REMAINDER
63                                     : R4 = POINTER TO QUOTIENT
64                                     :
65                                     : NOTE - THE CASES WHERE EITHER THE DIVISOR OR DIVIDENT ARE ZERO,
66                                     : ARE NOT CONSIDERED IN THIS ROUTINE.
67                                     : --
68                                     :
69 001570 PUSH R0,R1,R2,R5                : SAVE REGISTERS
70 001574 114007 CLR R0                    : CLR LO ORDER QUOTIENT REG
71 001575 114001 CLR R1                    : CLR HI ORDER QUOTIENT REG
72 001576 104132 MOV (R3),R2              : GET DIVISOR
73 001577 104645 000001 10$: MOV 1(R4),R5 : GET HI ORDER DIVIDENT
74 001601 051606 BNE 20$                 : DIVISOR NOT = 0
75 001602 104145 MOV (R4),R5            : GET LO ORDER DIVIDENT
76 001603 106052 15$: CMP R5,R2          : IS DIVIDENT < DIVISOR ?
77 001604 041606 BCC 20$                 : NO, CONTINUE
78 001605 001614 BR 30$                  : YES, STOP
79 001606 021524 20$: CALL DSUB           : SYNTHESIZE DIVIDE
80 001607 105207 000001 ADD #1,R0        : INCR LO ORDER QUOTIENT
81 001611 041577 BCC 10$                 : DID NOT OVERFLOW
82 001612 115401 INC R1                    : ADJUST HI ORDER QUOTIENT
83 001613 001577 BR 10$
84 001614 104145 30$: MOV (R4),R5        : GET REMAINDER
85 001615 100147 MOV R0,(R4)              : LOAD LO ORDER QUOTIENT
86 001616 100641 000001 MOV R1,1(R4)          : LOAD HI ORDER QUOTIENT
87 001620 100135 MOV R5,(R3)              : LOAD REMAINDER
88 001621 POP R5,R2,R1,R0                : RESTORE REGISTERS
89 001625 000000 RETURN
90

```

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13
14 001626 10046 '
15 001627 10046
16 001630 104171
17 001631 104447 000001
18 001633 104637 000001
19 001635 106151
20 001636 041644
21 001637 104261
22 001640 104267
23 001641 106204 000000
24 001643 000000
25 001644 104261
26 001645 104267
27 001646 106204 077777
28 001650 000000
29 001651 106131
30 001652 051657
31 001653 104261
32 001654 104267
33 001655 106044
34 001656 000000
35 001657 106131
36 001660 041644
37 001661 001637

```

```

.....
DOUBLE COMPARE
INPUT PARAMETERS
R3     CONTAINS A POINTER TO THE FIRST OPERAND
R4     CONTAINS A POINTER TO THE SECOND OPERAND
OUTPUT PARAMETERS
THE FLAGS ARE SET AS IF A SINGLE PRECISION 'CMP' HAD OCCURED
.....
DCMP:  MOV     R0,-(SP)           ;SAVE R0 FOR USE AS SCRATCH
      MOV     R1,-(SP)           ;SAVE R1 FOR USE AS SCRATCH
      MOV     (R4),R1           ;GET LOW ORDER DEST OPERAND
      MOV     1(R4),R0          ;GET HIGH ORDER DEST OPERAND
      CMP     1(R3),R0          ;DO ACTUAL HIGH ORDER TEST
      BEQ     DCMP1             ;GO DO ADDITIONAL TESTING
      BCC     DCMP2             ;SRC HI, CLEAN UP AND RTN
DCMP4: MOV     (SP)+,R1         ;RESTORE R1
      MOV     (SP)+,R0         ;RESTORE R0
      CMP     #0,R4            ;SET CONDITION CODES - SRC LSS
      RETURN                          ;AND RETURN
DCMP2: MOV     (SP)+,R1         ;RESTORE R1
      MOV     (SP)+,R0         ;RESTORE R0
      CMP     #077777,R4       ;SET CONDITION CODES - DST LSS
      RETURN                          ;AND RETURN
DCMP1: CMP     (R3),R1         ;TEST LOW ORDER
      BNE     DCMP3             ;BRANCH IF NOT EQUAL
      MOV     (SP)+,R1         ;RESTORE R1
      MOV     (SP)+,R0         ;RESTORE R0
      CMP     R4,R4            ;SET CONDITION CODES - EQUAL
      RETURN                          ;AND RETURN
DCMP3: CMP     (R3),R1         ;COMPARE AGAIN
      BCC     DCMP2             ;BRANCH ON SRC HI
      BR      DCMP4             ;BRANCH ON SRC LOW

```

```

1          .SBTTL SDI SUBROUTINES
2
3          GET STATUS
4
5          OUTPUT PARAMETERS
6
7          CLEARS DRIVE STATUS AND GETS CHARACTERISTICS
8          IF NOT ALREADY RECEIVED
9
10
11
12 001662  GSTATS: PUSH R3          ;PUSH R3
13 001663  PUSH R5          ;PUSH R5
14 001664  104203 000741  STATST: MOV #CR.GST,R3 ;POINT TO GET STATUS TABLE
15 001666  022016  CALL TALK ;GET STATUS
16 001667  104207 001030  MOV #ST,R0 ;POINT TO SUBUNIT CHARACTERISTICS
17 001671  104673 000002  MOV ST.ERB(R0),R3 ;GET ERROR BYTE
18 001673  103203 177420  BIC #ST.DF+HIBYTE,R3 ;CLEAR HIGH BYTE AND DF BIT
19 001675  115003  TST R3 ;ANY NEED TO ISSUE DRIVE CLEAR ?
20 001676  011702  BEQ STSK1 ;NOPE - SKIP IT
21 001677  104030 001027  MOV R3,DCLR+1 ;STORE MASK IN DRIVE CLR COMMAND
22 001701  022243  CALL CLEAR ;DO A DRIVE CLEAR
23 001702  104205 001030  STSK1: MOV #ST,R5 ;POINT TO STATUS BLOCK
24 001704  105205 000001  ADD #1,R5 ;POINT TO 2ND WORD
25 001706  104253  MOV (R5)+,R3 ;GET FIRST WORD OF STATUS
26 001707  104202 000001  MCV #1,R2 ;ERROR SUBCODE IN CASE
27 001711  102203 000040  BIT #ST.DR,R3 ;IS DRIVE IN DIAGNOSTIC MODE
28 001713  052013  BNE STPNIC ;YES, WE LOSE
29 001714  115402  INC R2 ;ERROR SUBCODE 2
30 001715  102203 000001  BIT #ST.RU,R3 ;IS RUN STOP SWITCH OUT
31 001717  012013  BEQ STPNIC ;YES, LOSE AGAIN
32 001720  104202 000004  MOV #4,R2 ;SUBCODE
33 001722  102203 000002  BIT #ST.PS,R3 ;PORT SWITCH OUT ?
34 001724  012013  BEQ STPNIC ;YES - DIE PAINFULLY
35 001725  104032  MOV R3,R2 ;GET STATUS MODE BYTE
36 001726  110702  SWAB R2 ;SWITCH WRITE PROTECT TO LOW BYTE
37 001727  102302 001020  BIT GSR+1,R2 ;WRITE PROTECTED ?
38 001731  011745  BEQ SRCK ;IF NOT CHECK IF SPINNING
39 001732  104202 000003  MOV #3,R2 ;IN CASE IT'S FATAL
40 001734  102200 000001 001220  BIT #WP,FLAG1 ;BEEN HERE ONCE ?
41 001737  052013  BNE STPNIC ;YUP - GIVE UP
42 001740  101200 000001 001220  BIS #WP,FLAG1 ;SET BEEN HERE FLAG
43 001743  022235  CALL ACCESS ;TRY TO RESET IT
44 001744  001664  BR STATST ;AND SEE IF IT WORKED
45 001745  102203 000020  SRCK: BIT #ST.SR,R3 ;IS PACK SPINNING?
46 001747  051752  BNE STFORM ;YES, TEST FOR FORMAT ENABLE
47 001750  022160  CALL LOAD ;NO, SPIN PACK
48 001751  001664  JMP STATST ;SEE IF ANYTHING CHANGED
49 001752  102203 002000  STFORM: BIT #ST.FO,R3 ;IS FORMATTING ENABLED?
50 001754  051757  BNE STDIAG ;YES, TEST FOR DIAG ACCESS
51 001755  022235  CALL ACCESS ;NO, SET UP DIAG/FORM ACCESS
52 001756  001664  JMP STATST ;SEE IF ANYTHING CHANGED
53 001757  102203 001000  STDIAG: BIT #ST.DB,R3 ;IS DIAG CYL ACCESS ALLOWED
54 001761  051764  BNE STWLK ;YES, CHECK FOR ERRORS
55 001762  022235  CALL ACCESS ;NO, SET UP DIAG/FORM ACCESS
56 001763  001664  JMP STATST ;SEE IF ANYTHING CHANGED
57 001764  104153  STWLK: MOV (R5),R3 ;GET SECOND STATUS WORD

```

58	001765	102203	000010		BIT	#ST.WE,R3	:ANY WRITE ENABLE ERRORS
59	001767	011772			BEQ	CHAR	:NO, GET CHARACTERISTICS
60	001770	022235			CALL	ACCESS	:TRY ENABLING LOGICAL WRITE
61	001771	001664			BR	STATST	:AND CHECK WORLD AGAIN
62	001772	102200	010000	001217	CHAR: BIT	#CHRDNE,FLAG	:CHARACTERISTICS ALREADY RECEIVED
63	001775	052007			BNE	STSKP	:YUP - NO NEED TO GET AGAIN
64	001776	104203	000745		MOV	#CR.GCR,R3	:POINT TO GET CHAR CMD TABLE
65	002000	022016			CALL	TALK	:GET CHARACTERISTICS
66	002001	104203	000751		MOV	#CR.GSR,R3	:GET SUBUNIT CHARACTERISTICS
67	002003	022016			CALL	TALK	:GET THEM
68	002004	101200	010000	001217	BIS	#CHRDNE,FLAG	:SET CHAR DONE BIT
69	002007				STK P: POP	R5	:RESTORE R5
70	002010				POP	R3	:RESTORE R3
71	002011	114001			CLR	R1	:CLEAR ERROR INDICATOR
72	002012	000000			RETURN		:RETURN TO CALLER
73	002013	104201	000001		STPNIC: MOV	#1,R1	:INDICATE STATUS FAILURE
74	002015	022552			CALL	FRMNT	:SEND ERROR MSG AND QUIT

```

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11
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13 002016
14 002017
15 002020 104663 000001
16 002022 104237
17 002023 104231
18 002024 104302 000740
19 002026 060004
20 002027 115001
21 002030 012036
22 002031 115400 000716
23 002033 104201 000002
24 002035 002103
25 002036 102200 100000 001217 MSG1:
26 002041 052044
27 002042 114000 000716
28 002044 104231
29 002045 104137
30 002046 104302 000740
31 002050 060005
32 002051 115001
33 002052 012060
34 002053 115400 000715
35 002055 104201 000004
36 002057 002103
37 002060 106207 000175
38 002062 052070
39 002063 115400 000715
40 002065 104201 000003
41 002067 002103
42 002070 102200 100000 001217 TALKRT:
43 002073 052076
44 002074 114000 000715
45 002076
46 002077
47 002100 000000
48 002101 114002
49 002102 022552
50 002103 102200 100000 001217 TCLEAR:
51 002106 052115
52 002107 101200 100000 001217
53 002112 104060 001216
54 002114 002117
55 002115 104306 001216
56 002117 106300 001502 000716 TALKIP1:
57 002122 072101

```

TALK ROUTINE

INPUT PARAMETERS

R2 CONTAINS UNIT NUMBER CODE

R3 CONTAINS A POINTER TO A COMMAND/RESPONSE ADDRESS/SIZE TABLE

OUTPUT PARAMETERS

```

TALK:  PUSH    R3
       PUSH    R4
LOOP1:  MOV     1(SP),R3       ;RESTORE R3 FOR RETRIES
       MOV     (R3)+,R0       ;GET COMMAND ADDRESS
       MOV     (R3)+,R1       ;GET COMMAND SIZE
       MOV     UNIT,R2       ;MAKE SURE HAVE INTERCONNECT
       XFC     SEND           ;SEND GET STATUS COMMAND
       TST     R1             ;SUCCESSFUL?
       BEQ     MSG1          ;YES, BRANCH
       INC     UN.ERT         ;INCREMENT ERROR COUNT
       MOV     #2,R1         ;ERROR NUMBER IN CASE
       BR      TCLEAR        ;DO RECOVERY
MSG1:   BIT     #RTY,FLAG     ;IN A RETRY?
       BNE     LOOP2         ;YES - DON'T CLEAR COUNTER
       CLR     UN.ERT         ;FOR RESET
LOOP2:  MOV     (R3)+,R1       ;POINT TO RCV BUFFER
       MOV     (R3),R0       ;SET SIZE OF REPLY
       MOV     UNIT,R2       ;MAKE SURE HAVE INTERCONNECT
       XFC     RCV            ;RCV REPLY TO GET STATUS
       TST     R1             ;SUCCESSFUL?
       BEQ     TALKDN        ;YES, CHECK STATUS
       INC     UN.ERR         ;INCREMENT ERROR COUNT
       MOV     #4,R1         ;ERROR CODE IN CASE
       BR      TCLEAR        ;DO RECOVERY
TALKDN:  CMP     #UNSEC,R0     ;WAS CMD UNSUCCESSFUL?
       BNE     TALKRT        ;YES, DONE
       INC     UN.ERR         ;INCREMENT ERROR COUNT
       MOV     #3,R1         ;ERROR CODE IN CASE
       BR      TCLEAR        ;NO, TRY AGAIN
TALKRT:  BIT     #RTY,FLAG     ;IN A RETRY?
       BNE     TALKP         ;YUP - SKIP CLEAR
       CLR     UN.ERR         ;CLEAR FOR REST
TALKP:  POP     R4             ;RESTORE R4
       POP     R3             ;RESTORE R3
       RETURN
ERRT:   CLR     R2             ;CLEAR SUBCODE
       CALL    ERRMNT         ;ERROR EXIT
TCLEAR:  BIT     #RTY,FLAG     ;IN A RETRY?
       BNE     TALKIP        ;YUP - SKIP FLAG SET AND STACK SAVE
       BIS     #RTY,FLAG     ;SET FLAG
       MOV     SP,STCKSV     ;SAVE STACK POINTER
       BR      TALIP1        ;SKIP RETRY HANDLING
TALKIP:  MOV     STCKSV,SP     ;RESTORE STACK POINTER
TALIP1:  CMP     RETRY,UN.ERT   ;DONE RETRIES?
       BMI     ERRT          ;YUP - CAN IT

```


58	002123	106300	001502	000715	CMP	RETRY,UN.ERR	:OVER THE LIMIT ?
59	002126	072101			BMI	ERRT	:YUP
60	002127	104302	000740		MOV	UNIT,R2	:GET UNIT
61	002131	060011			XFC	DINIT	:INIT THE DRIVE
62	002132	022671			CALL	STATVL	:TST DRIVER STATUS VALIDITY
63	002133	052143			BNE	TERR	:IF NOT ZERO - NO GOOD
64	002134	022656			CALL	TIMER	:WAIT ANOTHER 2 SECONDS
65	002135	022656			CALL	TIMER	:TO MAKE SURE DRIVER HAS ENOUGH TIME
66	002136	022671			CALL	STATVL	:GET VALID STATUS AGAIN
67	002137	052143			BNE	TERR	:IF NO GOOD - ERROR
68	002140	102201	000001		BIT	#RCVRDY,R1	:IS RECEIVER READY SET
69	002142	052147			BNE	TATTN1	:YES - ALL SET
70	002143	104201	000024		TERR:	MOV #20.,R1	:SET ERROR CODE
71	002145	114002			CLR	R2	:CLEAR SUBCODE
72	002146	022552			CALL	ERRMNT	:DIE PEACEFULLY
73	002147	021662			TATTN1:	CALL GSTATS	:GET STATUS AND CLEAR ERRORS
74	002150	103200	100000	001217	BIC	#RTY,FLAG	:CLEAR RETRY FLAG
75	002153	002020			BR	LOOP1	:AND TRY AGAIN
76					:		
77					:		
78					:	RECAL ROUTINE	
79	002154	100463			RECAL:	MOV R3, -(SP)	:SAVE R3
80	002155	104203	001001			MOV #CR.RCL,R3	:POINT TO RECAL TABLE
81	002157	002165				JMP LOAD5	:SEND LMD VIA LOAD ROUTINE
82					:		
83					:	LOAD ROUTINE	
84					:		
85	002160	100463			LOAD:	MOV R3, -(SP)	:SAVE R3
86	002161	114000	000717			CLR UN.ERI	:FOR INIT
87	002163	104203	000761		LOAD1:	MOV #CR.RUN,R3	:POINT TO LOAD DRIVE TABLE
88	002165				LOAD5:	PUSH R4	:SAVE R4
89	002166	104137				MOV (R3),R0	:GET COMMAND ADDRESS
90	002167	104631	000001			MOV 1(R3),R1	:GET COMMAND SIZE
91	002171	104302	000740			MOV UNIT,R2	:GET INTERCONNECT
92	002173	060004				XFC SEND	:ISSUE GET STATUS COMMAND
93	002174	115001				TST R1	:SUCCESSFUL ?
94	002175	012205				BEQ LOAD2	:YUP - SKIP RETRY
95	002176	115400	000717			INC JN.ERI	:INC COUNT
96	002200	106300	001502	000717		CMP RETRY,UN.ERI	:DONE ALL RETIES ?
97	002203	072231				BMI LOADER	:YUP
98	002204	002165				BR LOAD5	
99	002205	114000	000717		LOAD2:	CLR UN.ERI	:FOR ERROR CLEAR
100	002207	104304	001250			MOV LTO,R4	:LONG TIMEOUT VALUE (SECONDS)
101	002211	104631	000002		LOAD3:	MOV 2(R3),R1	:GET RECEIVE BUFFRE
102	002213	104637	000003			MOV 3(R3),R0	:GET BUFFER LENGTH
103	002215	104302	000740			MOV UNIT,R2	:GET INTERCONNECT
104	002217	060005				XFC RCV	:RECEIVE SDI RESPONSE
105	002220	115001				TST R1	:SUCCESSFUL ?
106	002221	012226				BEQ LOAD4	:YUP - SKIP RETRY
107	002222	022656				CALL TIMER	:WAIT 1 SECOND
108	002223	117404				DEC R4	:DECREMENT COUNTER
109	002224	052211				BNE LOAD3	:LOOP TILL DONE
110	002225	002231				BR LOADER	:IF NOT DONE YET - THEN ERROR
111	002226				LOAD4:	POP R4	:RESTORE R4
112	002227	104263				MOV (SP)+,R3	:RESTORE R3
113	002230	000000				RETURN	:RETURN TO CALLER
114	002231	104201	000003		LOADER:	MOV #3,R1	:ERROR CODE

115	002233	114002		CLR	R2				:CLEAR SUBCODE
116	002234	022552		CALL	ERRMNT				:DIE
117									
118									
119									
120	002235	100463		ACCESS:	MOV	R3,-(SP)			:SAVE R3
121	002236	104203	000765		MOV	#CR.ACC,R3			:POINT TO ACCESS TABLE
122	002240	022016			CALL	TALK			:SEND ACCESS CMD
123	002241	104263			MOV	(SP)+,R3			:RESTORE R3
124	002242	000000			RETURN				:RETURN TO CALLER
125									
126									
127									
128	002243	100463		CLEAR:	MOV	R3,-(SP)			:SAVE R3
129	002244	104203	000771		MOV	#CR.CLR,R3			:POINT TO CLEAR TABLE
130	002246	022016			CALL	TALK			:SEND CLEAR CMD
131	002247	104263			MOV	(SP)+,R3			:RESTORE R3
132	002250	000000			RETURN				:RETURN TO CALLER
133									
134									
135									
136	002251	100463		SEEK:	MOV	R3,-(SP)			:SAVE R3
137	002252	100467			MOV	R0,-(SP)			:SAVE R0
138	002253	104302	000740	SEEK0:	MOV	UNIT,R2			:MAKE SURE HAVE UNIT
139	002255	104203	000775		MOV	#CR.SEK,R3			:POINT TO SEEK TABLE
140	002257	022016			CALL	TALK			:SEND SEEK COMMAND
141	002260	104303	001251		MOV	STO,R3			:SHORT TIMEOUT
142	002262	022671		SEEK1:	CALL	STATVL			:CHECK FOR STATUS VALIDITY
143	002263	052307			BNE	SEEK5			:IF NOT ZERO - DIE
144	002264	102201	000002		BIT	#ATTN,R1			:ANY PROBLEMS
145	002266	052310			BNE	SEEK2			:YES, BRANCH
146	002267	102201	100000		BIT	#RWRDY,R1			:NO, DONE?
147	002271	052301			BNE	SEEK6			:ALL DONE
148	002272	117403			DEC	R3			:DECREMENT COUNTER
149	002273	012321			BEQ	SEEK3			:IF ZERO THEN DEAD
150	002274	104207	000240	SEEK7:	MOV	#160.,R0			:1MS DELAY
151	002276	117407			DEC	R0			:DECREMENT COUNTER
152	002277	052276			BNE	SEEK7			:DELAY LOOP
153	002300	002262			BR	SEEK1			:TRY AGAIN
154	002301	114001		SEEK6:	CLR	R1			:CLEAR ERROR FLAG
155	002302	114000	000720	SEEK4:	CLR	UN.SEK			:FOR RESET
156	002304	104267			MOV	(SP)+,R0			:YES, RESTORE R0
157	002305	104263			MOV	(SP)+,R3			:RESTORE R3
158	002306	000000			RETURN				:RETURN TO CALLER
159	002307	022371		SEEK5:	CALL	INITPT			:INIT THE DRIVE
160	002310	115400	000720	SEEK2:	INC	UN.SEK			:INCREMENT RETRY COUNTER
161	002312	106300	001502		CMP	RETRY,UN.SEK			:HAVE WE DONE ALL RETRIES?
162	002315	012321			BEQ	SEEK3			:YES, PANIC
163	002316	021662			CALL	GSTATS			:PANIC AND CALL GET STATUS
164	002317	022154			CALL	RECAL			:RECAL DRIVE
165	002320	002253			BR	SEEK0			:AND TRY AGAIN
166	002321	104201	177775	SEEK3:	MOV	#-3,R1			:SET ERROR CODE
167	002323	002302			BR	SEEK4			:RESTORE REGS AND RETURN
168									
169									
170									
171	002324	100463		DISCON:	MOV	R3,-(SP)			:SAVE R3

```

172 002325 104203 000755      MOV      #CR.DIS,R3      ;DISCONNECT WITH
173 002327 022016              CALL     TALK            ;SEND UNLOAD CMD
174 002330 104263              MOV      (SP)+,R3       ;RESTORE R3
175 002331 000000              RETURN                  ;RETURN TO CALLER
176
177      ;
178      ; ONLINE ROUTINE
179 002332 100463      ONLIN:  MOV      R3,-(SP)      ;SAVE R3
180 002333 104203 001011      MOV      #CR.ONL,R3     ;ONLINE COMMAND
181 002335 022016              CALL     TALK            ;BRING DRIVE ONLINE
182 002336 104263              MOV      (SP)+,R3       ;RESTORE R3
183 002337 000000              RETURN                  ;RETURN TO CALLER
184
185      ;
186      ; INITIALIZE ROUTINE
187 002340 100461      INITIT: MOV      R1,-(SP)      ;SAVE R1
188 002341              PUSH     R3,R4          ;SAVE R3 AND R4
189 002343 104204 000001      MOV      #1,R4         ;START WITH PORT 0
190 002345 104203 000004      MOV      #4,R3         ;INIT PORT COUNTER
191 002347 104042      INIT5:  MOV      R4,R2     ;SET UP INTERCONNECT
192 002350 060011              XFC      DINIT          ;INIT DRIVE
193 002351 104207 066540      MOV      #28000.,R0    ;TIMER (APPROX 2 SECS)
194 002353 022671      ATTN1:  CALL     STATVL      ;CHECK STATUS VALIDITY
195 002354 052362              BNE      AOUT           ;IF NOT ZERO - NO GOOD
196 002355 117407              DEC      R0             ;DEC COUNT
197 002356 012362              BEQ      AOUT           ;IF ZERO THEN DEAD
198 002357 102201 000001      BIT      #RCVRDY,R1    ;IS REECEIVER READY SET ?
199 002361 012353      AOUT:   BEQ      ATTN1       ;NO, TRY AGAIN
200 002362 110204              ROL      R4             ;NEXT PORT
201 002363 117403              DEC      R3             ;DECREMENT COUNTER
202 002364 052347              BNE      INIT5         ;IF NOT DONE DO NEXT PORT
203 002365              POP      R4,R3         ;RESTORE R3 AND R4
204 002367 104261              MOV      (SP)+,R1      ;RESTORE R1
205 002370 000000              RETURN                  ;AND RETURN TO CALLER
206
207      ;
208      ; INIT GIVEN PORT
209
210 002371 104302 000740      INITPT: MOV      UNIT,R2    ;GET PORT NUMBER
211 002373 060011              XFC      DINIT          ;DO THE INIT
212 002374 104207 066540      MOV      #28000.,R0    ;1 SECOND TIMER
213 002376 022671      INITP1: CALL     STATVL      ;VALIDATE STATUS
214 002377 052406              BNE      INITDD        ;DEAD IF NOT VALID
215 002400 117407              DEC      R0             ;DECREMETN COUTNER
216 002401 012406              BEQ      INITDD        ;DEAD IF COUNT EXPIRED
217 002402 102201 000001      BIT      #RCVRDY,R1    ;DONE INIT ?
218 002404 012376              BEQ      INITP1       ;NOPE - KEEP TRYING
219 002405 000000              RETJRN                ;EXIT
220 002406 104201 000024      INITDD: MOV      #20.,R1 ;ERROR CODE
221 002410 114002              CLR      R2             ;NO SUBCODE
222 002411 022552              CALL     ERRMWT        ;ERROR EXIT

```

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7
8 002412 104204 001341
9 002414 105014
10 002415 104203 003047
11 002417 022526
12 002420 115007
13 002421 052426
14 002422 114000 000715
15 002424
16 002425 003047
17 002426 106300 001502 000715
18 002431 012435
19 002432 115400 000715
20 002434 002417
21 002435 104012
22 002436 104201 000005
23 002440 101200 000020 001220
24 002443 022552

.SBTTL OVERLAY PROCESSING ROUTINES
OVERLAY PROCESSING ROUTINES
R1 = OFFSET INTO TABLE
NEXT CALLS OVERLAY FOR NEXT CODE OVERLAY
NEXT: MOV #OVL TBL,R4 ;GET POINTER TO OVERLAY TABLE
ADD R1,R4 ;INDEX INTO TABLE
MOV #START,R3 ;UDA ADDRESS TO LOAD AT
NEXT5: CALL OVLAY ;CALL ROUTINE TO DO OVERLAY
TST R0 ;CHECKSUM O.K. ??
BNE OERR ;YES - RETRY IF POSSIBLE
CLR UN.ERR ;CLEAR ERROR COUNT
POP R1 ;POP CURRENT RETURN ADDRESS
BR START ;GO TO OVERLAY
OERR: CMP RETRY,UN.ERR ;DONE ALL RETRIES ?
BEQ OERR2 ;YUP
INC UN.ERR ;INC ERROR AND
BR NEXT5 ;TRY AGAIN
OERR2: MOV R1,R2 ;GET ERROR CODE FROM XFC
MOV #5,R1 ;SET UNIBUS READ ERROR
BIS #DEAD,FLAG1 ;INDICATE HOST GONE
CALL ERRMNT ;ERROR RETURN
    
```

```

1
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9
10 002444 104303 001153
11 002446
12 002447 104204 001341
13 002451 105014
14 002452 104203 003047
15 002454 022526
16 002455 115007
17 002456 012461
18 002457 022510
19 002460 002454
20 002461 114000 000715
21 002463 104203 002472
22 002465 100463
23 002466 104203 003047
24 002470 100463
25 002471 000000
26
27
28 002472
29 002473 104010 001153
30 002475 104204 001341
31 002477 105014
32 002500 104203 003047
33 002502 022526
34 002503 115007
35 002504 012507
36 002505 022510
37 002506 002502
38 002507 000000
39 002510 106300 001502 000715
40 002513 012517
41 002514 115400 000715
42 002516 000000
43 002517 101200 000020 001220
44 002522 114002
45 002523 104201 000005
46 002525 022552

```

```

:
: PAGE BRINGS IN AN OVERLAY AND CALLS IT
: UPON RETURN OF THE OVERLAY PAGE BRINGS IN
: THE PREVIOUS OVERLAY AND BEGINS EXECUTION
: AT THE POINT THE CALL TO PAGE WAS MADE
:
: R1 - OVERLAY TO BE BROUGHT IN
:
PAGE:  MOV    CUROVL,R3      ;GET 'CALLING' OVERLAY
      PUSH   R3            ;PUSH FOR LATER RETURN
      MOV    #OVLTLB,R4    ;POINT TO OVERLAY TABLE
      ADD    R1,R4         ;POINT TO ENTRY FOR NEW OVERLAY
      MOV    #START,R3    ;POINT TO UDA LOAD ADDRESS
PALP1: CALL   OVRLAY       ;BRING IN NEW OVERLAY
      TST    R0            ;EDC O.K. ?
      BEQ    PALP2        ;YUP
      CALL   PAERR        ;CALL ERROR HANDLER
      BR     PALP1        ;TRY AGAIN
PALP2: CLR    UN.ERR       ;CLEAR ERROR COUNT
      MOV    #PAGER,R3    ;ADDRESS FOR OVERLAY TO RETURN TO
      MOV    R3,-(SP)     ;PUSH ON STACK
      MOV    #START,R3    ;STARTING ADDRESS OF NEW OVERLAY
      MOV    R3,-(SP)     ;PUSH ON STACK FOR 'CALL'
      RETURN              ;'CALL' OVERLAY
      ;NEXT ADDRESS ON STACK IS RETURN
      ;ADDRESS TO PAGE
      ;POP OLD OVERLAY NUMBER
      ;MAKE IT CURRENT
      ;POINT TO OVERLAY TABLE
      ;POINT TO OLD OVERLAY BLOCK
      ;POINT TO UDA LOAD ADDRESS
PAGER: POP    R1           ;BRING IT IN
      MOV    R1,CUROVL    ;EDC O.K. ?
      MOV    #OVLTLB,R4  ;YUP
      ADD    R1,R4       ;ERROR HANDLER
      MOV    #START,R3   ;TRY AGAIN
      CALL   OVRLAY      ;RETURN TO ADDRESS PAGE CALLED FROM
      ;DONE ALL RETRIES ?
      ;YUP
      ;INC ERROR COUNT
      ;RETURN AND TRY AGAIN
      ;SET HOST GONE
      ;NO SUBCODE
      ;UNIBUS READ ERROR
      ;DIE
PALP4: CALL   OVRLAY
      TST    R0
      BEQ    PALP3
      CALL   PAERR
      BR     PALP4
PALP3: RETURN
PAERR: CMP    RETRY,UN.ERR
      BEQ    PAERR1
      INC    UN.ERR
      RETURN
PAERR1: BIS   #DEAD,FLAG1
      CLR    R2
      MOV    #5,R1
      CALL   ERRMNT

```

1
2
3
4
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6
7 002526 104647 000001
8 002530 104641 000002,
9 002532 104642 000000
10 002534 060013
11 002535 000000

.....
OVERLAY ROUTINE
ISSUES UNIBUS READ TO GET OVERLAY
R3 -> UDA ADDRESS TO LOAD
OVRLAY: MOV HSTLO(R4),R0 :LOW ORDER UNIBUS ADDRESS
MOV HSTHI(R4),R1 :HI ORDER UNIBUS ADDRESS
MOV LEN(R4),R2 :WORD COUNT TO OVERLAY
XFC UREAD :ISSUE UNIBUS READ
RETURN :RETURN TO CALLING ROUTINE

```

1          .SBTTL MISCELLANEOUS COMMON ROUTINES
2          :
3          : SEND MAINTENANCE READ COMMAND
4          :
5 002536 104207 001263 SNDMNT: MOV    #DMBUF,R0      ;POINT TO BUFFER
6 002540 104201 000016   MOV    #DMBUFL,R1    ;LENGTH
7 002542 060016          XFC    MAINTR      ;ISSUE COMMAND
8 002543 000000          RETURN
9          :
10         : RECEIVE MAINTENANCE WRITE DATA
11         :
12         :
13         :
14 002544 104207 001263 RCMVMT: MOV    #DMBUF,R0      ;POINT TO BUFFER
15 002546 104201 000016   MOV    #DMBUFL,R1    ;SIZE OF BUFFER
16 002550 060017          XFC    MAINTW      ;RECEIVE MAINT WRITE DATA
17 002551 000000          RETURN
18         :
19         : ERROR RETURN TO HOST
20         :
21         :
22         :
23         :
24 002552 102200 000010 001220 ERRMNT: BIT    #ERDN,FLAG1    ;TRIED TO QUIT YET ?
25 002555 052603          BNE    ALLOVR      ;YUP - DISCON FAILED
26 002556 101200 000010 001220   BIS    #ERDN,FLAG1    ;SET FLAG
27 002561 104207 001263   MOV    #DMBUF,R0      ;POINT TO MAINT BUFFER
28 002563 100671 000002   MOV    R1,2(R0)      ;PUT ERROR NUMBER IN MSG
29 002565 100672 000003   MOV    R2,3(R0)      ;PUT IN ERROR SUBCODE
30 002567 114002          CLR    R2              ;CLEAR *** TEMP ***
31 002570 100672 000004   MOV    R2,4(R0)      ;ONLY ONE WORD RIGHT NOW ***
32 002572 104301 001324   MOV    EMSG,R1      ;GET DUP CODE
33 002574 100171          MOV    R1,(R0)        ;STORE IT
34 002575 104301 001325   MOV    EMSG+1,R1    ;GET 'E' IDENTIFIER
35 002577 100671 000001   MOV    R1,1(R0)     ;STORE IT
36 002601 022536          CALL   SNDMNT        ;SEND TO HOST
37 002602 022324          CALL   DISCON        ;DISCONNECT/SPINDOWN DRIVE
38 002603 114007          ALLOVR: CLR    R0      ;IN CASE O.K
39 002604 102200 000020 001220   BIT    #DEAD,FLAG1  ;DIE OR JUST QUIT ?
40 002607 012611          BEQ    ALLOV1        ;JUST QUIT
41 002610 115407          INC    R0            ;MAKE NON ZERO
42 002611 060021          ALLOV1: XFC    DONE  ;EXIT DM MODE
43         :
44         : ERROR RETRY SEQUENCER
45         :
46 002612 115000 001505   ERRHND: TST    RECTMP  ;RECOVERY LEVEL 0 ?
47 002614 012624          BEQ    ERRLST        ;YES - DO LAST DITCH EFFORT
48 002615 104300 001505 001103   MOV    RECTMP,ERECOV+1 ;STORE LEVEL IN COMMAND
49 002620 104203 001005   MOV    #CR.ERV,R3   ;POINT TO COMMAND
50 002622 022016          CALL   TALK          ;DO ERROR RECOVERY
51 002623 000000          RETURN
52 002624 022154          ERRLST: CALL   RECAL  ;DO A RECALIBRATE
53 002625 022251          CALL   SEEK        ;RESEEK
54 002626 000000          RETURN
    
```


1				:		
2				:		
3				:	COMPUTE EDC	
4				:	R2 -> BUFFER	
5				:		
6	002627			CEDC:	PUSH R2,R4,R5	
7	002632	104303	001246		MOV INI,R3	:INITIAL VALUE (69)
8	002634	104305	001247		MOV CNT,R5	:SECTOR SIZE (258)
9	002636	104224		EAGAIN:	MOV (R2)+,R4	:MOVE A WORD INTO R4
10	002637				XOR R4,R3	:XOR INTO EDC
11	002643	105203	000000		ADD #0,R3	:CLEAR CARRY
12	002645	110203			ROL R3	:CIRCLE LEFT
13	002646	042650			BCC NOCRY	:IF NO CARRY SKIP
14	002647	115403			INC R3	:INCREMENT IF CARRY
15	002650	117405		NOCRY:	DEC R5	:DECREMENT COUNTER
16	002651	052636			BNE EAGAIN	:IF NOT 0 DO NEXT WORD
17	002652				POP R5,R4,R2	
18	002655	000000			RETURN	:R3 = EDC
19				:		
20				:		
21				:		
22				:	ONE SECOND DELAY ROUTINE	
23				:		
24				:		
25	002656			TIMER:	PUSH R3	:SAVE R3
26	002657	104203	100000		MOV #TIMVAL,R3	:LOOP COUNTER (32768)
27	002661	104011		TIMLP:	MOV R1,R1	:DELAY
28	002662	104011			MOV R1,R1	:DELAY
29	002663	104011			MOV R1,R1	:DELAY
30	002664	104011			MOV R1,R1	:DELAY
31	002665	117403			DEC R3	:DECRMENT COUNTER
32	002666	052661			BNE TIMLP	:LOOP TILL DONE
33	002667				POP R3	:RESTORE R3
34	002670	000000			RETURN	:RETUR TO CALLER
35				:		
36				:		
37				:		
38				:	VALIDATE XFC STATUS RESPONSE	
39				:		
40				:		
41	002671			STATVL:	PUSH R5	:SAVE R5
42	002672	104205	077777		MOV #77777,R5	:COUNTER (1 SECOND)
43	002674	060007		STATRE:	XFC STATUS	:GET DRIVE STATUS
44	002675	117405			DEC R5	:INCREMENT COUNTER
45	002676	012710			BEQ STATFR	:IF ZERO - NO GOOD
46	002677	102201	000004		BIT #VLD,R1	:LOW VALID BIT GOOD ?
47	002701	012674			BEQ STATRE	:NO - RETRY
48	002702	102201	000400		BIT #PARIT1,R1	:PARITY ERROR ?
49	002704	052674			BNE STATRE	:YES - RETRY
50	002705				POP R5	:RESTORE R5
51	002706	106011			CMP R1,R1	:SET COND CODE EQ ZERO
52	002707	000000		STATRT:	RETURN	:RETURN
53	002710			STATFR:	POP R5	:RESTORE R5
54	002711	106201	177777		CMP #177777,R1	:MAKE SURE NOT EQUAL
55	002713	002707			BR STATRT	:RETURN

```

1
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5 002714 104207 001430
6 002716 104641 000001
7 002720 100671 000003
8 002722 104143
9 002723 100673 000002
10 002725 104201 001052
11 002727 060020
12 002730 104670 000011 001112
13 002733 104670 000006 001076
14 002736 104670 000007 001077
15 002741 104670 000010 001100
16 002744 022251
17 002745 115001
18 002746 052750
19 002747 000000
20 002750 104201 000012
21 002752 104207 001430
22 002754 104672 000006
23 002756 022552

```

```

:
:
: CONVERT BLOCK NUMBER TO PHYSICAL ADDRESS AND SEEK
: R4 -> BLOCK NUMBER
:
CVTSK: MOV #CONBLK,R0 ;POINT AT CONVERT BLOCK
MOV 1(R4),R1 ;GET HIGH ORDER
MOV R1,V2+1(R0) ;STORE IT
MOV (R4),R3 ;GET LOW ORDER
MOV R3,V2(R0) ;STORE IT
MOV #SCR,R1 ;POINT TO SUBUNIT CHARACTERISTICS
XFC CVT ;CONVERT IT
MOV TRK(R0),CURTRK ;GET TRACK NUMBER
MOV CYL(R0),ISEEK+1 ;LOW ORDER XYLINDER
MOV CYL+1(R0),ISEEK+2 ;HIGH ORDER CYLINDR
MOV GRP(R0),ISEEK+3 ;GROUP NUMBER
CALL SEEK ;DO SEEK
TST R1 ;ANY ERROR ?
BNE CVTERR ;YUP ERRCR
RETURN
CVTERR: MOV #10.,R1 ;SEEK ERROR
MOV #CONBLK,R0 ;CONVERT BLOCK
MOV CYL(R0),R2 ;CYLINDER FAILED ON
CALL ERRMNT ;ERROR RETURN

```

```
1
2
3
4
5
6 002757          PRIMRB: PUSH      R2
7 002760 104140   MOV          (R4),TEMP      ;GET LOW ORDER LBN
8 002762 104642   MOV          1(R4),R2      ;GET HIGH ORDER
9 002764 104204   MOV          #TEMP,R4          ;FOR SUBTRACT
10 002766 107302  SUB          ST.LBN,R2         ;DO SUBTRACT
11 002770 100642   MOV          R2,1(R4)          ;STORE BACK
12 002772 104673   MOV          LBNTRK(R0),R3     ;GET LBN/TRACK
13 002774 103203  BIC          #HI1BYTE,R3      ;CLEAR HIGH BYTE
14 002776 104030   MOV          R3,DDUMMY        ;STORE FOR COMPUTATION
15 003000 114000   CLR          DDUMMY+1        ;CLEAR FOR STORE
16 003002 104203   MOV          #DDUMMY,R3      ;FOR DIVIDE
17 003004 021570   CALL        DDIV             ;
18 003005 104673   MOV          RBNTRK(R0),R3     ;GET RBN/TRACK
19 003007 103203  BIC          #HI1BYTE,R3      ;CLEAR GARBAGE
20 003011 104030   MOV          R3,DDUMMY        ;FOR COMPUTATION
21 003013 114000   CLR          DDUMMY+1        ;CLEAR HIGH ORDER
22 003015 104203   MOV          #DDUMMY,R3      ;FOR MULTIPLY
23 003017 021542   CALL        DMUL
24 003020 104140   MOV          (R4),REVRBN      ;GET LOW ORDER
25 003022 104640   MOV          1(R4),REVRBN+1   ;STORE HIGH ORDER
26 003025          POP          R2
27 003026 000000   RETURN
```

001152

3				.....	COMPUTE ECC SYMBOLS IN ERROR	
4				.....	
5				.....	
6	003027	104202	001037	FCCCK:	MOV #CR,R2	:POINT TO CHARACTERISTICS
7	003031	104623	000002		MOV ERRSYM(R2),R3	:GET THRESHOLD
8	003033	103203	177400		BIC #4IBYTE,R3	:CLAR HIGH GARBAGE
9	003035	104207	000721		MOV #RDBLK,R0	:POINT TO COMMAND BLOCK
10	003037	060015			XFC ECC	:PERFORM ECC CORRECTION
11	003040	115001			TST R1	:SUCCESSFUL ?
12	003041	053044			BNE 105\$	:NOPE
13	003042	106073			CMP R0,R3	:WITHIN BOUNDS ?
14	003043	073046			BMI GDECC	:YES CONSIDER GOOD
15	003044	104201	177777	105\$:	MOV #-1,R1	:ELSE SIGNAL BAD
16	003046	060000		GDECC:	RETURN	:RETURN

1	003047	003063			START: JMP	START3		:SKIP LOCAL DATA STORAGE
2					:			
3					:			
4					:			
5	003050				DESC: .BLKW	4		:HOST BUFFER DESCRIPTOR
6	003054	010000			DMSG1: .WORD	10000		:TYPE AND SEQUENCE NUMBER
7	003055	123	040		.ASCII	'S'		:START UP
8	003056	125	120	040	.ASCIZ	'UP YOURS'		:MESSAGE ZERO
	003057	131	117	125				
	003061	122	123	000				
9		000007			DMSG1L -	.-DMSG1		:LENGTH OF MESSAGE ZERO
10					:			
11					:			
12	003063	104206	001215		START3: MOV	#STACK,SP		:SET UP STACK
13	003065	104207	003054		MOV	#DMSG1,R0		:MESSAGE
14	003067	104201	000007		MOV	#DMSG1L,R1		:LENGTH
15	003071	060016			XFC	MAINTR		:SEND MESSAGE
16	003072	104207	001263		MOV	#DMBUF,R0		:ADDRESS OF BUFFER
17	003074	104201	000016		MOV	#DMBUFL,R1		:LENGTH OF BUFFER
18	003076	060017			XFC	MAINTW		:GET ANSWER
19	003077	023103			CALL	SETOVL		:SET UP OVERLAY ADDRESSES
20	003100	104201	000060		MOV	#G1,R1		:NEXT OVERLAY
21	003102	022412			CALL	NEXT		:BRING IT IN

1				:	SET UP OVERLAY TABLE	
2				:		
3				:		
4	003103	104205	000021	SETOVL:	MOV #OVCNT,R5	:GET COUNT OF OVERLAYS
5	003103	104204	007774		MOV #DUPOVL,R4	:POINT TO OVERLAY ADDRESS (2 WORDS)
6	003107	104200	005472	000731	MOV #OVS.G1,DDUMMY	:RELATIVE START OF FIRSTOVERLAY
7	003112	114000	000732		CLR DDUMMY+1	:CLEAR HIGH ORDER
8	003114	104203	006731		MOV #DDUMMY,R3	:FOR SUB
9	003116	021524			CALL DSUB	:GET OFFSET (MUST ADD TO RELATIVE START ADDRESS OF E
10	003117	104043			MOV R4,R3	:CHANGE POINTER FOR ADDS
11	003120	104204	001342		MOV #OVL TBL+HSTLO,R4	:POINT TO LOW HOST ADD OF FIRST ENTRY
12	003122	021506		SLOOP:	CALL DADD	:ADD OFFSET
13	003123	105204	000003		ADD #OVLLEN,R4	:POINT TO LOW HOST ADD. OF NEXT ENTRY
14	003125	117405			DEC R5	:DECREMENT COUNTER
15	003126	053122			BNE SLOOP	:IF NON-ZERO THEN CONTINUE
16	003127	000000			RETURN	:ELSE DONE

1				.SBTTL	INITIALIZATION OVERLAY	
2				:		
3				:	INITIALIZATION OVERLAY	
4				:		
5	003130			DMOVLY	G1,START	
6	003047	024430		CALL	INITL	:INITIALIZE DISK
7	003050	115001		TST	R1	:ANY ERRORS ?
8	003051	053064		BNE	BUMER	:YUP - QUIT
9	003052	102200	000001	BIT	#FCTAVL,FLAG	:USE RESIDENT FCT ?
10	003055	053061		BNE	DOLBN	:YES - ONLY DO LBN
11	003056	104201	000000	MOV	#F1,R1	:ELSE DO D/XBN FIRST
12	003060	003063		BR	DXBN	:SKIP LBN FLAGGING
13	003061	104201	000003	DOLBN:	MOV #F2,R1	:SIGNAL LBN FORMAT
14	003063	022412		DXBN:	CALL NEXT	:BRING IN NEXT OVERLAY
15	003064	104201	000006	BUMER:	MOV #6,R1	:SIGNAL INIT
16	003066	022552		CALL	ERRMNT	:ERROR RETURN
17				:		
18				:		
19				:	COMPUTE D.SK CONSTANTS FROM CHARACTERISTICS	
20				:		
21				:		
22				:		
23				:	COMPUTE TRACKS/CYLINDER	
24				:		
25	003067	104207	001052	CONINT:	MOV #SCR,R0	:POINT TO SUB CHARACTERISTICS
26	003071	104673	000003	MOV	TRKGRP(R0),R3	:LOAD TRACKS/GROUP
27	003073	103203	177400	BIC	#HI BYTE,R3	:CLEAR HIGH BYTE
28	003075	104030	000731	MOV	R3,DDUMMY	:STORE IN DUMMY AREA
29	003077	114000	000732	CLR	DDUMMY+1	:CLEAR FOR STORE
30	003101	104673	000002	MOV	GRPCYL(R0),R3	:GET GROUPS/CYLINDER
31	003103	103203	177400	BIC	#HI BYTE,R3	:CLEAR HIGH BYTE
32	003105	104030	000736	MOV	R3,TEMP	:STORE IN TEMP AREA
33	003107	114000	000737	CLR	TEMP+1	:CLEAR HIGH ORDER
34	003111	104203	000731	MOV	#DDUMMY,R3	:SETR UP FOR MULT
35	003113	104204	000736	MOV	#TEMP,R4	:DITTO
36	003115	021542		CALL	DMUL	:COMPUTE IT
37	003116	104140	001141	MOV	(R4),TRKCYL	:LOAD FOR STORE
38	003120	104640	000001	MOV	1(R4),TRKCYL+1	:LOAD FOR STORE
39				:		
40				:	COMPUTE LBN'S/CYLINDER	
41				:		
42	003123	104673	000011	MOV	LBNTRK(R0),R3	:GET LBN'S/TRACK
43	003125	103203	177400	BIC	#HI BYTE,R3	:CLEAR HIGH BYTE
44	003127	104030	000736	MOV	R3,TEMP	:FOR MULT
45	003131	114000	000737	CLR	TEMP+1	:FOR STORE
46	003133	104204	000736	MOV	#TEMP,R4	:FOR MULTIPLY
47	003135	104203	001141	MOV	#TRKCYL,R3	:DITTO
48	003137	021542		CALL	DMUL	:GET LBN'S/CYL
49	003140	104140	001145	MOV	(R4),LBNPCY	:GET LOW ORDER
50	003142	104640	000001	MOV	1(R4),LBNPCY+1	:GET HIGH ORDER
51				:		
52				:	COMPUTE RBN'S/CYLINDER	
53				:		
54	003145	104673	000004	MOV	RBNTRK(R0),R3	:GET RBN'S/TRACK
55	003147	103203	177600	BIC	#HI1 BYTE,R3	:CLEAR OUT GARBAGE
56	003151	104030	000736	MOV	R3,TEMP	:STORE FOR MULT
57	003153	114000	000737	CLR	TEMP+1	:FOR STORE

58	003155	104204	000736	MOV	#TEMP,R4	:FOR MULTIPLY
59	003157	104203	001141	MOV	#TRKCYL,R3	:DITTO
60	003161	021542		CALL	DMUL	:GET RBN'S/CYL
61	003162	104140	001147	MOV	(R4),RBNPCY	:GET LOW ORDER
62	003164	104640	000001 001150	MOV	1(R4),RBNPCY+1	:GET HIGH ORDER
63						
64						
65					COMPUTE LBN'S IN LBN AREA	
66						
67						
68	003167	104207	001052	MOV	#SCR,R0	:POINT TO CHARACTERISTICS
69	003171	104670	000000 000736	MOV	CYLBN(R0),TEMP	:GET LBN CYLINDERS
70	003174	104673	000001	MOV	CYLBN+1(R0),R3	:GET HIGH ORDER
71	003176	103203	170000	BIC	#HD.CLR,R3	:CLEAR STARTING CYLINDER BITS
72	003200	104030	000737	MOV	R3,TEMP+1	:STORE IT
73	003202	104204	000736	MOV	#TEMP,R4	:FOR MULT
74	003204	104203	001145	MOV	#LBNPCY,R3	:POINT TO LBN'S/CYLINDER
75	003206	021542		CALL	DMUL	:GET LBN'S IN LBN AREA
76	003207	104140	001133	MOV	(R4),LBNLBN	:GET LOW ORDER
77	003211	104640	000001 001134	MOV	1(R4),LBNLBN+1	:GET HIGH ORDER
78	003214	104670	000012 000731	MOV	LBNHOST(R0),DDUMMY	:GET LBN'S IN HOST AREA
79	003217	104670	000013 000732	MOV	LBNHOST+1(R0),DDUMMY+1	:GET HIGH ORDER
80	003222	104203	000731	MOV	#DDUMMY,R3	:FOR SUB
81	003224	021524		CALL	DSUB	:SUBTRACT TO GET LBN'S IN RCT
82	003225	104140	001475	MOV	(R4),TOTRCT	:GET LOW ORDER
83	003227	104640	000001 001476	MOV	1(R4),TOTRCT+1	:GET HIGH ORDER
84						
85					COMPUTE RBN'S IN LBN AREA	
86						
87						
88	003232	104207	001052	MOV	#SCR,R0	:POINT TO CHARACTERISTICS
89	003234	104670	000000 000736	MOV	CYLBN(R0),TEMP	:GET LBN CYLINDERS
90	003237	104673	000001	MOV	CYLBN+1(R0),R3	:GET HIGH ORDER
91	003241	103203	170000	BIC	#HD.CLR,R3	:CLEAR STARTING CYLINDER BITS
92	003243	104030	000737	MOV	R3,TEMP+1	:STORE IT
93	003245	104204	000736	MOV	#TEMP,R4	:FOR MULT
94	003247	104203	001147	MOV	#RBNPCY,R3	:POINT TO RBN'S/CYLINDER
95	003251	021542		CALL	DMUL	:GET LBN'S IN LBN AREA
96	003252	104140	001135	MOV	(R4),RBNLBN	:GET LOW ORDER
97	003254	104640	000001 001136	MOV	1(R4),RBNLBN+1	:GET HIGH ORDER
98						
99					COMPUTE SECTORS/TRACK	
100						
101	003257	104673	000004	MOV	RBNTRK(R0),R3	:LOAD RBN'S/TRACK
102	003261	103203	177600	BIC	#HI1BYTE,R3	:CLEAR OUT GARBAGE
103	003263	104674	000011	MOV	LBNTRK(R0),R4	:LOAD LBN'S/TRACK(512)
104	003265	103204	177400	BIC	#HI1BYTE,R4	:CLEAR OUT HIGH BYTE
105	003267	105043		ADD	R4,R3	:ADD FOR SECT/TRACK
106	003270	104030	001127	MOV	R3,SECTRK	:STORE IT
107	003272	114000	001130	CLR	SECTRK+1	:CLEAR FOR STORE
108						
109					COMPUTE SECTORS/CYLINDER	
110						
111	003274	104300	001127 000731	MOV	SECTRK,DDUMMY	:LOW ORDER
112	003277	104300	001130 000732	MOV	SECTRK+1,DDUMMY+1	:HIGH ORDER
113	003302	104204	000731	MOV	#DDUMMY,R4	:SET UP FOR MULT
114	003304	104203	001141	MOV	#TRKCYL,R3	:DITTO

115	003306	021542			CALL	DMUL		: COMPUTE IT
116	003307	104140	001131		MOV	(R4),SECTCY		: LOAD FOR STORE
117	003311	104640	000001	001132	MOV	1(R4),SECTCY+1		: LOAD FOR STORE
118								
119								
120								
121	003314	104670	000021	000736	MOV	XBNCYL(R0),TEMP		: LOAD NUMBER OF XBN CYLINDERS
122	003317	114000	000737		CLR	TEMP+1		: CLEAR FOR STORE
123	003321	104203	000736		MOV	#TEMP,R3		: SET UP FOR MULT
124	003323	021542			CALL	DMUL		: GET XBN SECTORS
125	003324	104140	001137		MOV	(R4),XBNSEC		: LOAD FOR STORE
126	003326	104640	000001	001140	MOV	1(R4),XBNSEC+1		: LOAD FOR STORE
127								
128								
129								
130	003331	104207	001052		MOV	#SCR,R0		: POINT TO CHARACTERISTICS
131	003333	104670	000000	001143	MOV	CYLBN(R0),LBNCYL		: GET LOW ORDER LBN CYLINDERS
132	003336	104670	000000	000736	MOV	CYLBN(R0),TEMP		: ALSO FOR MATH
133	003341	104674	000001		MOV	CYLBN+1(R0),R4		: GET HIGH ORDER
134	003343	104040	001144		MOV	R4,LBNCYL+1		: STORE HI ORDER
135	003345	104040	000737		MOV	R4,TEMP+1		: ALSO FOR MATH
136	003347	104204	000736		MOV	#TEMP,R4		: SET UP FOR ADD
137	003351	104670	000021	000731	MOV	XBNCYL(R0),DDUMMY		: LOAD XBN CYLINDERS
138	003354	114000	000732		CLR	DDUMMY+1		: CLEAR HIGH ORDER
139	003356	104203	000731		MOV	#DDUMMY,R3		: SET UP FOR ADD
140	003360	021506			CALL	DADD		: GET LBN+XBN CYLINDERS
141	003361	104673	000022		MOV	DBNCYL(R0),R3		: LOAD DBN CYLINDERS
142	003363	110703			SWAB	R3		: GET INTO LO BYTE
143	003364	103203	177400		BIC	#HIBYTE,R3		: CLEAR GARBAGE
144	003366	104030	000731		MOV	R3,DDUMMY		: FOR DIVIDE
145	003370	114000	000732		CLR	DDUMMY+1		: CLEAR HIGH ORDER
146	003372	104203	000731		MOV	#DDUMMY,R3		: SET UP FOR ADD
147	003374	021506			CALL	DADD		: GET LBN+XBN+DBN CYLINDERS
148	003375	104642	000001		MOV	1(R4),R2		: GET HIGH ORDER
149	003377	104673	000001		MOV	STCYL(R0),R3		: GET CYLINDER BITS
150	003401	103203	007777		BIC	#LO,R3		: CLEAR OUT REST OF WORD
151	003403	101032			BIS	R3,R2		: OR IN CYLINDER HIGH BITS
152	003404	100642	000001		MOV	R2,1(R4)		: STORE BACK
153	003406	104203	001466		MOV	#ONE,R3		: DECREMENT TO GET NUM OF LAST CYL
154	003410	021524			CALL	DSUB		: DO IT
155	003411	104140	001125		MOV	(R4),CYLNUM		: MAKE IT CURRENT CYLINDER
156	003413	104640	000001	001126	MOV	1(R4),CYLNUM+1		: LOAD HI ORDER
157								
158								
159								
160	003416	104300	001135	000736	MOV	RBNLBN,TEMP		: GET LOW ORDER LBN'S IN HOST AREA
161	003421	104300	001136	000737	MOV	RBNLBN+1,TEMP+1		: GET HIGH ORDER
162	003424	104200	000177	000731	MOV	#127,DDUMMY		: ADD 127 FOR DIV FUNCTION
163	003427	114000	000732		CLR	DDUMMY+1		: FOR CLEAR
164	003431	104204	000736		MOV	#TEMP,R4		: FOR ADD
165	003433	104203	000731		MOV	#DDUMMY,R3		: DITTO
166	003435	021506			CALL	DADD		: ADD
167	003436	104200	000200	000731	MOV	#128,DDUMMY		: FOR DIVIDE (128 RBN/RCT BLOCK)
168	003441	114000	000732		CLR	DDUMMY+1		: FOR STORE
169	003443	104203	000731		MOV	#DDUMMY,R3		: POINT TO IT
170	003445	021570			CALL	DDIV		: DO DIVIDE
171	003446	104140	001261		MOV	(R4),RCTLBN		: GET LOW ORDER QUOTIENT

172	003450	105200	000002	001261	ADD	#2,RCTLBN	:FOR CONTROL BLOCKS
173							
174					COMPUTE	NON-PAD FCT	
175							
176	003453	104300	001135	000736	MOV	RBNLBN,TEMP	:GET LOW ORDER LBN'S IN HOST AREA
177	003456	104300	001136	000737	MOV	RBNLBN+1,TEMP+1	:GET HIGH ORDER
178	003461	104200	000002	000731	MOV	#2,DDUMMY	:FOR DIVIDE BY 2
179	003464	114000	000732		CLR	DDUMMY+1	:DITTO
180	003466	104204	000736		MOV	#TEMP,R4	:SETUP
181	003470	104203	000731		MOV	#DDUMMY,R3	:SETUP
182	003472	021570			CALL	DDIV	:CALL DIVIDE
183	003473	104200	000177	000731	MOV	#127.,DDUMMY	:ADD 127 FOR DIV FUNCTION
184	003476	114000	000732		CLR	DDUMMY+1	:FOR CLEAR
185	003500	104204	000736		MOV	#TEMP,R4	:FOR ADD
186	003502	104203	000731		MOV	#DDUMMY,R3	:DITTO
187	003504	021506			CALL	DADD	:ADD
188	003505	104200	000200	000731	MOV	#128.,DDUMMY	:FOR DIVIDE (128 RBN/RCT BLOCK)
189	003510	114000	000732		CLR	DDUMMY+1	:FOR STORE
190	003512	104203	000731		MOV	#DDUMMY,R3	:POINT TO IT
191	003514	021570			CALL	DDIV	:DO DIVIDE
192	003515	104200	000002	000731	MOV	#2,DDUMMY	:FOR MULT
193	003520	114000	000732		CLR	DDUMMY+1	:CLEAR HIGH WORD
194	003522	104203	000731		MOV	#DDUMMY,R3	:FOR DIVIDE
195	003524	021542			CALL	DMUL	:DO MULTIPLY
196	003525	104140	001260		MOV	(R4),FCTNPD	:NON-PAD FCT BLOCKS
197	003527	115400	001260		INC	FCTNPD	:FOR NON-PAD FCT BLOCKS
198							
199							
200						INITIALIZE GOOD DATA BLOCK	
201	003531	104203	005567		MOV	#GDBLK,R3	:POINT TO BUFFER
202	003533	104302	001450		MOV	DWRD,R2	:DIAGNOSTIC WORD
203	003535	100232			MOV	R2,(R3)+	:STORE IT
204	003536	104204	000125		MOV	#85.,R4	:SET COUNTER
205	003540	104302	001445		MOV	FWRD,R2	:FIRST WORD OF PATTERN
206	003542	100232			MOV	R2,(R3)+	:STORE IT
207	003543	104302	001446		MOV	SWRD,R2	:SECOND WORD OF PATTERN
208	003545	100232			MOV	R2,(R3)+	:STORE IT
209	003546	104302	001447		MOV	TWRD,R2	:THIRD WORD OF PATTERN
210	003550	100232			MOV	R2,(R3)+	:STORE IT
211	003551	117404			DEC	R4	:DECREMENT COUNTER
212	003552	053540			BNE	OVER	:REPEAT TILL DONE
213	003553	104302	001451		MOV	EDC,R2	:EDC FOR PATTERN
214	003555	100232			MOV	R2,(R3)+	:STORE IT
215							
216							
217						SET UP END OF IMAGE POINTER	
218							
219	003556	104203	001127		MOV	#SECTRK,R3	:SEC/TRACK
220	003560	104200	000003	000736	MOV	#3,TEMP	:FOR MULT
221	003563	114000	000737		CLR	TEMP+1	:FOR STORE
222	003565	104204	000736		MOV	#TEMP,R4	:SET UP FOR MULT
223	003567	021542			CALL	DMUL	:GET LENGTH OF IMAGE BLOCK
224	003570	104200	007275	000731	MOV	#IMAGE,DDUMMY	:FOR ADD
225	003573	114000	000732		CLR	DDUMMY+1	:CLEAR HIGH BYTE
226	003575	104203	000731		MOV	#DDUMMY,R3	:SET UP FOR ADD
227	003577	021506			CALL	DADD	:ADD TO GET ADDRESS
228	003600	104140	001231		MOV	(R4),EIMAGE	:GET ADDRESS

1								
2								
3								
4								
5								
6	003602	104207	001037					
7	003604	104673	000007					
8	003606	110703						
9	003607	103203	177400					
10	003611	104030	000736					
11	003613	114000	000737					
12	003615	104204	000736					
13	003617	104203	001127					
14	003621	021542						
15	003622	106300	001235	000736				
16	003625	033635						
17	003626	104200	000011	001234				
18	003631	104200	000044	001233				
19	003634	003643						
20	003635	104200	000006	001234	TWO:			
21	003640	104200	000033	001233				
22	003643				ISKIP:			

COMPUTE INTERLEAVE FACTOR

```

MOV    #CR,R0          ;POINT TO CHARACTERISTICS BLOCK
MOV    REVSEC(R0),R3   ;GET REVS/SECOND
SWAB   R3              ;GET INTO LOW BYTE
BIC    #HIBYTE,R3     ;CLEAR HIGH BYTE
MOV    R3,TEMP        ;FOR MULTIPLY
CLR    TEMP+1         ;CLEAR FOR STORE
MOV    #TEMP,R4       ;SET UP FOR MULTIPLY
MOV    #SECTRK,R3     ;SECTORS/TRACK
CALL   DMUL           ;GET SECTORS/SECOND
CMP    CUTOFF,TEMP    ;WITHIN LIMITS ?
BPL    TWO           ;DO BI-LEAVE
MOV    #THREB,TBLK   ;ELSE DO TRI-LEAVE
MOV    #44,SKPCNT    ;INIT CHECK PASS OFFSET
BR     ISKIP         ;SKIP BI-LEAVE SETUP
MOV    #TWOB,TBLK    ;DO BI-LEAVE
MOV    #33,SKPCNT    ;INIT CHECK PASS OFFSET
  
```

1						
2						
3						FILL IN FCT INFO
4	003643	104207	001037			MOV #CR,R0 ;POINT TO CHARACTERISTICS BLK
5	003645	104673	000001			MOV FRCPY(R0),R3 ;GET F/RCT COPIES
6	003647	110703				SWAB R3 ;GET INTO LOW BYTE
7	003650	103203	177760			BIC #FCLR,R3 ;CLEAR OUT REST OF GARBAGE
8	003652	104030	001244			MOV R3,FCTCPY ;STORE
9	003654	104207	001052			MOV #SCR,R0 ;POINT TO SUBUNIT CHARACTERISTICS
10	003656	104670	000010	001240		MOV FCTSZ(R0),FCTFMT ;GET FCT SIZE IN SECTORS
11	003661	114000	001241			CLR FCTFMT+1 ;CLEAR HIGH ORDER
12	003663	104670	000014	001242		MOV RCTSZ(R0),RCTFMT ;GET RCT SIZE
13	003666	114000	001243			CLR RCTFMT+1 ;CLEAR HIGH ORDER
14						
15						
16						
17						COMPUTE HIGHEST PBN IN LBN AREA
18						
19						
20	003670	104300	001133	000736		MOV LBNLBN,TEMP ;GET LOW ORDER
21	003673	104300	001134	000737		MOV LBNLBN+1,TEMP+1 ;GET HIGH ORDER
22	003676	104204	000736			MOV #TEMP,R4 ;FOR SUB
23	003700	104203	001135			MOV #RBNLBN,R3 ;POINT TO RBN'S IN LBN AREA
24	003702	021506				CALL DADD ;ADD TO GET HIGHEST PBN
25	003703	104203	001466			MOV #ONE,R3 ;DITTO
26	003705	021524				CALL DSUB ;TO GET ACTUAL PBN NUMBER
27	003706	104642	000001			MOV 1(R4),R2 ;GET HIGH ORDER
28	003710	107302	001335			SUB ST.LBN,R2 ;SUBTRACT TO GET RELATIVE LAST BLOCK
29	003712	104020	001155			MOV R2,HGHPBN+1 ;STORE IT
30	003714	104140	001154			MOV (R4),HGHPBN ;GET HIGH ORDER

```

1
2
3
4 003716 104200 000003 000736
5 003721 114000 000737
6 003723 104204 000736
7 003725 104203 001127
8 003727 021542
9 003730 104303 000736
10 003732 104204 007275
11 003734 105034
12 003735 104040 001224
13 003737 104040 001252
14 003741 104200 007775 000736
15 003744 114000 000737
16 003746 104040 000731
17 003750 114000 000732
18 003752 104204 000736
19 003754 104203 000731
20 003756 021524
21 003757 104304 000736
22 003761 110604
23 003762 104040 001225
24
25
26
27 003764 104207 001037
28 003766 104673 000002
29 003770 103203 177400
30 003772 104030 001503
31 003774 104030 001505
32 003776 104673 000001
33 004000 110603
34 004001 110603
35 004002 110603
36 004003 110603
37 004004 103203 177700
38 004006 115403
39 004007 104030 001502
40 004011 114000 001504
41
42
43
44
45
46 004013 104207 001037
47 004015 104673 000001
48 004017 103203 177760
49 004021 117403
50 004022 104201 000001
51 004024 105201 000000
52 004026 110201
53 004027 117403
54 004030 054026
55 004031 104010 001250
56
57

```

COMPUTE REVECTOR BUFFER ADDRESS AND MAX REVECTOR COUNT

```

MOV #IMLEN,TEMP ;GET LENGTH OF FORMAT IMAGE BLOCK
CLR TEMP+1 ;CLEAR FOR STORE
MOV #TEMP,R4 ;FOR MULT
MOV #SECTRK,R3 ;SECTORS/TRACK
CALL DMUL ;GET LENGTH OF FORMAT BUFFER TABLE
MOV TEMP,R3 ;GET LENGTH
MOV #IMAGE,R4 ;GET IMAGE BUFFER START ADDRESS
ADD R3,R4 ;GET START ADDRESS OF REVECTOR BUFFER
MOV R4,ERRBUF ;STORE IT
MOV R4,ERPNT ;INIT POINTER
MOV #BMAX,TEMP ;GET MAX BUFFER ADDRESS
CLR TEMP+1 ;FOR CLEAR
MOV R4,DDUMMY ;STORE BEGINNING ADDRESS
CLR DDUMMY+1 ;CLEAR HIGH WORD
MOV #TEMP,R4 ;POINT TO END ADDRESS
MOV #DDUMMY,R3 ;POINT TO BEGINNING ADDRESS
CALL DSUB ;SUBTRACT TO GET LENGTH
MOV TEMP,R4 ;GET LENGTH
ROR R4 ;DIVIDE BY 2 (LENGTH OF 1 ENTRY)
MOV R4,EMAX ;STORE AS MAX NUMBER

```

STORE RETRY AND RECOVERY LEVELS

```

MOV #CR,R0 ;POINT TO CHARACTERISTICS
MOV ERV(R0),R3 ;GET RECOVERY LEVELS
BIC #HIBYTE,R3 ;CLEAR HIGH ORDER
MOV R3,RECOV ;STORE IT
MOV R3,RECTMP ;INIT COUNTER
MOV RTRY(R0),R3 ;GET RETRY NUMBER
ROR R3 ;SHIFT BY FOUR TO GET INTO LOW ORDER NIBBLE
ROR R3
ROR R3
ROR R3
BIC #HI2BYTE,R3 ;CLEAR HIGH ORDER JUNK
INC R3 ;ONE MORE BECAUSE OF WRONG INC
MOV R3,RETRY ;STORE IT
CLR TMPTRY ;FOR STORE

```

SET UP LONG TIMEOUT

```

MOV #CR,R0 ;POINT TO COMMON CHARACTERISTICS
MOV LONGTO(R0),R3 ;GET LONG TIMEOUT IN LOG2
BIC #FCLR,R3 ;CLEAR ALL BUT TIMEOUT
DEC R3 ;ALREADY HAVE SHIFTED ONCE
MOV #1,R1 ;INIT COUNTER
ADD #0,R1 ;CLEAR CARRY
TIMLOP: ROL R1 ;SHIFT
DEC R3 ;DECREMENT SHIFT COUNT
BNE TIMLOP ;CONTINUE TILL DONE
MOV R1,LTO ;STORE IT FOR US LATER

```

```

58          :          SET UP SHORT TIMEOUT
59          :
60          :
61 004033 104207 001037          MOV      #CR,R0          ;POINT TO COMM CHAR
62 004035 104673 000000          MOV      SHORTO(R0),R3      ;GET SHORT TIMEOUT WORD
63 004037 103203 177760          BIC      #FCLR,R3          ;CLEAR WORD
64 004041 117403                   DEC      R3                ;FOR LOG CALCULATION
65 004042 104201 000001          MOV      #1,R1            ;INIT COUNTER
66 004044 105201 000000          ADD      #0,R1            ;CLEAR CARRY
67 004046 110201          TILOP: ROL      R1        ;ROTATE (MULT BY 2)
68 004047 117403                   DEC      R3                ;DECREMENT COUNTER
69 004050 054046                   BNE      TILOP             ;KEEP GOING TILL DONE
70 004051 104203 000012          MOV      #10.,R3         ;SHIFT COUNT FOR MILSEC CONVERSION
71 004053 110201          TILOP1: ROL      R1        ;GET NUMBER IN MILSECS
72 004054 117403                   DEC      R3                ;GO TILL DONE
73 004055 054053                   BNE      TILOP1           ;AGAIN
74 004056 104010 001251          MOV      R1,STO          ;STORE IT
75          :
76          :
77          :          GET SERIAL NUMER AND DATE FROM DMBUF
78          :
79          :
80 004060 104205 000004          MOV      #4,R5            ;COUNT OF WORDS IN SERIAL NUMBRE
81 004062 104207 001263          MOV      #DMBUF,R0        ;POINT TO BUFFER
82 004064 105207 000005          ADD      #SER,R0          ;POINT TO SERIAL NUMBER
83 004066 104203 001305          MOV      #SERNUM,R3       ;POINT TO BUFFER
84 004070 104272          1$: MOV      (R0)+,R2        ;GET WORD
85 004071 100232          MOV      R2,(R3)+        ;STORE WORD
86 004072 117405                   DEC      R5                ;DECREMENT COUNT
87 004073 054070                   BNE      1$                ;CONTINUE TILL DONE
88 004074 104205 000004          MOV      #4,R5            ;RESET COUNT FOR DATE
89 004076 104207 001263          MOV      #DMBUF,R0        ;POINT TO DMBUF
90 004100 105207 000011          ADD      #DAT,R0          ;POINT TO DATE
91 004102 104203 001301          MOV      #DATE,R3         ;POINT TO DATE BUFFER
92 004104 104272          2$: MOV      (R0)+,R2        ;GET WORD
93 004105 100232          MOV      R2,(R3)+        ;STORE WORD
94 004106 117405                   DEC      R5                ;DECREMENT COUTNER
95 004107 054104                   BNE      2$                ;CONTINUE TILL DONE
96          :
97          :
98          :          SET UP HEADER AND DATA PREAMBLE LENGTHS
99          :
100         :
101         :
102 004110 104207 001052          MOV      #SCR,R0          ;POINT TO CHARACTERISTICS BLK
103 004112 104670 000005 001334  MOV      DATA(R0),DPREA   ;DATA PREAMBLE LENGTH
104 004115 103200 177400 001334  BIC      #HIBYTE,DPREA     ;CLEAR OUT HIGH BYTE GARBAGE
105 004120 104673 000005          MOV      HEAD(R0),R3      ;HEADER PREAMBLE LENGTH
106 004122 110703                   SWAB      R3                ;GET INTO LOW BYTE
107 004123 103203 177400          BIC      #HIBYTE,R3       ;CLEAR OUT HIGH BYTE GARBAGE
108 004125 104030 001333          MOV      R3,HPREA        ;STORE IT
109 004127 114001                   CLR      R1                ;FOR NO ERROR
    
```

1				SET UP STARTING ADDRESS BITS	
2					
3					
4	004130	104203	001052	MOV #SCR,R3	;POINT TO SUBUNIT CHAR BLOCK
5				LBN	
6					
7					
8	004132	104637	000002	MOV STLBN(R3),R0	;GET THE WORD
9	004134	103207	170377	BIC #STCLR,R0	;CLEAR THE REST
10	004136	104070	001335	MOV R0,ST.LBN	;STORE IT
11					
12				RBN	
13					
14	004140	104637	000003	MOV STRBN(R3),R0	;GET RBN WORD
15	004142	103207	170377	BIC #STCLR,R0	;CLEAR THE REST
16	004144	104070	001336	MOV R0,ST.RBN	;STORE IT
17					
18				XBN	
19					
20	004146	104637	000002	MOV STXBN(R3),R0	;GET THE WORD
21	004150	110607		ROR R0	
22	004151	110607		ROR R0	
23	004152	110607		ROR R0	
24	004153	110607		ROR R0	;GET INTO THE RIGHT NIBBLE
25	004154	103207	170377	BIC #STCLR,R0	;CLEAR THE REST
26	004156	104070	001337	MOV R0,ST.XBN	;STORE IT
27					
28				DBN	
29					
30	004160	104637	000003	MOV STDBN(R3),R0	;GET THE WORD
31	004162	110607		ROR R0	
32	004163	110607		ROR R0	
33	004164	110607		ROR R0	
34	004165	110607		ROR R0	;GET INTO THE RIGHT NIBBLE
35	004166	103207	170377	BIC #STCLR,R0	;CLEAR THE REST
36	004170	104070	001340	MOV R0,ST.DBN	;STORE IT

1					
2					
3					
4	004172	104203	001037		
5	004174	104632	000002		
6	004176	103202	000377		
7	004200	100632	000002		
8	004202	000000			

...	CLEAR ECC THRESHOLD	
	MOV #CR,R3	:POINT TO CHARACTERISTICS
	MOV ERRSYM(R3),R2	:GET THE WORD
	BIC #1,0BYTE,R2	:CLEAR THE THRESHOLD
	MOV R2,ERRSYM(R3)	:STORE IT BACK
	RETURN	


```

1
2
3
4
5
6 004203 104205 001263
7 004205 114000 001501
8 004207 104200 000001 000740
9 004212 104203 000741
10 004214 104237
11 004215 104231
12 004216 104302 000740
13 004220 060004
14 004221 115001
15 004222 014232
16 004223 115400 000717
17 004225 106300 001502 000717
18 004230 074352
19 004231 004212
20 004232 114000 000717
21 004234 104231
22 004235 104137
23 004236 060005
24 004237 115001
25 004240 014250
26 004241 115400 001501
27 004243 106300 001502 001501
28 004246 074352
29 004247 004212
30 004250 114000 001501
31 004252 104204 001030
32 004254 104641 000000
33 004256 103201 170000
34 004260 106651 000003
35 004262 074352
36 004263 054267
37 004264 104202 000001
38 004266 004337
39 004267 104643 000000
40 004271 103203 007777
41 004273 110703
42 004274 110603
43 004275 110603
44 004276 110603
45 004277 110603
46 004300 114007
47 004301 102203 000002
48 004303 014315
49 004304 115407
50 004305 102203 000004
51 004307 014315
52 004310 115407
53 004311 102203 000010
54 004313 014315
55 004314 115407
56 004315 105071
57 004316 107651 000003
    
```

: : : : :
 FIND SDI INTERCONNECT FOR DESIRED UNIT

```

GETUNT: MOV #DMBUF,R5 ;POINT TO STARTUP INFO
        CLR COUNT ;FOR INTERCONNECT INIT
GOVER:  MOV #1,UNIT ;INIT INTERCONNECT
        MOV #CR.GST,R3 ;FOR GET STATUS
        MOV (R3)+,R0 ;GETCOMMAND ADDRESS
        MOV (R3)+,R1 ;GET COMMAND SIZE
        MOV UNIT,R2 ;GET INTERCONNECT
        XFC SEND ;ISSUE GET STATUS COMMAND
        TST R1 ;SUCCESSFUL ?
        BEQ GSKIP1 ;YUP - SKIP RETRY
        INC UN.ERI ;INC COUNT
        CMP RETRY,UN.ERI ;DONE ALL RETIES ?
        BMI NOTHER ;YUP
        BR GOVER
GSKIP1: CLR UN.ERI ;FOR ERROR CLEAR
        MOV (R3)+,R1 ;GET RECEIVE BUFFRE
        MOV (R3),R0 ;GET BUFFER LENGTH
        XFC RCV ;RECEIVE SDI RESPONSE
        TST R1 ;SUCCESSFUL ?
        BEQ GSKIP2 ;YUP - SKIP RETRY
        INC COUNT ;INC ERROR COUNT
        CMP RETRY,COUNT ;DONE ALL RETRIES ?
        BMI NOTHER ;YUP
        BR GOVER ;TRY AGAIN
GSKIP2: CLR COUNT ;FOR COUNT CLEAR
        MOV #ST,R4 ;POINT TO STATUS BUFFER
        MOV UID(R4),R1 ;GET UNIT NUMBER FROM STATUS
        BIC #HD.CLR,R1 ;CLEAR GARBAGE
        CMP DMUNIT(R5),R1 ;IS IT THE ONE ?
        BMI NOTHER ;NOT EVEN A POSSIBLE SUBUNIT
        BNE GSKIP3 ;NO - SEE IF A SUBUNIT
        MOV #1,R2 ;SET SUBUNIT MASK
        BR GDONE ;AND EXIT
GSKIP3: MOV MASK(R4),R3 ;GET SUBUNIT MASK
        BIC #LO,R3 ;CLEAR GARBAGE
        SWAB R3 ;GET INTO LOW BYTE
        ROR R3 ;TO GET IN LOW NIBBLE
        ROR R3 ;TO GET IN LOW NIBBLE
        ROR R3 ;TO GET IN LOW NIBBLE
        ROR R3 ;TO GET IN LOW NIBBLE
        CLR R0 ;CLEAR COUNTER
        BIT #BIT1,R3 ;ANYTHING THERE ?
        BEQ GSKIP ;NOPE - ONLY 1
        INC R0 ;YUP - INCREMENT COUNTER
        BIT #BIT2,R3 ;ANYTHING HERE ?
        BEQ GSKIP ;NOPE - ONLY 2
        INC R0 ;INC COUNTER
        BIT #BIT3,R3 ;ANYTHING HERE ?
        BEQ GSKIP ;NOPE
        INC R0 ;YUP
GSKIP:  ADD R0,R1 ;ADD TO UNIT NUMBER
        SUB DMUNIT(R5),R1 ;GET RELATIVE OFFSET FROM GIVEN UNIT NUMBER
    
```

58	004320	074352		BMI	NOTHER	:IF NEGATIVE THEN NOT IN THE RANGE
59	004321	104653	000003	MOV	DMUNIT(R5),R3	:GET DESIRED
60	004323	104641	000000	MOV	UID(R4),R1	:GET ORIGINAL
61	004325	103201	170000	BIC	#H,CLR,R1	:CLEAR SUBUNIT MASK
62	004327	07013		SUB	R1,R3	:FIGURE OUT WHICH SUBUNIT
63	004330	104202	000001	MOV	#1,R2	:INIT SUBUNIT MASK
64	004332	105202	000000	ADD	#0,R2	:TO CLEAR CARRY
65	004334	110202		SFTRPT: ROL	R2	:SHIFT LEFT
66	004335	117403		DEC	R3	:DECREMTN COUNTER
67	004336	054334		BNE	SFTRPT	:REPEAT SHIFT
68	004337	105202	000000	GDONE: ADD	#0,R2	:CLEAR CARRY
69	004341	110202		ROL	R2	:HAVE TO ROTATE
70	004342	110202		ROL	R2	:4 TIMES TO DO A
71	004343	110202		ROL	R2	:SWAP NIBBLE
72	004344	110202		ROL	R2	:FOR SUBUNIT MASK
73	004345	104020	001020	MOV	R2,GSR+1	:STORE MASK IN SUBUNIT CHAR COMMAND
74	004347	101020	001025	BIS	R2,ACC+1	:SET IN FOR CHANGE MODE COMMAND
75	004351	000000		RETURN		:RETURN
76	004352	104302	000740	NOTHER: MOV	UNIT,R2	:GET CURRENT INTERCONNECT
77	004354	105022		ADD	R2,R2	:NEXT PORT
78	004355	104020	000740	MOV	R2,UNIT	:SAVE BACK
79	004357	114000	000717	CLR	UN.ERI	:FOR RESTORE
80	004361	114000	001501	CLR	COUNT	:CLEAR ERROR COUNT
81	004363	106202	000010	CMP	#8.,R2	:ALL DONE ?
82	004365	034212		BPL	GOVER	:NOPE - TRY THIS INTERCONNECT
83	004366	104652	000002	MOV	2(R5),R2	:UNIT SEARCHING FOR
84	004370	104201	000007	MOV	#7,R1	:SIGNAL NON-EXISTANT UNIT
85	004372	022552		CALL	ERRMNT	:ERROR RETURN

```

1
2
3
4 004373 104203 001263          SET UP FLAGS
5 004375 104634 000004          FLGSET: MOV   #DMBUF,R3           :POINT TO BUFFER
6 004377 102204 000002          MOV   DMFLG(R3),R4          :GET FLAG WORD
7 004401 054405                BIT   #BIT1,R4             :STOP IF BAD FLAG ?
8 004402 101200 000020 001217   BNE   FLGSKP                :YES - SKIP SET
9 004405 102204 000001          BIS   #GOBAD,FLAG          :SET IT
10 004407 054417               FLGSKP: BIT   #BIT0,R4          :USE RESIDENT FCT ?
11 004410 102204 000004          BNE   RFACT                :YUP - SET IT UP
12 004412 054423               BIT   #BIT2,R4             :DOWN-LINE LOAD FCT ?
13 004413 101200 002000 001217   BNE   DFCT                  :YUP - SET IT UP
14 004416 004427               BR    #BSTGS,FLAG          :DO BEST GUESS
15 004417 101200 000001 001217   BR    FLGDON                :ELS USE BEST GUESS
16 004422 004427               DFCT: BIS   #FCTAVL,FLAG     :SET FLAG
17 004423 101200 000400 001217   BR    FLGDON                :EXOT
18 004426 004427               BR    #DLL,FLAG           :SET FOR DLL
19 004427 000000          FLGDON: RETURN             ;DONE
20
21
22
23
24 004430 104302 000740          INITL: MOV   UNIT,R2         ;SELECT UNIT
25 004432 022340               CALL  INITIT                ;INIT DRIVE
26 004433 024203               CALL  GETUNT                 ;GET THE SDI INTERCONNECT
27 004434 024373               CALL  FLGSET                 ;SET UP FLAGS
28 004435 022332               CALL  ONLIN                  ;BRING IT ONLINE
29 004436 021662               CALL  GSTATS                ;GET STATUS
30 004437 115001               TST   R1                    ;ANY ERRORS ?
31 004440 054443               BNE   OOPS                   ;YUP - QUIT
32 004441 022154               CALL  RECAL                  ;RECALIBRATE
33 004442 023067               CALL  CONINT                 ;COMPUTE DISK CONSTANTS
34 004443 000000          OOPS: RETURN               ;AND STOP

```

DBN/XBN FORMAT OVERLAY (F1)

FORMAT DBN AND XBN AREAS

```

1
2
3
4
5
6
7
8 004444      DMOVLY F1,START
9
10 003047 104200 000000 001153  MOV    #F1,CUROVL      ;OVERLAY #1
11 003052 101200 000010 001217  BIS    #DBN,FLAG      ;SET DBN FORMAT
12 003055 023114          CALL   DXFORM         ;FORMAT DBN AREA
13 003056 104303 001311          MOV    FCTREV,R3      ;STARTING FCT ENTRY COUNT
14 003060 107303 001237          SUB    FCNT,R3        ;TOTAL BAD IN DBN AREA
15 003062 105303 001453          ADD    ERRCNT,R3     ;GET FINAL TOTAL
16 003064 104030 001314          MOV    R3,DBBAD      ;STORE IT FOR STATS
17 003066 114000 001453          CLR   ERRCNT        ;FOR CLEAR
18 003070 104300 001237 001311  MOV    FCNT,FCTREV    ;FOR BAD BLOCK COUNT
19 003073 103200 000010 001217  BIS    #DBN,FLAG      ;DO XBN AREA
20 003076 023114          CALL   DXFORM         ;FORMAT XBN AREA
21 003077 104303 001311          MOV    FCTREV,R3      ;STARTING FCT ENTRY COUNT
22 003101 107303 001237          SUB    FCNT,R3        ;TOTAL BAD IN XBN AREA
23 003103 105303 001453          ADD    ERRCNT,R3     ;GET FINAL TOTAL
24 003105 104030 001315          MOV    R3,XBBAD      ;STORE IT FOR STATS
25 003107 114000 001453          CLR   ERRCNT        ;FOR CLEAR
26 003111 104201 000006          MOV    #F3,R1        ;FCT DLL OVERLAY
27 003113 022412          CALL   NEXT          ;BRING IN NEXT OVERLAY
28
29 003114 104207 001052          DXFORM: MOV    #SCR,R0      ;POINT TO CHARACTERISTICS BLOCK
30 003116 102200 000010 001217  BIT    #DBN,FLAG      ;DO DBN AREA ?
31 003121 013171          BEQ   XBNIT          ;NO - DO XBN AREA
32 003122 104673 000022          MOV    DBNCYL(R0),R3  ;GET NUMBER OF CYLS TO FM
33 003124 110703          SWAB  R3             ;GET INTO LOW BYTE
34 003125 103203 177400          BIC   #HIBYTE,R3     ;CLEAR HI BYTE
35 003127 104030 001460          MOV    R3,CNTCYL     ;SET UP COUNTER
36 003131 102200 002000 001217  BIT    #BSTGS,FLAG    ;DOING BEST GUESS ???
37 003134 053164          BNE   SKIP4          ;YES - SKIP FCT SET UP
38 003135 104200 000200 001500  MOV    #128,PCNT      ;FOR PBN COUNT INIT
39 003140 114000 001256          CLR   FCTCNT         ;FOR INIT FCT READ
40 003142 023407          CALL   DXFCPG        ;READ IT IN
41 003143 104200 005152 001223  MOV    #PBNBUF,BADPBN ;ADDR OF BAD PBN LIST
42 003146 104300 005170 001237  MOV    PBNBUF+C512,FCNT ;GET COUNT OF USED ENTRIES
43 003151 104300 005170 001311  MOV    PBNBUF+C512,FCTREV ;STORE IT FOR STAT COMPUTATION
44 003154 013161          BEQ   SKIP19         ;IF ZERO - THEN NO ENTRIES
45 003155 115400 001256          INC   FCTCNT         ;START WITH SECOND FCT BLOCK
46 003157 023407          CALL   DXFCPG        ;BRING IT IN
47 003160 003164          BR    SKIP4          ;SKIP NO ENTRY STUFF
48 003161 101200 000002 001217  SKIP19: BIS    #FCTEMT,FLAG  ;SET EMPTY FLAG
49 003164 104200 140000 001462  SKIP4:  MOV    #HD.DBN,HD.CUR ;GET DBN HEADER CODE
50 003167 023423          CALL   NUMDBN        ;GET DBN OF FIRST BLOCK ON LAST CYLINDER
51 003170 003200          BR    SKIP1          ;SKIP XBN SETUP
52 003171 104200 120000 001462  XBNIT:  MOV    #HD.XBN,HD.CUR ;GET XBN HEADER CODE
53 003174 104670 000021 001460  MOV    XBNCYL(R0),CNTCYL ;GET CYLINDERS IN XBN AREA
54 003177 023453          CALL   NUMXBN        ;GET XBN OF FIRST BLOCK ON LAST XBN CYL
55 003200 104140 001117          SKIP*:  MOV    (R4),HOLDBN   ;LO ORDER FIRST BLOCK NUM TO DO
56 003202 104240 001113          MOV    (R4)+,CURBN   ;AND MAKE IT CURRENT NUMBER
57 003204 104140 001120          MOV    (R4),HOLDBN+1 ;HI ORDER FIRST BLOCK NUM TO DO

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58	003206	104140	001114		MOV	(R4),CURBN+1	:AND MAKE IT CURRENT NUMBER
59	003210	104207	001052		MOV	#SCR,R0	:POINT TO CHARACTERISTICS BLK
60	003212	104670	000002	001464	MOV	GRPCYL(R0),GRPCNT	:LOAD GROUPS/CYL
61	003215	103200	177400	001464	BIC	#HIBYTE,GRPCNT	:CLEAR OUT HIGH GARBAGE
62	003220	104300	001464	001463	MOV	GRPCNT,CURGRP	:GET GROUP NUMBER BY
63	003223	117400	001463		DEC	CURGRP	:DECREMENTING
64	003225	104300	001125	001076	MOV	CYLNUM,ISEEK+1	:GET LO ORDER WORD OF CYLINDER NUMBER
65	003230	104300	001126	001077	MOV	CYLNUM+1,ISEEK+2	:LOAD HIGH ORDER WORD OF CYL NUM
66	003233	104300	001463	001100	MOV	CURGRP,ISEEK+3	:LOAD GROUP NUMBER
67	003236	022251			CALL	SEEK	:SEEK TO CURRENT CYL NUM
68	003237	115001			TST	R1	:ANY ERRORS ?
69	003240	073402			BMI	SKERR	:YUP - QUIT
70	003241	104207	001052		MOV	#SCR,R0	:POINT TO CHARACTERISTICS BLOCK
71	003243	104673	000003		MOV	TRKGRP(R0),R3	:LOAD TRACKS/GROUP
72	003245	103203	177400		BIC	#HIBYTE,R3	:CLEAR OUT HIGH GARBAGE
73	003247	104030	001465		MOV	R3,TRKCNT	:STORE IN COUNTER
74	003251	117403			DEC	R3	:TRACK NUMBER IS ONE LESS
75	003252	104030	001112		MOV	R3,CURTRK	:RESET CURRENT TRACK NUMBER
76	003254	104201	000047		MOV	#G7,R1	:FORMAT SETUP OVERLAY
77	003256	022444			CALL	PAGE	:DO IT
78	003257	104304	001334		MOV	DPREA,R4	:DATA PREAMBLE LENGTH
79	003261	104303	001333		MOV	HPREA,R3	:HEADER PREAMBLE LENGTH
80	003263	104307	001332		MOV	IMSTAR,R0	:POINT TO FORMAT IMAGE START POINT
81	003265	104301	001112		MOV	CURTRK,R1	:TRACK TO FORMAT
82	003267	104302	000740		MOV	UNIT,R2	:SDI INTERCONNECT
83	003271	104205	007275		MOV	#IMAGE,R5	:RECIRCULATION POINTER
84	003273	060001			XFC	FORMAT	:FORMAT THE TRACK
85	003274	115001			TST	R1	:ANY ERRORS ?
86	003275	013310			BEQ	SKIP6	:NO - DO CHECK PASS
87	003276	115400	000717		INC	UN.ERI	:INCREMENT IT
88	003300	106300	001502	000717	CMF	RETRY,UN.ERI	:DONE ALL RETRIES ?
89	003303	073376			BMI	FERR	:YUP - ERROR
90	003304	022371			CALL	INITPT	:REINIT
91	003305	022243			CALL	CLEAR	:DRIVE CLEAR
92	003306	022251			CALL	SEEK	:RE-SEEK AND GROUP SELECT
93	003307	003257			BR	SKIP7	:RETRY FORMAT
94	003310	114000	000717		CLR	UN.ERI	:FOR STORE
95	003312	023477			CALL	DXCHEC	:DO CHECK PASS
96	003313	117400	001112		DEC	CURTRK	:DECREMENT IT
97	003315	104204	001117		MOV	#HOLDBN,R4	:PREPARE FOR BEGINNING BLOCK DECREMENT
98	003317	104203	001127		MOV	#SECTRK,R3	:DECREMENT BY SECTORS/TRACK
99	003321	021524			CALL	DSUB	:DO DECREMENT
100	003322	104300	001117	001113	MOV	HOLDBN,CURBN	:LO ORDER NEW BLOCK NUMBER
101	003325	104300	001120	001114	MOV	HOLDBN+1,CURBN+1	:HI ORDER NEW BLOCK NUMBER
102	003330	117400	001465		DEC	TRKCNT	:DECREMENT IT
103	003332	053254			BNE	SKIP3	:NO - DO NEXT TRACK
104	003333	117400	001463		DEC	CURGRP	:DECREMENT GROUP NUMBER
105	003335	117400	001464		DEC	GRPCNT	:DECREMENT IT
106	003337	053225			BNE	SLEEK2	:NO - DO NEXT GROUP
107	003340	117400	001460		DEC	CNTCYL	:DECREMENT IT
108	003342	060022			XFC	UPDATE	:UPDATE PROGRESS INDICATOR
109	003343	104207	001263		MOV	#DMBUF,R0	:POINT TO MAINT BUFFER
110	003345	104303	001316		MOV	CYLMSG,R3	:GET DUP CODE
111	003347	100173			MOV	R3,(R0)	:STORE IT
112	003350	104303	001317		MOV	CYLMSG+1,R3	:GET CYLINDER MSG FLAG
113	003352	100673	000001		MOV	R3,1(R0)	:STORE IT
114	003354	104303	001125		MOV	CYLNUM,R3	:GET LOW ORDER CYLINDER NUMBER

119	003356	100673	000003		MOV	R3,3(R0)		:PUT IN MESSAGE
120	003360	104303	001126		MOV	CYLNUM+1,R3		:GET HIGH ORDER
121	003362	100673	000002		MOV	R3,2(R0)		:STORE IT
122	003364	022536			CALL	SNDMNT		:LET HOST KNOW WE'RE ALIVE
123	003365	104204	001125	SKIP12:	MOV	#CYLNUM,R4		:PREPARE FOR CYL NUM DECREMENT
124	003367	104203	001466		MOV	#ONE,R3		:DECREMENT BY ONE
125	003371	021524			CALL	DSUB		:DO SUBTRACT
126	003372	115000	001460		TST	CNTCYL		:ARE WE DONE ?
127	003374	053210			BNE	SLEEK		:DONE ? NO - DO NEXT CYLINDER
128	003375	000000			RETURN			:YES - ALL DONE
129	003376	104012		FERR:	MOV	R1,R2		:GET XFC FAILURE CODE
130	003377	104201	000010		MOV	#8.,R1		:SET FORMAT ERROR
131	003401	003406			BR	DXERR		
132	003402	104302	001125	SKERR:	MOV	CYLNUM,R2		:CYLINDER WHICH FAILED ON
133	003404	104201	000012		MOV	#10.,R1		:SEEK ERROR
134	003406	022552		DXERR:	CALL	ERRMNT		:ERROR RETURN

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4 003407
5 003410 104201 000033
6 003412 022444
7 003413 104200 000200 001501
8 003416 104200 005152 001223
9 003421
10 003422 000000
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14
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17 003423 104673 000022
18 003425 110703
19 003426 103203 177400
20 003430 104030 000736
21 003432 114000 000737
22 003434 104204 000736
23 003436 104203 001131
24 003440 021542
25 003441 104641 000001
26 003443 105301 001340
27 003445 100641 000001
28 003447 104203 001127
29 003451 021524
30 003452 000000
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37 003453 104670 000021 000736
38 003456 114000 000737
39 003460 104204 000736
40 003462 104203 001131
41 003464 021542
42 003465 104641 000001
43 003467 105301 001337
44 003471 100641 000001
45 003473 104203 001127
46 003475 021524
47 003476 000000
48
49
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51
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53 003477
54 003500 114000 001226
55 003502 114000 001221
56 003504 102200 000600 001217
57 003507 013522

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:
: PAGE IN NEW FCT BLOCK
:
DXFCPG: PUSH R0
MOV #G2,R1 ;DLL OVERLAY
CALL PAGE ;EXECUTE OVERLAY
MOV #128.,COUNT ;FOR INIT
MOV #PBNBUF,BADPBN ;FOR POINTER RESET
POP R0 ;RESTORE R0
RETURN ;RETURN
:
:
: COMPUTE NUMBER OF FIRST DBN ON LAST DBN TRACK
: RO -> CHARACTERISTICS BLOCK
:
:
NUMDBN: MOV DBN(CYL(R0),R3 ;GET NUMBER OF CYLINDERS IN DBN AREA
SWAB R3 ;GET INTO LOW BYTE
BIC #HIBYTE,R3 ;CLEAR OUT OTHER INFO
MOV R3,TEMP ;MOVE TO TEMP AREA
CLR TEMP+1 ;CLEAR FOR STORE
MOV #TEMP,R4 ;POINT R4 AT TEMP AREA
MOV #SECTCY,R3 ;POINT TO NUM OF SECTORS/CYLINDER
CALL DMUL ;MULTIPLY TO GET SECTORS BEFORE LAST CYL
MOV 1(R4),R1 ;GET HIGH ORDER
ADD ST,DBN,R1 ;ADD HIGH ORDER STARTING DBN
MOV R1,1(R4) ;STORE BACK
MOV #SECTRK,R3 ;WANT FIRST DN OF LAST TRACK
CALL DSUB ;SUB TO GET IT
RETURN
:
:
: COMPUTE NUMBER OF FIRST XBN ON LAST XBN TRACK
: RO -> CHARACTERISTICS BLOCK
:
:
NUMXBN: MOV XBNCYL(R0),TEMP ;GET NUMBER OF CYLINDERS IN XBN AREA
CLR TEMP+1 ;CLEAR FOR STORE
MOV #TEMP,R4 ;POINT TO TEMP AREA
MOV #SECTCY,R3 ;POINT TO SECTORS/CYLINDER
CALL DMUL ;MULTIPLY TO GET SECTORS IN XBN AREA
MOV 1(R4),R1 ;GET HIGH ORDER
ADD ST,XBN,R1 ;ADD HIGH ORDER STARTING XBN
MOV R1,1(R4) ;STORE BACK
MOV #SECTRK,R3 ;WANT XBN OF LAST TRACK
CALL DSUB ;SUB TO GET IT
RETURN
:
:
: CHECK PASS
:
DXCHEC: PUSH R0 ;SAVE PTR TO CHARACTERISTICS BLK
DXCH: CLR ERR ;FOR ERROR COUNT RESET
CLR ERF_LAG ;CLEAR RE-FORMAT FLAG
BIT #MANU+DLL,FLAG ;FCT AVAILABLE ?
BEQ CSKIP ;NO - DO EXTENSIVE READ

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58	003510	104200	000001	001455	MOV	#1,N	:SET UP FOR STORE
59	003513	104200	000005	001456	MOV	#5,N1	:SET UP
60	003516	104300	001456	001457	MOV	N1,NN1	:SAVE FOR LATER RESET
61	003521	003533			BR	CSKIP2	:SKIP EXTENSIVE READ SETUP
62	003522	104200	000003	001455	CSKIP: MOV	#3,N	:EXTENSIVE REGULAR READ
63	003525	104200	000024	001456	MOV	#20,N1	:EXTENSIVE ERROR READS
64	003530	104300	001456	001457	MOV	N1,NN1	:SAVE FOR LATER RESET
65	003533	024046			CSKIP2: CALL	FIXIT	:DO IT
66	003534	104302	000740		CSKIP1: MOV	UNIT,R2	:SDI INTERCONNECT
67	003536	060012			XFC	SIP	:SYNCH WITH SECTOR/INDEX PULSE
68	003537	104300	001127	001454	MOV	SECTRK,SECCNT	:LOAD SECTORS/TRACK
69	003542	104205	006621		MOV	#CMDBUF,R5	:POINT TO COMMAND BUFFER
70	003544	104207	000721		AGAIN: MOV	#RDBLK,R0	:POINT TO READ COMMAND BLOCK
71	003546	104653	000000		MOV	RB.BUF(R5),R3	:ZERO BUFFER POINTER ?
72	003550	013626			BEQ	NOERR	:YES - SKIP CHECKS
73	003551	100673	000001		MOV	R3,RW.BUF(R0)	:ELSE STORE IT
74	003553	104653	000001		MOV	RB.LOW(R5),R3	:GET LOW ORDER BLOCK NUMBER
75	003555	100673	000002		MOV	R3,RW.LOW(R0)	:STORE IN COMMAND BLOCK
76	003557	104653	000002		MOV	RB.HI(R5),R3	:LOAD HIGH ORDER BLOCK NUMBER
77	003561	100673	000003		MOV	R3,RW.HI(R0)	:STORE IN COMMAND BLOCK
78	003563	104653	000003		MOV	RB.CMD(R5),R3	:GET READ COMMAND AND TRACK NUMBER
79	003565	100673	000004		MOV	R3,RW.CMD(R0)	:STORE IN COMMAND BLOCK
80	003567	104203	000726		MOV	#HSLIM-1,R3	:POINTER TO DUMMY SDI BLOCK
81	003571	100673	000005		MOV	R3,RW.DUM(R0)	:STORE IT IN READ BLOCK
82	003573	104207	100721		READ1: MOV	#<BIT15!RDBLK>,R0	:MAKE SURE POINTING AT BLOCK
83	003575	104203	100000		MOV	#RDCMD,R3	:RESET STATUS POINTER
84	003577	100673	000000		MOV	R3,RW.STAT(R0)	:STORE IT BACK
85	003601	060002			XFC	READ	:READ 1 SECTOR
86	003602	115001			TST	R1	:ANY ERRORS ?
87	003603	053611			BNE	RRERR	:YES - UH OH
88	003604	104207	001443		MOV	#NUM,R0	:POINT TO COMPARE BLOCK
89	003606	060006			XFC	CMPDAT	:DO DATA COMPARE
90	003607	115001			TST	R1	:ANY ERROR IN COMPARE ?
91	003610	013626			BEQ	NOERR	:NOPE - CONTINUE LOOP
92	003611				RRERR:		
93	003611	104653	000004		MOV	RB.IM(R5),R3	:GET POINTER TO IMAGE
94	003613	104134			MOV	(R3),R4	:GET BUFFER POINTER WORD
95	003614	102204	020000		BIT	#BD,R4	:ALREADY MARKED BAD ??
96	003616	053626			BNE	NOERR	:YUP - DON'T COUNT AGAIN
97	003617	101204	020000		BIS	#BD,R4	:FLAG AS BAD
98	003621	100134			MOV	R4,(R3)	:STORE BACK
99	003622	115400	001226		INC	ERR	:INCREMENT ERROR COUNT
100	003624	115400	001473		INC	RTYCNT	:INC COUNTER
101	003626	105205	000005		NOERR: ADD	#RDLEN,R5	:POINT TO NEXT READ CMD BLOCK
102	003630	114000	001504		CLR	TMPTRY	:FOR RESET
103	003632	104300	001503	001505	MOV	RECOV,RECTMP	:GET RECOVERY LEVELS
104	003635	103200	000002	001220	BIC	#RTYDN,FLAG1	:CLEAR RETRY DONE FLAG
105	003640	117400	001454		DEC	SFCCNT	:DECREMENT COUNTER
106	003642	053544			BNE	AGAIN	:NO - DO NEXT SECTOR
107	003643	117400	001455		DEC	N	:DECREMENT COUNTER
108	003645	053534			BNE	CSKIP1	:NO - REPEAT TRACK READ AND COMPARE
109	003646	115000	001226		TST	ERR	:ANY ERRORS ?
110	003650	014044			BEQ	CDONE	:NO - ALL DONE CHECK PASS
111	003651	104204	007275		MOV	#IMAGE,R4	:POINT TO IMAGE BUFFER
112	003653	104143			HERE: MOV	(R4),R3	:GET BUFFER POINTER WORD
113	003654	102203	020000		BIT	#BD,R3	:IS IT BAD
114	003656	014000			BEQ	CSKIP7	:NO - SKIP IT

115	003657	104643	000002		MOV	FT.HI(R4),R3	:GET HIGH ORDER	
116	003661	103203	007777		BIC	#LO,R3	:CLEAR OUT ALL BUT HEADER	
117	003663	106303	001462		CMP	HD.CUR,R3	:IS IT A 'GOOD X/D BN' ?	
118	003665	054000			BNE	CSKIP7	:NOPE - ALREADY REVECTORED IT	
119	003666	104302	000740		MOV	UNIT,R2	:SDI INTERCONNECT	
120	003670	060012			XFC	SIP	:WAIT FOR PULSE	
121	003671	104207	000721		MOV	#RDBLK,R0	:PREPARE FOR READ SECTORS	
122	003673	104203	000726		MOV	#HSLIM-1,R3	:POINTER TO DUMMY SDI BLOCK	
123	003675	100673	000005		MOV	R3,RW.DUM(R0)	:STORE IN COMMAND BLOCK	
124	003677	104643	000001		MOV	1(R4),R3	:LO ORDER BLOCK NUMBER	
125	003701	100673	000002		MOV	R3,RW.LOW(R0)	:STORE IN READ CMD BLOCK	
126	003703	104643	000002		MOV	2(R4),R3	:HI ORDER BLOCK NUM AND CODE	
127	003705	100673	000003		MOV	R3,RW.HI(R0)	:STORE IN READ CMD BLOCK	
128	003707	104203	004535		MOV	#RDBUF,R3	:LOAD ADDRESS OF DATA BUFFER	
129	003711	100673	000001		MOV	R3,RW.BUF(R0)	:STORE IN COMMAND BUFFER	
130	003713	104203	013400		MOV	#RWCMD,R3	:LOAD SDI READ COMMAND	
131	003715	104301	001112		MOV	CURTRK,R1	:GET CURRENT HEAD NUMBER IN R1	
132	003717	101013			BIS	R1,R3	:SET IT IN COMMAND	
133	003720	100673	000004		MOV	R3,RW.CMD(R0)	:STORE BACK	
134	003722	104207	100721	READ2:	MOV	#<BIT15!RDBLK>,R0	:MAKE SURE POINTING AT BLOCK	
135	003724	104203	100000		MOV	#RDCMD,R3	:MARK AS ONLY REQUEST	
136	003726	100173			MOV	R3,(R0)	:STORE IN CMD BLOCK	
137	003727	104302	000740		MOV	UNIT,R2	:SDI INTERCONNECT	
138	003731	060002			XFC	READ	:READ 1 SECTOR	
139	003732	115001			TST	R1	:ANY ERROR IN READ ?	
140	003733	053753			BNE	ER1	:YES - CONSIDER BAD	
141	003734	104173			MOV	(R0),R3	:LOAD ECC ERROR INDICATOR FOR TEST	
142	003735	102203	010000		BIT	#ECCF,R3	:ERROR ?	
143	003737	013743			BEQ	CSKIP6	:NO - CHECK EDC	
144	003740	023027			CALL	ECCCK	:ELSE FIND HOW MANY SYMBOLS IN ERROR	
145	003741	115001			TST	R1	:WITHIN BOUNDS ?	
146	003742	073753			BMI	ER1	:NOPE - CONSIDER BAD	
147	003743	104202	004535	CSKIP6:	MOV	#RDBUF,R2	:POINT TO BUFFER	
148	003745	022627			CALL	CEDC	:COMPUTE EDC - RETURNED IN R3	
149	003746	104205	004535		MOV	#RDBUF,R5	:POINT TO BUFFER	
150	003750	106653	000400		CMP	RW.EDC(R5),R3	:EDC O.K. ?	
151	003752	013770			BEQ	OK	:NO ERROR	
152	003753			ER1:				
153	003753	104643	000002		MOV	FT.HI(R4),R3	:GET HI ORDER BLOCK NUM AND HDR CODE	
154	003755	103203	170000		BIC	#HD.CLR,R3	:CLEAR THE HEADER	
155	003757	101203	110000		BIS	#HD.BAD,R3	:MARK AS BAD	
156	003761	100643	000002		MOV	R3,FT.HI(R4)	:STORE BACK IN IMAGE	
157	003763	115400	001221		INC	ERFLAG	:SET RE-FORMAT FLAG	
158	003765	115400	001453		INC	ERRCNT	:UP COUNTER OF BAD BLOCKS	
159	003767	003773			BR	CSKIP3	:NO NEED TO RE-READ ANY MORE THIS SECTOR	
160	003770	117400	001456	OK:	DEC	N1	:DECREMENT COUNTER - DONE ?	
161	003772	053653			BNE	HERE	:NO - RE-READ SECTOR IN ERROR	
162	003773	104300	001457	001456	CSKIP3:	MOV	NN1,N1	:GET SAVED VALUE
163	003776	117400	001226		DEC	ERR	:DECREMENT IT	
164	004000	105204	000003	CSKIP7:	ADD	#IMLEN,R4	:POINT TO NEXT ERROR ENTRY	
165	004002	115000	001226		TST	ERR	:ALL DONE ERROR SECTORS	
166	004004	053653			BNE	HERE	:NO - DO NEXT SECTOR	
167	004005	115000	001221		TST	ERFLAG	:WERE THERE ANY BAD SECTORS FOUND	
168	004007	014044			BEQ	CDONE	:NOPE - ALL DONE	
169	004010	104304	001334	OVER2:	MOV	DPREA,R4	:DATA PREAMBLE LENGTH	
170	004012	104303	001333		MOV	HPREA,R3	:HEADER PREAMBLE LENGTH	
171	004014	104307	001332		MOV	IMSTAR,R0	:POINT TO TRACK IMAGE START POINT	

172	004016	104301	001112		MOV	CURTRK,R1		:CURRENT TRACK NUMBER
173	004020	104302	000740		MOV	UNIT,R2		:SDI INTERCONNECT
174	004022	104205	007275		MOV	#IMAGE,R5		:RECIRCULATION ADDRESS
175	004024	060001			XFC	FORMAT		:RE-FORMAT
176	004025	115001			TST	R1		:ANY PROBLEMS ??
177	004026	014041			BEQ	OVER1		:NO -REDO CHECK PASS
178	004027	115400	000717		INC	UN.ERI		:INCREMENT IT
179	004031	106300	001502	000717	CMP	RETRY UN.ER1		:DONE ALL RETRIES ?
180	004034	073376			BMI	FERR		:YUP - ERROR
181	004035	022371			CALL	INITPT		:REINIT
182	004036	022243			CALL	CLEAR		:DRIVE CLEAR
183	004037	022251			CALL	SEEK		:RE-SEEK AND GROUP SELECT
184	004040	004010			BR	OVER2		:RETRY FORMAT
185	004041	114000	000717	OVER1:	CLR	UN.ERI		:CLEAR RETRY COUNT
186	004043	003500			BR	DXCH		:RE-CYCLE CHECK PASS
187	004044			CDONE:	POP	RO		:RESTORE CHARACTERISTICS PTR
188	004045	000000			RETURN			

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1
2
3
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5
6 004046 104300 001127 001454 FIXIT: MOV SECTRK,SECCNT ;INIT COUNTER
7 004051 104207 006621 MOV #CMDBUF,R0 ;COMMAND BUFFER
8 004053 104205 007275 MOV #IMAGE,R5 ;POINT TO TRACK IMAGE
9 004055 104303 001233 MOV SKPCNT,R3 ;GET STARTING OFFSET(TUNED)
10 004057 105035 ADD R3,R5 ;POINT TO FIRST ENTRY
11 004060 104050 001232 MOV R5,STARIT ;MARK STARTING ADDRESS
12 004062 104653 000002 MORE: MOV 2(R5),R3 ;SET UP FOR HSR CODE COMPARE
13 004064 103203 007777 BIC #LO,R3 ;ISOLATE HI 4 BITS(HDR CODE)
14 004066 106203 120000 CMP #HD.XBN,R3 ;GOOD XBN ?
15 004070 014102 BEQ FKIP2 ;YES - MARK AS GOOD TO CHECK
16 004071 106203 140000 CMP #HD.DBN,R3 ;GOOD DBN ?
17 004073 014102 BEQ FKIP2 ;YES - MARK AS GOOD TO CHECK
18 004074 114003 CLR R3 ;CLEAR FOR STORE
19 004075 100673 000000 MOV R3,RB.BUF(R0) ;STORE AS BAD SECTOR FLAG
20 004077 105207 000005 ADD #RDLEN,R0 ;POINT PAST BLOCK
21 004101 004121 BR FKIP1 ;SKIP GOOD MARK
22 004102 104203 004535 FKIP2: MOV #RDBUF,R3 ;LOAD ADDRESS OF DATA BUFFER
23 004104 100273 MOV R3,(R0)+ ;STORE BUFFER ADDRESS
24 004105 104653 000001 MOV 1(R5),R3 ;LO ORDER BLOCK NUMBER
25 004107 100273 MOV R3,(R0)+ ;STORE IN READ CMD BLOCK
26 004110 104653 000002 MOV 2(R5),R3 ;HI ORDER BLOCK NUM AND CODE
27 004112 100273 MOV R3,(R0)+ ;STORE IN READ CMD BLOCK
28 004113 104203 013400 MOV #RWCMD,R3 ;LOAD SDI READ COMMAND
29 004115 101303 001112 BIS CURTRK,R3 ;SET IN CURRENT TRACK NUMBER
30 004117 100273 MOV R3,(R0)+ ;STORE IN BLOCK
31 004120 100275 MOV R5,(R0)+ ;SAVE PTR TO IMAGE BLK ENTRY
32 004121 105305 001234 FKIP1: ADD TBLK,R5 ;ADD TO GET NEXT SECTOR
33 004123 106305 001231 CMP EIMAGE,R5 ;SEE IF HAVE TO LOOP BACK TO TOP
34 004125 014134 BEQ REDO ;NEED TO RESET
35 004126 034136 BPL FKP1 ;NO NEED - JUST CONTINUE
36 004127 107305 001231 SUB EIMAGE,R5 ;SUBTRACT TO GET LOOP AMOUNT
37 004131 105205 007275 ADD #IMAGE,R5 ;AND ADD OFFSET
38 004133 004136 BR FKP1 ;SKIP ZERO CONDITION
39 004134 104205 007275 REDO: MOV #IMAGE,R5 ;IF ZERO SIMPLY MOVE TO FRONT
40 004136 106305 001232 FKP1: CMP STARIT,R5 ;AT BEGINNING ADDRESS ?
41 004140 054145 BNE FKIP10 ;NO - JUST CONTINUE
42 004141 105205 000003 ADD #IMLEN,R5 ;ELSE POINT TO NEXT ENTRY
43 004143 104050 001232 MOV R5,STARIT ;MAKE IT NEW STARTING ADDRESS
44 004145 117400 001454 FKIP10: DEC SECCNT ;DECREMENT
45 004147 054062 BNE MORE ;NO - DO NEXT SECTOR
46 004150 000000 RETURN
    
```

```

1          .SBTTL  DBN/XBN TRACK FORMAT OVERLAY (G7)
2          :
3          :
4          :
5          :
6          :
7          :
8          :
9          :
10         DMOVLY  G7,START
11         004151 104200 000047 001153  DXTRK:  MOV      #G7,CUROVL          ;GET OVERLAY INDICATOR
12         003047 104300 001127 001454  MOV      SECTRK,SECCNT      ;MOVE SECTOR COUNT INTO R3
13         003052 104302 001223          MOV      BADPBN,R2        ;MOVE PTR TO BAD LIST INTO R2
14         003055 104205 007275          MOV      #IMAGE,R5        ;POINT TO FORMAT TRACK IMAGE
15         003057 102200 000600 001217  BIT      #MANU+DLL,FLAG    ;SEE IF FCT AVAILABLE
16         003061 013074          BEQ      TKIP2            ;NO - SKIP PBN COMPUTATION
17         003064 102200 000010 001217  BIT      #DBN,FLAG        ;DO DBN AREA ??
18         003065 013073          BEQ      TKIP1            ;NO - DO XBN AREA
19         003070 023307          CALL     DPBN             ;COMPUTE PBN FOR STARTING DBN
20         003071 003074          BR       TKIP2            ;SKIP XBN COMPUTATION
21         003072 023341          TKIP1:  CALL     XPBN       ;COMPUTE PBN FOR STARTING XBN
22         003073 104203 005567  TKIP2:  MOV      #GDBLK,R3      ;POINT R3 AT GOOD DATA BLOCK
23         003074 100253          MOV      R3,(R5)+        ;AND STORE PTR IN IMAGE BLOCK
24         003076 104303 001113          MOV      CURBN,R3        ;GET LOW ORDER BLOCK NUMBER
25         003101 100253          MOV      R3,(R5)+        ;AND STORE IN IMAGE BLOCK
26         003102 102200 002002 001217  BIT      #BSTGS+FCTEMT,FLAG ;IS FCT AVAILABLE AND NON-EMPTY ?
27         003105 053146          BNE     TKIP3            ;NO - CONSIDER GOOD
28         003106 104302 001223          MOV      BADPBN,R2      ;GET POINTER TO PBN
29         003110 104121          MOV      (R2),R1        ;GET LOW ORDER PBN
30         003111 106010 001110          CMP     R1,CURPBN       ;ARE THEY EQUAL ?
31         003113 053146          BNE     TKIP3            ;NO - SKIP REST OF COMPARE
32         003114 104621 000001          MOV     1(R2),R1        ;GET HIGH ORDER BAD
33         003116 103201 170000          BIC     #HD.CLR,R1      ;CLEAR HEADER FOR COMPARE
34         003120 106010 001111          CMP     R1,CURPBN+1    ;EQUAL ?
35         003122 053146          BNE     TKIP3            ;NO - MARK AS GOOD
36         003123 117400 001501          DEC     COUNT          ;DECREMENT IT
37         003125 117400 001237          DEC     FCNT           ;DEC IT
38         003127 053133          BNE     TKIP7            ;IF NOT EMPTY THEN CONTINUE
39         003130 101200 000002 001217  BIS     #FCTEMT,FLAG    ;SET FCT EMPTY FLAG
40         003133 104303 001114  TKIP7:  MOV     CURBN+1,R3     ;HI ORDER BLOCK NUM AND HDR CODE
41         003135 103203 170000          BIC     #HD.CLR,R3      ;CLEAR THE HEADER CODE
42         003137 101203 110000          BIS     #HD.BAD,R3     ;SET TO BAD HEADER CODE
43         003141 100253          MOV     R3,(R5)+        ;AND STORE IN IMAGE BLOCK
44         003142 105200 000002 001223  ADD     #2,BADPBN       ;MOVE PTR TO NEXT BAD BLOCK
45         003145 003156          BR      TKIP4            ;SKIP GOOD MARKING
46         003146 104303 001114  TKIP3:  MOV     CURBN+1,R3     ;HI ORDER BLOCK NUM AND HDR CODE
47         003150 103203 170000          BIC     #HD.CLR,R3      ;CLEAR HEADER CODE
48         003152 104301 001462          MOV     HD.CUR,R1      ;GET CURRENT HEADER CODE(XBN OR DBN)
49         003154 101013          BIS     R1,R3           ;SET TO GOOD HEADER CODE
50         003155 100253          MOV     R3,(R5)+        ;AND STORE IN IMAGE BLOCK
51         003156          TKIP4:  DUBINC  CURBN         ;INCREMENT IT
52         003163 102200 000600 001217  TKIP10: BIT     #MANU+DLL,FLAG ;IS FCT AVAILABLE ?
53         003166 013202          BEQ     SKIP5           ;NO - SKIP PBN INCREMENT
54         003167          DUBINC  CURPBN        ;INCREMENT IT
55         003174 104303 001501          MOV     COUNT,R3       ;GET PBN COUNT
56         003176 053202          BNE     SKIP5           ;IF NOT DONE SKIP
57         003177 115400 001256          INC     FCTCNT         ;GET NEXT BLOCK NUMBER
    
```

58	003201	02337C				CALL	DXFCP1		:ELSE PAGE IN NEW FCT BLOCK
59	003202	117400	001454			SKIP5: DEC	SECCNT		:DECREMENT IT
60	003204	013206				BEQ	DONE1		:YUP - RETURN
61	003205	003074				BR	TKIP2		:NO - DO NEXT SECTOR
62	003206					DONE1:			
63	003206	107205	000003			SUB	#IMLEN,R5		:POINT TO FLAG OF LAST ENTRY
64	003210	104153				MOV	(R5),R3		:GET FLAG WORD
65	003211	101203	040000			BIS	#RECIR,R3		:SET RECIRCULATION FLAG
66	003213	100153				MOV	R3,(R5)		:STORE IT BACK
67	003214	115000	001463			TST	CURGRP		:IS GROUP ZERO ???
68	003216	013230				BEQ	TKIP11		:YES - NO OFFSET
69	003217	104203	001052			MOV	#SCR,R3		:POINT TO CHARACTERISTICS
70	003221	104632	000011			MOV	OFFS(R3),R2		:GET GROUP OFFSET
71	003223	110702				SWAB	R2		:GET INTO LOWBYTE
72	003224	103202	177400			BIC	#HIBYTE,R2		:CLEAR HIGH GARBAGE
73	003226	115002				TST	R2		:ANY OFFSET ?
74	003227	053236				BNE	TKIP5		:YUP - HANDLE IT
75	003230	104200	007275	001332		TKIP11: MOV	#IMAGE,IMSTAR		:ELSE START AT BEGINNING
76	003233	104304	001332			MOV	IMSTAR,R4		:GET START
77	003235	003302				BR	TKIP6		:SKIP OFFSET COMPUTATION
78	003236	104020	000736			TKIP5: MOV	R2,TEMP		:STORE IT
79	003240	114000	000737			CLR	TEMP+1		:FOR STORE
80	003242	104300	001463	00073f		MOV	CURGRP,DDUMMY		:GET CURRENT GROUP
81	003245	114000	000732			CLR	DDUMMY+1		:CLEAR HIGH WORD
82	003247	104203	000736			MOV	#TEMP,R3		:FOR MUL
83	003251	104204	000731			MOV	#DDUMMY,R4		:DITTO
84	003253	021542				CALL	DMUL		:MULTIPLY TO GET OFFSET FOR THIS GROUP
85	003254	106300	001127	000731		TKIP8: CMP	SECTRK,DDUMMY		:IS TOTAL OFFSET MORE THAN NUMBER OF SECTORS ?
86	003257	033264				BPL	TKIP9		:NO - ALL IS FINE
87	003260	107300	001127	000731		SUB	SECTRK,DDUMMY		:YES - SUBTRACT TILL IT IS
88	003263	003254				BR	TKIP8		:CHECK AGAIN
89	003264	104200	000003	000736		TKIP9: MOV	#IMLEN,TEMP		:GET LENGTH OF IMAGE BLOCK
90	003267	114000	000737			CLR	TEMP+1		:FOR STORE
91	003271	104203	000736			MOV	#TEMP,R3		:FOR MULT
92	003273	021542				CALL	DMUL		:GET LENGTH TO OFFSET
93	003274	104143				MOV	(R4),R3		:GET RESULT
94	003275	104304	001231			MOV	EIMAGE,R4		:GET ADDRESS OF END OF IMAGE
95	003277	107034				SUB	R3,R4		:SUBTRACT TO GET STARTING LOCATION
96	003300	104040	001332			MOV	R4,IMSTAR		:STORE IT
97	003302	104143				TKIP6: MOV	(R4),R3		:GET BUFF POINTER
98	003303	101203	100000			BIS	#LAST,R3		:SIGNAL AS LAST
99	003305	100143				MOV	R3,(R4)		:STORE IT BACK
100	003306	000000				RETURN			

1								
2								
3								
4								
5								
6								
7								
8	003307	104300	001137	000736	DPBN:	MOV	XBNSEC,TEMP	:GET NUMBER OF SECTORS IN XBN AREA
9	003312	104300	001140	000737		MOV	XBNSEC+1,TEMP+1	:GET HI ORDER
10	003315	104204	000736			MOV	#TEMP,R4	:POINT R4 AT TEMP AREA
11	003317	104203	001133			MOV	#LBNLBN,R3	:POINT AT NUM OF LBN'S IN LBN AREA
12	003321	021506				CALL	DADD	:ADD
13	003322	104203	001135			MOV	#RBNLBN,R3	:POINT TO NUM OF RBN'S IN LBN AREA
14	003324	021506				CALL	DADD	:ADD TO GET SECTORS IN LBN + XBN AREA
15	003325	104203	001113			MOV	#CURBN,R3	:POINT TO CURRENT BLOCK NUMBER (DBN)
16	003327	021506				CALL	DADD	:GET RELATIVE PBN
17	003330	104641	000001			MOV	1(R4),R1	:GET HIGH ORDER
18	003332	107301	001340			SUB	ST,DBN,R1	:SUBTRACT HIGH ORDER STARTING DBN
19	003334	104140	001110			MOV	(R4),CURPBN	:GET LO ORDER PBN
20	003336	104010	001111			MOV	R1,CURPBN+1	:STORE HIGH ORDER
21	003340	000000				RETURN		
22								
23								
24								
25								
26								
27								
28								
29								
30								
31	003341	104300	001133	000736	XPBN:	MOV	LBNLBN,TEMP	:GET NUMBER OF LBN'S IN LBN AREA
32	003344	104300	001134	000737		MOV	LBNLBN+1,TEMP+1	:GET HIGH ORDER
33	003347	104204	000736			MOV	#TEMP,R4	:POINT R4 TO TEMP AREA
34	003351	104203	001135			MOV	#RBNLBN,R3	:POINT R3 AT RBN'S IN LBN AREA
35	003353	021506				CALL	DADD	:ADD TO GET TOTAL SECTORS IN LBN AREA
36	003354	104203	001113			MOV	#CURBN,R3	:POINT R3 AT CURRENT BLOCK NUMBER
37	003356	021506				CALL	DADD	:ADD TO GET RELATIVE PBN
38	003357	104641	000001			MOV	1(R4),R1	:GET HIGH ORDER
39	003361	107301	001337			SUB	ST,XBN,R1	:SUBTRACT HIGH ORDER STARTING XBN
40	003363	104140	001110			MOV	(R4),CURPBN	:GET LO ORDER OF PBN
41	003365	104010	001111			MOV	R1,CURPBN+1	:SAVE HIGH ORDER
42	003367	000000				RETURN		

1
2
3
4 003370
5 003371 104201 000033
6 003373 022444
7 003374 104200 000200 001501
8 003377 104200 005152 001223
9 003402
10 003403 000000

;;PAGE IN NEW FCT BLOCK

DXFCP1: PUSH R0
MOV #G2,R1
CALL PAGE
MOV #128,COUNT
MOV #PBNBUF,BADPBN
POP R0
RETURN

:DLL OVERLAY
:EXECUTE OVERLAY
:FOR INIT
:FOR POINTER RESET
:RESTORE R0
:RETURN

1					.SBTTL	LBN FORMATTING OVERLAY (F2)	
2					:		
3					:	LBN FORMATTING	
4					:		
5	003404				DMOVLY	F2,START	
6							
7							
8	003047	104200	000003	001153	LFORM:	MOV #F2,CUROVL	:OVERLAY #2
9	003052	102200	000001	001217		BIT #FCTAVL,FLAG	:FCT AVAILAABLE ?
10	003055	013061				BEQ XSKIP1	:NO - SKIP SET UP
11	003056	104201	000036			MOV #G3,R1	:OVERLAY TO GET RIGHT FCT BLOCK
12	003060	022444				CALL PAGE	:EXECUTE IT
13	003061	104207	001052		XSKIP1:	MOV #SCR,R0	:POINT TO CHARACTERISTICS BLOCK
14	003063	104300	001143	001125		MOV LBNCYL,CYLNUM	:GET LO ORDER CYLINDER COUNT
15	003066	104300	001143	001460		MOV LBNCYL,CNTCYL	:MAKE LO ORDER COUNT
16	003071	104300	001144	001126		MOV LBNCYL+1,CYLNUM+1	:GET HIGH ORDER
17	003074	104300	001144	001461		MOV LBNCYL+1,CNTCYL+1	:STORE IT
18	003077	103200	170000	001461		BIC #HD.CLR,CNTCYL+1	:CLEAR STARTING CYLINDER BITS
19	003102	104204	001125			MOV #CYLNUM,R4	:SUBTRACT TO GET CYLINDER NUMBER
20	003104	104203	001466			MOV #ONE,R3	:1 - BECAUSE START AT 0
21	003106	021524				CALL DSUB	:DO SUBTRACT
22	003107	104300	001475	001235		MOV TOTRCT,RCTTOT	:GET TOTAL RCT LBN'S
23	003112	104201	000052			MOV #G8,R1	:POINT TO OVERLAY
24	003114	022444				CALL PAGE	:COMPUTE VARIOUS CONSTANTS
25	003115	104207	001052		XSLEEK:	MOV #SCR,R0	:POINT TO CHARACTERISTICS
26	003117	104673	000002			MOV GRPCYL(R0),R3	:GET GRUPS/CYLINDER
27	003121	103203	177400			BIC #HIBYTE,R3	:CLEAR OUT GARBAGE
28	003123	104030	001464			MOV R3,GRPCNT	:USE AS COUNTER
29	003125	104030	001463			MOV R3,CURGRP	:GROUP NUMBER
30	003127	117400	001463			DEC CURGRP	:DECREMENT TO GET ACTUAL NUMBER
31	003131	104300	00125	001076	XSLEK2:	MOV CYLNUM,ISEEK+1	:GET CURRENT CYLINDER NUMBER
32	003134	104300	001126	001077		MOV CYLNUM+1,ISEEK+2	:GET HIGH ORDER
33	003137	104300	001463	001100		MOV CURGRP,ISEEK+3	:LOAD GROUP NUMBER
34	003142	022251				CALL SEEK	:DO THE SEEK
35	003143	115001				TST R1	:ANY ERROR ?
36	003144	073435				BMI SEEKER	:YUP - CUT OUT
37	003145	104207	001052			MOV #SCR,R0	:POINT TO CHARACTERISTICS
38	003147	104673	000003			MOV TRKGRP(R0),R3	:GET TRACKS/GROUP
39	003151	103203	177400			BIC #HIBYTE,R3	:CLEAR OUT GARBAGE
40	003153	104030	001465			MOV R3,TRKCNT	:MAKE COUNTER
41	003155	117403				DEC R3	:WANT LAST TRACK NUMBER
42	003156	104030	001112			MOV R3,CURTRK	:MAKE CURRENT TRACK 0
43	003160	104201	000025		XSKIP3:	MOV #F8,R1	:TRACK SET UP OVERLAY
44	003162	022444				CALL PAGE	:SET UP TRACK FORMAT
45	003163	104304	001334		XSKIP2:	MOV DPREA,R4	:GET DATA PREAMBLE LENGTH
46	003165	104303	001333			MOV HPREA,R3	:GET HEADER PREAMBLE LENGTH
47	003167	104307	001332			MOV IMSTAR,R0	:POINT TO TRACK IMAGE START POINT
48	003171	104301	001112			MOV CURTRK,R1	:TRACK TO FORMAT
49	003173	104302	000740			MOV UNIT,R2	:SDI INTERCONNECT
50	003175	104205	007275			MOV #IMAGE,R5	:RECIRCULATION ADDRESS
51	003177	060001				XFC FORMAT	:DO FORMAT
52	003200	115001				TST R1	:ANY ERROR ?
53	003201	013214				BEQ LSKIP4	:NO - DO CHECK PASS
54	003202	115400	000717			INC UN.ERI	:INCREMENT IT
55	003204	106300	001502	000717		CMP RETRY,UN.ERI	:DONE ALL RETRIES ?
56	003207	073431				BMI FORERR	:YUP - ERROR
57	003210	022371				CALL INITPT	:REINIT

58	003211	022243			CALL	CLEAR			:DRIVE CLEAR
59	003212	022251			CALL	SEEK			:RE-SEEK AND GROUP SELECT
60	003213	003163			BR	XSKIP2			:NOPE - RETRY
61	003214	114000	000717		LSKIP4: CLR	UN.ERI			:FOR STORE
62	003216	104301	001225		MOV	EMAX,R1			:GET MAX REVECTORS
63	003220	107301	001254		SUB	REVCNT,R1			:SUBTRACT CURRENT ENTRIES
64	003222	106301	001127		CMP	SECTRK,R1			:ENOUGH LEFT FOR WHOLE TRACK ??
65	003224	073235			BMI	XSKIP4			:YES - CONTINUE
66	003225	104201	000011		MOV	#F4,R1			:SIGNAL RCT UPDATE OVERLAY
67	003227	022444			CALL	PAGE			:PAGE IT IN
68	003230	114000	001254		CLR	REVCNT			:FOR STORE
69	003232	104300	001224	001252	MOV	ERRBUF,ERPNT			:FOR RESET
70	003235	023442			XSKIP4: CALL	LCHEC			:DO CHECK PASS
71	003236	102200	020000	001217	BIT	#INIRCT,FLAG			:TIME TO INIT RCT ?
72	003241	013260			BEQ	XSKIP5			:NOPE
73	003242	103200	020000	001217	BIC	#INIRCT,FLAG			:REST FLAG
74	003245	102200	002000	001217	BIT	#BSTGS,FLAG			:DOING BEST GUESS ?
75	003250	013255			BEQ	XSKIP6			:NO - GO ALL THE WAY
76	003251	104201	000022		MOV	#F7,R1			:RCT INIT OVERLAY
77	003253	022444			CALL	PAGE			:EXECUTE IT
78	003254	003260			BR	XSKIP5			:SKIP OTHER
79	003255	104201	000014		XSKIP6: MOV	#F5,R1			:DO FCT->RCT AND INIT
80	003257	022444			CALL	PAGE			:EXECUTE IT
81	003260	117400	001112		XSKIP5: DEC	CURTRK			:DECREMENT IT
82	003262	104204	001117		MOV	#HOLDBN,R4			:GET STARTING BLOCK NUMBER
83	003264	104207	001052		MOV	#SCR,R0			:POINT TO CHARACTERISTICS
84	003266	104673	000011		MOV	LBNTRK(R0),R3			:GET LBN/TRACK
85	003270	103203	177400		BIC	#HI1BYTE,R3			:CLEAR HIGH BYTE
86	003272	104030	000731		MOV	R3,DDUMMY			:STORE IT
87	003274	114000	000732		CLR	DDUMMY+1			:FOR STORE
88	003276	104203	000731		MOV	#DDUMMY,R3			:LBN/TRACK
89	003300	021524			CALL	DSUB			:GET STARTING LBN FOR NEW TRACK
90	003301	104300	001117	001113	MOV	HOLDBN,CURBN			:GET LOW ORDER
91	003304	104300	001120	001114	MOV	HOLDBN+1,CURBN+1			:GET HIGH ORDER
92	003307	104204	001121		MOV	#HOLRBN,R4			:GET STARTING RBN NUMBER
93	003311	104673	000004		MOV	RBNTRK(R0),R3			:GET RBN/TRACK
94	003313	103203	177600		BIC	#HI1BYTE,R3			:CLERA OUT GARBAGE
95	003315	104030	000731		MOV	R3,DDUMMY			:STORE IT
96	003317	114000	000732		CLR	DDUMMY+1			:FOR STORE
97	003321	104203	000731		MOV	#DDUMMY,R3			:RBN'S/TRACK
98	003323	021524			CALL	DSUB			:GET STARTING RBN FOR NEW TRACK
99	003324	104300	001121	001106	MOV	HOLRBN,CURRBN			:GET LOW ORDER
100	003327	104300	001122	001107	MOV	HOLRBN+1,CURRBN+1			:GET HI ORDER
101	003332	117400	001465		DEC	TRKCN			:DECREMENT IT
102	003334	053160			BNE	XSKIP3			:NO - DO NEXT TRACK
103	003335	117400	001463		DEC	CURGRP			:DECREMENT GROUP NUMBER
104	003337	117400	001464		DEC	GRPCNT			:DECREMENT IT
105	003341	053131			BNE	XSLEK2			:NO - DO NEXT GROUP
106	003342	104204	001460		MOV	#CNTCYL,R4			:GET READY TO DEC CYLINDER CNT
107	003344	104203	001466		MOV	#ONE,R3			:CONSTANT WORD OF 1
108	003346	021524			CALL	DSUB			:DECREMENT IT
109	003347	060022			XFC	UPDATE			:UPDATE PROGRESS INDICATOR
110	003350	104207	001263		MOV	#DMBUF,R0			:POINT TO MAINT BUFFER
111	003352	104303	001316		MOV	CYLMSG,R3			:GET CYLINDER MSG FLAG
112	003354	100173			MOV	R3,(R0)			:STORE IT
113	003355	104303	001317		MOV	CYLMSG+1,R3			: 'C' CODE
114	003357	100673	000001		MOV	R3,1(R0)			:STORE IT

115	003361	104303	001125		MOV	CYLNUM,R3	:GET LOW ORDER CYLINDER NUMBER
120	003363	100673	000003		MOV	R3,R3(R0)	:PUT IN MESSAGE
121	003365	104303	001126		MOV	CYLNUM+1,R3	:GET HIGH ORDER
122	003367	100673	000002		MOV	R3,R2(R0)	:STORE IT
123	003371	022536			CALL	SNDMNT	:LET HOST KNOW WE'RE ALIVE
124	003372	104204	001125	LSKIP5:	MOV	#CYLNUM,R4	:GET CURRENT CYLINDER NUMBER
125	003374	104203	001466		MOV	#ONE,R3	:FOR DECREMENT
126	003376	021524			CALL	DSUB	:DECREMENT FOR NEW CYLINDER NUM
127	003377	104304	001460		MOV	CNTCYL,R4	:LOW ORDER ZERO ?
128	003401	053115			BNE	XSLEEK	:NO - CONTINUE
129	003402	104304	001461		MOV	CNTCYL+1,R4	:HIGH ORDER ZERO ?
130	003404	053115			BNE	XSLEEK	:NO - CONTINUE
131	003405	104303	001254		MOV	REVCNT,R3	:ANY LEFTOVER REVECTORS ?
132	003407	013416			BEQ	XDONE	:NOPE
133	003410	101200	040000	001217	BIS	#FINI,FLAG	:SIGNAL NOT TO SEEK
134	003413	104201	000011		MOV	#F4,R1	:SIGNAL RCT UPDATE OVERLAY
135	003415	022444			CALL	PAGE	:UPDATE IT
136	003416	104303	001312	XDONE:	MOV	LBNBAD,R3	:GET BAD BLOCKS FROM FCT
137	003420	104304	001453		MOV	ERRCNT,R4	:GET CHECK PASS BAD
138	003422	105043			ADD	R4,R3	:ADD TO GET TOTAL
139	003423	104030	001312		MOV	R3,LBNBAD	:STORE BACK
140	003425	104201	000041		MOV	#G4,R1	:RCT CLEANUP
141	003427	022412			CALL	NEXT	:GET NEXT OVERLAY
142	003430	000000			RETURN		
143	003431	104012		FORERR:	MOV	R1,R2	:XFC ERROR CODE
144	003432	104201	000014		MOV	#12,R1	:SIGNAL LBN FORMAT ERROR
145	003434	003441			BR	LFERR	
146	003435	104302	001125	SEEKER:	MOV	CYLNUM,R2	:CYLINDER FAILED ON
147	003437	104201	000012		MOV	#10,R1	:SEEK ERROR
148	003441	022552		LFERR:	CALL	ERRMNT	:ERROR RETURN

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6	003442	114000	001226		LCHEC:	CLR	ERR		:FOR ERROR COUNT RESET
7	003444	114000	001221			CLR	ERFLAG		:CLEAR REFORMAT FLAG
8	003446	102200	002000	001217		BIT	#BSTGS,FLAG		:BEST GUESS ?
9	003451	053464				BNE	LSKIP		:YES - DO EXTENSIVE READ
10	003452	104200	000001	001455		MOV	#1,N		:SET UP FOR STORE
11	003455	104200	000005	001456		MOV	#5,N1		:SET UP
12	003460	104300	001456	001457		MOV	N1,NN1		:SAVE FOR LATER RESET
13	003463	003475				BR	LSKIP2		:SKIP EXTENSIVE READ SETUP
14	003464	104200	000003	001455	LSKIP:	MOV	#3,N		:EXTENSIVE REGULAR READ
15	003467	104200	000024	001456		MOV	#20.,N1		:EXTENSIVE ERROR READS
16	003472	104300	001456	001457		MOV	N1,NN1		:SAVE FOR LATER RESET
17	003475	024361			LSKIP2:	CALL	LFIXIT		:EXECUTE IT
18	003476	104302	000740		LSKIP1:	MOV	UNIT,R2		:GET SDI INTERCONNECT
19	003500	060012				XFC	SIP		:WAIT FOR PULSE
20	003501	104300	001127	001454		MOV	SECTRK,SECCNT		:LOAD SECTORS/TRACK
21	003504	104205	006621			MOV	#CMDBUF,R5		:POINT TO COMMAND BUFFER
22	003506	104207	000721		LAGAIN:	MOV	#RDBLK,R0		:POINT TO READ COMMAND BLOCK
23	003510	104653	000000			MOV	RB.BUF(R5),R3		:BUFFER PTR ZERO ?
24	003512	013570				BEQ	LNOERR		:SECTOR BAD - SKIP CHECKS
25	003513	100673	000001			MOV	R3,RW.BUF(R0)		:ELSE STORE IN COMMAND BLOCK
26	003515	104653	000001			MOV	RB.LOW(R5),R3		:LOAD LOW ORDER SECTOR NUMBER
27	003517	100673	000002			MOV	R3,RW.LOW(R0)		:STORE IN COMMAND BLOCK
28	003521	104653	000002			MOV	RB.HI(R5),R3		:LOAD HIGH ORDER BLOCK NUMBER
29	003523	100673	000003			MOV	R3,RW.HI(R0)		:STORE IN COMMAND BLOCK
30	003525	104653	000003			MOV	RB.CMD(R5),R3		:GET READ COMMAND AND TRACK NUMBER
31	003527	100673	000004			MOV	R3,RW.CMD(R0)		:STORE IN COMMAND BLOCK
32	003531	104203	000726			MOV	#HSLIM-1,R3		:POINTER TO DUMMY SDI BLOCK
33	003533	100673	000005			MOV	R3,RW.DUM(R0)		:STORE IN READ BLOCK
34	003535	104207	100721		RFAD3:	MOV	#<BIT15!RDBLK>,R0		:MAKE SURE POINTING AT BLOCK
35	003537	104203	100000			MOV	#RDCMD,R3		:RESET STATUS POINTER
36	003541	100673	000000			MOV	R3,RW.STAT(R0)		:STORE IT BACK
37	003543	060002				XFC	READ		:READ 1 SECTOR
38	003544	115001				TST	R1		:ANY ERRORS ?
39	003545	053553				BNE	LERR		:YES - UH OH
40	003546	104207	001443			MOV	#NUM,R0		:POINT TO COMPARE BLOCK
41	003550	060006				XFC	CMPCMP		:DO DATA COMPARE
42	003551	115001				TST	R1		:ANY ERROR IN COMPARE ?
43	003552	013570				BEQ	LNOERR		:NOPE - CONTINUE LOOP
44	003553				LERR:				
45	003553	104653	000004			MOV	RB.IM(R5),R3		:GET IMAGE POINTER
46	003555	104134				MOV	(R3),R4		:GET BUFFER POINTER WORD
47	003556	102204	020000			BIT	#BD,R4		:ALREADY BEEN HERE ??
48	003560	053570				BNE	LNOERR		:YUP - DON'T COUNT AGAIN
49	003561	101204	020000			BIS	#BD,R4		:MARK AS BAD
50	003563	100134				MOV	R4,(R3)		:STORE BACK
51	003564	115400	001473			INC	RTYCNT		:INC IT
52	003566	115400	001226			INC	ERR		:INCREMENT ERROR COUNT
53	003570	105205	000005		LNOERR:	ADD	#RDLEN,R5		:POINT TO NEXT READ CMD BLOCK
54	003572	114000	001504			CLR	TMPTRY		:FOR RESET
55	003574	104300	001503	001505		MOV	RECOV,RECTMP		:GET RECOVERY LEVELS
56	003577	103200	000002	001220		BIC	#RTYDN,FLAG1		:CLEAR RETRY DONE FLAG
57	003602	117400	001454			DEC	SECCNT		:DECREMENT COUNTER

58	003604	053506		BNE	LAGAIN				:NO - DO NEXT SECTOR
59	003605	117400	001455	DEC	N				:DECREMENT COUNTER
60	003607	053476		BNE	LSKIP1				:NO - REPEAT TRACK READ AND COMPARE
61	003610	115000	001226	TST	ERR				:ANY ERRORS ON FIRST PASS ?
62	003612	014360		BEQ	LDONE				:NO - ALL DONE CHECK PASS
63	003613	104204	007275	MOV	#IMAGE,R4				:POINT TO IMAGE BUFFER
64	003615	104143		HERE: MOV	(R4),R3				:GET BUFFER POINTER WORD
65	003616	102203	020000	BIT	#BD,R3				:IS IT BAD ?
66	003620	014230		BEQ	LSKIP7				:NO - SKIP IT
67	003621	104643	000002	MOV	FT.HI(R4),R3				:GET HI ORDER BLOCK NUM AND HDR CODE
68	003623	103203	007777	BIC	#LO,R3				:CLEAR LOW ORDER
69	003625	106203	000000	CMP	#HD.LBN,R3				:IS IT A 'GOOD' LBN
70	003627	013633		BEQ	LSKIP8				:YES - DO IT
71	003630	106203	060000	CMP	#HD.RBN,R3				:IS IT AN RBN ???
72	003632	054230		BNE	LSKIP7				:NOPE - ALREADY PROCESSED SKIP IT
73	003633	104302	000740	SKIP8: MOV	UNIT,R2				:SDI INTERCONNECT
74	003635	060012		XFC	SIP				:WAIT FOR PULSE
75	003636	104207	000721	MOV	#RDBLK,R0				:PREPARE FOR READ SECTORS
76	003640	104203	000726	MOV	#HSLIM-1,R3				:POINTER TO DUMMY SDI BLOCK
77	003642	100673	000005	MOV	R3,RW.DUM(R0)				:STORE IN COMMAND BLOCK
78	003644	104643	000001	MOV	1(R4),R3				:LO ORDER BLOCK NUMBER
79	003646	100673	000002	MOV	R3,RW.LOW(R0)				:STORE IN READ CMD BLOCK
80	003650	104643	000002	MOV	2(R4),R3				:HI ORDER BLOCK NUM AND CODE
81	003652	100673	000003	MOV	R3,RW.HI(R0)				:STORE IN READ CMD BLOCK
82	003654	104203	004535	MOV	#RDBUF,R3				:LOAD ADDRESS OF DATA BUFFER
83	003656	100673	000001	MOV	R3,RW.BUF(R0)				:STORE IN COMMAND BUFFER
84	003660	104203	013400	MOV	#RWCMD,R3				:LOAD SDI READ COMMAND
85	003662	101303	001112	BIS	CURTRK,R3				:SET CURRENT HEAD ADDRESS IN COMMAND
86	003664	100673	000004	MOV	R3,RW.CMD(R0)				:STORE BACK
87	003666	104207	100721	HEAD4: MOV	#<BIT15!RDBLK>,R0				:MAKE SURE POINTING AT BLOCK
88	003670	104203	100000	MOV	#RDCMD,R3				:MARK AS ONLY REQUEST
89	003672	100173		MOV	R3,(R0)				:STORE IN CMD BLOCK
90	003673	104302	000740	MOV	UNIT,R2				:SDI INTERCONNECT
91	003675	060002		XFC	READ				:READ 1 SECTOR
92	003676	115001		TST	R1				:ANY ERROR IN READ ?
93	003677	053715		BNE	LER3				:YES - CONSIDER BAD
94	003700	104173		MOV	(R0),R3				:LOAD ECC ERROR INDICATOR FOR TEST
95	003701	102203	010000	BIT	#ECCF,R3				:TEST FOR ECC ERROR
96	003703	013707		BEQ	LSKIP6				:NO - CHECK EDC
97	003704	023027		CALL	ECCCK				:FIND OUT HOW MANY SYMBOLS IN ERROR
98	003705	115001		TST	R1				:TOO MANY ?
99	003706	073720		BMI	LER1				:YUP - CONSIDER BAD
100	003707			SKIP6: MOV	#NUM,R0				:POINT TO COMPARE BLOCK
101	003707	104207	001443	XFC	CMPDAT				:DO DATA COMPARE
102	003711	060006		TST	R1				:ANY ERROR IN COMPARE ?
103	003712	115001		BEQ	LOK				:NO ERROR
104	003713	014220		RR	LER1				:SKIP BAD HEADER FLAGGING
105	003714	003720		BIS	#BDHD,FLAG1				:FLAG AS BAD HEADER
106	003715	101200	000040	001220	LER3:	BIT	#REVECT,FLAG		:IN RCT ???
107	003720	102200	000100	001217	LER1:	BNE	LER2		:NOPE - SKIP NEXT STUFF
108	003723	053727		INC	RCTBAD				:INC BAD COUNTER
109	003724	115400	001313	BR	BDIRCT				:THEN MARK BAD
110	003726	004136		LER2: MOV	FT.HI(R4),R3				:GET HI ORDER BLOCK NUM AND HDR CODE
111	003727	104643	000002	BIC	#LO,R3				:CLEAR LOW ORDER
112	003731	103203	007777	CMP	#HD.RBN,R3				:IS IT A BAD RBN ?
113	003733	106203	060000	BEQ	BRBN				:YUP - GO HANDLE IT
114	003735	014034							

115	003736	104643	000002		MOV	FT.HI(R4),R3	:RELOAD HEADER
116	003740	103203	170000		BIC	#HD.CLR,R3	:CLEAR THE HEADER
117	003742	102200	001000	001217	BIT	#PRIM,FLAG	:ANY PRIMARY YET ?
118	003745	054153			BNE	SND	:YUP - THIS ONE SECONDARY
119	003746	104030	000732		MOV	R3,DDUMMY+1	:STORE HIGH ORDER FOR RBN COMPUTATION
120	003750	101200	001000	001217	BIS	#PRIM,FLAG	:SET PRIMARY FLAG
121	003753	101200	000004	001220	BIS	#RPRIM,FLAG1	:SET GOOD RBN EDC NEEDED
122	003756	101203	050000		BIS	#HD.PRIV,R3	:MARK AS PRIMARY
123	003760	100643	000002		MOV	R3,FT.HI(R4)	:STORE BACK IN IMAGE
124	003762	104640	000001	000731	MOV	FT.LOW(R4),DDUMMY	:STORE LOW ORDER FOR RBN COMPUTATION
125	003765	104042			MOV	R4,R2	:SAVE IMAGE POINTER
126	003766	104207	001052		MOV	#SCR,R0	:MAKE SURE POINT TO CHAR BLOCK
127	003770	104204	000731		MOV	#DDUMMY,R4	:POINT TO BLOCK NUMBER
128	003772	022757			CALL	PRIMRB	:GET PRIMARY RBN NUMBER
129	003773	104307	001151		MOV	REVRBN,R0	:GET NUMBER OF REVECTORED RBN
130	003775	104301	001152		MOV	REVRBN+1,R1	:GET HIGH ORDER
131	003777	101201	060000		BIS	#HD.RBN,R1	:SET IN RBN HEADER CODE
132	004001	104205	006204		MOV	#PRMBUF,R5	:USE RDBUF TO HOLD 128 COPIES OF RBN
133	004003	104203	000200		MOV	#RBNRPT,R3	:COUNT OF REPLICATED RBN'S
134	004005	100257			MOV	R0,(R5)+	:STORE A COPY
135	004006	100251			MOV	R1,(R5)+	:AND HIGH ORDER
136	004007	117403			DEC	R3	:DECREMENT COUNTER - DONE ?
137	004010	054005			BNE	RPT1	:NO - STORE ANOTHER COPY
138	004011	104024			MOV	R2,R4	:RESTORE IMAGE POINTER
139	004012	104205	006204		MOV	#PRMBUF,R5	:POINT TO BEGINNING OF BUFFER
140	004014	104642	000000		MOV	FT.BUF(R4),R2	:GET BUFFER POINTER
141	004016	103202	007777		BIC	#BUFMSK,R2	:CLEAR ONLY BUFFER POINTER
142	004020	101052			BIS	R5,R2	:OR IN NEW BUFFER POINTER
143	004021	100642	000000		MOV	R2,FT.BUF(R4)	:STORE IT BACK
144	004023	104202	006204		MOV	#PRMBUF,R2	:FOR EDC COMPUTATION
145	004025	022627			CALL	CEDC	:COMPUTE IT
146	004026	100623	000400		MOV	R3,RW.EDC(R2)	:STORE IT
147	004030	103200	000040	001220	BIC	#BDHD,FLAG1	:WAN'T TO STAY PRIMARY
148	004033	004165			BR	LSND	:BRANCH AROUND SECONDARY
149	004034	117400	001453		DEC	ERRCNT	:DEC ERR CNT SO PRIMARY STATS WILL BE RIGHT
150	004036	102200	001000	001217	BIT	#PRIM,FLAG	:IS THERE A PRIMARY ON THIS TRACK ?
151	004041	014130			BEQ	7\$	:NO - SKIP HEADER RESET
152	004042	104203	007275		MOV	#IMAGE,R3	:POINT TO FORMAT TABLE
153	004044	104632	000002		MOV	FT.HI(R3),R2	:GET HEADER WORD
154	004046	103202	007777		BIC	#LO,R2	:CLEAR ALL BUT HEADER
155	004050	106202	050000		CMP	#HD.PRIV,R2	:IS IT THE PRIMARY ?
156	004052	014056			BEQ	6\$	:YES - DONE
157	004053	105203	000003		ADD	#IMLEN,R3	:NO - POINT TO NEXT ENTRY
158	004055	004044			BR	5\$	:CHECK NEXT ENTRY
159	004056	104632	000002		MOV	FT.HI(R3),R2	:RESET TO HI ORDER
160	004060	103202	170000		BIC	#HD.CLR,R2	:CLEAR HEADER
161	004062	101202	030000		BIS	#HD.REV,R2	:MARK AS SECONDARY
162	004064	100632	000002		MOV	R2,FT.HI(R3)	:STORE BACK
163	004066	104202	005567		MOV	#GDBLK,R2	:POINT TO GOOD BLOCK
164	004070	104635	000000		MOV	FT.BUF(R3),R5	:GET BUFFER POINTER AND FLAGS
165	004072	103200	007777	000014	BIC	#BUFMSK,F5	:CLEAR ONLY BUFFER POINTER
166	004075	101025			BIS	R2,R5	:OR IN NEW BUFFER POINTER
167	004076	100635	000000		MOV	R5,FT.BUF(R3)	:MOVE IN BUFFER POINTER AND FLAGS
168	004100	104305	001252		MOV	ERPNT,R5	:GET REVECTOR POINTER
169	004102	107205	000002		SUB	#ERLEN,R5	:LOOK FOR PRIMARY BACKWARDS
170	004104	104652	000001		MOV	1(R5),R2	:GET HIGH ORDER
171	004106	103202	007777		BIC	#LO,R2	:CLEAR LO STUFF

172	004110	106202	050000			CMP	#HD.PRIV,R2	: IS IT THE PRIMARY ?
173	004112	054102				BNE	8\$	: NO - KEEP LOOKING
174	004113	104652	000001			MOV	1(R5),R2	: GET HIGH ORDER AGAIN
175	004115	103202	170000			BIC	#HD.CLR,R2	: CLEAR THE HEADER
176	004117	101202	030000			BIS	#HD.REV,R2	: MAKE IT SECONDARY
177	004121	100652	000001			MOV	R2,1(R5)	: STORE IT BACK
178	004123	115400	001472			INC	SNDCNT	: INC SECONDARY COUNTER
179	004125	103200	000004	001220		BIC	#RPRIM,FLAG1	: DON'T NEED GOOD EDC ANY LONGER
180	004130	103200	000040	001220	7\$:	BIC	#BDHD,FLAG1	: CLEAR SO WILL PUT IN AS RBN
181	004133	101200	001000	001217		BIS	#PRIM,FLAG	: SET SO NONE WILL BE PRIMARY
182	004136	104643	000002		BDIRCT·	MOV	FT.HI(R4),R3	: RELOAD HEADER
183	004140	103203	170000			BIC	#HD.CLR,R3	: CLEAR THE HEADER
184	004142	101203	110000			BIS	#HD.BAD,R3	: MARK AS BAD
185	004144	100643	000002			MOV	R3,FT.HI(R4)	: STORE BACK IN IMAGE
186	004146	102200	000100	001217		BIT	#REVECT,FLAG	: IN RCT ?
187	004151	054165				ENE	LSND	: NO - PUT IN TO REVECTOR
188	004152	004223				BR	LSKIP3	: ELSE DO NEXT ENTRY
189	004153	102200	000040	001220	SND:	BIT	#BDHD,FLAG1	: BAD HEADER ?
190	004156	054136				BNE	BDIRCT	: YUP - MARK AS BAD
191	004157	101203	030000			BIS	#HD.REV,R3	: MARK AS SECONDARY
192	004161	100643	000002			MOV	R3,FT.HI(R4)	: STORE BACK IN IMAGE
193	004163	115400	001472			INC	SNDCNT	: INC IT
194	004165	115400	001221		LSND:	INC	ERFLAG	: SET RE-FORMAT FLAG
195	004167	104303	001252			MOV	ERPNT,R3	: STORE BACK
196	004171	104642	000001			MOV	FT.LOW(R4),R2	: GET LOW ORDER BLOCK NUMBER
197	004173	100232				MOV	R2,(R3)+	: STORE FOR RCT UPDATE
198	004174	104642	000002			MOV	FT.HI(R4),R2	: GET HIGH ORDER
199	004176	102200	000040	001220		BIT	#BDHD,FLAG1	: BAD HEADER ?
200	004201	014210				BEQ	LSKIP9	: NO - HANDLE AS USUAL
201	004202	103202	170000			BIC	#HD.CLR,R2	: ELSE CLEAR BAD HEADER CODE
202	004204	101202	030000			BIS	#HD.REV,R2	: AND PUT IN SECONDARY CODE
203	004206	115400	001472			INC	SNDCNT	: INC SECONDARY COUNT
204	004210	100232			LSKIP9:	MOV	R2,(R3)+	: STORE FOR RCT UPDATE
205	004211	104030	001252			MOV	R3,ERPNT	: STORE BACK
206	004213	115400	001254			INC	REVCNT	: INCREMENT IT
207	004215	115400	001453			INC	ERRCNT	: UP COUNTER OF BAD BLOCKS
208	004217	004223				BR	LSKIP3	: NO NEED TO RE-READ ANY MORE THIS SECTOR
209	004220	117400	001456		LOK:	DEC	N1	: DECREMENT COUNTER
210	004222	053615				BNE	LHERE	: NO - RE-READ SECTOR IN ERROR
211	004223	104300	001457	001456	LSKIP3:	MOV	NN1,N1	: GET SAVED VALUE
212	004226	117400	001226			DEC	ERR	: DECREMENT IT
213	004230	103200	000040	001220	LSKIP7:	BIC	#BDHD,FLAG1	: CLEAR BAD HEADER FLAG
214	004233	105204	000003			ADD	#IMLEN,R4	: POINT TO NEXT ENTRY
215	004235	115000	001226			TST	ERR	: DONE ALL SECTORS ?
216	004237	053615				BNE	LHERE	: NO - DO NEXT SECTOR
217	004240	115000	001221			TST	ERFLAG	: WERE THERE ANY BAD SECTORS FOUND
218	004242	014360				BEQ	LDONE	: NOPE - ALL DONE
219	004243	104207	006621			MOV	#RBNBUF,R0	: POINT TO RBN BUFFER
220	004245	104301	001450			MOV	DWRD,R1	: DIAGNOSTIC WORD
221	004247	100271				MOV	R1,(R0)+	: STORE IT
222	004250	104204	000125			MOV	#85,R4	: SET COUNTER OF TRIPLE WORDS
223	004252	104301	001445			MOV	FWRD,R1	: FIRST WORD OF PATTERN
224	004254	104302	001446			MOV	SWRD,R2	: SECOND WORD OF PATTERN
225	004256	104303	001447			MOV	TWRD,R3	: THIRD WORD OF PATTERN
226	004260	100271			LOVER:	MOV	R1,(R0)+	: STORE IT
227	004261	100272				MOV	R2,(R0)+	: STORE IT
228	004262	100273				MOV	R3,(R0)+	: STORE IT

229	004263	117404		DEC	R4		:DECREMENT COUNTER
230	004264	054260		BNE	LOVER		:REPEAT TILL DONE
231	004265	104302	001452	MOV	BADEDC,R2		:EDC FOR PATTERN (FORCED ERROR IND)
232	004267	100272		MOV	R2,(R0)+		:STORE IT
233	004270	102200	000004 001220	BIT	#RPRIM,FLAG1		:NEED GOOD RBN EDC ???
234	004273	014321		BEQ	LOVER2		:NOPE
235	004274	104203	007275	MOV	#IMAGE,R3		:POINT TO IMAGE
236	004276	104205	005567	MOV	#GDBLK,R5		:POINT TO GOOD BLOCK
237	004300	104632	000002	LOVER4: MOV	FT.HI(R3),R2		:GET HI ORDER
238	004302	103202	007777	BIC	#LO,R2		:CLEAR JUNK
239	004304	106202	060000	CMP	#HD.RBN,R2		:IS IT THE PRIMARY ?
240	004306	014312		BEQ	LOVER3		:YUP - HANDLE IT
241	004307	105203	000003	ADD	#IMLEN,R3		:CHECK NEXT ENTRY
242	004311	004300		BR	LOVER4		:TRY AGAIN
243	004312	104632	000000	LOVER3: MOV	FT.BUF(R3),R2		:GET BUFFER POINTER
244	004314	103202	007777	BIC	#BUFMSK,R2		:CLEAR ONLY BUFFER POINTER
245	004316	101052		BIS	R5,R2		:SET IN NEW BUFFER POINTER
246	004317	100632	000000	MOV	R2,FT.BUF(R3)		:STORE IT
247	004321	104304	001334	LOVER2: MOV	DPREA,R4		:DATA PREAMBLE LENGTH
248	004323	104303	001333	MOV	HPREA,R3		:HEADER PREAMBLE LENGTH
249	004325	104307	001332	MOV	IMSTAR,R0		:POINT TO TRACK IMAGE START POINT
250	004327	104301	001112	MOV	CURTRK,R1		:CURRENT TRACK NUMBER
251	004331	104302	000740	MOV	UNIT,R2		:SDI INTERCONNECT
252	004333	104205	007275	MOV	#IMAGE,R5		:RECIRCULATION ADDRESS
253	004335	060001		XFC	FORMAT		:RE-FORMAT
254	004336	115001		TST	R1		:ANY PROBLEMS ??
255	004337	014355		BEQ	LOVER1		:NO - DO CHECK PASS
256	004340	115400	000717	INC	UN.ERI		:INCREMENT IT
257	004342	106300	001502 000717	CMP	RETRY,UN.ERI		:DONE ALL RETRIES ?
258	004345	073431		BMI	FORERR		:YUP - ERROR
259	004346	022371		CALL	INITPT		:REINIT
260	004347	022243		CALL	CLEAR		:DRIVE CLEAR
261	004350	104300	001463 001100	MOV	CURGRP,ISEEK+3		:GROUP
262	004353	022251		CALL	SEEK		:RE-SEEK AND GROUP SELECT
263	004354	004321		BR	LOVER2		:NOPE - RETRY
264	004355	114000	000717	LOVER1: CLR	UN.ERI		:CLEAR RETRY COUNT
265	004357	003442		BR	LCHEC		:RE-CYCLE CHECK PASS
266	004360	000000		LDONE: RETURN			

1								
2								
3								
4								
5								
6	004361	104300	001127	001454	LFIXIT:	MOV	SECTRK,SECCNT	:INIT COUNTER
7	004364	104207	006621			MOV	#CMDBUF,R0	:COMMAND BUFFER
8	004366	104205	007275			MOV	#IMAGE,R5	:POINT TO TRACK IMAGE
9	004370	104303	001233			MOV	SKPCNT,R3	:GET STARTING OFFSET(TUNED)
10	004372	105035				ADD	R3,R5	:POINT TO FIRST ENTRY
11	004373	104050	001232			MOV	R5,STARIT	:MARK STARTING ADDRESS
12	004375	104653	000002		LMORE:	MOV	2(R5),R3	:SET UP FOR HSR CODE COMPARE
13	004377	103203	007777			BIC	#LO,R3	:ISOLATE HI 4 BITS(HDR CODE)
14	004401	106203	000000			CMP	#HD.LBN,R3	:GOOD LBN ?
15	004403	014415				BEQ	FLKIP2	:YES - MARK AS GOOD TO CHECK
16	004404	106203	060000			CMP	#HD.RBN,R3	:GOOD RBN ?
17	004406	014415				BEQ	FLKIP2	:YES - MARK AS GOOD TO CHECK
18	004407	114003				CLR	R3	:CLEAR FOR STORE
19	004410	100673	000000			MOV	R3,RB.BUF(R0)	:STORE AS BAD SECTOR FLAG
20	004412	105207	000005			ADD	#RDLEN,R0	:POINT TO NEXT BLOCK
21	004414	004434				BR	FLKIP1	:SKIP GOOD MARK
22	004415	104203	004535		FLKIP2:	MOV	#RDBUF,R3	:LOAD ADDRESS OF DATA BUFFER
23	004417	100273				MOV	R3,(R0)+	:STORE IN BLOCK
24	004420	104653	000001			MOV	1(R5),R3	:LO ORDER BLOCK NUMBER
25	004422	100273				MOV	R3,(R0)+	:STORE IN READ CMD BLOCK
26	004423	104653	000002			MOV	2(R5),R3	:HI ORDER BLOCK NUM AND CODE
27	004425	100273				MOV	R3,(R0)+	:STORE IN READ CMD BLOCK
28	004426	104203	013400			MOV	#RWCMD,R3	:LOAD SDI READ COMMAND
29	004430	101303	001112			BIS	CURTRK,R3	:SET IN CURRENT TRACK NUMBER
30	004432	100273				MOV	R3,(R0)+	:STORE IN BLOCK
31	004433	100275				MOV	R5,(R0)+	:SAVE PTR TO IMAGE BLK ENTRY
32	004434	105305	001234		FLKIP1:	ADD	TBLK,R5	:ADD TO GET NEXT SECTOR
33	004436	106305	001231			CMP	EIMAGE,R5	:SEE IF HAVE TO LOOP BACK TO TOP
34	004440	014447				BEQ	LREDO	:NEED TO RESET
35	004441	034451				BPL	FLKP1	:NO NEED - JUST CONTINUE
36	004442	107305	001231			SUB	EIMAGE,R5	:SUBTRACT TO GET LOOP AMOUNT
37	004444	105205	007275			ADD	#IMAGE,R5	:AND ADD OFFSET
38	004446	004451				BR	FLKP1	:SKIP ZERO CONDITION
39	004447	104205	007275		LREDO:	MOV	#IMAGE,R5	:IF ZERO SIMPLY MOVE TO FRONT
40	004451	106305	001232		FLKP*:	CMP	STARIT,R5	:AT BEGINNING ADDRESS ?
41	004453	054460				BNE	FKIP9	:NO - JUST CONTINUE
42	004454	105205	000003			ADD	#IMLEN,R5	:ELSE POINT TO NEXT ENTRY
43	004456	104050	001232			MOV	R5,STARIT	:MAKE IT NEW STARTING ADDRESS
44	004460	117400	001454		FKIP9:	DEC	SECCNT	:DECREMENT
45	004462	054375				BNE	LMORE	:NO - DO NEXT SECTOR
46	004463	000000				RETURN		


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1          .SBTTL LBN FORMAT IMAGE SETUP OVERLAY (F8)
2 004464   DMOVLY F8,START
3
4          SET UP TRACK FORMAT
5
6 003047   104200 000025 001153 LTRK:  MOV    #F8,CUROVL      ;GET OVERLAY OFFSET
7 003052   104207 001052          MOV    #SCR,R0        ;POINT TO CHARACTERISTICS BLOCK
8 003054   104673 000011          MOV    LBNTRK(R0),R3  ;GET LBN'S/TRACK
9 003056   103203 177400          BIC    #HIBYTE,R3    ;CLEAR HIGH BYTE
10 003060   104030 001454          MOV    R3,SECCNT     ;USE AS COUNTER
11 003062   104302 001223          MOV    BADPBN,R2     ;POINT TO CURRENT BAD PBN ENTRY
12 003064   104205 007275          MOV    #IMAGE,R5     ;POINT TO TRACK IMAGE BUFFER
13 003066   104300 001123 001110  MOV    HOLDPN,CURPBN ;GET LOW ORDER PBN
14 003071   104300 001124 001111  MOV    HOLDPN+1,CURPBN+1 ;GET HIGH ORDER
15 003074   104203 005567          MOV    #GDBLK,R3     ;POINT TO DATA BLOCK
16 003076   104304 001451          MOV    EDC,R4        ;GET GOOD EDC
17 003100   100634 000400          MOV    R4,RW.EDC(R3) ;STORE IN BUFFER
18 003102   103200 001000 001217  BIC    #PRIM,FLAG    ;CLEAR PRIMARY FLAG
19 003105   104203 005567          MOV    #GDBLK,R3     ;POINT TO GOOD DATA BLOCK
20 003107   100653 000000          MOV    R3,FT.BUF(R5) ;STORE IN IMAGE BLOCK
21 003111   104303 001113          MOV    CURBN,R3      ;GET LOW ORDER BLOCK NUMBER
22 003113   100653 000001          MOV    R3,FT.LOW(R5) ;STORE IN IMAGE BLOCK
23 003115   102200 000001 001217  BIT    #FCTAVL,FLAG  ;IS FCT AVAILABLE ?
24 003120   013301          BEQ    LKIP3         ;NO - ASSUME BLOCK GOOD
25 003121   102200 000002 001217  BIT    #FCTEMT,FLAG  ;FCT EMPTY ?
26 003124   053301          BNE    LKIP3         ;YUP - BLOCK IS GOOD
27 003125   104302 001223          MOV    BADPBN,R2     ;GET FCT POINTER
28 003127   104121          MOV    (R2),R1       ;GET LOW ORDER BAD PBN
29 003130   106010 001110          CMP    R1,CURPBN     ;ARE THEY EQUAL ?
30 003132   053301          BNE    LKIP3         ;NO - SKIP REST OF COMPARE
31 003133   104621 000001          MOV    1(R2),R1      ;GET HIGH ORDER
32 003135   103201 170000          BIC    #HD.CLR,R1    ;CLEAR THE HEADER
33 003137   106010 001111          CMP    P,CURPBN+1    ;ARE THEY EQUAL ?
34 003141   053301          BNE    LKIP3         ;NO - MUST BE GOOD
35 003142   117400 001500          DEC    PCNT          ;DECREMENT IT
36 003144   117400 001237          DEC    FCNT          ;DECREMENT FCT COUNT
37 003146   053152          BNE    LKIP12       ;IF NON - ZERO SKIP FLAG SET
38 003147   101200 000002 001217  BIS    #FCTEMT,FLAG  ;SET EMPTY FLAG
39 003152
40 003152   102200 000100 001217  LKIP12: BIT    #REVECT,FLAG ;IN RCT ?
41 003155   053161          BNE    6$           ;NO - SKIP RCT STUFF
42 003156   115400 001313          INC    RCTBAD        ;INCREMENT IT
43 003160   003265          BR     MARBAD        ;GO MARK BAD
44 003161   104623 000001          6$:  MOV    1(R2),R3     ;GET BAD PBN HDR
45 003163   102203 100000          BIT    #PRMY,R3      ;IS IT SECONDARY ?
46 003165   013244          BEQ    LKIP5         ;YES - GO DO IT
47 003166   101200 001000 001217  BIS    #PRIM,FLAG    ;SET FLAG FOR PRIMARY FOUND
48 003171   101200 000004 001220  BIS    #RPRIM,FLAG1  ;SET GOOD EDC NEEDED
49 003174   104303 001114          MOV    CURBN+1,R3    ;GET HIGH ORDER HEADER
50 003176   103203 170000          BIC    #HD.CLR,R3    ;CLEAR HEADER CODE
51 003200   101203 050000          BIS    #HD.PRV,R3    ;MARK AS PRIMARY REVECTOR
52 003202   100653 000002          MOV    R3,FT.HI(R5) ;STORE IN IMAGE BLOCK
53 003204   104207 001052          MOV    #SCR,R0       ;MAKE SURE POINT TO CHAR BLOCK
54 003206   104204 001113          MOV    #CURBN,R4     ;POINT TO BLOCK NUMBER
55 003210   022757          CALL   PRIMRB        ;GET PRIMARY RBN NUMBER
56 003211   104307 001151          MOV    REVRBN,R0     ;GET NUMBER OF REVECTORED RBN
57 003213   104301 001152          MOV    REVRBN+1,R1   ;GET HIGH ORDER

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58	003215	101201	060000		BIS	#HD.RBN,R1	:SET IN RBN HEADER CODE
59	003217	104204	006204		MOV	#PRMBUF,R4	:USE RDBUF TO HOLD 128 COPIES OF RBN
60	003221	104203	000200		MOV	#RBNRPT,R3	:COUNT OF REPLICATED RBN'S
61	003223	100247		RPT:	MOV	R0,(R4)+	:STORE A COPY
62	003224	100241			MOV	R1,(R4)+	:AND HIGH ORDER
63	003225	117403			DEC	R3	:DECREMENT COUNTER - DONE ?
64	003226	053223			BNE	RPT	:NO - STORE ANOTHER COPY
65	003227	104204	006204		MOV	#PRMBUF,R4	:POINT TO BEGINNING OF BUFFER
66	003231	100654	000000		MOV	R4,FT.BUF(R5)	:STORE NEW BUFFER PTR IN IMAGE
67	003233	105200	000002	001223	ADD	#2,BADPBN	:INCREMENT BADPBN POINTER
68	003236	104202	006204		MOV	#PRMBUF,R2	:POINT TO BUFFER
69	003240	022627			CALL	CEDC	:COMPUTE EDC - RETURNED IN R3
70	003241	100623	000400		MOV	R3,RW.EDC(R2)	:STORE IT
71	003243	003311			BR	LKIP4	:SKIP SECONDARY REVECTOR
72	003244			LKIP5:			
73	003244	115400	001472		INC	SNDCNT	:INC IT
74	003246	102202	010000		BIT	#FBDHD,R2	:HEADER IN ERROR CODE IN FCT ?
75	003250	053265			BNE	MARBAD	:YUP - MARK BAD
76	003251	104303	001114		MOV	CURBN+1,R3	:GET HIGH ORDER HEADER
77	003253	103203	170000		BIC	#HD.CLR,R3	:CLEAR HEADFR CODE
78	003255	101203	030000		BIS	#HD.REV,R3	:SET HEADER TO SECONDARY REVECTOR
79	003257	100653	000002		MOV	R3,FT.HI(R5)	:STORE IN IMAGE
80	003261	105200	000002	001223	ADD	#2,BADPBN	:INCREMENT BADPBN POINTER
81	003264	003311			BR	LKIP4	:SKIP GOOD MARK
82	003265			MARBAD:			
83	003265	104303	001114		MOV	CURBN+1,R3	:GET HIGH ORDER HEADER
84	003267	103203	170000		BIC	#HD.CLR,R3	:CLEAR HEADER CODE
85	003271	101203	110000		BIS	#HD.BAD,R3	:MARK AS BAD
86	003273	100653	000002		MOV	R3,FT.HI(R5)	:STORE IN IMAGE
87	003275	105200	000002	001223	ADD	#2,BADPBN	:UPDATE COUNTER
88	003300	003311			BR	LKIP4	:SKIP GOOD MARKING
89	003301	104303	001114	LKIP3:	MOV	CURBN+1,R3	:GET HIGH ORDER HEADER
90	003303	103203	170000		BIC	#HD.CLR,R3	:CLEAR HEADER
91	003305	101203	000000		BIS	#HD.LBN,R3	:MARK AS GOOD LBN
92	003307	100653	000002		MOV	R3,FT.HI(R5)	:STORE IN IMAGE
93	003311	105205	000003	LKIP4:	ADD	#IMLEN,R5	:GO TO NEXT IMAGE BLOCK
94	003313				DUBINC	CURBN	:DO THE INCREMENT
95	003320	102200	000100	001217	BIT	#REVECT,FLAG	:STILL IN RCT AREA ?
96	003323	053335			BNE	LKIP9	:NO - NO NEED TO DECREMENT
97	003324	117400	001235		DEC	RCTTOT	:DECREMENT IT
98	003326	053335			BNE	LKIP9	:OUT OF RCT ? - NO
99	003327	101200	020100	001217	BIS	#REVECT+INIRCT,FLAG	:SET TO REVECTOR
100	003332	104300	001237	001312	MOV	FCNT,LBNBAD	:GET FCT ENTRY COUNT - AFTER RCT
101	003335	102200	002002	001217	LKIP9:	BIT	#BSTGS+FCTEMT,FLAG
102	003340	053352			BNE	LKIP10	:DOING BEST GUESS OR FCT EMPTY
103	003341				DUBINC	CURPBN	:YUP - SKIP FCT STUFF
104	003346	104303	001500		MOV	PCNT,R3	:DO THE INCREMENT
105	003350	053352			BNE	LKIP10	:GET PBN COUNT
106	003351	023657			CALL	FPCG	:IF NOT DONE SKIP
107	003352	117400	001454	LKIP10:	DEC	SECCNT	:ELSE PAGE IN NEW FCT BLOCK
108	003354	053105			BNE	LKIP2	:DECREMENT IT
109							:NO - DO NEXT LBN
110							
111						RBN FORMATTING	
112							
113							
114	003355	104207	001052		MOV	#SCR,R0	:POINT TO CHARACTERISTICS

115	00335	104673	000004		MOV	RBNTRK(R0),R3	:GET RBN'S/TRACK
116	003361	103203	177600		BIC	#HI1BYTE,R3	:CLEAR HIGH GARBAGE
117	003363	104030	001454		MOV	R3,SECCNT	:USE AS COUNTER
118	003365	104207	006621	LKIP8:	MOV	#RBNBUF,R0	:POINT TO RBN BUFFER
119	003367	104301	001450		MOV	DWRD,R1	:DIAGNOSTIC WORD
120	003371	100271			MOV	R1,(R0)+	:STORE IT
121	003372	104204	000125		MOV	#85,R4	:SET COUNTER
122	003374	104301	001445		MOV	FWRD,R1	:FIRST WORD OF PATTERN
123	003376	104302	001446		MOV	SWRD,R2	:SECOND WORD OF PATTERN
124	003400	104303	001447		MOV	TWRD,R3	:THIRD WORD OF PATTERN
125	003402	100271		LLOVER:	MOV	R1,(R0)+	:STORE IT
126	003403	100272			MOV	R2,(R0)+	:STORE IT
127	003404	100273			MOV	R3,(R0)+	:STORE IT
128	003405	117404			DEC	R4	:DECREMENT COUNTER
129	003406	053402			BNE	LLOVER	:REPEAT TILL DONE
130	003407	104302	001452		MOV	BADEDC,R2	:EDC FOR PATTERN (FORCED ERROR IND)
131	003411	100272			MOV	R2,(R0)+	:STORE IT
132	003412	104203	006621		MOV	#RBNBUF,R3	:POINT TO BUFFER
133	003414	100653	000000		MOV	R3,FT.BUF(R5)	:STORE IN IMAGE
134	003416	104303	001106		MOV	CURRBN,R3	:GET LOW ORDER RBN
135	003420	100653	000001		MOV	R3,FT.LOW(R5)	:STORE IN IMAGE
136	003422	102200	002002	001217	BIT	#BSTGS+FCTEMT,FLAG	:IS FCT AVAILABLE ?
137	003425	053471			BNE	LKIP6	:NO - CONSIDER GOOD
138	003426	104203	001110		MOV	#CURPBN,R3	:CURRENT PBN
139	003430	104121			MOV	(R2),R1	:GET LOW ORDER BAD
140	003431	104137			MOV	(R3),R0	:GET LOW ORDER CURRENT
141	003432	106071			CMP	R0,R1	:ARE THEY EQUAL ?
142	003433	053471			BNE	LKIP6	:NO - SKIP REST OF COMPARE
143	003434	104621	000001		MOV	1(R2),R1	:GET HIGH ORDER BAD
144	003436	104637	000001		MOV	1(R3),R0	:GET HIGH ORDER CURRENT
145	003440	106071			CMP	R0,R1	:ARE THEY EQUAL ?
146	003441	053471			BNE	LKIP6	:NO - MUST BE GOOD
147	003442	117400	001500		DEC	PCNT	:DECREMENT IT
148	003444	117400	001237		DEC	FCNT	:DECREMENT IT
149	003446	053452			BNE	LKIP13	:IF NON - ZERO SKIP FLAG SET
150	003447	101200	000002	001217	BIS	#FCTEMT,FLAG	:SET EMPTY FLAG
151	003452	104303	001107	LKIP*3:	MOV	CURRBN+1,R3	:GET HIGH ORDER RBN
152	003454	103203	170000		BIC	#HD.CLR,R3	:CLEAR THE HEADER
153	003456	101203	110000		BIS	#HD.BAD,R3	:MARK AS BAD
154	003460	100653	000002		MOV	R3,FT.HI(R5)	:STORE IN IMAGE
155	003462	105200	000002	001223	ADD	#2,BADPBN	:POINT TO NEXT BAD
156	003465	101200	001000	001217	BIS	#PRIM,FLAG	:MAKE SURE NO PRIMARIES
157	003470	003514			BR	LKIP7	:SKIP GOOD MARKING
158	003471	104303	001107	LKIP6:	MOV	CURRBN+1,R3	:GET HIGH ORDER RBN
159	003473	103203	170000		BIC	#HD.CLR,R3	:CLEAR HEADER
160	003475	101203	060000		BIS	#HD.RBN,R3	:MARK AS GOOD RBN
161	003477	100653	000002		MOV	R3,FT.HI(R5)	:STORE IN IMAGE
162	003501	102200	000004	001220	BIT	#RPRIM,FLAG1	:NEED GOOD EDC ?
163	003504	013514			BEQ	LKIP7	:NOPE
164	003505	103200	000004	001220	BIC	#RPRIM,FLAG1	:CLEAR FLAG
165	003510	104203	005567		MOV	#GDBLK,R3	:GET GOOD EDC BLOCK
166	003512	100653	000000		MOV	R3,FT.BUF(R5)	:STORE IT IN BUFFER POINTER
167	003514			LKIP7:	DUBINC	CURRBN	:DO THE INCREMENT
168	003521	105205	000003		ADD	#IMLEN,R5	:POINT TO NEXT IMAGE BLOCK
169	003523	102200	002002	001217	BIT	#BSTGS+FCTEMT,FLAG	:DOING NEXT GUESS ?
170	003526	053546			BNE	LKIP14	:YUP - SKIP FCT STUFF
171	003527	104204	001110		MOV	#CURPBN,R4	:PREPARE FOR INC

172	003531	104141				MOV	(R4),R1	:GET LOW ORDER OPERAND
173	003532	105201	000001			ADD	#1,R1	:INCREMENT WITH CARRY
174	003534	100241				MOV	R1,(R4)+	:SAVE LOW ORDER RESULT
175	003535	043542				BCC	RINC1	:BRANCH IF DONE
176	003536	104141				MOV	(R4),R1	:GET HIGH ORDER RESULT
177	003537	105201	000001			ADD	#1,R1	:INCREMENT
178	003541	100141				MOV	R1,(R4)	:SAVE HIGH ORDER
179	003542	104303	001500		RINC1:	MOV	PCNT,R3	:GET PBN COUNT
180	003544	053546				BNE	LKIP14	:IF NOT DONE SKIP
181	003545	023657				CALL	FCPG	:ELSE PAGE IN NEW FCT BLOCK
182	003546	117400	001454		LKIP14:	DEC	SECCNT	:DECREMENT IT
183	003550	053365				BNE	LKIP8	:NO - DO NEXT RBN
184	003551	107205	000003			SUB	#IMLEN,R5	:POINT TO LAST ENTRY BUFF POINTER
185	003553	104153				MOV	(R5),R3	:GET IT
186	003554	101203	040000			BIS	#RECIR,R3	:MARK IT AS RECIRC
187	003556	100153				MOV	R3,(R5)	:STORE BACK
188	003557	115000	001463			TST	CURGRP	:IS IT GROUP ZERO ?
189	003561	013573				BEQ	LKIP19	:YES - NO OFFSET
190	003562	104203	001052			MOV	#SCR,R3	:POINT TO CHARACTERISTICS
191	003564	104632	000011			MOV	OFFS(R3),R2	:GET GROUP OFFSET
192	003566	110702				SWAB	R2	:GET IN LOW ORDER
193	003567	103202	177400			BIC	#HIBYTE,R2	:CLEAR HIGH ORDER
194	003571	115002				TST	R2	:ANY GROUPS ?
195	003572	053601				BNE	LKIP15	:YUP - HANDLE IT
196	003573	104200	007275	001332	LKIP19:	MOV	#IMAGE,IMSTAR	:ELSE START AT VERY BEGINNING
197	003576	104304	001332			MOV	IMSTAR,R4	:POINT TO START FOR LATER
198	003600	003645				BR	LKIP16	:BRANCH AROUND OFFSET FIXUP
199	003601	104020	000736		LKIP15:	MOV	R2,TEMP	:STORE IT
200	003603	114000	000737			CLR	TEMP+1	:FOR STORE
201	003605	104300	001463	000731		MOV	CURGRP,DDUMMY	:GET CURRENT GROUP
202	003610	114000	000732			CLR	DDUMMY+1	:CLEAR HIGH ORDER
203	003612	104203	000736			MOV	#TEMP,R3	:FOR MUL
204	003614	104204	000731			MOV	#DDUMMY,R4	:DITTO
205	003616	021542				CALL	DMUL	:MULTIPLY TO GET OFFSET FOR THIS GROUP
206	003617	106300	001127	000731	LKIP17:	CMP	SECTRK,DDUMMY	:IS TOTAL OFFSET MORE THAN NUMBER OF SECTORS ?
207	003622	033627				BPL	LKIP18	:NO - ALL IS FINE
208	003623	107300	001127	000731		SUB	SECTRK,DDUMMY	:YES - SUBTRACT TILL IT IS
209	003626	003617				BR	LKIP17	:CHECK AGAIN
210	003627	104200	000003	000736	LKIP18:	MOV	#IMLEN,TEMP	:MUST MULTIPLY BY ENTRY ENGTH
211	003632	114000	000737			CLR	TEMP+1	:FOR CLEAR
212	003634	104203	000736			MOV	#TEMP,R3	:FOR MULT
213	003636	021542				CALL	DMUL	:DO MULTIPLY
214	003637	104143				MOV	(R4),R3	:GET RESULT
215	003640	104304	001231			MOV	EIMAGE,R4	:GET ADDRESS OF END OF IMAGE
216	003642	107034				SUB	R3,R4	:SUBTRACT TO GET STARTING LOCATION
217	003643	104040	001332			MOV	R4,IMSTAR	:STORE IN IMSTAR
218	003645	104143			LKIP16:	MOV	(R4),R3	:GET BUFF POINTER
219	003646	101203	100000			BIS	#LAST,R3	:SIGNAL AS LAST
220	003650	100143				MOV	R3,(R4)	:STORE IT BACK
221	003651	104204	001123			MOV	#HOLDPN,R4	:FOR DECREMENT
222	003653	104203	001127			MOV	#SECTRK,R3	:DITTO
223	003655	021524				CALL	DSUB	:SUBTRAC TO GET NEXT TRACK
224	003656	000000				RETURN		

				...	PAGE IN NEXT FCT BLOCK	
4	003657			:	PUSH R5	:SAVE R5
5	003660	104200	005152	:	MOV #PBNBUF,BUFPNT	:POINT TO BUFFER
6	003663	104201	000017	:	MOV #F6,R1	:OVERLAY F6 DOES IT
7	003665	022444		:	CALL PAGE	:EXECUTE IT
8	003666	104200	000200	:	MOV #128.,PCNT	:RESET COUNT
9	003671			:	POP R5	:RESTORE R5
10	003672	000000		:	RETURN	:RETURN

1					.SBTTL L/RBN COMPUTE OVERLAY (G8)	
2						
3						
4					THIS OVERLAY COMPUTES LBN AND RBN OF THE LAST TRACK ON LAST LBN CYLINDER	
5					AND COMPUTES THE PBN OF THAT LBN	
6	003673				DMOVLY G8,START	
7						
8						
9	003047	104200	000052	001153	MOV #G8,CUROVL	;FOR RECCRDING
10	003052	104207	001052		MOV #SCR,R0	;POINT TO CHARACTERISTICS BLOCK
11	003054	023104			CALL NUMLBN	;GET NUMBER OF FIRST LBN ON LAST LBN CYL
12	003055	104140	001113		MOV (R4),CURBN	;GET LOW ORDER
13	003057	104140	001117		MOV (R4),HOLDBN	;SAVE FOR LATER
14	003061	104640	000001	001114	MOV 1(R4),CURBN+1	;GET HIGH ORDER
15	003064	104640	000001	001120	MOV 1(R4),HOLDBN+1	;SAVE FOR LATER
16	003067	023144			CALL NUMRBN	;GET NUM OF FIRST RBN ON LAST LBN CYLINDER
17	003070	104140	001106		MOV (R4),CURRBN	;GET LOW ORDER
18	003072	104640	000001	001107	MOV 1(R4),CURRBN+1	;GET HIGH ORDER
19	003075	104140	001121		MOV (R4),HOLRBN	;SAVE LOW FOR LATER
20	003077	104640	000001	001122	MOV 1(R4),HOLRBN+1	;SAVE HIGH FOR LATER
21	003102	023204			CALL LPBN	;GET PBN OF FIRST SECTOR ON LAST TRACK
22	003103	000000			RETURN	

1									
2									
3									
4									
5	003104	104300	001143	000736	NUMLBN:	MOV	LBNCYL,TEMP		:GET LOW ORDER NUM OF LBN CYLINDERS
6	003107	104300	001144	000737		MOV	LBNCYL+1,TEMP+1		:GET HIGH ORDER
7	003112	103200	170000	000737		BIC	#HD.CLR,TEMP+1		:CLEAR STARTING CYLINDER BITS
8	003115	104204	000736			MOV	#TEMP,R4		:DITTO
9	003117	104203	001145			MOV	#LBNPCY,R3		:GET LBN'S/CYLINDER
10	003121	021542				CALL	DMUL		:GET FIRST LBN ON LAST CYLINDER
11	003122	104641	000001			MOV	1(R4),R1		:GET LBN
12	003124	105301	001335			ADD	ST.LBN,R1		:ADD STARTING LBN TO GET ABSOLUTE LBN
13	003126	100641	000001			MOV	R1,1(R4)		:STORE BACK
14	003130	104673	000011			MOV	LBNTRK(RO),R3		:GET LBN/TRK
15	003132	103203	177400			BIC	#HIBYTE,R3		:CLERA HIGH BYTE
16	003134	104030	000731			MOV	R3,DDUMMY		:STORE IT
17	003136	114000	000732			CLR	DDUMMY+1		:FOR STORE
18	003140	104203	000731			MOV	#DDUMMY,R3		:LBN/TRACK
19	003142	021524				CALL	DSUB		:WANT LBN ON LAST TRACK
20	003143	000000				RETURN			

1								
2								
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4								
5	003144	104300	001143	000736	NUMRBN:	MOV	LBNCYL,TEMP	:GET LOW ORDER NUMBER OF LBN CYLINDER
6	003147	104300	001144	000737		MOV	LBNCYL+1,TEMP+1	:GET HIGH ORDER
7	003152	103200	170000	000737		BIC	#HD.CLR,TEMP+1	:CLEAR STARTING CYLINDER BITS
8	003155	104204	000736			MOV	#TEMP,R4	:DITTO
9	003157	104203	001147			MOV	#RBNPCY,R3	:GET RBN'S/CYLINDER
10	003161	021542				CALL	DMUL	:GET FIRST RBN ON LAST CYLINDER
11	003162	104641	000001			MOV	1(R4),R1	:GET HIGH ORDER
12	003164	105301	001336			ADD	ST.RBN,R1	:ADD TO GET ABSOLUTE LBN
13	003166	100641	000001			MOV	R1,1(R4)	:STORE BACK
14	003170	104673	000004			MOV	RBNTRK(R0),R3	:GET RBN/TRACK
15	003172	103203	177600			BIC	#HI1BYTE,R3	:CLEAR OUT GARBAGE
16	003174	104030	000731			MOV	R3,DDUMMY	:STORE IT
17	003176	114000	000732			CLR	DDUMMY+1	:FOR STORE
18	003200	104203	000731			MOV	#DDUMMY,R3	:WANT LAST TRACK
19	003202	021524				CALL	DSUB	:GET IT
20	003203	000000				RETURN		

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4									
5	003204	104300	001113	000736	L PBN:	MOV	CURBN,TEMP	:	GET LOW ORDER
6	003207	104300	001114	000737		MOV	CURBN+1,TEMP+1	:	GET HIGH ORDER
7	003212	104204	000736			MOV	#TEMP,R4	:	FOR SUBTRACT
8	003214	104641	000001			MOV	1(R4),R1	:	GET HIGH ORDER
9	003216	107301	001335			SUB	ST.LBN,R1	:	SUB STARTING LBN TO GET ABSOLUTE LBN
10	003220	100641	000001			MOV	R1,1(R4)	:	STORE BACK
11	003222	104673	000011			MOV	LBNTRK(RO),R3	:	GET LBN'S/TRACK
12	003224	103203	177400			BIC	#HI1BYTE,R3	:	CLEAR HIGH WORD
13	003226	104030	000731			MOV	R3,DDUMMY	:	STORE FOR COMPUTATION
14	003230	114000	000732			CLR	DDUMMY+1	:	CLEAR FOR STORE
15	003232	104203	000731			MOV	#DDUMMY,R3	:	FOR DIVIDE
16	003234	021570				CALL	DDIV	:	GET NUMBER OF TRACKS
17	003235	104673	000004			MOV	RBNTRK(RO),R3	:	GET RBN'S/TRACK
18	003237	103203	177600			BIC	#HI1BYTE,R3	:	CLEAR GARBAGE
19	003241	104030	000731			MOV	R3,DDUMMY	:	FOR COMPUTATION
20	003243	114000	000732			CLR	DDUMMY+1	:	CLEAR HIGH WORD
21	003245	104203	000731			MOV	#DDUMMY,R3	:	FOR MULTIPLY
22	003247	021542				CALL	DMUL	:	GET NUMBER OF RBN'S
23	003250	104300	001113	000731		MOV	CURBN,DDUMMY	:	GET LOW ORDER CURRENT BLOCK NUMBER
24	003253	104300	001114	000732		MOV	CURBN+1,DDUMMY+1	:	GET HIGH ORDER
25	003256	107300	001335	000732		SUB	ST.LBN,DDUMMY+1	:	SUBTRACT STARTING
26	003261	104203	000731			MOV	#DDUMMY,R3	:	FOR ADD
27	003263	021506				CALL	DADD	:	ADD TO GET PBN
28	003264	104140	001123			MOV	(R4),HOLDON	:	GET LOW ORDER
29	003266	104640	000001	001124		MOV	1(R4),HOLDON+1	:	STORE HIGH ORDER
30	003271	000000				RETURN			

```

1          .SBTTL  FCT DOWN-LINE LOAD OVERLAY (F3)
2
3          :
4          : DOWNLINE LOADER FOR FCT
5          :
6          :
7          : FDLL:  DMOVLY  F3,START          ;OVERLAY #3
8          :
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Line	Address	Hex	Hex	Hex	Label	Instruction	Comment
7	003047	104200	000006	001153		MOV #F3,CUROVL	:OVERLAY #3
8	003052	104200	000001	001501		MOV #1,COUNT	:INIT COUNT TO 1
9	003055	104300	001337	001116		MOV ST.XBN,CURXBN+1	:ALSO INITIALIZE XBN COUNTER
10	003060	104300	001337	001114		MOV ST.XBN,CURBN+1	:HIGH ORDER
11	003063	114000	001115		CLR CURXBN	:LOW ORDER IS ZERO	
12	003065	114000	001113		CLR CURBN	:DITTO	
13	003067	104207	001430		MOV #CONBLK,R0	:POINT TO CONVERT BLOCK	
14	003071	104203	001052		MOV #SCR,R3	:POINT TO CHARACTERISTICS	
15	003073	104632	000000		MOV CYLBN(R3),R2	:GET LBN CYLINDERS	
16	003075	100672	000000		MOV R2,V1(R0)	:STORE IN CONVERT BLOCK	
17	003077	104632	000001		MOV CYLBN+1(R3),R2	:GET HIGH ORDER	
18	003101	100672	000001		MOV R2,V1+1(R0)	:STORE IT	
19	003103	104303	001127		MOV SECTRK,R3	:GET SECTORS/TRACK	
20	003105	100673	000004		MOV R3,V3(R0)	:STORE IN CONVERT BLOCK	
21	003107	102200	002000	001217	BIT #BSTGS,FLAG	:IN BEST GUESS MODE ?	
22	003112	053114			BNE NODLL	:YUP - FIX UP FIRST BLOCK	
23	003113	003144			BR LOOP	:START LOOP	
24	003114	104203	004535		NODLL: MOV #RDBUF,R3	:POINT TO BUFFER	
25	003116	114002			CLR R2	:SET MEDIA MODE TO 0 (IN FORMAT)	
26	003117	100132			MOV R2,(R3)	:STORE IT	
27	003120	104204	001305		MOV #SERNUM,R4	:POINT TO SERIAL NUMBER	
28	003122	105203	000002		ADD #FSER,R3	:POINT TO ENTRY IN FCT BLOCK	
29	003124	104205	000004		MOV #4,R5	:INIT COUNTER	
30	003126	104242			9\$: MOV (R4)+,R2	:GET WORD	
31	003127	100232			MOV R2,(R3)+	:STORE WORD	
32	003130	117405			DEC R5	:DECRMENT COUNTER	
33	003131	053126			BNE 9\$	:CONTINUE TILL DONE
34	003132	114002			CLR R2	:FOR INSTANCE NUMBER	
35	003133	104203	004535		MOV #RDBUF,R3	:RESET POINTER	
36	003135	100632	000001		MOV R2,INST(R3)	:STORE INSTANCE NUMBER IN BLOCK	
37	003137	101202	100000		BIS #NOFCT,R2	:SET NO FCT AVAILABLE BIT	
38	003141	100632	000025		MOV R2,FCTFLG(R3)	:STORE IT IN FCT INFO BLOCK	
39	003143	003203			BR LOOPP2	:SKIP DLL STUFF	
40	003144	104205	001263		LOOP: MOV #DMBUF,R5	:POINT TO MAINT BUFFER	
41	003146	104303	001321		MOV FCMMSG,R3	:GET DUP CODE	
42	003150	100153			MOV R3,(R5)	:STORE IT IN MESSAGE	
43	003151	104303	001322		MOV FCMMSG+1,R3	:GET 'F' IDENTIFIER	
44	003153	100653	000001		MOV R3,1(R5)	:STORE IT	
45	003155	104303	001113		MOV CURBN,R3	:GET BLOCK NUMBER DESIRED	
46	003157	100653	000002		MOV R3,2(R5)	:STORE IT	
47	003161	022536			CALL SNDMNT	:SEND REQUEST	
48	003162	022544			CALL RCVMT	:RECEIVE ANSWER	
49	003163	104653	000002		MOV 2(R5),R3	:GET BLOCK COUNT RECEIVED	
50	003165	013451			BEQ DONDLL	:DONE DLL OF ACTUAL FCT	
51	003166	104650	000003	001425	MOV 3(R5),OVLBLK+1	:GET HOST ADDRESS	
52	003171	114000	001426		CLR OVLBLK+2	:ZERO HIGH ORDER	
53	003173	104200	000401	001424	MOV #257,OVLBLK	:NUMBER OF WORDS TO TRANSFER	
54	003176	104204	001424		MOV #OVLBLK,R4	:FOR OVERLAY ROUTINE	
55	003200	104203	004535		MOV #RDBUF,R3	:POINT TO BUFFER	
56	003202	022526			CALL OVRLAY	:GET THE SECTOR	
57	003203	114005			LOOPP2: CLR R5	:CLEAR WRITE ERROR COUNT	

58	003204	104050	001245		MOV	R5,NEXT1	:CLEAR REPEAT COUNT
59	003206	106200	000001	001501	CMP	#1,COUNT	:IS IT THE FIRST ONE ?
60	003211	053231			BNE	LOOPP	:NO - SKIP THIS STUFF
61	003212	104204	001301		MOV	#DATE,R4	:POINT TO SERIAL NUMBER
62	003214	104203	004535		MOV	#RDBUF,R3	:POINT TO BUFFER
63	003216	114005			CLR	R5	:FOR MEDIA FORMAT UPDATE
64	003217	100135			MOV	R5,(R3)	:SET FORMAT IN PROGRESS
65	003220	105203	000012		ADD	#FDAT,R3	:POINT TO ENTRY IN FCT BLOCK
66	003222	104205	000004		MOV	#4,R5	:INIT COUNTER
67	003224	104242		10\$:	MOV	(R4)+,R2	:GET WORD
68	003225	100232			MOV	R2,(R3)+	:STORE WORD
69	003226	117405			DEC	R5	:DECRMENT COUNTER
70	003227	053224			BNE	10\$	:CONTINUE TILL DONE
71	003230	114005			CLR	R5	:CLEAR R5 (ERROR COUNTER)
72	003231	104202	004535	LOOPP:	MOV	#RDBUF,R2	:POINT TO BUFFER
73	003233	022627			CALL	CEDC	:COMPUTE EDC
74	003234	100623	000400		MOV	R3,RW.EDC(R2)	:STORE IT
75	003236	104300	001113	000736	MOV	CURBN,TEMP	:GET LOW ORDER
76	003241	104300	001114	000737	MOV	CURBN+1,TEMP+1	:GET HIGH ORDER
77	003244	104204	000736		MOV	#TEMP,R4	:FOR SUB
78	003246	104641	000001		MOV	1(R4),R1	:GET HIGH ORDER
79	003250	107301	001337		SUB	ST.XBN,R1	:SUBTRACT STARTING XBN
80	003252	100641	000001		MOV	R1,1(R4)	:STORE BACK
81	003254	022714			CALL	CVTSK	:CONVERT AND SEEK
82	003255	104207	000721		MOV	#WRBLK,R0	:POINT TO COMMAND BLOCK
83	003257	104203	122400		MOV	#WRCMD,R3	:GET WRITE COMMAND
84	003261	104302	001112		MOV	CURTRK,R2	:GET CURRENT TRACK
85	003263	101023			BIS	R2,R3	:SET TRACK FOR WRITE
86	003264	100673	000004		MOV	R3,RW.CMD(R0)	:STORE IN COMMAND BLOCK
87	003266	104203	004535		MOV	#RDBUF,R3	:POINT TO BUFFER
88	003270	100673	000001		MOV	R3,RW.BUF(R0)	:STICK IN COMMAND BLOCK
89	003272	104303	001113		MOV	CURBN,R3	:GET LOW ORDER HEADER
90	003274	100673	000002		MOV	R3,RW.LOW(R0)	:STORE IN WRITE BLOCK
91	003276	104303	001114		MOV	CURBN+1,R3	:GET HIGH ORDER
92	003300	101203	120000		BIS	#HD.XBN,R3	:SET HEADER
93	003302	100673	000003		MOV	R3,RW.HI(R0)	:STORE IN WRITE BLOCK
94	003304	104203	000726		MOV	#HSLIM-1,R3	:GET DUMMY SDI POINTER
95	003306	100673	000005		MOV	R3,RW.DUM(R0)	:POINT IN COMMAND BLOCK
96	003310	104303	001333	WRITE1:	MOV	HPREA,R3	:GET HEADER PREAMBLE
97	003312	104304	001334		MOV	DPREA,R4	:GET DATA PREAMBLE
98	003314	104302	000740		MOV	UNIT,R2	:SET UNIT
99	003316	104207	000721		MOV	#WRBLK,R0	:MAKE SURE POINTING AT BLOCK
100	003320	101207	100000		BIS	#BIT15,R0	:SET NO REVECTORING
101	003322	060012			XFC	SIP	:WAIT FOR SECTOR PULSE
102	003323	060003			XFC	WRITE	:WRITE SECTOR
103	003324	115001			TST	R1	:ANY ERROR ?
104	003325	013347			BEQ	NO	:NOPE
105	003326	106300	001502	001504	CMP	RETRY,IMPTRY	:MAX ?
106	003331	013335			BEQ	1\$	:YES - TRY SOME RECOVERY
107	003332	115400	001504		INC	IMPTRY	:INC RETRY COUNT
108	003334	003310			BR	WRITE1	:DO RETRY
109	003335	104303	001505	1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
110	003337	073346			BMI	2\$	:IF NEGATIVE THEN FRIED
111	003340	022612			CALL	ERRHND	:TRY RECOVERY
112	003341	114000	001504		CLR	IMPTRY	:FOR INIT
113	003343	117400	001505		DEC	RECTMP	:DECREMENT IT
114	003345	003310			BR	WRITE1	:RETRY

115	003346			2\$:	INC	R5		:YUP - INCREMENT COUNTER
116	003346	115405			INC	NEXT1		:INCREMENT IT
117	003347	115400	001245	NO:	JLR	TMPTRY		:FOR RESET
118	003351	114000	001504		MOV	RECOV,RECTMP		:GET RECOVERY LEVELS
119	003353	104300	001503	001505	MOV	#CURBN,R4		:FOR ADD
120	003356	104204	001113		MOV	#FCTFMT,R3		:FOR ADD
121	003360	104203	001240		CALL	DADD		:POINT TO NEXT COPY
122	003362	021506			CMP	FCTCPY,NEXT1		:DONE THIS SECTOR ?
123	003363	106300	001244	001245	BNE	LOOPP		:NO - WRITE NEXT FCT COPY
124	003366	053231			CMP	FCTCPY,R5		:ERROR ON EVERY WRITE ?
125	003367	106305	001244		BEQ	ERROR		:YUP - BIG TROUBLE
126	003371	013465			BIT	#BSTGS,FLAG		:BEST GUESS ?
127	003372	102200	002000	001217	BNE	DLLRET		:YUP - JUST WANT TO WRITE FIRST BLOCK
128	003375	053446			BIT	#NDLL,FLAG		:ALL DONE ???
129	003376	102200	004000	001217	BNE	DLLRT1		:YUP - EXIT
130	003401	053432			XFC	UPDATE		:LET HOST KNOW STILL ALIVE
131	003402	060022			INC	COUNT		:INCREMENT IT
132	003403	115400	001501		DUBINC	CURXBN		:INCREMENT IT
133	003405				MOV	CURXBN,CURBN		:GET LOW ORDER
134	003412	104300	001115	001113	MOV	CURXBN+1,CURBN+1		:GET HIGH ORDER
135	003415	104300	001116	001114	CMP	FCTNPD,COUNT		:AT THE LAST NON-PAD ENTRY
136	003420	106300	001260	001501	BNE	12\$		:NOPE
137	003423	053426			DEC	FCTCPY		:DECREMENT - NO PAD ON LAST COPY
138	003424	117400	001244		CMP	FCTFMT,COUNT		:DONE ?
139	003426	106300	001240	001501	BNE	LOOP		:NOPE - DO NEXT SECTOR
140	003431	053144			BIS	#FCTAVL,FLAG		:SET FCT AVAILABLE
141	003432	101200	000001	001217	MOV	#CR,R0		:POINT TO CHARACTERISTICS BLK
142	003435	104207	001037		MOV	FRCPY(R0),R3		:GET F/RCT COPIES
143	003437	104673	000001		SWAB	R3		:GET INTO JW BYTE
144	003441	110703			BIC	#FCLR,R3		:CLEAR OUT REST OF GARBAGE
145	003442	103203	177760		MOV	R3,FCTCPY		:RESTORE NUM OF COPIES
146	003444	104030	001244		MOV	#F2,R1		:FOR OVERLAY #2
147	003446	104201	000003		DLLRET:	CALL		:LBN FORMATTING
148	003450	022412			DONDLL:	MOV		:COUNT FOR BLOCK INIT
149	003451	104205	000400		MOV	#256.,R5		:POINT TO BUFFER
150	003453	104204	004535		MOV	#RDBUF,R4		:INIT TO 0
151	003455	114003			CLR	R3		:CLEAR ONE WORD
152	003456	100243			LOOP3:	MOV		:DEC COUNTER
153	003457	117405			DEC	R5		:CONTINUE TILL DONE
154	003460	053456			BNE	LOOP3		:SET FLAG
155	003461	101200	004000	001217	BIS	#NDLL,FLAG		:CONTINUE
156	003464	003203			BR	LOOPP2		:GET XFC ERROR CODE
157	003465	104012			ERROR:	MOV		:FCT WRITE ERROR
158	003466	104201	000015		MOV	#13.,R1		:ERROR RETURN
159	003470	022552			DLERT:	CALL		

1					.SBTTL RCT UPDATE OVERLAY (F4)	
2	003471				DMOVLY F4,START	
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11	003047	104200	000011	001153	RCTUPD: MOV #F4,CURVOL	:GET OVERLAY
12	003052	104303	001112		MOV CURTRK,R3	:GET CURRENT TRACK
13	003054				PUSH R3	:SAVE FOR RESTORE
14	003055	104303	001125		MOV CYLNUM,R3	:GET LOW ORDRE CYLINDER
15	003057				PUSH R3	:SAVE FOR RESTORE
16	003060	104303	001126		MOV CYLNUM+1,R3	:GET HIGH ORDER
17	003062				PUSH R3	:SAVE FOR RESTORE
18	003063	104300	001133	001227	MOV LBNLBN,HOLD	:GET LOW ORDER COUNT OF LBN'S
19	003066	104300	001134	001230	MOV LBNLBN+1,HOLD+	:GET HIGH ORDER
20	003071	104203	001475		MOV #TOTRCT,R3	:FOR SUBTRACT
21	003073	104204	001227		MOV #HOLD,R4	:DITTO
22	003075	021524			CALL DSUB	:GET STARTING RCT LBN
23	003076	104300	001224	001474	MOV ERRBUF,UPDPNT	:POINT TO ERROR BUFFER
24	003101	104302	001474		ROVER: MOV UPDPNT,R2	:GET POINTER TO BAD LIST
25	003103	104120	000731		MOV (R2),DDUMMY	:GET LOW ORDER
26	003105	104620	000001	000732	MOV 1(R2),DDUMMY+1	:GET HIGH ORDER
27	003110	102200	100000	000732	BIT #BIT15,DDUMMY+1	:IS IT AN RBN ??
28	003113	013116			BEQ ROVER1	:NO - REGULAR HASH
29	003114	104201	177777		MOV #-1,R1	:HASH FOR RBN
30	003116	103200	170000	000732	ROVER1: BIC #HD.CLR,DDUMMY+1	:CLEAR THE HEADER
31	003121	104204	000731		MOV #DDUMMY,R4	:FOR HASH
32	003123	023357			CALL UHASH	:FIND THE RCT ENTRY FOR CURRENT ERR BLOCK
33	003124	104143			MOV (R4),R3	:GET BLOCK NUMBER
34	003125	105203	000002		ADD #2,R3	:ADD TO GET PAST FIRST 2 BLOCKS
35	003127	100143			MOV R3,(R4)	:STORE BACK
36	003130	104030	001477		MOV R3,RCTCNT	:FOR LATER PING-PONG
37	003132	104203	001227		MOV #HOLD,R3	:FOR ADD
38	003134	021506			CALL DADD	:TO GET LBN OF RCT BLOCK
39	003135	104040	001253		MOV R4,BUF PNT	:STORE POINTER TO BLOCK NUMBER
40	003137	104201	000055		MOV #H1,R1	:RCT READ OVERLAY
41	003141	022444			CALL PAGE	:DO IT
42	003142	104205	006621		MOV #RCTBUF,R5	:POINT TO BUFFER
43	003144	104303	000736		MOV OFFSET,R3	:GET OFFSET
44	003146	105035			ADD R3,R5	:POINT TO HIT ENTRY
45	003147	104302	001474		MOV UPDPNT,R2	:RESTORE POINTER
46	003151	104623	000001		MOV 1(R2),R3	:GET THE HEADER
47	003153	103203	007777		BIC #LO,R3	:CLEAR ALL BUT HEADER
48	003155	106203	110000		CMP #HD.BAD,R3	:IS IT A BAD RBN ?
49	003157	053226			BNE NOTR	:NOPE - CHECK FOR PRIMARY
50	003160	104650	000000	000733	MOV 0(R5),TEMP2	:GET LOW ORDER CURRENT RESIDENT
51	003163	104650	000001	000734	MOV 1(R5),TEMP2+1	:GET HIGH ORDER
52	003166	103203	170000		BIC #HD.CLR,R3	:CLEAR HEADER
53	003170	101203	040000		BIS #RC.UNU,R3	:MARK AS UNUSABLE
54	003172	103203	007777		BIC #LO,R3	:CLEAR LOW ORDER
55	003174	100653	000001		MOV R3,1(R5)	:STORE IT BACK
56	003176	114003			CLR R3	:CLEAR FOR STORE
57	003177	100153			MOV R3,(R5)	:CLEAR LOW ORDER

58	003200	102200	020000	000734	BIT	#BIT13,TEMP2+1	:ANY THING DISPLACED ???
59	003203	013322			BEQ	BOTTOM	:NO - NO NEED TO PING-PONG
60	003204	023421			CALL	RCTWT	:WRITE OUT BLOCK
61	003205	023612			CALL	PNGPG	:FIND IT A NEW HOME
62	003206	104204	006621		MOV	#RCTBUF,R4	:POINT TO BUFFER
63	003210	105054			ADD	R5,R4	:ADD OFFSET
64	003211	104202	000733		MOV	#TEMP2,R2	:POINT TO OLD RESIDENT
65	003213	104123			MOV	(R2),R3	:GET LOW ORDER
66	003214	100143			MOV	R3,(R4)	:PUT IT IN
67	003215	104623	000001		MOV	1(R2),R3	:GET HIGH ORDER
68	003217	103203	170000		BIC	#HD.CLR,R3	:CLEAR HEADER
69	003221	101203	030000		BIS	#RC.SND,R3	:MARK AS SECONDARY
70	003223	100643	000001		MOV	R3,1(R4)	:STORE IT
71	003225	003322			BR	BOTTOM	:GO TO BOTTOM OF LOOP
72	003226	106203	050000		NOTR: CMP	#HD.PRIV,R3	:PRIMARY REVECTOR ??
73	003230	053302			BNE	SECNDY	:NO - TREAT AS SECONDARY
74	003231	104653	000001		MOV	1(R5),R3	:GET RCT HEADER
75	003233	103203	007777		BIC	#LO,R3	:CLEAR ALL BUT HEADER
76	003235	106203	000000		CMF	#RC.FRE,R3	:IS IT FREE ??
77	003237	053255			BNE	SWAP	:NO - SWAP ENTRIES
78	003240	104123			MOV	(R2),R3	:GET LOW BLOCK NUMBER
79	003241	100153			MOV	R3,(R5)	:STORE IN RCT
80	003242	104623	000001		MOV	1(R2),R3	:GET HIGH ORDER
81	003244	107303	001335		SUB	ST.LBN,R3	:SUBTRACT STARTING LBN BITS
82	003246	103203	170000		BIC	#HD.CLR,R3	:CLEAR HEADER
83	003250	101203	020000		BIS	#RC.PRIV,R3	:SIGNAL PRIMARY REVECTOR IN RCT
84	003252	100653	000001		MOV	R3,1(R5)	:STORE IN RCT
85	003254	003322			BR	BOTTOM	:GO TO BOTTOM OF LOOP
86	003255	104650	000000	000733	SWAP: MOV	0(R5),TEMP2	:GET LOW ORDER CURRENT RESIDENT
87	003260	104650	000001	000734	MOV	1(R5),TEMP2+1	:GET HIGH ORDER CURRENT RESIDENT
88	003263	104123			MOV	(R2),R3	:GET LOW ORDER NEW RESIDENT
89	003264	100153			MOV	R3,(R5)	:PUT IN RCT
90	003265	104623	000001		MOV	1(R2),R3	:GET HIGH ORDER NEW RESIDENT
91	003267	107303	001335		SUB	ST.LBN,R3	:SUBTRACT STARTING LBN BITS
92	003271	103203	170000		BIC	#HD.CLR,R3	:CLEAR THE HEADER
93	003273	101203	020000		BIS	#RC.PRIV,R3	:SET AS PRIMARY
94	003275	100653	000001		MOV	R3,1(R5)	:PUT IN RCT
95	003277	023421			CALL	RCTWT	:WRITE OUT PRIMARY BLOCK
96	003300	104202	000733		MOV	#TEMP2,R2	:POINT TO OLD RESIDENT
97	003302	023612			SECNDY: CALL	PNGPG	:FIND RCT ENTRY FOR SECONDARY
98	003303	104204	006621		MOV	#RCTBUF,R4	:POINT TO BUFFER
99	003305	105054			ADD	R5,R4	:ADD OFFSET
100	003306	104123			MOV	(R2),R3	:GET LOW ORDER NEW ENTRY
101	003307	100143			MOV	R3,(R4)	:PUT IN RCT
102	003310	104623	000001		MOV	1(R2),R3	:GET HIGH ORDER NEW ENTRY
103	003312	107303	001335		SUB	ST.LBN,R3	:SUBTRACT STARTING LBN BITS
104	003314	103203	170000		BIC	#HD.CLR,R3	:CLEAR HEADER
105	003316	101203	030000		BIS	#RC.SND,R3	:FLAG AS SECONDARY
106	003320	100643	000001		MOV	R3,1(R4)	:STORE IN RCT
107	003322	023421			BOTTOM: CALL	RCTWT	:WRITE OUT RCT BLOCK
108	003323	105200	000002	001474	ADD	#ERLEN,UPDPNT	:POINT TO NEXT ERROR SECTOR
109	003326	117400	001254		DEC	REVCNT	:DECREMENT IT
110	003330	053101			BNE	ROVER	:NOT DONE - DO NEXT SECTOR
111	003331				POP	R3	:GET HIGH ORDER CYL
112	003332	104030	001126		MOV	R3,CYLNUM+1	:RESTORE IT
113	003334	104030	001077		MOV	R3,ISEEK+2	:PUT IN SEEK COMMAND
114	003336				POP	R3	:GET LOW ORDER

115	003337	104030	001125	MOV	R3,CYLNUM	
116	003341	104030	001076	MOV	R3,ISEEK+1	:PUT IN SEEK COMMAND
117	003343			POP	R3	:GET TRACK NUMBER
118	003344	104030	001112	MOV	R3,CURTRK	:RESTORE IT
119	003346	102200	040000 001217	BIT	#FINI,FLAG	:DO THE SEEK ?
120	003351	053356		BNE	NOSEK	:NOPE
121	003352	104300	001463 001100	MOV	CURGRP,ISEEK+3	:RESTORE GROUP TO SEEK
122	003355	022251		CALL	SEEK	:GET BACK TO RIGHT CYLINDER
123	003356	000000		NOSEK: RETURN		

1										
2										
3										
4	003357	115001								
5	003360	073410								
6	003361	104207	001052							
7	003363	022757								
8	003364	104200	000200	000736	UHASH:	TST	R1			:NEED TO COMPUTE PRIMARY RBN ?
9	003367	114000	000737			BMI	UHKIP1			:NO - SKIP IT
10	003371	104300	001151	000731		MOV	#SCR,R0			:POINT TO CUBUNIT CHARACTERISTICS
11	003374	104300	001152	000732		CALL	PRIMRB			:COMPUTE PRIMARY RBN
12	003377	104204	000731			MOV	#128,TEMP			:DIVIDE BY 128 TO GET BLOCK NUMBER
13	003401	104203	000736			CLR	TEMP+1			:FOR STORE
14	003403	021570				MOV	REVRBN,DDUMMY			:GET PRIMARY RBN
15						MOV	REVRBN+1,DDUMMY+			:GET HIGH ORDER
16	003404	104131				MOV	#DDUMMY,R4			:FOR DIVIDE
17	003405	105011				MOV	#TEMP,R3			:DITTO
18	003406	100131				CALL	DDIV			:DDUMMY=RCT BLOCK NUMBER
19	003407	000000								:TEMP=OFFSET
20	003410	104140	001151			MOV	(R3),R1			:GET OFFSET
21	003412	104640	000001	001152		ADD	R1,R1			:MULTIPLY BY 2
22	003415	107300	001336	001152		MOV	R1,(R3)			:STORE BACK
23	003420	003364				RETURN				
						UHKIP1:	MOV	(R4),REVRBN		:FOR DIVIDE SETUP
							MOV	1(R4),REVRBN+1		:DITTO
							SUB	ST.RBN,REVRBN+1		:SUBTRACT STARTING RBN BITS
							BR	UHKIP		:DO DIVIDE

1									
2									
3									
4	003421	114005							
5	003422	104050	001245						
6	003424	104204	000731						
7	003426	104203	001052						
8	003430	104632	000011						
9	003432	103202	177400						
10	003434	104207	001430						
11	003436	100672	000004						
12	003440	104632	000001						
13	003442	103202	007777						
14	003444	100672	000001						
15	003446	114002							
16	003447	100672	000000						
17	003451	022714							
18	003452	104207	000721						
19	003454	104203	122400						
20	003456	104302	001112						
21	003460	101023							
22	003461	100673	000004						
23	003463	104202	006621						
24	003465	022627							
25	003466	100623	000400						
26	003470	100672	000001						
27	003472	104143							
28	003473	100673	000002						
29	003475	104643	000001						
30	003477	105303	001335						
31	003501	101203	000000						
32	003503	100673	000003						
33	003505	104203	000726						
34	003507	100673	000005						
35	003511	104303	001333						
36	003513	104304	001334						
37	003515	104302	000740						
38	003517	104207	000721						
39	003521	060012							
40	003522	060003							
41	003523	115001							
42	003524	013546							
43	003525	106300	001502	001504					
44	003530	013534							
45	003531	115400	001504						
46	003533	003511							
47	003534	104303	001505						
48	003536	073545							
49	003537	022612							
50	003540	114000	001504						
51	003542	117400	001505						
52	003544	003511							
53	003545								
54	003545	115405							
55	003546	115400	001245						
56	003550	114000	001504						
57	003552	104300	001503	001505					

```

WRITE AN RCT BLOCK
:
:
:
RCTWT: CLR R5 ;CLEAR ERROR COUNTER
MOV R5,NEXT1 ;RESET NEXT COUNTER
MOV #DDUMMY,R4 ;POINT TO BLOCK
RCTWLP: MOV #SCR,R3 ;POINT TO CHARACTERISTICS
MOV LBNTK(R3),R2 ;GET LBN/TRACK
BIC #HIBYTE,R2 ;CLEAR REST OF WORD
MOV #CONBLK,R0 ;POINT TO CONVERT BLOCK
MOV R2,V3(R0) ;FOR CONVERT
MOV STCYL(R3),R2 ;STARTING CLYLINDER
BIC #LO,R2 ;CLEAR REST OF WORD
MOV R2,V1+1(R0) ;STORE
CLR R2 ;CLEAR FOR STORE
MOV R2,V1(R0) ;LOW ORDER ALWAYS 0
CALL CVTSK ;CONVERT AND SEEK
MOV #WRBLK,R0 ;POINT TO COMMAND BLOCK
MOV #WRCMD,R3 ;GET WRITE COMMAND
MOV CURTRK,R2 ;GET CURRENT TRACK
BIS R2,R3 ;SET TRACK FOR WRITE
MOV R3,RW.CMD(R0) ;STORE IN COMMAND BLOCK
MOV #RCTBUF,R2 ;POINT TO BUFFER
CALL CEDC ;COMPUTE EDC - RETURNED IN R3
MOV R3,RW.EDC(R2) ;STORE IT
MOV R2,RW.BUF(R0) ;STICK IN COMMAND BLOCK
MOV (R4),R3 ;GET LOW ORDER HEADER
MOV R3,RW.LOW(R0) ;STORE IN WRITE BLOCK
MOV 1(R4),R3 ;GET HIGH ORDER
ADD ST.LBN,R3 ;ADD STARTING LBN BITS
BIS #HD.LBN,R3 ;SET HEADER
MOV R3,RW.HI(R0) ;STORE IN WRITE BLOCK
MOV #HSLIM-1,R3 ;GET DUMMY SDI POINTER
MOV R3,RW.DUM(R0) ;POINT IN COMMAND BLOCK
WRITE2: MOV HPREA,R3 ;GET HEADER PREAMBLE
MOV DPREA,R4 ;GET DATA PREAMBLE
MOV UNIT,R2 ;SET UNIT
MOV #WRBLK,R0 ;MAKE SURE POINTING AT BLOCK
XFC SIP ;WAIT FOR SECTOR PULSE
XFC WRITE ;WRITE SECTOR
TST R1 ;ANY ERROR ?
BEQ RWGD ;NOPE
CMP RETRY,IMPTRY ;MAX ?
BEQ 1$ ;YES - TRY SOME RECOVERY
INC IMPTRY ;INC RETRY COUNT
BR WRITE2 ;DO RETRY
1$: MOV RECTMP,R3 ;GET CURRENT ERROR RECOVERY LEVEL
BMI 2$ ;IF NEGATIVE THEN FRIED
CALL ERRHND ;TRY RECOVERY
CLR IMPTRY ;FOR INIT
DEC RECTMP ;DECREMENT IT
BR WRITE2 ;RETRY
2$: INC R5 ;YUP - INCREMENT COUNTER
RWGD: INC NEXT1 ;INCREMENT IT
CLR IMPTRY ;FOR RESET
MOV RECOV,RECTMP ;GET RECOVERY LEVELS

```

58	003555	104204	000731		MOV	#DDUMMY,R4		:FOR ADD
59	003557	104203	001242		MOV	#RCTFMT,R3		:FOR ADD
60	003561	021506			CALL	DADD		:POINT TO NEXT COPY
61	003562	106300	001244	001245	CMP	FCTCPY,NEXT1		:DONE THIS SECTOR ?
62	003565	053426			BNE	RCTWLP		:NO - WRITE NEXT FCT COPY
63	003566	106305	001244		CMP	FCTCPY,R5		:ERROR ON EVERY WRITE ?
64	003570	013606			BEQ	RCTERR		:YUP - BIG TROUBLE
65	003571	104303	001245	RCXLP:	MOV	NEXT1,R3		:ANY REPEATS ?
66	003573	013604			BEQ	RTDON		:NO
67	003574	104204	000731		MOV	#DDUMMY,R4		:TO GET IT BACK
68	003576	104203	001242		MOV	#RCTFMT,R3		:DITTO
69	003600	021524			CALL	DSUB		
70	003601	117400	001245		DEC	NEXT1		:SUB IT
71	003603	003571			BR	RCXLP		:REPEAT
72	003604	060022		RTDON:	XFC	UPDATE		:LET HOST KNOW STILL ALIVE
73	003605	000000			RETURN			
74	003606	104012		RCTERR:	MOV	R1,R2		:XFC ERROR CODE
75	003607	104201	000017		MOV	#15.,R1		:RCT WRITE ERROR
76	003611	022552			CALL	ERRMNT		:ERROR QUIT

```

1
2
3
4 003612          :
5 003613 114000 001222 PNGPG: PUSH R2          :SAVE R2
6 003615 114002          :CLR WRFLG          :CLEAR WRAP FLAG
7 003616 104303 000736 XNGBLK: CLR R2          :FOR FLOP SET
8 003620 104035          :MOV OFFSET,R3     :GET OFFSET
9 003621 105025          :MOV R3,R5         :MOV OFFSET INTO BUFF POINTER
10 003622 102205 000400 XAGAIN: ADD R2,R5        :ADD FLOP VALUE
11 003624 053637          :BIT #BIT8,R5      :PAST ONE END (OR BOTH)
12 003625 104651 006622          :BNE XFLIP         :YUP - FLIP OTHER DIRECTION
13 003627 103201 007777          :MOV RCTBUF+1(R5),R1 :GET HEADER CODE
14 003631 106201 100000          :BIC #LO,R1        :CLEAR LOW ORDER
15 003633 013675          :CMP #RC,NUL,R1    :END OF RCT ?
16 003634 106201 000000          :BEQ XEORCT        :YUP - WRAP TO FIRST BLOCK
17 003636 013707          :CMP #RC,FRE,R1    :FREE ?
18 003637 104025          :BEQ XPRET         :YUP - ALL DONE
19 003640 114002          :MOV R2,R5         :GET FLIP VALUE
20 003641 107052          :CLR R2
21 003642 073645          :SUB R5,R2         :NEGATE IT
22 003643 105202 000002          :BMI XNOINC        :IF NEGATIVE DON'T INC
23 003645 106202 000400          :ADD #2,R2         :ADD TO NEXT VALUE
24 003647 053620          :XNOINC: CMP #256.,R2 :DONE EVERY SLOT IN BLOCK ?
25                          :BNE XAGAIN        :NOPE - TRY NEXT ONE
26
27
28
29
30 003650 115400 001477          :
31 003652 104303 001477 XPNGRD: INC RCTCNT        :INC TO NEXT ONE
32 003654 104204 000731          :MOV RCTCNT,R3     :FOR STORE
33 003656 100143          :MOV #DDUMMY,R4    :FOR ADD
34 003657 114003          :MOV R3,(R4)       :STORE BLOCK NUMBER
35 003660 100643 000001          :CLR R3           :FOR RESETS
36 003662 104030 000736          :MOV R3,1(R4)     :CLEAR HIGH WORD
37 003664 104203 001227          :MOV R3,OFFSET    :MAKE OFFSET AT BEGINNING
38 003666 021506          :MOV #HOLD,R3     :POINT TO FIRST RCT LBN
39 003667 104040 001253          :CALL DADD        :GET LBN OF THIS RCT BLOCK
40 003671 104201 000055          :MOV R4,BUFPNT    :STORE BLOCK NUMBER
41 003673 022444          :MOV #H1,R1       :READ RCT OVERLAY
42 003674 003615          :CALL PAGE        :DO IT
43 003675 104303 001222          :BR XNGBLK        :SEARCH THIS BLOCK
44 003677 053711          :XEORCT: MOV WRFLG,R3 :GET WRAP FLAG
45 003700 104200 000002 001477          :BNE XPERR        :IF BEEN HERE ONCE THEN RCT FULL
46 003703 104200 000002 001222          :MOV #2,RCTCNT    :FOR FIRST RCT BLOCK
47 003706 003652          :MOV #2,WRFLG     :MAKE WRAP FLAG NON-ZERO
48                          :BR XPNGRD        :READ IT AND CONTINUE
49
50 003707          :XPRET: POP R2      :RESTORE R2
51 003710 000000          :RETURN          :SUCCESSFUL RETURN
52 003711 104201 000020          :XPERR: MOV #16.,R1 :RCT FULL
53 003713 114002          :CLR R2         :NO SUBCODE
54 003714 022552          :CALL ERRMNT     :ERROR RETURN
    
```


58	003201	003141	-		BR	READ11	:DO RETRY
59	003202	104303	001505	1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
60	003204	073213			BMI	2\$	:IF NEGATIVE THEN FRIED
61	003205	022612			CALL	ERRHND	:TRY RECOVERY
62	003206	114000	001504		CLR	TMPTRY	:FOR INIT
63	003210	117400	001505		DEC	RECTMP	:DECREMENT IT
64	003212	003141			BR	READ11	:RETRY
65	003213			2\$:			
66	003213	115405			INC	R5	:INCREMENT BAD COUNTER
67	003214	106305	001244		CMP	FCTCPY,R5	:ALL BAD ?
68	003216	013344			BEQ	ORFTAL	:YUP - ALL OVER
69	003217	104203	001242		MOV	#RCTFMT,R3	:SIZE OF TABLE - R4 -> BLOCK NUMBER
70	003221	021506			CALL	DADD	:ADD TO POINT TO NEXT COPY
71	003222	114000	001504		CLR	TMPTRY	:RESET RETRY COUNT
72	003224	104300	001503	001505	MOV	RECOV,RECTMP	:DITTO RECOVERY LEVELS
73	003227	003106			BR	OLOOP	:BRANCH BACK
74	003230			102\$:			
75	003230	114000	001504		CLR	TMPTRY	:FOR RESET
76	003232	104300	001503	001505	MOV	RECOV,RECTMP	:GET RECOVERY LEVELS
77	003235	115005			TST	R5	:ANY ERRORS ?
78	003236	013335			BEQ	RLDONE	:NO - EXIT
79	003237	104203	001240		MOV	#FCTFMT,R3	:SIZE OF TABLE
80	003241	021524			CALL	DSUB	:GET BACK TO PREVIOUS COPY
81	003242	022714			CALL	CVTSK	:CONVERT AND SEEK
82	003243	104207	000721		MOV	#WRBLK,R0	:POINT TO COMMAND BLOCK
83	003245	104203	122400		MOV	#WRCMD,R3	:GET WRITE COMMAND
84	003247	104302	001112		MOV	CURTRK,R2	:GET CURRENT TRACK
85	003251	101023			BIS	R2,R3	:SET TRACK FOR WRITE
86	003252	100673	000004		MOV	R3,RW.CMD(R0)	:STORE IN COMMAND BLOCK
87	003254	104203	006621		MOV	#RCTBUF,R3	:POINT TO BUFFER
88	003256	100673	000001		MOV	R3,RW.BUF(R0)	:STICK IN COMMAND BLOCK
89	003260	104143			MOV	(R4),R3	:GET LOW ORDER HEADER
90	003261	100673	000002		MOV	R3,RW.LOW(R0)	:STORE IN WRITE BLOCK
91	003263	104643	000001		MOV	1(R4),R3	:GET HIGH ORDER
92	003265	105303	001335		ADD	ST.LBN,R3	:ADD STARTING LBN BITS
93	003267	100673	000003		MOV	R3,RW.HI(R0)	:STORE IN WRITE BLOCK
94	003271	104203	000726		MOV	#HSLIM-1,R3	:GET DUMMY SDI POINTER
95	003273	100673	000005		MOV	R3,RW.DUM(R0)	:POINT IN COMMAND BLOCK
96	003275	104303	001333		MOV	HPREA,R3	:GET HEADER PREAMBLE
97	003277	104304	001334		MOV	DPREA,R4	:GET DATA PREAMBLE
98	003301	104302	000740		MOV	UNIT,R2	:SET UNIT
99	003303	104207	000721		MOV	#WRBLK,R0	:MAKE SURE POINTING AT BLOCK
100	003305	101207	100000		BIS	#BIT15,R0	:SET NO REVECTORING
101	003307	060012			XFC	SIP	:WAIT FOR SECTOR PULSE
102	003310	060003			XFC	WRITE	:WRITE SECTOR
103	003311	115001			TST	R1	:ANY ERROR ?
104	003312	013333			BEQ	2\$	:NO - SKIP RETRY
105	003313	106300	001502	001504	CMP	RETRY,TMPTRY	:MAX ?
106	003316	013322			BEQ	1\$	:YES - TRY SOME RECOVERY
107	003317	115400	001504		INC	TMPTRY	:INC RETRY COUNT
108	003321	003275			BR	WRIT12	:DO RETRY
109	003322	104303	001505	1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
110	003324	073333			BMI	2\$	:IF NEGATIVE THEN FRIED
111	003325	022612			CALL	ERRHND	:TRY RECOVERY
112	003326	114000	001504		CLR	TMPTRY	:FOR INIT
113	003330	117400	001505		DEC	RECTMP	:DECREMENT IT
114	003332	003275			BR	WRIT12	:RETRY

115 003333
116 003333 117405
117 003334 003230
118 003335
119 003343 000000
120 003344 104012
121 003345 104201 000016
122 003347 022552

28:
DEC R5
BR OCDONE
RLDONE: POPA
RETURN
ORFTAL: MOV R1,R2
MOV #14.,R1
CALL ERMNT

:DEREMENT COUNTER
:SEE IF ANY MORE TO DO
:ALL DONE
:XFC ERROR CODE
:RCT READ ERROR
:ERROR RETURN

1
2
3
4
5
6
7 003350
8
9
10
11 003047 003212

```
.SBTTL FCT->RCT CONVERSION OVERLAY (F5)  
CONVERT FCT INTO RCT  
DMOVLY F5,START  
JMP START2 ;  
;SKIP SUBROUTINES
```

1									
2									
3									
4	003050	115001							
5	003051	073101							
6	003052	104207	001052						
7	003054	022757							
8	003055	104200	000200	000736	HKIP:				
9	003060	114000	000737						
10	003062	104300	001151	000731					
11	003065	104300	001152	000732					
12	003070	104204	000731						
13	003072	104203	000736						
14	003074	021570							
15									
16	003075	104131							
17	003076	105011							
18	003077	100131							
19	003100	000000							
20	003101	104140	001151		HKIP1:				
21	003103	104640	000001	001152					
22	003106	107300	001336	001152					
23	003111	003055							

COMPUTE RCT ADDRESS FOR GIVEN LBN

```

HASH:  TST  R1          ;NEED TO COMPUTE PRIMARY RBN
        BMI  HKIP1     ;NO - SKIP IT
        MOV  #SCR,R0   ;POINT TO CUBUNIT CHARACTERISTICS
        CALL PRIMRB    ;COMPUTE PRIMARY RBN
HKIP:   MOV  #128,TEMP ;DIVIDE BY 128 TO GET BLOCK NUMBER
        CLR  TEMP+1    ;FOR STORE
        MOV  REVRBN,DDUMMY ;GET PRIMARY RBN
        MOV  REVRBN+1,DDUMMY+1 ;GET HIGH ORDER
        MOV  #DDUMMY,R4 ;FOR DIVIDE
        MOV  #TEMP,R3   ;DITTO
        CALL DDIV      ;DDUMMY=RCT BLOCK NUMBER
                          ;TEMP=OFFSET
                          ;GET OFFSET
        MOV  (R3),R1    ;MULTIPLY BY 2
        ADD  R1,R1     ;STORE BACK
        MOV  R1,(R3)
        RETURN
HKIP1:  MOV  (R4),REVRBN ;FOR DIVIDE SETUP
        MOV  1(R4),REVRBN+1 ;DITTO
        SUB  ST,RBN,REVRBN+1 ;SUBTRACT STARTING RBN BITS
        BR   HKIP      ;DO DIVIDE
    
```


1				:			
2				:	SEARCH FOR OPEN ENTRY IN RCT		
3				:			
4	003112	114000	001222	PNGPNG:	CLR	WRFLG	:CLEAR WRAP FLAG
5	003114	114002		PNGBLK:	CLR	R2	:FOR FLOP SET
6	003115	104303	000736		MOV	OFFSET,R3	:GET OFFSET
7	003117	104035		PAGAIN:	MOV	R3,R5	:MOV OFFSET INTO BUFF PCINTER
8	003120	105025			ADD	R2,R5	:ADD FLOP VALUE
9	003121	102205	000400		BIT	#BIT8,R5	:PAST ONE END (OR BOTH)
10	003123	053136			BNE	FLIP	:YUP - FLIP OTHER DIRECTION
11	003124	104651	006622		MOV	RCTBUF+1(R5),R1	:GET HEADER CODE
12	003126	103201	007777		BIC	#LO,R1	:CLEAR LOW ORDER STUFF
13	003130	106201	100000		CMP	#RC.NUL,R1	:END OF RCT ?
14	003132	013173			BEQ	EORCT	:YUP - WRAP TO FIRST BLOCK
15	003133	106201	000000		CMP	#RC.FRE,R1	:FREE ?
16	003135	013205			BEQ	PRET	:YUP - ALL DONE
17	003136	104025		FLIP:	MOV	R2,R5	:GET FLIP VALUE
18	003137	114002			CLR	R2	
19	003140	107052			SUB	R5,R2	:NEGATE IT
20	003141	073144			BMI	NOINC	:IF NEGATIVE DON'T INC
21	003142	105202	000002		ADD	#2,R2	:ADD TO NEXT VALUE
22	003144	106202	000400	NOINC:	CMP	#256.,R2	:DONE EVERY SLOT IN BLOCK ?
23	003146	053117			BNE	PAGAIN	:NOPE - TRY NEXT ONE
24				:			
25				:	IN THIS SECTION THE BLOCKS ARE PING-PONGED BUT		
26				:	THE SEARCH WITHIN BLOCKS IS LINEAR FROM HIGHEST BUFFER		
27				:	ADDRESS TO LOWEST		
28				:			
29	003147	115400	001477		INC	RCTCNT	:INC TO NEXT ONE
30	003151	104303	001477	PNGRD:	MOV	RCTCNT,R3	:FOR STORE
31	003153	104204	000731		MOV	#DDUMMY,R4	:FOR ADD
32	003155	100143			MOV	R3,(R4)	:STORE BLOCK NUMBER
33	003156	114000	000732		CLR	DDUMMY+1	:FOR RESETS
34	003160	114000	000736		CLR	OFFSET	:MAKE IT AT ZERO
35	003162	104203	001227		MOV	#HOLD,R3	:POINT TO FIRST RCT LBN
36	003164	021506			CALL	DADD	:GET LBN OF THIS RCT BLOCK
37	003165	104040	001253		MOV	R4,BUFFPNT	:STORE POINTER TO BLOCK NUMBER
38	003167	104201	000055		MOV	#H1,R1	:RCT READ OVERLAY
39	003171	022444			CALL	PAGE	:DO IT
40	003172	003114			BR	PNGBLK	:SEARCH THIS BLOCK
41	003173	104303	001222	EORCT:	MOV	WRFLG,R3	:GET WRAP FLAG
42	003175	053206			BNE	PERR	:IF BEEN HERE ONCE THEN RCT FULL
43	003176	104200	000002 001477		MOV	#2,RCTCNT	:FOR FIRST RCT BLOCK
44	003201	104200	000002 001222		MOV	#2,WRFLG	:MAKE WRAP FLAG NON-ZERO
45	003204	003151			BR	PNGRD	:READ IT AND CONTINUE
46				:			
47				:			
48	003205	000000		PRET:	RETJRN		:SUCCESSFUL RETURN
49							:R5=OFFSET
50	003206	104201	000020	PERR:	MOV	#16.,R1	:RCT FULL
51	003210	114002			CLR	R2	:NO SUBCODE
52	003211	022552			CALL	ERRMNT	:ERROR RETURN

1									
2									
3									
4									
5									
6									
7	003212					START2:			
8	003212	104200	000014	001153	FCTRCT:	MOV	#F5,CUROVL	:GET OVERLAY NUMBER	
9	003215	104303	001112			MOV	CURTRK,R3	:GET CURRENT TRACK	
10	003217					PUSH	R3	:SAVE IT	
11	003220	104303	001125			MOV	CYLNUM,R3	:GET LOW ORDER CYLINDR	
12	003222					PUSH	R3	:SAVE FOR RESTORE	
13	003223	104303	001126			MOV	CYLNUM+1,R3	:GET HIGH ORDER	
14	003225					PUSH	R3	:SAVE FOR RESTORE	
15	003226	104204	001255			MOV	#FCTCNT,R4	:FOR SUB	
16	003230	104203	001256			MOV	#ONE,R3	:DITTO	
17	003232	021524				CALL	DSUB	:SUB TO GET CURRENT FT BLOCK NUM	
18	003233	104143				MOV	(R4),R3	:GET IT	
19	003234					PUSH	R3	:FOR LATER RESTORE	
20	003235	114000	001256			CLR	FCTCNT	:CLEAR FOR INIT	
21	003237	104200	004535	001253		MOV	#RDBUF,BUFPNT	:POINT TO BUFFER	
22	003242	104201	000017			MOV	#F6,R1	:READ A BLOCK OF THE FCT	
23	003244	022444				CALL	PAGE	:EXECUTE IT	
24	003245	104204	004535			MOV	#RDBUF,R4	:MAKE SURE POINT TO IT	
25	003247	104640	000016	001262		MOV	C512(R4),MNCNT	:GET COUNT OF USED ENTRIES	
26	003252	104200	000200	001454		MOV	#128,SECCNT	:ENTRIES IN A FCT SECTOR	
27	003255	104300	001133	001227		MOV	LBNLBN,HOLD	:GET LOW ORDER COUNT OF LBN'S	
28	003260	104300	001134	001230		MOV	LBNLBN+1,HOLD+1	:GET HIGH ORDER	
29	003263	104203	001475			MOV	#TOTRCT,R3	:FOR SUBTRACT	
30	003265	104204	001227			MOV	#HOLD,R4	:DITTO	
31	003267	021524				CALL	DSUB	:GET STARTING RCT LBN	
32	003270	104201	000022			MOV	#F7,R1	:RCT INIT OVERLAY	
33	003272	022444				CALL	PAGE	:INIT RCT	
34	003273	104303	001262			MOV	MNCNT,R3	:GET COUNT	
35	003275	013762				BEQ	FCTSP	:QUIT IF NO ENTRIES	
36	003276	104200	004535	001253	FBEGIN:	MOV	#RDBUF,BUFPNT	:POINT TO BUFFER	
37	003301	104201	000017			MOV	#F6,R1	:FCT READ OVERLAY	
38	003303	022444				CALL	PAGE	:DO IT	
39	003304	104200	004535	001255		MOV	#RDBUF,FCTPTR	:MAKE SURE POINT TO TI	
40	003307	104304	001255			MOV	FCTPTR,R4	:FOR USE	
41	003311	104140	001110		FBEG2:	MOV	(R4),CURPBN	:GET LOW ORDER PBN	
42	003313	104640	000001	001111		MOV	1(R4),CURPBN+1	:GET HIGH ORDER	
43	003316	103200	170000	001111		BIC	#HD.CLR,CURPBN+1	:CLEAR THE FCT HEADER CODE	
44	003321	104203	001110			MOV	#CURPBN,R3	:FOR COMAPRE	
45	003323	104204	001064			MOV	#SCR+LBNHOST,R4	:DITTO	
46	003325	021626				CALL	DCMP	:IN RCT ??	
47	003326	033720				BPL	XYZ1	:YUP	
48	003327	104201	000044			MOV	#G5,R1	:OVERLAY TO CONVERT FORM PBN TO OTHER BN	
49	003331	022444				CALL	PAGE	:EXECUTE IT	
50	003332	104303	001114			MOV	CURBN+1,R3	:GET HIGH ORDER CONVERTED BLOCK NUM	
51	003334	103203	007777			BIC	#LO,R3	:CLEAR ALL BUT HEADER	
52	003336	106203	000000			CMP	#HD.LBN,R3	:IS IT AN LBN ?	
53	003340	053510				BNE	NOLBN	:NO - SKIP DOWN	
54	003341	104204	001113			MOV	#CURBN,R4	:POINT TO BLOCK NUMBER	
55	003343	023050				CALL	HASH	:COMPUTE RCT ENTRY	
56	003344	104143				MOV	(R4),R3	:GET RCT BLOCK	
57	003345	105203	000002			ADD	#2,R3	:ADD TO GET BY FIRST 2 BLOCKS	

58	003347	100143		MOV	R3,(R4)		:STORE BACK
59	003350	104030	001477	MOV	R3,RCTCNT		:SAVE FOR LATER PNGPNG
60	003352	104203	001227	MOV	#HOLD,R3		:FOR ADD
61	003354	021506		CALL	DADD		:TO GET LBN OF RCT BLOCK
62	003355	104040	001253	MOV	R4,BUFPT		:STORE POINTER TO BLOCK NUMBER
63	003357	104201	000055	MOV	#H1,R1		:RCT READ OVERLAY
64	003361	022444		CALL	PAGE		:EXECUTE IT
65	003362	104205	006621	MOV	#RCTBUF,R5		:POINT TO BUFFER
66	003364	104303	000736	MOV	OFFSET,R3		:GET OFFSET
67	003366	105035		ADD	R3,R5		:POINT TO ENTRY
68	003367	104653	000001	MOV	1(R5),R3		:GET HIGH ORDER
69	003371	103203	007777	BIC	#LO,R3		:CLEAR ALL BUT HEADER
70	003373	106203	000000	CMP	#RC.FRE,R3		:IS IT FREE ?
71	003375	013666		BEQ	FILLIT		:YES - FILL IT
72	003376	106203	040000	CMP	#RC.UNU,R3		:UNUSABLE RBN ?
73	003400	013645		BEQ	BADRBN		:YES - MUST BE SECONDARY
74	003401	104150	000733	MOV	(R5),TEMP2		:ELSE SWITCH
75	003403	104650	000001	MOV	1(R5),TEMP2+1	000734	:HIGH ORDER
76	003406	104303	001113	MOV	CURBN,R3		:GET NEW RESIDENT LOW ORDER
77	003410	100153		MOV	R3,(R5)		:STORE IN RCT
78	003411	104303	001114	MOV	CURBN+1,R3		:GET HIGH ORDER
79	003413	107303	001335	SUB	ST.LBN,R3		:SUBTRACT STARTING LBN BITS
80	003415	103203	170000	BIC	#HD.CLR,R3		:CLEAR THE HEADER
81	003417	101203	020000	BIS	#RC.PRIV,R3		:MARK AS PRIMARY
82	003421	100653	000001	MOV	R3,1(R5)		:STORE IT
83	003423	102200	000400	BIT	#DLL,FLAG	001217	:DID WE CREATE THE FCT ?
84	003426	013466		BEQ	FCTSKP		:NO - THEN DON'T CHANGE IT
85	003427	104302	001255	MOV	FCTPTR,R2		:GET POINTER TO CURRENT FCT BLOCK POS
86	003431	104623	000001	MOV	1(R2),R3		:GET HIGH ORDER FCT ENTRY
87	003433	101203	100000	BIS	#PRMY,R3		:MAKE IT SECONDARY
88	003435	100623	000001	MOV	R3,1(R2)		:STORE IT BACK
89	003437	106202	004535	CMP	#RDBUF,R2		:IS THIS THE FIRST ENTRY IN THE BLOCK
90	003441	053460		BNE	FCTSK1		:NOPE WE'RE SAFE
91	003442	104300	000731	MOV	DDUMMY,CURXBN	001115	:SAVE RCT BLOCK NUMBER
92	003445	104300	000732	MOV	DDUMMY+1,CURXBN+1	001116	:DITTO
93	003450	024015		CALL	FIXFCT		:YUP - GOT SOME GYRATIONS TO DO
94	003451	104300	001115	MOV	CURXBN,DDUMMY	000731	:RESTORE RCT BLOCK NUMBER
95	003454	104300	001116	MOV	CURXBN+1,DDUMMY+1	000732	:DITTO
96	003457	003466		BR	FCTSKP		:THEN CONTINUE ON
97	003460	107202	000001	FCTSK1: SUB	#1,R2		:POINT BACK ONE
98	003462	104123		MOV	(R2),R3		:GET HIGH ORDER
99	003463	103203	100000	BIC	#PRMY,R3		:CLEAR PRIMARY IF SET
100	003465	100123		MOV	R3,(R2)		:STORE IT
101	003466	024056		FCTSKP: CALL	RCTWRT		:WRITE OUT CHANGED BLOCK
102	003467	023112		CALL	PNGPNG		:FIND IT A NEW HOME
103	003470	104204	006621	MOV	#RCTBUF,R4		:POINT TO BUFFER
104	003472	105054		ADD	R5,R4		:ADD OFFSET
105	003473	104202	000733	MOV	#TEMP2,R2		:POINT TO OLD RESIDENT
106	003475	104123		MOV	(R2),R3		:GET LOW ORDER
107	003476	100143		MOV	R3,(R4)		:PUT IT IN
108	003477	104623	000001	MOV	1(R2),R3		:GET HIGH ORDER
109	003501	103203	170000	BIC	#HD.CLR,R3		:CLEAR HEADER
110	003503	101203	030000	BIS	#RC.SND,R3		:MARK AS SECONDARY
111	003505	100643	000001	MOV	R3,1(R4)		:STORE IT
112	003507	003717		BR	XYZ		:SKIP TO END
113	003510	106203	060000	NOLBN: CMP	#HD.RBN,R3		:BAD RBN ?
114	003512	053717		BNE	XYZ		:NO - THEN DON'T CARE ABOUT IT

```

115 003513 104303 001114
116 003515 103203 170000
117 003517 104030 001114
118 003521 104201 177777
119 003523 104204 001113
120 003525 023050
121 003526 104143
122 003527 105203 000002
123 003531 100143
124 003532 104030 001477
125 003534 104203 001227
126 003536 021506
127 003537 104040 001253
128 003541 104201 000055
129 003543 022444
130 003544 104205 006621
131 003546 104304 000736
132 003550 105045
133 003551 104653 000001
134 003553 103203 007777
135 003555 106203 000000
136 003557 053567
137 003560 103203 170000
138 003562 101203 040000
139 003564 100653 000001
140 003566 003717
141 003567 104650 000000 000733 RRPL:
142 003572 104650 000001 000734
143 003575 103203 170000
144 003577 101203 040000
145 003601 103203 007777
146 003603 100653 000001
147 003605 114003
148 003606 100153
149 003607 024056
150 003610 023112
151 003611 104204 006621
152 003613 105054
153 003614 104202 000733
154 003616 104123
155 003617 100143
156 003620 104623 000001
157 003622 103203 170000
158 003624 101203 030000
159 003626 100643 000001
160 003630 102200 000400 001217
161 003633 013644
162 003634 104302 001255
163 003636 107202 000001
164 003640 104123
165 003641 103203 100000
166 003643 100123
167 003644 003717
168 003645 023112
169 003646 104204 006621
170 003650 105054
171 003651 104202 001113

```

```

MOV CURBN+1,R3
BIC #HD.CLR,R3
MOV R3,CURBN+1
MOV #-1,R1
MOV #CURBN,R4
CALL HASH
MOV (R4),R3
ADD #2,R3
MOV R3,(R4)
MOV R3,RCTCN*
MOV #HOLD,R3
CALL DADD
MOV R4,BUFPT
MOV #H1,R1
CALL PAGE
MOV #RCTBUF,R5
MOV OFFSET,R4
ADD R4,R5
MOV 1(R5),R3
BIC #LO,R3
CMP #RC.FRE,R3
BNE RRPL
BIC #HD.CLR,R3
BIS #RC.UNU,R3
MOV R3,1(R5)
BR XYZ
MOV C(R5),TEMP2
MOV 1(R5),TEMP2+1
BIC #HD.CLR,R3
BIS #RC.UNU,R3
BIC #LO,R3
MOV R3,1(R5)
CLR R3
MOV R3,(R5)
CALL RCTWRT
CALL PNGPNG
MOV #RCTBUF,R4
ADD R5,R4
MOV #TEMP2,R2
MOV (R2),R3
MOV R3,(R4)
MOV 1(R2),R3
BIC #HD.CLR,R3
BIS #RC.SND,R3
MOV R3,1(R4)
BIT #DLL,FLAG
BEQ FCTSLP
MOV FCTPTR,R2
SUB #1,R2
MOV (R2),R3
BIC #PRMY,R3
MOV R3,(R2)
BR XYZ
CALL PNGPNG
MOV #RCTBUF,R4
ADD R5,R4
MOV #CURBN,R2

```

```

:GET HEADER
:CLEAR IT
:STORE IT BACK
:SIGNAL RCT BLOCK
:POINT TO BLOCK NUMBER
:GET RCT BLOCK AND OFFSET
:GET RCT BLOCK
:ADD TO GET BY 2 BLOCKS
:STORE BACK
:SAVE FOR LATER PNGPNG
:FOR ADD
:TO GET LBN OF RCT BLOCK
:STORE POINTER TO BLOCK NUMBER
:RCT READ OVERLAY
:DO IT
:POINT TO BLOCK
:GET OFFSET
:POINT TO ENTRY
:GET HIGH ORDER
:CLEAR ALL BUT HEADER
:IS IT FREE ?
:NO - RELOCATE CURRENT RESIDENT
:CLEAR THE HEADER
:MARK AS UNUSABLE
:STORE IT BACK
:BRANCH TO THE END
:GET LOW ORDER CURRENT RESIDENT
:GET HIGH ORDER
:CLEAR HEADER
:MARK AS UNUSABLE
:CLEAR LOW ORDER
:STORE IT BACK
:CLEAR FOR STORE
:CLEAR LOW ORDER
:WRITE UT BLOCK
:FIND IT A NEW HOME
:POINT TO BUFFER
:POINT TO ENTRY
:POINT TO OLD RESIDENT
:GET LOW ORDER
:PUT IT IN
:GET HIGH ORDER
:CLEAR HEADER
:MARK AS SECONDARY
:STORE IT
:DID WE CREATE THE FCT ?
:NO - THEN DON'T CHANGE IT
:GET FCT PPOINTER
:POINT BACK ONE
:GET HIGH ORDER
:CLEAR PRIMARY IF SET
:STORE IT
:GO TO END
:FIND A NEW SLOT
:POINT TO BUFFER
:POINT TO ENTRY
:POINT TO OLD RESIDENT

```

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FCTSLP: BR XYZ
BADRBN: CALL PNGPNG

```

172	003653	104123		MOV	(R2),R3		:GET LOW ORDER
173	003654	100143		MOV	R3,(R4)		:PUT IT IN
174	003655	104623	000001	MOV	1(R2),R3		:GET HIGH ORDER
175	003657	103203	170000	BIC	#HD.CLR,R3		:CLEAR HEADER
176	003661	101203	030000	BIS	#RC.SND,R3		:MARK AS SECONDARY
177	003663	100643	000001	MOV	R3,1(R4)		:STORE IT
178	003665	003717		BR	XYZ		:GO TO END
179	003666	104303	001113	FILLIT: MOV	CURBN,R3		:GET LOW ORDER BN
180	003670	100153		MOV	R3,(R5)		:PUT IN RCT
181	003671	104303	001114	MOV	CURBN+1,R3		:GET HIGH ORDER AND HEADER
182	003673	107303	001335	SUB	ST.LBN,R3		:SUBTRACT STARTING LBN BITS
183	003675	103203	170000	BIC	#HD.CLR,R3		:CLEAR HEADER
184	003677	101203	020000	BIS	#RC.PRIV,R3		:MARK AS PRIMARY
185	003701	100653	000001	MOV	R3,1(R5)		:STORE IN RCT
186	003703	102200	000400	001217	BIT	#DLL.FLAG	:DID WE CREATE THE FCT ?
187	003706	013717		BEQ	XYZ		:NO - THEN DON'T CHANGE IT
188	003707	104303	001255	MOV	FCTPTR,R3		:GET POINTER TO FCT ENTRY
189	003711	104634	000001	MOV	1(R3),R4		:GET HIGH ORDER
190	003713	101204	100000	BIS	#PRIV,R4		:SET AS PRIMARY
191	003715	100634	000001	MOV	R4,1(R3)		:STORE BACK
192	003717	024056		XYZ: CALL	RCTWRT		:WRITE OUT BUFFER
193	003720	105200	000002	001255	XYZ1: ADD	#2,FCTPTR	:POINT TO TO NEXT ENTRY
194	003723	117400	001262	DEC	MNCNT		:DEREMENT IT
195	003725	013750		BEQ	FRDONE		:IF ZERO THEN DONE
196	003726	117400	001454	DEC	SECCNT		:DECREMENT IT
197	003730	053744		BNE	FRSKP		:IF STILL IN BLOCK - CONTINUE
198	003731	102200	000400	001217	BIT	#DLL.FLAG	:DID WE CREATE THE FCT ?
199	003734	013276		BEQ	FBEGIN		:NO - THEN DON'T CHANGE IT
200	003735	104200	004535	001253	MOV	#RDBUF,BUFPT	:POINT TO BUFFER
201	003740	104201	000030	MOV	#F9,R1		:FCT WRITE OVERLAY
202	003742	022444		CALL	PAGE		:EXECUTE IT
203	003743	003276		BR	FBEGIN		:AND GET A NEW ONE
204	003744	104304	001255	FRSKP: MOV	FCTPTR,R4		:ELSE GET CURRENT POINTER
205	003746	060022		XFC	UPDATE		:LET HOST KNOW STILL ALIVE
206	003747	003311		BR	FBEG2		:AND DO NEXT ENTRY
207	003750	102200	000400	001217	FRDONE: BIT	#DLL.FLAG	:DID WE CREATE THE FCT ?
208	003753	013762		BEQ	FCTSP		:NO - THEN DON'T CHANGE IT
209	003754	104200	004535	001253	MOV	#RDBUF,BUFPT	:POINT TO BUFFER
210	003757	104201	000030	MOV	#F9,R1		:WRITE LAST FCT BLOCK
211	003761	022444		CALL	PAGE		:DO IT
212	003762			FCTSP: POP	R3		:GET CURRENT FCT BLOCK NUM
213	003763	104030	001256	MOV	R3,FCTCNT		:RESTORE IT
214	003765	104200	005152	001253	MOV	#PBNBUF,BUFPT	:RE-READ IT IN CASE OF HEADER CHANGES
215	003770	104201	000017	MOV	#F6,R1		:FCT READ OVERLAY
216	003772	022444		CALL	PAGE		:DO IT
217	003773			POP	R3		:GET HIGH ORDER CYLINDER
218	003774	104030	001126	MOV	R3,CYLNUM+1		:STORE IT
219	003776	104030	001077	MOV	R3,ISEEK+2		:STORE IN SEEK COMMAND
220	004000			POP	R3		:GET LOW ORDER
221	004001	104030	001125	MOV	R3,CYLNUM		:RESTORE IT
222	004003	104030	001076	MOV	R3,ISEEK+1		:STORE IN SEEK COMMAND
223	004005			POP	R3		:GET CURRENT TRACK
224	004006	104030	001112	MOV	R3,CURTRK		:RESTORE IT
225	004010	104300	001463	001100	MOV	CURGRP,ISEEK+3	:RESTORE GROUP
226	004013	022251		CALL	SEEK		:RESTORE TO PREVIOUS CYLINDER
227	004014	000000		RETURN			

229					
230					
231					
232					
233					
234	004015	104204	001256		
235	004017	104203	001470		
236	004021	021524			
237	004022	104200	007275	001253	
238	004025	104201	000017		
239	004027	022444			
240	004030	104203	007275		
241	004032	105203	000377		
242	004034	104632	000001		
243	004036	103202	100000		
244	004040	100632	000001		
245	004042	104200	007275	001253	
246	004045	104201	000030		
247	004047	022444			
248	004050				
249	004055	000000			

.....	THIS ROUTINE FIXES UP THE PREVIOUS BLOCK	
.....	OF THE FCT. IT CLEARS THE PRIMARY FLAG OF THE	
.....	LAST ENTRY.	
FIXFCT:	MOV #FCTCNT,R4	:FOR SUBTRACT
	MOV #TWOC,R3	:DOUBLE WORD OF 2
	CALL DSUB	:SUBTRACT TO GET BACK TO RIGHT NUM
	MOV #IMAGE,BUFPNT	:USE IMAGE BUFFER
	MOV #F6,R1	:FCT READ OVERLAY
	CALL PAGE	:READ THE BLOCK
	MOV #IMAGE,R3	:POINT TO BUFFER
	ADD #255,R3	:POINT TO LAST ENTRY
	MOV 1(R3),R2	:GET HIGH ORDER
	BIC #PRMY,R2	:CLEAR FLAG
	MOV R2,1(R3)	:STORE IT BACK
	MOV #IMAGE,BUFPNT	:STORE BUFFER POINTER
	MOV #F9,R1	:FCT WRITE OVERLAY
	CALL PAGE	:WRITE IT BACK OUT
	DJBINC FCTCNT	:GET FCTCNT BACK TO NORMAL
	RETURN	

58	004207	114000	001504		CLR	TMPTRY		:FOR RESET
59	004211	104300	001503	001505	MOV	RECOV,RECTMP		:GET RECOVERY LEVELS
60	004214	104204	000731		MOV	#DDUMMY,R4		:FOR ADD
61	004216	104203	001242		MOV	#RCTFMT,R3		:FOR ADD
62	004220	021506			CALL	DADD		:POINT TO NEXT COPY
63	004221	106300	001244	001245	CMP	FCTCPY,NEXT1		:DONE THIS SECTOR ?
64	004224	054063			BNE	RCTRLP		:NO - WRITE NEXT FCT COPY
65	004225	106305	001244		CMP	FCTCPY,R5		:ERROR ON EVERY WRITE ?
66	004227	014244			BEQ	RCWERR		:YUP - BIG TROUBLE
67	004230	104303	001245		RCFXLP: MOV	NEXT1,R3		:ANY REPEATS ?
68	004232	014243			BEQ	RWTDON		.NO
69	004233	104204	000731		MOV	#DDUMMY,R4		:TO GET IT BACK
70	004235	104203	001242		MOV	#RCTFMT,R3		:DITTO
71	004237	021524			CALL	DSUB		
72	004240	117400	001245		DEC	NEXT1		:SUB IT
73	004242	004230			BR	RCFXLP		:REPEAT
74	004243	000000			RWTDON: RETURN			
75	004244	104012			RCWERR: MOV	R1,R2		:XFC ERROR CODE
76	004245	104201	000017		MOV	#15.,R1		:RCT WRITE ERROR
77	004247	022552			CALL	ERRMNT		:ERROR RETURN


```

1          .SBTTL RCT INITIALIZE OVERLAY (F7)
2 004250   DMOVLY F7,START
3          :
4          : INITIALIZE RCT TO ALL UNUSED
5          :
6 003047   104200 000014 001153 RCTINI: MOV    #F5,CUROVL      :FOR OVERLAY INIT
7 003052   104203 000400          MOV    #256.,R3      :SECTOR WORD COUNT
8 003054   114001          CLR    R1            :FOR INIT OF RCT WORDS
9 003055   104204 004535          MOV    #RDBUF,R4     :BUFFER
10 003057   100241          RCLP:  MOV    R1,(R4)+  :STORE IN BUFFER
11 003060   117403          DEC    R3            :DECREMENT COUNTER
12 003061   053057          BNE   RCLP          :BRANCH BACK TILL DONE
13 003062   104201 001305          MOV    #SERNUM,R1   :POINT TO SERIAL NUMBER
14 003064   104204 004535          MOV    #RDBUF,R4     :POINT TO BUFFER
15 003066   105204 000000          ADD    #RSER,R4     :POINT TO SERIAL NUMBER
16 003070   104205 000004          MOV    #4,R5        :COUNTER
17 003072   104212          6$:  MOV    (R1)+,R2     :GET WORD
18 003073   100242          MOV    R2,(R4)+    :STORE WORD
19 003074   117405          DEC    R5            :DECREMENT COUNTER
20 003075   053072          BNE   6$           :CONTINUE TILL DONE
21 003076   104303 001112          MOV    CURTRK,R3    :GET CURRENT TRACK
22 003100          PUSH   R3           :SAVE IT
23 003101   104303 001125          MOV    CYLNUM,R3    :GET LOW ORDER CYLINDR
24 003103          PUSH   R3           :SAVE FOR RESTORE
25 003104   104303 001126          MOV    CYLNUM+1,R3  :GET HIGH ORDER
26 003106          PUSH   R3           :SAVE FOR RESTORE
27 003107   104300 001135 000736          MOV    RBNLBN,TEMP  :GET NUMBER OF RBN'S IN LBN AREA
28 003112   104300 001136 000737          MOV    RBNLBN+1,TEMP+1 :HIGH ORDER
29 003115   104204 000736          MOV    #TEMP,R4     :FOR ADD
30 003117   104200 000400 000731          MOV    #256.,DDUMMY :2 BLOCKS(CONTROL) WORTH OF RBN'S
31 003122   114000 000732          CLR    DDUMMY+1    :CLEAR HIGH ORDER
32 003124   104203 000731          MOV    #DDUMMY,R3   :FOR ADD
33 003126   021506          CALL   DADD         :ADD TO GET 'REAL' NUMBER OF RBN'S
34 003127   104300 001133 001227          MOV    LBNLBN,HOLD  :GET LOW ORDER COUNT OF LBN'S
35 003132   104300 001134 001230          MOV    LBNLBN+1,HOLD+1 :GET HIGH ORDER
36 003135   104203 001475          MOV    #TOTRCT,R3   :FOR SUBTRACT
37 003137   104204 001227          MOV    #HOLD,R4     :DITTO
38 003141   021524          CALL   DSUB         :GET STARTING RCT LBN
39 003142   104300 001227 001113          MOV    HOLD,CURBN   :GET STARTING RCT BLOCK NUMBER
40 003145   104300 001227 001115          MOV    HOLD,CURLBN  :ALSO SAVE
41 003150   104300 001230 001114          MOV    HOLD+1,CURBN+1 :GET HIGH ORDER
42 003153   104300 001230 001116          MOV    HOLD+1,CURLBN+1 :AND SAVE
43 003156   114000 001501          CLR    COUNT        :CLEAR BLOCK COUNTER
44 003160   104203 001052          MOV    #SCR,R3      :POINT TO CHARACTERISTICS
45 003162   104207 001430          MOV    #CONBLK,R0   :POINT TO CONVERT BLOCK
46 003164   104632 000011          MOV    LBNTRK(R3),R2 :GET LBN/TRACK
47 003166   103202 177400          BIC    #HIBYTE,R2   :CLEAR HIGH BYTE
48 003170   100672 000004          MOV    R2,V3(R0)    :FOR CONVERT
49 003172   104632 000001          MOV    STCYL(R3),R2 :STARTING CLYLINDER
50 003174   103202 007777          BIC    #LO,R2       :CLEAR REST OF WORD
51 003176   100672 000001          MOV    R2,V1+1(R0)  :STORE
52 003200   114002          CLR    R2           :FOR STORE
53 003201   100672 000000          MOV    R2,V1(R0)    :LOW ORDER ALWAYS 0
54 003203   114005          RCTINLP: CLR    R5    :CLEAR ERROR COUNTER
55 003204   104050 001245          MOV    R5,NEXT1     :INIT COPY COUNT
56 003206   104204 001113          RCLP2: MOV    #CURBN,R4 :FOR CONVERT
57 003210   022714          CALL   CVTSK        :CONVERT AND SEEK
  
```

58	003211	104207	000721		MOV	#WRBLK,R0	:POINT TO COMMAND BLOCK
59	003213	104203	122400		MOV	#WRCMD,R3	:GET WRITE COMMAND
60	003215	104302	001112		MOV	CURTRK,R2	:GET CURRENT TRACK
61	003217	101023			BIS	R2,R3	:SET TRACK FOR WRITE
62	003220	100673	000004		MOV	R3,RW.CMD(R0)	:STORE IN COMMAND BLOCK
63	003222	104202	004535		MOV	#RDBUF,R2	:POINT TO BUFFER
64	003224	022627			CALL	CEDC	:COMPUTE EDC - RETURNED IN R3
65	003225	100623	000400		MOV	R3,RW.EDC(R2)	:STORE IT
66	003227	100672	000001		MOV	R2,RW.BUF(R0)	:STICK IN COMMAND BLOCK
67	003231	104303	001113		MOV	CURBN,R3	:GET LOW ORDER HEADER
68	003233	100673	000002		MOV	R3,RW.LOW(R0)	:STORE IN WRITE BLOCK
69	003235	104303	001114		MOV	CURBN+1,R3	:GET HIGH ORDER
70	003237	105303	001335		ADD	ST.LBN,R3	:ADD STARTING LBN BITS
71	003241	101203	000000		BIS	#HD.LBN,R3	:SET HEADER
72	003243	100673	000003		MOV	R3,RW.HI(R0)	:STORE IN WRITE BLOCK
73	003245	104203	000726		MOV	#HSLIM-1,R3	:GET DUMMY SDI POINTER
74	003247	100673	000005		MOV	R3,RW.DUM(R0)	:POINT IN COMMAND BLOCK
75	003251	104303	001333		WRITE4: MOV	HPREA,R3	:GET HEADER PREAMBLE
76	003253	104304	001334		MOV	DPREA,R4	:GET DATA PREAMBLE
77	003255	104302	000740		MOV	UNIT,R2	:SET UNIT
78	003257	104207	100721		MOV	#<WRBLK.BIT15>,R0	:MAKE SURE POINTING AT BLOCK
79	003261	060012			XFC	SIP	:WAIT FOR SECTOR PULSE
80	003262	060003			XFC	WRITE	:WRITE SECTOR
81	003263	115001			TST	R1	:ANY ERROR ?
82	003264	013306			BEQ	NOGOOD	:NOPE
83	003265	106300	001502	001504	CMP	RETRY,TMPTRY	:MAX ?
84	003270	013274			BEQ	1\$	:YES - TRY SOME RECOVERY
85	003271	115400	001504		INC	TMPTRY	:INC RETRY COUNT
86	003273	003251			BR	WRITE4	:DO RETRY
87	003274	104303	001505	1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
88	003276	073305			BMI	2\$	:IF NEGATIVE THEN FRIED
89	003277	022612			CALL	ERR4ND	:TRY RECOVERY
90	003300	114000	001504		CLR	TMPTRY	:FOR INIT
91	003302	117400	001505		DEC	RECTMP	:DECREMENT IT
92	003304	003251			BR	WRITE4	:RETRY
93	003305			2\$:			
94	003305	115405			INC	R5	:YUP - INCREMENT COUNTER
95	003306	115400	001245		NOGOOD: INC	NEXT1	:INCREMENT IT
96	003310	114000	001504		CLR	TMPTRY	:FOR RESET
97	003312	104300	001503	001505	MOV	RECOV,RECTMP	:GET RECOVERY LEVELS
98	003315	104204	001113		MOV	#CURBN,R4	:FOR ADD
99	003317	104203	001242		MOV	#RCTFMT,R3	:FOR ADD
100	003321	021506			CALL	DADD	:POINT TO NEXT COPY
101	003322	106300	001244	001245	CMP	FCTCPY,NEXT1	:DONE THIS SECTOR ?
102	003325	053206			BNE	RCLP2	:NO - WRITE NEXT FCT COPY
103	003326	106305	001244		CMP	FCTCPY,R5	:ERROR ON EVERY WRITE ?
104	003330	013462			BEQ	RCINER	:YUP - BIG TROUBLE
105	003331	102200	000040	001217	BIT	#RCINIT,FLAG	:ALREADY FIXED IT UP
106	003334	053353			BNE	4\$	:YUP - NO NEED TO DO IT AGAIN
107	003335	104204	000736		MOV	#TEMP,R4	:FOR SUBTRACT (RBN'S NOT DONE)
108	003337	104200	000200	000731	MOV	#128,DDUMMY	:SUBTRACT ONE BLOCKS WORTH
109	003338	114000	000732		CLR	DDUMMY+1	:FOR CLEAR
110	003339	104203	000731		MOV	#DDUMMY,R3	:FOR SUBTRACT
111	003346	021524			CALL	DSUB	:SUBTRACT
112	003347	021626			CALL	DCMP	:IN LAST BLOCK ?
113	003350	073353			BMI	4\$	:NOPE
114	003351	013353			BEQ	4\$	:IF EQUAL - NO PARTIAL BLOCK

115	003352	023466				CALL	FIXBLK		:YES - CHANGE HEADERS TO NULL
116	003353	115000	001501		4\$:	TST	COUNT		:ON FIRST BLOCK ?
117	003355	053366				BNE	7\$		:NO - NO NEED TO FIX UP
118	003356	114005				CLR	R5		:FOR BLOCK FIXUP
119	003357	104204	004535			MOV	#RDBUF,R4		:POINT TO BUFFER
120	003361	104201	000004			MOV	#4,R1		:COUNTER
121	003363	100245			5\$:	MOV	R5,(R4)+		:CLEAR DATE AREA
122	003364	117401				DEC	R1		:DECREMENT COUNTER
123	003365	053363				BNE	5\$		:CONT TILL DONE
124	003366	102200	000100	001220	7\$:	BIT	#RCINDN,FLAG1		:ALL DONE ??
125	003371	053420				BNE	RCLP6		:YUP - CUT OUT
126	003372					DUBINC	CURLBN		:INCREMENT IT
127	003377	104300	001115	001113		MOV	CURLBN,CURBN		:GET LOW ORDER
128	003402	104300	001116	001114		MOV	CURLBN+1,CURBN+1		:GET HIGH ORDER
129	003405	106300	001261	001501		CMP	RCTLBN,COUNT		:DONE RCT BLOCKS(NOT PAD)
130	003410	013442				BEQ	RCFIX		:YUP - REINIT BLOCK
131	003411	060022			RCLP4:	XFC	UPDATE		:LET HOST KNOW STILL ALIVE
132	003412	115400	001501			INC	COUNT		:INCREMENT BLOCK COUNTER
133	003414	106300	001242	001501		CMP	RCTFMT,COUNT		:DONE ?
134	003417	053203				BNE	RCINLP		:NOPE - DO NEXT SECTOR
135	003420				RCLP6:	POP	R3		:GET HIGH ORDER CYLINDER
136	003421	104030	001126			MOV	R3,CYLNUM+1		:STORE IT
137	003423	104030	001077			MOV	R3,ISEEK+2		:STORE IN SEEK COMMAND
138	003425					POP	R3		:GET LOW ORDER
139	003426	104030	001125			MOV	R3,CYLNUM		:RESTORE IT
140	003430	104030	001076			MOV	R3,ISEEK+1		:STORE IN SEEK COMMAND
141	003432					POP	R3		:GET CURRENT TRACK
142	003433	104030	001112			MOV	R3,CURTRK		:RESTORE IT
143	003435	104300	001463	001100		MOV	CURGRP,ISEEK+3		:RESTORE GROUP NUMBER
144	003440	022251				CALL	SEEK		:RESTORE TO PREVIOUS CYLINDER
145	003441	000000				RETURN			
146	003442	104202	000200			MOV	#128,R2		:INIT COUNT
147	003444	104204	004535			MOV	#RDBUF,R4		:INIT POINTER
148	003446	114003				CLR	R3		:FOR STORE
149	003447	114005				CLR	R5		:DITTO
150	003450	101205	100000			BIS	#RC.NUL,R5		:SET NULL HEADER
151	003452	100243			RCLP3:	MOV	R3,(R4)+		:STORE LOW ORDER
152	003453	100245				MOV	R5,(R4)+		:STORE HIGH ORDER
153	003454	117402				DEC	R2		:DECREMENT COUNTER
154	003455	053452				BNE	RCLP3		:LOOP UNTIL DONE
155	003456	101200	000100	001220		BIS	#RCINDN,FLAG1		:DONE ALL NON-PAD - ONE MORE THEN FINISH
156	003461	003411				BR	RCLP4		:CONTINUE TILL DONE ALL SECTORS
157	003462	104012			RCINER:	MOV	R1,R2		:XFC ERROR CODE
158	003463	104201	000017			MOV	#15,R1		:RCT INIT ERROR
159	003465	022552				CALL	ERRMNT		:ERROR RETURN

1							
2							
3							
4							
5							
6	003466	114002					
7	003467	114005					
8	003470	104303	000736				
9	003472	101205	100000				
10	003474	104204	004535				
11	003476	104201	000200				
12	003500	107031					
13	003501	105033					
14	003502	105034					
15	003503	100242					
16	003504	100245					
17	003505	117401					
18	003506	053503					
19	003507	101200	000040	001217			
20	003512	000000					

CHANGE UNUSED ENTRIES TO NULL HEADERS

```

FIXBLK: CLR R2 ;FOR LOW ORDER
        CLR R5 ;FOR HIGH ORDER
        MOV TEMP,R3 ;GET REMAINDER FROM TEMP
        BIS #RC.NUL,R5 ;SET IN NEW HEADER CODE
        MOV #RDBUF,R4 ;POINT TO BUFFER
        MOV #128.,R1 ;TOTAL COUNT
        SUB R3,R1 ;SUBTRACT USED ENTRIES
        ADD R3,R3 ;ADD TO GET OFFSET (MULT BY 2)
        ADD R3,R4 ;POINT TO FIRST UNUSED ENTRY
FIXLP:  MOV R2,(R4)+ ;STORE LOW ORDER
        MOV R5,(R4)+ ;STORE HIGH ORDER
        DEC R1 ;DECREMENT COUNT
        BNE FIXLP ;LOOP TILL DONE
        BIS #RCINIT,FLAG ;SET DONE IT
        RETURN
  
```

1					.SBTTL FCT READ OVERLAY (F6)	
2	003513				DMOVLY F6,START	
3						
4					READ A BLOCK OF THE FCT	
5					R5 -> BUFFER	
6						
7	003047	104200	000017	001153	MOV #F6,CUROVL	:OVERLAY NUMBER
8	003052	104300	001256	000731	MOV FCTCNT,DDUMMY	:GET CURRENT COUNT
9	003055	114000	000732		CLR DDUMMY+1	:FOR HIGH ORDER STORE
10	003057	114005			CLR R5	:CLEAR ERROR COUNTER
11	003060	104204	000731		FOI LOOP: MOV #DDUMMY,R4	:FOR CONVERT
12	003062	104303	001143		MOV LBNCYL,R3	:GET LBN CYLINDERS
13	003064	104207	001430		MOV #CONBLK,R0	:POINT TO CONVERT BLOCK
14	003066	100673	000000		MOV R3,V1(R0)	:STORE IT FOR CONVERT
15	003070	104303	001144		MOV LBNCYL+1,R3	:HIGH ORDER
16	003072	100673	000001		MOV R3,V1+1(R0)	:STORE IT
17	003074	104303	001127		MOV SECTR,R3	:GET SECTORS/TRACK
18	003076	100673	000004		MOV R3,V3(R0)	:STORE FOR CONVERT
19	003100	022714			CALL CVTSK	:CONVERT FCT BLOCK NUMBER AND SEEK
20	003101	104207	000721		MOV #RDBLK,R0	:PREPARE FOR READ SECTORS
21	003103	104203	000726		MOV #HSLIM-1,R3	:POINTER TO DUMMY SDI BLOCK
22	003105	100673	000005		MOV R3,RW.DUM(R0)	:STORE IN COMMAND BLOCK
23	003107	104303	000731		MOV DDUMMY,R3	:LO ORDER BLOCK NUMBER
24	003111	100673	000002		MOV R3,RW.LOW(R0)	:STORE IN READ CMD BLOCK
25	003113	104303	000732		MOV DDUMMY+1,R3	:GET HIGH ORDER
26	003115	105303	001337		ADD ST.XBN,R3	:ADD STARTING LBN BITS
27	003117	101203	120000		BIS #HD.XBN,R3	:HEADER CODE
28	003121	100673	000003		MOV R3,RW.HI(R0)	:STORE IN READ CMD BLOCK
29	003123	104303	001253		MOV BUFPT,R3	:GET BUFFER POINTER
30	003125	100673	000001		MOV R3,RW.BUF(R0)	:STORE BUFFER ADDRESS IN COMMAND BUFFER
31	003127	104203	013400		MOV #RWCMD,R3	:LOAD SDI READ COMMAND
32	003131	104301	001112		MOV CURTRK,R1	:GET CURRENT HEAD NUMBER IN R1
33	003133	101013			BIS R1,R3	:SET IT IN COMMAND
34	003134	100673	000004		MOV R3,RW.CMD(R0)	:STORE BACK
35	003136	104207	000721		READ7: MOV #RDBLK,R0	:MAKE SURE POINTING AT BLOCK
36	003140	104203	100000		MOV #RDCMD,R3	:MARK AS ONLY REQUEST
37	003142	100173			MOV R3,(R0)	:STORE IN CMD BLOCK
38	003143	104302	000740		MOV UNIT,R2	:SDI INTERCONNECT
39	003145	101207	100000		BIS #BIT15,R0	:SET NO REVECTORING
40	003147	060012			XFC SIP	:WAIT FOR PULSE
41	003150	060002			XFC READ	:READ 1 SECTOR
42	003151	115001			TST R1	:ANY ERRORS ?
43	003152	053170			BNE 100\$	:YES - TRY RECOVERY
44	003153	104173			MOV (R0),R3	:GET STATUS WORD
45	003154	102203	010000		BIT #ECCF,R3	:ECC ERROR ?
46	003156	013162			BEQ 101\$	:NOPE - VERIFY EDC
47	003157	023027			CALL ECCCK	:CORRECT ECC
48	003160	115001			TST R1	:TEST FLAG
49	003161	053170			BNE 100\$	:UNCORRECTABLE
50	003162	104302	001253		101\$: MOV BUFPT,R2	:POINT TO BUFFER
51	003164	022627			CALL CEDC	:COMPUTE EDC
52	003165	106623	000400		CMP RW.EDC(R2),R3	:O.K. ?
53	003167	013227			BEQ 102\$	:YUP - CONSIDER GOOD
54	003170	106300	001502	001504	100\$: CMP RETRY,TMPTRY	:MAX ?
55	003173	013177			BEQ 1\$	:YES - TRY SOME RECOVERY
56	003174	115400	001504		INC TMPTRY	:INC RETRY COUNT
57	003176	003136			BR READ7	:DO RETRY

58	003177	104303	001505	1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
59	003201	073210			BMI	2\$	:IF NEGATIVE THEN FRIED
60	003202	022612			CALL	ERRHND	:TRY RECOVERY
61	003203	114000	001504		CLR	TMPTRY	:FOR INIT
62	003205	117400	001505		DEC	RECTMP	:DECREMENT IT
63	003207	003136			BR	RFAD7	:RETRY
64	003210			2\$:			
65	003210	115405			INC	R5	:INCREMENT BAD COUNTER
66	003211	106305	001244		CMP	FCTCPY,R5	:ALL BAD ?
67	003213	013344			BEQ	OFATAL	:YUP - ALL OVER
68	003214	104204	000731		MOV	#DDUMMY,R4	:PCINT TO COUNT
69	003216	104203	001240		MOV	#FCTFMT,R3	:SIZE OF TABLE
70	003220	021506			CALL	DADD	:ADD TO POINT TO NEXT COPY
71	003221	114000	001504		CLR	TMPTRY	:RESET RETRY LEVEL
72	003223	104300	001503	001505	MOV	RECOV,RECTMP	:DITTO RECOVERY LEVELS
73	003226	003060			BR	FOLOOP	:BRANCH BACK
74	003227			102\$:			
75	003227	114000	001504	FODONE:	CLR	TMPTRY	:FOR RESET
76	003231	104300	001503	001505	MOV	RECOV,RECTMP	:GET RECOVERY LEVELS
77	003234	115005			TST	R5	:ANY ERRORS ?
78	003235	013341			BEQ	OLDONE	:NO - EXIT
79	003236	104204	000731		MOV	#DDUMMY,R4	:POINT TO BLOCK COUNT
80	003240	104203	001240		MOV	#FCTFMT,R3	:SIZE OF TABLE
81	003242	021524			CALL	DSUB	:GET BACK TO PREVIOUS COPY
82	003243	022714			CALL	CVTSK	:CONVERT AND SEEK
83	003244	104207	000721		MOV	#WRBLK,R0	:POINT TO COMMAND BLOCK
84	003246	104203	122400		MOV	#WRCMD,R3	:GET WRITE COMMAND
85	003250	104302	001112		MOV	CURTRK,R2	:GET CURRENT TRACK
86	003252	101023			BIS	R2,R3	:SET TRACK FOR WRITE
87	003253	100673	000004		MOV	R3,RW.CMD(R0)	:STORE IN COMMAND BLOCK
88	003255	104303	001253		MOV	BUFPT,R3	:GET BUFFER ADDRESS
89	003257	100673	000007		MOV	R3,RW.BUF(R0)	:STICK IN COMMAND BLOCK
90	003261	104303	000731		MOV	DDUMMY,R3	:GET LOW ORDER HEADER
91	003263	100673	000002		MOV	R3,RW.LOW(R0)	:STORE IN WRITE BLOCK
92	003265	104303	000732		MOV	DDUMMY+1,R3	:GET HIGH ORDER
93	003267	105303	001337		ADD	ST.XBN,R3	:ADD STARTING XBN BITS
94	003271	101203	120000		BIS	#HD.XBN,R3	:HEADER CODE
95	003273	100673	000003		MOV	R3,RW.HI(R0)	:STORE IN WRITE BLOCK
96	003275	104203	000726		MOV	#HSLIM-1,R3	:GET DUMMY SDI POINTER
97	003277	100673	000005		MOV	R3,RW.DUM(R0)	:POINT IN COMMAND BLOCK
98	003301	104303	001333	W-ITER:	MOV	HPREA,R3	:GET HEADER PREAMBLE
99	003303	104304	001334		MOV	DPREA,R4	:GET DATA PREAMBLE
100	003305	104302	000740		MOV	UNIT,R2	:SET UNIT
101	003307	104207	000721		MOV	#WRBLK,R0	:MAKE SURE POINTING AT BLOCK
102	003311	101207	100000		BIS	#BIT15,R0	:SET NO REVECTORING
103	003313	060012			XFC	SIP	:WAIT FRO SECTOR PULSE
104	003314	060003			XFC	WRITE	:WRITE SECTOR
105	003315	115001			TST	R1	:ANY ERROR ?
106	003316	013337			BEQ	2\$	:NO - SKIP RETRY
107	003317	106300	001502	001504	CMP	RETRY,TMPTRY	:MAX ?
108	003322	013326			BEQ	1\$	:YES - TRY SOME RECOVERY
109	003323	115400	001504		INC	TMPTRY	:INC RETRY COUNT
110	003325	003301			BR	WRITE8	:DO RETRY
111	003326	104303	001505	1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
112	003330	073337			BMI	2\$	:IF NEGATIVE THEN FRIED
113	003331	022612			CALL	ERRHND	:TRY RECOVERY
114	003332	114000	001504		CLR	TMPTRY	:FOR INIT

115	003334	117400	001505		DEC	RECTMP		:DECREMENT IT
116	003336	003301			BR	WRITE8		:RETRY
117	003337			2\$:				
118	003337	117405			DEC	R5		:DEREMENT COUNTER
119	003340	003227			BR	FODONE		:SEE IF ANY MORE TO DO
120	003341	115400	001256	OLDONE:	INC	FCTCNT		:INCREMENT IT
121	003343	000000			RETURN			:ALL DONE
122	003344	115000	001256	OFATAL:	TST	FCTCNT		:SECTOR 0 ? (MEDIA INFO)
123	003346	013362			BEQ	OQUIT		:IF YES THEN IT'S ALL OVER
124	003347	102200	000020	001217	BIT	#GOBAD,FLAG		:CONTINUE AS BEST GUESS?
125	003352	013362			BEQ	OQUIT		:NOPE - GIVE UP
126	003353	101200	002004	001217	BIS	#FCTBAD+BSTGS,FLAG		:SET FCT BAD FLAG
127	003356	103200	000001	001217	BIC	#FCTAVL,FLAG		:NO MORE FCT
128	003361	000000			RETURN			:RETURN
129	003362	104012			OCUIT:	MOV	R1,R2	:XFC ERROR CODE
130	003363	104201	000021		MOV	#17,R1		:FCT READ ERROR
131	003365	022552			CALL	ERRMNT		:ERROR RETURN

1					.SBTTL GET FCT BLOCK FOR D/XBN FORMAT (G2) -	
2						
3						
4						
5					GET'S ONE FCT BLOCK FROM HOST FOR D/BN FORMATTING	
6						
7	003366				DMOVLY G2,START	
8						
9						
10						
11	003047	104200	000033	001153	MOV #G2,CUROVL	:SIGNAL OVERLAY 11
12	003052	104205	001263		MOV #DMSBUF,R5	:POINT TO MAINT BUFFER
13	003054	104303	001321		MOV FCMSG,R3	:GET DUP CODE
14	003056	100153			MOV R3,(R5)	:STORE IT
15	003057	104303	001322		MOV FCMSG+1,R3	:GET 'F' IDENTIFIER
16	003061	100653	000001		MOV R3,1(R5)	:STORE IT IN MESSAGE
17	003063	104303	001256		MOV FCTCNT,R3	:GET BLOCK NUMBER DESIRED
18	003065	100653	000002		MOV R3,2(R5)	:STORE IT
19	003067	022536			CALL SNDMNT	:SFND REQUEST
20	003070	022544			CALL RCVMT	:RECEIVE ANSWER
21	003071	104653	000002		MOV 2(R5),R3	:GET BLOCK COUNT RECEIVED
22	003073	013113			BEQ DLERR	:ERROR IF ZERO
23	003074	104653	000003		MOV 3(R5),R3	:GET HOST ADDRESS
24	003076	104030	001425		MOV R3,OVLBLK+1	:STORE IN OVERLAY BLOCK
25	003100	114000	001426		CLR OVLBLK+2	:ZERO HIGH ORDER
26	003102	104200	000401	001424	MOV #257,OVLBLK	:GET LENGTH
27	003105	104204	001424		MOV #OVLBLK,R4	:FOR OVERLAY ROUTINE
28	003107	104203	005152		MOV #PBNBUF,R3	:POINT TO BUFFER
29	003111	022526			CALL OVRLAY	:GET THE SECTOR
30	003112	000000			RETURN	
31	003113	104201	000023		DLERR: MOV #19,R1	:SIGNAL DLL ERROR
32	003115	104302	001256		MOV FCTCNT,R2	:BLOCK FAILED ON
33	003117	022552			CALL ERRMNT	:ERROR RETURN

1					.SBTTL	GET FCT BLOCK FOR LBN FORMAT (G3)	
2							
3							
4						GET RIGHT FCT BLOCK FOR LBN FORMATTING	
5							
6							
7	003120				DMOVLY	G3,START	
8							
9							
10							
11	003047	104200	000036	001153	MOV	#G3,CUROVL	:FOR CURRENT OVERLAY
12	003052	114000	001256		CLR	FCTCNT	:FOR FIRST FCT BLOCK
13	003054	104200	005152	001253	MOV	#PBNBUF,BUFPNT	:POINT TO BUFFER
14	003057	104201	000017		MOV	#F6,R1	:FCT READ OVERLAY
15	003061	022444			CALL	PAGE	:READ IT IN
16	003062	102200	000001	001217	BIT	#FCTAVL,FLAG	:FCT STILL HERE ?
17	003065	013243			BEQ	NGD	:NOPE - CAN IT
18	003066	104207	005152		MOV	#PBNBUF,R0	:POINT TO BUFFER
19	003070	104173			MOV	(R0),R3	:GET FORMAT MEDIA WORD
20	003071	106203	126736		CMP	#M512,R3	:IS IT 512 ?
21	003073	013101			BEQ	13\$	:YUP - O.K.
22	003074	106203	074161		CMP	#M576,R3	:IS IT 576 ?
23	003076	013101			BEQ	13\$	:YUP - O.K.
24	003077	115003			TST	R3	:IS IT FORMAT IN PROGRESS
25	003100	053243			BNE	NGD	:NOPE - FCT NO GOOD
26	003101	104673	000025	3\$:	MOV	FCTFLG(R0),R3	:GET FLAG WORD
27	003103	102203	100000		BIT	#NOFCT,R3	:IS THERE REALLY AN FCT ??
28	003105	053243			BNE	NGD	:NOPE - FIND OUT IF WE QUIT OR ROUGH IT
29	003106	104673	000016		MOV	C512(R0),R3	:GET COUNT OF USED ENTRIES
30	003110	104030	001237		MOV	R3,FCNT	:STORE IT
31	003112	053116			BNE	12\$	:IF NOT ZERO THEN ENTRIES EXIST
32	003113	101200	000002	001217	BIS	#FCTEMT,FLAG	:SET EMPTY FLAG
33	003116	114003		12\$:	CLR	R3	:FOR FCT INIT
34	003117	100173			MOV	R3,(R0)	:SIGNAL FORMAT IN PROGRESS
35	003120	104203	005152		MOV	#PBNBUF,R3	:POINT TO BUFFER
36	003122	105203	000002		ADD	#FSER,R3	:POINT TO SERIAL NUMBER
37	003124	104204	001305		MOV	#SERNUM,R4	:SERIAL NUMBER BLOCK
38	003126	104205	000004		MOV	#4,R5	:COUNTER
39	003130	104232		8\$:	MOV	(R3)+,R2	:GET WORD
40	003131	100242			MOV	R2,(R4)+	:STORE WORD
41	003132	117405			DEC	R5	:DECREMENT COUNTER
42	003133	053130			BNE	8\$	:CONT TILL DONE
43	003134	104200	005152	001253	MOV	#PBNBUF,BUFPNT	:POINT TO BUFFER
44	003137	104201	000030		MOV	#F9,R1	:FCT WRITE OVERLAY
45	003141	022444			CALL	PAGE	:DO IT
46	003142	115000	001237		TST	FCNT	:ANY ENTRIES ?
47	003144	013237			BEQ	RDONE1	:NOPE - ALL DONE
48	003145	104200	000001	001256	MOV	#1,FCTCNT	:FOR FCT COUNT INIT
49	003150	104200	005152	001253	MOV	#PBNBUF,BUFPNT	:POINT TO BUFFER
50	003153	104201	000017		MOV	#F6,R1	:FCT READ OVERLAY
51	003155	022444			CALL	PAGE	:DO THE READ
52	003156	102200	000001	001217	BIT	#FCTAVL,FLAG	:STILL HAVE FCT ?
53	003161	013243			BEQ	NGD	:NOPE - CAN IT
54	003162	104204	005152		MOV	#PBNBUF,R4	:POINT TO THE BUFFER
55	003164	105204	000376		ADD	#254,R4	:POINT TO LAST ENTRY
56	003166	104203	001154		MOV	#HGHPBN,R3	:HIGHEST PBN IN LBN AREA
57	003170	021626			CALL	DCMP	:IS IT RIGHT BLOCK ?

58	003171	033176			BPL	BLKFND	:YES - FIND RIGHT ENTRY
59	003172	107200	000200	001237	SUB	#128.,FCNT	:SUBTRACT ONE BLOCKS WORTH
60	003175	003150			BR	RLOOP	:BRANCH BACK
61	003176	104200	000200	001500	BLKFND: MOV	#128.,PCNT	:FOR INIT OF COUNT
62	003201	104204	005152		MOV	#PBNBUF,R4	:POINT TO PBN BUFFER
63	003203	104647	000001		RLOOP1: MOV	1(R4),R0	:GET HIGH ORDER
64	003205	104071			MOV	R0,R1	:SAVE IT TEMPORARILY
65	003206	103207	170000		BIC	#HD.CLR,R0	:CLEAR FOR COMPARE
66	003210	100647	000001		MOV	R0,1(R4)	:STORE IT BACK
67	003212	104203	001154		MOV	#HGHPBN,R3	:POINT TO HIGHEST PBN
68	003214	021626			CALL	DCMP	:COMPARE
69	003215	033233			BPL	RDONE	:IF LESS THAN OR EQUAL THEN FOUND FIRST LBN
70	003216	100641	000001		MOV	R1,1(R4)	:STORE HEADER BACK
71	003220	117400	001500		DEC	PCNT	:DECREMENT COUNT
72	003222	117400	001237		DEC	FCNT	:DEC IT
73	003224	105204	000002		ADD	#2,R4	:POINT TO NEXT ENTRY
74	003226	106200	000001	001237	CMP	#1,FCNT	:COUNT AT 1 ?
75	003231	013233			BEQ	RDONE	:YUP - THEN LAST ENTRY IS IT
76	003232	003203			BR	RLOOP1	:TRY NEXT ENTRY
77	003233	100641	000001		RDONE: MOV	R1,1(R4)	:STORE HEADER BACK
78	003235	104040	001223		MOV	R4,BADPBN	:MAKE CURRENT BAD POINTER
79	003237	104300	001237	001311	RDONE1: MOV	FCNT,FCNTREV	:FCT ENTRY COUNT FOR LATER USE
80	003242	000000			RETURN		:RETURN
81	003243	102200	000020	001217	NGD: BIT	#GOBAD,FLAG	:CONTINUE AS BEST GUESS ?
82	003246	013256			BEQ	RQUIT	:NOPE - GIVE UP
83	003247	101200	002004	001217	BIS	#FCTBAD+BSTGS,FLAG	:SET BAD FCT FLAG
84	003252	103200	000001	001217	BIC	#FCTAVL,FLAG	:NO MORE FCT
85	003255	000000			RETURN		
86	003256	104201	000022		RQUIT: MOV	#18.,R1	:ERROR CODE
87	003260	114002			CLR	R2	:NO SUBCODE
88	003261	022552			CALL	ERRMNT	:ERROR RETURN

1						.SBTTL RCT CLEANUP OVERLAY (G4)	
2						RCT CLEANUP AND FINAL STATS	
3							
4							
5	003262					DMOVLY G4,START	
6							
7							
8							
9	003047	104200	000041	001153		MOV #G4,CUROVL	:FOR OVERLAY IDENT
10	003052	104207	001263		MOV #DMBUF,R0		:MESSAGE BUFFER
11	003054	104303	001472		MOV SNDCNT,R3		:ANY SECONDARY REVECTORS ?
12	003056	100673	000003		MOV R3,SNDR(R0)		:STORE IT
13	003060	115003			TST R3		:ARE THERE ANY ?
14	003061	013201			BEQ CLSKP3		:NOPE - JUST EXIT
15	003062	104202	006204		MOV #REVBUFF,R2		:POINT TO REVECTOR BUFFER
16	003064	104200	000100	001501	MOV #64,COUNT		:COUNT OF MAX TO REVECTOR AT ONCE
17	003067	114000	001106		CLR CURRBN		:CLEAR FOR INIT
18	003071	114000	001107		CLR CURRBN+1		:HIGH ORDER TOO
19	003073	104200	000002	001477	MOV #2,RCTCNT		:INIT RCT BLOCK
20	003076	104200	000200	001454	CLELP2: MOV #128,SECCNT		:GET COUNT OF RCT ENTRIES
21	003101	104304	001477		MOV RCTCNT,R4		:GET BLOCK NUMBER TO READ
22	003103	023715			CALL RRC		:READ IT
23	003104	104205	006621		MOV #RCTBUF,R5		:POINT TO BUFFER
24	003106	104653	000001		CLELP: MOV 1(R5),R3		:GET HEADER
25	003110	103203	007777		BIC #LO,R3		:CLEAR OUT LOW GARBAGE
26	003112	106203	030000		CMP #RC,SNDR,R3		:IS IT A SECONDARY ?
27	003114	053144			BNE CLESKP		:NO - SKIP REVECTORING
28	003115	104153			MOV (R5),R3		:GET LOW ORDER
29	003116	100223			MOV R3,(R2)+		:STORE IN REVECTOR BUFFER
30	003117	104653	000001		MOV 1(R5),R3		:GET HIGH ORDER
31	003121	103203	170000		BIC #HD,CLR,R3		:CLEAR HEADER
32	003123	101203	030000		BIS #HD,REV,R3		:SET AS AN LBN REVECTOR
33	003125	100223			MOV R3,(R2)+		:STORE IT
34	003126	104303	001106		MOV CURRBN,R3		:GET LOW ORDER RBN NUMBER
35	003130	100223			MOV R3,(R2)+		:STORE IT
36	003131	104303	001107		MOV CURRBN+1,R3		:GET HIGH ORDER
37	003133	100223			MOV R3,(R2)+		:STORE IT
38	003134	117400	001501		DEC COUNT		:DEC NUM OF EMPTY REVECTOR SLOTS
39	003136	117400	001472		DEC SNDCNT		:DECREMENT IT
40	003140	013200			BEQ CLSKP4		:IF ZERO THEN DONE
41	003141	104303	001501		MOV COUNT,R3		:FULL BLOCK ?
42	003143	013165			BEQ CLSKP2		:IF 0 - PROCESS BLOCK
43	003144				CLESKP: DUBINC CURRBN		:INCREMENT IT
44	003151	105205	000002		ADD #2,R5		:POINT TO NEXT RBN ENTR
45	003153	117400	001454		DEC SECCNT		:DECREMENT IT
46	003155	053106			BNE CLELP		:DO NEXT ENTRY IF NOT ZERO
47	003156	115400	001477		INC RCTCNT		:INCREMENT IT
48	003160	106300	001242	001477	CMP RCTFMT,RCTCNT		:DONE ?
49	003163	053076			BNE CLELP2		:NOPE - READ IN NEXT BLOCK
50	003164	003174			BR CLEDON		:ELSE DONE
51	003165	023270			CLSKP2: CALL CLEWRT		:PROCESS THE BLOCK
52	003166	104200	000100	001501	MOV #64,COUNT		:FOR COUNTER INIT
53	003171	104202	006204		MOV #REVBUFF,R2		:RESET POINTER
54	003173	003144			BR CLESKP		:BRANCH JACK
55	003174	106200	000100	001501	CLEDON: CMP #64,COUNT		:DOEN ANY ?
56	003177	013201			BEQ CLSKP3		:NO - DONE
57	003200	023270			CLSKP4: CALL CLEWRT		:WRITE OUT ANY LEFTOVERS

58	003201	024222		CALL	FCTCK	:VERIFY FCT
59	003202	024510		CALL	RCTCK	:VERIFY RCT
60	003203	104207	001263	MOV	#DMBUF,R0	:POINT TO DMBUF
61	003205	104301	001327	MOV	DONMSG,R1	:GET DUP CODE
62	003207	100171		MOV	R1,(R0)	:STORE IT
63	003210	104301	001330	MOV	DONMSG+1,R1	: 'D' FLAG
64	003212	100671	000001	MOV	R1,1(R0)	:STORE IT
65	003214	114002		CLR	R2	:FOR CLEAR OF BUFFER
66	003215	104303	001312	MOV	LBNBAD,R3	:GET COUNT OF REVECTORED LBN'S
67	003217	100673	000002	MOV	R3,LBD(R0)	:STORE IN BLOCK
68	003221	104303	001313	MOV	RCTBAD,R3	:RCT BLOCKS BAD
69	003223	100673	000004	MOV	R3,RBD(R0)	:STORE IT
70	003225	100672	000005	MOV	R2,RBD+1(R0)	:CLEAR OTHER ERROR
71	003227	104303	001314	MOV	DBBAD,R3	:DBN BLOCKS BAD
72	003231	100673	000006	MOV	R3,DBD(R0)	:STORE IT
73	003233	100672	000007	MOV	R2,DBD+1(R0)	:CLEAR OTHER COUNT
74	003235	104303	001315	MOV	XBBAD,R3	:XBN LOCKS BAD
75	003237	100673	000010	MOV	R3,XBD(R0)	:STORE IT
76	003241	100672	000011	MOV	R2,XBD+1(R0)	:CLEAR OTHER ERROR
77	003243	104303	001473	MOV	RTYCNT,R3	:RETRY COUNT
78	003245	100673	000012	MOV	R3,RTCNT(R0)	:STORE IT
79	003247	102200	002000	BIT	#BSTGS,FLAG	:DID WE USE FCT ?
80	003252	013260	001217	BEQ	GDFCT	:YUP
81	003253	104202	000002	MOV	#2,R2	:NOPE - FLAG AS 2
82	003255	100672	000013	MOV	R2,FCT(R0)	:STORE IT
83	003257	003264		BR	ALDONE	:SKIP GOOD FCT FLAGGIN
84	003260	104202	000001	MOV	#1,R2	:GOOD IS A 1
85	003262	100672	000013	MOV	R2,FCT(R0)	:STORE IT
86	003264	022536		CALL	SNDMNT	:SEND IT
87	003265	022324		CALL	DISCON	:DISCONNECT/SPINDOWN DRIVE
88	003266	114007		CLR	R0	:MAKE SURE QUILS NICELY
89	003267	060021		XFC	DONE	:DONE

1							
2							
3							
4	003270						
5	003276	104204	006204				
6	003300	104300	001501	000736			
7	003303	104642	000002				
8	003305	104643	000003				
9	003307	101203	060000				
10	003311	104205	005152				
11	003313	104201	060200				
12	003315	100252					
13	003316	100253					
14	003317	117401					
15	003320	053315					
16	003321	104203	001052				
17	003323	104632	000011				
18	003325	103202	177400				
19	003327	104207	001430				
20	003331	100672	000004				
21	003333	104632	000001				
22	003335	103202	007777				
23	003337	100672	000001				
24	003341	114002					
25	003342	100672	000000				
26	003344	023455					
27	003345	104207	000721				
28	003347	104203	122400				
29	003351	104302	001112				
30	003353	101023					
31	003354	100673	000004				
32	003356	104202	005152				
33	003360	022627					
34	003361	100623	000400				
35	003363	100672	000001				
36	003365	104143					
37	003366	100673	000002				
38	003370	104643	000001				
39	003372	105303	001335				
40	003374	100673	000003				
41	003376	104203	000726				
42	003400	100673	000005				
43	003402	104040	000731				
44	003404	104303	001333				
45	003406	104304	001334				
46	003410	104302	000740				
47	003412	104207	000721				
48	003414	101207	100000				
49	003416	060012					
50	003417	060003					
51	003420	115001					
52	003421	013431					
53	003422	106200	000010	001504			
54	003425	013431					
55	003426	115400	001504				
56	003430	003404					
57	003431						

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PROCESS REVECTOR BLOCK
CLEWRT:  PUSHA
MOV      #REVBUF,R4      ;POINT TO BUFFER
MOV      COUNT,TEMP     ;GET COUNT
CLHERE:  MOV      2(R4),R2 ;GET LOW ORDER RBN
MOV      3(R4),R3       ;GET HIGH ORDER RBN
BIS      #HD.RBN,R3     ;SET IN HDR CODE
MOV      #PBNBUF,R5     ;POINT TO BUFFER
MOV      #RBNRPT,R1    ;INIT COUNTER
WLOOP:   MOV      R2,(R5)+ ;STORE LOW ORDER
MOV      R3,(R5)+     ;STORE HIGH ORDER
DEC      R1           ;DECREMENT COUNTER
BNE      WLOOP       ;CONTINUE TILL DONE
MOV      #SCR,R3      ;POINT TO CHARACTERISTICS
MOV      LBNTRK(R3),R2 ;GET LBN/TRACK
BIC      #HIBYTE,R2   ;CLEAR HIGH BYTE
MOV      #CONBLK,R0   ;POINT TO CONVERT BLOCK
MOV      R2,V3(R0)    ;FOR CONVERT
MOV      STCYL(R3),R2 ;STARTING CLYLINDER
BIC      #LO,R2       ;CLEAR REST OF WORD
MOV      R2,V1+1(R0)  ;STORE
CLR      R2           ;FOR STORE
MOV      R2,V1(R0)    ;LOW ALWAYS ZERO
CALL     CS           ;CONVERT AND SEEK
MOV      #WRBLK,R0    ;POINT TO COMMAND BLOCK
MOV      #WRCMD,R3    ;GET WRITE COMMAND
MOV      CURTRK,R2    ;GET CURRENT TRACK
BIS      R2,R3        ;SET TRACK FOR WRITE
MOV      R3,RW.CMD(R0) ;STORE IN COMMAND BLOCK
MOV      #PBNBUF,R2   ;POINT TO BUFFER
CALL     CEDC        ;COMPUTE EDC - RETURNED IN R3
MOV      R3,RW.EDC(R2) ;STORE IT
MOV      R2,RW.BUF(R0) ;STICK IN COMMAND BLOCK
MOV      (R4),R3      ;GET LOW ORDER HEADER
MOV      R3,RW.LOW(R0) ;STORE IN WRITE BLOCK
MOV      1(R4),R3     ;GET HIGH ORDER
ADD      ST.LBN,R3    ;ADD STARTING LBN BITS
MOV      R3,RW.HI(R0) ;STORE IN WRITE BLOCK
MOV      #HSLIM-1,R3  ;GET DUMMY SDI POINTER
MOV      R3,RW.DUM(R0) ;POINT IN COMMAND BLOCK
MOV      R4,DDUMMY    ;SAVE R4
WRITE9:  MOV      HPREA,R3 ;GET HEADER PREAMBLE
MOV      DPREA,R4     ;GET DATA PREAMBLE
MOV      UNIT,R2      ;SET UNIT
MOV      #WRBLK,R0    ;MAKE SURE POINTING AT BLOCK
BIS      #BIT15,R0   ;SET NO REVECTORING
XFC     SIP          ;WAIT FOR SECTOR PULSE
XFC     WRITE        ;WRITE SECTOR
TST     R1           ;ANY ERROR ?
BEQ     1$           ;NO - SKIP RETRY
CMP     #MAXTRY,1MPTRY ;MAX ?
BEQ     1$           ;YES - GIVE UP
INC     1MPTRY       ;INC RETRY COUNT
BR      WRITE9      ;DO RETRY
1$:

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58	003431	114000	001504		CLR	TMPTRY		:CLEAR RETRY COUNT
59	003433	104304	000731		MOV	DDUMMY,R4		:RESTORE R4
60	003435	105204	000004		ADD	#REVLN,R4		:POINT TO NEXT ENTRY
61	003437	115400	001501		INC	COUNT		:INC COUNTER
62	003441	106200	000100	001501	CMP	#64,COUNT		:DONE ?
63	003444	053303			BNE	CIHERE		:NO - REPEAT
64	003445	023522			CALL	RBNWRT		:WRITE GOOD EDC'S TO RBN'S
65	003446				POPA			
66	003454	000000			RETURN			
67								
68								
69								
70								
71	003455	104207	001430		MOV	#CONBLK,R0		:POINT TO CONVERT BLOCK
72	003457	104143			MOV	(R4),R3		:GET LOW ORDR
73	003460	100673	000002		MOV	R3,V2(R0)		:STORE IT
74	003462	104643	000001		MOV	1(R4),R3		:HIGH ORDER
75	003464	103203	170000		BIC	#HD,CLR,R3		:CLEAR HEADER
76	003466	100673	000003		MOV	R3,V2+1(R0)		:STORE IT
77	003470	104201	001052		MOV	#SCR,R1		:POINT TO SUBUNIT CHARACTERISTICS
78	003472	060020			XFC	CVT		:CONVERT IT
79	003473	104670	000011	001112	MOV	TRK(R0),CURTRK		:GET TRACK NUMBER
80	003476	104670	000006	001076	MOV	CYL(R0),ISEEK+1		:LOW ORDER XYLINDER
81	003501	104670	000007	001077	MOV	CYL+1(R0),ISEEK+2		:HIGH ORDER CYLINDR
82	003504	104670	000010	001100	MOV	GRP(R0),ISEEK+3		:GROUP NUMBER
83	003507	022251			CALL	SEEK		:DO SEEK
84	003510	115001			TST	R1		:ANY ERROR
85	003511	053513			BNE	CKR		:YUP
86	003512	000000			RETURN			
87	003513	104201	000012		MOV	#10,R1		:SEEK ERROR
88	003515	104207	001430		MOV	#CONBLK,R0		:CONVERT BLOCK
89	003517	104672	000006		MOV	CYL(R0),R2		:CYLINDER FAILD ON
90	003521	022552			CALL	ERRMNT		:ERROR RETURN

1	003522	104204	006204		RBNWRT:	MOV	#REVBUFF,R4	:POINT TO BUFFER
2	003524	104203	005567			MOV	#GDBLK,R3	:POINT TO GOOD BLOCK
3	003526	104302	001451			MOV	EDC,R2	:GET GOOD EDC
4	003530	100632	000400			MOV	R2,RW.EDC(R3)	:STORE IT
5	003532	104203	001052			MOV	#SCR,R3	:POINT TO CHARACTERISTICS
6	003534	104632	000004			MOV	RBNTRK(R3),R2	:GET RBN/TRACK
7	003536	103202	177600			BIC	#HI1BYTE,R2	:CLEAR HIGH GARBAGE
8	003540	104207	001430			MOV	#CONBLK,R0	:POINT TO CONVERT BLOCK
9	003542	100672	000004			MOV	R2,V3(R0)	:FOR CONVERT
10	003544	104632	000011			MOV	LBNTRK(R3),R2	:GET LBN/TRACK
11	003546	103202	177400			BIC	#HI1BYTE,R2	:CLEAR HIGH BYTE
12	003550	100672	000005			MOV	R2,V4(R0)	:SET UP FOR RBN'S
13	003552	104632	000001			MOV	STCYL(R3),R2	:STARTING CLYLINDER
14	003554	103202	007777			BIC	#LO,R2	:CLEAR REST OF WORD
15	003556	100672	000001			MOV	R2,V1+1(R0)	:STORE
16	003560	114002				CLR	R2	:FOR STORE
17	003561	100672	000000			MOV	R2,V1(R0)	:LOW ALWAYS ZERO
18	003563	104640	000002	000733	RBNWHER:	MOV	2(R4),TEMP2	:GET LOW ORDER RBN
19	003566	104640	000003	000734		MOV	3(R4),TEMP2+1	:GET HIGH ORDER
20	003571	104040	000731			MOV	R4,DDJMMY	:SAVE R4
21	003573	104204	000733			MOV	#TEMP2,R4	:FOR CONVERT
22	003575	022714				CALL	CVTSK	:CONVERT AND SEEK
23	003576	104207	000721			MOV	#WRBLK,R0	:POINT TO COMMAND BLOCK
24	003600	104203	122400			MOV	#WRCMD,R3	:GET WRITE COMMAND
25	003602	104302	001112			MOV	CURTRK,R2	:GET CURRENT TRACK
26	003604	101023				BIS	R2,R3	:SET TRACK FOR WRITE
27	003605	100673	000004			MOV	R3,RW.CMD(R0)	:STORE IN COMMAND BLOCK
28	003607	104202	005567			MOV	#GDBLK,R2	:POINT TO BLOCK
29	003611	100672	000001			MOV	R2,RW.BUF(R0)	:STICK IN COMMAND BLOCK
30	003613	104143				MOV	(R4),R3	:GET LOW ORDER HEADER
31	003614	100673	000002			MOV	R3,RW.LOW(R0)	:STORE IN WRITE BLOCK
32	003616	104643	000001			MOV	1(R4),R3	:GET HIGH ORDER
33	003620	105303	001336			ADD	ST.RBN,R3	:ADD STARTING RBN BITS
34	003622	101203	060000			BIS	#HD.RBN,R3	:GIVE RBN HEADER
35	003624	100673	000003			MOV	R3,RW.HI(R0)	:STORE IN WRITE BLOCK
36	003626	104203	000726			MOV	#HSLIM-1,R3	:GET DUMMY SDI POINTER
37	003630	100673	000005			MOV	R3,RW.DUM(R0)	:POINT IN COMMAND BLOCK
38	003632	104303	001333		WRIT13:	MOV	HPREA,R3	:GET HEADER PREAMBLE
39	003634	104304	001334			MOV	DPREA,R4	:GET DATA PREAMBLE
40	003636	104302	000740			MOV	UNIT,R2	:SET UNIT
41	003640	104207	000721			MOV	#WRBLK,R0	:MAKE SURE POINTING AT BLOCK
42	003642	101207	100000			BIS	#BIT15,R0	:SET NO REVECTORING
43	003644	060012				XFC	SIP	:WAIT FOR SECTOR PULSE
44	003645	060003				XFC	WRITE	:WRITE SECTOR
45	003646	115001				TST	R1	:ANY ERROR ?
46	003647	013670				BEQ	2\$	:NO - SKIP RETRY
47	003650	106300	001502	001504		CMP	RETRY,TMPTRY	:MAX ?
48	003653	013657				BEQ	1\$	:YES - TRY SOME RECOVERY
49	003654	115400	001504			INC	TMPTRY	:INC RETRY COUNT
50	003656	003632				BR	WRIT13	:DO RETRY
51	003657	104303	001505		1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
52	003661	073670				BMI	2\$	:IF NEGATIVE THEN FRIED
53	003662	022612				CALL	ERRHND	:TRY RECOVERY
54	003663	114000	001504			CLR	TMPTRY	:FOR INIT
55	003665	117400	001505			DEC	RECTMP	:DECREMENT IT
56	003667	003632				BR	WRIT13	:RETRY
57	003670				2\$:			

58	004051	115400	001504		INC	TMPTRY	:INC RETRY COUNT
59	004053	004013			BR	READ8	:DO RETRY
60	004054	104303	001505	1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
61	004056	074065			BMI	2\$	:IF NEGATIVE THEN FRIED
62	004057	022612			CALL	ERRHND	:TRY RECOVERY
63	004060	114000	001504		CLR	TMPTRY	:FOR INIT
64	004062	117400	001505		DEC	RECTMP	:DECREMENT IT
65	004064	004013			BR	READ8	:RETRY
66	004055			2\$:			
67	004065	115400			INC	R5	:INCREMENT BAD COUNTER
68	004066	106305	001244		CMP	FCTCPY,R5	:ALL BAD ?
69	004070	014216			BEQ	RFTL	:YUP - ALL OVER
70	004071	104203	001242		MOV	#RCTFMT,R3	:SIZE OF TABLE - R4 -> BLOCK NUMBER
71	004073	021506			CALL	DADD	:ADD TO POINT TO NEXT COPY
72	004074	114000	001504		CLR	TMPTRY	:RESET RETRY LEVEL
73	004076	104300	001503	001505	MOV	RECOV,RECTMP	:DITTO RECOVERY LEVELS
74	004101	003760			BR	RCL	:BRANCH BACK
75	004102			102\$:			
76	004102	114000	001504	RCD:	CLR	TMPTRY	:FOR RESET
77	004104	104300	001503	001505	MOV	RECOV,RECTMP	:GET RECOVERY LEVELS
78	004107	115005			TST	R5	:ANY ERRORS ?
79	004110	014207			BEQ	RLD	:NO - EXIT
80	004111	104203	001240		MOV	#RCTFMT,R3	:SIZE OF TABLE
81	004113	021524			CALL	DSUB	:GET BACK TO PREVIOUS COPY
82	004114	023455			CALL	CS	:CONVERT AND SEEK
83	004115	104207	000721		MOV	#WRBLK,R0	:POINT TO COMMAND BLOCK
84	004117	104203	122400		MOV	#WRCMD,R3	:GET WRITE COMMAND
85	004121	104302	001112		MOV	CURTRK,R2	:GET CURRENT TRACK
86	004123	101023			BIS	R2,R3	:SET TRACK FOR WRITE
87	004124	100673	000004		MOV	R3,RW.CMD(R0)	:STORE IN COMMAND BLOCK
88	004126	104203	006621		MOV	#RCTBUF,R3	:POINT TO BUFFER
89	004130	100673	000001		MOV	R3,RW.BUF(R0)	:STICK IN COMMAND BLOCK
90	004132	104143			MOV	(R4),R3	:GET LOW ORDER HEADER
91	004133	100673	000002		MOV	R3,RW.LOW(R0)	:STORE IN WRITE BLOCK
92	004135	104643	000001		MOV	1(R4),R3	:GET HIGH ORDER
93	004137	105303	001335		ADD	ST.LBN,R3	:ADD STARTING LBN BITS
94	004141	100673	000003		MOV	R3,RW.HI(R0)	:STORE IN WRITE BLOCK
95	004143	104203	000726		MOV	#HSLIM-1,R3	:GET DUMMY SDI POINTER
96	004145	100673	000005		MOV	R3,RW.DUM(R0)	:POINT IN COMMAND BLOCK
97	004147	104303	001333	WRIT10:	MOV	HPREA,R3	:GET HEADER PREAMBLE
98	004151	104304	001334		MOV	DPREA,R4	:GET DATA PREAMBLE
99	004153	104302	000740		MOV	UNIT,R2	:SET UNIT
100	004155	104207	000721		MOV	#WRBLK,R0	:MAKE SURE POINTING AT BLOCK
101	004157	101207	100000		BIS	#BIT15,R0	:SET NO REVECTORING
102	004161	060012			XFC	SIP	:WAIT FOR SECTOR PULSE
103	004162	060003			XFC	WRITE	:WRITE SECTOR
104	004163	115001			TST	R1	:ANY ERROR ?
105	004164	014205			BEQ	2\$	:NO - SKIP RETRY
106	004165	106300	001502	001504	CMP	RETRY,TMPTRY	:MAX ?
107	004170	014174			BEQ	1\$	:YES - TRY SOME RECOVERY
108	004171	115400	001504		INC	TMPTRY	:INC RETRY COUNT
109	004173	004147			BR	WRIT10	:DO RETRY
110	004174	104303	001505	1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
111	004176	074205			BMI	2\$	:IF NEGATIVE THEN FRIED
112	004177	022612			CALL	ERRHND	:TRY RECOVERY
113	004200	114000	001504		CLR	TMPTRY	:FOR INIT
114	004202	117400	001505		DEC	RECTMP	:DECREMENT IT

115 004204 004147
116 004205
117 004205 117405
118 004206 004102
119 004207
120 004215 000000
121 004216 104012
122 004217 104201 000016
123 004221 022552

2\$: BR WRIT10
DEC R5
BR RCD
RLD: POPA
RETURN
RFTL: MOV R1,R2
MOV #14.,R1
CALL ERRMNT

:RETRY
:DEREMENT COUNTER
:SEE IF ANY MORE TO DO
:ALL DONE
:XFC ERROR CODE
:RCT READ ERROR
:ERROR RETURN

1						
2						
3						
4	004222	114000	001256		FCTCK-	CLR FCTCNT
5	004224	115400	001260			INC FCTNPD
6	004226	104200	006204	001253		MOV #PRMBUF, BUFPT
7	004231	104201	000017			MOV #F6, R1
8	004233	022444				CALL PAGE
9	004234	104205	006204			MOV #PRMBUF, R5
10	004236	104203	126736			MOV #M512, R3
11	004240	100153				MOV R3, (R5)
12	004241	104050	001253			MOV R5, BUFPT
13	004243	104201	000030			MOV #F9, R1
14	004245	022444				CALL PAGE
15	004246	114000	001256			CLR FCTCNT
16	004250	104300	001337	001116		MOV ST.XBN, CURXBN+1
17	004253	104300	001337	001114		MOV ST.XBN, CURBN+1
18	004256	114000	001115			CLR CURXBN
19	004260	114000	001113			CLR CURBN
20	004262	104203	001052			MOV #SCR, R3
21	004264	104207	001430			MOV #CONBLK, R0
22	004266	104632	000100			MOV CYLBN(R3), R2
23	004270	100672	000000			MOV R2, V1(R0)
24	004272	104632	000001			MOV CYLBN+1(R3), R2
25	004274	100672	000001			MOV R2, V1+1(R0)
26	004276	104303	001127			MOV SECTR, R3
27	004300	100673	000004			MOV R3, V3(R0)
28	004302	114005			FCTCLF:	CLR R5
29	004303	104050	001245			MOV R5, NEXT1
30	004305	104204	000736		FCTCL1:	MOV #TEMP, R4
31	004307	104300	001113	000736		MOV CURBN, TEMP
32	004312	104300	001114	000737		MOV CURBN+1, TEMP+1
33	004315	107300	001337	000737		SUB ST.XBN, TEMP+1
34	004320	023455				CALL CS
35	004321	104207	000721			MOV #RDBLK, R0
36	004323	104203	013400			MOV #RWCMD, R3
37	004325	104302	001112			MOV CURTRK, R2
38	004327	101023				BIS R2, R3
39	004330	100673	000004			MOV R3, RW.CMD(R0)
40	004332	104203	006204			MOV #PRMBUF, R3
41	004334	100673	000001			MOV R3, RW.BUF(R0)
42	004336	104303	001113			MOV CURBN, R3
43	004340	100673	000002			MOV R3, RW.LOW(R0)
44	004342	104303	001114			MOV CURBN+1, R3
45	004344	101203	120000			BIS #HD.XBN, R3
46	004346	100673	000003			MOV R3, RW.HI(R0)
47	004350	104203	000726			MOV #HSLIM-1, R3
48	004352	100673	000005			MOV R3, RW.DUM(R0)
49	004354	104207	000721		READ9:	MOV #RDBLK, R0
50	004356	104203	100000			MOV #RDCMD, R3
51	004360	100673	000000			MOV R3, RW.STAT(R0)
52	004362	104302	000740			MOV UNIT, R2
53	004364	101207	100000			BIS #BIT15, R0
54	004366	060012				XFC SIP
55	004367	060002				XFC READ
56	004370	115001				TST R1
57	004371	054407				BNE 100\$

```

:FOR INIT
:SO CHECK THE NULL BLOCK ALSO
:POINT TO BUFFER
:FCT READ OVERLAY
:READ FIRST BLOCK
:POINT TO BUFFER
:GET MODE INDICATOR
:SIGNAL DONE FORMAT
:STORE BUFFER POINTER
:FCT WRITE OVERLAY
:WRITE IT OUT
:FOR FCTCNT INIT
:ALSO INITIALIZE XBN COUNTER
:HIGH ORDER
:LOW ORDER ALWAYS 0
:AND BLOCK NUMBER
:POINT TO CHARACTERISTICS
:POINT TO CONVERT BLOCK
:GET LOW ORDER CYLINDER
:STORE IT
:GET HIGH ORDER
:STORE IT
:GET SECTORS/TRACK
:STORE IT
:CLEAR WRITE ERROR COUNT
:CLEAR REPEAT COUNT
:POINT TO BLOCK
:FOR CONVERSION
:BITTO
:SUBTRACT STARTING XBN BITS
:CONVERT AND SEEK
:POINT TO COMMAND BLOCK
:GET READ COMMAND
:GET CURRENT TRACK
:SET TRACK FOR WRITE
:STORE IN COMMAND BLOCK
:POINT TO BUFFER
:STICK IN COMMAND BLOCK
:GET LOW ORDER HEADER
:STORE IN WRITE BLOCK
:GET HIGH ORDER
:SET HEADER
:STORE IN WRITE BLOCK
:GET DUMMY SDI POINTER
:POINT IN COMMAND BLOCK
:MAKE SURE POINTING AT BLOCK
:GET READ COMMAND
:STORE IT
:SET UNIT
:SET NO REVECTORING
:WAIT FOR SECTOR PULSE
:READ SECTOR
:ANY ERROR ?
:YES - TRY RECOVERY

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58	004372	104173				MOV	(R0),R3	:GET STATUS WORD
59	004373	102203	010000			BIT	#ECCF,R3	:ECC ERROR ?
60	004375	014401				BEQ	101\$	:NOPE - VERIFY EDC
61	004376	023027				CALL	ECCCK	:CORRECT ECC
62	004377	115001				TST	R1	:TEST FLAG
63	004400	054407				BNE	100\$	:UNCORRECTABLE
64	004401	104202	006204		101\$:	MOV	#PRMBUF,R2	:POINT TO BUFFER
65	004403	022627				CALL	CEDC	:COMPUTE EDC
66	004404	106623	000400			CMP	RW.EDC(R2),R3	:O.K. ?
67	004406	014427				BEQ	102\$	:YUP - CONSIDER GOOD
68	004407	106300	001502	001504	100\$:	CMP	RETRY,TMPTRY	:MAX ?
69	004412	014416				BEQ	1\$	:YES - TRY SOME RECOVERY
70	004413	115400	001504			INC	TMPTRY	:INC RETRY COUNT
71	004415	074354				BR	READ9	:DO RETRY
72	004416	104303	001505		1\$:	MOV	RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
73	004420	074430				BMI	YES	:IF NEGATIVE THEN FRIED
74	004421	022612				CALL	ERRHND	:TRY RECOVERY
75	004422	114000	001504			CLR	TMPTRY	:FOR INIT
76	004424	117400	001505			DEC	RECTMP	:DECREMENT IT
77	004426	004354				BR	READ9	:RETRY
78	004427				102\$:			
79	004427				2\$:			
80	004427	115405				INC	R5	:NO - INCREMENT COUNTER
81	004430	115400	001245		YES:	INC	NEXT1	:INCREMENT IT
82	004432	106205	000002			CMP	#2,R5	:FOUND 2 GOOD ONES ?
83	004434	014454				BEQ	FCTCKD	:YUP - GO TO NEXT BLOCK
84	004435	104204	001113			MOV	#CURBN,R4	:FOR ADD
85	004437	104203	001240			MOV	#FCTFMT,R3	:FOR ADD
86	004441	021506				CALL	DADD	:POINT TO NEXT COPY
87	004442	114000	001504			CLR	TMPTRY	:RESET RETRY LEVEL
88	004444	104300	001503	001505		MOV	RECOV,RECTMP	:DITTO RECOVERY LEVELS
89	004447	106300	001244	001245		CMP	FCTCPY,NEXT1	:DONE THIS SECTOR ?
90	004452	054305				BNE	FCTCL1	:NO - WRITE NEXT FCT COPY
91	004453	004503				BR	FCTCKE	:2 NOT GOOD - TROUBLE
92	004454	102200	002000	001217	FCTCKD:	BIT	#BSTGS,FLAG	:BEST GUESS ?
93	004457	054502				BNE	4\$	:YUP - ONLY CHECK FIRST BLOCK
94	004460	060022				XFC	UPDATE	:LET HOST KNOW STILL ALIVE
95	004461	115400	001256			INC	FCTCNT	:INCREMENT IT
96	004463					DUBINC	CURXBN	:INCREMENT IT
97	004470	104300	001115	001113		MOV	CURXBN,CURBN	:GET LOW ORDER
98	004473	104300	001116	001114		MOV	CURXBN+1,CURBN+1	:GET HIGH ORDER
99	004476	106300	001260	001256		CMP	FCTNPD,FCTCNT	:DONE ?
100	004501	054302				BNE	FCTCLP	:NOPE - DO NEXT SECTOR
101	004502	000000			4\$:	RETURN		
102	004503	104201	000011		FCTCKE:	MOV	#9,R1	:SIGNAL ERROR
103	004505	104302	001256			MOV	FCTCNT,R2	:BLOCK FAILED ON
104	004507	022552				CALL	ERRMNT	:ERROR RETURN

1				...				
2				...	VERIFY RCT			
3				...				
4	004510	115400	001261		RCTICK: INC	RCTLBN	:CHECK NON-PAD PLUS NULL BLOCK	
5	004512	104300	001133	001227		MOV	LBNLBN,HOLD	:GET LOW ORDER COUNT OF LBN'S
6	004515	104300	001134	001230		MOV	LRNLBN+1,HOLD+1	:GET HIGH ORDER
7	004520	104203	001475			MOV	#TOTRCT,R3	:FOR SUBTRACT
8	004522	104204	001227			MOV	#HOLD,R4	:DITTO
9	004524	021524				CALL	DSUB	:GET STARTING RCT LBN
10	004525	104300	001227	001113		MOV	HOLD,CURBN	:GET STARTING RCT BLOCK NUMBER
11	004530	104300	001227	001115		MOV	HOLD,CURLBN	:ALSO SAVE
12	004533	104300	001230	001114		MOV	HOLD+1,CURBN+1	:GET HIGH ORDER
13	004536	104300	001230	001116		MOV	HOLD+1,CURLBN+1	:AND SAVE
14	004541	104200	000001	001501		MOV	#1,COUNT	
15	004544	114005				RCTCLP: CLR	R5	:CLEAR ERROR COUNTER
16	004545	104050	001245			MOV	R5,NEXT1	:INIT COPY COUNT
17	004547	104203	001052			RCTCL1: MOV	#SCR,R3	:POINT TO CHARACTERISTICS
18	004551	104632	000011			MOV	LBNTRK(R3),R2	:GET LBN/TRACK
19	004553	103202	177400			BIC	#HIBYTE,R2	:CLEAR HIGH BYTE
20	004555	104207	001430			MOV	#CONBLK,R0	:POINT TO CONVERT BLOCK
21	004557	100672	000004			MOV	R2,V3(R0)	:FOR CONVERT
22	004561	104632	000001			MOV	STCYL(R3),R2	:STARTING CLYLINDER
23	004563	103202	007777			BIC	#LO,R2	:CLEAR REST OF WORD
24	004565	100672	000001			MOV	R2,V1+1(R0)	:STORE
25	004567	114002				CLR	R2	:FOR STORE
26	004570	100672	000000			MOV	R2,V1(R0)	:LOW ORDER ALWAYS ZERO
27	004572	104204	001113			MOV	#CURBN,R4	:FOR CONVERT
28	004574	023455				CALL	CS	:CONVERT AND SEEK
29	004575	104207	000721			MOV	#RDBLK,R0	:POINT TO COMMAND BLOCK
30	004577	104203	013400			MOV	#RWCMD,R3	:GET READ COMMAND
31	004601	104302	001112			MOV	CURTRK,R2	:GET CURRENT TRACK
32	004603	101023				BIS	R2,R3	:SET TRACK FOR WRITE
33	004604	100673	000004			MOV	R3,RW.CMD(R0)	:STORE IN COMMAND BLOCK
34	004606	104203	006204			MOV	#PRMBUF,R3	:POINT TO BUFFER
35	004610	100673	000001			MOV	R3,RW.BUF(R0)	:STICK IN COMMAND BLOCK
36	004612	104303	001113			MOV	CURBN,R3	:GET LOW ORDER HEADER
37	004614	100673	000002			MOV	R3,RW.LOW(R0)	:STORE IN WRITE BLOCK
38	004616	104303	001114			MOV	CURBN+1,R3	:GET HIGH ORDER
39	004620	105303	001335			ALD	ST.LBN,R3	:ADD STARTING LBN BITS
40	004622	101203	000000			BIS	#HD.LBN,R3	:SET HEADER
41	004624	100673	000003			MOV	R3,RW.HI(R0)	:STORE IN WRITE BLOCK
42	004626	104203	000726			MOV	#HSLIM-1,R3	:GET DUMMY SDI POINTER
43	004630	100673	000005			MOV	R3,RW.DIM(R0)	:POINT IN COMMAND BLOCK
44	004632	104207	000721			READ10: MOV	#RDBLK,R0	:MAKE SURE POINTING AT BLOCK
45	004634	104203	100000			MOV	#RDCMD,R3	:GET STATUS WORD
46	004636	100173				MOV	R3,(R0)	:STORE IT
47	004637	104302	000740			MOV	UNIT,R2	:SET UNIT
48	004641	101207	100000			BIS	#BIT15,R0	:SET NO REVECTORING
49	004643	060012				XFC	SIP	:WAIT FOR SECTOR PULSE
50	004644	060002				XFC	READ	:WRITE SECTOR
51	004645	115001				TST	R1	:ANY ERROR ?
52	004646	054664				BNE	100\$	:YES - TRY RECOVERY
53	004647	104173				MOV	(R0),R3	:GET STATUS WORD
54	004650	102203	010000			BIT	#ECCF,R3	:ECC ERROR ?
55	004652	014656				BEQ	101\$	:NOPE - VERIFY EDC
56	004653	023027				CALL	ECCCK	:CORRECT ECC
57	004654	115001				TST	R1	:TEST FLAG

58	004655	054664				BNE	100\$		:UNCORRECTABLE
59	004656	104202	006204		101\$:	MOV	#PRMBUF,R2		:POINT TO BUFFER
60	004660	022627				CALL	CEDC		:COMPUTE EDC
61	004661	106623	000400			CMP	RW.EDC(R2),R3		:O.K. ?
62	004663	014704				BEQ	102\$		:YUP - CONSIDER GOOD
63	004664	106300	001502	001504	100\$:	CMP	RETRY,TMPTRY		:MAX ?
64	004667	014673				BEQ	1\$		:YES - TRY SOME RECOVERY
65	004670	115400	001504			INC	TMPTRY		:INC RETRY COUNT
66	004672	004632				BR	READ10		:DO RETRY
67	004673	104303	001505		1\$:	MOV	RECTMP,R3		:GET CURRENT ERROR RECOVERY LEVEL
68	004675	074705				BMI	RCTNGD		:IF NEGATIVE SKIP GOOD INCREMENT
69	004676	022612				CALL	ERRHND		:TRY RECOVERY
70	004677	114000	001504			CLR	TMPTRY		:FOR INIT
71	004701	117400	001505			DEC	RECTMP		:DECREMENT IT
72	004703	004632				BR	READ10		:RETRY
73	004704				102\$:				
74	004704				2\$:				
75	004704	115405				INC	R5		:YUP - INCREMENT COUNTER
76	004705	115400	001245		RCTNGD:	INC	NEXT1		:INCREMENT IT
77	004707	114000	001504			CLR	TMPTRY		:FOR RESET
78	004711	104300	001503	001505		MOV	RECOV,RECTMP		:GET RECOVERY LEVELS
79	004714	106205	000002			CMP	#2,R5		:FOUND 2 GOOD ONES ?
80	004716	014736				BEQ	RCTCKD		:YUP - GO TO NEXT BLOCK
81	004717	104204	001113			MOV	#CURBN,R4		:FOR ADD
82	004721	104203	001242			MOV	#RCTFMT,R3		:FOR ADD
83	004723	021506				CALL	DADD		:POINT TO NEXT COPY
84	004724	114000	001504			CLR	TMPTRY		:RESET RETRY LEVEL
85	004726	104300	001503	001505		MOV	RECOV,RECTMP		:DITTO RECOVERY LEVELS
86	004731	106300	001244	001245		CMP	FCTCPY,NEXT1		:DONE THIS SECTOR ?
87	004734	054547				BNE	RCTCL1		:NO - READ NEXT FCT COPY
88	004735	004761				BR	RCTCKE		:2 NOT GOOD - TROUBLE
89	004736	060022			RCTCKD:	XFC	UPDATE		:LET HOST KNOW STILL ALIVE
90	004737	115400	001501			INC	COUNT		:INCRMENT IT
91	004741					DUBINC	CURLBN		:INCREMENT IT
92	004746	104300	001115	001113		MOV	CURLBN,CURBN		:GET LOW ORDER
93	004751	104300	001116	001114		MOV	CURLBN+1,CURBN+1		:GET HIGH ORDER
94	004754	106300	001261	001501		CMP	RCTLBN,COUNT		:DONE ?
95	004757	054544				BNE	RCTCLP		:NOPE - DO NEXT SECTOR
96	004760	000000				RETURN			
97	004761	104201	000013		RCTCKE:	MOV	#11,R1		:SET ERROR CODE
98	004763	104302	001501			MOV	COUNT,R2		:RCT BLOCK FAILED ON
99	004765	022552				CALL	ERRMNT		:ERROR RETURN

1					.SBTTL FCT WRITE OVERLAY (F9)	
2	004766				DMOVLY F9,START	
3						
4					WRITE AN FCT BLOCK	
5						
6						
7	003047	104200	000030	001153	FCTWRT: MOV #F9,CUROVL	:FOR INIT
8	003052	114005			CLR R5	:CLEAR ERROR COUNTER
9	003053	104050	001245		MOV R5,NEXT1	:INIT NEXT COPY COUNTER
10	003055	104204	001256		MOV #FCTCNT,R4	:POINT TO FCT BLOCK NUMBER
11	003057	104203	001466		MOV #ONE,R3	:FOR SUB
12	003061	021524			CALL DSUB	:SUB TO GET RIGHT ONE
13	003062	104305	001253		MOV BUFNT,R5	:GET BUFFER POINTER
14	003064	104303	001143		FCTRLP: MOV LBNCYL,R3	:GET LBN CYLINDERS
15	003066	104207	001430		MOV #CONBLK,R0	:POINT TO CONVERT BLOCK
16	003070	100673	000000		MOV R3,V1(R0)	:STORE FOR CONVERT
17	003072	104303	001144		MOV LBNCYL+1,R3	:GET HIGH ORDER
18	003074	100673	000000		MOV R3,V1+1(R0)	:STORE IT
19	003076	104303	001127		MOV SECTRK,R3	:GET SECTORS/TRACK
20	003100	100673	000004		MOV R3,V3(R0)	:STORE IT
21	003102	022714			CALL CVTSK	:CONVERT AND SEEK
22	003103	104207	000721		MOV #WRBLK,R0	:POINT TO COMMAND BLOCK
23	003105	104203	122400		MOV #WRCMD,R3	:GET WRITE COMMAND
24	003107	104302	001112		MOV CURTRK,R2	:GET CURRENT TRACK
25	003111	101023			BIS R2,R3	:SET TRACK FOR WRITE
26	003112	100673	000004		MOV R3,RW.CMD(R0)	:STORE IN COMMAND BLOCK
27	003114	104052			MOV R5,R2	:POINT TO BUFFER
28	003115	022627			CALL CEDC	:COMPUTE EDC - RETURNED IN R3
29	003116	100623	000400		MOV R3,RW.EDC(R2)	:STORE IT
30	003120	100672	000001		MOV R2,RW.BUF(R0)	:STICK IN COMMAND BLOCK
31	003122	104143			MOV (R4),R3	:GET LOW ORDER HEADER
32	003123	100673	000002		MOV R3,RW.LOW(R0)	:STORE IN WRITE BLOCK
33	003125	104643	000001		MOV 1(R4),R3	:GET HIGH ORDER
34	003127	105303	001337		ADD ST.XBN,R3	:ADD STARTING XBN BITS
35	003131	101203	120000		BIS #HD.XBN,R3	:SET HEADER
36	003133	100673	000003		MOV R3,RW.HI(R0)	:STORE IN WRITE BLOCK
37	003135	104203	000726		MOV #HSLIM-1,R3	:GET DUMMY SDI POINTER
38	003137	100673	000005		MOV R3,RW.DUM(R0)	:POINT IN COMMAND BLOCK
39	003141	104303	001333		WRITE5: MOV HPREA,R3	:GET HEADER PREAMBLE
40	003143	104304	001334		MOV DPREA,R4	:GET DATA PREAMBLE
41	003145	104302	000740		MOV UNIT,R2	:SET UNIT
42	003147	104207	000721		MOV #WRBLK,R0	:MAKE SURE POINTING AT BLOCK
43	003151	101207	100000		BIS #BIT15,R0	:SET NO RVECTORING
44	003153	060012			XFC SIP	:WAIT FOR SECTOR PULSE
45	003154	060003			XFC WRITE	:WRITE SECTOR
46	003155	115001			TST R1	:ANY ERROR ?
47	003156	013200			BEQ FWGOOD	:NOPE
48	003157	106300	001502	001504	CMP RETRY,TMPTRY	:MAX ?
49	003162	013166			BEQ 1\$	:YES - TRY SOME RECOVERY
50	003163	115400	001504		INC TMPTRY	:INC RETRY COUNT
51	003165	003141			BR WRITES	:DO RETRY
52	003166	104303	001505		1\$: MOV RECTMP,R3	:GET CURRENT ERROR RECOVERY LEVEL
53	003170	073177			BMI 2\$	:IF NEGATIVE THEN FRIED
54	003171	022612			CALL ERRHND	:TRY RECOVERY
55	003172	114000	001504		CLR TMPTRY	:FOR INIT
56	003174	117400	001505		DEC RECTMP	:DECREMENT IT
57	003176	003141			BR WRITES	:RETRY

58	003177			28:	INC	R5	:YUP - INCREMENT COUNTER
59	003177	115405			INC	NEXT1	:INCREMENT IT
60	003200	115400	001245	FWGOOD:	CLR	TMPTRY	:FOR RESET
61	003202	114000	001504		MOV	RECOV,RECTMP	:GET RECOVERY LEVELS
62	003204	104300	001503	001505	MOV	#FCTCNT,R4	:FOR ADD
63	003207	104204	001256		MOV	#FCTFMT,R3	:FOR ADD
64	003211	104203	001240		CALL	DADD	:POINT TO NEXT COPY
65	003213	021506			CMP	FCTCPY,NEXT1	:DONE THIS SECTOR ?
66	003214	106300	001244	001245	BNE	FCTRLP	:NO - WRITE NEXT FCT COPY
67	003217	053064			CMP	FCTCPY,R5	:ERROR ON EVERY WRITE ?
68	003220	106305	001244		BEQ	FCWERR	:YUP - BIG TROUBLE
69	003222	013244			MOV	NEXT1,R3	:ANY REPEATS ?
70	003223	104303	001245	FCFXLP:	BEQ	FWTDON	:NO
71	003225	013236			MOV	#FCTCNT,R4	:TO GET IT BACK
72	003226	104204	001256		MOV	#FCTFMT,R3	:DITTO
73	003230	104203	001240		CALL	DSUB	
74	003232	021524			DEC	NEXT1	:SUB IT
75	003233	117400	001245		BR	FCFXLP	:REPEAT
76	003235	003223			DUBINC	FCTCNT	:PUT BACK THE WAY IT WAS
77	003236			FWTDON:	RETURN		
78	003243	000000			MOV	R1,R2	:XFC ERROR CODE
79	003244	104012		FCWERR:	MOV	#15.,R1	:RCT WRITE ERROR
80	003245	104201	000017		CALL	ERRMNT	:ERROR RETURN
81	003247	022552					

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    03250
    4
    5
    6 003047 104303 001111
    7 003051 103203 170000
    8 003053 104030 001111
    9 003055 104300 001133 000731
   10 003060 104300 001134 000732
   11 003063 104204 000731
   12 003065 104203 001135
   13 003067 021506
   14 003070 104203 001110
   15 003072 021626
   16 003073 073142
   17 003074 104204 001110
   18 003076 104203 000731
   19 003100 021524
   20 003101 104203 001137
   21 003103 021626
   22 003104 073125
   23 003105 104204 001110
   24 003107 104203 001137
   25 003111 021524
   26 003112 104641 000001
   27 003114 105301 001340
   28 003116 103201 170000
   29 003120 101201 140000
   30 003122 104010 001111
   31 003124 003276
   32 003125 104204 001110
   33 003127 104641 000001
   34 003131 105301 001337
   35 003133 103201 170000
   36 003135 101201 120000
   37 003137 104010 001111
   38 003141 003276
   39
   40
   41 003142 104300 001127 000731
   42 003145 104300 001130 000732
   43 003150 104203 000731
   44 003152 104204 001110
   45 003154 021570
   46 003155 104205 001052
   47 003157 104653 000011
   48 003161 103203 177400
   49 003163 104201 000731
   50 003165 104114
   51 003166 106043
   52 003167 073242
   53 003170 104653 000004
   54 003172 103203 177600
   55 003174 104030 000736
   56 003176 114000 000737
   57 003200 104203 000736

    .SBTTL PBN->D,X,L,RBN CONVERSION OVERLAY (G5)
    DMOVLY G5,START

    CONVERT FROM PBN TO D,X,L,RBN

    PCON: MOV CURPBN+1,R3 ;GET PBN HEADER
          BIC #HD.CLR,R3 ;CLEAR THE HEADER
          MOV R3,CURPBN+1 ;STORE BACK
          MOV LBNLBN,DDUMMY ;GET TOTAL NUMBER OF LBN'S
          MOV LBNLBN+1,DDUMMY+1 ;HIGH ORDER
          MOV #DDUMMY,R4 ;FOR ADD
          MOV #RBNLBN,R3 ;TOTAL NUMBER OF RBN'2
          CALL DADD ;ADD TO GET TOTAL BLOCKS IN LBN AREA
          MOV #CURPBN,R3 ;CURRENT PBN
          CALL DCOMP ;IS IT LBN OR RBN ?
          BMI LBN ;YUP - GO COMPUTE IT
          MOV #CURPBN,R4 ;ELSE X OR DBN - GET VALUE
          MOV #DDUMMY,R3 ;TOTAL LBN+RBN BLOCKS
          CALL DSUB ;SUBTRACT
          MOV #XBNSEC,R3 ;TOTAL XBN SECTORS
          CALL DCOMP ;IS IT AN XBN ?
          BMI XBNFND ;YUP - GO FIXIT
          MOV #CURPBN,R4 ;ELSE DBN - GET VALUE
          MOV #XBNSEC,R3 ;TOTAL XBN SECTORS
          CALL DSUB ;SUBTRACT TO GET RELATIVE DBN
          MOV 1(R4),R1 ;GET HIGH ORDER
          ADD ST.DBN,R1 ;ADD TO GET ABSOLUTE DBN
          BIC #HD.CLR,R1 ;CLEAR THE HEADER
          BIS #HD.DBN,R1 ;MARK AS DBN
          MOV R1,CURPBN+1 ;STORE BACK
          BR PDONE ;CLEAN UP AND RETURN

    XBNFND: MOV #CURPBN+1,R4 ;POINT TO BLOCK NUMBER
            MOV 1(R4),R1 ;GET HIGH ORDER
            ADD ST.XBN,R1 ;ADD TO GET ABSOLUTE XBN
            BIC #HD.CLR,R1 ;CLEAR HEADER
            BIS #HD.XBN,R1 ;MARK AS XBN
            MOV R1,CURPBN+1 ;STORE BACK
            BR PDONE ;CLEAN UP AND RETURN

    LBN: MOV SECTRK,DDUMMY ;GET LOW ORDER SECOTRS/TRACK
          MOV SECTRK+1,DDUMMY+1 ;HIGH ORDER
          MOV #DDUMMY,R3 ;FOR DIVIDE
          MOV #CURPBN,R4 ;DITTO
          CALL DDIV ;DIVIDE TO GET TRACK NUMBER AND REMAINDER
          MOV #SCR,R5 ;POINT TO CHARACTERISTICS
          MOV LBNTRK(R5),R3 ;GET LBN/TRK
          BIC #HI1BYTE,R3 ;CLEAR HIGH BYTE
          MOV #DDUMMY,R1 ;POINT TO REMAINDER
          MOV (R1),R4 ;GET IT
          CMP R4,R3 ;COMPARE
          BMI LBNFND ;IF MINUS THEN LBN
          MOV RBNTRK(R5),R3 ;GET RBN/TRACK
          BIC #HI1BYTE,R3 ;CLEAR OUT GARBAGE
          MOV R3,TEMP ;STORE IT
          CLR TEMP+1 ;FOR STORE
          MOV #TEMP,R3 ;FOR MULTIPLY
    
```

58	003202	104204	001110	MOV	#CURPBN,R4	:DITTO - NUM OF TRACKS
59	003204	021542		CALL	DMUL	:MULTIPLY BY TRACK NUMBER
60	003205	104204	000731	MOV	#DDUMMY,R4	:FOR SUBTRACT
61	003207	104653	000111	MOV	LBNTRK(R5),R3	:GET LBN/TRK
62	003211	103203	177400	BIC	#HIBYTE,R3	:CLEAR HIGH BYTE
63	003213	104030	000736	MOV	R3,TEMP	:STORE IT
64	003215	114000	000737	CLR	TEMP+1	:FOR CLEAR
65	003217	104203	000736	MOV	#TEMP,R3	:POINT FOR SUBTRACT
66	003221	021524		CALL	DSUB	:SUBTRACT TO GET RESIDUE RBN
67	003222	104204	001110	MOV	#CURPBN,R4	:TO GET RBN NUMBER
68	003224	104203	000731	MOV	#DDUMMY,R3	:DITTO
69	003226	021506		CALL	DADD	:GIVES RELATIVE RBN
70	003227	104641	000001	MOV	1(R4),R1	:GET HIGH ORDER
71	003231	105301	001336	ADD	ST.RBN,R1	:ADD TO GET ABSOLUTE RBN
72	003233	103201	170000	BIC	#HD.CLR,R1	:CLEAR TH EHEADER
73	003235	101201	060000	BIS	#HD.RBN,R1	:SET AS A RBN
74	003237	104010	001111	MOV	R1,CURPBN+1	:STORE BACK
75	003241	003276		BR	PDONE	:CLEAN UP AND RETURN
76						
77						
78	003242	104204	001110	LBNFND: MOV	#CURPBN,R4	:MULT NUM OF TRACKS
79	003244	104653	000011	MOV	LBNTRK(R5),R3	:GET LBN/TRK
80	003246	103203	177400	BIC	#HIBYTE,R3	:CLEAR HIGH BYTE
81	003250	104030	000736	MOV	R3,TEMP	:STORE IT
82	003252	114000	000737	CLR	TEMP+1	:FOR CLEAR
83	003254	104203	000736	MOV	#TEMP,R3	:POINT FOR MULT
84	003256	021542		CALL	DMUL	:GET LBN'S
85	003257	104203	000731	MOV	#DDUMMY,R3	:PLUS RESIDUE
86	003261	021506		CALL	DADD	:GIVES LBN NUMBER
87	003262	104207	001052	MOV	#SCR,R0	:POINT TO CHARACTERISTICS
88	003264	104641	000001	MOV	1(R4),R1	:GET HIGH ORDER
89	003266	105301	001335	ADD	ST.LBN,R1	:ADD TO GET ABSOLUTE LBN
90	003270	103201	170000	BIC	#HD.CLR,R1	:CLEAR HEADER
91	003272	101201	000000	BIS	#HD.LBN,R1	:SET AS LBN
92	003274	104010	001111	MOV	R1,CURPBN+1	:STORE BACK
93	003276	104300	001110	001113 PDONE: MOV	CURPBN,CURBN	:GET LOW ORDER
94	003301	104300	001111	001114 MOV	CURPBN+1,CURBN+1	:HIGH ORDER
95	003304	000000		RETURN		
96	003305			DMEND		
97		000001		.END		

ACC	001024	CLEWRT	003270	DCLR	001026	ERDN	000010	FIXLP	003503
ACCESS	002235	CLHERE	003303	DCMP	001626	ERCOV	001102	FKIP1	004121
AGAIN	003544	CLSAP2	003165	DCMP1	001651	ERFLAG	001221	FKIP10	004145
ALDONE	003264	CLSKP3	003201	DCMP2	001644	ERLEN	= 000002	FKIP2	004102
ALLOVR	002603	CLSKP4	003200	DCMP3	001657	ERPNT	001252	FKIP9	004460
ALLOV1	002611	CMDBUF	= 006621	DCMP4	001637	ERR	001226	FKP1	004136
AOUT	002362	CMPDAT	= 000006	DDIV	001570	ERRBUF	001224	FLAG	001217
ATTN	= 000002	CNT	001247	DDUMMY	000731	ERRCNT	001453	FLAG1	001220
A*TN1	002353	CNTCYL	001460	DEAD	= 000020	ERRHND	002612	FLGDON	004427
BADEDC	001452	CONBLK	001430	DESC	003050	ERRLN	= 000003	FLGSET	004373
BADP*JN	001223	CONINT	003067	DFCT	004423	ERRLST	002624	FLGSKP	004405
BADREN	003645	COUNT	001501	DINIT	- 000011	ERRMNT	002552	FLIP	003136
BD	= 020000	CR	001037	DIS	001021	ERROR	003465	FLKIP1	004434
BDHD	= 000040	CR.ACC	000765	DISCON	002324	ERRSYM	= 000002	FLKIP2	004415
BDIRCT	004136	CR.CLR	000771	DLERR	003113	ERRT	002101	FLKP1	004451
BIO	= 000001	CR.DIS	000755	DLERT	003470	ERI	003753	FODONE	003227
BIT1	= 000002	CR.ERV	001005	DLL	000400	FBDHD	= 010000	FOLOOP	003060
BIT10	= 002000	CR.GCR	000745	DLLRET	003446	FBEGIN	003276	FORERR	003431
BIT11	= 004000	CR.GSR	000751	DLLRT1	003432	FBEG2	003311	FORMAT	= 000001
BIT12	= 010000	CR.GST	000741	DMBUF	001263	FCFXLP	003223	FRCPY	= 000001
BIT13	= 020000	CR.ONL	001017	DMBUF	= 000016	FCLR	= 177760	FRDONE	003750
BIT14	= 040000	CR.RCL	001001	DMFLG	000004	FMSG	001321	FRSKP	003744
BIT15	= 100000	CR.RUN	000761	DMOST	= 000001	FCNT	001237	FSER	= 000002
BIT2	= 000004	CR.SEK	000775	DMSG1	003054	FCPG	003657	FT.BUF	= 000000
BIT3	= 000010	CS	003455	DMSG1L	= 000007	FCT	= 000013	FT.HI	= 000002
BIT4	= 000020	CSKIP	003522	DMUL	001542	FCTAVL	= 000001	FT.LOW	= 000001
BIT5	= 000040	CSKIP1	003534	DMUNIT	= 000003	FCTBAD	= 000004	FULL	= 040000
BIT6	= 000100	CSKIP2	003533	DOLBN	003061	FCTCK	004222	FWGOOD	003200
BIT7	= 000200	CSKIP3	003773	DONDLL	003451	FCTCKD	004454	FWRD	001445
BIT8	= 000400	CSKIP6	003743	DONE	= 000021	FCTCKE	004503	FWTDON	003236
BIT9	= 001000	CSKIP7	004000	DONE1	003206	FCTCLP	004302	F1	= 000000
BLKFND	003176	CURBN	001113	DONMSG	001327	FCTCL1	004305	F2	= 000003
BMAX	= 007775	CURGRP	001463	DPBN	003307	FCTCNT	001256	F3	= 000006
BOTTOM	003322	CURLBN	001115	DPREA	001334	FCTCPY	001244	F4	= 000011
BRBN	004034	CUROVL	001153	DSUB	001524	FCTEMT	= 000002	F5	= 000014
BREAK	= 000000	CURPBN	001110	DUPOVL	= 007774	FCTFLG	= 000025	F6	= 000017
BSTGS	= 002000	CURRBN	001106	DWRD	001450	FCTFMT	001240	F7	= 000022
BUFMSK	= 007777	CURTRK	001112	DXBN	003063	FCTNPD	001260	F8	= 000025
BUFPNT	001253	CURXBN	001115	DXCH	003500	FCTPTR	001255	F9	= 000030
BUF1	= 004535	CUTOF	001235	DXCHEC	003477	FCTRCT	003212	GCR	001016
BUF2	= 005152	CVT	= 000020	DXERR	003406	FCTREV	001311	GDBLK	= 005567
BUF3	= 005567	CVTERR	002750	DXFCPG	003407	FCTRLP	003064	GDECC	003046
BUF4	= 006204	CVTSK	002714	DXFCP1	003370	FCTSKP	003466	GDFCT	003260
BUF5	= 006621	CYL	= 000006	DXFORM	003114	FCTSK1	003460	GDONE	004337
BUF6	= 007275	CYLBN	= 000000	DXTRK	003052	FCTSLP	003644	GETUNT	004203
BUMER	003064	CYLMG	001316	EAGAIN	002636	FCTSP	003762	GOBAD	= 000020
CBUF	001444	CYLNUM	001125	ECC	= 000015	FCTSZ	= 000010	GOVER	004212
CDONE	004044	C512	= 000016	ECCCK	003027	FCTWRT	003047	GRP	= 000010
CEDC	002627	DADD	001506	ECCF	= 010000	FCWERR	003244	GRPCNT	001464
CHAR	001772	DADD1	001515	ECHO	= 000010	FEDAT	= 000012	GRPCYL	= 000002
CHRDNE	= 010000	DAT	= 000011	EDC	001451	FDLL	003272	GSKIP	004315
CLR	003513	DATA	= 000005	EIMAGE	001231	FERR	003376	GSKIP1	004232
CLEAR	002243	DATE	001301	EMAX	001225	FILLIT	003666	GSKIP2	004250
CLEDON	003174	DBBAD	001314	EMSG	001324	FINI	= 040000	GSKIP3	004267
CLELP	003106	DBD	= 000006	ENTRY	000714	FIXBLK	003466	GSR	001017
CLELP2	003076	DBN	= 000010	EORCT	003173	FIXFCT	004015	GST	001015
CLESKP	003144	DBNCYL	= 000022	ERCV	000002	FIXIT	004046	GSTATS	001662

RCFIX	003442	READ9	004354	SECTRK	001127	STPNIC	002013	TRK	=	000011
RCFXLP	004230	RECAL	002154	SEEK	002251	STRBN	-	000003	TRKCNT	001465
RCINDN=	000100	R-CIR =	040000	SEEKER	003435	STSC	=	000012	TRKCYL	001141
RCINER	003462	RECOV	001503	SEEK0	002253	STSKP	002007	TRKGRP=	000003	
RCINIT=	000040	RECTMP	001505	SEEK1	002262	STSK1	001702	TWO	003635	
RCINLP	003203	REDO	004134	SEEK2	002310	STWLK	001764	TWOB =	000006	
RCL	003760	RETRY	001502	SEEK3	002321	STXBN	-	000002	TWOC	001470
RCLP	003057	REVBUF=	006204	SEEK4	002302	ST.DB =	001000	TWRD	001447	
RCLP2	003206	REVCNT	001254	SEEK5	002307	ST.DBN	001340	UHASH	003357	
RCLP3	003452	REVECT=	000100	SEEK6	002301	ST.DF =	000020	UHKIP	003364	
RCLP4	003411	REVLN=	000004	SEEK7	002276	ST.DR =	000040	UHKIP1	003410	
RCLP6	003420	REVRBN	001151	SEND =	000004	ST.ERB=	000002	UID	=	000000
RCTBAD	001313	REVSEC=	000007	SER =	000005	ST.ERR=	000374	UNIT	000740	
RCTBUF=	006621	RFCT	004417	SERNUM	001305	ST.FD =	002000	UNSEC =	000175	
RCTCK	004510	RFTL	004216	SETOVL	003103	ST.IN =	000004	UN.ERI	000717	
RCTCKD	004736	RINC1	003542	SFTRPT	004334	ST.LBN	001335	UN.ERR	000715	
RCTCKE	004761	RLD	004207	SHORTO=	000000	ST.PS =	000002	UN.ERT	000716	
RCTCLP	004544	RLDONE	003335	SIP =	000012	ST.RBN	001330	UN.SEK	000720	
RCTCL1	004547	RLOOP	003150	SIXTN -	000017	ST.RU =	000001	UPDATE=	000022	
RCTCNT	001477	RLOOP1	003203	SKERR	003402	ST.SR =	000020	UPDPNT	001474	
RCTERR	003606	RNWHER	003563	SKIP1	003200	ST.WE -	000010	UREAD =	000013	
RCTFMT	001242	ROVER	003101	SKIP12	003365	ST.WP -	170000	UWRITE=	000014	
RCTINI	003047	ROVER1	003116	SKIP19	003161	ST.XBN	001337	VLD	=	000004
RCTLBN	001261	RPRIM =	000004	SKIP3	003254	SWAP	003255	VLD1 =	000010	
RCTNGD	004705	RPT	003223	SKIP4	003164	SWRD	001446	V1	=	000000
RCTRLP	004063	RPT1	004005	SKIP5	003202	TALIP1	002117	V2	=	000002
RCTSZ =	000014	RQUIT	003256	SKIP6	003310	TALK	002016	V3	=	000004
RCTTOT	001235	RRC	003715	SKIP7	003257	TALKDN	002060	V4	=	000005
RCTUPD	003047	RRERR	003611	SKPCNT	001233	TALKIP	002115	WLOOP	003315	
RCTWLP	003426	RRPL	003567	SLEEK	003210	TALKP	002076	WP	=	000001
RCTWRT	004056	RSER =	000000	SLEEK2	003225	TALKRT	002070	WRBLK	000721	
RCTWT	003421	RTCNT =	000012	SLOOP	003122	TATTN1	002147	WRCMD =	122400	
RCV	=	RTDON	003604	SND	004153	TBLK	001234	WRFLG	001222	
RCVMNT	002544	RTRY =	000001	SNDCNT	001472	TCLEAR	002103	WRITE =	000003	
RCVRDY=	000001	RTY -	100000	SNDMNT	002536	TEMP	000736	WRITE1	003310	
RCWERR	004244	RTYCNT	001473	SND1 =	000003	TEMP2	000733	WRITE2	003511	
RCXLP	003571	RTYDN =	000002	SRCK	001745	TERR	002143	WRITE3	004146	
RC.FRE=	000000	RUN	001023	ST	001030	THREB =	000011	WRITE4	003251	
RC.MUL =	100000	RWCMD =	013400	STACK	001215	TILOP	004046	WRITE5	003141	
RC.PRIV=	020000	RWGD	003546	STARIT	001232	TILOP1	004053	WRITE8	003301	
RC.SND=	030000	RWGOOD	004205	START	003047	TIMER	002656	WRITE9	003404	
RC.LNU-	040000	RWRDY =	100000	START2	003212	TIMLOP	004026	WRIT10	004147	
RDBLK	000721	RWTDON	004243	START3	003063	TIMLP	002661	WRIT12	003275	
RDBUF -	004535	RW.BUF=	000001	STATFR	002710	TIMVAL=	100000	WRIT13	003632	
RDCMD -	100000	RW.CMD=	000004	STATRE	002674	TKIP1	003073	XAGAIN	003620	
RDLEN -	000005	RW.DAT=	000000	STATRT	002707	TKIP10	003163	XBBAD	001315	
RDONE	003233	RW.DUM=	000005	STATST	001664	TKIP11	003230	XBD =	000010	
RDONE1	003237	RW.EDC=	000400	STATUS=	000007	TKIP2	003074	XBNCYL=	000021	
READ =	000002	RW.ER1=	000000	STATVL	002671	TKIP3	003146	XBNFND	003125	
READ1	003573	RW.ER2=	000401	STCKSV	001216	TKIP4	003156	XBNT	003171	
READ10	004632	RW.HI -	000003	STCLR -	170377	TKIP5	003236	XBNSC	001137	
READ11	003141	RW.LOW=	000002	STCYL =	000001	TKIP6	003302	XDONE	003416	
READ2	003722	RW.STA=	000000	STDBN =	000003	TKIP7	003133	XEORCT	003675	
READ3	003535	SCR	001052	STDIAG	001757	TKIP8	003254	XFLIP	003637	
READ4	003666	SECCNT	001454	STFORM	001752	TKIP9	003264	XNGBLK	003615	
READ7	003136	SECNDY	003302	STLBN	000002	TMPTRY	001504	XNOINC	003645	
READ8	004013	SECTCY	001131	STG	001251	TOTRCT	001475	XPBN	003341	

CKR	67-85	67-87#													
CLEAR	14-22	15-128#	34-91	35-182	40-58	42-260									
CLEDON	66-50	66-55#													
CLLPL	66-24#	66-46													
CLLPL2	66-20#	66-49													
CLESKP	66-27	66-43#	66-54												
CLEWRT	66-51	66-57	67-4#												
CLHERE	67-7#	67-63													
CLSKP2	66-42	66-51#													
CLSKP3	66-14	66-56	66-58#												
CLSKP4	66-40	66-57#													
CMDBUF	7-358#	35-69	36-7	42-21	43-7										
CMPCAT	7-57#	35-89	42-41	42-102											
CNT	9-165#	20-8													
CNTCYL	10-35#	34-35*	34-53*	34-107*	34-126*	40-15*	40-17*	40-18*	40-106	40-127	40-129				
CONBLK	10-6#	21-5	21-21	50-13	53-10	55-13	60-9	61-45	63-13	67-19	67-71	67-88	68-8	68-65	
	69-10	70-21	71-20	72-15											
CONINT	26-25#	33-33													
COUNT	10-52#	32-7*	32-26*	32-27*	32-30*	32-80*	35-7*	37-36*	37-55	39-7*	50-8*	50-59*	50-132*	50-136*	
	50-139#	61-43*	61-116*	61-129*	61-132*	61-133*	66-16*	66-38*	66-41	66-52*	66-55*	67-6	67-61*	67-62*	
	71-14*	71-90*	71-94*	71-98											
CR	9-48	9-77#	23-6	27-6	28-4	29-27	29-46	29-61	31-4	50-142					
CR.ACC	9-52#	15-121													
CR.CLR	9-53#	15-129													
CR.DIS	9-50#	15-172													
CR.ERV	9-56#	19-49													
CR.GCR	9-48#	14-64													
CR.GSR	9-49#	14-66													
CR.GST	9-47#	14-14	32-9												
CR.ONL	9-57#	15-180													
CR.RCL	9-55#	15-80													
CR.RUN	9-51#	15-87													
CR.SEK	9-54#	15-139													
CS	67-26	67-71#	69-22	69-82	70-34	71-28									
CSKIP	35-57	35-62#													
CSKIP1	35-66#	35-108													
CSKIP2	35-61	35-65#													
CSKIP3	35-159	35-162#													
CSKIP6	35-143	35-147#													
CSKIP7	35-114	35-118	35-164#												
CURBN	9-96#	34-56*	34-58*	34-100*	34-101*	37-24	37-40	37-46	37-51*	37-51*	38-15	38-36	40-90*	40-91*	
	44-21	44-49	44-54	44-76	44-83	44-89	44-94*	44-94*	46-12*	46-14*	49-5	49-6	49-23	49-24	
	50-10*	50-12*	50-45	50-75	50-76	50-89	50-91	50-120	50-134*	50-135*	59-50	59-54	59-76	59-78	
	59-115	59-117*	59-119	59-171	59-179	59-181	61-39*	61-41*	61-56	61-67	61-69	61-98	61-127*	61-128*	
	70-17*	70-19*	70-31	70-32	70-42	70-44	70-84	70-97*	70-98*	71-10*	71-12*	71-27	71-36	71-38	
	71-81	71-92*	71-93*	73-93*	73-94*										
CURGRP	10-38#	34-62*	34-63*	34-66	34-104*	37-67*	37-80	40-29*	40-30*	40-33	40-103*	42-261	44-188*	44-201	
	51-121	59-225	61-143												
CURLBN	9-98#	61-40*	61-42*	61-126*	61-126*	61-127	61-128	71-11*	71-13*	71-91*	71-91*	71-92	71-93	71-93	
CUROVL	9-122#	17-10	17-29*	34-10*	37-11*	40-8*	44-6*	46-9*	50-7*	51-11*	55-7*	59-8*	61-6*	63-7*	
	64-11*	65-11*	66-9*	72-7*											
CURPBN	9-93#	37-30*	37-34*	37-54*	37-54*	38-19*	38-20*	38-40*	38-41*	44-13*	44-14*	44-29*	44-33*	44-103*	
	44-103*	44-138	44-171	59-41*	59-42*	59-43*	59-44	73-6	73-8*	73-14	73-17	73-23	73-30*	73-32	
	73-37*	73-44	73-58	73-67	73-74*	73-78	73-92*	73-93	73-94						
CURRBN	9-91#	40-99*	40-100*	44-134	44-151	44-158	44-167*	44-167*	46-17*	46-18*	66-17*	66-18*	66-34	66-36	
	66-43*	66-43*													
CURTRK	9-95#	21-12*	34-75*	34-81	34-96*	35-131	35-172	36-29	40-42*	40-48	40-81*	42-85	42-250	43-29	

XFCRT	54-15	54-13#				
XFLIP	54-11	54-18#				
XNGBLK	54-6#	54-10				
XNOINC	54-21	54-23#				
XPBA	37-21	38-31#				
XPERR	54-44	54-52#				
XFNGRD	54-31#	54-47				
XPRET	54-17	54-50#				
XSKIP1	40-10	40-13#				
XSKIP2	40-45#	40-60				
XSKIP3	40-43#	40-102				
XSKIP4	40-65	40-70#				
XSKIP5	40-72	40-78	40-81#			
XSKIP6	40-75	40-79#				
XSLEEK	40-25#	40-128	40-130			
XSLEK2	40-31#	40-105				
XVZ	59-112	59-114	59-140	59-167	59-178	59-187 59-192#
XYZ1	59-47	59-193#				
YES	70-73	70-81#				

