

**940 OLDS DIAGOSTIC
SYSTEM**

UNIT 19 F CHANNEL DISC

SDS 870041-51A

May 1969



* UNIT 19 = F CHANNEL DISC
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* THIS UNIT TESTS THE DISC ON CHANNEL F. THE FUNCTIONS INCLUDED
 * IN THIS UNIT ARE:

- * FUNCTION 1 = DACC DIAGNOSTIC
- * FUNCTION 2 = CONTROLLER DIAGNOSTIC WITHOUT DATA TRANSFER
- * FUNCTION 3 = CONTROLLER DIAGNOSTIC WITH DATA TRANSFER
- * FUNCTION 4 = HEADER VERIFICATION AND ADDRESSING TEST
- * FUNCTION 5 = DATA PRODUCTS 5045 DISC FILE DIAGNOSTIC
- * FUNCTION 10 = EXERCISER
- * FUNCTION 18 = WRITE PROTECT SWITCH TEST
- * FUNCTION 19 = SINGLE INCREMENT VS. TIME PLOTTER
- * FUNCTION 20 = MULTIPLE INCREMENT VS. TIME PLOTTER
- * FUNCTION 21 = WRITE HEADERS
- * FUNCTION 22 = HEADER WRITING TEST
- * FUNCTION 23 = SECTOR DUMP

* THE THREE UNIT PARAMETERS ARE AS FOLLOWS:

- * FAW FUNCTION ACTIVATION WORD, ONE BITS CONTAINED IN THIS WORD CORRESPOND TO FUNCTIONS THAT ARE TO BE ACTIVATED IN THE AUTOMATIC MODE. LEGAL FUNCTIONS ARE FUNCTIONS 1, 2, 3, 4, 5, AND 10. FUNCTIONS 18 THROUGH 23 DO NOT NEED TO BE SELECTED, SINCE THEY ARE SPECIAL AND ARE NOT ACTIVATED IN THE AUTOMATIC MODE.
- * D00T17 ACTIVATION BITS FOR ARMS 0 THROUGH 17 (OCTAL). BITS IN THE MOST SIGNIFICANT PORTION OF THIS WORD PERMIT THE CORRESPONDING DISCS TO BE USED. THE ABSENCE OF A BIT PROHIBITS A DISC FROM BEING USED. I.E. IF DISC 10 (OCTAL) IS NOT TO BE USED, THE CORRESPONDING BIT (BIT 8) WOULD BE A ZERO.

- * D20T37 ACTIVATION BITS FOR ARMS 20 THROUGH 37 (OCTAL). THIS VARIABLE COMBINES WITH THE VARIABLE D00T17 TO PROVIDE SELECTIVE CONTROL FOR ALL DISCS. THESE VARIABLES HAVE PRIORITY OVER ALL FUNCTION VARIABLES, PERMITTING DISCS TO BE SKIPPED WITHIN A LARGE OPERATING RANGE OF DISCS. I.E. FOR A 3P DISC SYSTEM, D00T17 = 73777400, D20T37 = 37777400, HDISC = 777777, AND H0DISC = 0 SHOULD ALLOW ALL DISCS TO BE USED EXCEPT FOR DISCS 3 AND 20 (OCTAL). THESE VARIABLES ARE PRESET WHEN THE UNIT IS LOADED ACCORDING TO THE SYSTEM VARIABLE 'DSCSIZ'. THE SIGNIFICANT BITS IN 'DSCSIZ' ARE BITS 3 THROUGH 5.

* THERE ARE A FEW CONVENTIONS THAT MUST BE FOLLOWED WHEN USING THIS UNIT. THEY ARE AS FOLLOWS:

- * CHANGING UNIT VARIABLES = NORMALLY, CHANGING THE UNIT VARIABLES REQUIRES THAT A UNIT TRANSFER (=U 19T) BE EXECUTED. HOWEVER, IN MOST CASES, CHANGING 'D00T17' AND 'D20T37' DOES NOT REQUIRE RESTARTING THE UNIT, AND A CONTINUE (=T) IS SUFFICIENT. IT SHOULD BE NOTED, HOWEVER, IF THE FILE IS KEYED IN THE EXERCISER WITH A DISC DEACTIVATED, AN ERROR WILL RESULT IF A READ ATTEMPT IS MADE ON THAT DISC (THIS WILL BE DISCUSSED UNDER FUNCTION 10).
- * CHANGING FUNCTION VARIABLES = NORMALLY WHEN CHANGING FUNCTION VARIABLES, A FUNCTION TRANSFER (=F XXT) FOLLOWED BY AN IDENTIFICATION MESSAGE IS PRINTED ON THE ERROR DEVICE. SPECIAL FUNCTIONS ARE THE EXCEPTIONS TO THIS RULE.
- * SPECIAL FUNCTIONS = FUNCTIONS 18 THROUGH 23 ARE SPECIAL FUNCTIONS AND ARE NOT NORMALLY ACCESSED. IF THE OPERATOR WISHES TO USE ONE OF THEM, HE MUST EXECUTE A FUNCTION TRANSFER TO THAT FUNCTION. WHEN THE FUNCTION IS ENTERED, AN IDENTIFICATION MESSAGE IS PRINTED ON THE ERROR DEVICE AND CONTROL RETURNED TO THE KEYBOARD. AT THIS TIME, THE OPERATOR SHOULD SET THE FUNCTION VARIABLES TO HIS RE.

• REQUIREMENTS AND EXECUTE A CONTINUE (C). WHEN THE OPERATION IS COMPLETED, THE ID MESSAGE WILL BE OUTPUT AND CONTROL RETURNED TO THE KEYBOARD. A NEW FUNCTION WILL NOT BE ENTERED WITHOUT OPERATOR INTERVENTION.

• AUTOMATIC OPERATION • IN ORDER TO INCREASE THE EFFICIENCY OF THE SYSTEM WHEN RUNNING IN THE AUTOMATIC MODE, ALL DIAGNOSTICS WILL BE RUN AND THE DISC WILL BE KEYPED IN THE FIRST PASS. WHEN THE DISC HAS BEEN KEYPED, A FLAG IS SET IN CONTROL (IT IS NOT A VARIABLE), AND THE UNIT WILL BE DISMISSED. WHEN THE UNIT HAS BEEN RESTARTED, ONLY THOSE DIAGNOSTICS WHICH DO NOT DESTROY THE INTEGRITY OF THE DISC WILL BE RUN (FUNCTIONS 1, 2, AND 5), AS WELL AS THE EXERCISER, REGARDLESS OF THE FUNCTION ACTIVATION WORD.

• IF THE DISC IS SOFTWARE WRITE-PROTECTED, FUNCTIONS WHICH DESTROY THE INTEGRITY OF THE DISC WILL BE SKIPPED. THESE ARE FUNCTIONS 3 AND 4. IN ADDITION, THE EXERCISER IS FORCED TO A SPECIAL RUNNING MODE (SEE FUNCTION 10 DESCRIPTION).

• FUNCTION 1 • DACC DIAGNOSTIC
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• THIS FUNCTION TESTS SEVERAL BASIC DACC OPERATIONS WITHOUT THE USE OF AN EXTERNAL DEVICE. TESTED ARE THE INTERLACE REGISTERS, INTERRUPTS, AND SEVERAL SKIPS. IF AN ERROR IS DETECTED, IT IS REPORTED AS SOURCE LOCATION(S) AND LOGIC PAGE(S). AT ERROR HALTS, THE A REGISTER CONTAINS THE INCORRECT DATA, THE B REGISTER THE EXPECTED DATA, AND THE X REGISTER THE ADDRESS OF THE CURRENT OBJECT TEST.

• THERE ARE NO FUNCTION VARIABLES.

• FUNCTION 2 • CONTROLLER DIAGNOSTIC WITHOUT DATA TRANSFER
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• THIS FUNCTION TESTS AS MANY OPERATIONS OF THE DISC FILE CONTROLLER AS POSSIBLE WITHOUT INVOLVING DATA TRANSFER. THE ADDRESS REGISTER, SKIPS (LEGAL AND ILLEGAL), HEADER VERIFICATION, AND POSITION VERIFICATION ARE CHECKED IN THIS FUNCTION.

• BECAUSE OF THE COMPLEXITY OF THE DISC FILE CONTROLLER, AN ATTEMPT IS MADE TO GIVE AS MUCH INFORMATION AS POSSIBLE WHEN AN ERROR OCCURS. INFORMATION DISPLAYED USUALLY INCLUDES A BRIEF INDICATION OF THE FAILURE, LOGIC EQUATIONS THAT ARE DIRECTLY INVOLVED, AND SOURCE MODULES AND LOGIC PAGES.

• THE FOLLOWING ASSUMPTIONS ARE MADE:
• WRITE HEADER SWITCH IS OFF
• WRITE PROTECT SWITCHES ARE ALL UP
• ERROR/STOP SWITCH IS IN CONTINUE
• FILE IS ON-LINE
• HEADERS ARE GOOD.

• THE OBJECT TESTS WHICH USE DISCS WHICH ARE DELETED FROM '00017' AND '02037' WILL BE SKIPPED.

• THERE ARE NO FUNCTION VARIABLES.

• FUNCTION 3 • CONTROLLER DIAGNOSTIC WITH DATA TRANSFER
•-----

• THIS FUNCTION TESTS MANY DISC FILE CONTROLLER OPERATIONS WHILE TRANSFERRING DATA. PARITY GENERATION AND CHECKING, ADDRESS REGISTER INCREMENTING, TERMINATION OF VARIOUS STATES, AND CHECKING OF MANY GATES ARE INCLUDED IN THIS FUNCTION. ERROR REPORTING IS THE SAME AS IN FUNCTION 2 AND THE SAME ASSUMPTIONS ARE MADE.

• OBJECT TESTS USING DISCS DELETED FROM '00017' AND

• 1D20T371 WILL BE SKIPPED. IN ADDITION, IF THE DISC IS
• SOFTWARE WRITE-PROTECTED OR HAS BEEN PREVIOUSLY KEYED,
• THIS FUNCTION WILL BE SKIPPED.

• THERE ARE NO FUNCTION VARIABLES.

• FUNCTION 4 - HEADER VERIFICATION AND ADDRESSING TEST
• -----

• THIS FUNCTION VERIFIES THE ABILITY TO ADDRESS THE ENTIRE
• DISC FILE AND ALSO VERIFIES ALL HEADERS. DURING THE FIRST
• PASS, THE FIRST WORD OF EACH SECTOR IS TAGGED WITH ITS
• 8XN ADDRESS, AND ON THE SECOND PASS, THE FIRST WORD OF
• THE SECTOR IS CHECKED. IF THE DATA DOES NOT COMPARE WITH
• THE ADDRESS, AN ERROR MESSAGE WILL BE PRINTED. IN AD-
• DITION, IF AN I/O ERROR IS DETECTED, AN APPROPRIATE ERROR
• MESSAGE WILL BE PRINTED. NO ATTEMPT IS MADE TO DIAGNOSE
• THE ERROR.

• DISCS WHICH HAVE BEEN DELETED FROM 1D00T171 AND 1D20T371
• WILL BE SKIPPED. IF THE DISC HAS BEEN PREVIOUSLY KEYED
• OR IS SOFTWARE WRITE-PROTECTED, THIS FUNCTION WILL BE
• SKIPPED.

• THERE ARE NO FUNCTION VARIABLES.

• FUNCTION 5 - DATA PRODUCTS 5045 DISC FILE DIAGNOSTIC
• -----

• THIS FUNCTION CONTAINS OBJECT TESTS WHICH ARE DESIGNED
• TO LOCATE SOME OF THE PROBLEMS IN THE DATA PRODUCTS
• 5045 DISC FILE, SOME OF THE POSITION DECODER (PDBA)
• LOGIC IS TESTED, AS WELL AS SOME OF THE TIMING AND
• THE CLFAR LOGIC.

• OBJECT TESTS USING DISCS DELETED FROM 1D00T171 AND

• 1D20T371 WILL BE SKIPPED.

• THERE ARE NO FUNCTION VARIABLES.

• FUNCTION 10 - EXERCISER
• -----

• THIS FUNCTION EXERCISES THE DISC IN ONE OF SEVERAL DIF-
• FERENT MODES, AUTOMATICALLY OR UNDER OPERATOR CONTROL.
• THE EIGHT FUNCTION VARIABLES ARE AS FOLLOWS:

• 8PMODE CONTROL WORD FOR MODE OF OPERATION
• LBCORE STARTING CORE ADDRESS. THIS MUST BE GREATER THAN
• 34000

• HICORE ENDING CORE ADDRESS. FOR A 925/930, MAXIMUM CORE
• ADDRESS IS 37777. FOR A 940, IT IS 177777.

• LDDISC STARTING DISC ADDRESS

• HDISC ENDING DISC ADDRESS. MAXIMUM DISC IS 777777 FOR
• A 32 DISC SYSTEM.

• LENGTH CONTROL FOR TRANSMISSION LENGTH. IF 1LENGTH1 IS
• NEGATIVE, RANDOM LENGTH RECORDS WILL BE USED. IF
• 1LENGTH1 IS POSITIVE, IT IS THE FIXED RECORD
• LENGTH TO BE USED, IN SECTORS. FOR A 940, THE
• MAXIMUM FIXED LENGTH IS 340 SECTORS (14K). IF
• SET TO 1COMPARE MODE1, THE MAXIMUM FIXED LENGTH
• IS 160 SECTORS (7K). IN ANY EVENT, THE LENGTH
• CANNOT BE GREATER THAN THE DIFFERENCE OF 1HICORE1
• AND 1LCORE1.

• PATTERN THE DATA TO BE TRANSMITTED IF IN THE FIXED DATA MODE.
• COUNTERS BITS 9 THROUGH 12, THE NUMBER OF RETRY ATTEMPTS TO
• BE MADE IF AN I/O ERROR IS DETECTED, BITS 18
• THROUGH 23, THE NUMBER OF DATA ERRORS TO BE DIS-
• PLAYED AFTER THE FIRST ERROR DETECTED IN A GIVEN
• SECTOR.

• THE BITS IN THE VARIABLE 18PMODE1 HAVE THE FOLLOWING

- * SIGNIFICANCE:
- * 0 • FIXED DISC ADDRESSING (USES ADDRESS IN LBDISC)
- * 1 • SEQUENTIAL DISC ADDRESSING
- * 2 • RANDOM DISC ADDRESSING
- * 3 • FIXED CORE ADDRESSING (USES ADDRESS IN LCCORE)
- * 4 • SEQUENTIAL CORE ADDRESSING
- * 5 • RANDOM CORE ADDRESSING
- * 6 • FIXED DATA (USES WORD IN PATTERN). ADDRESS ADDED
- * TO LAST WORD IN SECTOR)
- * 7 • SEQUENTIAL DATA (DISC ADDRESS IN MOST SIG. 18 BITS)
- * 8 • RANDOM DATA
- * 9 • N/A
- * 10 • COMPUTE WHILE TRANSFERRING DATA
- * 11 • USE INTERRUPTS
- * 12 • BUFFER 1 OPERATION FIXED (READ OR WRITE)
- * 13 • WRITE BUFFER 1
- * 14 • READ BUFFER 1
- * 15 • BUFFER 2 OPERATION FIXED (READ OR WRITE)
- * 16 • WRITE BUFFER 2
- * 17 • READ BUFFER 2
- * 18 • N/A
- * 19 • COMPARE MODE
- * 20 • KEY MODE
- * 21 • EXECUTE DUMMY SFEK BEFORE EACH DISC ACCESS
- * 22 • TIME ALL SEEKS
- * 23 • TIME ALL SEARCHES

IF BIT 23 IS SET, THE AMOUNT OF TIME TAKEN TO FIND THE SECTOR AFTER THE TRACK HAS BEEN VERIFIED IS MEASURED AND, IF GREATER THAN 52 MILLISEC, AN ERROR MESSAGE WILL BE PRINTED. THE ERROR MESSAGE WILL BE 'HEADER' AND A DISC ADDRESS, INDICATING THE SECTOR WHOSE HEADER WAS MISSED. THERE IS NO ERROR HALT ASSOCIATED WITH THIS ERROR. OPERATION WILL CONTINUE WITH BPT 2 RESET.

IN THE COMPARE MODE, OPERATION IS CONTROLLED BY THE STATUS

IF BUFFER 1, IF BUFFER 1 IS FIXED READ, A READ-READ-COMPARE-WRITE-READ-COMPARE OPERATION WILL RESULT. THIS OPERATION WILL NOT DESTROY THE INTEGRITY OF THE DISC. IF BUFFER 1 IS FIXED WRITE, A WRITE-READ-COMPARE OPERATION WILL RESULT TO ALLOW DATA TO BE CHECKED AS IT IS BEING WRITTEN.

IN THE KEY MODE, THE DISC WILL BE KEYED WITH THE SELECTED DATA AND THE UNIT DISMISSED. THE UNIT WILL NOT BE DISMISSED, HOWEVER, UNTIL THE KEYING IS COMPLETE.

DUE TO THE MANNER IN WHICH THE EXERCISER IS CONTROLLED, THERE ARE SEVERAL PARAMETER COMBINATIONS WHICH ARE NOT ALLOWED AND WILL BE FLAGGED AS ERRORS. THEY ARE:

- * DISC ADDRESSING NOT SPECIFIED
- * CORE ADDRESSING NOT SPECIFIED
- * DATA NOT SPECIFIED
- * FIXED CORE, FAST MODE
- * BUFFER 1 FIXED OPERATION, WRITE AND READ
- * BUFFER 2 FIXED OPERATION, WRITE AND READ
- * NO BUFFER SELECTED
- * COMPARE MODE, BUFFER 1 OPERATION NOT FIXED
- * COMPARE MODE, BUFFER 2 OPERATION NOT FIXED
- * COMPARE MODE, BUFFER 2 NOT READ
- * COMPARE MODE, LENGTH RANDOM
- * FIXED LENGTH TOO LARGE
- * FIXED LENGTH GREATER THAN 14K (3408 SECTORS)
- * COMPARE MODE, LENGTH GREATER THAN 7K (1608 SECTORS)
- * FIXED LENGTH = 0
- * LCCORE LESS THAN 340008
- * HICORE GREATER THAN 1777778
- * HICORE GREATER THAN 377778, NOT 940
- * HICORE MINUS LCCORE LESS THAN 640 (1 SECTOR)
- * HDISC LESS THAN LBDISC
- * HDISC GREATER THAN 777777
- * KEY MODE, DISC ADDRESSING NOT SEQUENTIAL, B=1 OR B=2 READ

* IF AN I/O ERROR IS DETECTED THE INFORMATION DISPLAYED
 * INCLUDES THE FOLLOWING:
 *
 * IOSTATUS AN INDICATION OF THE STATE AT THE TIME OF FAILURE
 * ERR FLAG A FLAG USED WITH IOSTATUS TO INDICATE WHICH
 * ERROR WAS DETECTED
 * TIS=TSB TIME IS AND TIME SHOULD BE FOR POSITIONING TIME
 * ERRORS
 * SRT DISC STARTING DISC ADDRESS
 * END DISC ENDING (PINNED) DISC ADDRESS
 * SRT CORE STARTING CORE ADDRESS
 * END CORE ENDING (PINNED) CORE ADDRESS
 * BLK LGTH TRANSMIT BLOCK LENGTH
 *
 * BITS IN THE WORD IOSTATUS AND ERR FLAG HAVE THE
 * FOLLOWING SIGNIFICANCE:
 *
 * 0 = FILE NOT ON LINE
 * 1 = CONTROLLER NOT READY (500 MS TIMEOUT)
 * 2 = CONTROLLER ERROR SET
 * 3 = TRACK NOT VERIFIED
 * 4 = DISC WRITE PROTECTED (DURING WRITE ATTEMPT)
 * 5 = WRITE HEADER SWITCH ON
 * 6 = N/A
 * 7 = SEEK TIME ERROR
 * 8 = N/A
 * 9 = SEARCH TIME ERROR
 * 10 = N/A
 * 11 = N/A
 * 12 = CHANNEL ERROR SET
 * 13 = CHANNEL ACTIVE (500 MS TIMEOUT)
 * 14 = WORD COUNT NOT ZERO
 * 15 = I1 NOT RECEIVED
 * 16 = I2 NOT RECEIVED
 * 17 = N/A

* 18=20 = CURRENT RETRY NUMBER
 * 21=23 = CURRENT PHASE
 * 0 = INACTIVE
 * 1 = DISC SEEK
 * 2 = DISC SEEK (RETRY)
 * 3 = WRITE BUFFER 1
 * 4 = READ BUFFER 1
 * 5 = WRITE BUFFER 2
 * 6 = READ BUFFER 2
 *
 * IF A DATA ERROR IS DETECTED, THE FOLLOWING INFORMATION IS
 * DISPLAYED:
 *
 * WORDIS BAD DATA
 * WORDSB GOOD DATA
 * DISC ADD DISC ADDRESS OF BAD DATA
 * CORE ADD CORE ADDRESS OF BAD DATA
 * SRTDISC STARTING DISC ADDRESS
 * LENGTH TRANSMIT BLOCK LENGTH
 * WORD NB WORD NUMBER WITHIN THE SECTOR
 * ERROR NB ERROR NUMBER WITHIN THE SECTOR
 *
 * IF IN THE COMPARE MODE, WORDIS IS THE BUFFER 2 WORD
 * AND WORDSB IS THE BUFFER 1 WORD.
 *
 * WHEN THE FUNCTION IS ENTERED, IF THE DISC HAS NOT BEEN
 * KEYED, THE KEY MODE IS SET UP (OPMODE = 22126610). IF THE
 * DISC HAS BEEN KEYED, THE AUTOMATIC RUNNING MODE IS SET UP
 * (OPMODE = 11133307). IF THE DISC IS SOFTWARE WRITE=
 * PROTECTED, THE R=R=C=W=R=C MODE IS SET UP WHICH WILL NOT
 * DESTROY THE INTEGRITY OF THE DISC (OPMODE = 11135527).
 *
 * IN ORDER TO RESET THE SEQUENTIAL DISC POINTER, TYPE
 * =0 15236T. THIS POINTER IS NOT RESET BY TYPING =F 10T. THE
 * POINTER WILL BE RESET AND CONTROL RETURNED TO THE KEYBOARD.
 * IF =T IS TYPED, A FUNCTION 10 TRANSFER WILL BE EXECUTED.

ALL WRITE OPERATIONS ARE DONE IN THE SECTOR MODE, AND ALL READ OPERATIONS ARE IN THE CHAIN MODE.

FUNCTION 18 - WRITE PROTECT SWITCH TEST

THIS SPECIAL FUNCTION TESTS THE STATUS OF THE WRITE PROTECT SWITCHES BY POSITIONING THE ARMS TO POSITION 0 AND THEN TESTING THE SWITCHES. IF A DISC IS FOUND TO BE WRITE-PROTECTED, THE MESSAGE 'WRITE PROTECTED - DISC XX' WILL BE PRINTED ON THE ERROR DEVICE.

THERE ARE TWO FUNCTION VARIABLES, START AND END. THESE ARE THE STARTING AND ENDING ARM NUMBERS RESPECTIVELY, WHERE THE NUMBERS RANGE FROM 0 TO 37 OCTAL. THE FUNCTION WILL CONTINUE TO RUN UNTIL BREAKPOINT 4 IS TOGGLED.

DISCS DELETED FROM THE VARIABLES 'D00T17' AND 'D20T17' WILL BE SKIPPED.

FUNCTION 19 - SINGLE INCREMENT VS. TIME PLOTTER

THIS SPECIAL FUNCTION TIMES THE ARM MOVEMENTS FROM POSITION 0 TO POSITION 1 TO POSITION 2 ETC. ENDING AT POSITION 63. AT THIS POINT, THE MOTION IS REVERSED AND THE TIME IS MEASURED FROM POSITION 63 TO POSITION 62 TO POSITION 61 ETC. UNTIL POSITION 0 IS REACHED. THE TIMES FOR ALL MOVEMENTS ARE THEN ENTERED INTO A GRAPH WHICH IS OUTPUT BY THE ERROR DEVICE. THE SYMBOLS USED ARE:

PLUS SIGN - FORWARD DIRECTION TIMES
MINUS SIGN - REVERSE DIRECTION TIMES
DELTA SIGN - EQUAL FORWARD AND REVERSE TIMES

DISCS WILL BE SEQUENTIALLY TESTED STARTING AT 'START' AND ENDING WITH 'END'. THE TWO FUNCTION VARIABLES, THESE VARIABLES RANGE FROM 0 TO 37 OCTAL.

IF A DISC DOES NOT COME READY WITHIN 500 MILLISEC, AN ERROR MESSAGE IS OUTPUT AND THE TEST ABORTED.

THE GRAPH IS SCALED AS FOLLOWS:
HORIZONTAL SCALE - ENDING ARM POSITION
VERTICAL SCALE - POSITIONING TIME IN MILLISEC.

TYPICAL RANGE IN TIMES IS FROM 140 MS TO ABOUT 200 MS. THERE ARE NO EXISTING SPECIFICATIONS TO INDICATE JUST WHAT ARE GOOD AND BAD TIMES, HOWEVER, IN MANY CASES, A PROBLEM HAS BEEN INDICATED BY IRREGULARITIES IN THE GRAPHS. FOR EXAMPLE, A DISC FILE THAT IS ROTATING TOO SLOWLY, AND A DISC FILE WITH TIMING LOGIC SET INCORRECTLY BOTH HAD GRAPHS WHOSE MINIMUM POSITIONING TIMES WERE 5 TO 10 MILLISEC TOO LONG (EFFECTIVELY DISPLACING THE GRAPH). OTHER PROBLEMS SUCH AS STICKY ARMS WILL RESULT IN HIGH POSITIONING TIMES. IN SEVERAL CASES, COMPARING THE GRAPH OF A SUSPECTED BAD ARM, WITH THAT OF A GOOD ARM HAS SHOWN UP PROBLEMS.

FUNCTION 20 - MULTIPLE INCREMENT VS. TIME PLOTTER

THIS SPECIAL FUNCTION TIMES ALL POSSIBLE COMBINATIONS OF 1, 2, 3, ... 64 POSITIONS MOVED AND RECORDS THE MAXIMUM AND MINIMUM TIMES FOR EACH INCREMENT VALUE ON A GRAPH. DISCS ARE TESTED SEQUENTIALLY FROM 'START' TO 'END', THE TWO FUNCTION VARIABLES. THESE VARIABLES RANGE FROM 0 TO 37 OCTAL. TIMING FOR EACH ARM IS APPROXIMATELY 18 MINUTES PER ARM WHEN THE GRAPH IS OUTPUT TO THE LINE PRINTER.

THE GRAPH IS SCALED AS FOLLOWS:

* HORIZONTAL SCALE = NUMBER OF POSITIONS MOVED
* VERTICLE SCALE = MAX AND MIN POSITIONING TIMES
* IN MILLISEC.
*
* TYPICAL POSITIONING TIMES RANGE FROM 140 TO 350 MILLISEC,
* DEPENDING UPON THE AMOUNT OF POSITIONS MOVED.
*
* IF THE DISC DOES NOT COME READY WITHIN 500 MILLISEC, AN
* ERROR MESSAGE IS OUTPUT AND THE DISC IS ABORTED.
*
* FUNCTION 21 = WRITE HEADER
*-----
* THIS SPECIAL FUNCTION WILL WRITE THE HEADERS ON SEQUENTIAL
* ADDRESSES ACCORDING TO THE VARIABLES (START) AND (END).
* THESE VARIABLES ARE IN THE FORM OF DISC PBT WORDS. (START)
* SHOULD HAVE AN ADDRESS STARTING AT SECTOR 0, HEAD PAIR 0.
* I.E. 777600 IS DISC 37, TRACK 77, HEAD PAIR 0, SECTOR 0.
*
* FUNCTION 22 = WRITE HEADER TEST
*-----
* THE PURPOSE OF THIS FUNCTION IS TO PROVIDE THE OPERATOR
* WITH A TOOL FOR USE IN LOCATING PROBLEMS ENCOUNTERED IN
* HEADER WRITING. NO ATTEMPT IS MADE TO DIAGNOSE ERRORS,
* JUST TO PROVIDE A PROGRAM FOR USE WHILE SCOPING.
*
* THE FUNCTION VARIABLES ARE (START) AND (END), WHICH ARE
* THE STARTING AND ENDING DISC ADDRESSES IN THE FORM OF
* DISC PBT WORDS. THE SAME VARIABLES WILL BE USED UNTIL
* BREAKPOINT 1 IS RESET, AT WHICH POINT THE CONTROL WILL
* REVERT TO THE KEYBOARD. THE SECTOR COUNT MUST RANGE FROM
* 1 TO 128.
*
* FUNCTION 23 = SECTOR DUMP
*-----

* THE PURPOSE OF THIS SPECIAL FUNCTION IS TO PROVIDE THE
* OPERATOR WITH A MEANS OF DUMPING ONE SECTOR ON THE DISC
* ON THE ERROR DEVICE. WHEN COMPLETED, THE CONTROL WILL BE
* RETURNED TO THE KEYBOARD.
*
* THE ONLY VARIABLE IS (SECTOR), WHICH IS THE DISC ADDRESS
* TO BE DUMPED.
*

DISCF TAP=3.0 04/25 20100 PAGE 15

```
00010 OCTAL
*
* EQU'S
*
0 01 0000 ONE 0PD 0100000*1
0 02 0000 TWO 0PD 0200000*1
0 03 0000 THREE 0PD 0300000*1
0 04 0000 FOUR 0PD 0400000*1
0 05 0000 FIVE 0PD 0500000*1
0 06 0000 SIX 0PD 0600000*1
0 07 0000 SEVEN 0PD 0700000*1
0 10 0000 EIGHT 0PD 01000000*1

*
0000242 INT31 EQU 242
0000243 I31 EQU 243
0000246 INT33 EQU 246
0000247 I33 EQU 247
0000310 INT64 EQU 310
0000311 I64 EQU 311
0000312 INT65 EQU 312
0000313 I65 EQU 313
0000314 INT66 EQU 314
0000315 I66 EQU 315
0000316 INT67 EQU 316
0000317 I67 EQU 317
0000332 FLAGS EQU 332
0000401 STATUS EQU 401
0000404 DSCSIZ EQU 404
0000405 SYSIZE EQU 405
0000406 SEED EQU 406
0000414 FRRORS EQU 414
0000415 RL1 EQU 415
0000416 RL2 EQU 416
0000420 UNIT EQU 420
0000424 FUNCTN EQU 424
0000430 SUBJECT EQU 430
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DISCF TAP=3.0 04/25 20100 PAGE 16

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0000434 END EQU 434
0000440 RETURN EQU 440
0000450 DIVERT EQU 450
0000452 DBNF EQU 452
0000454 REPRY EQU 454
0000456 FDBNE EQU 456
0000460 ERRPR EQU 460
0003400 STADDR EQU 34000

* DISCF IDENT
0000314 INTX1 EQU INT66
0000316 INTX2 EQU INT67
0000315 IX1 EQU I66
0000317 IX2 EQU I67

*
*
* EPDS FOR 925 COMPATABILITY
*
0 46 10012 RAC 0PD 04610012*2
0 46 20005 ABC 0PD 04620005*2
0 46 30023 CLR 0PD 04630003*2

*
* UNCONDITIONAL MACRS DEFINITIONS
*
DSCC MACRS 0
EBS 100 DISCONNECT CHANNEL
END

ALCC MACRS 0
EBS 10100 ALERT CHANNEL
END

ASCC MACRS 0
EBS 12100 ALERT TO PIN CHANNEL ADDRESS
END

T0PC MACRS 0
EBS 14100 TERMINATE OUTPUT
END

CATC MACRS 0
SKS 14100 CHANNEL ACTIVE TEST
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DISCF TAP=3.0 04/25 20100 PAGE 17

CETC	ENDM MACR0 SKS* ENDM	D 11100	CHANNEL ERROR TEST
CITC	MACR0 SKS* ENDM	D 10500	CHANNEL INTER-RECORD TEST
CZTC	MACR0 SKS* ENDM	D 12100	CHANNEL ZERO WORD COUNT TEST
D0LT	MACR0 SKS* ENDM	D 10326	FILE ON LINE TEST
DFRT	MACR0 SKS* ENDM	D 10126	DISC FILE READY TEST
DFET	MACR0 SKS* ENDM	D 11126	DISC FILE ERROR TEST
DFVT	MACR0 SKS* ENDM	D 12126	TRACK VERIFIED TEST
DWPT	MACR0 SKS* ENDM	D 13126	DISC WRITE PROTECT TEST
DWHT	MACR0 SKS* ENDM	D 14126	WRITE HEADER TEST
ALDF	MACR0 E0D ENDM	D 10126	ALERT DISC FILE
CLDF	MACR0 E0D ENDM	D 10326	CLEAR FILE
WDFC	MACR0 E0D	D 2766	WRITE DISC FILE - CHAIN

DISCF TAP=3.0 04/25 20100 PAGE 18

WDFS	ENDM MACR0 E0D ENDM	D 3766	WRITE DISC FILE - SECTOR
RDFC	MACR0 E0D ENDM	D 2726	HEAD DISC FILE - CHAIN
RDFS	MACR0 E0D ENDM	D 3726	HEAD DISC FILE - SECTOR
DE0M	MACR0 E0D ENDM	D 2140	DUMMY E0D
XE0M	MACR0 E0D ENDM	D D(1)	EXTENDED MODE E0D

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PRESET UNIT PARAMETERS

00000		04000	BSS	4000	
04000	0 20	00000	NBP	0	DUMMY CELL
04001	0 20	04761	NBP	UPT	UNIT PARAMETER TABLES
04002	0 75	33272	LDB	#0	SET 940 FLAG
04003	0 76	00401	LDA	STATUS	
04004	0 72	15430	SKA	BIT21	
04005	0 75	33273	LDB	#1	
04006	0 36	23330	STB	NFFLG	
04007	0 76	00404	LDA	DSCSIZ	PRESET D00T17 AND D20T37
04010	0 66	00022	RSH	18D	
04011	0 14	33274	LTR	#7	
04012	0 75	33272	LDB	#0	
04013	0 73	33272	SKG	#0	
04014	0 01	04020	BRU	##4	
04015	0 46	00014	XAB		
04016	0 16	33275	YRG	#77600000	
04017	0 46	00014	XAB		
04020	0 73	15432	SKG	BIT23	
04021	0 01	04025	BRU	##4	
04022	0 46	00014	XAB		
04023	0 16	33276	YRG	#177400	
04024	0 46	00014	XAB		
04025	0 36	04767	STB	D00T17	
04026	0 75	33272	LDB	#0	
04027	0 73	15431	SKG	BIT22	
04030	0 01	04034	BRU	##4	
04031	0 46	00014	XAB		
04032	0 16	33275	YRG	#77400000	
04033	0 46	00014	XAB		
04034	0 73	33277	SKG	#3	
04035	0 01	04041	BRU	##4	

04036	0 46	00014	XAB		
04037	0 16	33276	YRG	#177400	
04040	0 46	00014	XAB		
04041	0 36	04770	STB	D20T37	
04042	0 43	00420	BRM	UNIT	
04043	0 20	04761	NBP	UPT	UNIT PARAMETER TABLES

FUNCTION 1 - DACC TEST

04044 0 43 00424 FUNC1 BRM FUNCTN FUNCTION LINK
 04045 0 20 04771 NBP FRT1 FUNCTION PARAMETER TABLES

* F10B01 NO BIT 13 EOR OR 14 ZWC
 * BIT 12 SFELECT ARM INTERRUPTS

04046 0 43 00430 BRM SUBJECT
 04047 0 43 00440 BRM RETURN TO INTERRUPT LINK
 04050 0 20 04062 NBP F1001A
 04051 0 06 00100 EBD 100 DISCONNECT CHANNEL
 04052 0 06 10100 EBD* 10100 ALERT CHANNEL
 04053 0 13 33272 PBT #0
 04054 0 06 14200 EBD 14200 EXTENDED MODE EBD
 04055 0 71 33700 LDX #077765115 10 MS DELAY TIME FOR POSSIBLE INTERRUPT
 04056 0 02 20002 EIR
 04057 0 41 04057 BRX * COUNT OUT TIMER
 04060 0 02 20004 DIR
 04061 0 01 04072 BRU F1001D BK NO INTERRUPT OCCURED
 04062 0 02 20004 F1001A DIR
 04063 0 46 00001 CLA
 04064 0 76 00450 LDA DIVERT CLEAR INTERRUPT LINK
 04065 0 75 33701 LDB #37777
 04066 0 70 33702 SKN #IX1 TEST FOR CORRECT INTERRUPT
 04067 0 01 04076 BRU F1001B
 04070 0 43 00460 BRM ERROR
 04071 0 20 23467 NBP #1001A INTERRUPT MESSAGE
 04072 0 53 23930 F1001D SKN #FFLG
 04073 0 01 04075 BRU* **2
 04074 0 11 04075 BR1 **1

04075 0 20 04100 NBP F1001C
 04076 0 43 23357 F1001B BRM SPUR
 04077 0 20 33703 NBP #66
 04100 0 06 00100 EBD 100 DISCONNECT CHANNEL
 04101 0 43 00434 BRM END

* F10B02 BIT 13 EOR AND 14 ZWC
 * BIT 12 SELECT ARM INTERRUPTS

04102 0 43 00430 BRM SUBJECT
 04103 0 43 00440 BRM RETURN
 04104 0 20 04116 NBP F1002A
 04105 0 06 00100 EBD 100 DISCONNECT CHANNEL
 04106 0 06 10100 EBD* 10100 ALERT CHANNEL
 04107 0 13 33272 PBT #0
 04110 0 06 14200 EBD 14200 EXTENDED MODE EBD
 04111 0 71 33700 LDX #077765115 10 MS DELAY TIME FOR POSSIBLE INTERRUPT
 04112 0 02 20002 EIR
 04113 0 41 04113 BRX * COUNT OUT TIMER
 04114 0 02 20004 DIR
 04115 0 01 04126 BRU F1002D NO INTERRUPT OCCURED
 04116 0 02 20004 F1002A DIR
 04117 0 46 00001 CLA
 04120 0 76 00450 LDA DIVERT
 04121 0 75 33701 LDB #37777
 04122 0 70 33702 SKN #IX1
 04123 0 01 04137 BRU F1002B
 04124 0 43 00460 BRM ERROR INTERRUPT ERROR MESSAGE
 04125 0 20 23467 NBP #1001A
 04126 0 53 23930 F1002D SKN #FFLG
 04127 0 01 04131 BRU* **2
 04130 0 11 04131 BR1 **1
 04131 0 20 04134 NBP F1002C
 04132 0 43 23357 F1002B BRM SPUR

DISCF TAP=3.0 04/25 20100 PAGE 23

04133 0 20 33703 NBP #66
04134 0 06 00100 EBD 100 DISCONNECT CHANNEL
04135 0 43 00434 BRM END

* F10003 CHANNEL SKS ACTIVE TEST

04136 0 43 00430 BRM SUBJECT
04137 0 43 00440 BRM RETURN
04140 0 20 23751 NBP ENTER SPURIOUS INTERRUPT CONTROL
04141 0 06 00100 EBD 100 DISCONNECT CHANNEL
04142 0 40*14100 SKS* 14100 CHANNEL ACTIVE TEST
04143 0 01 04147 BRU F1003A NOT ACTIVE ERROR
04144 0 06 14100 EBD 14100 TERMINATE OUTPUT
04145 0 40*14100 SKS* 14100 CHANNEL ACTIVE TEST
04146 0 01 04152 BRU F1003B ACTIVE TEST OK
04147 0 43 00460 F1003A BRM ERROR
04150 0 20 23705 NBP #1003A ERROR MESSAGE
04151 0 06 00100 EBD 100 DISCONNECT CHANNEL
04152 0 43 00434 F1003B BRM END EXIT TEST

* F10004 TEST ZERO COUNT SKS

04153 0 43 00430 BRM SUBJECT
04154 0 43 00440 BRM RETURN INTERRUPT LINK
04155 0 20 23751 NBP ENTER
04156 0 06 00100 EBD 100 DISCONNECT CHANNEL
04157 0 06*14100 EBD* 10100 ALERT CHANNEL
04160 0 06 14200 EBD 14200 EXTENDED MODE EBD
04161 0 13 33772 PBT #0
04162 0 40*12100 SKS* 12100 CHANNEL ZERO WORD COUNT TEST
04163 0 43 00460 BRM ERROR
04164 0 20 23715 NBP #1004A SKS OR COUNT FLIP-FLAP FAILURE

DISCF TAP=3.0 04/25 20100 PAGE 24

04165 0 43 00434 BRM END EXIT TEST

* F10005 TEST ADDRESS BIT Z414 OR Q23

04166 0 43 00430 BRM SUBJECT
04167 0 43 23702 BRM F1051 PERFORM TEST
04170 00000001 DATA 1
04171 00001001 DATA 1
04172 0 06 14200 EBD 14200 EXTENDED MODE EBD
04173 0 20 23740 NBP #1005A

* F10006 TEST ADDRESS BIT Z413 OR Q22

04174 0 43 00430 BRM SUBJECT
04175 0 43 23702 BRM F1051 PERFORM TEST
04176 00000002 DATA 2
04177 00001002 DATA 2
04200 0 06 14200 EBD 14200 EXTENDED MODE EBD
04201 0 20 23747 NBP #1006A

* F10007 TEST ADDRESS BIT Z412 OR Q21

04202 0 43 00430 BRM SUBJECT
04203 0 43 23702 BRM F1051 PERFORM TEST
04204 00001004 DATA 4
04205 00000004 DATA 4
04206 0 06 14200 EBD 14200 EXTENDED MODE EBD
04207 0 20 23756 NBP #1007A

DISCF TAP=3.0 04/25 20100 PAGE 25

* F10B08 TEST ADDRESS BIT ZA11 OR C20

04210 0 43 00430 BRM OBJECT
04211 0 43 22202 BRM F151 PERFORM TEST
04212 00000010 DATA 10
04213 00000010 DATA 10
04214 0 06 14200 EBD 14200 EXTENDED MODE EBD
04215 0 20 23765 NBP M1008A

* F10B09 TEST ADDRESS BIT ZA10 OR C19

04216 0 43 00430 BRM OBJECT
04217 0 43 22202 BRM F151 PERFORM TEST
04220 00000020 DATA 20
04221 00000020 DATA 20
04222 0 06 14200 EBD 14200 EXTENDED MODE EBD
04223 0 20 23774 NBP M1009A

* F10B10 TEST ADDRESS BIT ZA09 OR C18

04224 0 43 00430 BRM OBJECT
04225 0 43 22202 BRM F151 PERFORM TEST
04226 00000040 DATA 40
04227 00000040 DATA 40
04230 0 06 14200 EBD 14200 EXTENDED MODE EBD
04231 0 20 24003 NBP M1010A

* F10B11 TEST ADDRESS BIT ZA08 OR C17

DISCF TAP=3.0 04/25 20100 PAGE 26

04232 0 43 00430 BRM OBJECT
04233 0 43 22202 BRM F151 PERFORM TEST
04234 00000100 DATA 100
04235 00000100 DATA 100
04236 0 06 14200 EBD 14200 EXTENDED MODE EBD
04237 0 20 24012 NBP M1011A

* F10B12 TEST ADDRESS BIT ZA07 OR C16

04240 0 43 00430 BRM OBJECT
04241 0 43 22202 BRM F151 PERFORM TEST
04242 00000200 DATA 200
04243 00000200 DATA 200
04244 0 06 14200 EBD 14200 EXTENDED MODE EBD
04245 0 20 24021 NBP M1012A

* F10B13 TEST ADDRESS BIT ZA06 OR C15

04246 0 43 00430 BRM OBJECT
04247 0 43 22202 BRM F151 PERFORM TEST
04250 00000400 DATA 400
04251 00000400 DATA 400
04252 0 06 14200 EBD 14200 EXTENDED MODE EBD
04253 0 20 24030 NBP M1013A

* F10B14 TEST ADDRESS BIT ZA05 OR C14

04254 0 43 00430 BRM OBJECT
04255 0 43 22202 BRM F151 PERFORM TEST
04256 00001000 DATA 1000

DISCF TAP=3.C 04/25 20100 PAGE 27

04257 0 0001000 DATA 1000
04260 0 06 14200 E0D 14200 EXTENDED MODE E0D
04261 0 20 24037 NBP M1014A

* F10B15 TEST ADDRESS BIT Z404 OR C13

04262 0 43 00430 BRM OBJECT
04263 0 43 22202 BRM F151 PERFORM TEST
04264 0 0002000 DATA 2000
04265 0 0002000 DATA 2000
04266 0 06 14200 E0D 14200 EXTENDED MODE E0D
04267 0 20 24046 NBP M1015A

* F10B16 TEST ADDRESS BIT Z403 OR C12

04270 0 43 00430 BRM OBJECT
04271 0 43 22202 BRM F151 PERFORM TEST
04272 0 0004000 DATA 4000
04273 0 0004000 DATA 4000
04274 0 06 14200 E0D 14200 EXTENDED MODE E0D
04275 0 20 24055 NBP M1016A

* F10B17 TEST ADDRESS BIT Z402 OR C11

04276 0 43 00430 BRM OBJECT
04277 0 43 22202 BRM F151 PERFORM TEST
04300 0 00010000 DATA 10000
04301 0 00010000 DATA 10000
04302 0 06 14200 E0D 14200 EXTENDED MODE E0D
04303 0 20 24065 NBP M1017A

DISCF TAP=3.C 04/25 20100 PAGE 28

* F10B18 TEST ADDRESS BIT Z401 OR C10

04304 0 43 00430 BRM OBJECT
04305 0 43 22202 BRM F151 PERFORM TEST
04306 0 0002000 DATA 20000
04307 0 0002000 DATA 20000
04310 0 06 14200 E0D 14200 EXTENDED MODE E0D
04311 0 20 24075 NBP M1018A

* F10B19 TEST ADDRESS BIT Z40 OR C18

04312 0 43 00430 BRM OBJECT
04313 0 43 22202 BRM F151 PERFORM TEST
04314 0 0004000 DATA 40000
04315 0 0000000 DATA 0
04316 0 06 14200 E0D 14200 EXTENDED MODE E0D
04317 0 20 24105 NBP M1019A

* F10B20 TEST ADDRESS BIT Z400 OR C17

04320 0 43 00430 BRM OBJECT
04321 0 43 22202 BRM F151 PERFORM TEST
04322 0 00010000 DATA 100000
04323 0 00000000 DATA 0
04324 0 06 14300 E0D 14300 EXTENDED MODE E0D
04325 0 20 24116 NBP M1020A

* F10B21 TEST WORD COUNT BIT Z014 OR C09

DISCF TAP=3.0 04/25 20100 PAGE 29

04326 0 43 00430 BRM OBJECT
04327 0 43 22243 BRM F152 PERFORM TEST
04330 0 06 14200 EBD 14200 EXTENDED MODE EBD
04331 00040000 DATA 40000
04332 0 20 24130 NBP M1023A

* F10B22 TEST WORD COUNT BIT ZC13 BR C08

04333 0 43 00430 BRM OBJECT
04334 0 43 22243 BRM F152 PERFORM TEST
04335 0 06 14200 EBD 14200 EXTENDED MODE EBD
04336 00100000 DATA 100000
04337 0 20 24137 NBP M1024A

* F10B23 TEST WORD COUNT BIT ZC12 BR C07

04340 0 43 00430 BRM OBJECT
04341 0 43 22243 BRM F152 PERFORM TEST
04342 0 06 14200 EBD 14200 EXTENDED MODE EBD
04343 00200000 DATA 200000
04344 0 20 24146 NBP M1025A

* F10B24 TEST WORD COUNT BIT ZC11 BR C06

04345 0 43 00430 BRM OBJECT
04346 0 43 22243 BRM F152 PERFORM TEST
04347 0 06 14200 EBD 14200 EXTENDED MODE EBD
04350 00400000 DATA 400000

DISCF TAP=3.0 04/25 20100 PAGE 30

04351 0 20 24155 NBP M1026A

* F10B25 TEST WORD COUNT BIT ZC10 BR C05

04352 0 43 00430 BRM OBJECT
04353 0 43 22243 BRM F152 PERFORM TEST
04354 0 06 14200 EBD 14200 EXTENDED MODE EBD
04355 01000000 DATA 1000000
04356 0 20 24164 NBP M1027A

* F10B26 TEST WORD COUNT BIT ZC09 BR C04

04357 0 43 00430 BRM OBJECT
04360 0 43 22243 BRM F152 PERFORM TEST
04361 0 06 14200 EBD 14200 EXTENDED MODE EBD
04362 02000000 DATA 2000000
04363 0 20 24173 NBP M1028A

* F10B27 TEST WORD COUNT BIT ZC08 BR C03

04364 0 43 00430 BRM OBJECT
04365 0 43 22243 BRM F152 PERFORM TEST
04366 0 06 14200 EBD 14200 EXTENDED MODE EBD
04367 04000000 DATA 4000000
04370 0 20 24202 NBP M1029A

* F10B28 TEST WORD COUNT BIT ZC07 BR C02

DISCF TAP=3.0 04/25 20100 PAGE 31

04371	0 43 00430	BRM	0BJECT	
04372	0 43 22243	BRM	F192	PERFORM TEST
04373	0 06 14200	E0D	14200	EXTENDED MODE E0D
04374	0 00 10000000	DATA	10000000	
04375	0 20 24211	NBP	M1030A	

*
* F10B29 TEST WORD COUNT BIT ZC06 OR C01
*

04376	0 43 00430	BRM	0BJECT	
04377	0 43 22243	BRM	F192	PERFORM TEST
04400	0 06 14200	E0D	14200	EXTENDED MODE E0D
04401	0 00 20000000	DATA	20000000	
04402	0 20 24220	NBP	M1031A	

*
* F10B30 TEST WORD COUNT BIT ZC05 OR C00
*

04403	0 43 00430	BRM	0BJECT	
04404	0 43 22243	BRM	F192	PERFORM TEST
04405	0 06 14200	E0D	14200	EXTENDED MODE E0D
04406	0 00 40000000	DATA	40000000	
04407	0 20 24227	NBP	M1032A	

*
* F10B33 TEST WORD COUNT BIT ZC04 OR C23
*

04410	0 43 00430	BRM	0BJECT	
04411	0 43 22243	BRM	F192	PERFORM TEST
04412	0 06 14201	E0D	14201	EXTENDED MODE E0D
04413	0 00 00000000	DATA	0	
04414	0 20 24236	NBP	M1033A	

DISCF TAP=3.0 04/25 20100 PAGE 32

*
* F10B34 TEST WORD COUNT BIT ZC03 OR C22
*

04415	0 43 00430	BRM	0BJECT	
04416	0 43 22243	BRM	F192	PERFORM TEST
04417	0 06 14202	E0D	14202	EXTENDED MODE E0D
04420	0 00 00000000	DATA	0	
04421	0 20 24246	NBP	M1034A	

*
* F10B35 TEST WORD COUNT BIT ZC02 OR C21
*

04422	0 43 00430	BRM	0BJECT	
04423	0 43 22243	BRM	F192	PERFORM TEST
04424	0 06 14204	E0D	14204	EXTENDED MODE E0D
04425	0 00 00000000	DATA	0	
04426	0 20 24256	NBP	M1035A	

*
* F10B36 TEST WORD COUNT BIT ZC01 OR C21
*

04427	0 43 00430	BRM	0BJECT	
04430	0 43 22243	BRM	F192	PERFORM TEST
04431	0 06 14210	E0D	14210	EXTENDED MODE E0D
04432	0 00 00000000	DATA	0	
04433	0 20 24266	NBP	M1036A	

*
* F10B37 TEST WORD COUNT BIT ZC00 OR C19
*

04434	0 43 00430	BRM	0BJECT	
04435	0 43 22243	BRM	F192	PERFORM TEST

DISCF TAP=3.0 04/25 20100 PAGE 33
 04436 0 06 14220 EOD 14220 EXTENDED MODE EOD
 04437 0 0000000 DATA 0
 04440 0 20 24276 NOP M1037A

*
 * F10B38 INTERLACE CARRY TEST ZA14 TO ZA13
 *

04441 0 43 00430 BRM OBJECT
 04442 0 43 00440 BRM RETURN
 04443 0 20 23351 NOP ENTER
 04444 0 76 15432 LDA BIT23 ZA14
 04445 0 43 04622 BRM INKXNT
 04446 0 43 00460 BRM ERROR
 04447 0 20 23740 NOP M1005A LOGIC IN ERROR
 04450 0 43 00434 BRM END

*
 * F10B39 INTERLACE CARRY TEST ZA13 TO ZA12
 *

04451 0 43 00430 BRM OBJECT
 04452 0 43 00440 BRM RETURN
 04453 0 20 23351 NOP ENTER
 04454 0 76 33277 LDA #03 ZA13
 04455 0 43 04622 BRM INKXNT
 04456 0 43 00460 BRM ERROR
 04457 0 20 23747 NOP M1006A LOGIC IN ERROR
 04460 0 43 00434 BRM END

*
 * F10B40 INTERLACE CARRY TEST ZA12 TO ZA11
 *

04461 0 43 00430 BRM OBJECT
 04462 0 43 00440 BRM RETURN

DISCF TAP=3.0 04/25 20100 PAGE 34
 04463 0 20 23351 NOP ENTER
 04464 0 76 33274 LDA #07 ZA12
 04465 0 43 04622 BRM INKXNT
 04466 0 43 00460 BRM ERROR
 04467 0 20 23756 NOP M1007A LOGIC IN ERROR
 04470 0 43 00434 BRM END

*
 * F10B41 INTERLACE CARRY TEST ZA11 TO ZA10
 *

04471 0 43 00430 BRM OBJECT
 04472 0 43 00440 BRM RETURN
 04473 0 20 23351 NOP ENTER
 04474 0 76 33304 LDA #017 ZA11
 04475 0 43 04622 BRM INKXNT
 04476 0 43 00460 BRM ERROR
 04477 0 20 23765 NOP M1008A LOGIC IN ERROR
 04500 0 43 00434 BRM END

*
 * F10B42 INTERLACE CARRY TEST ZA10 TO ZA09
 *

04501 0 43 00430 BRM OBJECT
 04502 0 43 00440 BRM RETURN
 04503 0 20 23351 NOP ENTER
 04504 0 76 33305 LDA #037 ZA10
 04505 0 43 04622 BRM INKXNT
 04506 0 43 00460 BRM ERROR
 04507 0 20 23774 NOP M1009A LOGIC IN ERROR
 04510 0 43 00434 BRM END

*
 * F10B43 INTERLACE CARRY TEST ZA09 TO ZA08
 *

```

*
04511 0 43 00430 BRM OBJECT
04512 0 43 00440 BRM RETURN
04513 0 20 23351 NBP ENTER
04514 0 76 33306 LDA #077 ZA09
04515 0 43 04622 BRM INKMNT
04516 0 43 00460 BRM ERROR
04517 0 20 24003 NBP M1010A LOGIC IN ERROR
04520 0 43 00434 BRM END

```

* F19B44 INTERLACE CARRY TEST ZA08 TO ZA07

```

*
04521 0 43 00430 BRM OBJECT
04522 0 43 00440 BRM RETURN
04523 0 20 23351 NBP ENTER
04524 0 76 33307 LDA #0177 ZA08
04525 0 43 04622 BRM INKMNT
04526 0 43 00460 BRM ERROR
04527 0 20 24012 NBP M1011A LOGIC IN ERROR
04530 0 43 00434 BRM END

```

* F19B45 INTERLACE CARRY TEST ZA07 TO ZA06

```

*
04531 0 43 00430 BRM OBJECT
04532 0 43 00440 BRM RETURN
04533 0 20 23351 NBP ENTER
04534 0 76 33310 LDA #0377 ZA07
04535 0 43 04622 BRM INKMNT
04536 0 43 00460 BRM ERROR
04537 0 20 24021 NBP M1012A LOGIC IN ERROR
04540 0 43 00434 BRM END

```

* F19B46 INTERLACE CARRY TEST ZA06 TO ZA05

```

*
04541 0 43 00430 BRM OBJECT
04542 0 43 00440 BRM RETURN
04543 0 20 23351 NBP ENTER
04544 0 76 33311 LDA #0777 ZA06
04545 0 43 04622 BRM INKMNT
04546 0 43 00460 BRM ERROR
04547 0 20 24030 NBP M1013A LOGIC IN ERROR
04550 0 43 00434 BRM END

```

* F19B47 INTERLACE CARRY TEST ZA05 TO ZA04

```

*
04551 0 43 00430 BRM OBJECT
04552 0 43 00440 BRM RETURN
04553 0 20 23351 NBP ENTER
04554 0 76 33312 LDA #01777 ZA05
04555 0 43 04622 BRM INKMNT
04556 0 43 00460 BRM ERROR
04557 0 20 24037 NBP M1014A LOGIC IN ERROR
04560 0 43 00434 BRM END

```

* F19B48 INTERLACE CARRY TEST ZA04 TO ZA03

```

*
04561 0 43 00430 BRM OBJECT
04562 0 43 00440 BRM RETURN
04563 0 20 23351 NBP ENTER
04564 0 76 33313 LDA #03777 ZA04
04565 0 43 04622 BRM INKMNT
04566 0 43 00460 BRM ERROR

```


DISCF TAP=3.0 04/25 20100 PAGE 37

04567 0 20 24046 NBP M1015A LOGIC IN ERROR
04570 0 43 00434 BRM END

* F10B49 INTERLACE CARRY TEST ZA03 TO ZA02

04571 0 43 00430 BRM SUBJECT
04572 0 43 00440 BRM RETURN
04573 0 20 23351 NBP ENTER
04574 0 76 33314 LDA #07777 ZA03
04575 0 43 04422 BRM INKMNT
04576 0 43 00460 BRM ERROR
04577 0 20 24055 NBP M1016A LOGIC IN ERROR
04600 0 43 00434 BRM END

* F10B50 INTERLACE CARRY TEST ZA02 TO ZA01

04601 0 43 00430 BRM SUBJECT
04602 0 43 00440 BRM RETURN
04603 0 20 23351 NBP ENTER
04604 0 76 33315 LDA #17777 ZA02
04605 0 43 04422 BRM INKMNT
04606 0 43 00460 BRM ERROR
04607 0 20 24065 NBP M1017A LOGIC IN ERROR
04610 0 43 00434 BRM END

* F10B51 INTERLACE CARRY TEST ZA01 TO ZA0

04611 0 43 00430 BRM SUBJECT
04612 0 43 00440 BRM RETURN
04613 0 20 23351 NBP ENTER

DISCF TAP=3.0 04/25 20100 PAGE 38

04614 0 76 33301 LDA #37777 ZA01
04615 0 43 04422 BRM INKMNT
04616 0 43 00460 BRM ERROR
04617 0 20 24075 NBP M1018A LOGIC IN ERROR
04620 0 43 00434 BRM END
04621 0 01 04446 BRU END1

* SUBROUTINE INKMNT

04622 0 00 00000 INKMNT ZR0 0
04623 0 16 15414 PRG BIT9
04624 0 35 23332 STA PSTARD
04625 0 17 15414 EBR BIT9
04626 0 55 15432 ADD BIT23
04627 0 06 10100 EBD 10100 ALERT CHANNEL
04630 0 06 14200 EBD 14200 EXTENDED MODE EBD
04631 0 13 23332 PST PSTARD
04632 0 06 02140 EBD 2140 DUMMY EBD
04633 0 20 00000 NBP 0
04634 0 20 00000 NBP 0 DELAY TO ALLOW PIN
04635 0 20 00000 NBP 0
04636 0 06 12100 EBD 12100 ALERT TO PIN CHANNEL ADDRESS
04637 0 33 23332 PIN PSTARD
04640 0 06 00100 EBD 100 DISCONNECT CHANNEL
04641 0 17 23332 EBR PSTARD
04642 0 72 23332 SKA PSTARD
04643 0 51 04422 BRM INKMNT
04644 0 61 04422 PIN INKMNT
04645 0 51 04422 BRM INKMNT
04646 0 20 00000 END1 NBP 0

* F10B53 DATA CHAIN TEST

DISCF TAP=3.0 04/25 20100 PAGE 39

```
*
04647 0 43 00430 BRM SUBJECT
04650 0 43 00440 BRM RETURN
04651 0 20 23351 NBP ENTER
04652 0 76 33272 LDA #0 TEST CLEAR
04653 0 43 04731 BRM INKMMT
04654 0 43 00460 BRM ERRBR
04655 0 20 24306 NBP M1038A LOGIC IN ERROR
04656 0 43 00434 BRM END
```

* F10B54 DATA CHAIN TEST ZMP3

```
*
04657 0 43 00430 BRM SUBJECT
04660 0 43 00440 BRM RETURN
04661 0 20 23351 NBP ENTER
04662 0 76 33316 LDA #04001 ZMP3
04663 0 43 04731 BRM INKMMT
04664 0 43 00460 BRM ERRBR
04665 0 20 24317 NBP M1039A LOGIC IN ERROR
04666 0 43 00434 BRM END
```

* F10B55 DATA CHAIN TEST ZMP2

```
*
04667 0 43 00430 BRM SUBJECT
04670 0 43 00440 BRM RETURN
04671 0 20 23351 NBP ENTER
04672 0 76 33317 LDA #010002 ZMP2
04673 0 43 04731 BRM INKMMT
04674 0 43 00460 BRM ERRBR
04675 0 20 24324 NBP M1040A LOGIC IN ERROR
04676 0 43 00434 BRM END
```

DISCF TAP=3.0 04/25 20100 PAGE 40

* F10B56 DATA CHAIN TEST ZMP1

```
*
04700 0 43 00430 BRM SUBJECT
04700 0 43 00440 BRM RETURN
04701 0 20 23351 NBP ENTER
04702 0 76 33320 LDA #020004 ZMP1
04703 0 43 04731 BRM INKMMT
04704 0 43 00460 BRM ERRBR
04705 0 20 24331 NBP M1041A LOGIC IN ERROR
04706 0 43 00434 BRM END
```

* F10B57 DATA CHAIN TEST ZMP0

```
*
04707 0 43 00430 BRM SUBJECT
04710 0 43 00440 BRM RETURN
04711 0 20 23351 NBP ENTER
04712 0 76 33321 LDA #040010 ZMP0
04713 0 43 04731 BRM INKMMT
04714 0 43 00460 BRM ERRBR
04715 0 20 24336 NBP M1042A LOGIC IN ERROR
04716 0 43 00434 BRM END
```

* F10B58 DATA CHAIN TEST ZMP00

```
*
04717 0 43 00430 BRM SUBJECT
04720 0 43 00440 BRM RETURN
04721 0 20 23351 NBP ENTER
04722 0 76 33322 LDA #0100020 ZMP00
04723 0 43 04731 BRM INKMMT
04724 0 43 00460 BRM ERRBR
```

DISCF TAP=3.C 04/25 20100 PAGE 41

04725	0 20 24343	NBP	#1043A	LOGIC IN ERROR
04726	0 43 00434	BRM	END	
04727	0 43 00456	BRM	FDONE	
04730	0 01 05444	BRU	FUNC2	

*
*
* SUBROUTINE INKMMT
*
*

04731	0 00 00000	INKMMT ZR0	0	
04732	0 35 23332	STA	PBTARD	
04733	0 06 10100	E00*	10100	ALERT CHANNEL
04734	0 06 14200	E00	14200	EXTENDED MODE E00
04735	0 13 33323	PBT	#03777	
04736	0 06 11000	E00	11000	EXTENDED MODE E00
04737	0 13 23332	PBT	PBTARD	
04740	0 06 02140	E00	2140	DUMMY E00
04741	0 20 00000	NBP	0	
04742	0 20 00000	NBP	0	DELAY TO ALLOW PIN
04743	0 20 00000	NBP	0	
04744	0 06 12100	E00	12100	ALERT TO PIN CHANNEL ADDRESS
04745	0 33 23332	PIN	PBTARD	
04746	0 06 00100	E00	100	DISCONNECT CHANNEL
04747	0 75 33324	LDB	#174000	
04750	0 70 23332	SKM	PBTARD	
04751	0 51 04731	BRR	INKMMT	
04752	0 61 04731	* IN	INKMMT	
04753	0 51 04731	BRR	INKMMT	

*
*
* CLEAR CHANNEL
*
*

04754	0 00 00000	CLRCHN PZE	0	
04755	0 06 10100	E00*	10100	ALERT CHANNEL
04756	0 06 14200	E00	14200	EXTENDED MODE E00

DISCF TAP=3.C 04/25 20100 PAGE 42

04757	0 13 33272	PBT	#0	
04760	0 51 04754	BRR	CLRCHN	RETURN

```

*
* UNIT, FUNCTION TABLES
*
04761 0 20 05000 UPT NBP UIM UNIT IDENTIFIER MESSAGE
04762 0 20 05007 NBP UAM UNIT ABSTRACT MESSAGE
04763 0 20 05326 NBP JVM UNIT VARIABLE MESSAGE
04764 0 C3 04766 THREE UVT UNIT VARIABLE TABLE
04765 00000020 DATA 20 UNIT IDENTIFIER = BIT 19
04766 37020000 UVT DATA 37020000 INITIALIZE FUNCTIONS 1 THROUGH 5 AND 10
04767 0 00 00000 ROOT17 PZE 0 DISCS 0 THROUGH 17 ACTIVATION BITS
04770 0 00 00000 ROOT37 PZE 0 DISCS 20 THROUGH 37 ACTIVATION BITS
04771 0 20 05335 FRT1 NBP FIM1 FUNCTION IDENTIFIER MESSAGE
04772 0 20 05343 NBP FAM1 FUNCTION ABSTRACT MESSAGE
04773 0 20 05436 NBP FVM1 FUNCTION VARIABLE MESSAGE
04774 0 01 04777 BNE FVT1 FUNCTION VARIABLE TABLE
04775 0 00 05444 PZE FUNCP POINTER TO NEXT FUNCTION
04776 20000000 DATA 2B7 FUNCTION IDENTIFIER = BIT 1
04777 0 00 00000 FVT1 PZE 0 FUNCTION VARIABLE TABLE (NO VARIABLES)

```

```

*
* UNIT, FUNCTION MESSAGES
*
05000 52F41201 UIM BCD ' U 19 = F CHANNEL DISC 4.0''
05001 11124012
05002 26122330
05003 21454525
05004 43122431
05005 62231204
05006 33003712
05007 50321445 UAM BCD ' UNIT 19 = F-CHANNEL DISC DIAGNOSTICS AND EXERCISERS 4.0''
05010 31631201
05011 11124012
05012 26402330
05013 21454525
05014 43122431
05015 62231224
05016 31212745

```

```

05017 44622331
05020 23621221
05021 45241225
05022 67255123
05023 31622551
05024 62121433
05025 00121212
05026 52520330 BCD ' THIS UNIT CONTAINS DIAGNOSTICS, EXERCISERS, AND SPECIAL FUNCTIONS DEV
05027 31621264
05030 45316312
05031 23464563
05032 21314562
05033 12240021
05034 27454662
05035 63312262
05036 73122567
05037 45512331
05040 62255162
05041 73121445
05042 24122247
05043 25233121
05044 43122464
05045 45270331
05046 46450212
05047 24254546
05050 63252412
05051 52634412 BCD ' IN THE 9164=01 AND 9165=01 DISC FILE, THERE ARE THREE UNIT VARIABLES!!
05052 63302512
05053 11011604
05054 40001112
05055 21452412
05056 11011605
05057 40001112
05060 24316223
05061 12263143
05062 25331263

```

05063 30255125
 05064 12215125
 05065 12633751
 05066 25251264
 05067 45316312
 05070 65215131
 05071 21224325
 05072 62151212
 05073 52522621
 05074 66124012
 05075 26644523
 05076 63314445
 05077 12212363
 05100 31652163
 05101 31464512
 05102 66465124
 05103 33124325
 05104 27214312
 05105 26644523
 05106 63314445
 05107 62122151
 05110 25122664
 05111 45236331
 05112 46456212
 05113 01400512
 05114 74243121
 05115 27401212
 05116 52454462
 05117 63312362
 05120 34731226
 05121 64452363
 05122 31464512
 05123 01001274
 05124 25672551
 05125 23316225
 05126 51347312

BCD FUNCTION ACTIVATION WORD. LEGAL FUNCTIONS ARE FUNCTIONS 1-5 (DI

BCD LOGISTICS), FUNCTION 10 (EXERCISER), AND FUNCTIONS 18-23 (SPECIAL FUNCTI

05127 21452412
 05130 26644523
 05131 63314445
 05132 62120110
 05133 40020312
 05134 74624725
 05135 23312143
 05136 12266445
 05137 23633146
 05140 45623433
 05141 52240000
 05142 63010712
 05143 21452412
 05144 24020063
 05145 03071240
 05146 12212363
 05147 31652163
 05150 31464512
 05151 22316362
 05152 12264451
 05153 12215144
 05154 62120040
 05155 03073312
 05156 22316362
 05157 12314512
 05160 63302512
 05161 44460363
 05162 12623127
 05163 45312640
 05164 52312221
 05165 45631201
 05166 06122231
 05167 63621246
 05170 26122521
 05171 23301266
 05172 46512412

BCD D20T17 AND D20T37 - ACTIVATION BITS FOR ARMS 0-37. BITS IN THE MOST SI

BCD SIGNIFICANT 16 BITS OF EACH WORD PERMIT THE CORRESPONDING DISC TO BE USED. I

05173 47255144
 05174 31631263
 05175 30251223
 05176 46515125
 05177 62474645
 05200 24314527
 05201 12243162
 05202 23126346
 05203 12222512
 05204 64622524
 05205 33123126
 05206 12211212
 05207 52001231
 05210 62123145
 05211 12211222
 05212 31637312
 05213 63302512
 05214 23465151
 05215 25624746
 05216 45243145
 05217 27122151
 05220 44126631
 05221 43431245
 05222 46631222
 05223 25124462
 05224 25243312
 05225 52464512
 05226 63302512
 05227 26315162
 05230 63124721
 05231 62627312
 05232 21434312
 05233 24312127
 05234 45466263
 05235 31236212
 05236 66314343

BCD : 0 IS IN A BIT, THE CORRESPONDING ARM WILL NOT BE USED.

BCD : ON THE FIRST PASS, ALL DIAGNOSTICS WILL BE RUN, AND THE DISC WILL BE K

05237 12222512
 05240 51644573
 05241 12214524
 05242 12633025
 05243 12243162
 05244 23126631
 05245 43431222
 05246 25124425
 05247 70252132
 05250 52464512
 05251 62642262
 05252 25520425
 05253 45631247
 05254 21626225
 05255 62731246
 05256 45437012
 05257 63302512
 05260 24312127
 05261 45466263
 05262 31236212
 05263 66303123
 05264 30127444
 05265 12454663
 05266 12243162
 05267 63514670
 05270 12633025
 05271 12314563
 05272 25275131
 05273 63701212
 05274 52466212
 05275 63302512
 05276 24316223
 05277 12663143
 05300 42125164
 05301 45731221
 05302 62121625

BCD : ON SUBSEQUENT PASSES, ONLY THE DIAGNOSTICS WHICH DO NOT DESTROY THE IN

BCD : OF THE DISC WILL RUN, AS WELL AS THE EXERCISER FUNCTIONS 18-23 WILL N

DISCF TAP=3.0 04/25 20100 PAGE 49

05303 43431221
05304 62126330
05305 25122567
05306 25512331
05307 62255133
05310 12266445
05311 23633146
05312 45621201
05313 10400203
05314 12663143
05315 43124546
05316 63121212
05317 52516445 BCD I RUN UNLESS TRANSFERED TO:11
05320 12644543
05321 25626212
05322 63512145
05323 62262551
05324 25241263
05325 46333712
05326 52121212 UVM BCD I FAW D00T17 D20T37 11
05327 26216612
05330 12121224
05331 00006301
05332 07121212
05333 24020063
05334 03075237

*
*
*

05335 52261200 FIM1 BCD I F 01 = DACC DIAGNOSTIC I
05336 01124412
05337 24212323
05340 12243121
05341 27454662
05342 63312337
05343 52322421 FIM1 BCD I DACC DIAGNOSTIC I

DISCF TAP=3.0 04/25 20100 PAGE 50

05344 23231224
05345 31212745
05346 46626331
05347 23521212 BCD I THIS DIAGNOSTIC TESTS AS MANY DACC FUNCTIONS AS POSSIBLE I
05350 52632131
05351 62122431
05352 21274546
05353 62633123
05354 12642562
05355 63621221
05356 62124421
05357 45701224
05360 21272312
05361 26644523
05362 63314645
05363 62122162
05364 12474662
05365 62312243
05366 25121212
05367 52663163 BCD I WITHOUT THE USE OF AN EXTERNAL DEVICE, IF AN ERROR OCCURES, I
05370 30461463
05371 12643225
05372 12646225
05373 12462412
05374 21451225
05375 67632551
05376 45214312
05377 24256531
05400 62253312
05401 31261221
05402 45122551
05403 51465112
05404 46232364
05405 51256273
05406 52211213 BCD I A = ERROR WORD, B = TEST WORD, AND X = OBJECT TEST. I
05407 12255151

05410	46511266		
05411	46512473		
05412	12221212		
05413	12632562		
05414	63126646		
05415	51247312		
05416	21482412		
05417	67121312		
05420	46224125		
05421	23631263		
05422	25626333		
05423	52623127	BCD	' SIGNAL NAMES AND MODULES WILL BE PRINTED. '
05424	45214312		
05425	45214425		
05426	62122145		
05427	24124446		
05430	24644325		
05431	62126631		
05432	43431222		
05433	25124751		
05434	31456325		
05435	24333712		
05436	52454612	FVM1 BCD	' NO FUNCTION VARIABLES '
05437	26644523		
05440	63314645		
05441	12652151		
05442	31212243		
05443	25635237		

```

.
.
.
FUNCTION 2 = 9164 DISC FILE CONTROLLER DIAGNOSTIC (NO DATA XFER)
.
.
.
05444 0 43 00430 FUNC2 BRM SUBJECT
05445 0 76 20404 LDA ^SCSIZ GET DISC SIZE
05446 0 76 30325 SKA #796 IS SIZE > 0
05447 0 01 00451 BRU *+2 YES
05450 0 43 01452 BRM DONE NO = EXIT UNIT
05451 0 40 10326 SKS* 10326 FILE ON LINE TEST
05452 0 01 01454 BRU *+2 FILE NOT ON LINE
05453 0 01 05460 BRU FUNC2A
05454 0 43 01454 BRM REPORT REPORT FILE NOT ON LINE
05455 0 20 23351 ^BP C19M7
05456 0 43 01434 BRM END
05457 0 43 01452 BRM DONE EXIT UNIT
05460 0 43 01424 FUNC2A BRM FUNCTA FUNCTION LINK
05461 0 21 00442 ^BP FPR2
05462 0 43 01440 BRM RETURN INTERRUPT/TRAP LINK
05463 0 20 23351 ^BP ENTER
05464 0 22 20004 DIR DISABLE INTERRUPTS
.
.
.
FILE ON-LINE TEST (FILE ON-LINE CONDITION)
.
.
.
05465 0 43 00430 BRM SUBJECT
05466 0 43 20303 BRM F252 PERFORM TEST
05467 0 40 10326 SKS* 10326 FILE ON LINE TEST
05470 0 20 24364 ^BP F2M1
.
.
.
TEST 2CAAA
.
.
.
05471 0 43 00430 BRM SUBJECT
05472 0 43 27264 BRM F251 PERFORM TEST
05473 0 40 10327 SKS* 10327
05474 0 20 24452 ^BP F2M2

```


DISCF TAP=3.0 04/25 20100 PAGE 53

```

*
* TEST 2CAAA
05475 0 43 00430 BRM 0BJECT
05476 0 43 22264 BRM F2S1 PERFORM TEST
05477 0 40*10224 SKS* 10224
05500 0 20 24473 NBP F2M3
*
* TEST 2CAAA
05501 0 43 00430 BRM 0BJECT
05502 0 43 22264 BRM F2S1 PERFORM TEST
05503 0 40*10222 SKS* 10222
05504 0 20 24505 NBP F2M4
*
* TEST 2CAAA
05505 0 43 00430 BRM 0BJECT
05506 0 43 22264 BRM F2S1 PERFORM TEST
05507 0 40*10206 SKS* 10206
05510 0 20 24517 NBP F2M6
*
* TEST 2CAAA
05511 0 43 00430 BRM 0BJECT
05512 0 43 22264 BRM F2S1 PERFORM TEST
05513 0 40*10326 SKS* 10326
05514 0 20 24531 NBP F2M7
*
* TEST 8S10F
05515 0 43 00430 BRM 0BJECT
05516 0 43 22264 BRM F2S1 PERFORM TEST
05517 0 40*17026 SKS* 17026
05520 0 20 24543 NBP F2M8
*

```

DISCF TAP=3.0 04/25 20100 PAGE 54

```

*
* TEST 60LSA0
05521 0 43 00430 BRM 0BJECT
05522 0 43 22264 BRM F2S1 PERFORM TEST
05523 0 40*11226 SKS* 11226
05524 0 20 24563 NBP F2M9
*
* TEST 60LSA0
05525 0 43 00430 BRM 0BJECT
05526 0 43 22264 BRM F2S1 PERFORM TEST
05527 0 40*12226 SKS* 12226
05530 0 20 24612 NBP F2M10
*
* TEST 60LSA0
05531 0 43 00430 BRM 0BJECT
05532 0 43 22264 BRM F2S1 PERFORM TEST
05533 0 40*13226 SKS* 13226
05534 0 20 24630 NBP F2M11
*
* TEST 60LSA0
05535 0 43 00430 BRM 0BJECT
05536 0 43 22264 BRM F2S1 PERFORM TEST
05537 0 40*14226 SKS* 14226
05540 0 20 24645 NBP F2M12
*
* TEST 60LSA0
05541 0 43 00430 BRM 0BJECT
05542 0 43 22264 BRM F2S1 PERFORM TEST
05543 0 40*15226 SKS* 15226
05544 0 20 24665 NBP F2M13
*
* TEST 60LSA0

```

DISCF TAP=3.0 04/25 20100 PAGE 55

```
05545 0 43 00430 BRM 0BJECT
05546 0 43 22264 BRM F291 PERFORM TEST
05547 0 40*16226 SKS* 16226
05550 0 20 24677 NOP F2M14
*
* TEST 60LSAO
*
05551 0 43 00430 BRM 0BJECT
05552 0 43 22264 BRM F291 PERFORM TEST
05553 0 40*17226 SKS* 17226
05554 0 20 24711 NOP F2M15
*
* WRITE=HEADER SWITCH TEST (SWITCH OFF CONDITION)
*
05555 0 43 00430 BRM 0BJECT
05556 0 43 22303 BRM F292 PERFORM TEST
05557 0 40*14126 SKS* 14126 WRITE HEADER TEST
05560 0 20 24723 NOP F2M16
*
* TEST 6518AO
*
05561 0 43 00430 BRM 0BJECT
05562 0 43 22264 BRM F291 PERFORM TEST
05563 0 40*15026 SKS* 15026
05564 0 20 24760 NOP F2M17
*
* TEST 6518AO
*
05565 0 43 00430 BRM 0BJECT
05566 0 43 22264 BRM F291 PERFORM TEST
05567 0 40*16026 SKS* 16026
05570 0 20 24771 NOP F2M18
*
* CONTROLLER READY TEST (READY CONDITION)
*
```

DISCF TAP=3.0 04/25 20100 PAGE 56

```
05571 0 43 00430 BRM 0BJECT
05572 0 43 22303 BRM F292 PERFORM TEST
05573 0 40*10126 SKS* 10126 DISC FILE READY TEST
05574 0 20 25004 NOP F2M19
*
* TRACK VERIFIED AND PHASE ONE TEST (CONTROLLER IN PHASE 0)
*
05575 0 43 00430 BRM 0BJECT
05576 0 43 22264 BRM F291 PERFORM TEST
05577 0 40*12126 SKS* 12126 TRACK VERIFIED TEST
05600 0 20 25057 NOP F2M20
*
* CONTROLLER ERROR TEST (NO ERROR CONDITION)
*
05601 0 43 00430 BRM 0BJECT
05602 0 43 22303 BRM F292 PERFORM TEST
05603 0 40*11126 SKS* 11126 DISC FILE ERROR TEST
05604 0 20 25113 NOP F2M21
*
* WRITE PROTECT SWITCH TEST (NOT WRITE PROTECTED CASE)
*
05605 0 43 00430 BRM 0BJECT
05606 0 43 22303 BRM F292 PERFORM TEST
05607 0 40*13126 SKS* 13126 DISC WRITE PROTECT TEST
05610 0 20 25145 NOP F2M22
*
* TEST 0A23A (SET)
*
05611 0 43 00430 BRM 0BJECT
05612 0 43 22321 BRM F293 PERFORM OBJECT TEST
05613 0 0000001 DATA 1
05614 0 20 25174 NOP F2M32
*
* TEST 0A23A (RESET)
*
05615 0 43 00430 BRM 0BJECT
```

DISCF TAP-3.0 04/25 20100 PAGE 57

05616	0 43 22342	BRM	F254	PERFORM OBJECT TEST
05617	00000001	DATA	1	
05620	0 20 25267	NBP	F2M33	
			TEST 0A22A (SET)	
05621	0 43 00430	BRM	0BJECT	
05622	0 43 22321	BRM	F253	PERFORM OBJECT TEST
05623	00000002	DATA	2	
05624	0 20 25313	NBP	F2M34	
			TEST 0A22A (RESET)	
05625	0 43 00430	BRM	0BJECT	
05626	0 43 22342	BRM	F254	PERFORM OBJECT TEST
05627	00000002	DATA	2	
05630	0 20 25324	NBP	F2M35	
			TEST 0A21A (SET)	
05631	0 43 00430	BRM	0BJECT	
05632	0 43 22321	BRM	F253	PERFORM OBJECT TEST
05633	00000004	DATA	4	
05634	0 20 25347	NBP	F2M36	
			TEST 0A21A (RESET)	
05635	0 43 00430	BRM	0BJECT	
05636	0 43 22342	BRM	F254	PERFORM OBJECT TEST
05637	00000004	DATA	4	
05640	0 20 25360	NBP	F2M37	
			TEST 0A20A (SET)	
05641	0 43 00430	BRM	0BJECT	
05642	0 43 22321	BRM	F253	PERFORM OBJECT TEST

DISCF TAP-3.0 04/25 20100 PAGE 58

05643	00000010	DATA	10	
05644	0 20 25371	NBP	F2M38	
			TEST 0A20A (RESET)	
05645	0 43 00430	BRM	0BJECT	
05646	0 43 22342	BRM	F254	PERFORM OBJECT TEST
05647	00000010	DATA	10	
05650	0 20 25402	NBP	F2M39	
			TEST 0A19A (SET)	
05651	0 43 00430	BRM	0BJECT	
05652	0 43 22321	BRM	F253	PERFORM OBJECT TEST
05653	00000020	DATA	20	
05654	0 20 25411	NBP	F2M40	
			TEST 0A19A (RESET)	
05655	0 43 00430	BRM	0BJECT	
05656	0 43 22342	BRM	F254	PERFORM OBJECT TEST
05657	00000020	DATA	20	
05660	0 20 25420	NBP	F2M41	
			TEST 0A18A (SET)	
05661	0 43 00430	BRM	0BJECT	
05662	0 43 22321	BRM	F253	PERFORM OBJECT TEST
05663	00000040	DATA	40	
05664	0 20 25427	NBP	F2M42	
			TEST 0A18A (RESET)	
05665	0 43 00430	BRM	0BJECT	
05666	0 43 22342	BRM	F254	PERFORM OBJECT TEST
05667	00000040	DATA	40	

```

DISCF TAP=3.C 04/25 20100 PAGE 59
05670 0 20 25440 NBP F2M43
*
* TEST 0A17A (SET)
*
05671 0 43 00430 BRM OBJECT
05672 0 43 22321 BRM F2S3 PERFORM OBJECT TEST
05673 0 0000100 DATA 100
05674 0 20 25451 NBP F2M44
*
* TEST 0A17A (RESET)
*
05675 0 43 00430 BRM OBJECT
05676 0 43 22342 BRM F2S4 PERFORM OBJECT TEST
05677 0 0000100 DATA 100
05700 0 20 25462 NBP F2M45
*
* TEST 0A16A (SET)
*
05701 0 43 00430 BRM OBJECT
05702 0 43 22321 BRM F2S3 PERFORM OBJECT TEST
05703 0 0000200 DATA 200
05704 0 20 25473 NBP F2M46
*
* TEST 0A16A (RESET)
*
05705 0 43 00430 BRM OBJECT
05706 0 43 22342 BRM F2S4 PERFORM OBJECT TEST
05707 0 0000200 DATA 200
05710 0 20 25502 NBP F2M47
*
* TEST 0A15A (SET)
*
05711 0 43 00430 BRM OBJECT
05712 0 43 22321 BRM F2S3 PERFORM OBJECT TEST
05713 0 0000400 DATA 400
05714 0 20 25511 NBP F2M48

```

```

DISCF TAP=3.C 04/25 20100 PAGE 60
*
* TEST 0A15A (RESET)
*
05715 0 43 00430 BRM OBJECT
05716 0 43 22342 BRM F2S4 PERFORM OBJECT TEST
05717 0 0000400 DATA 400
05720 0 20 25522 NBP F2M49
*
* TEST 0A14A (SET)
*
05721 0 43 00430 BRM OBJECT
05722 0 43 22321 BRM F2S3 PERFORM OBJECT TEST
05723 0 0000100 DATA 100
05724 0 20 25533 NBP F2M50
*
* TEST 0A14A (RESET)
*
05725 0 43 00430 BRM OBJECT
05726 0 43 22342 BRM F2S4 PERFORM OBJECT TEST
05727 0 0000100 DATA 100
05730 0 20 25542 NBP F2M51
*
* TEST 0A13A (SET)
*
05731 0 43 00430 BRM OBJECT
05732 0 43 22321 BRM F2S3 PERFORM OBJECT TEST
05733 0 0000200 DATA 200
05734 0 20 25551 NBP F2M52
*
* TEST 0A13A (RESET)
*
05735 0 43 00430 BRM OBJECT
05736 0 43 22342 BRM F2S4 PERFORM OBJECT TEST
05737 0 0000200 DATA 200
05740 0 20 25563 NBP F2M53

```

DISCF TAP=3.0 04/25 20100 PAGE 61

```
* TEST QA12A (SET)
*
05741 0 43 00430 BRM 0BJECT
05742 0 43 22321 BRM F253 PERFORM OBJECT TEST
05743 00004000 DATA 4000
05744 0 20 25575 NOP F2M54
*
* TEST QA12A (RESET)
*
05745 0 43 00430 BRM 0BJECT
05746 0 43 22342 BRM F254 PERFORM OBJECT TEST
05747 00004000 DATA 4000
05750 0 20 25607 NOP F2M55
*
* TEST QA11A (SET)
*
05751 0 43 00430 BRM 0BJECT
05752 0 43 22321 BRM F253 PERFORM OBJECT TEST
05753 00010000 DATA 10000
05754 0 20 25621 NOP F2M56
*
* TEST QA11A (RESET)
*
05755 0 43 00430 BRM 0BJECT
05756 0 43 22342 BRM F254 PERFORM OBJECT TEST
05757 00010000 DATA 10000
05760 0 20 25633 NOP F2M57
*
* TEST QA10A (SET)
*
05761 0 43 00430 BRM 0BJECT
05762 0 43 22321 BRM F253 PERFORM OBJECT TEST
05763 00020000 DATA 20000
05764 0 20 25645 NOP F2M58
*
* TEST QA10A (RESET)
```

DISCF TAP=3.0 04/25 20100 PAGE 62

```
* BRM 0BJECT
05765 0 43 00430 BRM F254 PERFORM OBJECT TEST
05766 0 43 22342 BRM F254
05767 00020000 DATA 20000
05770 0 20 25657 NOP F2M59
*
* TEST QA09A (SET)
*
05771 0 43 00430 BRM 0BJECT
05772 0 43 22321 BRM F253 PERFORM OBJECT TEST
05773 00040000 DATA 40000
05774 0 20 25671 NOP F2M60
*
* TEST QA09A (RESET)
*
05775 0 43 00430 BRM 0BJECT
05776 0 43 22342 BRM F254 PERFORM OBJECT TEST
05777 00040000 DATA 40000
06000 0 20 25702 NOP F2M61
*
* TEST QA08A (SET)
*
06001 0 43 00430 BRM 0BJECT
06002 0 43 22321 BRM F253 PERFORM OBJECT TEST
06003 00100000 DATA 100000
06004 0 20 25713 NOP F2M62
*
* TEST QA08A (RESET)
*
06005 0 43 00430 BRM 0BJECT
06006 0 43 22342 BRM F254 PERFORM OBJECT TEST
06007 00100000 DATA 100000
06010 0 20 25724 NOP F2M63
*
* TEST QA07A (SET)
```

```

DISCF TAP=3.0 04/25 20100 PAGE 63
06011 0 43 00430 BRM SUBJECT
06012 0 43 22321 BRM F253 PERFORM OBJECT TEST
06013 00200000 DATA 200000
06014 0 20 25735 NOP F2M64
*
* TEST 0A07A (RESET)
*
06015 0 43 00430 BRM SUBJECT
06016 0 43 22342 BRM F254 PERFORM OBJECT TEST
06017 00200000 DATA 200000
06020 0 20 25746 NOP F2M65
*
* TEST 0A06A (SET)
*
06021 0 43 00430 BRM SUBJECT
06022 0 43 22321 BRM F253 PERFORM OBJECT TEST
06023 00400000 DATA 400000
06024 0 20 25757 NOP F2M66
*
* TEST 0A06A (RESET)
*
06025 0 43 00430 BRM SUBJECT
06026 0 43 22342 BRM F254 PERFORM OBJECT TEST
06027 00040000 DATA 40000
06030 0 20 25770 NOP F2M67
*
* TEST FOR 0A05A GROUNDED
*
06031 0 43 00430 BRM SUBJECT
06032 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
06033 0 20 22351 NOP ENTER
06034 0 76 15410 LDA BIT5 P0T*BRD
06035 0 43 22343 BRM P0T*PIN
06036 0 72 15410 SKA BIT5 ADDRESS BIT SET
06037 0 43 00460 BRM ERRBR YES
06040 0 20 25001 NOP F2M68

```

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DISCF TAP=3.0 04/25 20100 PAGE 64
06041 0 43 00434 BRM END
*
* TEST FOR 0A04A GROUNDED
*
06042 0 43 00430 BRM SUBJECT
06043 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
06044 0 20 22351 NOP ENTER
06045 0 76 15407 LDA BIT4 P0T*BRD
06046 0 43 22343 BRM P0T*PIN
06047 0 72 15407 SKA BIT4 ADDRESS BIT SET
06050 0 43 00460 BRM ERRBR YES
06051 0 20 25017 NOP F2M69
06052 0 43 00434 BRM END
*
* TEST FOR 0A03A GROUNDED
*
06053 0 43 00430 BRM SUBJECT
06054 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
06055 0 20 22351 NOP ENTER
06056 0 76 15406 LDA BIT3 P0T*BRD
06057 0 43 22343 BRM P0T*PIN
06060 0 72 15406 SKA BIT3 ADDRESS BIT SET
06061 0 43 00460 BRM ERRBR YES
06062 0 20 25035 NOP F2M70
06063 0 43 00434 BRM END
*
* CHECK FOR INTERFERENCE OF CHANNEL POTS WITH CONTROLLER
*
06064 0 43 00430 BRM SUBJECT
06065 0 43 22740 BRM SETUP2
06066 0 06 10126 EBD 10126 ALERT DISC FILE
06067 0 13 33272 PBT #0 CLEAR ADDRESS REGISTER
06070 0 06*10100 EBD* 10100 ALERT CHANNEL
06071 0 13 33226 PBT #77777 PBT TO CHANNEL
06072 0 06 10126 EBD 10126 ALERT DISC FILE
06073 0 33 22310 PIN TEMP PIN CONTROLLER ADDRESS REGISTER

```

DISCF TAP=3.0 04/25 20100 PAGE 65

06074	0 76 23310	LDA	TEMP	
06075	0 72 33273	SKA	#=1	ANY ADDRESS REGISTER F.F'S SET
06076	0 43 00460	BRM	ERROR	YES
06077	0 20 26053	NBP	F2M71	
06100	0 43 00434	BRM	END	

CHECK FOR INTERFERENCE OF CHANNEL PINS WITH CONTROLLER

06101	0 43 00430	BRM	OBJECT	
06102	0 43 22740	BRM	SETUP2	
06103	0 06 10126	E0D	10126	ALERT DISC FILE
06104	0 13 33326	PBT	#777777	SET CONTROLLER ADDRESS REGISTER
06105	0 06 10100	E0D	10100	ALERT CHANNEL
06106	0 06 14000	E0D	14000	EXTENDED MODE E0D
06107	0 13 33272	PBT	#0	
06110	0 06 12100	E0D	12100	ALERT TO PIN CHANNEL ADDRESS
06111	0 33 23310	PIN	TEMP	PIN CHANNEL ADDRESS REGISTER
06112	0 76 23310	LDA	TEMP	
06113	0 72 33273	SKA	#=1	CHANNEL ADDRESS REGISTER TEST ZEROS
06114	0 43 00460	BRM	ERROR	NO
06115	0 20 26076	NBP	F2M72	
06116	0 43 00434	BRM	END	

TEST ABILITY TO VERIFY ADDRESS 0 = NO MOVEMENT, FILE NOT READY

06117	0 43 23106	BRM	NORMAL	NORMALIZE DISC
06120	0 40 10126	SKS	10126	DISC FILE READY TEST
06121	0 01 06120	BRU	#=1	WAIT FOR CONTROLLER READY
06122	0 06 10126	E0D	10126	ALERT DISC FILE
06123	0 13 33272	PBT	#0	
06124	0 43 00430	BRM	OBJECT	
06125	0 76 33272	LDA	#0	PBTWORD
06126	0 43 22747	BRM	SETUP3	
06127	0 01 06146	BRU	F2E9	DO NOT USE THIS DISC
06130	0 06 10126	E0D	10126	ALERT DISC FILE
06131	0 13 23332	PBT	PBTWORD	SELECT PRESENT POSITION

DISCF TAP=3.0 04/25 20100 PAGE 66

06132	0 40 10126	SKS	12126	TRACK VERIFIED TEST
06133	0 01 06135	BRU	#=2	ADDRESS NOT VERIFIED
06134	0 01 06143	BRU	F2E9#3	OK
06135	0 55 15432	ADD	BIT23	
06136	0 73 33327	SKG	#8571D	120 MILLISEC ELAPSED YET
06137	0 01 06132	BRU	F2L1	NO
06140	0 43 00460	BRM	ERROR	TIMEOUT ERROR
06141	0 20 26115	NBP	F2M73	
06142	0 01 06146	BRU	F2E9	
06143	0 73 33330	SKG	#5000D	TIME GREATER THAN 70 MILLISEC
06144	0 43 00460	BRM	ERROR	NO = TIME TOO SHORT
06145	0 20 26144	NBP	F2M73A	
06146	0 43 00434	BRM	END	

LOGIC FLOW FOR PRECEDING OBJECT TEST

1	AX01A	# 2CAAA,3C12A,810CA,3C16A	SET X01
2	AU01A	# 2PTFA,3X04A,2IGDA,CX01A,8PT2A	SET U01
3	6RARAO	# 2C0FA,2U01A,1X04A	RESET A REG
	6RGRAO	# 2C0FA,2U01A,1X04A	RESET G REG
	6RERAO	# 2C0FA,2U01A	RESET E REG
4	AX04A	# 2C0FA,2U01A,8PT2A	SET X04
5	YA23A	# 2C0FA,0X04A,2U01A,8PT2A,8C23A	SET A REG
6	AU02A	# 2C0FA,2U01A,4NBSB,3WHRA	SET U02
7	BU01A	# 2C0FA,0X04A,8PT2A	RESET U01
8	2RT0A	# 0X04A,3U01A	PBT RELEASE
9	AG01A	# 2PTFA,3U01A,3BYPA,8PT2A,0X04A	SET G01
	AG03A	# 2PTFA,3U01A,3BYPA,8PT2A,0X04A	SET G03
		# 2BYPA,2U02A,2PAVA,2RDVA	ST 4 BYPASS
10	BX04A	# 2C0FA,8PT1A	RESET X04
	BU02A	# 2C0FA,8PT1A	RESET U02
	BX01A	# 2C0FA,8PT1A	RESET X01
	AF01A	# 2PTFA,3U01A,3BYPA,8PT2A,0X04A	STATE 4 NEXT
11	TK01A	# 0X01A,204FA	RESET K01
	TK02A	# 0X02A,204FA	RESET K02
	6RBH0A	# 2C4FA,3U01A	RESET B01=04

DISC TAP=3,0 04/25 20100 PAGE 67

*	6RBLA0	■ 204FA,3U01A	RESET B05-08
*	BB09A	■ 204FA,3U01A,2CK0A	RESET B09
* 12	AD04A	■ 2SC1A	D REGISTER
*		■ 2SC1A,SECTOR 1 PULSE	USED TO
*	BD04A	■ 2SC0A	DECODE SEC-
*		■ 2SC0A,SECTOR 0 PULSE	TOR DATA
*	AD03A	■ 0D04A,2SC0A	PULSES
*	BD03A	■ 1D04A,2SC0A	
*	AD02A	■ 0D03A,4SC0A	
*	BD02A	■ 1D03A,4SC0A	
*	AD01A	■ 4SC0A,(0D02A+0D03A)	
*	BD01A	■ 4SC0A	
* 13	AX05A	■ 0D01A,0D02A,1D03A,4SC0A	INNER ZONE
*	BX05A	■ 2SC0A	SECTOR
* 14	2IZSA	■ 0X05A	
* 15	SGBA0	■ 2003A,2CKGA	SET G02
*	RGCA0	■ 2CKGA	RESET G03
*		■ 2CKGA,3U01A,204FA,2IZSA	
* 16	SGCA0	■ 2CKGA	SET G03
* 17	AU01A	■ 204FA,207GA,1U04A,9RDYA,2IZSA	SET U01
*		■ 207GA, G01A, G02A, G03A	
*		■ 9X0YA,FILE NOT READY	
* 18	AP01A	■ 2L01A,204FA,2CK0A	SET P01
*	BP01A	■ AF01A	RESET P01
* 19	AU03A	■ 204FA,2U01A,2SC1A,2IZSA,2RDYA	SET U03
* 20	BU03A	■ 204FA,2U01A,2IZSA	RESET U03
*	BU01A	■ 204FA,2U03A,2IZSA	RESET U01
* 21	BF01A	■ 204FA,3U02A,3U01A,2BGAA	RESET F01
*		■ 2BGAA,2RDYA,2PAVA,2IZSA,207GA	STATE 1 NEXT
*	AF03A	■ 204FA,3U02A,3U01A,2BGAA	SET F03
* 22	AU04A	■ 201FA,3U03A,8HLTB,6Q20A	SET U04
*		■ 8HLTB,FORCED TRUE IN SINGLE ACCESS	
* 23	8INLA	■ 201FA,2U04A,1X03A	SEND INT
* 24	AU03A	■ 201FA,2U04A,6Q20A	SET U03
* 25	BU04A	■ 201FA,2U03A,6Q20A	RESET U04

DISC TAP=3,0 04/25 20100 PAGE 68

* CONTROLLER IS NOW IN WAIT STATE ONE WAITING FOR THE BUFFER TO
 * CONNECT FOR DATA TRANSMISSION, VERIFICATION WILL NOW TAKE PLACE.
 *
 * TIMING FOR SEQUENCE SHOULD BE 116 MILLISEC.
 *
 * TEST ABILITY TO VERIFY ADDRESS 0 - MOVEMENT INVOLVED, FILE READY

06147	0 43 00430	BRM	OBJECT	
06150	0 76 33272	LDA	#0	DOTWORD
06151	0 43 22747	BRM	SETUP3	
06152	0 01 06174	BRU	F2E10	DO NOT USE THIS DISC
06153	0 06 11126	EBD	10126	ALERT DISC FILE
06154	0 13 15423	FST	3IT16	MOVE TO POSITION 1
06155	0 43 33575	BRM	500	WAIT 500 MILLISEC
06156	0 06 11126	EBD	10126	ALERT DISC FILE
06157	0 13 23332	PBT	PRT, RD	MOVE TO POSITION 0
06160	0 40 12126	SKS*	12126	TRACK VERIFIED TEST
06161	0 01 06167	BRU	42	TRACK NOT VERIFIED
06162	0 01 06170	BRU	F2L3	
06163	0 55 15432	ADD	3IT23	
06164	0 73 33331	SKG	#35714D	500 MILLISEC ELAPSED YET
06165	0 01 06160	BRU	F2LP	NO
06166	0 43 00460	BRM	ERRRR	500 MILLISEC TIMEOUT
06167	0 20 26222	NBP	F2M74	
06170	0 73 33327	F2L3 SKG	#8571D	TIME > 120 MILLISEC
06171	0 43 00460	BRM	ERRRR	NO - TIME TOO SHORT
06172	0 20 26231	NBP	F2M74A	
06173	0 43 00434	F2E10 BRM	END	

* LOGIC FLAG FOR PRECEDING OBJECT TEST
 *
 * 1 AX01A ■ 2CAAA,3C12A,8I8CA,3C16A SET X01
 * 2 AU01A ■ 2PYFA,3X04A,2IGDA,0X01A,8PT2A SET U01
 * 3 6RARAO ■ 200FA,2U01A,1X04A RESET A REG
 * 6RGRAO ■ 200FA,2U01A,1X04A RESET G REG
 * 6RERAO ■ 200FA,2U01A RESET E REG

* 4	AX04A	200FA,2U01A,8PT2A	SET X04
* 5	YA23A	200FA,OX04A,2U01A,8PT2A,8C23A	SET A REG
* 6	AU02A	200FA,2U01A,4NB88,3WHRA	SET U02
* 7	BU01A	200FA,OX04A,8PT2A	RESET U01
* 8	2RTCA	OX04A,3U01A	POT RELEASE
* 9	AG01A	2PTFA,3U01A,3BYFA,8PT2A,OX04A	SET G01
*	AG03A	2PTFA,3U01A,3BYFA,8PT2A,OX04A	SET G03
*		2BYFA,2U02A,2PAVA,2RDYA	ST 4 BYPASS
* 10	BX04A	200FA,8PT1A	RESET X04
*	BU02A	200FA,8PT1A	RESET U02
*	BX01A	200FA,8PT1A	RESET X01
*	AF01A	2PTFA,3U01A,3BYFA,8PT2A,OX04A	STATE 4 NEXT
* 11	TK01A	OK01A,204FA	RESET K01
*	TK02A	OK02A,204FA	RESET K02
*	6RBH40	204FA,3U01A	RESET B01-04
*	6RBLA0	204FA,3U01A	RESET B05-08
*	BB09A	204FA,3U01A,2CKQA	RESET B09
* 13	SGBA0	2803A,2CKGA	SET G02
*	RGCA0	2CKGA	RESET G03
*		2CKGA,3U01A,204FA,2IZSA	
* 14	SGCA0	2CKGA	SET G03
* 15	AU01A	204FA,207GA,3PAVA,2IZSA	SET U01
* 16	AP01A	2U01A,204FA,2CKQA	SET P01
* 17	8SPRA	204FA,0P01A	SEL AND 8PER
* 18	AU03A	204FA,2U01A,2SC1A,2IZSA,2RDYA	SET U03
* 19	BU03A	204FA,2U01A,2IZSA	RESET U03
* 20	BU01A	204FA,2U03A,2IZSA	RESET U01
*	BF01A	204FA,2BUBA,3WHRA,2IZSA	STATE 2 NEXT
*	AF02A	204FA,2BUBA,3WHRA,2IZSA	
*		2BUBA,2U01A,2U03A	
* 21	AU01A	223FA,2SECA	SET U01
*		2SECA,2IZSA,2IZHA	
* 22	2CKBA	223FA,2IUBA,2CKQA	B REG CLACK
*		7IUBA0,2U02A,3U01A	
*		2CKQA,FILE WRITE CLACK	
* 23	SB09A	2CKBA,1B09A	SET B09

*	KB09A	2CKBA,0B09A	RESET B09
*	SB08A	2CKBA,1B08A,0B09A,1B07A	SET B08
*	RB08A	2CKBA,0B08A,0B09A,1B07A	RESET B08
*	SB07A	2CKBA,1B07A,2CT3A	SET B07
*		2CT3A,0B08A,0B09A	
*	KB07A	2CKBA,0B07A,2CT5A	RESET B07
*		2CT5A,0B07A,0B09A	
*	SB06A	2CKBA,1B06A,2CT5A	SET B06
*	KB06A	2CKBA,0B06A,2CT5A	RESET B06
*	SB05A	2CKBA,1B05A,0B06A,2CT5A	SET B05
*	KB05A	2CKBA,0B05A,0B06A,2CT5A	RESET B05
*	SB04A	2CKBA,1B04A,2CT5A,2H03A	SET B04
*	RB04A	2CKBA,0B04A,2CT5A,2H03A	RESET B04
*		2H03A,0B05A,0B06A	
*	SB03A	CB03A,1B03A	SET B03
*	RB03A	CB03A,0B03A	RESET B03
*		CB03A,2CT5A,2CKBA,2H07A	
*		2H07A,0B04A,0B05A,0B06A	
* 24	265BA	0B03A,0B05A,2CT5A	COUNT = 65
* 25	BU01A	223FA,265BA,2CKQA	RESET U01
*	AU02A	223FA,265BA,2CKQA	SET U02
* 26	CB03A	222FA,3U01A,0B03A,2CKQA	RESET B03
*	3RBLA	202FA,3U01A	RESET B05-08
*	BB09A	202FA,3U01A,2CKQA	RESET B09
*	AU03A	223FA,2IUBA,2CKQA	SET U03
*		2RDKA,2RDQA,2RD1A	
* 27	AU01A	223FA,2U02A,2RD1A	SET U01
* 28	2CKBA	223FA,2BUAA,2RDKA	B REG CLACK
*		2BUAA,2U01A,2U02A	
* 29	AU04A	223FA,2U02A,2H00A,2CT1A,2RDKA	SET U04
*		2H00A,1B05A,1B06A	
*		2CT1A,1B07A,1B08A,0B09A	
* 30	UP02A	223FA,3U01A	SET P02
*	AP02A	223FA,2BUAA,2RD1A	SET P02
*	BP02A	223FA,2BUAA,2RD1A	RESET P02
* 31	2CKGA	223FA,2IXLA	RESET G REG

```

*
*           2IXDA=INDEX PULSE
*
* 32 IF PARITY ERROR OR INEQUALITY:
*
* BU03A  # 223FA+2U02A+2H03A+2CT2A+0P02A+2RDOA      PARITY ERROR
*         # 223FA+2U02A+2H03A+2CT2A+1P02A+2RD1A
* BU03A  # 0UCA0+XUCA0+2UCA0+VUCA0      INEQUALITY
* 6RB=AO # 202FA+2IUEA+2H03A+2CT3A      RESET B01=04
*         # 7IUEA0+2U03A+3U02A
* TK02A  # 0K02A+202FA+2IUEA+2H03A+2CT3A      RESET K02
* TK01A  # 0K01A+202FA+2IUEA+2H03A+2CT3A      RESET K01
*
* IF EQUALITY AND NO PARITY ERROR:
*
* CB02A  # 202FA+2IZSA      TOGGLE B02
* CB01A  # 202FA+0B02A+2IZSA  TOGGLE B01
* TK02A  # 202FA+2H48A+2IZSA  TOGGLE K02
*         # 7H48A0+1B01A+1B02A
* TK01A  # 202FA+2H48A+0K02A+2IZSA      TOGGLE K01
* 33 RU04A # 202FA+2U02A+2H02A+2CT2A+2RDKA      RESET U04
*         # 2H02A+0B05A+1B06A
*         # 2CT2A+0B08A+1B09A
* 34 BU01A # 223FA+2U02A+2H03A+2CT3A+2RDKA      RESET U01
* BU02A  # 223FA+2H03A+2CT3A+2RDKA      RESET U02
* 35 AF03A # 202FA+2IGCA      STATE 1 NEXT
* BF02A  # 202FA+3B9CA+2IGCA
*         # 7IGCA0+1K01A+1K02A+2SECA+1B01A+1B02A
*         # 2B9CA+2X03A+8FHAF      BUFFER C9NN.
* BU03A  # 202FA+2IGCA      RESET U03
* 6G01A  # 202FA+2IGCA      RESET G01
* 6G02A  # 202FA+2IGCA      RESET G02
* 6G03A  # 202FA+2IGCA      RESET G03
*
* CONTROLLER IS NOW IN WAIT STATE ONE WAITING FOR THE BUFFER TO
* CONNECT FOR DATA TRANSMISSION, VERIFICATION WILL NOW TAKE PLACE.

```

```

*
* IF SEVEN DISC REVOLUTIONS HAD TAKEN PLACE WITHOUT VERIFICATION,
* LOGIC FLOW SHOULD HAVE BEEN AS FOLLOWS DURING STATE TWO:
*
* AE03A  # 202FA+0G01A+0G02A+2TUGA      SET E03
*         # 2TUGA+NST [1L04A+1G03A]
* PINLA  # 202FA+0G01A+0G02A+2TUGA      INTERRUPT
* 9YHSA  # NST [0X06A+2MHAA]
*         # YX06A+202FA+0G01A+0G02A+2TUGA      SET X06
* BF02A  # 202FA+0G01A+0G02A+2TUGA      STATE 0 NEXT
*
* STATE SEEK ERROR INDICATOR SHOULD BE ON (1E01+1E02+0E03)
*
* TIMING FOR SEQUENCE SHOULD BE APPROXIMATELY 145 TO 220 MILLISEC.
*
* TEST ABILITY TO VERIFY ADDRESS 0 • NO MOVEMENT, FILE READY

```

06174	C	43	07430	BRM	SUBJECT	
06175	C	76	33772	LDA	#0	PBT=BRD
06176	C	43	22747	BRM	SETUP3	
06177	C	71	07223	BRU	F2E52	DO NOT USE THIS DISC
06200	C	06	15126	E0D	10126	ALERT DISC FILE
06201	C	13	23332	PBT	PBT=ARD	PBT TO CONTROLLER
06202	C	43	23123	BRM	WAIT	WAIT FOR CONTROLLER READY
06203	C	01	06223	BRU	F2E52	ERROR ABORT
06204	C	06	15126	E0D	10126	ALERT DISC FILE
06205	C	13	23332	PBT	PBT=ARD	PBT TO CONTROLLER
06206	C	40	17176	SKS	12126	TRACK VERIFIED TEST
06207	C	11	07211	BRU	**2	TRACK NOT VERIFIED
06210	C	01	06217	BRU	F2L32	
06211	C	55	15432	ADD	31T23	
06212	C	73	33331	SKG	#35714D	500 MILLISEC ELAPSED YET
06213	C	01	06206	BRU	F2L31	NO = LOOP
06214	C	43	06460	BRM	ERRAR	500 MILLISEC TIMEOUT
06215	C	20	27264	NBP	F2M116	
06216	C	01	06220	BRU	**2	
06217	C	73	33330	F2L32	SKG	#5000D

TIME < 70 MILLISEC

DISCF TAP-3.0 04/25 20100 PAGE 73

06220 C 01 06222 BRU *2 YES = 8K
06221 C 43 00460 BRM ERROR TIME TOO LONG
06222 C 20 27413 NBP F2M117
06223 C 43 00434 F2E52 BRM END

* LOGIC FLOW FOR PRECEDING OBJECT TEST

* 1	AX01A	2CAAA,3C12A,8I9CA,3C16A	SET X01
* 2	AU01A	2PTFA,3X04A,2IGDA,OX01A,8PT2A	SET U01
* 3	6RARAQ	200FA,2U01A,1X04A	RESET A REG
*	6RGRAQ	200FA,2U01A,1X04A	RESET G REG
*	6RERAQ	200FA,2U01A	RESET E REG
* 4	AX04A	200FA,2U01A,8PT2A	SET X04
* 5	YA23A	200FA,OX04A,2U01A,8PT2A,8C23A	SET A REG
* 6	AU02A	200FA,2U01A,4NB8B,3WHRA	SET U02
* 7	BU01A	200FA,OX04A,8PT2A	RESET U01
* 8	2RT0A	OX04A,3U01A	POT RELEASE
* 9	AF02A	2PTFA,2BYPA	STATE 3 NEXT
*		2BYPA,2U02A,2PAVA,2RDYA	ST. 4 BYPASS
*	AF03A	2PTFA,2BYPA	
*	BU02A	200FA,8PT1A	RESET U02
*	BX01A	200FA,8PT1A	RESET X01
*	BX04A	200FA,8PT1A	RESET X04
* 10	6RBHAQ	OF03A,3U01A	RESET B01=04
*	6RBLAQ	OF03A,3U01A	RESET B05=08
*	RB1AQ	OF03A,3U01A,2CKQA	RESET B09
* 11	AU01A	223FA,2SECA	SET U01
* 12	2CKBA	223FA,2IU5A,2CKQA	B REG CLOCK
* 13	265BA	0B03A,0B05A,2CT5A	COUNT = 65
* 14	BU01A	223FA,265BA,2CKQA	RESET U01
*	AU02A	223FA,265BA,2CKQA	SET U02
* 15	6RBHAQ	OF03A,3U01A	RESET B01=04
*	6RBLAQ	OF03A,3U01A	RESET B05=08
*	RB1AQ	OF03A,3U01A,2CKQA	RESET B09
* 16	AU03A	223FA,2IUAA,2RDKA	SET U03
*	AU01A	223FA,2U02A,2RD1A	SET U01

DISCF TAP-3.0 04/25 20100 PAGE 74

* 17	2CKBA	223FA,2U01A,2U02A,2RDKA	B REG CLOCK
* 18	AU04A	223FA,2U01A,2H03A,2CT1A,2RDKA	SET U04
*		IF PARITY ERROR OR INEQUALITY:	
*	BU03A	223FA,2U02A,2H03A,2CT2A,0P02A,2RDCA + 223FA,2U02A,2H03A,2CT2A,1P02A,2RD1A + 2UCA, XUCA, YUCA, ZUCA	PARITY ERROR
* 19	RU04A	2RDKA,2CT1A,2H03A,2U02A,203FA	INEQUALITY
* 20	BU02A	223FA,2RDKA,2CT3A,2H03A	RESET U04
*	BU03A	203FA,2IUAA,2RDKA,2CT3A,2H03A 2IUAA, U01, U02, U03	RESET U02
*	BU01A	2U02A,2RDKA,2CT3A,2H03A,223FA	RESET U03
*	AG01A	203FA,2IUAA,2RDKA,2CT3A,2H03A	SET G REG TO
*	BG02A	203FA,2IUAA,2RDKA,2CT3A,2H03A	FIVE
*	AG03A	203FA,2IUAA,2RDKA,2CT3A,2H03A	
*	AF01A	203FA,2IUAA,2RDKA,2CT3A,2H03A	STATE 4 NEXT
*	BF02A	203FA,2IUAA,2RDKA,2CT3A,2H03A,3Y9CA	
*	BF03A	203FA,2IUAA,2RDKA,2CT3A,2H03A,3BNCA	
* 21	TK01A	OK01A,204FA	RESET K01
*	TK02A	OK02A,204FA	RESET K02
*	6RBHAQ	204FA,3U01A	RESET B01=04
*	6RBLAQ	204FA,3U01A	RESET B05=08
*	BB09A	204FA,3U01A,2CKQA	RESET B09
* 22	2CK3A	3U01A,204FA,2I25A	G REG CLOCK
* 23	AU03A	204FA,2I25A,2U01A,2RDYA,2SC1A	SET U03
* 24	BU03A	204FA,2U01A,2I25A	RESET U03
*	BU01A	204FA,2U03A,2I25A	RESET U01
* 25	BF01A	204FA,3U02A,3U01A,2BGAA	STATE 1 NEXT
*	AF03A	204FA,3U02A,3U01A,2BGAA	

CONTROLLER IS NOW IN WAIT STATE ONE. TIMING FOR SEQUENCE SHOULD BE FROM 16 TO 68 MILLISEC.

TEST VERIFICATION LOGIC

DISCF TAP=3.0 04/25 20100 PAGE 75

06224	0 43 00430	BRM	0BJECT	
06225	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06226	00777777	DATA	777777	
06227	0 20 26273	NBP	F2M75	
			TEST VERIFICATION LOGIC	
06230	0 43 00430	BRM	0BJECT	
06231	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06232	00400000	DATA	400000	
06233	0 20 26342	NBP	F2M76	
			TEST VERIFICATION LOGIC	
06234	0 43 00430	BRM	0BJECT	
06235	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06236	00200000	DATA	200000	
06237	0 20 26375	NBP	F2M77	
			TEST VERIFICATION LOGIC	
06240	0 43 00430	BRM	0BJECT	
06241	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06242	00100000	DATA	100000	
06243	0 20 26422	NBP	F2M78	
			TEST VERIFICATION LOGIC	
06244	0 43 00430	BRM	0BJECT	
06245	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06246	00040000	DATA	40000	
06247	0 20 26452	NBP	F2M79	
			TEST VERIFICATION LOGIC	
06250	0 43 00430	BRM	0BJECT	

DISCF TAP=3.0 04/25 20100 PAGE 76

06251	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06252	00020000	DATA	20000	
06253	0 20 26500	NBP	F2M80	
			TEST VERIFICATION LOGIC	
06254	0 43 00430	BRM	0BJECT	
06255	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06256	00010000	DATA	10000	
06257	0 20 26537	NBP	F2M81	
			TEST VERIFICATION LOGIC	
06260	0 43 00430	BRM	0BJECT	
06261	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06262	00024000	DATA	4000	
06263	0 20 26562	NBP	F2M82	
			TEST VERIFICATION LOGIC	
06264	0 43 00430	BRM	0BJECT	
06265	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06266	00002000	DATA	2000	
06267	0 20 26605	NBP	F2M83	
			TEST VERIFICATION LOGIC	
06270	0 43 00430	BRM	0BJECT	
06271	0 43 22362	BRM	F295	PERFORM OBJECT TEST
06272	00001000	DATA	1000	
06273	0 20 26633	NBP	F2M84	
			TEST VERIFICATION LOGIC	
06274	0 43 00430	BRM	0BJECT	
06275	0 43 22362	BRM	F295	PERFORM OBJECT TEST

```

DISCF  TAP=3.0    04/25  20100  PAGE 77
06276  00000400    DATA  400
06277  0 20 26657    NOP    F2M85
      *
      *    TEST VERIFICATION LOGIC
      *
06300  0 43 00430    BRM    8BJECT
06301  0 43 22362    BRM    F285    PERFORM OBJECT TEST
06302  00000200    DATA  200
06303  0 20 26704    NOP    F2M86
      *
      *    TEST VERIFICATION LOGIC
      *
06304  0 43 00430    BRM    8BJECT
06305  0 43 22362    BRM    F285    PERFORM OBJECT TEST
06306  00000100    DATA  100
06307  0 20 26731    NOP    F2M87
      *
      *    TEST VERIFICATION LOGIC
      *
06310  0 43 00430    BRM    8BJECT
06311  0 43 22362    BRM    F285    PERFORM OBJECT TEST
06312  00000040    DATA  40
06313  0 20 26755    NOP    F2M88
      *
      *    TEST PAVA LOGIC
      *
06314  0 43 00430    BRM    8BJECT
06315  0 43 22407    BRM    F286    PERFORM OBJECT TEST
06316  00000000    DATA  0
06317  00017600    DATA  17600
06320  0 20 26777    NOP    F2M89
      *
      *    TEST PAVA LOGIC
      *
06321  0 43 00430    BRM    8BJECT
06322  0 43 22407    BRM    F286    PERFORM OBJECT TEST

```

```

DISCF  TAP=3.0    04/25  20100  PAGE 78
06323  00777777    DATA  777777
06324  0076 000    DATA  760000
06325  0 20 26777    NOP    F2M89
      *
      *    TEST PAVA LOGIC
      *
06326  0 43 00430    BRM    8BJECT
06327  0 43 22407    BRM    F286    PERFORM OBJECT TEST
06330  00777777    DATA  777777
06331  00377777    DATA  377777
06332  0 20 27016    NOP    F2M90
      *
      *    TEST PAVA LOGIC
      *
06333  0 43 00430    BRM    8BJECT
06334  0 43 22407    BRM    F286    PERFORM OBJECT TEST
06335  00777777    DATA  777777
06336  00577777    DATA  577777
06337  0 20 27023    NOP    F2M91
      *
      *    TEST PAVA LOGIC
      *
06340  0 43 00430    BRM    8BJECT
06341  0 43 22407    BRM    F286    PERFORM OBJECT TEST
06342  00777777    DATA  777777
06343  00677777    DATA  677777
06344  0 20 27030    NOP    F2M92
      *
      *    TEST PAVA LOGIC
      *
06345  0 43 00430    BRM    8BJECT
06346  0 43 22407    BRM    F286    PERFORM OBJECT TEST
06347  00777777    DATA  777777
06350  00737777    DATA  737777
06351  0 20 27035    NOP    F2M93

```

DISCF TAP-3.0 04/25 20100 PAGE 79

* TEST PAVA LOGIC

06352 0 43 00430 BRM 8BJECT
06353 0 43 22407 BRM F2S6 PERFORM OBJECT TEST
06354 00777777 DATA 777777
06355 00757777 DATA 757777
06356 0 20 27542 NBP F2M94

* TEST PAVA LOGIC

06357 0 43 00430 BRM 8BJECT
06360 0 43 22407 BRM F2S6 PERFORM OBJECT TEST
06361 00777777 DATA 777777
06362 00757777 DATA 757777
06363 0 20 27547 NBP F2M95

* TEST PAVA LOGIC

06364 0 43 00430 BRM 8BJECT
06365 0 43 22407 BRM F2S6 PERFORM OBJECT TEST
06366 00777777 DATA 777777
06367 00773777 DATA 773777
06370 0 20 27554 NBP F2M96

* TEST PAVA LOGIC

06371 0 43 00430 BRM 8BJECT
06372 0 43 22407 BRM F2S6 PERFORM OBJECT TEST
06373 00777777 DATA 777777
06374 00775777 DATA 775777
06375 0 20 27561 NBP F2M97

* TEST PAVA LOGIC

06376 0 43 00430 BRM 8BJECT
06377 0 43 22407 BRM F2S6 PERFORM OBJECT TEST

DISCF TAP-3.0 04/25 20100 PAGE 80

06400 00777777 DATA 777777
06401 00776777 DATA 776777
06402 0 20 27566 NBP F2M98

* TEST PAVA LOGIC

06403 0 43 00430 BRM 8BJECT
06404 0 43 22407 BRM F2S6 PERFORM OBJECT TEST
06405 00777777 DATA 777777
06406 00773777 DATA 773777
06407 0 20 27573 NBP F2M99

* TEST PAVA LOGIC

06410 0 43 00430 BRM 8BJECT
06411 0 43 22407 BRM F2S6 PERFORM OBJECT TEST
06412 00777777 DATA 777777
06413 00775777 DATA 775777
06414 0 20 27580 NBP F2M100

* TEST PAVA LOGIC

06415 0 43 00430 BRM 8BJECT
06416 0 43 22407 BRM F2S6 PERFORM OBJECT TEST
06417 00000000 DATA 0
06420 00400000 DATA 400000
06421 0 20 27585 NBP F2M101

* TEST PAVA LOGIC

06422 0 43 00430 BRM 8BJECT
06423 0 43 22407 BRM F2S6 PERFORM OBJECT TEST
06424 00000000 DATA 0
06425 00200000 DATA 200000
06426 0 20 27592 NBP F2M102

```

DISCF TAP=3.0 04/25 20100 PAGE 81
*
* TEST PAVA LOGIC
06427 0 43 00430 BRM OBJECT
06430 0 43 22407 BRM F256 PERFORM OBJECT TEST
06431 00000000 DATA 0
06432 00100000 DATA 10000
06433 0 20 27123 NBP F2M103
*
* TEST PAVA LOGIC
06434 0 43 00430 BRM OBJECT
06435 0 43 22407 BRM F256 PERFORM OBJECT TEST
06436 00000000 DATA 0
06437 00000000 DATA 40000
06440 0 20 27137 NBP F2M104
*
* TEST PAVA LOGIC
06441 0 43 00430 BRM OBJECT
06442 0 43 22407 BRM F256 PERFORM OBJECT TEST
06443 00000000 DATA 0
06444 00000000 DATA 20000
06445 0 20 27141 NBP F2M105
*
* TEST PAVA LOGIC
06446 0 43 00430 BRM OBJECT
06447 0 43 22407 BRM F256 PERFORM OBJECT TEST
06450 00000000 DATA 0
06451 00010000 DATA 10000
06452 0 20 27150 NBP F2M106
*
* TEST PAVA LOGIC
06453 0 43 00430 BRM OBJECT
06454 0 43 22407 BRM F256 PERFORM OBJECT TEST

```

```

DISCF TAP=3.0 04/25 20100 PAGE 82
06455 00000000 DATA 0
06456 00004000 DATA 4000
06457 0 20 27160 NBP F2M107
*
* TEST PAVA LOGIC
06460 0 43 00430 BRM OBJECT
06461 0 43 22407 BRM F256 PERFORM OBJECT TEST
06462 00000000 DATA 0
06463 00002000 DATA 2000
06464 0 20 27167 NBP F2M108
*
* TEST PAVA LOGIC
06465 0 43 00430 BRM OBJECT
06466 0 43 22407 BRM F256 PERFORM OBJECT TEST
06467 00000000 DATA 0
06470 00001000 DATA 1000
06471 0 20 27176 NBP F2M109
*
* TEST PAVA LOGIC
06472 0 43 00430 BRM OBJECT
06473 0 43 22407 BRM F256 PERFORM OBJECT TEST
06474 00000000 DATA 0
06475 00000400 DATA 400
06476 0 20 27205 NBP F2M110
*
* TEST PAVA LOGIC
06477 0 43 00430 BRM OBJECT
06500 0 43 22407 BRM F256 PERFORM OBJECT TEST
06501 00000000 DATA 0
06502 00000000 DATA 200
06503 0 20 27214 NBP F2M111

```

```

*
* TEST 6S10A0
*
06504 0 43 00430 BRM OBJECT
06505 0 76 33272 LDA #0
06506 0 43 22747 BRM SETUP3
06507 0 01 06520 BRU F2E58
06510 0 06 10126 EOD 10126
06511 0 13 23332 PBT PBTWRD
06512 0 71 33332 LDX ##3997D
06513 0 41 06513 BRX *
06514 0 40*10126 SKS* 10126
06515 0 01 06517 BRU **2
06516 0 43 00460 BRM ERROR
06517 0 20 27224 NBP F2M112
06520 0 43 00434 F2E58 BRM END

*
* TEST 6S10A0
*
06521 0 43 00430 BRM OBJECT
06522 0 76 33272 LDA #0
06523 0 43 22747 BRM SETUP3
06524 0 01 06534 BRU F2E49
06525 0 06 10126 EOD 10126
06526 0 13 23332 PBT PBTWRD
06527 0 40*10126 SKS* 12126
06530 0 01 06527 BRU **1
06531 0 40*10126 SKS* 10126
06532 0 43 00460 BRM ERROR
06533 0 20 27233 NBP F2M113
06534 0 43 00434 F2E49 BRM END

*
* TEST 6S10A0
*
06535 0 43 00430 BRM OBJECT
06536 0 76 33272 LDA #0
06537 0 43 22747 BRM SETUP3
    
```

DO NOT USE ADDRESSED DISC
ALERT DISC FILE
POSITION ARM
7 MILLISEC DELAY

DISC FILE READY TEST
CONTROLLER SHOULD NOT BE READY YET

PBTWRD

DO NOT USE ADDRESSED DISC
ALERT DISC FILE
PBT TO CONTROLLER
TRACK VERIFIED TEST
WAIT FOR VERIFICATION
DISC FILE READY TEST
CONTROLLER NOT READY

PBTWRD

```

06540 0 01 06551 BRU F2E50
06541 0 06 10126 EOD 10126
06542 0 13 23332 PBT PBTWRD
06543 0 40*10126 SKS* 12126
06544 0 01 06543 BRU **1
06545 0 40*10126 SKS* 10026
06546 0 01 06550 BRU **2
06547 0 43 00460 BRM ERROR
06550 0 20 27240 NBP F2M114
06551 0 43 00434 F2E50 BRM END

*
* TEST 6S10A0
*
06552 0 43 00430 BRM OBJECT
06553 0 76 33272 LDA #0
06554 0 43 22747 BRM SETUP3
06555 0 01 06566 BRU F2E51
06556 0 06 10126 EOD 10126
06557 0 13 23332 PBT PBTWRD
06560 0 40*10126 SKS* 12126
06561 0 01 06560 BRU **1
06562 0 40*10126 SKS* 12226
06563 0 01 06565 BRU **2
06564 0 43 00460 BRM ERROR
06565 0 20 27252 NBP F2M115
06566 0 43 00434 F2E51 BRM END

*
* SECTOR VERIFICATION LOGIC CHECK
*
06567 0 43 00430 BRM OBJECT
06570 0 43 22445 BRM F2E57
06571 0 0777777 DATA 777777
06572 0 20 27254 NBP F2M118

*
* SECTOR VERIFICATION LOGIC CHECK
    
```

DO NOT USE ADDRESSED DISC
ALERT DISC FILE
PBT TO DISC
TRACK VERIFIED TEST
WAIT FOR VERIFICATION
SHOULD NOT SKIP
OK

DO NOT USE ADDRESSED DISC
ALERT DISC FILE
PBT TO DISC
TRACK VERIFIED TEST
WAIT FOR VERIFICATION
SHOULD NOT SKIP
OK

PERFORM OBJECT TEST


```

DISCF TAP=3.0      04/25 20100 PAGE 85
06573 0 43 00430   BRM   OBJECT
06574 0 43 22445   BRM   F257           PERFORM OBJECT TEST
06575 0 00000002   DATA 2
06576 0 20 27403   NOP   F2M119

*
*   SECTOR VERIFICATION LOGIC CHECK
*
06577 0 43 00430   BRM   OBJECT
06600 0 43 22445   BRM   F257           PERFORM OBJECT TEST
06601 0 00000001   DATA 1
06602 0 20 27432   NOP   F2M120

*
*   TEST FOR ERRORS DURING VERIFICATION
*
06603 0 43 00430   BRM   OBJECT
06604 0 76 33272   LDA   #0           P0TWRD
06605 0 43 22747   BRM   SETUP3
06606 0 01 06621   BRU   F2E56         DISC OUT OF BOUNDS
06607 0 06 10126   EBD   10126        ALERT DISC FILE
06610 0 13 23332   PBT   P0TWRD       PBT TO DISC
06611 0 40*12126   SKS*  12126        TRACK VERIFIED TEST
06612 0 01 06611   BRU   **1          WAIT FOR VERIFICATION
06613 0 06 10126   EBD   10126        ALERT DISC FILE
06614 0 13 23332   PBT   P0TWRD       PBT TO DISC
06615 0 43 23275   BRM   #500         WAIT 500 MILLISEC
06616 0 40*11126   SKS*  11126        DISC FILE ERROR TEST
06617 0 43 00460   BRM   ERROR        CONTROLLER ERROR SET
06620 0 20 27460   NOP   F2M121
06621 0 43 00434   F2E56 BRM   END

*
*   TEST FOR ERRORS DURING VERIFICATION
*
06622 0 43 00430   BRM   OBJECT
06623 0 76 33272   LDA   #0           P0TWRD
06624 0 43 22747   BRM   SETUP3
06625 0 01 06640   BRU   F2E57         DISC OUT OF BOUNDS

```

```

DISCF TAP=3.0      04/25 20100 PAGE 86
06626 0 06 10126   EBD   10126        ALERT DISC FILE
06627 0 13 15423   PBT   BIT16        MOVE ARM TO POSITION 1
06630 0 43 23123   BRM   #AIT         WAIT FOR CONTROLLER READY
06631 0 01 06640   BRU   F2E57        ERROR ABORT
06632 0 06 10126   EBD   10126        ALERT DISC FILE
06633 0 13 23332   PBT   P0TWRD       MOVE TO POSITION 0
06634 0 43 23275   BRM   #500         WAIT 500 MILLISEC
06635 0 40*11126   SKS*  11126        DISC FILE ERROR TEST
06636 0 43 00460   BRM   ERROR        CONTROLLER ERROR SET
06637 0 20 27504   NOP   F2M122
06640 0 43 00434   F2E57 BRM   END
06641 0 43 00456   F2DF2 BRM   F00NE   EXIT THIS FUNCTION

```

*
* FUNCTION PARAMETER TABLES

06642	0 20 06650	FPT2	NBP	FIM2	FUNCTION IDENTIFIER MESSAGE
06643	0 20 06670		NBP	FAM2	FUNCTION ABSTRACT MESSAGE
06644	0 20 05436		NBP	FVM1	FUNCTION VARIABLES MESSAGE
06645	0 01 04777		ONE	FVT1	FUNCTION VARIABLES (NONE)
06646	0 00 07042		PZE	FUNC3	POINTER TO NEXT FUNCTION
06647	10001000		DATA	10000000	FUNCTION IDENTIFIER BIT (BIT 2)

*
* FUNCTION MESSAGES

06650	52261200	FIM2	BCD	' F 02 - DISC FILE CONTROLLER DIAGNOSTIC WITH NO DATA'	
06651	02124012				
06652	24316223				
06653	12263143				
06654	25122346				
06655	45635146				
06656	43432551				
06657	12243121				
06660	27454662				
06661	63312312				
06662	66316330				
06663	12454612				
06664	24216321				
06665	12635121		BCD	' TRANSFER!'	
06666	45622625				
06667	51371212				
06670	52322431	FAM2	BCD	' DISC FILE CONTROLLER DIAGNOSTIC WITH NO DATA TRANSFER!'	
06671	62211226				
06672	31432512				
06673	23464563				
06674	51464343				
06675	25511224				
06676	31212745				
06677	46625331				

06700	23124431				
06701	63312345				
06702	46122421				
06703	63211263				
06704	51214562				
06705	26255112				
06706	52521230		BCD	' THIS FUNCTIONS TESTS THE 9164 DISC FILE CONTROLLER AS'	
06707	31621226				
06710	64452363				
06711	31464562				
06712	12632562				
06713	63621263				
06714	30251211				
06715	61060412				
06716	24316223				
06717	12263143				
06720	25122346				
06721	45635146				
06722	43432551				
06723	12216212				
06724	52446423		BCD	' MUCH AS POSSIBLE WITHOUT DATA TRANSFER. THE FOLLOWING'	
06725	30122162				
06726	12474662				
06727	62312243				
06730	25126631				
06731	63324664				
06732	63122421				
06733	63211263				
06734	51214562				
06735	26255133				
06736	12633225				
06737	12264443				
06740	43456631				
06741	45271212				
06742	52216262		BCD	' ASSUMPTIONS ARE MADE!'	
06743	64444763				

DISCF TAP=3.0 04/25 20100 PAGE 89

06744	31464562		
06745	12215125		
06746	12442124		
06747	25151212		
06750	52665131	BCD	' WRITE HEADER SWITCH IS OFF'
06751	63251230		
06752	25212425		
06753	51126266		
06754	31632330		
06755	12316212		
06756	46262612		
06757	52454612	BCD	' NO DISCS WRITE PROTECTED'
06760	24316223		
06761	62126651		
06762	31632512		
06763	47514663		
06764	25236325		
06765	24121212		
06766	52255151	BCD	' ERROR STOP SWITCH IS IN CONTINUE'
06767	46511262		
06770	63464712		
06771	62663163		
06772	23301231		
06773	62123145		
06774	12234445		
06775	63314564		
06776	25121212		
06777	52263143	BCD	' FILE IS ON LINE'
07000	25123162		
07001	12464312		
07002	43314525		
07003	52302521	BCD	' HEADERS ARE GOOD'
07004	24255162		
07005	12215125		
07006	12274646		
07007	24121212		

DISCF TAP=3.0 04/25 20100 PAGE 90

07010	52462241	BCD	' OBJECT TESTS USING DISCS WHICH ARE DELETED FROM THE'
07011	25236312		
07012	63256263		
07013	62126462		
07014	31452712		
07015	24316223		
07016	62126630		
07017	31233112		
07020	21512512		
07021	24254325		
07022	63252412		
07023	26514644		
07024	12633025		
07025	52644531	BCD	' UNIT VARIABLES DOCT17 AND D20T37 WILL BE SKIPPED.'
07026	63126521		
07027	51312122		
07030	43256212		
07031	24002063		
07032	01071221		
07033	45241224		
07034	02006303		
07035	07126631		
07036	43431222		
07037	25126242		
07040	31474725		
07041	24333712		

FUNCTION 3 = 9164 DISC FILE CONTROLLER DIAGNOSTIC (DATA XFER)

```

07042 0 43 00424 FUNC3 BRM FUNCTN FUNCTION LINK
07043 0 20 11461 NBP F3T3
07044 0 43 00430 BRM OBJECT
07045 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
07046 0 20 23351 NBP ENTER
07047 0 02 20004 DIR DISABLE INTERRUPTS
07050 0 76 00401 LDA STATUS GET SYSTEM STATUS WORD
07051 0 72 15414 SKA BIT9 IS DISC SOFTWARE WRITE=PROTECTED
07052 0 01 11460 BRU ENDF3 YES = EXIT FUNCTION
07053 0 76 00332 LDA FLAGS CHECK FOR PREVIOUS KEY
07054 0 72 04765 SKA UPT*4
07055 0 01 11460 BRU ENDF3 DISC KEYED
    
```

TEST ABILITY TO CONNECT BUFFER FOR WRITE

```

07056 0 43 00430 BRM OBJECT
07057 0 76 33772 LDA #0 PASSWORD
07060 0 43 22755 BRM SETUP4 SETUP OBJECT TEST
07061 0 01 07072 BRU F3E1 ABORT
07062 0 43 22766 BRM CPBT1 PBT TO CHANNEL
07063 00074000 DATA #B*STADDR
07064 0 77 36706 LAX #570D WAIT 1 MILLISEC
07065 0 41 07065 BRX *
07066 0 40*12126 SKS* 12126 TRACK VERIFIED TEST
07067 0 01 07071 BRU **2 CONTROLLER LEFT STATE 1 = OK
07070 0 43 00460 BRM ERROR
07071 0 20 27551 NBP F3M1
07072 0 43 00434 BRM END
    
```

TEST 2M-4A

```

07073 0 43 00430 BRM OBJECT
07074 0 40*12146 SKS* 12146 CARD PUNCH BUFFER TEST
07075 0 01 07077 BRU **2
07076 0 01 07105 BRU F3E2 READY = ABORT TEST
07077 0 40*14146 SKS* 14146 CARD PUNCH READY TEST
07100 0 01 07102 BRU **2
07101 0 01 07105 BRU F3E2 READY = ABORT TEST
07102 0 43 22470 BRM F3S1 PERFORM TEST
07103 0 06 03766 EBD 3766
07104 0 20 27446 NBP F3M2
07105 0 43 00434 BRM END
    
```

TEST 2M-4A

```

07106 0 43 00430 BRM OBJECT
07107 0 40*10316 SKS* 10316 MAGPACK TEST (CHECK FOR MAG TAPE 6)
07110 0 01 07112 BRU **2 NO MAG TAPE 6
07111 0 01 07115 BRU F3E3
07112 0 43 22470 BRM F3S1 PERFORM TEST
07113 0 06 03776 EBD 3776
07114 0 20 27461 NBP F3M3
07115 0 43 00434 BRM END
    
```

TEST 2M-4A

```

07116 0 43 00430 BRM OBJECT
07117 0 43 22470 BRM F3S1 PERFORM TEST
07120 0 06 03762 EBD 3762
07121 0 20 27461 NBP F3M3
07122 0 43 00434 BRM END
    
```

TEST 2M-4A

```

07123 0 43 00430 BRM OBJECT
07124 0 43 22470 BRM F3S1 PERFORM TEST
07125 0 06 03766 EBD 3766
    
```

DISCF TAP=3.C 04/25 20100 PAGE 93

```

07126 0 20 27661 NBP F3M3
07127 0 43 00434 BRM END
*
*
* TEST 2MHAA
*
07130 0 43 00430 BRM SUBJECT
07131 0 43 22470 BRM F3B1 PERFORM TEST
07132 0 06 03767 EBD 3767
07133 0 20 27670 NBP F3M4
07134 0 43 00434 BRM END
*
*
* VERIFY ECW RECEIVED
*
07135 0 43 00430 BRM SUBJECT
07136 0 76 33272 LDA #0 POTWORD
07137 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07140 0 01 07151 BRU F3E8 ERROR ABORT
07141 0 06*10100 EBD* 10100 ALERT CHANNEL
07142 0 06 14200 EBD 14200 EXTENDED MODE EOD
07143 0 13 33333 PBT #4B4*STADDR WC # 1
07144 0 06 03166 EBD 3166 WRITE SECTOR MODE, 1 CHARACTER
07145 0 43 23265 BRM #200 WAIT 200 MILLISEC
07146 0 40*12100 SKS* 12100 CHANNEL ZERO WORD COUNT TEST
07147 0 43 00460 BRM ERROR CHANNEL NOT ZERO # ECW NOT RECEIVED
07150 0 20 27477 NBP F3M6
07151 0 43 00434 F3E8 BRM END
*
*
* TEST ABILITY TO CYCLE TO STATE 0 FROM STATE 7 (WRITE)
*
07152 0 43 00430 BRM SUBJECT
07153 0 76 33272 LDA #0 POTWORD
07154 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07155 0 01 07200 BRU F3E9 ERROR ABORT
07156 0 06*10100 EBD* 10100 ALERT CHANNEL
07157 0 06 14200 EBD 14200 EXTENDED MODE EOD
07160 0 13 33334 PBT #2B5*STADDR WC # 4

```

DISCF TAP=3.C 04/25 20100 PAGE 94

```

07161 0 06 03166 EBD 3166 1 CHARACTER
07162 0 40*12100 SKS* 12100 CHANNEL ZERO WORD COUNT TEST
07163 0 01 07162 BRU #*1 WAIT FOR ECW TO DISCONNECT
07164 0 77 20754 EAX #7700D WAIT #** MILLISEC
*
07165 0 41 07165 BRX *
07166 0 40*10126 SKS* 10126 DISC FILE READY TEST
07167 0 01 07171 BRU #*2 CONTROLLER NOT READY
07170 0 01 07174 BRU #*4
07171 0 43 00460 BRM ERROR
07172 0 20 27752 NBP F3M7
07173 0 01 07200 BRU F3E9
*
07174 0 40*12126 SKS* 12126 TRACK VERIFIED TEST
07175 0 01 07200 BRU F3E9 NOT IN STATE 1
07176 0 43 00460 BRM ERROR RETURNED TO STATE 1
07177 0 20 27770 NBP F3M8
07200 0 43 00434 F3E9 BRM END
*
*
* LOGIC FLOW FOR PRECEDING OBJECT TEST
*
* ENTRANCE FROM STATE 3 (SEARCH)
*
* 1 AF01A # 2BGEA STATE 7 NEXT
* # 2BGEA#2F03A,2I0HA,2H03A,2CT3A,2RDKA
*
* 2 6RBH4Q # 2RSTA RESET B01=04
* 6RBL4Q # 2RSTA RESET B05=08
* 6RBL4Q # 2RSTA RESET B09
* 6RSLX0 # 257FA,2I0CA,3U01A RESET L01=06
* TK01A # 2RSKA,0K01A RESET K01
* TK02A # 2RSKA,0K02A RESET K02
*
* # 2RSKA,257FA,2I0CA,3U01A
*
* 3 8EN4A # 207FA,3CLRA WRITE ENABLE
* 8WDC4 # 207FA,2I0CA,2CK0A WRITE DATA 0
* AU01A # 207FA,2CK0A SET U01
* 4 2CK8A # 207FA,2U01A,2CK0A # REG CL9CK
* 5 AU04A # 207FA,3U02A,2H07A,2CT1A,2CK0A SET U04
* 6 6ECY4Q # 207FA,2U04A ECW

```

```

* 7 BU04A ■ 207FA.3U02A.2468A.2CK0A RESET U04
* BU01A ■ 207FA.3U02A.2468A.2CK0A RESET U01
* AU02A ■ 207FA.2468A.2CK0A SET U02
* 8 6RBHA0 ■ 2RSTA RESET B01=04
* 6RBLA0 ■ 2RSTA RESET B05=08
* RB1A0 ■ 2RSTA.2CK0A RESET B09
* 2SGSX ■ 207FA.2U04A.3U02A.2468A.2CK0A
* AS01A ■ 2SGSX.8R10A SET S REG
* BS01A ■ 2SGSX.9R10A RESET S REG
* 9 8WD1A ■ 207FA.2CK0A.2IUAA WRITE DATA 1
* AU01A ■ 207FA.2CK0A SET U01
* 2SSRX ■ 207FA.2BUAA.2IG8A.2CK0A SHIFT S REG
* 10 8S06A ■ 207FA.2SSRX RESET S06
* 8WD1A ■ 2VFCA.2BUAA.0S01A WRITE DATA 1
* 8WD0A ■ 2VFCA.2BUAA.1S01A WRITE DATA 0
*
* AT THIS POINT, THE BUFFER SHOULD DISCONNECT (ZERO WORD COUNT)
*
* 12 8X03A ■ 2HAA.8Y90A RESET X03
* 13 BU03A ■ 3X03A.2CK0A.207FA.2U02A RESET U03
*
* NOW, SGSX IS INHIBITED AND ZEROS WILL BE WRITTEN
*
* 14 BU01A ■ 207FA.2FLBA.2CK0A RESET U01
* 2FLBA.2FCHA.2CT5A COUNT = 383
* 7FCHA0.1B01A.1B02A.1B03A.1B04A.1B05A.1B06A
* 15 2RSTA ■ 0F03A.3U01A CLEAR B REG
* AU01A ■ 207FA.2CK0A SET U01
*
* 16 IF MORE PACKETS:
*
* 8WD1A ■ 207FA.2IUAA.2CK0A WRITE DATA 1
*
* IF LAST PACKET:
*
* 17 AU03A ■ 207FA.2U02A.0K01A.0K02A.2FCHA.2CK0A SET U03

```

```

* 18 BU02A ■ 207FA.2U03A.2FLBA.2CK0A RESET U02
* BU01A ■ 207FA.2FLBA.2CK0A RESET U01
* 19 8WD0A ■ 2VFCA.3U01A.3U02A WRITE DATA 0
* 20 APO1A ■ 2SGSX.8RPOA SET/RESET P01
* BPO1A ■ 2SGSX.9RPOA
* BPO1A ■ 207FA.2U01A.2IG8A.2WD1A TOGGLE P01
* APO1A ■ 207FA.2U01A.2IG8A.2WD1A
* 2IG8A NBT [ CT5 ]
* TL01A ■ 2TLRX.8R10A TOGGLE L REG
* 2TLRX.207FA.2U04A.3U02A.2468A
* 207FA.3U03A.2U04A.2CT5A.2CK0A
* 21 AS01A ■ 2TL5X.0L01A SET S FROM L
* BS01A ■ 2TL5X.1L01A
* 2TL5X.207FA.3U01A.2U03A.2CK0A
* 22 2SSRX ■ 207FA.2BUAA.2CK0A SHIFT S REG
* 8WD1A ■ 2VFCA.2BUAA.306JA.307JA.0S01A WRITE DATA 1
* 8WD0A ■ 2VFCA.2BUAA.306JA.307JA.1S01A WRITE DATA 0
* 2BUAA.2U01A.2U03A
* 2VFCA.207FA.2CK0A
* 306JANBT COUNT SIX
* 307JANBT COUNT SEVEN
* 23 APO1A ■ 207FA.2IUFA.2CT5A.2CK0A SET P01
* 24 BPO1A ■ 207FA.2U01A.2IG8A.2WD1A TOGGLE P01
* APO1A ■ 207FA.2U01A.2IG8A.2WD1A
* 25 8WD1A ■ 2VFCA.2IUFA.206JA.0P01A WRITE DATA 1
* 8WD0A ■ 2VFCA.3U02A.206JA.1P01A WRITE DATA 0
* 26 8WD1A ■ 2VFCA.2IUFA.207JA.0X02A CHAIN BIT
* X02 SET DURING E0D IN STATE 1
* 27 2BG0A ■ 207FA.2IUFA.2W02A.2CT2A.2CK0A
* BU01A ■ 2BGDA RESET U01
* BU03A ■ 2BGDA RESET U03
* RG03A ■ 2BGDA RESET G03
* BF01A ■ 2BGDA.3X03A STATE 0 NEXT
* BF02A ■ 2BGDA.3X03A
* BF03A ■ 2BGDA.3X03A

```

* THE CONTROLLER IS NOW IN STATE ZERO

* TEST ECA GENERATION

```

07201 0 43 00430 BRM OBJECT
07202 0 76 33272 LDA #0
07203 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07204 0 01 07237 BRU F3E10 ERROR ABORT
07205 0 76 33272 LDA #0 CLEAR 4 WORDS OF OUTPUT BUFFER
07206 0 77 37774 EAX #4
07207 2 35 34004 STA STADDR+4,2
07210 0 41 07207 BRX **1
07211 0 06*10100 EBD* 10100 ALERT CHANNEL
07212 0 06 14200 EBD 14200 EXTENDED MODE EOD
07213 0 13 33334 PBT #295*STADDR WC # 4
07214 0 06 03166 EOD 3166 1 CHAR/WORD
07215 0 76 33272 LDA #0
07216 0 40*10126 SKS* 10126 DISC FILE READY TEST
07217 0 01 07221 BRU **2 CONTROLLER NOT READY
07220 0 01 07234 BRU F3L2
07221 0 55 15432 ADD BIT23
07222 0 73 33335 SKG #8000D 112 MILLISEC ELAPSED YET
07223 0 01 07216 BRU F3L1 NO
07224 0 40*11126 SKS* 11126 DISC FILE ERROR TEST
07225 0 01 07231 BRU **4 CONTROLLER ERROR SET
07226 0 43 00460 BRM ERRBR
07227 0 20 27776 NBP F3M9
07230 0 01 07237 BRU F3E10
07231 0 43 00460 BRM ERRBR
07232 0 20 30011 NBP F3M10
07233 0 01 07237 BRU F3E10
07234 0 40*12100 SKS* 12100 CHANNEL ZERO WORD COUNT TEST
07235 0 43 00460 BRM ERRBR CHANNEL WORD COUNT NOT ZERO
07236 0 20 30026 NBP F3M11
07237 0 43 00434 F3E10 BRM END
    
```

* TEST PARITY CHECKING DURING WRITE

```

07240 0 43 00430 BRM OBJECT
07241 0 76 33272 LDA #0 POT*WORD
07242 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07243 0 01 07254 BRU F3E11 ABORT
07244 0 76 33272 LDA #0
07245 0 35 34000 STA STADDR DATA WORD
07246 0 43 22766 BRM CPBT1 POT TO CHANNEL
07247 0 00074000 DATA 4B4*STADDR
07250 0 43 23265 BRM #200 WAIT 200 MILLISEC
07251 0 40*11126 SKS* 11126 DISC FILE ERROR TEST
07252 0 43 00460 BRM ERRBR CONTROLLER ERROR SET
07253 0 20 30064 NBP F3M12
07254 0 43 00434 F3E11 BRM END
    
```

* TEST PARITY CHECKING DURING WRITE

```

07255 0 43 00430 BRM OBJECT
07256 0 43 22515 BRM F3S2 PERFORM TEST
07257 40000000 DATA 4B7
07260 0 20 30156 NBP F3M13

07261 0 43 00430 BRM OBJECT
07262 0 43 22515 BRM F3S2 PERFORM TEST
07263 20000000 DATA 2B7
07264 0 20 30201 NBP F3M14

07265 0 43 00430 BRM OBJECT
07266 0 43 22515 BRM F3S2 PERFORM TEST
07267 10000000 DATA 1B7
07270 0 20 30217 NBP F3M15

07271 0 43 00430 BRM OBJECT
07272 0 43 22515 BRM F3S2 PERFORM TEST
07273 04000000 DATA 4B6
    
```

```

DISCF TAP=3.0 04/25 20100 PAGE 99
07274 0 20 30236 * NBP F3M16
07275 0 43 00430 BRM SUBJECT
07276 0 43 22515 BRM F3S2 PERFORM TEST
07277 0 0200000 DATA 286
07300 0 20 30254 * NBP F3M17
07301 0 43 00430 BRM SUBJECT
07302 0 43 22515 BRM F3S2 PERFORM TEST
07303 0 0100000 DATA 186
07304 0 20 30272 * NBP F3M18
*
* TEST ABILITY TO DISCONNECT CONTROLLER AT END OF SECTOR
*
07305 0 43 00430 BRM SUBJECT
07306 0 76 33272 LDA #0 PASSWORD
07307 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07310 0 01 07363 BRU F3E18 ERROR ABORT
07311 0 77 37600 EAX =128D CLEAR 128 WORDS OF OUTPUT BUFFER
07312 0 76 33272 LDA #0
07313 2 35 34200 STA STADDR+128D,2
07314 0 41 07313 BRX **1
07315 0 43 22766 BRM CPBT1 PBT TO CHANNEL
07316 0 10034000 DATA 1B7*STADDR
07317 0 40*14100 SKS* 14100 CHANNEL ACTIVE TEST
07320 0 01 07322 BRU **2 CHANNEL ACTIVE
07321 0 01 07330 BRU F3L4
07322 0 55 15432 ADD BIT23
07323 0 73 33331 SKG =35714D 500 MILLISEC ELAPSED YET
07324 0 01 07317 BRU F3L3 NO
07325 0 43 00460 BRM ERROR
07326 0 20 30311 NBP F3M19
07327 0 01 07363 BRU F3E18
07330 0 06 12100 EDD 12100 ALERT TO PIN CHANNEL ADDRESS
07331 0 33 23310 PIN TEMP PIN CHANNEL ADDRESS
07332 0 76 23310 LDA TEMP

```

```

DISCF TAP=3.0 04/25 20100 PAGE 100
07333 0 75 33273 LDB **1 MASK
07334 0 70 33236 SKM #STADDR+128D CHANNEL ADDRESS CORRECT
07335 0 01 07337 BRU **2 NO
07336 0 01 07345 BRU F3L5 YES
07337 0 54 33337 SUB #STADDR A = WORD COUNT
07340 0 75 15423 LDB BIT16 3 = CORRECT WORD COUNT
07341 0 71 33337 LDX #STADDR X = STARTING CORE ADDRESS
07342 0 43 00460 BRM ERROR
07343 2 20 30222 NBP F3M20,2
07344 0 01 07363 BRU F3E18
07345 0 40*11126 SKS* 11126 DISC FILE ERROR TEST
07346 0 01 07350 BRU **2 CONTROLLER ERROR SET
07347 0 01 07353 BRU F3L6
07350 0 43 00460 BRM ERROR
07351 0 20 30362 NBP F3M21
07352 0 01 07363 BRU F3E18
07353 0 43 23253 F3L6 BRM CHECK FOR CHANNEL READY
07354 0 01 07363 BRU F3E18 ERROR ABORT
07355 0 06 10126 EDD 10126 ALERT DISC FILE
07356 0 13 15432 PBT BIT23 VERIFY SECTOR 1
07357 0 43 23275 BRM =500 WAIT 500 MILLISEC
07360 0 40*12126 SKS* 12126 TRACK VERIFIED TEST
07361 0 43 00160 BRM ERROR TRACK NOT VERIFIED
07362 0 20 30277 NBP F3M22
07363 0 43 00434 F3E18 BRM END
*
* TEST FOR EACH 9A READ
*
07364 0 43 00430 BRM SUBJECT
07365 0 76 33272 LDA #0 PBT=BRD
07366 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07367 0 01 07400 BRU F3E19 ERROR ABORT
07370 0 06*10100 EDD* 10100 ALERT CHANNEL
07371 0 06 14000 EDD 14000 EXTENDED MODE EDD
07372 0 13 33333 PBT #484*STADDR *C # 1
07373 0 06 03126 EDD 3126 1 CHAR/WORD

```


DISCF TAP=3.0 04/25 20100 PAGE 101

```
07374 0 43 23265 BRM W200 WAIT 200 MILLISEC
07375 0 40*12100 SKS 12100 CHANNEL ZERO WORD COUNT TEST
07376 0 43 00460 BRM ERRORR COUNT NOT ZERO * ECM NOT RECEIVED
07377 0 20 30457 NOP F3M23
07400 0 43 00434 F3E19 BRM END
```

*
* TEST ABILITY TO RETURN TO STATE 0 FROM STATE 5 (READ)
*

```
07401 0 43 00430 BRM OBJECT
07402 0 76 33272 LDA #0 POTWORD
07403 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07404 0 01 07423 BRU F3E20 ERROR ABORT
07405 0 06*10100 EBD* 10100 ALERT CHANNEL
07406 0 06 14000 EBD 14000 EXTENDED MODE EOD
07407 0 13 33333 PBT #4B4*STADDR WC # 1
07410 0 06 03126 EBD 3126 HEAD 1 CHAR
07411 0 43 23265 BRM W200 WAIT 200 MILLISEC
07412 0 40*10126 SKS* 10126 DISC FILE READY TEST
07413 0 01 07421 BRU F3L7 CONTROLLER NOT READY
07414 0 40*12126 SKS* 12126 TRACK VERIFIED TEST
07415 0 01 07423 BRU F3E20 IN STATE 0
07416 0 43 00460 BRM ERRORR
07417 0 20 30454 NOP F3M24
07420 0 01 07423 BRU F3E20
07421 0 43 00460 F3L7 BRM ERRORR
07422 0 20 30472 NOP F3M25
07423 0 43 00434 F3E20 BRM END
```

*
* TEST ABILITY TO WRITE/READ ONES
*

```
07424 0 43 00430 BRM OBJECT
07425 0 76 33272 LDA #0 POTWORD
07426 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07427 0 01 07472 BRU F3E21 ERROR ABORT
07430 0 76 33273 LDA #1 OUTPUT WORD
07431 0 35 34000 STA STADDR
```

DISCF TAP=3.0 04/25 20100 PAGE 102

```
07432 0 43 22766 BRM CPBT1 PBT TO CHANNEL
07433 0 00074000 DATA 4B4*STADDR
07434 0 43 23123 BRM WAIT WAIT FOR CONTROLLER READY
07435 0 01 07472 BRU F3E21 ERROR ABORT
07436 0 43 23153 BRM PBTOUT PBT TO DISC
07437 0 01 07472 BRU F3E21 ERROR ABORT
07440 0 43 23053 BRM CHECK CHECK FOR CHANNEL READY
07441 0 01 07472 BRU F3E21 ERROR ABORT
07442 0 76 33272 LDA #0 CLEAR INPUT LOCATION
07443 0 35 34000 STA STADDR
07444 0 43 22775 BRM CPBT2 PBT TO CHANNEL
07445 0 00074000 DATA 4B4*STADDR
07446 0 43 23265 BRM W200 WAIT 200 MILLISEC
07447 0 40*12100 SKS* 12100 CHANNEL ZERO WORD COUNT TEST
07450 0 01 07459 BRU **2 WORD COUNT NOT ZERO
07451 0 01 07460 BRU F3L8
07452 0 76 33272 LDA #0
07453 0 75 15432 LDB BIT23
07454 0 71 33337 LDX #STADDR
07455 0 43 00460 BRM ERRORR
07456 0 20 30422 NOP F3M20#2
07457 0 01 07472 BRU F3E21
07460 0 76 34000 F3L8 LDA STADDR GET INPUT WORD
07461 0 75 33273 LDB #1 MASK
07462 0 70 33273 SK* #1 INPUT DATA CORRECT
07463 0 01 07465 BRU **2 #0
07464 0 01 07472 BRU F3E21
07465 0 71 33337 LDX #STADDR
07466 0 43 00454 BRM REPORT
07467 0 20 30455 NOP F3M26#2
07470 0 43 00460 BRM ERRORR
07471 0 20 30476 NOP F3M27
07472 0 43 00434 F3E21 BRM END
```

*
* TEST ABILITY TO WRITE/READ ZEROS
*

```

DISCF  TAP=3.0      04/25  20100  PAGE 103
07473  0 43 00430      BRM  0BJECT
07474  0 76 33272      LDA  #0          P0TWORD
07475  0 43 22755      BRM  SETUP4     SET UP 0BJECT TEST
07476  0 01 07441      BRU  F3E22      ERROR ABORT
07477  0 76 33272      LDA  #0          OUTPUT WORD
07500  0 35 34000      STA  STADDR
07501  0 43 22766      BRM  CP0T1      P0T TO CHANNEL
07502  0 00074000      DATA 4B44STADDR
07503  0 43 23123      BRM  *AIT      *AIT FOR CONTROLLER READY
07504  0 01 07541      BRU  F3E22      ERROR ABORT
07505  0 43 23153      BRM  P0TOUT     P0T TO DISC
07506  0 01 07541      BRU  F3E22
07507  0 43 23053      BRM  CHECK      CHECK FOR CHANNEL READY
07510  0 01 07541      BRU  F3E22
07511  0 76 33273      LDA  #*1        ALTER INPUT LOCATION
07512  0 35 34000      STA  STADDR
07513  0 43 22775      BRM  CP0T2      P0T TO CHANNEL
07514  0 00074000      DATA 4B44STADDR
07515  0 43 23265      BRM  *200       *WAIT 200 MILLISEC
07516  0 40*12100      SKS* 12100      CHANNEL ZERO WORD COUNT TEST
07517  0 01 07521      BRU  **2        WORD COUNT NOT ZERO
07520  0 01 07527      BRU  F3L9
07521  0 76 33272      LDA  #0
07522  0 75 15432      LUB  BIT23
07523  0 71 33337      LDX  *STADDR
07524  0 43 00460      BRM  ERR0R
07525  2 20 30322      NBP  F3M20.2
07526  0 01 07541      BRU  F3E22
07527  0 76 34000      LDA  STADDR     GET INPUT WORD
07530  0 72 33273      SKA  **1        WERE ZEROS READ
07531  0 01 07533      BRU  **2        NO
07532  0 01 07541      BRU  F3E22
07533  0 75 33272      LDB  #0
07534  0 71 33337      LDX  *STADDR
07535  0 43 00454      BRM  REPRRT
07536  2 20 30455      NBP  F3M26.2

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```

DISCF  TAP=3.0      04/25  20100  PAGE 104
07537  0 43 00460      BRM  ERR0R
07540  0 20 30727      NBP  F3M28
07541  0 43 00434      F3E22 BRM  END
*
*   TEST READ/WRITE PARITY
*
07542  0 43 00430      BRM  0BJECT
07543  0 76 33272      LDA  #0          P0TWORD
07544  0 43 22755      BRM  SETUP4     SET UP 0BJECT TEST
07545  0 01 07566      BRU  F3E23
07546  0 76 33272      LDA  #0          DATA WORD
07547  0 35 34000      STA  STADDR
07550  0 43 22766      BRM  CP0T1      P0T TO CHANNEL
07551  0 00074000      DATA 4B44STADDR
07552  0 43 23123      BRM  *AIT      *AIT FOR CONTROLLER READY
07553  0 01 07566      BRU  F3E23
07554  0 43 23153      BRM  P0TOUT     P0T TO DISC
07555  0 01 07566      BRU  F3E23
07556  0 43 23053      BRM  CHECK      CHECK CHANNEL FOR READY
07557  0 01 07566      BRU  F3E23
07560  0 43 22775      BRM  CP0T2      P0T TO CHANNEL
07561  0 00074000      DATA 4B44STADDR
07562  0 43 23265      BRM  *200       *WAIT 200 MILLISEC
07563  0 40*11100      SKS* 11100      CHANNEL ERROR TEST
07564  0 43 00460      BRM  ERR0R      CHANNEL ERROR SET
07565  0 20 30735      NBP  F3M29
07566  0 43 00434      F3E23 BRM  END
*
*   TEST READ/WRITE PARITY
*
07567  0 43 00430      BRM  0BJECT
07570  0 76 33272      LDA  #0          P0TWORD
07571  0 43 22755      BRM  SETUP4     SET UP 0BJECT TEST
07572  0 01 07413      BRU  F3E24
07573  0 76 33306      LDA  #77        DATA WORD
07574  0 35 34000      STA  STADDR

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```

DISCF TAP=3.0 04/25 20100 PAGE 105
07575 0 43 22766 BRM CPBT1 PBT TO CHANNEL
07576 0 00074000 DATA 4844*STADDR
07577 0 43 23123 BRM WAIT WAIT FOR CONTROLLER READY
07600 0 01 07613 BRU F3E24
07601 0 43 23153 BRM PBTOUT PBT TO DISC
07602 0 01 07613 BRU F3E24
07603 0 43 23153 BRM CHECK CHECK FOR CHANNEL READY
07604 0 01 07613 BRU F3E24
07605 0 43 22775 BRM CPBT2 PBT TO CHANNEL
07606 0 00074000 DATA 4844*STADDR
07607 0 43 23265 BRM W200 WAIT 200 MILLISEC
07610 0 40*11100 SKS* 11100 CHANNEL ERROR TEST
07611 0 43 00460 BRM ERROR CHANNEL ERROR SET
07612 0 20 31010 NBP F3M30
07613 0 43 00434 F3E24 BRM END

```

*
* TEST TERMINATION OF STATE 7 TO STATE 3
*

```

07614 0 43 00430 BRM OBJECT
07615 0 76 33272 LDA #0 PBTWORD
07616 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07617 0 01 07647 BRU F3E62
07620 0 43 22766 BRM CPBT1 PBT TO CHANNEL
07621 0 04134000 DATA 4185*STADDR
07622 0 76 33340 LDA #STADDR+63D CHECK ADDRESS
07623 0 75 33273 LDB #*1 MASK
07624 0 06 12100 EBD 12100 ALERT TO PIN CHANNEL ADDRESS
07625 0 33 23310 PIN TEMP PIN CHANNEL ADDRESS
07626 0 70 23310 SKM TEMP 64 WORDS WRITTEN YET
07627 0 01 07624 BRU F3L45 NO
07630 0 77 37443 EAX -285D WAIT 1 MILLISEC
07631 0 41 07631 BRX *
07632 0 40*10126 SKS* 10126 DISC FILE READY TEST
07633 0 01 07644 BRU F3L47 NOT READY = 8K
07634 0 40*12126 SKS* 12126 TRACK VERIFIED TEST
07635 0 01 07641 BRU F3L46 IN STATE 0

```

```

DISCF TAP=3.0 04/25 20100 PAGE 106
07636 0 43 00460 BRM ERROR IN STATE 1
07637 0 20 31713 NBP F3M54
07640 0 01 07647 BRU F3E62
07641 0 43 00460 F3L46 BRM ERROR
07642 0 20 31733 NBP F3M55
07643 0 01 07647 BRU F3E62
07644 0 40*12100 SKS* 12100 CHANNEL ZERO WORD COUNT TEST
07645 0 43 00460 BRM ERROR COUNT SHOULD BE ZERO
07646 0 20 31764 NBP F3M56
07647 0 43 00434 F3E62 BRM END
*
* CHECK FOR WHS FROM CONTROLLER
*
07650 0 43 00430 BRM OBJECT
07651 0 76 33272 LDA #0 PBTWORD
07652 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
07653 0 01 07705 BRU F3E25
07654 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
07655 0 20 23333 NBP PIR
07656 0 77 37477 EAX #65D CLEAR 65 WORDS OF OUTPUT TABLE
07657 0 76 33272 LDA #0
07660 2 35 34101 STA STADDR,65D,2
07661 0 41 07660 BRX #*1
07662 0 43 22766 BRM CPBT1 PBT TO CHANNEL
07663 0 04074000 DATA 40484*STADDR
07664 0 43 23123 BRM WAIT WAIT FOR CONTROLLER READY
07665 0 01 07705 BRU F3E25
07666 0 43 23153 BRM CHECK WAIT FOR CHANNEL READY
07667 0 01 07705 BRU F3E25
07670 0 43 23153 BRM PBTOUT PBT TO DISC
07671 0 01 07705 BRU F3E25
07672 0 06*11100 EBD* 10100 ALERT CHANNEL
07673 0 06 16000 EBD 16000 EXTENDED MODE EBD
07674 0 13 33341 PBT #40484*STADDR #C = 65
07675 0 06 03726 EBD 3726 HEAD DISC FILE = SECTOR
07676 0 43 23265 BRM W200 WAIT 200 MILLISEC

```

DISCF TAP=3.0 04/25 20100 PAGE 107

07677	0 02 20002	EIR		ENABLE INTERRUPTS
07700	0 67 20060	LCY	48D	DUMMY CYCLES
07701	0 02 20004	DIR		DISABLE INTERRUPTS
07702	0 53 15443	SKN	12FLAG	IS RECEIVED
07703	0 43 00460	BRM	ERROR	NO
07704	0 20 31048	NOP	F3M31	
07705	0 43 00434	BRM	END	

F3E25
*
*
* TEST TERMINATION OF STATE 7 TO STATE 4

07706	0 43 00430	BRM	OBJECT	
07707	0 76 33307	LDA	#177	POTWORD
07710	0 43 22755	BRM	SETUP4	SET UP OBJECT TEST
07711	0 01 07761	BRU	F3E63	
07712	0 43 22766	BRM	CP071	POT TO CHANNEL
07713	0 C4074000	DATA	40484+8TADDR	
07714	0 76 33342	LDA	8TADDR+64D	COMPARE ADDRESS
07715	0 75 33273	LDB	#=1	MASK
07716	0 06 12100	EOD	12100	ALERT TO PIN CHANNEL ADDRESS
07717	0 33 23310	PIN	TEMP	PIN CHANNEL ADDRESS
07720	0 70 23310	SKM	TEMP	DS ADDRESSES COMPARE
07721	0 01 07716	BRU	F3L48	NO
07722	0 76 33272	LDA	#0	
07723	0 40*10126	SKS*	10126	DISC FILE READY TEST
07724	0 01 07726	BRU	++2	CONTROLLER NOT READY
07725	0 01 07741	BRU	F3L51	
07726	0 40*11126	SKS*	11126	DISC FILE ERROR TEST
07727	0 01 07736	BRU	F3L50	CONTROLLER ERROR SET
07730	0 55 15432	ADD	81723	
07731	0 73 33343	SKG	828974D	TIMED OUT YET
07732	0 01 07723	BRU	F3L49	NO
07733	0 43 00460	BRM	ERROR	
07734	0 20 31517	NOP	F3M59	
07735	0 01 07761	BRU	F3E63	
07736	0 43 00460	BRM	ERROR	
07737	0 20 31435	NOP	F3M57	

F3L50

DISCF TAP=3.0 04/25 20100 PAGE 108

07740	0 01 07761	BRU	F3E63	
07741	0 40*12100	SKS*	12100	CHANNEL ZERO WORD COUNT TEST
07742	0 01 07744	BRU	++2	COUNT NOT ZERO
07743	0 01 07747	BRU	F3L52	
07744	0 43 00460	BRM	ERROR	
07745	0 20 31477	NOP	F3M58	
07746	0 01 07761	BRU	F3E63	
07747	0 06 10126	EOD	10126	ALERT DISC FILE
07750	0 13 15423	POT	81716	WILL VERIFY SECTOR 0 IN STATE 3
07751	0 40*12126	SKS*	12126	TRACK VERIFIED TEST
07752	0 01 07754	BRU	++2	TRACK NOT VERIFIED
07753	0 01 07761	BRU	F3E63	
07754	0 40*11126	SKS*	11126	DISC FILE ERROR TEST
07755	0 01 07757	BRU	++2	CONTROLLER ERROR SET
07756	0 01 07751	BRU	F3L53	
07757	0 43 00460	BRM	ERROR	
07760	0 20 31537	NOP	F3M60	
07761	0 43 00434	BRM	END	

F3E63
*
*
* TEST INCREMENTING OF ADDRESS REGISTER

07762	0 43 00430	BRM	OBJECT	
07763	0 43 22537	BRM	F353	PERFORM TEST
07764	0 C000C000	DATA	0	
07765	0 20 31134	NOP	F3M33	
07766	0 43 00430	BRM	OBJECT	
07767	0 43 22537	BRM	F353	PERFORM TEST
07770	0 C000C001	DATA	1	
07771	0 20 31152	NOP	F3M34	
07772	0 43 00430	BRM	OBJECT	
07773	0 43 22537	BRM	F353	PERFORM TEST
07774	0 C000C002	DATA	2	
07775	0 20 31160	NOP	F3M35	

DISCF	TAP=3.0	04/25	20100	PAGE 109	
07776	0 43 00430		BRM	OBJECT	
07777	0 43 22537		BRM	F353	PERFORM TEST
10000	00000003		DATA	3	
10001	0 20 31163		NBP	F3M36	
10002	0 43 00430	*	BRM	OBJECT	
10003	0 43 22537		BRM	F353	PERFORM TEST
10004	00000007		DATA	7	
10005	0 20 31173		NBP	F3M37	
10006	0 43 00430	*	BRM	OBJECT	
10007	0 43 22537		BRM	F353	PERFORM TEST
10010	00000017		DATA	17	
10011	0 20 31173		NBP	F3M37	
10012	0 43 00430	*	BRM	OBJECT	
10013	0 43 22537		BRM	F353	PERFORM TEST
10014	00000037		DATA	37	
10015	0 20 31176		NBP	F3M38	
10016	0 43 00430	*	BRM	OBJECT	
10017	0 43 22537		BRM	F353	PERFORM TEST
10020	00000077		DATA	77	
10021	0 20 31205		NBP	F3M39	
10022	0 43 00430	*	BRM	OBJECT	
10023	0 43 22537		BRM	F353	PERFORM TEST
10024	00000057		DATA	57	
10025	0 20 31216		NBP	F3M40	
10026	0 43 00430	*	BRM	OBJECT	
10027	0 43 22537		BRM	F353	PERFORM TEST
10030	00000067		DATA	67	
10031	0 20 31216		NBP	F3M40	
10032	0 43 00430	*	BRM	OBJECT	

DISCF	TAP=3.0	04/25	20100	PAGE 110	
10033	0 43 22537		BRM	F353	PERFORM TEST
10034	00000073		DATA	73	
10035	0 20 31216		NBP	F3M40	
10036	0 43 00430	*	BRM	OBJECT	
10037	0 43 22537		BRM	F353	PERFORM TEST
10040	00000074		DATA	74	
10041	0 20 31221		NBP	F3M41	
10042	0 43 00430	*	BRM	OBJECT	
10043	0 43 22537		BRM	F353	PERFORM TEST
10044	00000177		DATA	177	
10045	0 20 31224		NBP	F3M42	
10046	0 43 00430	*	BRM	OBJECT	
10047	0 43 22537		BRM	F353	PERFORM TEST
10050	00000377		DATA	377	
10051	0 20 31224		NBP	F3M42	
10052	0 43 00430	*	BRM	OBJECT	
10053	0 43 22537		BRM	F353	PERFORM TEST
10054	00001777		DATA	777	
10055	0 20 31227		NBP	F3M43	
10056	0 43 00430	*	BRM	OBJECT	
10057	0 43 22537		BRM	F353	PERFORM TEST
10060	00001777		DATA	1777	
10061	0 20 31235		NBP	F3M44	
10062	0 43 00430	*	BRM	OBJECT	
10063	0 43 22537		BRM	F353	PERFORM TEST
10064	00001677		DATA	1677	
10065	0 20 31245		NBP	F3M45	
10066	0 43 00430	*	BRM	OBJECT	
10067	0 43 22537		BRM	F353	PERFORM TEST

DISCP	TAP=3.0	04/25	20100	PAGE 111	
10070				DATA	1577
10071	0 20 31245			NBP	F3M45
10072	0 43 00430			BRM	OBJECT
10073	0 43 22537			BRM	F353
10074	00001777			DATA	1377
10075	0 20 31245			NBP	F3M45
10076	0 43 00430			BRM	OBJECT
10077	0 43 22537			BRM	F353
10100	00001703			DATA	1703
10101	0 20 31221			NBP	F3M41
10102	0 43 00430			BRM	OBJECT
10103	0 43 22537			BRM	F353
10104	00001774			DATA	1774
10105	0 20 31221			NBP	F3M41
10106	0 43 00430			BRM	OBJECT
10107	0 43 22537			BRM	F353
10110	00003777			DATA	3777
10111	0 20 31250			NBP	F3M46
10112	0 43 00430			BRM	OBJECT
10113	0 43 22537			BRM	F353
10114	00007777			DATA	7777
10115	0 20 31250			NBP	F3M46
10116	0 43 00430			BRM	OBJECT
10117	0 43 22537			BRM	F353
10120	00017777			DATA	17777
10121	0 20 31253			NBP	F3M47
10122	0 43 00430			BRM	OBJECT
10123	0 43 22537			BRM	F353
10124	00037777			DATA	37777

DISCP	TAP=3.0	04/25	20100	PAGE 112	
10125	0 20 31261			NBP	F3M48
10126	0 43 00430			BRM	OBJECT
10127	0 43 22537			BRM	F353
10130	00035777			DATA	35777
10131	0 20 31245			NBP	F3M45
10132	0 43 00430			BRM	OBJECT
10133	0 43 22537			BRM	F353
10134	00033777			DATA	33777
10135	0 20 31245			NBP	F3M45
10136	0 43 00430			BRM	OBJECT
10137	0 43 22537			BRM	F353
10140	00027777			DATA	27777
10141	0 20 31245			NBP	F3M45
10142	0 43 00430			BRM	OBJECT
10143	0 43 22537			BRM	F353
10144	00036077			DATA	36077
10145	0 20 31271			NBP	F3M49
10146	0 43 00430			BRM	OBJECT
10147	0 43 22537			BRM	F353
10150	00037703			DATA	37703
10151	0 20 31221			NBP	F3M41
10152	0 43 00430			BRM	OBJECT
10153	0 43 22537			BRM	F353
10154	00037774			DATA	37774
10155	0 20 31221			NBP	F3M41
10156	0 43 00430			BRM	OBJECT
10157	0 43 22537			BRM	F353
10160	00077777			DATA	77777
10161	0 20 31274			NBP	F3M50


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DISCF  TAP-3.0      04/25  20100  PAGE 115
10257  0 43 22755    BRM  SETUP4    SET UP OBJECT TEST
10260  0 01 10323    BRU  F3E64
10261  0 43 22766    BRM  CP0T1     POT TO CHANNEL
10262  0 0034000    DATA 1B7*STADDR
10263  0 43 23123    BRM  WAIT      WAIT FOR CONTROLLER READY
10264  0 01 10323    BRU  F3E64
10265  0 43 23053    BRM  CHECK     CHECK FOR CHANNEL READY
10266  0 01 10323    BRU  F3E64
10267  0 43 23153    BRM  P0TOUT   POT TO DISC
10270  0 01 10323    BRU  F3E64
10271  0 43 23013    BRM  CP0T4     POT TO CHANNEL
10272  0 0034000    DATA 1B7*STADDR
10273  0 76 33342    LDA  #STADDR+64D COMPARE ADDRESS
10274  0 75 33273    LDB  #+1
10275  0 06 12100    EOD  12100    ALERT TO PIN CHANNEL ADDRESS
10276  0 33 23310    PIN  TEMP     PIN CHANNEL ADDRESS
10277  0 70 23310    SKM  TEMP     DB ADDRESSES COMPARE
10300  0 01 10275    BRU  F3L54   NO
10301  0 77 36706    EAX  #570D   WAIT 1 MILLISEC
10302  0 41 10302    BRX  *
10303  0 40*10126    SKS* 10126   DISC FILE READY TEST
10304  0 01 10315    BRU  F3L56   NOT READY * BK
10305  0 40*12126    SKS* 12126   TRACK VERIFIED TEST
10306  0 01 10412    BRU  F3L55   IN STATE 0
10307  0 43 00460    BRM  ERROR   IN STATE 1
10310  0 20 31554    NOP  F3M61
10311  0 01 10323    BRU  F3E64
10312  0 43 00460    BRM  ERROR   F3L55
10313  0 20 31576    NOP  F3M62
10314  0 01 10423    BRU  F3E64
10315  0 06 12100    EOD  12100   ALERT TO PIN CHANNEL ADDRESS
10316  0 33 23310    PIN  TEMP
10317  0 70 23310    SKM  TEMP     IS CHANNEL ADD REG COUNTING AGAIN
10320  0 01 10323    BRU  F3E64   YES
10321  0 43 00460    BRM  ERROR
10322  0 20 31634    NOP  F3M63

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DISCF  TAP-3.0      04/25  20100  PAGE 116
10323  0 43 00434    F3E64 BRM  END
*
*      TEST 2IGAA
*
10324  0 43 00430    BRM  0BJECT
10325  0 76 33272    LDA  #0      POT*WORD
10326  0 43 22755    BRM  SETUP4   SET UP OBJECT TEST
10327  0 01 10353    BRU  F3E65
10330  0 43 22766    BRM  CP0T1     POT TO CHANNEL
10331  0 0034000    DATA 4B6*STADDR
10332  0 43 23123    BRM  WAIT      WAIT FOR CONTROLLER READY
10333  0 01 10353    BRU  F3E65
10334  0 43 23053    BRM  CHECK     CHECK FOR CHANNEL READY
10335  0 01 10353    BRU  F3E65
10336  0 43 23153    BRM  P0TOUT   POT TO DISC
10337  0 01 10353    BRU  F3E65
10340  0 43 23013    BRM  CP0T4     POT TO CHANNEL
10341  0 0034000    DATA 4B6*STADDR
10342  0 40*12100    SKS* 12100   CHANNEL ZERO WORD COUNT TEST
10343  0 01 10342    BRU  #+1     WAIT FOR ZERO WORD COUNT
10344  0 77 36706    EAX  #570D
10345  0 41 10345    BRX  *
10346  0 40*10126    SKS* 10126   WAIT 1 MILLISEC
10347  0 01 10351    BRU  #+2     DISC FILE READY TEST
10350  0 01 10353    BRU  F3E65   CONTROLLER NOT READY
10351  0 43 00460    BRM  ERROR
10352  0 20 31476    NOP  F3M64
10353  0 43 00434    F3E65 BRM  END
*
*      TEST 2IGAA
*
10354  0 43 00430    BRM  0BJECT
10355  0 76 33272    LDA  #0      POT*WORD
10356  0 43 22755    BRM  SETUP4   SET UP OBJECT TEST
10357  0 01 10406    BRU  F3E66
10360  0 43 22766    BRM  CP0T1     POT TO CHANNEL

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DISCF  TAP=3.C      04/28  20100  PAGE 117

10361  0 10034000    DATA  187*STADDR
10362  0 43 23123    BRM    WAIT
10363  0 20 10406    NBP    F3E66      WAIT FOR CONTROLLER READY
10364  0 43 23153    BRM    PBTOUT   PBT TO DISC
10365  0 01 10406    BRU    F3E66
10366  0 43 23053    BRM    CHECK    CHECK FOR CHANNEL READY
10367  0 01 10406    BRU    F3E66
10370  0 43 23013    BRM    CPBT4    POT TO CHANNEL
10371  0 10034000    DATA  187*STADDR
10372  0 76 33342    LDA    *64D*STADDR  COMPARE ADDRESS
10373  0 75 33273    LDB    *+1          MASK
10374  0 06 12100    EBD    12100        ALERT TO PIN CHANNEL ADDRESS
10375  0 33 23310    PIN    TEMP         PIN CHANNEL ADDRESS
10376  0 70 23310    SKM    TEMP         DB ADDRESSES COMPARE
10377  0 01 10374    BRU    F3L57        NO
10400  0 77 36706    EAX    *570D        WAIT 1 MILLISEC
10401  0 41 10401    BRX    *
10402  0 40*10126    SKS*   10126        DISC FILE READY TEST
10403  0 01 10406    BRU    F3E66        CONTROLLER NOT READY * BK
10404  0 43 00440    BRM    ERROR
10405  0 20 31705    NBP    F3M65
10406  0 43 00434    BRM    END
      F3E66
      *
      * TEST ABILITY TO WRITE/READ IN CHAIN MODE
      *
10407  0 43 00430    BRM    SUBJECT
10410  0 76 33272    LDA    *0          PBTWORD
10411  0 43 22755    BRM    SETUP4     SET UP OBJECT TEST
10412  0 01 10440    BRU    F3E67
10413  0 43 23004    BRM    CPBT3      POT TO CHANNEL
10414  0 04034000    DATA  486*STADDR
10415  0 43 23123    BRM    WAIT       WAIT FOR CONTROLLER READY
10416  0 01 10440    BRU    F3E67
10417  0 43 23153    BRM    PBTOUT   PBT TO DISC
10420  0 01 10440    BRU    F3E67
10421  0 43 23153    BRM    CHECK    CHECK FOR CHANNEL READY

```

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DISCF  TAP=3.C      04/25  20100  PAGE 118

10422  0 01 10440    BRU    F3F67
10423  0 43 23113    BRM    CPBT4      POT TO CHANNEL
10424  0 10034000    DATA  187*STADDR
10425  0 76 33342    LDA    *STADDR*64D  COMPARE ADDRESS
10426  0 75 33273    LDB    *+1          MASK
10427  0 06 12100    EBD    12100        ALERT TO PIN CHANNEL ADDRESS
10430  0 33 23310    PIN    TEMP         PIN CHANNEL ADDRESS
10431  0 70 23310    SKM    TEMP         DB ADDRESSES COMPARE
10432  0 01 10427    BRU    F3L58        NO
10433  0 77 36706    EAX    *570D        WAIT 1 MILLISEC
10434  0 41 10434    BRX    *
10435  0 40*10126    SKS*   10126        DISC FILE READY TEST
10436  0 43 00460    BRM    ERROR      SHOULD BE IN STATE 0
10437  0 20 31712    NBP    F3M66
10440  0 43 00434    BRM    END
      F3E67
      *
      * TEST PACKET COUNTER
      *
10441  0 43 00430    BRM    SUBJECT
10442  0 76 33272    LDA    *0          PBTWORD
10443  0 43 22755    BRM    SETUP4     SET UP OBJECT TEST
10444  0 01 10507    BRU    F3FR3
10445  0 77 37700    EAX    *64D        SET UP OUTPUT BUFFER
10446  0 76 33273    LDA    *+1
10447  0 35 34100    STA    STADDR*64D*2
10450  0 41 10447    BRX    *+1
10451  0 43 22766    BRM    CPBT1      POT TO CHANNEL
10452  0 10034000    DATA  286*STADDR
10453  0 43 23123    BRM    WAIT       WAIT FOR CONTROLLER READY
10454  0 01 10507    BRU    F3E83
10455  0 43 23153    BRM    PBTOUT   PBT TO DISC
10456  0 01 10507    BRU    F3E83
10457  0 77 37700    EAX    *64D        CLEAR INPUT BUFFER
10460  0 76 33272    LDA    *0
10461  0 35 34100    STA    STADDR*64D*2
10462  0 41 10461    BRX    *+1

```

DISCF TAP=3.0 04/25 20100 PAGE 119

```
10463 0 43 23053 BRM CHECK CHECK FOR CHANNEL READY
10464 0 01 10507 BRU F3E83
10465 0 43 22775 BRM CP0T2 POT TO CHANNEL
10466 0 04034000 DATA 4B6*STADDR
10467 0 43 23123 BRM WAIT WAIT FOR CONTROLLER READY
10470 0 01 10507 BRU F3E83
10471 0 75 33273 LDB #=1 MASK
10472 0 76 34020 LDA STADDR+16D CHECK WORD 17
10473 0 70 33273 SKM #=1 IS DATA CORRECT
10474 0 01 10476 BRU **2 NO
10475 0 01 10501 BRU F3L78
10476 0 43 00460 BRM ERROR
10477 0 20 32275 XBP F3M84
10500 0 01 10507 BRU F3E83
10501 0 06 12100 EBD 12100 ALERT TO PIN CHANNEL ADDRESS
10502 0 33 23310 PIN TEMP PIN CHANNEL ADDRESS
10503 0 76 33345 LDA #STADDR+32D COMPARE ADDRESS
10504 0 70 23310 SKM TEMP CONTROLLER DISCONNECT AFTER TWO PACKETS
10505 0 43 00460 BRM ERROR NO
10506 0 20 32302 XBP F3M85
10507 0 43 00434 BRM END
```

F3E83

TEST TERMINATION OF STATE 5 TO STATE 4

```
10510 0 43 00430 BRM OBJECT
10511 0 76 33307 LDA #177 PASSWORD
10512 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
10513 0 01 10564 BRU F3E68
10514 0 43 22764 BRM CP0T1 POT TO CHANNEL
10515 0 00340000 DATA 1B7*STADDR
10516 0 43 23123 BRM WAIT WAIT FOR CONTROLLER READY
10517 0 01 10564 BRU F3E68
10520 0 43 22053 BRM CHECK CHECK FOR CHANNEL READY
10521 0 01 10564 BRU F3E68
10522 0 43 23153 BRM POTRUT POT TO DISC
10523 0 01 10564 BRU F3E68
```

DISCF TAP=3.0 04/25 20100 PAGE 120

```
10524 0 43 23014 BRM CP0T4 POT TO CHANNEL
10525 0 00340000 DATA 1B7*STADDR
10526 0 76 33242 LDA #STADDR+64D COMPARE ADDRESS
10527 0 75 33273 LDB #=1 MASK
10530 0 06 12100 EBD 12100 ALERT TO PIN CHANNEL ADDRESS
10531 0 33 23310 PIN TEMP PIN CHANNEL ADDRESS
10532 0 70 23310 SKM TEMP DO ADDRESSES COMPARE
10533 0 01 10530 BRU F3L59 NO
10534 0 77 34706 EAX #5700 WAIT 1 MILLISEC
10535 0 41 10535 BRX *
10536 0 70 23310 SKM TEMP IS CONTROLLER STILL READING
10537 0 01 10541 BRU **2 YES = ERROR
10540 0 01 10544 BRU F3L60
10541 0 43 00460 BRM ERROR
10542 0 20 31737 XBP F3M67
10543 0 01 10564 BRU F3E68
10544 0 40*10126 SKS 10126 DISC FILE READY TEST
10545 0 01 10551 BRU F3L61 CONTROLLER NOT READY = OK
10546 0 43 00460 BRM ERROR
10547 0 20 31747 XBP F3M68
10550 0 01 10564 BRU F3E68
10551 0 76 33272 LDA #0 WAIT 140 MILLISEC
10552 0 55 1543P ADD BIT23
10553 0 73 33244 SKG #16000D
10554 0 01 10552 BRU **2
10555 0 40*11126 SKS 11126 DISC FILE ERROR TEST
10556 0 01 10560 BRU **2 CONTROLLER ERROR SET
10557 0 01 10563 BRU F3L62
10560 0 43 00460 BRM ERROR
10561 0 20 31766 XBP F3M69
10562 0 01 10564 BRU F3E68
10563 0 43 23123 BRM WAIT WAIT FOR CONTROLLER TO FINISH
10564 0 43 00434 BRM END
```

F3L62

F3E68

TEST 6Y-TAC

```

DISCF  TAP=3.0      04/25  20100  PAGE 121
10565  0 43 00430    BRM  OBJECT
10566  0 76 33272    LDA  #0                PBT=ORD
10567  0 43 22755    BRM  SETUP#          SET UP OBJECT TEST
10570  0 01 10631    BRU  F3E69          PBT TO CHANNEL
10571  0 43 00440    BRM  RETURN         SET INTERRUPT LINKAGE
10572  0 20 23333    NBP  P12
10573  0 76 33277    LDA  #0                CLEAR I2 FLAG
10574  0 35 15443    STA  I2FLAG
10575  0 43 22766    BRM  CPBT1         PBT TO CHANNEL
10576  0 00 10034000  DATA 1B7*STADDR
10577  0 43 23123    BRM  #WAIT         WAIT FOR CONTROLLER READY
10600  0 01 10631    BRU  F3E69
10601  0 43 23053    BRM  CHECK         CHECK FOR CHANNEL READY
10602  0 01 10631    BRU  F3E69
10603  0 43 23153    BRM  PBTOUT        PBT TO DISC
10604  0 01 10631    BRU  F3E69
10608  0 06*10100    EDD*  10100         ALERT CHANNEL
10606  0 06 16000    EDD  16000         EXTENDED MODE EDD
10607  0 13 33747    PBT  #1B7*STADDR   WC # 128
10610  0 06 02726    EDD  2726         READ DISC FILE # CHAIN
10611  0 02 20002    EIR  #STADDR+64D  ENABLE INTERRUPTS
10612  0 76 33342    LDA  #STADDR+64D  COMPARE ADDRESS
10613  0 75 33273    LDB  #=1          MASK
10614  0 06 12100    EDD  12100         ALERT TO PIN CHANNEL ADDRESS
10615  0 33 23310    PIN  TEMP         PIN CHANNEL ADDRESS
10616  0 70 23310    SKM  TEMP         DO ADDRESSES COMPARE
10617  0 01 10614    BRU  F3L63        NO
10620  0 77 36706    EAX  #570D       WAIT 1 MILLISEC
10621  0 41 10621    BRX  *
10622  0 02 20004    DIR  #            DISABLE INTERRUPTS
10623  0 43 23123    BRM  #WAIT        WAIT FOR CONTROLLER READY
10624  0 01 10631    BRU  F3E69
10625  0 53 15443    SKN  I2FLAG       WAS I2 RECEIVED
10626  0 01 10630    BRU  **2          NO = BK
10627  0 43 00460    BRM  ERROR
10630  0 20 32004    NBP  F3M70

```

```

DISCF  TAP=3.0      04/25  20100  PAGE 122
10631  0 43 23035    F3E69 BRM  CLINT     CLEAR INTERRUPT
10632  0 43 23424    BRM  END
*
*   TEST ADDRESS INCREMENTING IN STATE 5
*
10633  0 43 00430    BRM  OBJECT
10634  0 76 33272    LDA  #0                PBT=ORD
10635  0 43 22755    BRM  SETUP#          SET UP OBJECT TEST
10636  0 01 10662    BRU  F3E70          PBT TO CHANNEL
10637  0 43 22766    BRM  CPBT1         PBT TO CHANNEL
10640  0 00 04074000  DATA 404B4*STADDR
10641  0 43 23123    BRM  #WAIT        WAIT FOR CONTROLLER READY
10642  0 01 10662    BRU  F3E70
10643  0 43 23053    BRM  CHECK         CHECK FOR CHANNEL READY
10644  0 01 10662    BRU  F3E70
10645  0 43 23153    BRM  PBTOUT        PBT TO DISC
10646  0 01 10662    BRU  F3E70
10647  0 43 23013    BRM  CPBT4         PBT TO CHANNEL
10650  0 00 04074000  DATA 404B4*STADDR
10651  0 43 23123    BRM  #WAIT        WAIT FOR CONTROLLER READY
10652  0 01 10662    BRU  F3E70
10653  0 06 10126    EDD  10126         ALERT DISC FILE
10654  0 33 23310    PIN  TEMP         PIN CONTROLLER ADDRESS
10655  0 76 23310    LDA  TEMP
10656  0 75 33273    LDB  #=1          MASK
10657  0 70 15432    SKM  BIT23        DID ADDRESS REGISTER INCREMENT
10660  0 43 00460    BRM  ERROR        NO
10661  0 20 32011    NBP  F3M71
10662  0 43 00434    BRM  END
*
*   TEST 6CX#AD (STATE 5)
*
10663  0 43 00430    BRM  OBJECT
10664  0 76 33272    LDA  #0                PBT=ORD
10665  0 43 22755    BRM  SETUP#          SET UP OBJECT TEST
10666  0 01 10711    BRU  F3E71

```

```

DISCF TAP=3.0 04/25 20100 PAGE 123
10667 0 43 23004 BRM CPBT3 POT TO CHANNEL
10670 0 43 23000 DATA 4B6*STADDR
10671 0 43 23123 BRM *WAIT WAIT FOR CONTROLLER READY
10672 0 01 10711 BRU F3E71
10673 0 43 23153 BRM PBTOUT POT TO DISC
10674 0 01 10711 BRU F3E71
10675 0 43 23057 BRM CHECK CHECK FOR CHANNEL READY
10676 0 01 10711 BRU F3E71
10677 0 43 23013 BRM CPBT4 POT TO CHANNEL
10700 0 43 23000 DATA 4B6*STADDR
10701 0 43 23123 BRM *WAIT WAIT FOR CONTROLLER READY
10702 0 01 10711 BRU F3E71
10703 0 06 10126 EBD 10126 ALERT DISC FILE
10704 0 33 23310 PIN TEMP PIN CONTROLLER ADDRESS
10705 0 76 23310 LDA TEMP
10706 0 72 33273 SKA *+1 DID ADDRESS REGISTER INCREMENT
10707 0 43 00460 BRM ERRBR YES
10710 0 20 32011 NBP F3M71
10711 0 43 00434 F3E71 BRM END

```

```

*
* TEST READ PARITY GENERATION
*

```

```

10712 0 43 00430 BRM OBJECT
10713 0 76 33272 LDA *0 PBTWORD
10714 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
10715 0 01 10763 BRU F3E72 ABOUT
10716 0 76 33273 LDA *+1 DATA WORD
10717 0 35 34000 STA STADDR
10720 0 43 22766 BRM CPBT1 POT TO CHANNEL
10721 0 43 22766 DATA 4B4*STADDR
10722 0 43 23123 BRM *WAIT WAIT FOR CONTROLLER READY
10723 0 01 10763 BRU F3E72
10724 0 76 33272 LDA *0 CLEAR INPUT BUFFER CELL
10725 0 35 34000 STA STADDR
10726 0 43 23153 BRM PBTOUT POT TO DISC
10727 0 01 10763 BRU F3E72

```

```

DISCF TAP=3.0 04/25 20100 PAGE 124
10730 0 43 23057 BRM CHECK CHECK FOR CHANNEL READY
10731 0 01 10763 BRU F3E72
10732 0 43 22775 BRM CPBT2 POT TO CHANNEL
10733 0 43 23000 DATA 4B4*STADDR
10734 0 43 23123 BRM *WAIT WAIT FOR CONTROLLER READY
10735 0 01 10763 BRU F3E72
10736 0 40 12100 SKS* 12100 CHANNEL ZERO WORD COUNT TEST
10737 0 01 10741 BRU *+2 WORD COUNT NOT ZERO
10740 0 01 10747 BRU F3L64
10741 0 76 33272 LDA *0
10742 0 76 15432 LDB BIT23
10743 0 71 33337 LDX *STADDR
10744 0 43 00460 BRM ERRBR
10745 0 20 30322 NBP F3M20*2
10746 0 01 10763 BRU F3E72
10747 0 76 34000 F3L64 LDA STADDR CHECK INPUT WORD
10750 0 76 33273 LDB *+1 MASK
10751 0 70 33273 SKM *+1 DATA CORRECT
10752 0 01 10754 BRU *+2 NO
10753 0 01 10760 BRU F3L65
10754 0 71 33337 LDX *STADDR
10755 0 43 00460 BRM ERRBR
10756 0 20 30455 NBP F3M26*2
10757 0 01 10763 BRU F3E72
10760 0 40 11100 SKS* 11100 CHANNEL ERROR TEST
10761 0 43 00460 BRM ERRBR CHANNEL ERROR SET
10762 0 20 32016 NBP F3M72
10763 0 43 00434 F3E72 BRM END

```

```

*
* TEST READ PARITY GENERATION
*

```

```

10764 0 43 00430 BRM OBJECT
10765 0 76 33272 LDA *0 PBTWORD
10766 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
10767 0 01 11735 BRU F3E73 ABOUT
10770 0 76 33272 LDA *0 DATA WORD

```

DISCF	TAP#3.C	04/25	20100	PAGE 125
10771	0 35 34000		STA	STADDR
10772	0 43 22766		BRM	CP0T1
10773	00074000		DATA	484*STADDR
10774	0 43 23123		BRM	WAIT
10775	0 01 11035		BRU	F3E73
10776	0 76 33273		LDA	#=1
10777	0 35 34000		STA	STADDR
11000	0 43 23153		BRM	PRTRUT
11001	0 01 11035		BRU	F3E73
11002	0 43 23153		BRM	CHECK
11003	0 01 11035		BRU	F3E73
11004	0 43 22775		BRM	CP0T2
11005	00074000		DATA	484*STADDR
11006	0 43 23123		BRM	WAIT
11007	0 01 11035		BRU	F3E73
11010	0 40*12100		SKS*	12100
11011	0 01 11013		BRU	#+2
11012	0 01 11021		BRU	F3L66
11013	0 76 33272		LDA	#0
11014	0 75 15432		LDB	BIT23
11015	0 71 33337		LDX	#STADDR
11016	0 43 00460		BRM	ERR0R
11017	2 20 30222		NOP	F3M20*2
11020	0 01 11035		BRU	F3E73
11021	0 76 34000	F3L66	LDA	STADDR
11022	0 72 33273		SKA	#=1
11023	0 01 11025		BRU	#+2
11024	0 01 11032		BRU	F3L67
11025	0 75 33272		LDB	#0
11026	0 71 33337		LDX	#STADDR
11027	0 43 00460		BRM	ERR0R
11030	2 20 30222		NOP	F3M26*2
11031	0 01 11035		BRU	F3E73
11032	0 40*11100		SKS*	11100
11033	0 43 00460		BRM	ERR0R
11034	0 40 30446		NOP	F3M73

PBT TO CHANNEL
 WAIT FOR CONTROLLER READY
 WAIT FOR CONTROLLER READY
 ALTER INPUT LOCATION
 PBT TO DISC
 CHECK FOR CHANNEL READY
 PBT TO CHANNEL
 WAIT FOR CONTROLLER READY
 CHANNEL ZERO WORD COUNT TEST
 WORD COUNT NOT ZERO
 CHECK INPUT WORD
 DATA CORRECT
 NO
 CHANNEL ERROR TEST
 CHANNEL ERROR SET

DISCF	TAP#3.C	04/25	20100	PAGE 126
11035	0 43 00434	F3E73	BRM	END
		*		TEST PARITY GENERATION CIRCUIT
		*		
		*		
11036	0 43 00430		BRM	BRJFCT
11037	0 76 33272		LDA	#0
11040	0 43 22755		BRM	SETUP4
11041	0 01 11110		BRU	F3E74
11042	0 76 33250		LDA	#25522552
11043	0 35 34000		STA	STADDR
11044	0 43 22766		BRM	CP0T1
11045	00074000		DATA	484*STADDR
11046	0 43 23123		BRM	WAIT
11047	0 01 11110		BRU	F3E74
11050	0 76 33272		LDA	#0
11051	0 35 34000		STA	STADDR
11052	0 43 23153		BRM	PRTRUT
11053	0 01 11110		BRU	F3E74
11054	0 43 23153		BRM	CHECK
11055	0 01 11110		BRU	F3E74
11056	0 43 22775		BRM	CP0T2
11057	00074000		DATA	484*STADDR
11060	0 43 23123		BRM	WAIT
11061	0 01 11110		BRU	F3E74
11062	0 40*12100		SKS*	12100
11063	0 01 11065		BRU	#+2
11064	0 01 11073		BRU	F3L68
11065	0 76 33272		LDA	#0
11066	0 75 15432		LDB	BIT23
11067	0 71 33337		LDX	#STADDR
11070	0 43 00460		BRM	ERR0R
11071	2 20 30222		NOP	F3M20*2
11072	0 01 11110		BRU	F3E74
11073	0 76 34000	F3L68	LDA	STADDR
11074	0 75 33273		LDB	#=1
11075	0 70 33250		SKM	#25522552

PBT TO CHANNEL
 SET UP SUBJECT TEST
 ABOUT
 DATA WORD
 PBT TO CHANNEL
 WAIT FOR CONTROLLER READY
 CLEAR INPUT LOCATION
 PBT TO DISC
 CHECK FOR CHANNEL READY
 PBT TO CHANNEL
 WAIT FOR CONTROLLER READY
 CHANNEL ZERO WORD COUNT TEST
 WORD COUNT NOT ZERO
 CHECK INPUT WORD
 *ASK
 IS THE DATA CORRECT

DISCF TAP=3.0 04/25 20100 PAGE 129

```
11203 0 01 11215 BRU F3E75
11204 0 00 00000 F3L72 PZE 0
11205 0 53 23310 SKN TEMP FIRST ERROR
11206 0 43 00454 BRM REPORT YES = OUTPUT HEADING
11207 0 20 32110 NBP F3M75
11210 0 43 00454 BRM REPORT OUTPUT DATA
11211 2 20 32146 NBP F3M76,2
11212 0 76 33273 LDA #=1
11213 0 36 23310 STA TEMP
11214 0 51 11204 BRM F3L72
11215 0 43 00434 F3E75 BRM END
*
* TEST 3ZFFA
*
11216 0 43 00430 BRM SUBJECT
11217 0 76 33272 LDA #0 PBT*BRD
11220 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
11221 0 01 11244 BRU F3E76
11222 0 43 22766 BRM CPBT1 PBT TO CHANNEL
11223 10034000 DATA 1B7*STADDR
11224 0 76 33251 LDA #STADDR+3 COMPARE ADDRESS
11225 0 76 33273 LDB #=1 *ASK
11226 0 06 12100 EBD 12100 ALERT TO PIN CHANNEL ADDRESS
11227 0 33 23310 PIN TEMP PIN CHANNEL ADDRESS
11230 0 70 23310 SKM TEMP DB ADDRESSES COMPARE
11231 0 01 11226 BRU F3L73 NO = LOOP
11232 0 06 10326 EBD 10326 CLEAR FILE
11233 0 40 10126 SKS* 10126 DISC FILE READY TEST
11234 0 01 11242 BRU F3L74 NOT IN STATE 0
11235 0 00 12126 SKS* 12126 TRACK VERIFIED TEST
11236 0 01 11244 BRU F3E76 IN STATE 0
11237 0 43 00460 BRM ERROR IN STATE 1
11240 0 20 32224 NBP F3M79
11241 0 01 11244 BRU F3E76
11242 0 43 00460 F3L74 BRM ERROR
11243 0 00 32170 NBP F3M78
```

DISCF TAP=3.0 04/25 20100 PAGE 130

```
11244 0 06 00100 EBD 100 DISCONNECT CHANNEL
11245 0 43 00434 BRM END
*
* TEST 2CL7A
*
11246 0 43 00430 BRM SUBJECT
11247 0 76 33272 LDA #0 PBT*BRD
11250 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
11251 0 01 11267 BRU F3E77
11252 0 43 22766 BRM CPBT1 PBT TO CHANNEL
11253 10034000 DATA 1B7*STADDR
11254 0 76 33251 LDA #STADDR+3 COMPARE ADDRESS
11255 0 76 33273 LDB #=1 *ASK
11256 0 06 12100 EBD 12100 ALERT TO PIN CHANNEL ADDRESS
11257 0 33 23310 PIN TEMP PIN CHANNEL ADDRESS
11260 0 70 23310 SKM TEMP DATA BEING TRANSMITTED YET
11261 0 01 11256 BRU F3L75 NO = LOOP
11262 0 06 10327 EBD 10327 ILLEGAL EBD
11263 0 40 10126 SKS* 10126 DISC FILE READY TEST
11264 0 01 11266 BRU #+2 NOT READY = BK
11265 0 43 00460 BRM ERROR
11266 0 20 32236 NBP F3M80
11267 0 06 00100 EBD 100 DISCONNECT CHANNEL
11270 0 43 00434 BRM END
*
* TEST 2CL7A
*
11271 0 43 00430 BRM SUBJECT
11272 0 76 33272 LDA #0 PBT*BRD
11273 0 43 22755 BRM SETUP4 SET UP OBJECT TEST
11274 0 01 11212 BRU F3E78
11275 0 43 22766 BRM CPBT1 PBT TO CHANNEL
11276 10034000 DATA 1B7*STADDR
11277 0 76 33251 LDA #STADDR+3 COMPARE ADDRESS
11300 0 76 33273 LDB #=1 *ASK
11301 0 06 12100 EBD 12100 ALERT TO PIN CHANNEL ADDRESS
```

DISCF TAF=3.0 04/25 20100 PAGE 131

11302	0 43 23310	FIN	TEMP	PIN CHANNEL ADDRESS
11303	0 70 23310	SKM	TEMP	DATA BEING TRANSMITTED YET
11304	0 01 11301	BRU	F3L76	NO
11305	0 06 3226A	EBD	30326	ILLEGAL EBD
11306	0 40 11326	SKS*	10126	DISC FILE READY TEST
11307	0 01 11311	BRU	**2	CONTROLLER NOT READY * 0K
11310	0 43 00460	BRM	ERRR	
11311	0 00 3226A	NSP	F3M*1	
11312	0 06 00400	EBD	100	DISCONNECT CHANNEL
11313	0 43 00434	BRM	END	

TEST 2010A

11314	0 43 00430	BRM	SUBJECT	PBTABRD
11315	0 70 32272	LDA	#0	SET UP OBJECT TEST
11316	0 43 22755	BRM	SETUP4	
11317	0 01 11336	BRU	F3F79	PBT TO CHANNEL
11320	0 43 22766	BRM	CP9T1	
11321	0 03 1003400	DATA	1B7*STADDR	COMPARE ADDRESS
11322	0 70 32251	LDA	#STADDR*3	MASK
11323	0 75 32273	LDR	#*1	ALERT TO PIN CHANNEL ADDRESS
11324	0 06 12100	EBD	12100	PIN CHANNEL ADDRESS
11325	0 43 23310	FIN	TEMP	DATA BEING TRANSMITTED YET
11326	0 70 23310	SKM	TEMP	NO
11327	0 01 11324	BRU	F3L77	ALERT DISC FILE
11330	0 06 10426	EBD	10126	DUMMY * EBD SHOULD NOT INTERFERE
11331	0 03 23310	FIN	TEMP	DISC FILE READY TEST
11332	0 40 11326	SKS*	10126	CONTROLLER NOT READY * 0K
11333	0 01 11325	BRU	**2	
11334	0 43 00460	BRM	ERRR	
11335	0 00 3226A	NSP	F3M*0	
11336	0 06 00400	EBD	100	DISCONNECT CHANNEL
11337	0 43 00434	BRM	END	

TEST 0X02A

DISCF TAF=3.0 04/25 20100 PAGE 132

11340	0 43 00430	BRM	SUBJECT	PBTABRD
11341	0 70 32272	LDA	#0	SET UP OBJECT TEST
11342	0 43 22755	BRM	SETUP4	
11343	0 01 11370	BRU	F3F41	PBT TO CHANNEL
11344	0 43 22766	BRM	CP9T1	
11345	0 03 1003400	DATA	1B7*STADDR	SYSTEMS EBD * SHOULD HAVE NO EFFECT
11346	0 06 32766	EBD	32766	-AIT FOR CONTROLLER READY
11347	0 43 22123	BRM	AIT	
11350	0 01 11370	BRU	F3F41	PBT TO DISC
11351	0 43 22755	BRM	SETUP4	
11352	0 01 11370	BRU	F3F41	CHECK FOR CHANNEL READY
11353	0 43 22755	BRM	CHECK	
11354	0 01 11370	BRU	F3F41	PBT TO CHANNEL
11355	0 43 22755	BRM	CP9T2	
11356	0 03 1003400	DATA	1B7*STADDR	-AIT FOR CONTROLLER READY
11357	0 43 22123	BRM	AIT	
11350	0 01 11370	BRU	F3E41	ALERT TO PIN CHANNEL ADDRESS
11361	0 06 12100	EBD	12100	PIN CHANNEL ADDRESS
11362	0 03 23310	FIN	TEMP	CHECK TO SEE IF DISC DISCONNECTED AFTER
11363	0 70 23310	LDA	TEMP	01E SECTOR
11364	0 75 32273	LDR	#*1	
11365	0 70 32242	SKM	#STADDR*100	GRD COUNT NOT CORRECT
11366	0 43 00460	BRM	ERRR	
11367	0 00 3226A	NSP	F3M*3	
11370	0 06 00400	EBD	100	DISCONNECT CHANNEL
11371	0 43 00434	BRM	END	

TEST 0X02A

11370	0 43 00430	BRM	SUBJECT	PBTABRD
11373	0 70 32272	LDA	#0	SET UP OBJECT TEST
11374	0 43 22755	BRM	SETUP4	
11375	0 01 11316	BRU	F3F42	PBT TO CHANNEL
11376	0 43 22766	BRM	CP9T3	
11377	0 03 1003400	DATA	1B7*STADDR	SYSTEMS EBD * SHOULD HAVE NO EFFECT
11378	0 06 32766	EBD	32766	

DISCF TAP=3.0 04/25 20100 PAGE 133

11401	0 43 23123	BRM	WAIT	WAIT FOR CONTROLLER READY
11402	0 01 11416	BRU	F3E82	
11403	0 43 23153	BRM	PBTOUT	PBT TO DISC
11404	0 01 11416	BRU	F3E82	
11405	0 43 23153	BRM	CHECK	CHECK FOR CHANNEL READY
11406	0 01 11416	BRU	F3E82	
11407	0 43 23113	BRM	CP874	PBT TO CHANNEL
11410	10034000	DATA	1R7*STADDR	
11411	0 43 23123	BRM	WAIT	WAIT FOR CONTROLLER READY
11412	0 01 11416	BRU	F3E82	
11413	0 40 12100	SKS*	12100	CHANNEL ZERO WORD COUNT TEST
11414	0 43 00460	BRM	ERR8R	WORD COUNT NOT ZERO
11415	0 20 32255	NBP	F3M82	
11416	0 06 00100	E8D	100	DISCONNECT CHANNEL
11417	0 43 00434	BRM	END	

*
* TEST 9YESA
*

11420	0 43 00430	BRM	8BJECT	
11421	0 43 22614	BRM	F3S4	GENERATE ERROR
11422	0 01 11427	BRU	F3E85	ABORT
11423	0 40 11100	SKS*	11100	CHANNEL ERROR TEST
11424	0 01 11426	BRU	**2	CHANNEL ERROR OK
11425	0 43 00460	BRM	ERR8R	
11426	0 20 32307	NBP	F3M94	
11427	0 43 00434	F3E85 BRM	END	

*
* TEST 9YHSA
*

11430	0 43 00430	BRM	8BJECT	
11431	0 43 22614	BRM	F3S4	GENERATE ERROR
11432	0 01 11427	BRU	F3E86	ABORT
11433	0 06 10326	E8D	10326	CLEAR FILE
11434	0 06 00100	E8D	100	DISCONNECT CHANNEL
11435	0 76 33277	LDA	#0	CLEAR I2 FLAG
11436	0 25 15443	STA	I2FLAG	

DISCF TAP=3.0 04/25 20100 PAGE 134

11437	0 43 00440	BRM	RETURN	SET SPIT LINKAGE
11440	0 20 23333	NBP	P12	
11441	0 43 23153	BRM	PBTOUT	PBT TO DISC
11442	0 01 11457	BRU	F3E86	
11443	0 06 10100	E8D*	10100	ALERT CHANNEL
11444	0 06 16000	E8D	16000	EXTENDED MODE E8C
11445	0 13 33247	PBT	#1R7*STADDR	
11446	0 06 02726	E8D	2726	READ DISC FILE * CHAIN
11447	0 43 23265	BRM	*200	WAIT 200 MILLISEC
11450	0 02 20002	EIR		ENABLE INTERRUPTS
11451	0 20 00000	NBP	0	DUMMY * INTERRUPT SHOULD BE PENDING
11452	0 20 00000	NBP	0	
11453	0 02 20004	DIR		DISABLE INTERRUPTS
11454	0 53 15443	SKN	I2FLAG	HAS I2 INTERRUPT RECEIVED
11455	0 43 00460	BRM	ERR8R	NO
11456	0 20 32317	NBP	F3M95	
11457	0 43 00434	F3E86 BRM	END	
11460	0 43 00456	ENDF3 BRM	END	EXIT FUNCTION

```

*
* FUNCTION PARAMETER TABLES
*
11461 0 20 11467 FPT3 NBP FIM3 FUNCTION IDENTIFIER MESSAGE
11462 0 20 11506 NBP FAM3 FUNCTION ABSTRACT MESSAGE
11463 0 20 05436 NBP FVM1 FUNCTION VARIABLES MESSAGE
11464 0 01 04777 ONE FVT1 FUNCTION VARIABLES (NONE)
11465 0 00 11707 PZE FUNC4 POINTER TO NEXT FUNCTION
11466 04000000 DATA 4000000 FUNCTION IDENTIFIER BIT (BIT 3)
*
* FUNCTION MESSAGES
*
11467 52261200 FIM3 BCD ' F 03 = DISC FILE CONTROLLER DIAGNOSTIC WITH DATA TRANSFER!'
11470 03124012
11471 24316223
11472 12263143
11473 25122344
11474 45635144
11475 43432551
11476 12243121
11477 27454462
11500 63312312
11501 66316330
11502 12242163
11503 21121251
11504 21456226
11505 25513712
11506 52322431 FAM3 BCD ' DISC FILE CONTROLLER DIAGNOSTIC WITH DATA TRANSFER!'
11507 62231226
11510 31432512
11511 23464563
11512 51464343
11513 25511224
11514 31212745
11515 46626331
11516 23126631

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11517 43301224
11520 21637112
11521 63512145
11522 62262551
11523 52526330 BCD ' THIS FUNCTION TESTS THE 9164 DISC FILE CONTROLLER AS'
11524 31621226
11525 64452363
11526 31464512
11527 63256263
11530 23126330
11531 25121101
11532 06041224
11533 31622312
11534 26314225
11535 12234445
11536 63514443
11537 43255112
11540 21621212
11541 52446423 BCD ' MUCH AS POSSIBLE WITH DATA TRANSFER, THE FOLLOWING'
11542 30122162
11543 12474662
11544 62312243
11545 25126631
11546 63301224
11547 21632112
11550 63512145
11551 62262551
11552 33126330
11553 25122446
11554 43434666
11555 31452712
11556 52216262 BCD ' ASSUMPTIONS ARE MADE!!'
11557 14444763
11560 31464562
11561 12215125
11562 12442124

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DISCF TAP=3.0 04/25 20100 PAGE 137

11563	25151212		
11564	52665131	BCD	' WRITE HEADER SWITCH IS OFF'
11565	63251230		
11566	55212125		
11567	51126266		
11570	31632330		
11571	12312212		
11572	46262612		
11573	52454412	BCD	' NO DISCS WRITE PROTECTED'
11574	24316223		
11575	62126651		
11576	31632512		
11577	47514669		
11600	25236325		
11601	24121212		
11602	52255151	BCD	' ERROR STOP SWITCH IS IN CONTINUE'
11603	46511262		
11604	63464712		
11605	62663163		
11606	23301231		
11607	62123145		
11610	12234445		
11611	43314564		
11612	25121212		
11613	52263143	BCD	' FILE IS ON LINE'
11614	25123162		
11615	12464512		
11616	43314525		
11617	52302521	BCD	' HEADERS ARE GOOD'
11620	24255162		
11621	12215125		
11622	12274646		
11623	24121212		
11624	52312612	BCD	' IF THE DISC IS SOFTWARE WRITE PROTECTED OR PREVIOUSLY'
11625	63302512		
11626	24316223		

DISCF TAP=3.0 04/25 20100 PAGE 138

11627	12316212		
11630	62462663		
11631	64215125		
11632	12665131		
11633	63251247		
11634	51466325		
11635	23637524		
11636	12465112		
11637	47512565		
11640	31467462		
11641	43701212		
11642	52422570	BCD	' KEYED, THIS FUNCTION WILL BE SKIPPED. SUBJECT TESTS USING'
11643	25247312		
11644	63302162		
11645	12266445		
11646	23633146		
11647	45126631		
11650	43431222		
11651	25126242		
11652	31474725		
11653	24331244		
11654	22412523		
11655	63126325		
11656	62631212		
11657	64622145		
11660	27121212		
11661	52243162	BCD	' DISCS WHICH ARE DELETED FROM THE UNIT VARIABLES DOCT17'
11662	23621266		
11663	30317330		
11664	12215125		
11665	12242543		
11666	25214325		
11667	24122451		
11670	46441263		
11671	30251264		
11672	45316312		

DISCF TAP=3.0 04/25 20100 PAGE 139

11673	65215131		
11674	21224325		
11675	62122400		
11676	00630107		
11677	52214524	BCD	AND D20T37 WILL BE SKIPPED.!!
11700	12240200		
11701	63030712		
11702	66314343		
11703	12222512		
11704	62423147		
11705	47252433		
11706	37121012		

DISCF TAP=3.0 04/25 20100 PAGE 140

```

*
*
* FUNCTION 4 - HEADER AND ADDRESSING VERIFICATION
*
11707 0 43 00424 FOLC4 BRM FUNCTN FUNCTION LINK
11710 0 43 12175 NOP FRT4
11711 0 43 00430 BRM SUBJECT
11712 0 43 20004 DIR
11713 0 43 00440 BRM RETUR. SET INTERRUPT LINKAGE
11714 0 20 23351 NOP ENTER
11715 0 76 00401 LDA STATUS CHECK FOR SOFTWARE WRITE-PROTECT
11716 0 72 15414 SKA BIT0
11717 0 01 12155 BRU ENDF4 WRITE PROTECTED
11720 0 74 00332 LDA FLAGS CHECK FOR PREVIOUS KEY
11721 0 72 04765 SKA BIT4
11722 0 01 12155 BRU ENDF4 DISC KEYED
*
* CLEAR OUTPUT BUFFER
*
11723 0 74 33372 LDA #0
11724 0 71 33352 LDX #2048D
11725 2 35 00000 STA STADDR+2048D,2
11726 0 41 11725 BRX #1
*
* PRESET
*
11727 0 76 33353 LDA #20000 PRESET PASSWORD
11730 0 35 23332 STA PASSWORD
*
* DISC DRIVER
*
11731 0 76 23332 F4L1 LDA PASSWORD
11732 0 55 15415 ADD BIT10 INCREMENT DISC NUMBER
11733 0 73 33326 SKG #777777 FINISHED
11734 0 01 11736 BRU #2 '9

```

```

DISCF TAP=3.0 04/25 20100 PAGE 141
11735 0 01 12037 BRU F4E1
11736 0 43 23022 BRM DISCK USE THIS DISC
11737 0 01 11731 BRU F4L1 NO
11740 0 43 00430 BRM OBJECT
11741 0 43 23153 BRM PBTOUT POT TO DISC
11742 0 01 12001 BRU F4L4 ERROR ABORT
11743 0 43 23053 F4L2 BRM CHECK CHECK FOR CHANNEL READY
11744 0 01 12001 BRU F4L4 ERROR ABORT
11745 0 76 23332 LDA PBTWRD
11746 0 71 33352 LDX #20480
11747 2 35 00000 STA STADDR+20480,2 STORE DATA IN FIRST WORD
11750 0 06*10100 EBD* 10100 ALERT CHANNEL
11751 0 06 14202 EBD 14202 EXTENDED MODE EBD
11752 0 13 33337 PBT #STADDR
11753 0 06 03766 EBD 3766 WRITE DISC FILE - SECTOR
*
* BUILD OUTPUT TABLE
*
11754 2 35 00000 F4L3 STA STADDR+20480,2
11755 0 55 15432 ADD BIT23
11756 2 77 00077 EAX 77,2
11757 0 41 11754 BRX F4L3 LOOP
11760 0 43 23123 BRM WAIT WAIT FOR DISC TO FINISH
11761 0 01 12001 BRU F4L4 ERROR ABORT
11762 0 40*12100 SKS* 12100 CHANNEL ZERO WORD COUNT TEST
11763 0 01 12001 BRU F4L4 ERROR = COUNT NOT ZERO
11764 0 40*11100 SKS* 11100 CHANNEL ERROR TEST
11765 0 01 12001 BRU F4L4 CHANNEL ERROR SET
11766 0 43 00434 BRM END
11767 0 76 23332 F4L5 LDA PBTWRD
11770 0 75 33354 LDB #760000 MASK
11771 0 55 15425 ADD BIT18 INCREMENT PBTWRD
11772 0 70 23332 SKM PBTWRD NEW ADDRESS ON SAME DISC
11773 0 01 11733 BRU F4L1*2 NO
11774 0 35 23332 STA PBTWRD
11775 0 43 00430 BRM OBJECT

```

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DISCF TAP=3.0 04/25 20100 PAGE 142
11776 0 06 10126 EBD 10126 ALERT DISC FILE
11777 0 13 23332 PBT PBTWRD POT TO DISC
12000 0 01 11743 BRU F4L2
*
* ERROR ROUTINE
*
12001 0 06 12100 EBD 12100 ALERT TO PIN CHANNEL ADDRESS
12002 0 33 23310 FIN TEMP COMPUTE WORD COUNT
12003 0 76 23310 LDA TEMP
12004 0 54 33337 SUB #STADDR
12005 0 35 15460 STA ERRLBL
12006 0 76 15417 LDA BIT1? CORRECT WORD COUNT
12007 0 35 15461 STA ERRLBL+1
12010 0 76 23332 LDA PBTWRD STARTING DISC ADDRESS
12011 0 35 15462 STA ERRLBL+2
12012 0 06 10126 EBD 10126 ALERT DISC FILE
12013 0 33 15463 PIN ERRLBL+3 PINNED DISC ADDRESS
12014 0 76 33272 LDA #0 CHANNEL ERROR FLAG
12015 0 40*11100 SKS* 11100 CHANNEL ERROR TEST
12016 0 76 33273 LDA #1
12017 0 35 15464 STA ERRLBL+4
12020 0 76 33272 LDA #0
12021 0 40*11126 SKS* 11126 CONTROLLER ERROR FLAG
12022 0 76 33273 LDA #1 DISC FILE ERROR TEST
12023 0 35 15465 STA ERRLBL+5
12024 0 76 23331 LDA TIMEOUT TIMEOUT ERROR FLAG
12025 0 35 15466 STA ERRLBL+6
12026 0 06 10326 EBD 10326 CLEAR FILE
12027 0 06 00100 EBD 100 DISCONNECT CHANNEL
12030 0 43 00454 BRM REPORT REPORT ERROR
12031 4 70 32324 NBP F4M1,4 MESSAGE
12032 0 07 15460 SEVEN ERRLBL DATA
12033 0 43 00460 BRM ERROR GO TO CONTROL
12034 0 20 32351 NBP F4M2
12035 0 43 00434 BRM END
12036 0 01 11767 BRU F4L5

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DISCF TAP=3.0 04/25 20100 PAGE 143

12037 0 43 00434 F4E1 BRM END
12040 0 01 12041 BRU F401

* ADDRESSING VERIFICATION

12041 0 76 33253 F401 LDA ##20000 PRESET PBT WORD
12042 0 35 23332 STA PBT-RO
12043 0 76 23332 F4L6 LDA PBT-RO INCREMENT DISC NUMBER
12044 0 55 15415 ADD BIT10
12045 0 73 33226 SKG ##777777 FINISHED
12046 0 01 12050 BRU **2 NO
12047 0 01 12154 BRU F4E2
12050 0 43 23222 BRM DISCK USE THIS DISC
12051 0 01 12043 BRU F4L6 NO
12052 0 43 00430 BRM SUBJECT
12053 0 43 23153 BRM PBT-RO PBT TO DISC
12054 0 01 12116 BRU F4L10 ERROR ABORT
12055 0 43 23253 F4L7 BRU CHECK CHECK FOR CHANNEL READY
12056 0 01 12116 BRU F4L10 ERROR ABORT
12057 0 06 10100 LED* 10100 ALERT CHANNEL
12060 0 06 14002 EOD 14002 EXTENDED MODE EOD
12061 0 12 33237 PUT #STADDR
12062 0 06 00226 EOD 2726 READ DISC FILE - CHAIN
12063 0 43 23123 BRM WAIT WAIT FOR CONTROLLER TO FINISH
12064 0 01 12116 BRU F4L10 ERROR ABORT
12065 0 40 12100 SKS* 12100 CHANNEL ZERO WORD COUNT TEST
12066 0 01 12116 BRU F4L10 WORD COUNT NOT ZERO
12067 0 40 11100 SKS* 11100 CHANNEL ERROR TEST
12070 0 01 12116 BRU F4L10 CHANNEL ERROR SET
12071 0 76 33272 LDA 0
12072 0 35 12174 STA F4L11A
12073 0 76 23332 LDA PBT-RO TEST FIRST WORD OF EACH SECTOR INPUT
12074 0 71 33252 LDX ##20480
12075 0 75 33273 LDB ##1
12076 0 70 00000 F4L8 SKY STADDR+20480/2 MASK
12077 0 43 12156 BRU F4L11 ADDRESS CORRECT
NO

DISCF TAP=3.0 04/25 20100 PAGE 144

12100 0 55 15430 ADD BIT10
12101 0 77 00277 EAX 7720
12102 0 41 12076 BRX F4L8 LOOP
12103 0 43 00434 BRM END
12104 0 76 23332 F4L9 LDA PBT-RO
12105 0 75 33254 LDB ##760000 MASK
12106 0 55 15425 ADD BIT10 INCREMENT TRACK PAIR
12107 0 77 23332 SKY PBT-RO ADDRESS ON SAME DISC
12110 0 01 12045 BRU F4L6+2 NO
12111 0 05 23332 STA PBT-RO
12112 0 43 00430 BRM SUBJECT
12113 0 06 10126 EOD 10126 ALERT DISC FILE
12114 0 12 23332 PUT PBT-RO PBT TO DISC
12115 0 01 12056 BRU F4L7
*
* ERROR ROUTINE
*
12116 0 06 10100 EOD 10100 ALERT TO PIN CHANNEL ADDRESS
12117 0 33 23210 PIN TEMP COMPUTE WORD COUNT
12120 0 76 23210 LDA TEMP
12121 0 54 33237 SUB #STADDR
12122 0 35 15460 STA ERR13L
12123 0 76 15417 LDA BIT12 CORRECT WORD COUNT
12124 0 55 15461 STA ERR13L+1
12125 0 76 23332 LDA PBT-RO STARTING DISC ADDRESS
12126 0 55 15462 STA ERR13L+2
12127 0 06 10126 EOD 10126 ALERT DISC FILE
12130 0 55 15463 PIN ERR13L+3 PINNED DISC ADDRESS
12131 0 76 33272 LDA 0 CHANNEL ERROR FLAG
12132 0 40 11100 SKS* 11100 CHANNEL ERROR TEST
12133 0 76 33273 LDA ##1
12134 0 54 15464 STA ERR13L+4
12135 0 76 33270 LDA 0 CONTROLLER ERROR FLAG
12136 0 40 11126 SKS* 11126 DISC FILE ERROR TEST
12137 0 76 33273 LDA ##1
12140 0 35 15465 STA ERR13L+5

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DISCF  TAP=3.C      04/25  20100  PAGE 145
12141  0 76 23131      LDA  TIMEOUT      TIMEOUT ERROR FLAG
12142  0 35 15466      STA  ERRTBL+6
12143  0 06 10326      EBD  10326      CLEAR FILE
12144  0 06 00100      EBD  100      DISCONNECT CHANNEL
12145  0 43 00454      BRM  REPORT      REPORT ERROR
12146  4 20 32352      NOP  F4M3,4      MESSAGE
12147  0 07 15460      SEVEN ERRTBL      DATA
12150  0 43 00460      BRM  ERRBR      GO TO CONTROL
12151  0 20 32351      NOP  F4M2
12152  0 43 00434      BRM  END
12153  0 01 12104      BRU  F4L9
12154  0 43 00434      F4E2 BRM  END
12155  0 43 00456      F4E2 BRM  FDBNE      EXIT FUNCTION
      *
      * DATA ERROR SUBROUTINE
      *
12156  0 00 00000      F4L11 PZE  0
12157  0 35 15460      STA  ERRTBL      CORRECT ADDRESS
12160  2 76 00000      LDA  STADDR+2048D,2
12161  0 35 15461      STA  ERRTBL+1      INCORRECT ADDRESS
12162  0 53 12174      SKN  F4L11A      PRINT HEADING
12163  0 43 00454      BRM  REPORT      YES
12164  0 20 32402      BRM  F4M4
12165  0 43 00454      BRM  REPORT      OUTPUT DATA
12166  4 20 32351      NOP  F4M2,4      CARRIAGE RETURN
12167  0 02 15460      TMB  ERRTBL      DATA
12170  0 76 33073      LDA  #=1
12171  0 35 12174      STA  F4L11A
12172  0 76 15460      LDA  ERRTBL
12173  0 51 12156      BRR  F4L11
12174  0 00 00000      F4L11A PZE  0      PRINT HEADING FLAG

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DISCF  TAP=3.C      04/25  20100  PAGE 146
      *
      * FUNCTION PARAMETER TABLES
      *
12175  0 20 12203      FPT4  NOP  FIM4      FUNCTION IDENTIFIER MESSAGE
12176  0 20 12216      NOP  FAM4      FUNCTION ABSTRACT MESSAGE
12177  0 20 05436      NOP  FVM1      FUNCTION VARIABLES MESSAGE
12200  0 01 04777      ONE  FVT1      FUNCTION VARIABLES (NONE)
12201  0 00 12412      PZE  FUNC5      POINTER TO NEXT FUNCTION
12202  0 00 00000      DATA 2000000      FUNCTION IDENTIFIER BIT (BIT 4)
      *
      * FUNCTION MESSAGES
      *
12203  52241200      FIM4  BCD  ' F 04 - HEADER AND ADDRESSING VERIFICATION!'
12204  14124012
12205  30252124
12206  25511221
12207  45241221
12210  24245125
12211  62623145
12212  27126525
12213  51312631
12214  23216331
12215  44453712
12216  52323025      FAM4  BCD  ' HEADER AND ADDRESSING VERIFICATION!'
12217  21242551
12220  12214524
12221  12212424
12222  51256262
12223  31452712
12224  45255131
12225  26312321
12226  43314445
12227  52524330      BCD  ' THIS FUNCTION VERIFIES HEADERS AND ADDRESSING BY!'
12230  31621226
12231  64452263
12232  31464512

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DISC# TAP#3.C 04/25 20100 PAGE 147

12233	65255131		
12234	26312562		
12235	12302521		
12236	24255162		
12237	12214524		
12240	12212424		
12241	51256262		
12242	31452712		
12243	22701212		
12244	52665131	BCD	' WRITING THE SECTOR ADDRESS IN THE FIRST WORD OF EACH'
12245	63314527		
12246	12633225		
12247	12622523		
12250	63465112		
12251	21242451		
12252	25626212		
12253	31451263		
12254	30251226		
12255	31516263		
12256	12664451		
12257	24124426		
12260	12252123		
12261	30121212		
12262	52622523	BCD	' SECTOR ON THE DISC, WHEN THE ENTIRE DISC HAS BEEN TAGGED'
12263	63465112		
12264	46451263		
12265	32251224		
12266	31622333		
12267	12663225		
12270	45124330		
12271	24122545		
12272	63315125		
12273	12242162		
12274	23123221		
12275	62122225		
12276	25451263		

DISC# TAP#3.C 04/25 20100 PAGE 148

12277	21272725		
12300	24121212		
12301	52633225	BCD	' THE ENTIRE DISC IS THEN READ AND THE FIRST WORD IN EACH'
12302	12254563		
12303	31512512		
12304	24316223		
12305	12316212		
12306	63302545		
12307	12512521		
12310	24122145		
12311	24126330		
12312	25122431		
12313	31622312		
12314	66465124		
12315	12314512		
12316	25212330		
12317	52622523	BCD	' SECTOR IS CHECKED FOR THE CORRECT ADDRESS, DISCS WHICH'
12320	63465112		
12321	31421223		
12322	30252342		
12323	25241226		
12324	46511263		
12325	30251223		
12326	46515125		
12327	23631221		
12330	24245125		
12331	12622312		
12332	24316223		
12333	27124630		
12334	31232112		
12335	22302165	BCD	' HAVE BEEN DELETED FROM THE UNIT VARIABLES D00T17 AND'
12336	25122225		
12337	25451224		
12340	25432563		
12341	25241226		
12342	31465112		

12343 63302512
12344 64453163
12345 12652151
12346 31212243
12347 25621224
12350 00006401
12351 07122145
12352 24121212
12353 52240200
12354 63030712
12355 66314343
12356 12454663
12357 12222512
12360 24513165
12361 25453312
12362 31261263
12363 30251224
12364 31622312
12365 31621262
12366 46266366
12367 21512512
12370 52665131
12371 63251247
12372 51466325
12373 23637524
12374 12465112
12375 47512565
12376 31466462
12377 43701242
12400 15702524
12401 73124330
12402 31621226
12403 64452263
12404 31464512
12405 52663143
12406 43122225

BCD ' D20T37 WILL NOT BE DRIVEN. IF THE DISC IS SOFTWARE'

BCD ' WRITE PROTECTED OR PREVIOUSLY KEYED, THIS FUNCTION'

BCD ' WILL BE SKIPPED.!!'

12407 12624231
12410 47472524
12411 33371212

FUNCTION 5 - DATA PRODUCTS 5045 DISC FILE DIAGNOSTIC

ADDRESS	OPERATION	DATA	FUNCTION	LINK
12412	0 43	00424	BRM	FUNCTION
12413	0 43	00416	NBP	FPT5
12414	0 43	00440	BRM	RETURN
12415	0 20	00951	NBP	ENTER
12416	0 07	00004	DIR	DISABLE INTERRUPTS

TEST PDRA LOGIC IN 5045 FILE (POSITION DECODER)				
12417	0 43	00430	BRM	PROJECT
12420	0 43	00460	BRM	F551
12421	0 00	00000	DATA	0
12422	0 00	0000400	DATA	600
12423	0 20	00440	NBP	F5M2
12424	0 20	00443	NBP	F5M3
12425	0 20	00446	NBP	F5M4
12426	0 20	00451	NBP	F5M5
12427	0 43	00430	BRM	PROJECT
12430	0 43	00460	BRM	F551
12431	0 00	00000	DATA	00000
12432	0 00	0000000	DATA	00000
12433	0 20	00454	NBP	F5M6
12434	0 20	00457	NBP	F5M7
12435	0 20	00462	NBP	F5M8
12436	0 20	00465	NBP	F5M9
12437	0 43	00430	BRM	PROJECT
12440	0 43	00460	BRM	F551
12441	0 00	00400	DATA	40200
12442	0 00	0040000	DATA	40400
12443	0 20	00470	NBP	F5M10

12444	0 20	00474	NBP	F5M11
12445	0 20	00476	NBP	F5M12
12446	0 20	00481	NBP	F5M13
12447	0 43	00430	BRM	PROJECT
12450	0 43	00460	BRM	F551
12451	0 00	00000	DATA	60400
12452	0 00	0000400	DATA	60600
12453	0 20	00404	NBP	F5M14
12454	0 20	00407	NBP	F5M15
12455	0 20	00412	NBP	F5M16
12456	0 20	00415	NBP	F5M17
12457	0 43	00430	BRM	PROJECT
12460	0 43	00460	BRM	F551
12461	0 00	00000	DATA	1000
12462	0 00	00001400	DATA	1600
12463	0 20	00420	NBP	F5M18
12464	0 20	00424	NBP	F5M19
12465	0 20	00427	NBP	F5M20
12466	0 20	00433	NBP	F5M21
12467	0 43	00430	BRM	PROJECT
12470	0 43	00460	BRM	F551
12471	0 00	00000	DATA	21000
12472	0 00	0000000	DATA	21200
12473	0 20	00436	NBP	F5M22
12474	0 20	00441	NBP	F5M23
12475	0 20	00444	NBP	F5M24
12476	0 20	00447	NBP	F5M25
12477	0 43	00430	BRM	PROJECT
12500	0 43	00460	BRM	F551
12501	0 00	00000	DATA	41200
12502	0 00	00001000	DATA	41400
12503	0 20	00450	NBP	F5M26

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12504 0 20 32555 NBP F5M27
12505 0 20 32560 NBP F5M28
12506 0 20 32563 NBP F5M29

12507 0 43 00430 BRM OBJECT
12510 0 43 22660 BRM F5S1 PERFORM TEST
12511 0 00061400 DATA 61400
12512 0 00061600 DATA 61600
12513 0 20 32566 NBP F5M30
12514 0 20 32571 NBP F5M31
12515 0 20 32574 NBP F5M32
12516 0 20 32577 NBP F5M33

*
* CHECK FOR FC0=6121 (CLR FLIP=FL0P IN FILE)
*
12517 0 43 00430 BRM OBJECT
12520 0 76 33272 LDA *0 P0TWORD
12521 0 43 23222 BRM DISCK USE THIS DISC
12522 0 01 12554 BRU F5E9 NO
12523 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
12524 0 20 23251 NBP ENTER
12525 0 02 20004 DIR
12526 0 71 33256 LDX *3 LOOP COUNT
12527 0 43 23123 F5L49 BRM *AIT WAIT FOR CONTROLLER READY
12530 0 01 12554 BRU F5E9 ERROR ABORT
12531 0 06 10126 E0D 10126 ALERT DISC FILE
12532 0 13 33272 PBT *0 PBT A
12533 0 43 23123 BRM *AIT WAIT FOR CONTROLLER READY
12534 0 01 12554 BRU F5E9 ERROR ABORT
12535 0 06 10126 E0D 10126 ALERT DISC FILE
12536 0 13 15423 PBT BIT16 PBT B
12537 0 41 12527 BRX F5L49 LOOP
12540 0 43 23123 BRM *AIT WAIT FOR CONTROLLER READY
12541 0 01 12554 BRU F5E9 ERROR ABORT
12542 0 06 10126 E0D 10126 CLEAR FILE
12543 0 40 10126 SKS 10126 DISC FILE READY TEST
    
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12544 0 01 12543 BRJ *1 WAIT FOR CONTROLLER READY
12545 0 06 10126 E0D 10126 ALERT DISC FILE
12546 0 13 33272 PBT *0 PBT A
12547 0 43 23275 BRM *500 WAIT 500 MILLISEC
12550 0 40 *1 126 SKS *10126 DISC FILE READY TEST
12551 0 43 00460 BRM ERROR CONTROLLER NOT READY
12552 0 20 32402 NBP F5M34
12553 0 06 10126 E0D 10126 CLEAR FILE
12554 0 43 00434 F5L9 BRM END

*
* TEST TIMING LOGIC
*
12555 0 43 00430 BRM OBJECT
12556 0 76 33272 LDA *0 PBT BRD
12557 0 43 23222 BRM DISCK USE THIS DISC
12560 0 01 12414 BRU F5E10 NO
12561 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
12562 0 20 23251 NBP ENTER
12563 0 02 20004 DIR
12564 0 43 23153 BRM PBTOUT PBT TO DISC
12565 0 01 12414 BRU F5E10
12566 0 06 10126 E0D 10126 CLEAR FILE
12567 0 40 *1 12124 SKS *10126 DISC FILE READY TEST
12570 0 01 12567 BRU *1 WAIT FOR CONTROLLER READY
12571 0 76 33272 LDA *0
12572 0 06 10126 E0D 10126 ALERT DISC FILE
12573 0 13 23232 PBT PBT TO DISC
12574 0 71 33256 F5L50 LDX *5600 TIME UNTIL VERIFICATION (1 MS/L00P)
12575 0 41 12575 BRX *
12576 0 55 15432 ADD BIT23
12577 0 73 33257 SKG *5000 TIMED OUT
12600 0 01 12602 BRU *2 NO
12601 0 01 12411 BRU F5L51
12602 0 40 *1 12124 SKS *10126 TRACK VERIFIED TEST
12603 0 01 12574 BRU F5L50 NOT VERIFIED * LOOP
12604 0 73 33260 SKG *1180 TIME GREATER THAN 118 MILLISEC
    
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DISCF  TAP-3.0      04/25  20:00  PAGE 155
12605  0 01 12607      BRU    **2
12606  0 43 00460      BRM    ERROR
12607  0 20 32641      NBP    F5M35
12610  0 01 12614      BRU    F5E10
12611  0 06 10326      EDD    10326
12612  0 43 00460      BRM    ERROR
12613  0 20 32730      NBP    F5M36
12614  0 43 00434      F5E10 BRM    END
12615  0 43 00456      ENDF5 BRM    FDBLE
                                NO = 0K
                                REPORT ERROR
                                CLEAR FILE
                                REPORT TIMEOUT ERROR
                                EXIT FUNCTION

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DISCF  TAP-3.0      04/25  20:00  PAGE 156
*
* FUNCTION PARAMETER TABLES
*
12616  0 20 12624      FPTS  NBP    FIM    FUNCTION IDENTIFIER MESSAGE
12617  0 20 12635      NBP    FAN5   FUNCTION ABSTRACT MESSAGE
12620  0 20 25436      NBP    FVM1   FUNCTION VARIABLES MESSAGE
12621  0 01 24777      PNE    FVT1   FUNCTION VARIABLES (NONE)
12622  0 00 12740      FZF    FUNC10  POINTER TO NEXT FUNCTION
12623  0 100 000      DATA  1000000   FUNCTION IDENTIFIER BIT (BIT 5)
*
* FUNCTION MESSAGES
*
12624  50261000      FIMS  BCD    * F 05 = 5045 DISC FILE DIAGNOSTIC
12625  05124012
12626  15001405
12627  12243162
12630  23122431
12631  42251224
12632  31212745
12633  44622331
12634  23371012
12635  50320000      FANS  BCD    * F045 DISC FILE DIAGNOSTICS
12636  14051224
12637  31622312
12640  26314225
12641  12243125
12642  27454462
12643  13312262
12644  52520330      BCD    * THIS FUNCTION CONTAINS OBJECT TESTS WHICH ARE DESIGNED
12645  31021226
12646  14452262
12647  31464512
12650  23464562
12651  21314562
12652  12462241
12653  28236312

```

DISCF TAP=3.0 04/25 20100 PAGE 157

12654	63256263		
12655	62126630		
12656	31233012		
12657	21512512		
12660	24256231		
12661	27452524		
12662	52624725	BCD	' SPECIFICALLY TO LOCATE PROBLEMS IN THE DATA PRODUCTS'
12663	23312631		
12664	23214343		
12665	70126246		
12666	12434623		
12667	21632512		
12670	47514422		
12671	43254462		
12672	12314512		
12673	63302512		
12674	24216321		
12675	12475146		
12676	24642363		
12677	62121212		
12700	52050004	BCD	' 5045 DISC FILE, OBJECT TESTS WHICH USE DISCS WHICH ARE'
12701	65122431		
12702	62231226		
12703	31432533		
12704	12462241		
12705	25236312		
12706	63256263		
12707	62126630		
12710	31233012		
12711	64622512		
12712	24316223		
12713	62126630		
12714	31233012		
12715	21512512		
12716	52242543	BCD	' DELETED FROM THE UNIT VARIABLES D00T17 AND D20T37 WILL'
12717	25632524		

DISCF TAP=3.0 04/25 20100 PAGE 158

12720	12265146		
12721	44126230		
12722	25126445		
12723	31631065		
12724	21512512		
12725	12432562		
12726	12240000		
12727	63010712		
12730	21452412		
12731	74020063		
12732	63071066		
12733	31434312		
12734	52222512	BCD	' BE SKIPPED.!!'
12735	62422147		
12736	47252433		
12737	37121212		

*
*
* FUNCTION 10 - DISC EXERCISES
*

```

12740 0 76 00401 FUNC10 LDA STATUS PRESET RUNMODE
12741 0 72 15414 SKA BIT9 WRITE PROTECT BIT SET
12742 0 01 12753 BRU PRE1 YES
12743 0 76 00332 LDA FLAGS
12744 0 72 04765 SKA JPT*4 DISC PREVIOUSLY KEYED
12745 0 01 12760 BRU PRE2 YES
12746 0 76 15433 LDA RMODE SET UP KEY MODE
12747 0 14 33361 ETR #785
12750 0 16 33362 *RG #22026610
12751 0 35 15466 STA RMODE
12752 0 01 12762 BRU PRE3
12753 0 76 15433 PRE1 LDA RMODE FORCE R=R-C=W-R-C MODE
12754 0 14 33363 ETR #77770007
12755 0 16 33364 *RG #5520
12756 0 35 15466 STA RMODE
12757 0 01 12762 BRU PRE2
12760 0 76 15433 PRE2 LDA RMODE HANDSH OPERATION
12761 0 35 15466 STA RMODE
12762 0 76 33327 PRE3 LDA #STADDR PRESET VARIABLES
12763 0 35 15467 STA LDCORE LDCORE
12764 0 76 00405 LDA SYSIZE WICORE
12765 0 71 33355 LDX #-3
12766 0 07 00001 LSH 1
12767 0 06 00001 RSH 1
12770 0 72 15432 SKA BIT23
12771 0 01 12767 BRX #-2
12772 0 07 33310 STX TEMP
12773 0 76 33377 LDA #3
12774 0 05 33310 ADD TEMP
12775 0 07 00016 LSH 14D
12776 0 16 33301 *RG #37777
    
```

```

12777 0 05 15472 STA WICORE
13000 0 76 33377 LDA #0
13001 0 35 15471 STA LDDISC LO DISC
13002 0 76 33326 LDA #777777 HI DISC
13003 0 35 15472 STA LDDISC
13004 0 76 15466 LDA RMODE SET XFER LENGTH
13005 0 72 15427 SKA BIT20 KEY MODE
13006 0 01 13013 BRU PRE4 YES
13007 0 75 33073 LDB #1 LENGTH RANDOM
13010 0 72 15426 SKA BIT19 IN COMPARE MODE
13011 0 75 15426 LDB BIT19 YES - LENGTH = 208 SECTORS
13012 0 01 13017 BRU PRE5
13013 0 75 15426 PRE4 LDR BIT19 LENGTH = 208 SECTORS
13014 0 74 15470 LDA WICORE
13015 0 72 15414 SKA BIT9 SECOND MEMBRY DOOR IN
13016 0 75 15423 LDB BIT16 YES - LENGTH = 2008 SECTORS
13017 0 36 15473 PRE5 STB LENGTH
13020 0 74 15467 LDA LDCORE
13021 0 35 33317 STA VAR3 POINTER TO CORE ADDRESS FOR SEQ CORE
13022 0 76 15471 LDA LDDISC
13023 0 35 23320 STA VAR4 POINTER TO DISC ADDRESS FOR SEQ DISC
    
```

INITIALIZE STARTING POSITIONS OF SELECTED DISCS TO 630

13024	0 76 33315	LDA	#17777	
13025	0 43 23022	INP0S1 BRM	D1SCCK	CHECK FOR OUT OF BOUNDS
13026	0 01 13043	BRU	INP0S4	OUT OF BOUNDS
13027	0 46 20005	ABC		
13030	0 40 10126	SKS*	10126	DISC FILE READY TEST
13031	0 01 13033	BRU	**2	
13032	0 01 13036	BRU	INP0S3	CONTROLLER READY
13033	0 55 15432	ADD	BIT23	ADD 1
13034	0 73 33331	SKG	#35714D	
13035	0 01 13030	BRU	INP0S2	500 MS NOT UP YET
13036	0 06 10326	E0D	10326	CLEAR FILE
13037	0 06 10126	E0D	10126	ALERT DISC FILE
13040	0 13 23332	P0T	P0T:RD	P0T TO DISC
13041	0 46 10012	BAC		
13042	0 43 15243	BRM	ENDP0S	ENTER ENDING POSITION IN TABLE
13043	0 55 15415	INP0S4 ADD	BIT10	INCREMENT DISC NO.
13044	0 73 15410	SKG	BIT5	FINISHED
13045	0 01 13025	BRU	INP0S1	NO

13046	0 49 01424	ESTART BRM	FUNCTN	FUNCTION LINK
13047	0 20 15660	NBP	FPT10	
13050	0 43 00440	BRM	RETURN	SET SPIT LINKAGE
13051	0 40 23351	NBP	ENTER	
13052	0 12 20002	LIR		ENABLE INTERRUPTS
13053	0 76 15466	LDA	9PMODE	CHECK 9PMODE
13054	0 72 33365	SKA	#7B7	
13055	0 01 12057	BRU	**2	
13056	0 43 13306	BRM	PERR1	DISC ADDRESSING NOT SPECIFIED
13057	0 72 33325	SKA	#7B6	
13060	0 01 13062	BRU	**2	
13061	0 43 12306	BRM	PERR1	CORE ADDRESSING NOT SPECIFIED
13062	0 72 33361	SKA	#7B5	
13063	0 01 12065	BRU	**2	
13064	0 43 13006	BRM	PERR1	DATA NOT SPECIFIED
13065	0 72 15406	SKA	BIT3	
13066	0 01 13070	BRU	**2	
13067	0 01 13072	BRU	**3	
13070	0 72 15415	SKA	BIT10	
13071	0 43 13306	BRM	PERR1	FIXED CORE, FAST MODE (ILLEGAL)
13072	0 75 33366	LDB	#7B3	
13073	0 70 33373	SKM	**1	
13074	0 01 13076	BRU	**2	
13075	0 43 13306	BRM	PERR1	FIXED WRITE AND READ (B=1)
13076	0 75 33367	LDB	#700	
13077	0 70 33373	SKM	**1	
13100	0 01 13102	BRU	**2	
13101	0 43 13306	BRM	PERR1	FIXED WRITE AND READ (B=2)
13102	0 72 15427	SKA	BIT20	
13103	0 01 13105	BRU	**2	
13104	0 01 13110	BRU	CK0	
13105	0 75 33370	LDB	#70005500	
13106	0 70 33371	SKM	#20004400	
13107	0 43 13306	BRM	PERR1	KEY, DISC ADD NOT SEQ, B=1 OR =2 READ
13110	0 72 33372	CK0	SKA	#3300
13111	0 01 13113	BRU	**2	

DISCF TAP=3.0 04/25 20100 PAGE 163

13112	0	43	13206	BRM	PERR1	NO BUFFER SELECTED
13113	0	72	15426	SKA	BIT19	
13114	0	01	13116	BRU	++2	
13115	0	01	13132	BRU	CK1	
13116	0	72	15417	SKA	BIT12	
13117	0	01	13121	BRU	++2	
13120	0	43	13206	BRM	PERR1	COMPARE MODE, B=1 OPER. NOT FIXED
13121	0	72	15422	SKA	BIT15	
13122	0	01	13124	BRU	++2	
13123	0	43	13206	BRM	PERR1	COMPARE MODE, B=2 OPER. NOT FIXED
13124	0	72	15424	SKA	BIT17	
13125	0	01	13127	BRU	++2	
13126	0	43	13206	BRM	PERR1	COMPARE MODE, B=2 NOT READ
13127	0	53	15473	SKN	LENGTH	
13130	0	01	13132	BRU	CK1	
13131	0	43	13213	BRM	PERR2	COMPARE MODE, LENGTH RANDOM
13132	0	72	33273	SKA	#2200	
13133	0	01	13135	BRU	++2	
13134	0	01	13140	BRU	CK2	
13135	0	76	00401	LDA	STATUS	
13136	0	72	15414	SKA	BIT9	
13137	0	43	13206	BRM	PERR1	
13140	0	53	15473	SKN	LENGTH	CHECK LENGTH
13141	0	01	13143	BRU	++2	YES
13142	0	01	13166	BRU	CK4	
13143	0	76	15470	LDA	-HICORE	
13144	0	54	15467	SUB	L0C0RE	
13145	0	55	15432	ADD	BIT23	
13146	0	66	00206	RSH	6	
13147	0	73	15473	SKG	LENGTH	
13150	0	43	13213	BRM	PERR2	FIXED LENGTH TOO LARGE
13151	0	76	33274	LDA	#341	
13152	0	73	15473	SKG	LENGTH	
13153	0	43	13213	BRM	PERR2	FIXED LENGTH > 14K (3406 SECTORS)
13154	0	76	15466	LDA	OPMADE	
13155	0	72	15426	SKA	BIT19	

DISCF TAP=3.0 04/25 20100 PAGE 164

13156	0	01	13160	BRU	++2	
13157	0	01	13163	BRU	CK3	
13160	0	76	33275	LDA	#161	
13161	0	73	15473	SKG	LENGTH	
13162	0	43	13213	BRM	PERR2	COMPARE MODE, LENGTH > 7K (1608 SECTORS)
13163	0	76	15473	LDA	LENGTH	
13164	0	73	33272	SKG	#0	
13165	0	43	13213	BRM	PERR2	FIXED LENGTH = 0
13166	0	76	15467	LDA	L0C0RE	CHECK L0C0RE
13167	0	55	15432	ADD	BIT23	ADD 1
13170	0	73	33237	SKG	#STADDR	
13171	0	43	00460	BRM	ERR0R	L0C0RE < 3400B
13172	4	20	32746	NBP	F10*1,4	
13173	0	20	32757	NBP	F10*3	
13174	0	76	15470	LDA	-HICORE	CHECK HICORE
13175	0	73	33276	SKG	#17777	
13176	0	01	13200	BRU	++2	
13177	0	43	00460	BRM	ERR0R	HICORE > 17777B
13200	4	20	32746	NBP	F10*1,4	
13201	0	20	33215	NBP	F10*10	
13202	0	63	23230	SKN	#FFL3	
13203	0	73	33201	SKG	#37777	
13204	0	01	13206	BRU	++2	
13205	0	43	00460	BRM	ERR0R	HICORE > 37777, NOT 940
13206	4	20	32746	NBP	F10*1,4	
13207	0	20	33215	NBP	F10*10	
13210	0	54	32206	SUB	#630	
13211	0	73	15467	SKG	L0C0RE	
13212	0	43	00460	BRM	ERR0R	-HICORE = L0C0RE < 640
13213	4	20	32746	NBP	F10*1,4	
13214	0	20	33215	NBP	F10*10	
13215	0	76	15472	LDA	HIDISC	CHECK HIDISC
13216	0	55	15432	ADD	BIT23	ADD 1
13217	0	73	15471	SKG	L0D1SC	
13220	0	43	00460	BRM	ERR0R	HIDISC < L0D1SC
13221	4	20	32746	NBP	F10*1,4	

DISCF TAP=3.C 04/25 20:00 PAGE 165

13222	0 20 32765	NBP	F10M6	
13223	0 73 15410	SKG	BIT5	
13224	0 01 13226	BRU	**2	
13225	0 43 00460	BRM	ERRR	HIDISC > 777777
13226	4 20 32746	NBP	F10M1,4	
13227	0 20 32765	NBP	F10M6	
13230	0 75 33273	LDB	**1	RESET SEQ DISC POINTER IF LODISC CHANGED
13231	0 76 23315	LDA	VAR1	
13232	0 55 15432	ADD	BIT23	
13233	0 70 15471	SKM	LODISC	
13234	0 01 13236	BRU	**2	
13235	0 01 13240	BRU	**3	
13236	0 76 15671	LDA	LODISC	
13237	0 35 23320	STA	VAR4	
13240	0 76 15666	LDA	SPMODE	INITIALIZE
13241	0 75 33272	LDB	=0	SET FLAGS
13242	0 72 15416	SKA	BIT11	
13243	0 75 33273	LDB	**1	
13244	0 36 15441	STB	INTRPT	
13245	0 75 33272	LDB	=0	
13246	0 72 15427	SKA	BIT20	
13247	0 75 33273	LDB	**1	
13250	0 36 15445	STB	KEY	
13251	0 76 33273	LDA	**1	SET HEADER FLAGS
13252	0 35 15437	STA	DHEAD	
13253	0 35 15440	STA	ISHEAD	
13254	0 76 15671	LDA	LODISC	
13255	0 54 15432	SUB	BIT23	SET LODISC PRIME
13256	0 35 23315	STA	VAR1	
13257	0 53 15441	SKN	INTRPT	SET INTERRUPT RETURN
13260	0 01 13262	BRU	**2	
13261	0 43 00440	BRM	RETURN	
13262	0 20 15350	NBP	INTER	
13263	0 76 15670	LDA	MCORE	SET MAX BLOCK LENGTH
13264	0 54 15667	SUB	LCORE	
13265	0 55 15432	ADD	BIT23	

DISCF TAP=3.C 04/25 20:00 PAGE 166

13266	0 73 33277	SKG	#7000	
13267	0 01 13271	BRU	**2	
13270	0 76 33277	LDA	#7000	
13271	0 66 00007	RSH	7	
13272	0 35 15452	STA	BLKMAX	
13273	0 76 33400	LDA	#1990	SET PASS COUNT
13274	0 35 23321	STA	VAR5	
13275	0 76 15666	LDA	SPMODE	
13276	0 72 15426	SKA	BIT19	
13277	0 01 13301	BRU	**2	
13300	0 01 13320	BRU	START	
13301	0 76 33401	LDA	#160	
13302	0 73 15452	SKG	BLKMAX	
13303	0 01 13320	BRU	START	
13304	0 35 15452	STA	BLKMAX	
13305	0 01 13320	BRU	START	
* * * PARAMETER ERROR OUTPUT ROUTINES				
13306	0 00 00000	PZR1	PZE	0
13307	0 43 00460	BRM	ERRR	
13310	4 20 32746	NBP	F10M1,4	
13311	0 20 32763	NBP	F10M5	
13312	0 51 13306	BRR	PERR1	
13313	0 00 00000	PZR2	PZE	
13314	0 43 00460	BRM	ERRR	
13315	4 20 32746	NBP	F10M1,4	
13316	0 20 32761	NBP	F10M4	
13317	0 51 13313	BRR	PERR2	

```

*
* START OPERATION
*
13320 0 76 15666 START LDA 0PMODE
13321 0 72 15426 SKA BIT19
13322 0 01 13446 BRU COMPAR COMPARE MODE HANDLER
13323 0 72 33402 SKA *3000
13324 0 01 13326 BRU **2
13325 0 01 13333 BRU B2ONLY HANDLE BUFFER 2 ONLY
13326 0 72 33403 SKA *300
13327 0 01 13363 BRU B1AND2 HANDLE BUFFERS 1 AND 2
13330 0 01 13331 BRU B1ONLY HANDLE BUFFER 1 ONLY
    
```

```

*
* HANDLE BUFFER 1 ONLY
*
13331 0 77 15530 B1ONLY EAX TABLE1 SET BUFFER BIAS
13332 0 01 13334 BRU B2ONLY*1
*
* HANDLE BUFFER 2 ONLY
*
13333 0 77 15540 B2ONLY EAX TABLE2 SET BUFFER BIAS
13334 0 43 13751 BRM SETDAD GET STARTING DISC ADDRESS AND LENGTH
13335 2 35 01003 STA 3,2 LENGTH
13336 2 56 01000 STR 0,2 START DISC
13337 0 75 33072 LDB *0
13340 0 42 13710 BRM SETCAD GET STARTING CORE ADDRESS
13341 2 35 01002 STA 2,2 START CORE
13342 0 43 13777 BRM SFTOVR SET UP CHANNEL DRIVER
13343 0 43 14764 BRM SPREAD SPREAD DATA IF WRITE
13344 0 43 01430 BRM SUBJECT
13345 0 02 21002 EIR ENABLE INTERRUPTS
13346 0 43 14212 BRM DRIVER DRIVE I/O
13347 0 43 14510 BRM *FIB WAIT FOR I/O TO FINISH
13350 0 43 14525 BRM CHACK CHECK FOR I/O ERRORS
13351 0 43 14712 BRM DACK CHECK FOR DATA ERRORS IF READ
13352 0 43 01434 FIGEND BRM END
13353 0 53 15445 SKN KEY IN KEY MODE
13354 0 01 13756 BRU **2 *B
13355 0 01 13725 BRU CANKEY CONTINUE OPERATION IF NOT COMPLETED
13356 0 60 25321 SKR VARS
13357 0 20 01000 *SP 0
13360 0 53 23321 SKN VARS FINISHED
13361 0 01 13320 BRU START *B
13362 0 43 00456 FNDP10 BRM FDBONE EXIT FUNCTION
    
```

```

*
* HANDLE BUFFERS 1 AND 2
*
13363 0 77 15530 B1AND2 EAX TABLE1 BIAS
13364 0 43 13551 BRM SETDAD GET STARTING DISC AND LENGTH (B=1)
13365 2 35 00003 STA 3,2 LENGTH
13366 2 36 00000 STB 0,2 START DISC
13367 0 77 15540 EAX TABLE2 BIAS
13370 0 43 13551 BRM SETDAD GET STARTING DISC AND LENGTH (B=2)
13371 2 35 00003 STA 3,2 LENGTH
13372 2 36 00000 STB 0,2 START DISC
13373 0 46 20005 ABC
13374 0 77 15530 EAX TABLE1
13375 2 76 00003 LDA 3,2 B=1 LENGTH
13376 0 43 13710 BRM SETCAD GET STARTING CORE ADDRESSES (B=102)
13377 2 35 00002 STA 2,2 START CORE (B=1)
13400 0 77 15540 EAX TABLE2
13401 2 36 00002 STB 2,2 START CORE (B=2)
13402 0 43 13777 BRM SETDVR SET UP CHANNEL DRIVER (B=2)
13403 0 77 15530 EAX TABLE1
13404 0 43 13777 BRM SETDVR SET UP CHANNEL DRIVER (B=1)
13405 0 43 14764 BRM SPREAD SPREAD DATA IF WRITE (B=1)
13406 0 76 00406 LDA SEED SAVE RANDOM SEED
13407 0 35 23316 STA VAR2
13410 0 43 00430 BRM SUBJECT
13411 0 02 20002 EIR
13412 0 76 23316 LDA VAR2 ENABLE INTERRUPTS
13413 0 35 00406 STA SEED GET ORIGINAL SEED (FOR LOOPING ON BP1)
13414 0 77 15530 EAX TABLE1
13415 0 43 14712 BRM DRIVER DRIVE I/O (B=1)
13416 0 76 15466 LDA BPMODE
13417 0 72 15415 SKA BIT10 IN FAST MODE
13420 0 01 13433 BRU B1A2B YES
13421 0 43 14510 BRM AFIS WAIT FOR I/O TO FINISH
13422 0 43 14825 BRM CHNCK CHECK FOR I/O ERRORS
13423 0 43 14712 BRM DATAK CHECK FOR DATA ERRORS IF READ

```

```

13424 0 77 15540 EAX TABLE2
13425 0 43 14764 BRM SPREAD SPREAD DATA IF WRITE (B=2)
13426 0 43 14712 BRM DRIVER DRIVE I/O (B=2)
13427 0 43 14510 R1A2A BRM AFIS WAIT FOR I/O TO FINISH
13430 0 43 14525 BRM CHNCK CHECK FOR I/O ERRORS
13431 0 43 14712 BRM DATAK CHECK FOR DATA ERRORS IF READ
13432 0 01 13352 BRU F10END
13433 0 77 15540 R1A2B EAX TABLE2
13434 0 43 14764 BRM SPREAD SPREAD DATA B=2 IF WRITE
13435 0 77 15530 EAX TABLE1
13436 0 43 14510 BRM AFIS WAIT FOR I/O TO FINISH
13437 0 43 14525 BRM CHNCK CHECK FOR I/O ERRORS
13440 0 77 15540 EAX TABLE2
13441 0 43 14712 BRM DRIVER DRIVE I/O (B=2)
13442 0 77 15530 EAX TABLE1
13443 0 43 14712 BRM DATAK CHECK DATA IF READ (B=1)
13444 0 77 15540 EAX TABLE2
13445 0 01 13427 BRU B1A2A

```

*
* COMPARE MODE HANDLER
*

13446	0	76	15666	COMPAR	LDA	0PMODE	
13447	0	75	33273		LDB	#01	
13450	0	72	15420		SKA	BIT13	WRITE B=1
13451	0	75	33272		LDB	#0	YES
13452	0	36	15446		STB	RRS	SET UP READ/READ SWITCH
13453	0	77	15530		EAX	TABLE1	B=1 BIAS
13454	0	43	13551		BRM	SETDAD	GET STARTING LENGTH AND DISC ADDRESS (B=1)
13455	2	35	00003		STA	3,2	LENGTH
13456	2	36	00000		STB	0,2	DISC ADDRESS
13457	0	77	15540		EAX	TABLE2	
13460	2	35	00003		STA	3,2	LENGTH (B=2)
13461	2	36	00000		STB	0,2	DISC ADDRESS (B=2)
13462	2	75	00003		LDB	3,2	
13463	0	43	13710		BRM	SETCAD	GET STARTING CORE ADDRESS
13464	2	36	00002		STB	2,2	START CORE (B=2)
13465	0	77	15530		EAX	TABLE1	
13466	2	35	00002		STA	2,2	START CORE (B=1)
13467	0	43	13777		BRM	SFTDVR	SET UP CHANNEL DRIVER (B=1)
13470	0	77	15540		EAX	TABLE2	
13471	0	43	13777		BRM	SFTDVR	SET UP CHANNEL DRIVER (B=2)
13472	0	77	15530		EAX	TABLE1	
13473	0	43	14064		BRM	SPREAD	SPREAD DATA IF WRITE (B=1)
13474	0	43	00430		BRM	OBJECT	
13475	0	02	20002		LIR		ENABLE INTERRUPTS
13476	0	43	14212	COMP1	BRM	DRIVER	DRIVE I/O (B=1)
13477	0	43	14510		BRM	IFB	WAIT FOR I/O TO FINISH
13500	0	43	14525		BRM	CHNCK	CHECK FOR CHANNEL ERRORS
13501	0	77	15540		EAX	TABLE2	
13502	0	43	14512		BRM	DRIVER	DRIVE I/O (B=2)
13503	0	43	14510		BRM	IFB	WAIT FOR I/O TO FINISH
13504	0	43	14525		BRM	CHNCK	CHECK FOR I/O ERRORS
13505	0	77	15530		EAX	TABLE1	
13506	0	43	15047		BRM	C1AND2	COMPARE BUFFER 1 WITH BUFFER 2

13507	0	43	0434	BRM	END		
13510	0	53	15446	SKA	RRS		LAST OPERATION A READ/READ
13511	0	01	13753	BRU	FINEND+1		NO
13512	0	76	33272	LDA	#0		RESET READ/READ SWITCH
13513	0	35	15446	STA	RRS		
13514	0	77	15530	EAX	TABLE1		
13515	0	76	33277	LDA	#3		FORCE WRITE BUFFER 1
13516	2	35	00004	STA	4,2		SET MODE
13517	2	76	00005	LDA	5,2		
13520	0	17	15423	EBR	BIT16		
13521	2	35	00005	STA	5,2		CONVERT XMODE EBD TO I9SD
13522	0	76	15435	LDA	WRITE		
13523	2	35	00006	STA	6,2		CHANGE BUFFER EBD TO WRITE
13524	0	01	13476	BRU	COMP1		

*
* CONTINUE IF KEYING DISC
*

13525	0 76 23320	CONKEY	LDA	VAR4	
13526	0 73 15672		SKG	HIDISC	FINISHED
13527	0 01 13320		BRU	START	NO
13530	0 76 04765		LDA	UPT*4	SET UP KEYED FLAGS
13531	0 16 00332		MRG	FLAGS	
13532	0 35 00332		STA	FLAGS	
13533	0 76 33272		LDA	#0	RESET KEY SWITCH
13534	0 35 15445		STA	KEY	
13535	0 76 15666		LDA	OPMODE	SET UP OPERATING MODE
13536	0 14 33761		ETR	#7B5	
13537	0 35 15666		STA	OPMODE	
13540	0 76 15433		LDA	RMODE	
13541	0 14 33404		ETR	#77077777	
13542	0 16 15666		MRG	OPMODE	
13543	0 35 15666		STA	OPMODE	
13544	0 76 33273		LDA	#-1	SET LENGTH TO BE RANDOM
13545	0 35 15473		STA	LENGTH	
13546	0 76 15471		LDA	LBDISC	RESET SEQUENTIAL DISC POINTER
13547	0 35 23320		STA	VAR4	
13550	0 01 13362		BRU	ENDF10	EXIT

*
* CALCULATE STARTING DISC ADDRESS AND TRANSMIT LENGTH
*

13551	0 00 00000	SETDAD	PZE	0	
13552	0 37 23314		STX	TEMPD	SAVE X
13553	0 76 15666		LDA	OPMODE	
13554	0 72 15403		SKA	BITC	IS ADDRESSING FIXED
13555	0 01 13417		BRU	FIXD	YES
13556	0 72 15404		SKA	BIT1	IS ADDRESSING SEQUENTIAL
13557	0 01 13472		BRU	SEED	YES
13560	0 76 00406	RAND	LDA	SEED	RANDOM ADDRESSING
13561	0 43 11237		BRM	RAND*W	GENERATE RANDOM ADDRESS
13562	0 35 00406		STA	SEED	
13563	0 14 33726		ETR	#777777	
13564	0 73 15472		SKG	HIDISC	CHECK GENERATED ADDRESS
13565	0 73 23315		SKG	VAR1	
13566	0 01 13460		BRU	RAND	NOT WITHIN HIDISC=LBDISC LIMITS
13567	0 43 23222		BRM	DISCKK	
13570	0 01 13560		BRU	RAND	ADDRESSED DISC OUT OF BOUNDS
13571	0 01 13627		BRU	SAVDP*W	
13572	0 76 23320	SEQD	LDA	VAR4	GET INCREMENTED DISC ADDRESS
13573	0 73 15472		SKG	HIDISC	CHECK ADDRESS
13574	0 01 13401		BRU	SEQD1	
13575	0 53 15445		SKN	KEY	ADDRESS TOO LARGE - IS KEY IN PROCESS
13576	0 01 13400		BRU	#*2	NO
13577	0 01 13525		BRU	CONKEY	
13600	0 76 15471		LDA	LBDISC	START OVER
13601	0 35 23320	SEQD1	STA	VAR4	
13602	0 43 23222		BRM	DISCKK	
13603	0 01 13405		BRU	#*2	DISC OUT OF BOUNDS
13604	0 01 13427		BRU	SAVDP*W	
13605	0 55 15415		ADD	BIT10	INCREMENT DISC ADDRESS
13606	0 14 33405		ETR	#1760000	
13607	0 73 15472		SKG	HIDISC	CHECK NEW ADDRESS FOR DONE
13610	0 01 13401		BRU	SEQD1	ADDRESS OK
13611	0 53 15445		SKN	KEY	ADDRESS TOO LARGE, IS KEY IN PROCESS

DISCF TAP=3.0 04/25 20100 PAGE 175

13612	0 01	13415	BRU	**3	NO
13613	0 35	23320	STA	VAR4	KEY FINISHED
13614	0 01	13525	BRU	CANKEY	
13615	0 76	15671	LDA	LODISC	RESET SEQUENTIAL DISC POINTER
13616	0 01	13573	BRU	SEQD*1	
13617	0 76	15671	FIXD LDA	LODISC	FIXED DISC ADDRESS
13620	0 43	23022	BRM	DISCCK	
13621	0 01	13623	BRU	**2	DISC OUT OF BOUNDS
13622	0 01	13627	BRU	SAVDPW	
13623	0 43	00460	BRM	ERROR	REPORT PARAMETER ERROR
13624	4 20	32746	NBP	F10M1,4	
13625	0 20	32755	NBP	F10M2	
13626	0 01	13617	BRU	FIXD	LOOP
13627	0 35	23312	SAVDPW STA	TEMPB	SAVE DISC ADDRESS
13630	0 53	15673	SLEN SKN	LENGTH	IS LENGTH FIXED
13631	0 01	13701	BRU	SLEN5	YES
13632	0 76	00406	LDA	SPED	GENERATE RANDOM LENGTH
13633	0 43	15337	BRM	RANDOM	
13634	0 35	00406	STA	SEED	
13635	0 14	33310	ETR	#377	
13636	0 73	15452	SLENO SKG	BLKMAX	LEN > BLKMAX
13637	0 01	13642	BRU	SLEN1	NO
13640	0 54	15452	SUB	BLKMAX	LEN = LEN - BLKMAX
13641	0 01	13636	BRU	SLENO	LOOP
13642	0 72	30273	SLEN1 SKA	**1	DOES LEN = 0
13643	0 01	13645	BRU	**2	NO
13644	0 76	15432	LDA	BIT23	A = 1
13645	0 35	23311	SLE12 STA	TEMPA	SAVE TRANSMIT LENGTH
13646	0 55	23312	ADD	TEMPB	ADD STARTING DISC ADDRESS
13647	0 54	15432	SUB	BIT23	SUBTRACT 1
13650	0 73	15472	SKG	HIDISC	LEN + ADDR = 1 > HIDISC
13651	0 01	13656	BRU	SLEN3	NO
13652	0 76	15472	LDA	HIDISC	LEN = HIDISC = ADDR + 1
13653	0 54	23312	SUB	TEMPB	
13654	0 55	15432	ADD	BIT23	ADD 1
13655	0 01	13645	BRU	SLEN2	

DISCF TAP=3.0 04/25 20100 PAGE 176

13656	0 43	23022	SLEN3 BRM	DISCCK	
13657	0 01	13661	BRU	**2	FINAL DISC ADDRESS OUT OF BOUNDS
13660	0 01	13666	BRU	SLEN4	
13661	0 76	23312	LDA	TEMPB	LEN = REMAINING SECTORS ON THIS DISC
13662	0 16	33315	TRG	#17777	
13663	0 54	23312	SUB	TEMPB	
13664	0 55	15432	ADD	BIT23	ADD 1
13665	0 35	23311	STA	TEMPA	
13666	0 76	15666	SLEN4 LDA	BFMODE	CHECK BFMODE FOR SEQUENTIAL DISC OPERATION
13667	0 72	15404	SKA	BIT1	
13670	0 01	13672	BRU	**2	SEQUENTIAL
13671	0 01	13675	BRU	SLEN6	NOT SEQUENTIAL
13672	0 76	23320	LDA	VAR4	UPDATE DISC INCREMENT
13673	0 55	23311	ADD	TEMPA	
13674	0 35	23320	STA	VAR4	
13675	0 76	23311	SLEN6 LDA	TEMPA	SET REGISTERS
13676	0 76	23312	LOB	TEMPB	
13677	0 71	23314	COX	TEMPO	
13700	0 01	13681	BRR	SETDAD	RETURN
13701	0 76	15673	SLEN5 LDA	LENGTH	
13702	0 73	15452	SKG	BLKMAX	FIXED LENGTH > BLKMAX
13703	0 01	13645	BRU	SLEN2	NO
13704	0 43	00460	BRM	ERRR	REPORT PARAMETER ERROR
13705	4 20	32746	NBP	F10M1,4	
13706	0 20	32761	NBP	F10M4	
13707	0 01	13630	BRU	SLEN	LOOP

```

*
* CALCULATE STARTING CORE ADDRESS
*
13710 0 00 00000 SETCAD PZE 0
13711 0 37 23307 STX X SAVE X
13712 0 67 00006 LSH 6 MULTIPLY LENGTHS BY 64D
13713 0 35 23311 STA TEMPA
13714 0 36 23312 STB TEMPB
13715 0 76 15666 LDA BPMODE FIND CORE ADDRESSING MODE
13716 0 72 15406 SKA BIT3 IS ADDRESSING FIXED
13717 0 01 13772 BRU FIXC YES
13720 0 72 15407 SKA BIT4 IS ADDRESSING SEQUENTIAL
13721 0 01 13747 BRU SEQC YES
13722 0 76 15670 LDA HICORE RANDOM ADDRESSING
13723 0 54 15667 SUB LCCORE
13724 0 54 23311 SUB TEMPA
13725 0 54 23312 SUB TEMPB
13726 0 35 23313 STA TFMPCC
13727 0 73 33272 SKG #0
13730 0 01 13741 BRU RANC2 YES
13731 0 76 00406 LDA SEED GENERATE RANDOM BIAS
13732 0 43 15337 BRM RANDOM
13733 0 35 00406 STA SEED
13734 0 14 33301 ETR #37777
13735 0 73 23313 RANC1 SKG TFMPCC IS BIAS > RANGE
13736 0 01 13742 BRU RANC3 NO
13737 0 54 23313 SUB TFMPCC BIAS = BIAS + RANGE
13740 0 01 13735 BRU RANC1
13741 0 76 33272 RANC2 LDA #0 BIAS = 0
13742 0 55 15667 RANC3 ADD LCCORE LCCORE + BIAS = CORE1
13743 0 35 23305 STA A
13744 0 55 23311 ADD TEMPA CORE1 + LEN1 = CORE2
13745 0 35 23306 STA B
13746 0 01 13775 BRU SCARET SET UP RETURN
13747 0 76 15470 SEQC LDA HICORE CALCULATE RANGE
13750 0 54 23311 SUB TEMPA
    
```

```

13751 0 54 23312 SUB TEMPB
13752 0 55 15432 ADD BIT23
13753 0 75 23317 LDB VAR3
13754 0 73 23317 SKG VAR3 IS RANGE > VAR3
13755 0 46 00014 XAR NO
13756 0 46 00014 XAH
13757 0 35 23305 STA A CORE 1
13760 0 55 23311 ADD TEMPA
13761 0 35 23306 STA B CORE 2
13762 0 55 23312 ADD TEMPB UPDATE VAR3
13763 0 35 23312 STA VAR3
13764 0 54 15670 SUB HICORE
13765 0 72 15407 SKA BITC
13766 0 01 13775 BRU SCARET IS VAR3 < HICORE
13767 0 76 15667 LDA LCCORE YES
13770 0 35 23317 STA VAR3 SET VAR3 = LCCORE
13771 0 01 13775 BRU SCARET SET UP RETURN
13772 0 76 15667 FIXC LDA LCCORE FIXED ADDRESSING
13773 0 35 23305 STA A CORE1
13774 0 35 23306 STA B CORE2
13775 0 43 15231 SCARET BRM GET SET REGISTERS
13776 0 51 13710 BRR SETCAD RETURN
    
```

DISCF TAP.3.0 04/25 20100 PAGE 179

```
*
* SET UP I/O BUFFER
*
13777 0 00 00000 SETDVR PZE 0
14000 2 76 00003 LDA 3,2 BUILD PBT WORD
14001 0 75 33272 LDR #0
14002 0 67 20024 LCV 200
14003 0 35 23310 STA TEMP
14004 2 76 00002 LDA 2,2
14005 0 14 33301 LTR #37777
14006 0 55 23310 ADD TEMP
14007 2 35 00001 STA 1,2
14010 0 36 23310 STB TEMP HI ORDER WORD COUNT
14011 2 76 00002 LDA 2,2 BUILD EXTENDED MODE EOM
14012 0 66 00011 RSH 90
14013 0 14 33406 ETR #140
14014 0 55 23310 ADD TEMP
14015 0 53 15441 SKN 1,TRPT
14016 0 01 14020 HRU #+2
14017 0 16 33402 HRG #3000
14020 0 55 15436 ADD XMODE
14021 2 35 00005 STA 5,2
14022 2 76 00007 LDA 7,2 BUFFER NUMBER
14023 0 75 15666 LDB 0,MODE
14024 0 72 15432 SKA BIT23 BUFFER 1
14025 0 66 00003 RSH 3 YES - CORRECT
14026 0 46 10012 BAC
14027 0 72 15422 SKA BIT15 OPERATION FIXED
14030 0 01 14032 HRU #+2
14031 0 01 14040 BRU SDVR3 NO
14032 0 72 15423 SDVRO SKA BIT16 IS OPERATION A WRITE
14033 0 01 14035 BRU #+2
14034 0 01 14044 BRU SDVR2 NO
14035 0 76 15435 LDA WRITE BUFFER EOM
14036 2 35 00006 STA 6,2
14037 2 76 00005 LDA 5,2 XMODE = 10SD
```

DISCF TAP.3.0 04/25 20100 PAGE 180

```
14040 0 16 15423 HRG BIT16
14041 2 35 00005 STA 5,2
14042 0 75 33277 LDR #3 SET MODE
14043 0 01 14047 BRU SDVR4
14044 0 76 15434 SDVR2 LDA READ BUFFER EOM
14045 2 35 00006 STA 6,2
14046 0 75 15430 LDB BIT21 B = 4
14047 2 76 00007 SDVR4 LDA 7,2 BUFFER #3
14050 0 72 15432 SKA BIT23 BUFFER 1
14051 0 01 14056 BRU SDVR5 YES
14052 0 46 10012 BAC
14053 0 55 15431 ADD BIT22 ADD 2
14054 2 35 00004 SDVR6 STA 4,2 MODE
14055 0 51 13777 BRR SETDVR RETURN
14056 0 46 10012 SDVR5 JAC
14057 0 01 14054 BRU SDVR6
14060 0 76 00406 SDVR3 LDA SEED GEN RANDOM NO. - IF BIT16, WRITE
14061 0 43 15237 BRM RANDOM
14062 0 35 00406 STA SEED
14063 0 01 14032 BRU SDVRO
```


GENERATE AND SPREAD DATA

14064	0 00 00000	SPREAD	BZE	0	
14065	0 37 23314		STX	TEMPD	SAVE X
14066	2 76 00006		LDA	6,2	EOM
14067	0 72 15425		SKA	BIT18	IS OPERATION A WRITE
14070	0 01 14072		BRU	**2	YES
14071	0 51 14064		BRR	SPREAD	RETURN
14072	0 53 23330		SKN	NFFLG	IS MACHINE A 940
14073	0 01 14113		BRU	SPR2	NO
14074	2 76 00002		LDA	2,2	START CORE
14075	0 66 00013		RSH	11D	SET UP RELABELING
14076	0 35 23310		STA	TEMP	
14077	0 75 33272		LDB	#0	
14100	0 71 33407		LDX	**7	
14101	0 61 23310	SPR1	MIN	TEMP	
14102	0 67 20006		LCY	6	
14103	0 55 23310		ADD	TEMP	
14104	0 41 14101		BRX	SPR1	
14105	0 36 00415		STB	RL1	
14106	0 35 00416		STA	RL2	
14107	0 02 20400		EOM	20400	SET UP RL1
14110	0 13 00415		PBT	RL1	
14111	0 02 21000		EOM	21000	SET UP RL2
14112	0 13 00416		PBT	RL2	
14113	0 71 23314	SPR2	LDX	TEMPD	
14114	2 76 00003		LDA	3,2	SECTOR COUNT
14115	0 54 15432		SUB	BIT23	SUBTRACT 1
14116	0 35 15453		STA	COUNT	
14117	2 76 00000		LDA	0,2	START DISC
14120	0 35 23324		STA	VARR	
14121	2 76 00002		LDA	2,2	START CORE
14122	0 53 23330		SKN	NFFLG	MACHINE A 940
14123	0 01 14125		BRU	**2	NO
14124	0 14 33313		ETR	#3777	

14125	0 14 15403		MFG	BIT0	USEH MAP BIT
14126	0 35 23325		STA	VARR	
14127	0 76 15466		LDA	99MODE	
14130	0 72 15411		SKA	BIT6	IS DATA FIXED
14131	0 01 14173		BRU	SPR5	YES
14132	0 72 15412		SKA	BIT7	IS DATA SEQUENTIAL
14133	0 01 14155		BRU	SPR4	YES
14134	0 71 33410	SPR3	LDX	**63D	RANDOM DATA
14135	0 76 00406		LDA	SEED	GEN RANDOM DATA
14136	0 43 15337		BRM	RANDOM	
14137	0 35 23325		STA	VARR	STORE DATA
14140	0 61 23325		MIN	VARR	INCREMENT POINTER
14141	0 41 14136		BRX	**3	LOOP
14142	0 43 15337		BRM	RANDOM	GEN DATA FOR LAST WORD
14143	0 35 00406		STA	SEED	
14144	0 55 23324		ADD	VARR	ADD DISC ADDRESS
14145	0 35 23325		STA	VARR	STORE LAST WORD
14146	0 61 23325		MIN	VARR	INCREMENT POINTER
14147	0 61 23324		MIN	VARR	INCREMENT DISC POINTER
14150	0 60 15453		SKR	COUNT	DECREMENT COUNT
14151	0 20 00000		NBP	0	
14152	0 53 15453		SKN	COUNT	FINISHED
14153	0 01 14134		BRU	SPR3	NO - LOOP
14154	0 01 14210		BRU	SPR6	RETURN
14155	0 71 33411	SPR4	LDX	**64D	COUNT
14156	0 76 23324		LDA	VARR	
14157	0 75 33272		LDB	#0	
14160	0 67 00006		LSH	6	
14161	0 35 23325		STA	VARR	STORE DATA
14162	0 55 15432		ADD	BIT23	ADD 1
14163	0 61 23325		MIN	VARR	INCREMENT POINTER
14164	0 41 14161		BRX	**3	LOOP
14165	0 61 23324		MIN	VARR	INCREMENT DISC ADDRESS
14166	0 60 15453		SKR	COUNT	DECREMENT COUNT
14167	0 20 00000		NBP	0	
14170	0 53 15453		SKN	COUNT	FINISHED

DISCF TAP=3.0 04/25 20100 PAGE 183

14171	0 01	14155	BRU	SPR4	NO = LOOP
14172	0 01	14210	BRU	SPR6	RETURN
14173	0 71	33410	LDX	*=630	COUNT
14174	0 76	15474	LDA	PATERN	FIXED PATTERN
14175	0 35	23325	STA*	VAR9	STONE DATA
14176	0 61	23325	MIN	VAR9	INCREMENT POINTER
14177	0 41	14175	JRX	*=2	
14200	0 55	23324	ADD	VAR8	TAG LAST WORD
14201	0 35	23325	STA*	VAR9	
14202	0 61	23325	MIN	VAR9	INCREMENT POINTERS
14203	0 61	23324	MIN	VAR8	
14204	0 60	15453	SKR	COUNT	DECREMENT COUNT
14205	0 20	00000	NBP	0	
14206	0 53	15453	SKN	COUNT	FINISHED
14207	0 01	14173	BRU	SPR5	NO
14210	0 71	23314	LDX	TEMPD	GET X
14211	0 51	14064	BRR	SPREAD	RETURN

DISCF TAP=3.0 04/25 20100 PAGE 184

			*		
			*	I/O DRIVER	
			*		
14212	0 00	00000	DRIVER	PZE	0
14213	0 37	23314	STX	TEMPD	
14214	0 76	15475	LDA	CNTR5	GET RETRY COUNT
14215	0 66	00014	RSH	120	
14216	0 14	33274	ETR	=7	
14217	0 54	15432	SUB	BIT23	SUBTRACT 1
14220	0 55	23323	STA	VAR7	CHANNEL DRIVER RETRY COUNT
14221	0 76	15466	LDA	SPM9DE	
14222	0 72	15130	SKA	BIT21	DO A DUMMY SEEK
14223	0 01	14025	BRU	*=2	YES
14224	0 01	14041	BRU	DRIVE1	
14225	0 76	00406	LDA	SEED	GENERATE RANDOM SEEK ADDRESS
14226	0 43	15337	BRM	RANDOM	
14227	0 35	00406	STA	SEED	
14230	0 14	33215	LTR	=17777	
14231	0 35	23310	STA	TEMP	
14232	0 76	00000	LDA	0,2	DISC STARTING PBT WORD
14233	0 14	33254	ETR	=760000	
14234	0 16	23310	VRG	TEMP	
14235	0 35	15450	STA	TABLE3	
14236	0 77	15450	EAX	TABLE3	
14237	0 43	14244	BRM	USCDVR	DRIVE DISC
14240	0 71	23314	LDX	TEMPD	
14241	0 43	14244	BRM	USCDVR	DRIVE DISC
14242	0 43	14417	BRM	CHNDVR	DRIVE CHANNEL
14243	0 51	14212	BRR	DRIVER	RETURN

```

*
* DISC DRIVER
*
14244 0 00 00000 DSCDVR RZE 0
14245 0 76 15675 LDA CNTRS SET UP RETRY COUNTER FOR DISC DRIVER
14246 0 66 00014 RSH 12D
14247 0 14 33274 ETR #7
14250 0 54 15432 SUB BIT23 SUBTRACT 1
14251 0 35 23322 STA VAR4
14252 0 76 33273 LDA #*1 PRESET RETRY COUNTER
14253 0 35 15454 STA RETRY
14254 0 76 15432 DDVRO LDA BIT23 SET PHASE
14255 0 35 15457 STA PHASE
14256 0 40*10126 SKS# 10326 FILE ON LINE TEST
14257 0 43 14677 BRM ABORT FILE NOT ON LINE
14260 0 20 15407 NBP BIT0
14261 0 40*14126 SKS# 14126 WRITE HEADER TEST
14262 0 43 14677 BRM ABORT WRITE HEADER SWITCH ON
14263 0 20 15410 NBP BIT5
14264 0 76 33272 LDA #0
14265 0 40*10126 SKS# 10126 DISC FILE READY TEST
14266 0 01 14277 BRU #*2 CONTROLLER NOT READY
14267 0 01 14275 BRU DDVRO2
14270 0 55 15432 ADD BIT23
14271 0 73 33331 SKG #357140
14272 0 01 14265 BRU DDVRO1
14273 0 43 14677 BRM ABORT
14274 0 20 15404 NBP BIT1
14275 0 36 10126 EBD 10126 ALERT DISC FILE
14276 2 13 00000 PBT 0,2 PBT TO DISC
14277 2 76 00000 LDA 0,2 GET PBT WORD
14300 0 43 15255 BRM GETCAP GET STARTING ARM POSITION
14301 0 35 23312 STA TEMPB
14302 0 67 00007 LSH 7
14303 0 14 33412 ETR #17400
14304 0 35 23310 STA TEMP

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14305 2 76 00000 LDA 0,2 PBTWORD
14306 0 14 33254 ETR #760000
14307 0 16 23310 MRG TEMP
14310 0 35 23311 STA TEMPA
14311 2 76 00000 LDA 0,2 ENTER ENDING POSITION IN TABLE
14312 0 43 15243 BRM ENDP95
14313 0 76 33272 LDA #0 PRESET %BVTIM AND BADTIM
14314 0 35 15451 STA %BVTIM
14315 0 35 15450 STA BADTIM
14316 2 76 00006 LDA 6,2
14317 0 72 15425 SKA BIT18 TEST FOR WRITE PROTECT
14320 0 01 14322 BRU #*2 IS OPERATION A READ
14321 0 01 14324 BRU #*3 NO # TEST FOR WRITE PROTECT
14322 0 40*13126 SKS# 13126 YES # DO NOT TEST FOR WRITE PROTECT
14323 0 43 14620 BRM %PERR DISC WRITE PROTECT TEST
14324 0 20 15407 NBP BIT4 DISC WRITE PROTECTED
14325 0 76 15466 LDA %PMODE TEST FOR POSITION TIMING
14326 0 72 15431 SKA BIT22
14327 0 01 14331 BRU #*2
14330 0 01 14244 BRM DSCDVR TIME IT
14331 2 76 00000 LDA 0,2 RETURN
14332 0 66 00007 RSH 7 GET NEW ARM POSITION
14333 0 14 33306 ETR #77
14334 0 75 23312 LDB TEMPB GET STARTING ARM POSITION
14335 0 43 15266 BRM GETIME GET MAXIMUM POSITIONING TIME
14336 0 36 15451 STB %BVTIM SAVE TIME
14337 2 76 00000 LDA 0,2 DISC PBT WORD
14340 0 14 33412 ETR #17600
14341 0 06 00037 RSH 31D END POSITION TO B
14342 0 71 33413 LDX #*375D
14343 0 41 14343 BRX *
14344 0 76 15432 LDA BIT23 WAIT REMAINDER OF 1 MS
14345 0 40*12126 SKS# 12126 PRESET A REGISTER
14346 0 01 14350 BRU #*2 TRACK VERIFIED TEST
14347 0 01 14357 BRU DDVRO4 TRACK NOT VERIFIED
14350 0 55 15432 ADD BIT23 ADD 1

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DISCF TAP=3.0 04/25 20100 PAGE 187

14351	C 73	33357	SKG	#500D	
14352	C 01	14354	BRU	*+2	
14353	C 01	14357	BRU	DDVR4	500 MS TIMEOUT
14354	C 71	33414	LDX	#+559D	
14355	C 41	14355	BRX	*	
14356	C 11	14345	BRU	DDVR3	
14357	C 71	23314	LDX	TEMPD	GET BUFFER BIAS
14360	C 73	15451	SKG	TRVTTM	IS POSITIONING TIME OK
14361	C 01	14344	BRR	DSCDVR	YES = RETURN
14362	C 05	15450	STA	BADTIM	SAVE TRUE POSITIONING TIME
14363	C 00	23322	SKR	VAR6	DECREMENT RETRY COUNTER
14364	C 20	00000	NOP	C	
14365	C 03	23322	SKN	VAR6	RETRY
14366	C 01	14370	BRU	*+2	YES
14367	C 43	14477	BRM	ABRT	
14370	C 20	15412	NOP	BIT7	
14371	C 43	14420	BRM	REPERR	REPORT ERROR
14372	C 20	15412	NOP	BIT7	
14373	C 06	10126	EOD	10126	ALERT DISC FILE
14374	C 13	25311	P6T	TEMPA	MOVE TO ORIGINAL POSITION
14375	C 76	15431	LDA	BIT22	SET PHASE
14376	C 05	15457	STA	PHASE	
14377	C 76	23311	LDA	TEMPA	SET UP END DISC POSITION
14400	C 05	23312	STA	TEMPB	
14401	C 43	15243	BRM	ENDPOS	ENTER ENDING POSITION IN TABLE
14402	C 76	00000	LDA	C,P	SET UP START DISC
14403	C 05	23311	STA	TEMPA	
14404	C 76	33372	LDA	#0	
14405	C 40	12126	SKS.	12126	TRACK VERIFIED TEST
14406	C 01	14417	BRU	*+2	TRACK NOT VERIFIED
14407	C 01	14254	BRU	DDVR0	TRY AGAIN
14410	C 05	14432	ADD	BIT23	ADD 1
14411	C 73	33331	SKG	#35714D	
14412	C 01	14405	BRU	DDVR5	
14413	C 76	33357	LDA	#500D	
14414	C 05	15450	STA	BADTIM	

DISCF TAP=3.0 04/25 20100 PAGE 188

14415	C 43	14477	BRM	ABRT	500 MS TIMEOUT
14416	C 20	15412	NOP	BIT7	

CHANNEL DRIVER

```

*
*
*
CHNDVR PZE 0
14417 0 00 00000 STX TEMPD SAVE X
14420 0 37 23314 LDA 5,2 EXTENDED MODE EOM
14421 2 76 00005 STA CDVR3
14422 0 35 14437 LDA 6,2 BUFFER CONTROL EOM
14423 2 76 00006 STA CDVR4
14424 0 35 14441 LDA #0
14425 0 76 33272 SKS# 14100 CHANNEL ACTIVE TFST
14426 0 40*14100 BRU **2 CHANNEL ACTIVE
14427 0 01 14431 BRU CDVR2
14430 0 01 14436 ADD BIT23 ADD 1
14431 0 55 15432 SKG #35714D
14432 0 73 33331 BRU CDVR1
14433 0 01 14426 BRM ABRRT CHANNEL ACTIVE AFTER 500 MS
14434 0 43 14677 NOP BIT13
14435 0 20 15420 EOD* 10100 ALERT CHANNEL
14436 0 06*10100 CDVR3 PZE 0 EXTENDED MODE EOM
14437 0 00 00000 PST 1,2
14440 2 13 00001 CDVR4 PZE 0 BUFFER CONTROL EOM
14441 0 00 00000 LDA 4,2 SET PHASE
14442 2 76 00004 STA PHASE
14443 0 35 15457 LDA #0
14444 0 76 33272 STA STFLAG CLEAR SEARCH TIME FLAG
14445 0 35 15444 STA I1FLAG CLEAR I1 FLAG
14446 0 35 15442 STA I2FLAG CLEAR I2 FLAG
14447 0 35 15443 LDA BR*ODF
14450 0 76 15666 SKA BIT23 TIME SEARCH
14451 0 72 15432 BRU **2 YES
14452 0 01 14454 BRM CHNDVR RETURN
14453 0 51 14417 LDA 2,2 GET COMPARE ADDRESS
14454 2 76 00002 ADD BIT22 ADD 2
14455 0 55 15431 LDX #3300D COUNT
14456 0 71 33415 LDB **1 MASK
14457 0 75 33073
    
```

```

14460 0 36 12100 EOD 12100 ALERT TO PIN CHANNEL ADDRESS
14461 0 33 23310 PIN TEMP PIN CHANNEL ADDRESS
14462 0 73 23310 SKG TEMP CHANNEL COUNTING YET
14463 0 01 14466 BRU CDVR7 YES
14464 0 41 14460 BRX CDVR5 LBRP
14465 0 36 15444 STB STFLAG SET SEARCH TIME ERROR FLAG
14466 0 71 33414 LDX #3303D COUNT
14467 0 06 12100 EOD 12100 ALERT TO PIN CHANNEL ADDRESS
14470 0 33 23310 PIN TEMP PIN CHANNEL ADDRESS
14471 0 73 23310 SKG TEMP IS INTERLACE COUNTING YET
14472 0 01 14466 BRU CDVR7 YES
14473 0 41 14467 BRX CDVR6 LBRP
14474 0 71 23314 LDX TEMPD GET X
14475 0 00 23323 SKR VAR7 DECREMENT RETRY COUNTER
14476 0 20 00000 NOP 0
14477 0 53 23323 SKY VAR7 WETHY
14500 0 01 14502 BRU **2 YES
14501 0 43 14477 BRM ABRRT
14502 0 20 15414 NOP BIT9
14503 0 43 15620 BRM REPERR
14504 0 20 15414 NOP BIT9
14505 0 01 14254 BRU CDVR9 TRY AGAIN
14506 0 71 20314 CDVR7 LDX TEMPD SET X
14507 0 51 14417 BRM CHNDVR RETURN
    
```


DISCF TAP=3.0 04/25 20100 PAGE 193

14566	0 53 15444	CHNCK0	SKN	STFLAG	SEARCH TIME FLAG SET
14567	0 51 14525		BRR	CHNCK	NO = RETURN
14570	0 76 33273		LDA	#01	RESET HEADING SWITCHES
14571	0 35 15437		STA	DWEAD	
14572	0 35 15440		STA	IOHEAD	
14573	0 37 23310		STX	TEMP	SET UP MESSAGE POINTER
14574	0 76 23310		LDA	TEMP	
14575	0 14 33301		ETR	#37777	
14576	0 16 15413		MRG	BITA	
14577	0 35 14602		STA	CHNCK1	
14600	0 43 00454		BRM	REPRT	
14601	4 20 33012		NBP	F10M9J4	
14602	0 00 00000	CHNCK1	PZE	0	POINTER
14603	0 51 14525		BRR	CHNCK	RETURN
14604	0 14 33420	CHNCK2	ETR	#71007000	FORMAT
14605	0 35 14617		STA	CHNCK3	
14606	0 60 23323		SKR	VAR7	DECREMENT CHANNEL RETRY COUNTER
14607	0 20 00000		NBP	0	
14610	0 53 23323		SKN	VAR7	HETRY
14611	0 01 14613		BRU	#42	YES
14612	0 43 14677		BRM	ABORT	
14613	0 20 14617		NBP	CHNCK3	
14614	0 43 14620		BRM	REPERR	
14615	0 20 14617		NBP	CHNCK3	
14616	0 01 14254		BRU	EDVRO	TRY AGAIN
14617	0 00 00000	CHNCK3	PZE	0	

DISCF TAP=3.0 04/25 20100 PAGE 194

		*			
		*	REPORT I/O ERROR		
		*			
14620	0 00 00000	REPERR	PZE	0	
14621	0 37 23314		STX	TEMPD	SAVE X
14622	0 61 14620		MIN	REPERR	INCREMENT RETURN
14623	0 61 14654		MIN	RETRY	INCREMENT RETRY COUNTER
14624	0 77 14620		EAX	REPERR	
14625	2 76 00000		LDA	0,2	ERROR FLAG
14626	0 35 15460		STA	ERRTBL	
14627	0 43 15305		BRM	ISSTAT	GET CURRENT I/O STATUS
14630	0 35 23310		STA	TEMP	
14631	0 76 15454		LDA	RETRY	
14632	0 67 00003		LSH	3	
14633	0 14 33423		ETR	#170	
14634	0 55 23310		ADD	TEMP	
14635	0 16 15460		MRG	ERRTBL	MERGE ERROR FLAG
14636	0 35 15461		STA	ERRTBL+1	
14637	0 76 15450		LDA	BADTIM	TIMES
14640	0 75 33272		LDB	#0	
14641	0 67 00014		LSH	120	
14642	0 55 15451		ADD	VAR+1M	
14643	0 35 15462		STA	ERRTBL+2	
14644	0 71 23314		LDX	TEMPD	BIAS
14645	2 76 00000		LDA	0,2	STARTING DISC ADDRESS
14646	0 35 15463		STA	ERRTBL+3	
14647	2 76 00002		LDA	2,2	STARTING CORE ADDRESS
14650	0 35 15464		STA	ERRTBL+5	
14651	2 76 00003		LDA	3,2	BLOCK LENGTH
14652	0 35 15467		STA	ERRTBL+7	
14653	0 06 10126		EBD	10126	ALERT DISC FILE
14654	0 32 15464		PIN	ERRTBL+4	ENDING DISC ADDRESS
14655	0 06 10100		EBD	12100	ALERT TO PIN CHANNEL ADDRESS
14656	0 33 15466		PIN	ERRTBL+6	ENDING CHANNEL ADDRESS
14657	0 43 14510		BRM	VFIO	WAIT FOR I/O TO FINISH
14660	0 53 15440		SKN	IOHEAD	PRINT HEADING

DISC TAP-3.0 04/25 20100 PAGE 197

14753	0 35 23325	STA	VAR9		
14754	0 75 33273	LDB	==1	MASK	
14755	0 76 15666	LDA	0PM80E		
14756	0 72 15411	SKA	BIT6	IS DATA FIXED	
14757	0 01 15025	BRU	DATA7	YES	
14760	0 72 15412	SKA	BIT7	IS DATA SEQUENTIAL	
14761	0 01 15004	BRU	DATAS	YES	
14762	0 36 15447	DATA3	STB	NEWSEC	SET NEW SECTOR SWITCH
14763	0 71 33410	LDX	==63D	RANDBM DATA	
14764	0 76*23325	LDA*	VAR9	GET FIRST WORD	
14765	0 70*23325	DATA4	SKM*	VAR9	IS DATA CORRECT
14766	0 43 15135	BRM	DATERR	NO	GENERATE NEXT RANDBM WORD
14767	0 43 15137	BRM	RANDBM		INCREMENT POINTER
14770	0 01 23325	MIN	VAR9		
14771	0 41 14765	BRX	DATA4		
14772	0 55 23324	ADD	VAR8	ADD DISC ADDRESS = LAST WORD	
14773	0 70*23325	SKM*	VAR9	IS LAST WORD CORRECT	
14774	0 43 15135	BRM	DATERR	NO	INCREMENT POINTERS
14775	0 61 23325	MIN	VAR9		
14776	0 61 23324	MIN	VAR8		
14777	0 60 15453	SKR	CBUNT	DECREMENT COUNT	
15000	0 20 00000	NBP	0		
15001	0 53 15453	SKN	CBUNT	FINISHED	
15002	0 01 14762	BRU	DATA3	NO	
15003	0 01 15045	BRU	DATA8		
15004	0 36 15447	DATA5	STB	NEWSEC	SET NEW SECTOR SWITCH
15005	0 75 33277	LDB	==0		
15006	0 76 23324	LDA	VAR8	SET UP FIRST SEQUENTIAL DATA WORD	
15007	0 67 00006	LSH	6		
15010	0 75 33273	LDB	==1	MASK	
15011	0 71 33411	LDX	==64D	CBUNT	
15012	0 70*23325	DATA6	SKM*	VAR9	IS DATA CORRECT
15013	0 43 15135	BRM	DATERR	NO	
15014	0 55 15432	ADD	BIT23	ADD 1	
15015	0 61 23325	MIN	VAR9	INCREMENT POINTER	
15016	0 41 15012	BRX	DATA6	LOOP	

DISC TAP-3.0 04/25 20100 PAGE 198

15017	0 61 23324	MIN	VAR8	UPDATE DISC ADDRESS	
15020	0 60 15453	SKR	CBUNT	DECREMENT COUNT	
15021	0 20 00000	NBP	0		
15022	0 53 15453	SKN	CBUNT	FINISHED	
15023	0 01 15004	BRU	DATA5	NO	
15024	0 01 15045	BRU	DATA8		
15025	0 36 15447	DATA7	STB	NEWSEC	SET NEW SECTOR SWITCH
15026	0 71 33410	LDX	==63D	CBUNT	
15027	0 76 15674	LDA	PATERN	FIXED PATTERN	
15030	0 70*23325	SKM*	VAR9	IS DATA CORRECT	
15031	0 43 15135	BRM	DATERR	NO	
15032	0 61 23325	MIN	VAR9	INCREMENT POINTER	
15033	0 41 15030	BRX	==3	LOOP	
15034	0 55 23324	ADD	VAR8		
15035	0 70*23325	SKM*	VAR9	IS LAST WORD CORRECT	
15036	0 43 15135	BRM	DATERR	NO	
15037	0 61 23325	MIN	VAR9	INCREMENT POINTERS	
15040	0 61 23324	MIN	VAR8		
15041	0 60 15453	SKR	CBUNT	DECREMENT COUNT	
15042	0 20 00000	NBP	0		
15043	0 53 15453	SKN	CBUNT	FINISHED	
15044	0 01 15025	BRU	DATA7	NO	
15045	0 71 23314	DATA8	LDX	TEMPD	GET X
15046	0 51 14712	BRR	DATACK	RETURN	

```

*
* COMPARE BUFFERS 1 AND 2
*
15047 0 00 00000 C1AND2 RZE 0
15050 0 37 23314 STX TEMPD SAVE X
15051 0 77 15530 EAX TABLE1
15052 2 76 0000P LDA 2,2 START CORE (B=1)
15053 0 53 23330 SKN NFFLG IS MACHINE A 940
15054 0 61 15076 BRJ C1A2B NO
15055 0 66 00013 RSH 110 SET UP RELABELING
15056 0 35 23310 STA TEMP
15057 0 75 33072 LDB #0
15060 0 71 33407 LDX #7
15061 0 61 23310 C1A2A MIN TEMPD
15062 0 67 20006 LCV 6
15063 0 55 23310 ADD TEMP
15064 0 41 15061 BRX C1A2A
15065 0 36 00415 STR RL1
15066 0 35 00416 STA RL2
15067 0 02 20400 EBM 20*00 SET UP RL1
15070 0 13 00415 PBT RL1
15071 0 02 21000 EBM 21000 SET UP RL2
15072 0 13 00416 PBT RL2
15073 0 77 15530 EAX TABLE1
15074 2 76 0000P LDA 2,2 START CORE (B=1)
15075 0 14 33313 ETR #3777
15076 0 35 23311 C1A2B STA TEMPA BUFFER 1 POINTER
15077 2 76 00003 LDA 3,2 LENGTH
15100 0 75 33072 LDB #0
15101 0 67 00006 LSH 6
15102 0 55 23311 ADD TEMPA
15103 0 16 15403 BRG BITC USER MAP BIT
15104 0 35 23325 STA VARG BUFFER 2 POINTER
15105 0 76 23311 LDA TEMPA
15106 0 16 15403 BRG BITC USER MAP BIT
15107 0 35 23311 STA TEMPA

```

```

15110 2 76 00003 LDA 3,2 LENGTH
15111 0 54 15432 SUB BITB SUBTRACT 1
15112 0 35 15452 STA CBUNT
15113 2 76 00000 LDA 0,2 START DISC
15114 0 35 23324 STA VARG
15115 0 75 33073 LDB #1 MASK
15116 0 36 15447 C1A2C STB NERSEC SET REA SECTOR SWITCH
15117 0 71 33411 LDX #640 CBUNT
15120 0 76 23311 C1A2D LDA TEMPA B=1 WORD
15121 0 70 23325 SKM VARG B=2 WORD
15122 0 43 15435 BRM DATERR MISCOMPARE
15123 0 61 23311 MIN TEMPA INCREMENT POINTERS
15124 0 61 23325 MIN VARG
15125 0 41 15120 BRX C1A2D LOOP
15126 0 61 23324 MIN VARG INCREMENT DISC POINTER
15127 0 60 15453 SKR CBUNT DECREMENT CBUNT
15130 0 20 00000 NOP
15131 0 53 15452 SKN CBUNT FINISHED
15132 0 61 15116 BRJ C1A2C
15133 0 71 23314 LDX TEMPD GET X
15134 0 51 15047 BRJ C1AND2 RETURN

```



```

*
*   SAVE REGISTERS
*
15224 0 00 00000 SAV PZE 0
15225 0 35 23305 STA A
15226 0 36 23306 STB B
15227 0 37 23307 STX X
15230 0 51 15224 ERR SAV
*
*   RESTORE REGISTERS
*
15231 0 00 00000 GET PZE 0
15232 0 76 23305 LDA A
15233 0 75 23306 LDB B
15234 0 71 23307 LDX X
15235 0 51 15231 ERR GET
*
*   RESET SEQUENTIAL DISC POINTER
*
15236 0 43 00430 RESET BRM BRJECT
15237 0 76 15671 LDA LODISC GET STARTING DISC ADDRESS
15240 0 35 23320 STA VAR4 RESET POINTER
15241 0 43 23045 BRM TERM GO TO CONTROL
15242 0 01 13046 BRU FSTART RESTART FUNCTION

```

```

*
*   ENTER POSITION INTO TABLE
*
15243 0 00 00000 ENDPBS PZE 0
15244 0 43 15224 BRM SAV
15245 0 66 00015 RSH 13D GET DISC
15246 0 35 23310 STA TEMP A TB X
15247 0 71 23310 LDX TEMP
15250 0 76 23072 LDA #0
15251 0 67 00006 LSH 6
15252 2 35 15470 STA CAPTBL,2
15253 0 43 15231 BRM GET
15254 0 51 15243 BRR ENDPBS RETURN
*
*   GET CURRENT ARM POSITION
*
15255 0 00 00000 GETCAP PZE 0
15256 0 43 15224 BRM SAV SAVE REGISTERS
15257 0 66 00015 RSH 13D GET DISC
15260 0 35 23310 STA TEMP A TB X
15261 0 71 23310 LDX TEMP
15262 2 76 15470 LDA CAPTBL,2 CURRENT POSITION
15263 0 75 23306 LDB B
15264 0 71 23307 LDX X
15265 0 51 15255 BRR GETCAP RETURN

```

•
• GET MAXIMUM POSITIONING TIME
•

15266	0 00 00000	GETIME	PZE	0	
15267	0 43 15224		BRM	SAV	SAVE REGISTERS
15270	0 54 23306		SUB	B	
15271	0 35 23310		STA	TEMP	A = END POS = START POS
15272	0 72 15403		SKA	BITC	IS A NEGATIVE
15273	0 01 15275		BRU	••2	YES
15274	0 01 15300		BRU	••4	
15275	0 76 33272		LDA	#0	
15276	0 54 23310		SUB	TEMP	=A TO A
15277	0 35 23310		STA	TEMP	
15300	0 71 23310		LDX	TEMP	
15301	2 75 15560		LDB	TIMTBL,2	MAX TIME
15302	0 76 23305		LDA	A	
15303	0 71 23307		LDX	X	
15304	0 51 15266		BRR	GETIME	RETURN

•
• GENERATE STATUS WORD
•

15305	0 00 00000	16STAT	PZE	0	
15306	0 76 33272		LDA	#0	
15307	0 40 10326		SKS•	10326	FILE ON LINE TEST
15310	0 16 15403		YRG	BITC	FILE NOT ON LINE
15311	0 40 10126		SKS•	10126	DISC FILE READY TEST
15312	0 16 15404		YRG	BIT1	CONTROLLER NOT READY
15313	0 40 11126		SKS•	11126	DISC FILE ERROR TEST
15314	0 16 15405		YRG	BIT2	CONTROLLER ERROR
15315	0 40 12126		SKS•	12126	TRACK VERIFIED TEST
15316	0 16 15406		YRG	BIT3	TRACK NOT VERIFIED
15317	0 40 13126		SKS•	13126	DISC WRITE PROTECT TEST
15320	0 16 15407		YRG	BIT4	DISC WRITE PROTECTED
15321	0 40 14126		SKS•	14126	WRITE HEADER TEST
15322	0 16 15410		YRG	BIT5	WRITE HEADER SWITCH ON
15323	0 40 11100		SKS•	11100	CHANNEL ERROR TEST
15324	0 16 15417		YRG	BIT12	CHANNEL ERROR
15325	0 40 14100		SKS•	14100	CHANNEL ACTIVE TEST
15326	0 16 15420		YRG	BIT13	CHANNEL ACTIVE
15327	0 40 10100		SKS•	10100	CHANNEL ZERP WORD COUNT TEST
15330	0 16 15421		YRG	BIT14	CHANNEL WORD COUNT NOT ZERO
15331	0 53 15442		SKX	I1FLAG	
15332	0 16 15422		YRG	BIT15	I1 NOT RECEIVED
15333	0 53 15443		SKX	I2FLAG	
15334	0 16 15423		YRG	BIT16	I2 NOT RECEIVED
15335	0 16 15457		YRG	PHASE	GET PHASE COUNTER
15336	0 51 15205		BRR	16STAT	RETURN

*
* RANDOM NUMBER GENERATOR
*

15337	0 00 00000	RANDM	PZE	0	
15340	0 35 23305		STA	A	SAVE A AND B REGISTERS
15341	0 36 23306		STB	B	
15342	0 46 21005		ABC		
15343	0 67 00017		LGH	15D	
15344	0 55 23305		ADD	A	
15345	0 55 33423		ADD	#33431031	
15346	0 75 23306		LDB	B	
15347	0 51 15337		BRR	RANDM	RETURN

*
* INTERRUPT PROCESSOR
*

15350	0 12 21004	INTER	DIR		DISABLE INTERRUPTS
15351	0 35 15455		STA	A1	SAVE REGISTERS
15352	0 36 15456		STB	B1	
15353	0 76 01450		LDA	DIVERT	GET INTERRUPT MARK ADDRESS
15354	0 78 33273		LDB	#1	MASK
15355	0 14 33301		ETR	#37777	
15356	0 70 33302		SKM	#IX1	IAS INTERRUPT AN I1
15357	0 01 15361		BRU	#2	NO
15358	0 01 15364		BRU	INTER1	
15361	0 70 33424		SKM	#IX2	IAS INTERRUPT AN I2
15362	0 48 20357		SRM	SPUR	NO # SPURIOUS
15363	0 20 30428		SRP	#660067	POINTER
15364	0 36 15443		STB	I2FLAG	
15365	0 01 15367		BRU	#2	
15366	0 36 15442	INTER1	STB	I1FLAG	
15367	0 54 15432		SUB	S1T23	
15370	0 36 00480		STA	DIVERT	
15371	0 76 #00480		LDA	DIVERT	
15372	0 35 00480		STA	DIVERT	
15373	0 76 15455		LDA	A1	RESTORE REGISTERS
15374	0 75 15456		LDB	B1	
15375	0 52 23320		SKM	#FLG	IS MACHINE A 940
15376	0 01 15401		BRU	#43	NO
15377	0 02 20000		EIR		ENABLE INTERRUPTS
15400	0 11 00450		BRI	DIVERT	RETURN
15401	0 12 20002		EIR		
15402	0 01 #00450		BRU	DIVERT	RETURN

*
* CONSTANTS
*

```

15403 40000000 BIT0 DATA 40000000
15404 20000000 BIT1 DATA 20000000
15405 10000000 BIT2 DATA 10000000
15406 04000000 BIT3 DATA 04000000
15407 02000000 BIT4 DATA 02000000
15410 01000000 BIT5 DATA 01000000
15411 00400000 BIT6 DATA 00400000
15412 00200000 BIT7 DATA 00200000
15413 00100000 BIT8 DATA 00100000
15414 00040000 BIT9 DATA 00040000
15415 00020000 BIT10 DATA 00020000
15416 00010000 BIT11 DATA 00010000
15417 00004000 BIT12 DATA 00004000
15420 00002000 BIT13 DATA 00002000
15421 00001000 BIT14 DATA 00001000
15422 00000400 BIT15 DATA 00000400
15423 00000200 BIT16 DATA 00000200
15424 00000100 BIT17 DATA 00000100
15425 00000040 BIT18 DATA 00000040
15426 00000020 BIT19 DATA 00000020
15427 00000010 BIT20 DATA 00000010
15430 00000004 BIT21 DATA 00000004
15431 00000002 BIT22 DATA 00000002
15432 00000001 BIT23 DATA 00000001
15433 11133307 RMODE DATA 11133307
15434 0 06 02726 EBD 2726
15435 0 06 03766 EBD 3766
15436 0 06 14000 EBD 14000
    
```

AUTOMATIC RUNNING MODE
HEAD DISC FILE = CHAIN
WRITE DISC FILE = SECTOR
EXTENDED MODE EBC

*
* FLAGS
*

```

15437 0 00 00000 CHLEAD PZE 0
15440 0 00 00000 I0HEAD PZE 0
15441 0 00 00000 INTRPT PZE 0
15442 0 00 00000 I1FLAG PZE 0
15443 0 00 00000 I2FLAG PZE 0
15444 0 00 00000 STFLAG PZE 0
15445 0 00 00000 KEY PZE 0
15446 0 00 00000 RRS PZE 0
15447 0 00 00000 NEWSEC PZE 0
    
```

DATA ERROR HEADING FLAG
I0 ERROR HEADING FLAG
INTERRUPT MODE FLAG
I1 RECEIVED FLAG
I2 RECEIVED FLAG
SEARCH TIME ERROR FLAG
KEY SWITCH (KEY IN PROCESS)
HEAD/READ SWITCH (USED IN COMPARE MODE)
NEW SECTOR SWITCH

*
* STORAGE CELLS
*

```

15450 0 00 00000 MBNTIM PZE 0
15451 0 00 00000 MBVTIM PZE 0
15452 0 00 00000 RLKMAX PZE 0
15453 0 00 00000 COUNT PZE 0
15454 0 00 00000 RETRY PZE 0
15455 0 00 00000 A1 PZE 0
15456 0 00 00000 P1 PZE 0
15457 0 00 00000 PHASE PZE 0
    
```

SEEK TIME ERROR (INCORRECT TIME)
SEEK TIME ERROR (MAX CORRECT TIME)
MAXIMUM TRANSFER BLOCK LENGTH
INTERNAL COUNTER
CURRENT RETRY COUNT
CURRENT PHASE

```

*
*   TABLES
*
15460      00010  FRTBL  BSS      80      ERROR OUTPUT TABLE
15470      00040  CAPTBL BSS     320     CURRENT ARM POSITION TABLE
15530      0 00 00000  TABLE1 PZE      0      DISC POT WORD (B-1)
15531      0 00 00000          PZE      0      CHANNEL POT WORD
15532      0 00 00000          PZE      0      CHANNEL STARTING ADDRESS
15533      0 00 00000          PZE      0      BLOCK LENGTH IN SECTORS
15534      0 00 00000          PZE      0      OPERATING MODE
15535      0 00 00000          PZE      0      EXTENDED MODE EOM
15536      0 00 00000          PZE      0      BUFFER CONTROL EOM
15537      00000001  TABLE2 PZE      0      BUFFER NUMBER (FIXED)
15540      0 00 00000          PZE      0      DISC POT WORD (B-2)
15541      0 00 00000          PZE      0      CHANNEL POT WORD
15542      0 00 00000          PZE      0      CHANNEL STARTING ADDRESS
15543      0 00 00000          PZE      0      BLOCK LENGTH IN SECTORS
15544      0 00 00000          PZE      0      OPERATING MODE
15545      0 00 00000          PZE      0      EXTENDED MODE EOM
15546      0 00 00000          PZE      0      BUFFER CONTROL EOM
15547      00000002  TABLE3 PZE      0      BUFFER NUMBER (FIXED)
15550      0 00 00000          PZE      0      DUMMY SEEK POT WORD
15551      0 00 00000          PZE      0      DUMMY TABLE
15552      0 00 00000          PZE      0
15553      0 00 00000          PZE      0
15554      0 00 00000          PZE      0
15555      0 00 00000          PZE      0
15556      0 00 00000          PZE      0
15557      00000003          DATA      3      BUFFER IDENTIFIER
    
```

```

*
*   MAXIMUM POSITIONING TIMES
*
15560      00000007  TIMTBL DATA  1350,2500,2170,2170,2330,2330,2500,2500,2500,2500
15561      00000072
15562      00000031
15563      00000031
15564      00000051
15565      00000051
15566      00000072
15567      00000072
15570      00000072
15571      00000072
15572      00000013  DATA  2670,2670,2670,2670,2830,2830,3000,3000,3000,3000
15573      00000013
15574      00000013
15575      00000013
15576      00000033
15577      00000033
15600      00000054
15601      00000054
15602      00000054
15603      00000054
15604      00000075  DATA  3170,3170,3170,3170,3170,3170,3330,3330,3500,3500
15605      00000075
15606      00000075
15607      00000075
15610      00000075
15611      00000075
15612      00000015
15613      00000015
15614      00000036
15615      00000036
15616      00000036  DATA  3500,3500,3500,3500,3500,3500,3670,3670,3670,3670
15617      00000036
15620      00000036
    
```



```

15621 00000536
15622 00000536
15623 00000536
15624 00000557
15625 00000557
15626 00000557
15627 00000557
15630 00000557 DATA 367D,367D,367D,367D,383D,383D,383D,383D,383D,383D
15631 00000557
15632 00000557
15633 00000557
15634 00000577
15635 00000577
15636 00000577
15637 00000577
15640 00000577
15641 00000577
15642 00000577 DATA 383D,383D,400D,400D,400D,400D,400D,400D,400D,400D
15643 00000577
15644 00000420
15645 00000420
15646 00000420
15647 00000420
15650 00000420
15651 00000420
15652 00000420
15653 00000420
15654 00000420 DATA 400D,400D,400D,400D
15655 00000420
15656 00000420
15657 00000420
    
```

```

.
.
.
FUNCTION PARAMETER TABLE
.
15660 0 20 15676 FRT10 NBP FIM10 FUNCTION IDENTIFIER MESSAGE
15661 0 20 15730 NBP FAM10 FUNCTION ABSTRACT MESSAGE
15662 0 20 15705 NBP FVM10 FUNCTION VARIABLE MESSAGE
15663 0 10 15666 EIGHT BPMPDE FUNCTION VARIABLES PRINTER
15664 0 00 15771 PZE FUNC1R POINTER TO NEXT FUNCTION
15665 00020000 DATA 20000 FUNCTION IDENTIFIER BIT (BIT 10)
15666 0 00 00000 BPMPDE PZE 0 OPERATING MODE
15667 0 00 00000 L0C0RE PZE 0 FIRST CORE ADDRESS
15670 0 00 00000 HIC0RE PZE 0 LAST CORE ADDRESS
15671 0 00 00000 L0DISC PZE 0 FIRST DISC ADDRESS
15672 0 00 00000 H0DISC PZE 0 LAST DISC ADDRESS
15673 0 00 00000 LENGTH PZE 0 FIXED LENGTH OR RANDOM SWITCH
15674 0 00 00000 PATERN PZE 0 FIXED PATTERN
15675 00070077 CNTRS DATA 70077 RETRY AND DATA ERROR DISPLAY COUNTERS
.
.
FUNCTION MESSAGES
.
15676 52261201 FIM10 BCD 1 F 10 * DISC EXERCISER 4.011
15677 00124012
15700 24314223
15701 12250725
15702 51230162
15703 25511204
15704 33003712
15705 52124647 FVM10 BCD 1 BPMPDE L0C0RE HIC0RE L0DISC H0DISC LENGTH PATERN COUNTER
15706 44467425
15707 12121243
15710 46234651
15711 25121012
15712 30312346
15713 51251212
15714 12434624
    
```

DISCF TAP=3.0 04/25 20100 PAGE 215

15715	31622312		
15716	12123031		
15717	24316223		
15720	12121243		
15721	25452763		
15722	30121247		
15723	21636325		
15724	51451212		
15725	23466445		
15726	63255162		
15727	52371212		
15730	52322431	FAM10 BCD	' DISC EXERCISER 4.0'
15731	62231225		
15732	67255123		
15733	31622551		
15734	12043300		
15735	52526346	BCD	' TO RESET THE SEQUENTIAL DISC POINTER, TYPE =0 15236T. THIS POINTER'
15736	12512562		
15737	25631263		
15740	30251262		
15741	25506425		
15742	45633121		
15743	43122431		
15744	62231247		
15745	46314563		
15746	25517312		
15747	63704725		
15750	12404612		
15751	01050203		
15752	06633312		
15753	63303162		
15754	12474631		
15755	45632551		
15756	52316212	BCD	' IS NOT RESET BY A =F 10T.'
15757	45466312		
15760	51256225		

DISCF TAP=3.0 04/25 20100 PAGE 216

15761	63122270		
15762	12211240		
15763	26120100		
15764	63331212		
15765	52526330	BCD	' THE MODE OF OPERATION OF THE EXERCISER IS CONTROLLED BY ONE BITS IN T
15766	25124446		
15767	24251246		
15770	26124547		
15771	25512163		
15772	31464512		
15773	46261263		
15774	30251225		
15775	67255123		
15776	31622551		
15777	12316212		
16000	23464563		
16001	51464343		
16002	25241222		
16003	70124645		
16004	25122231		
16005	63621231		
16006	45126330		
16007	25121212		
16010	52652151	BCD	' VARIABLE =OPMODE= AS FOLLOWS:'
16011	31212243		
16012	25124646		
16013	47444624		
16014	25401221		
16015	62122646		
16016	43434646		
16017	62151212		
16020	52000012	BCD	' 00 = FIXED DISC 01 = SEQUENTIAL DISC 02 = RANDOM DISC'
16021	40122631		
16022	67252412		
16023	24316223		
16024	52000112		

DISCF TAP=3.0 04/25 20100 PAGE 217

16025 40126225
16026 50642545
16027 63312143
16030 12247163
16031 23520007
16032 12401251
16033 21452446
16034 44122431
16035 62231212
16036 52000312
16037 40122631
16040 67252412
16041 23465125
16042 52000412
16043 40126225
16044 50642545
16045 63312143
16046 12234651
16047 25520005
16050 12401251
16051 21452446
16052 44122346
16053 51251212
16054 52000612
16055 40122431
16056 67252412
16057 24216721
16060 52000712
16061 40126225
16062 50642545
16063 63312143
16064 12247163
16065 21520010
16066 12401251
16067 21452446
16070 44122421

BCD 03 = FIXED CORE 04 = SEQUENTIAL CORE 05 = RANDOM CORE

BCD 06 = FIXED DATA 07 = SEQUENTIAL DATA 08 = RANDOM DATA

DISCF TAP=3.0 04/25 20100 PAGE 218

16071 63711212
16072 52001112
16073 40124561
16074 21520100
16075 12401223
16076 46444764
16077 63251266
16100 30314225
16101 12635121
16102 45622625
16103 51314527
16104 12242163
16105 21520101
16106 12401264
16107 62251231
16110 45632551
16111 51644763
16112 62121212
16113 52010212
16114 40122264
16115 26262551
16116 12011226
16117 31672524
16120 12464725
16121 51216431
16122 46455201
16123 33124012
16124 26513163
16125 25122264
16126 26262551
16127 12015201
16130 04124012
16131 51252124
16132 12226426
16133 26255112
16134 01121212

BCD 09 = N/A 10 = COMPUTE WHILE TRANSFERRING DATA 11 = USE INTERRUPTS

BCD 12 = BUFFER 1 FIXED OPERATION 13 = WRITE BUFFER 1 14 = READ BUFFER 1

DISCF TAP-3.0 04/25 20100 PAGE 219

16135	52010512	BCD	' 15 • BUFFER 2 FIXED OPERATION 16 • WRITE BUFFER 2 17 • READ BUFFER 2'
16136	40122264		
16137	26262551		
16140	12021226		
16141	31672524		
16142	12464725		
16143	51216331		
16144	46455201		
16145	06124012		
16146	66513163		
16147	25122264		
16150	26262551		
16151	12025201		
16152	07124012		
16153	51252124		
16154	12226426		
16155	26255112		
16156	02121212		
16157	52011012	BCD	' 18 • N/A 19 • COMPARE BUFFERS 1 AND 2 20 • KEY DISC'
16160	40124561		
16161	21520111		
16162	12401223		
16163	46444721		
16164	51251222		
16165	64262625		
16166	51621201		
16167	12214524		
16170	12025202		
16171	00124012		
16172	42257012		
16173	24316223		
16174	52020112	BCD	' 21 • USE DUMMY SEEK 22 • TIME SEEK 23 • TIME SEARCH'
16175	40126462		
16176	25122464		
16177	44447012		
16200	62252542		

DISCF TAP-3.0 04/25 20100 PAGE 220

16201	52020212		
16202	40126331		
16203	44251262		
16204	25254052		
16205	02031240		
16206	12633144		
16207	25126225		
16210	21512330		
16211	52526430	BCD	' WHEN IN THE COMPARE MODE, BUFFER 2 MUST BE SET FOR FIXED READ. IF'
16212	25451231		
16213	45126330		
16214	25122346		
16215	44472151		
16216	25124446		
16217	24257312		
16220	22642426		
16221	25511202		
16222	12446462		
16223	63122225		
16224	12622263		
16225	12264651		
16226	12263167		
16227	25241251		
16230	25212433		
16231	12312612		
16232	52226426	BCD	' BUFFER 1 IS SET FOR FIXED WRITE, THE PROGRAM WILL EXECUTE A WRITE-READ
16233	26255112		
16234	01123162		
16235	12622263		
16236	12264451		
16237	12263167		
16240	25241266		
16241	51316325		
16242	73126330		
16243	25124751		
16244	46275121		

16245 44126631
 16246 43431225
 16247 67232364
 16250 63251221
 16251 12665131
 16252 63254051
 16253 25212440
 16254 52234644
 16255 47215125
 16256 33123126
 16257 12226426
 16260 26255112
 16261 01123162
 16262 12622563
 16263 12264651
 16264 12263167
 16265 25241251
 16266 25212473
 16267 12633028
 16270 12475146
 16271 27512144
 16272 12663143
 16273 43122567
 16274 25236463
 16275 25122112
 16276 52512521
 16277 24405125
 16300 21244023
 16301 46444721
 16302 51254066
 16303 51316225
 16304 40512521
 16305 24402346
 16306 44472151
 16307 25127463
 16310 30316212

BCD 1 COMPARE, IF BUFFER 1 IS SET FOR FIXED READ, THE PROGRAM WILL EXECUTE A

BCD 1 READ=READ=COMPARE=WRITE=READ=COMPARE (THIS WILL NOT DESTROY THE INTEGR

16311 66314343
 16312 12454663
 16313 12242562
 16314 63514470
 16315 12633025
 16316 12314563
 16317 25275131
 16320 63701212
 16321 52462412
 16322 63302412
 16323 24316223
 16324 34335252
 16325 66302545
 16326 12314512
 16327 63302512
 16330 42257012
 16331 44462425
 16332 73126930
 16333 25122431
 16334 62231266
 16335 31434312
 16336 22251242
 16337 25702524
 16340 12663163
 16341 30126930
 16342 25121212
 16343 52622543
 16344 25236325
 16345 24122421
 16346 63211221
 16347 45241263
 16350 30251226
 16351 64452363
 16352 31464512
 16353 24316244
 16354 51626225

BCD 1 OF THE DISC). WHEN IN THE KEY MODE, THE DISC WILL BE KEYED WITH THE

BCD 1 SELECTED DATA AND THE FUNCTION DISMISSED.1

16355	24331212		
16356	52523126	BCD	IF THE VARIABLE =LENGTH= IS NEGATIVE, RANDOM BLOCK LENGTHS WILL BE US
16357	12633025		
16360	12652151		
16361	31212243		
16362	25124043		
16363	25452763		
16364	30401231		
16365	62124525		
16366	27216331		
16367	65257312		
16370	51214524		
16371	46441222		
16372	43462342		
16373	12432545		
16374	27633062		
16375	12663143		
16376	43122725		
16377	12646725		
16400	24331212		
16401	52312612	BCD	IF =LENGTH= IS POSITIVE, IT REPRESENTS THE FIXED BLOCK LENGTH TO BE US
16402	40432545		
16403	27633040		
16404	12316212		
16405	47466231		
16406	63316525		
16407	73123163		
16410	12517547		
16411	51256225		
16412	45636212		
16413	63302512		
16414	26316725		
16415	24122043		
16416	46234212		
16417	43254527		
16420	63301263		

16421	46122225		
16422	12646225		
16423	24331212		
16424	52523126	BCD	THE VARIABLE =COUNTERS= CONTAINS TWO COUNTERS. BITS 9-11 IS THE NUMB
16425	25124043		
16426	51214524		
16427	43251240		
16430	23466445		
16431	43255162		
16432	40122344		
16433	45432131		
16434	45621263		
16435	66461222		
16436	46644563		
16437	25514233		
16440	12223163		
16441	12121140		
16442	11011231		
16443	62126330		
16444	25124564		
16445	44222551		
16446	12446212		
16447	52517563		
16450	51701221	BCD	RETRY ATTEMPTS TO BE MADE IF AN I/O ERROR OCCURES, AND BITS 18-23 THE
16451	63632544		
16452	47630212		
16453	63461222		
16454	25124421		
16455	24251231		
16456	26122145		
16457	12316146		
16460	12255151		
16461	46511246		
16462	23230451		
16463	25627312		
16464	21452412		

16465 22316362
 16466 12011040
 16467 02031263
 16470 30251212
 16471 52456444
 16472 22255112
 16473 46261224
 16474 21632112
 16475 25515146
 16476 51621263
 16477 46122225
 16500 12243162
 16501 47432174
 16502 15241221
 16503 26632551
 16504 12633025
 16505 12263151
 16506 62631225
 16507 51514451
 16510 12314412
 16511 21122731
 16512 65254512
 16513 52222523
 16514 63465133
 16515 52523126
 16516 12214412
 16517 31614412
 16520 25515146
 16521 51124623
 16522 23645125
 16523 62731231
 16524 45264651
 16525 44216331
 16526 46451224
 16527 31624743
 16530 61702524

BCD NUMBER OF DATA ERRORS TO BE DISPLAYED AFTER THE FIRST ERROR IN A GIVEN

BCD SECTOR. IF AN I/O ERROR OCCURES, INFORMATION DISPLAYED INCLUDES THE F

16531 12314423
 16532 43647025
 16533 62126330
 16534 25127646
 16535 43434666
 16536 41452715
 16537 52314462
 16540 63216364
 16541 62151221
 16542 45123145
 16543 24312321
 16544 63314445
 16545 12462612
 16546 63302512
 16547 62632163
 16550 25124426
 16551 12633025
 16552 12627162
 16553 63254412
 16554 21631263
 16555 30251263
 16556 31442512
 16557 46261226
 16560 21314364
 16561 51253212
 16562 52000012
 16563 40122631
 16564 43251245
 16565 46631246
 16566 45124331
 16567 45255200
 16570 61124012
 16571 23464563
 16572 51464343
 16573 25511245
 16574 46631251

BCD INSTATUS: AN INDICATION OF THE STATE OF THE SYSTEM AT THE TIME OF FAIL

BCD 00 = FILE NOT ON LINE 01 = CONTROLLER NOT READY 02 = CONTROLLER ERROR

DISCF TAP=3.0 04/25 20100 PAGE 227

16575	25212470		
16576	52000712		
16577	40122346		
16600	45635146		
16601	43432551		
16602	12255151		
16603	46511712		
16604	52000312	BCD	03 = TRACK NOT VERIFIED 04 = DISC WRITE PROTECTED 05 = WRITE HEADER SW
16605	40126351		
16606	21234212		
16607	45466312		
16610	65255131		
16611	26312574		
16612	52000412		
16613	40122431		
16614	62231266		
16615	51316325		
16616	12475146		
16617	63252363		
16620	25245200		
16621	05124712		
16622	66513163		
16623	25123025		
16624	21242551		
16625	12626631		
16626	63233712		
16627	46451212		
16630	52000612	BCD	06 = N/A 07 = SEEK TIME ERROR 08 = N/A
16631	40124561		
16632	21520007		
16633	12401262		
16634	25234212		
16635	63314425		
16636	12255151		
16637	46515200		
16640	10124712		

DISCF TAP=3.0 04/25 20100 PAGE 228

16641	45612112		
16642	52001112	BCD	09 = SEARCH TIME ERROR 10 = N/A 11 = N/A
16643	40126225		
16644	21512330		
16645	12633144		
16646	25122551		
16647	51465152		
16650	01001240		
16651	12456121		
16652	52010112		
16653	40124561		
16654	21121212		
16655	52010212	BCD	12 = CHANNEL ERROR 13 = CHANNEL ACTIVE 14 = WORD COUNT NOT ZERO
16656	40123330		
16657	21454525		
16660	43122551		
16661	51465152		
16662	01031240		
16663	12233021		
16664	45452443		
16665	12212363		
16666	31652552		
16667	01041240		
16670	12664651		
16671	24122346		
16672	64456312		
16673	45466312		
16674	71255146		
16675	52010512	BCD	15 = 11 NOT RECEIVED 16 = 12 NOT RECEIVED 17 = N/A
16676	40123101		
16677	12454663		
16700	12512523		
16701	25316525		
16702	24520106		
16703	12401231		
16704	01124546		

DISCF TAP-3.0 04/25 20100 PAGE 229

16705	63125125		
16706	23253165		
16707	25245201		
16710	07124012		
16711	45612112		
16712	52011040	BCD	' 18=20 • CURRENT RETRY NUMBER 21=23 • CURRENT PHASE'
16713	02001240		
16714	12236451		
16715	51254563		
16716	12512563		
16717	51701245		
16720	64442225		
16721	51520201		
16722	40020312		
16723	40122364		
16724	51512545		
16725	63124730		
16726	21622512		
16727	52524225	BCD	' •ERR FLAG• IS A MASK FOR IOSTATUS TO INDICATE THE ERROR DETECTED'
16730	51511226		
16731	43212740		
16732	12316212		
16733	21124421		
16734	52421226		
16735	44511231		
16736	46626321		
16737	63646212		
16740	63461231		
16741	45243123		
16742	21632512		
16743	63302512		
16744	25515146		
16745	51122425		
16746	63252363		
16747	65241212		
16750	52406331	BCD	' •TIS..TSB. TIME IS AND TIME SB FOR SEEK TIME ERROR (IN HALFWORDS)!!'

DISCF TAP-3.0 04/25 20100 PAGE 230

16751	62424063
16752	02224012
16753	63314425
16754	12316212
16755	21452412
16756	63314425
16757	12622212
16760	20465112
16761	62252542
16762	12633144
16763	25122551
16764	51445112
16765	74314512
16766	50214326
16767	66445124
16770	62343712

*
 *
 * FUNCTION 18 - WRITE PROTECT SWITCH TEST
 *
 *

16771	0 76 00404	FUNC18 LDA	DSCSIZ	PRESET VARIABLES
16772	0 66 00017	RBW	15D	
16773	0 14 33426	ETR	#70	
16774	0 54 15432	SUB	BIT23	
16775	0 35 23327	STA	ENDISC	
16776	0 35 23315	STA	VAR1	
16777	0 75 33272	LDB	#0	
17000	0 36 23326	STB	STDISC	
17001	0 43 00424	BRM	FUNCTN	FUNCTION LINK TO CONTROL
17002	0 20 17070	NOP	FPT18	
17003	0 43 00454	BRM	REPRT	OUTPUT FUNCTION ID
17004	0 20 17076	NOP	FIM18	
17005	0 43 23045	BRM	TERM	GO TO CONTROL
17006	0 43 00440	BRM	RETURN	
17007	0 20 23351	NOP	ENTER	
17010	0 43 00430	BRM	OBJECT	
17011	0 76 23327	LDA	ENDISC	CHECK VARIABLES
17012	0 73 23315	SKG	VAR1	HIGH ARM TOO LARGE
17013	0 01 17015	BRU	**2	NO
17014	0 43 00460	BRM	ERRRR	
17015	0 20 33442	NOP	F18M1	
17016	0 55 15437	ADD	BIT23	
17017	0 73 23326	SKG	STDISC	LOW ARM < HIGH ARM
17020	0 43 00460	BRM	ERRRR	NO
17021	0 20 33447	NOP	F18M2	
17022	0 43 00434	BRM	END	
17023	0 76 23326	BEGN18 LDA	STDISC	SET STARTING ARM NUMBER
17024	0 35 23316	STA	VAR2	
17025	0 43 00430	STRT18 BRM	OBJECT	
17026	0 76 23316	LDA	VAR2	FORM DISC PBT WORD
17027	0 67 00015	LSH	13D	

17030	0 43 23422	BRM	DISCOCK	USE THIS DISC
17031	0 01 17043	BRU	F18E1	NO
17032	0 40*10126	SKS*	10126	DISC FILE READY TEST
17033	0 01 17032	BRU	**1	NO
17034	0 06 10126	E0D	10126	ALERT DISC FILE
17035	0 13 23332	PBT	PBT:RD	
17036	0 40*10126	SKS*	12126	TRACK VERIFIED TEST
17037	0 01 17036	BRU	**1	NO
17040	0 40*13126	SKS*	13126	DISC WRITE PROTECT TEST
17041	0 43 17051	BRM	OUT18	YES = OUTPUT MESSAGE
17042	0 06 10326	E0D	10326	CLEAR FILE
17043	0 43 00434	F18E1 BRM	END	
17044	0 61 23316	YIN	VAR2	
17045	0 76 23316	LDA	VAR2	
17046	0 73 23327	SKG	ENDISC	LAST DISC TESTED
17047	0 01 17025	BRU	STRT18	NO
17050	0 01 17023	BRU	BEGN18	
* * *				
17051	0 00 00000	OUT18 PZE	0	OUTPUT MESSAGE
17052	0 76 23316	LDA	VAR2	FORM ARM NUMBER INTO BCD
17053	0 67 00003	LSH	3	
17054	0 14 33367	ETR	#70C	
17055	0 55 23316	ADD	VAR2	
17056	0 14 33427	ETR	#707	
17057	0 67 00014	LSH	12D	
17060	0 16 33430	YRG	#3737	
17061	0 35 33064	STA	F18M4	
17062	0 40 20040	SKS	20040	GO TO CONTROL IF BPT4
17063	0 43 23045	BRM	TERM	
17064	0 43 00454	BRM	REPRT	OUTPUT THROUGH CONTROL
17065	0 20 33056	NOP	F18M3	
17066	0 20 33064	NOP	F18M4	
17067	0 51 17051	BRR	OUT18	

*
* FUNCTION PARAMETER TABLE
*

17070	0 20 17074	FPT18	NBP	FIM18
17071	0 20 17114		NBP	FAM18
17072	0 20 17107		NBP	FVM18
17073	0 32 23326		TWO	STDISC
17074	0 00 17225		PZE	FUNC19
17075	00000040		DATA	*0

*
* FUNCTION MESSAGES
*

17076	52261201	FIM18	BCD	' F 18 = WRITE PROTECT SWITCH TEST !!
17077	10124012			
17100	66513163			
17101	25124751			
17102	46632523			
17103	63126266			
17104	31632330			
17105	12632562			
17106	63371212			
17107	52121262	FVM18	BCD	' START END !!
17110	63215163			
17111	12121212			
17112	12254524			
17113	52371212			
17114	52326451	FAM18	BCD	' WRITE PROTECT SWITCH TEST !
17115	31632512			
17116	47514663			
17117	25236312			
17120	62663163			
17121	23301263			
17122	25626352			
17123	52633031	BCD		' THIS ROUTINE TESTS THE WRITE PROTECT STATUS OF SEQUENTIAL
17124	62125146			
17125	64633145			

17124	25126325			
17127	62636212			
17130	63302512			
17131	66513163			
17132	25124751			
17133	46632523			
17134	63126266			
17135	21630462			
17136	12462412			
17137	62255064			
17140	25456331			
17141	21431212			
17142	52243162	BCD		' DISCS AND PRINTS THE OCTAL NUMBER OF WRITE PROTECTED DISCS'
17143	23621221			
17144	45241247			
17145	61314663			
17146	62126330			
17147	25124623			
17150	63214312			
17151	45644422			
17152	25511246			
17153	26126451			
17154	31632512			
17155	47514663			
17156	25236325			
17157	24122431			
17160	62236212			
17161	52216212	BCD		' AS IT ENCOUNTERS THEM, THE FUNCTION VARIABLES ARE START AND'
17162	31631225			
17163	45234664			
17164	45632451			
17165	62126330			
17166	25443312			
17167	63302512			
17170	26644523			
17171	53314445			


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DISCF  TAP=3.0      04/25  20100  PAGE 237

17264  0 71 33337      LDX  #TABLE
17265  0 76 33434      LDA  #52020500
17266  0 75 33435      LDB  #52606054
17267  2 35 00000      F1912 STA  0,2      GENERATE VERTICLE AXIS
17270  2 77 00021      EAX  170,2
17271  2 36 00000      STB  C,2
17272  2 77 00021      EAX  170,2
17273  0 54 15424      SUB  BIT17
17274  0 72 33436      SKA  #6000
17275  0 54 33437      SUB  #6800
17276  0 60 15453      SKR  COUNT
17277  0 01 17300      BRU  #+1
17300  0 53 15453      SKN  COUNT      FINISHED AXIS
17301  0 01 17267      BRU  F1912      NO
17302  2 35 00000      STA  0,2
17303  0 76 33304      LDA  #150
17304  0 35 15453      STA  COUNT
17305  0 76 33440      LDA  #54545454      GENERATE HORIZONTAL AXIS
17306  2 77 00001      F1913 EAX  1,2
17307  2 35 00000      STA  0,2
17310  0 60 15453      SKR  COUNT
17311  0 01 17312      BRU  #+1
17312  0 53 15453      SKN  COUNT      FINISHED AXIS
17313  0 01 17306      BRU  F1913
17314  2 77 00001      EAX  1,2      YES
17315  0 76 33441      LDA  #52606060      GENERATE HORIZONTAL SCALE
17316  2 35 00000      STA  0,2
17317  0 76 33274      LDA  #7
17320  0 35 15453      STA  COUNT
17321  0 76 33442      LDA  #00606060
17322  0 75 33432      LDB  #60606060
17323  2 77 00001      EAX  1,2
17324  2 35 00000      F19112 STA  0,2
17325  2 36 00001      STB  1,2
17326  0 55 15410      ADD  BIT5
17327  2 77 00002      LAX  2,2

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DISCF  TAP=3.0      04/25  20100  PAGE 238

17330  0 60 15453      SKR  COUNT
17331  0 01 17332      BRU  #+1
17332  0 53 15453      SKN  COUNT
17333  0 01 17324      BRU  F19112
17334  2 77 37777      EAX  #1,2
17335  0 76 33441      LDA  #52606060
17336  2 35 00000      STA  C,2
17337  0 76 33274      LDA  #7
17340  0 35 15453      STA  COUNT
17341  2 77 00001      EAX  1,2
17342  0 76 33443      LDA  #00010203
17343  0 75 33444      LDB  #04050607
17344  2 35 00000      F1914 STA  0,2
17345  2 36 00001      STB  1,2
17346  2 77 00002      EAX  2,2
17347  0 60 15453      SKR  COUNT
17350  0 01 17351      BRU  #+1
17351  0 53 15453      SKN  COUNT
17352  0 01 17344      BRU  F1914
17353  0 76 33445      LDA  #37373737      TERMINATING CHARACTER
17354  2 35 00000      STA  0,2
17355  0 40 12126      SKS# 10126      DISC FILE READY TEST
17356  0 01 17355      BRU  #+1      NO
17357  0 74 23316      LDA  VAR2
17360  0 75 33272      LDB  #0
17361  0 67 00015      LSH  130
17362  0 35 23332      STA  PORTARD
17363  0 71 15414      LDX  BIT9
17364  0 43 23022      BRM  DISCOCK
17365  0 01 17336      BRU  F19113
17366  0 06 10126      EOD  10126
17367  0 13 23332      POT  PORTARD
17370  0 40 12126      SKS# 12126      TRACK VERIFIED TEST
17371  0 01 17373      BRU  #+2
17372  0 01 17400      BRU  #+6
17373  0 67 20060      LCY  48D

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DISCP TAP.3.C 04/25 20100 PAGE 239

17374	0	67	20060	LCY	48D
17375	0	67	20060	LCY	48D
17376	0	*1	17370	BRX	F1915
17377	0	01	17414	BRU	F19114
17400	0	76	23332	LDA	POTWRD
17401	0	55	33412	ADD	#17600
17402	0	35	23317	STA	VAR3
17403	0	76	23332	F1916 LDA	POTWRD
17404	0	55	15423	ADD	BIT16
17405	0	73	23317	SKG	VAR3
17406	0	01	17410	BRU	**2
17407	0	01	17450	BRU	F1917A
17410	0	35	23332	STA	POTWRD
17411	0	05	10326	EOD	10326
17412	0	*0	*10126	SKS.	10126
17413	0	01	17412	BRU	**1
17414	0	06	10126	EOD	10126
17415	0	13	23332	POT	POTWRD
17416	0	76	33372	LDA	#0
17417	0	67	20060	F1917 LCY	48D
17420	0	71	33446	LDX	**45D
17421	0	67	20060	LCY	48D
17422	0	41	17421	BRX	**1
17423	0	55	15432	ADD	BIT23
17424	0	73	33447	SKG	#1000D
17425	0	01	17427	BRU	**2
17426	0	01	17414	BRU	F19114
17427	0	*0	*12126	SKS.	12126
17430	0	01	17417	BRU	F1917
17431	0	35	33450	ADD	#5
17432	0	66	00001	RSH	1
17433	0	75	33372	LDB	#0
17434	0	36	15453	STB	COUNT
17435	0	54	33450	SUB	#5
17436	0	72	15403	SKA	BIT0
17437	0	01	17442	BRU	**3

TIMEOUT ERROR

UPDATE POT WRD BY ONE INCREMENT
FINISHED FORWARD INCREMENTS
NO

CLEAR FILE
DISC FILE READY TEST
NO
ALERT DISC FILE

TRACK VERIFIED TEST
NO
ROUND OFF TO NEAREST 5MILLISEC
DIVIDE BY 2 * A # NUM OF IMS COUNTS

SIMULATE DIVIDE BY 5

DISCP TAP.3.C 04/25 20100 PAGE 240

17440	0	61	15453	MIN	COUNT
17441	0	01	17435	BRU	**4
17442	0	76	15453	LDA	COUNT
17443	0	75	33372	LDB	#0
17444	0	*3	17445	BRM	F19111
17445	0	*0	20040	SKS	20040
17446	0	*3	22045	BRM	TERM
17447	0	01	17403	BRU	F1916
17450	0	76	23316	F1917A LDA	VAR2
17451	0	67	00015	LSH	13D
17452	0	54	15423	SUB	BIT16
17453	0	05	23317	STA	VAR3
17454	0	75	33273	F1918 LDB	**1
17455	0	76	23332	LDA	POTWRD
17456	0	54	15423	SUB	BIT16
17457	0	70	23317	SKM	VAR3
17460	0	01	17462	BRU	**2
17461	0	01	17522	BRU	F19110
17462	0	35	23332	STA	POTWRD
17463	0	06	10326	EOD	10326
17464	0	*0	*10126	SKS.	10126
17465	0	01	17464	BRU	**1
17466	0	06	10126	EOD	10126
17467	0	13	23332	POT	POTWRD
17470	0	76	33372	LDA	#0
17471	0	67	20060	F1919 LCY	48D
17472	0	71	33446	LDX	**45D
17473	0	67	20060	LCY	48D
17474	0	*1	17473	BRX	**1
17475	0	55	15432	ADD	BIT23
17476	0	73	33447	SKG	#1000D
17477	0	01	17501	BRU	**2
17500	0	01	17614	BRU	F19114
17501	0	*0	*12126	SKS.	12126
17502	0	01	17471	BRU	F1919
17503	0	55	33450	ADD	#5

A # NUM/5

ENTER TIME INTO CHART
BREAKPOINT 4 TEST
GO TO CONTROL

FINISHED
NO
FINISHED

CLEAR FILE
DISC FILE READY TEST
NO
ALERT DISC FILE

TIMEOUT ERROR
TRACK VERIFIED TEST
NO
ROUND OFF TO NEAREST 5MILLISEC

DISCF TAP=3.0 04/25 20100 PAGE 241

17504	0 66 00001	RSH	1
17505	0 75 33272	LDB	#0
17506	0 36 15453	STB	COUNT
17507	0 54 33480	SUB	#5
17510	0 72 15403	SKA	BIT0
17511	0 01 17514	BRU	**3
17512	0 61 15453	MIN	COUNT
17513	0 01 17507	BRU	**4
17514	0 76 15453	LDA	COUNT
17515	0 75 33273	LDB	#=1
17516	0 43 17545	BRM	F19111
17517	0 40 20040	SKS	20040
17520	0 43 23045	BRM	TERM
17521	0 01 17454	BRU	F1918
17522	0 75 33272	F19110 LDB	#0
17523	0 76 23316	LDA	VAR2
17524	0 67 00003	LSH	3
17525	0 14 33367	ETR	#700
17526	0 16 23316	MRG	VAR2
17527	0 14 33427	ETR	#707
17530	0 67 00014	LSH	120
17531	0 16 33430	MRG	#3737
17532	0 35 33106	STA	F19M4
17533	0 43 00454	BRM	REPRRT
17534	4 20 33077	NBP	F19M3,4
17535	0 20 34000	NBP	TABLE
17536	0 43 00434	F19113 BRM	END
17537	0 61 23316	MIN	VAR2
17540	0 76 23316	LDA	VAR2
17541	0 73 23327	SKG	ENDISC
17542	0 01 17255	BRU	F1911
17543	0 06 10326	LDB	10326
17544	0 01 17233	END19 BRU	F19115
17545	0 00 00000	F19111 PZE	0
17546	0 73 33451	SKG	#500
17547	0 01 17551	BRU	**2

DIVIDE BY 2 = A ; NUM OF IMS COUNTS
SIMULATE DIVIDE BY 5

DONE
YES

A = NUM/5

BREAKPOINT 4 TEST
GO TO CONTROL

PUT ARM NUMBER INTO BCD

OUTPUT MESSAGE

INCREMENT ARM NUMBER

FINISHED
NO
CLEAR FILE

ENTER TIMES INTO CHART
IS TIME > 250MS

DISCF TAP=3.0 04/25 20100 PAGE 242

17550	0 76 33451	LDA	#500
17551	0 73 33452	SKG	#200
17552	0 76 33452	LDA	#200
17553	0 35 23311	STA	TEMPA
17554	0 76 33451	LDA	#500
17555	0 54 23311	SUB	TEMPA
17556	0 35 23311	STA	TEMPA
17557	0 36 23312	STB	TEMPS
17560	0 75 33272	LDB	#0
17561	0 67 00004	LSH	4
17562	0 55 23311	ADD	TEMPA
17563	0 35 23311	STA	TEMPA
17564	0 76 23332	LDA	PST.RO
17565	0 14 33412	ETR	#17600
17566	0 66 00011	RSH	90
17567	0 55 23311	ADD	TEMPA
17570	0 55 33337	ADD	#TABLE
17571	0 55 15432	ADD	BIT23
17572	0 35 23313	STA	TEMPC
17573	0 76 33272	LDA	#0
17574	0 67 00002	LSH	2
17575	0 35 23311	STA	TEMPA
17576	0 71 23311	LDX	TEMPA
17577	0 76 23313	LDA	TEMPC
17600	2 72 17624	SKA	*ASK,2
17601	0 01 17606	BRU	**5
17602	2 76 17620	LDA	DELTA,2
17603	0 17 23313	EOR	TEMPC
17604	0 35 23313	STA	TEMPC
17605	0 51 17545	BRR	F19111
17606	2 76 17630	LDA	*INUS,2
17607	0 53 23312	SKN	TEMPS
17610	2 76 17624	LDA	*ASK,2
17611	0 17 23313	EOR	TEMPC
17612	0 35 23313	STA	TEMPC
17613	0 51 17545	BRR	F19111

YES = ENTER 250MS INTO CHART
IS TIME < 100MS
YES = ENTER 100MS INTO CHART

WORD ALTERED YET
NO

IS DIRECTION REVERSE
NO

```

DISCP  TAP=3.0      04/25  20100  PAGE 243
17614  0 43 00460  F19114 BRM  ERROR
17615  0 20 33107          NDP  F19M5
17616  0 06 10426          EGD  10326      CLEAR FILE
17617  0 01 17436          BRU  F19113
17620  77000000 DELTA DATA  77000000,770000,7700,77
17621  00770000
17622  00007700
17623  00000077
17624  40000000 MASK  DATA  487,485,483,481
17625  00400000
17626  00004000
17627  00000040
17630  20000000 MINUS DATA  287,285,283,281
17631  00200000
17632  00002000
17633  00000020

```

```

DISCP  TAP=3.0      04/25  20100  PAGE 244
*
* FUNCTION PARAMETER TABLE
*
17634  0 20 17442  FRT19  NDP  F1M19
17635  0 20 17455  NDP  FAM19
17636  0 20 17107  NDP  FVM18
17637  0 22 23126  TWS  STDISC
17640  0 00 20114  PZE  FUNC20
17641  00000020 DATA  20
*
* FUNCTION MESSAGES
*
17642  02261201 F1M19 BCD  ' F 19 = SINGLE INCREMENT VS. TIME PLOTTER!'
17643  11124012
17644  02314527
17645  43251231
17646  45235125
17647  44254563
17650  12654233
17651  12633144
17652  25124745
17653  46637325
17654  51371212
17655  52623145 FAM19 BCD  ' SINGLE INCREMENT VS. TIME PLOTTER!'
17656  07432512
17657  31452351
17660  25447545
17661  63127562
17662  33127331
17663  44251247
17664  43466363
17665  25511212
17666  52632331 BCD  ' THIS ROUTINE MEASURES AND CHARTS THE AMOUNT OF TIME!'
17667  62125146
17670  64633145
17671  25124425

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DISCF TAP-3.0 04/25 20100 PAGE 245

17672 21626451
17673 25621221
17674 45241223
17675 30215143
17676 62126330
17677 25122144
17700 46644563
17701 12462612
17702 63314425
17703 52314565
17704 46436525
17705 24123145
17706 12444665
17707 31452712
17710 21451221
17711 51441231
17712 45122143
17713 43122746
17714 44223145
17715 21633146
17716 45621246
17717 26124445
17720 25121212
17721 52314523
17722 51254425
17723 45633312
17724 63302512
17725 30465131
17726 71464563
17727 21431262
17730 23214725
17731 12316212
17732 26314521
17733 43124746
17734 62316331
17735 46457363

BCD INVOLVED IN MOVING AN ARM IN ALL COMBINATIONS OF ONE

BCD INCREMENT, THE HORIZONTAL SCALE IS FINAL POSITION, THE

DISCF TAP-3.0 04/25 20100 PAGE 246

17736 30251212
17737 52652551
17740 63312721
17741 43126223
17742 21432512
17743 31621263
17744 31442512
17745 31451244
17746 31434331
17747 62252373
17750 12264451
17751 25662151
17752 24122431
17753 51252763
17754 31464512
17755 52633144
17756 25621221
17757 51251231
17760 45243127
17761 21632524
17762 12227012
17763 21124743
17764 64627312
17765 31451263
17766 30251251
17767 25652551
17770 62251224
17771 31512523
17772 63314445
17773 52227012
17774 21124431
17775 45642273
17776 12214524
17777 12312612
20000 63312512
20001 26465125

BCD VERTICAL SCALE IS TIME IN MILLISEC, FORWARD DIRECTION

BCD TIMES ARE INDICATED BY A PLUS, IN THE REVERSE DIRECTION

BCD BY A MINUS, AND IF THE FORWARD AND REVERSE DIRECTION

20002 66215124
 20003 12214524
 20004 12512565
 20005 25516225
 20006 12243151
 20007 25236731
 20010 46451212
 20011 52633144
 20012 25621221
 20013 51251263
 20014 30251262
 20015 21442573
 20016 12227412
 20017 21122425
 20020 43632133
 20021 12633025
 20022 12233021
 20023 51631266
 20024 31434312
 20025 22251247
 20026 51314563
 20027 25241212
 20030 52464512
 20031 13302512
 20032 25515146
 20033 51122425
 20034 25316225
 20035 73122145
 20036 24126630
 20037 25451263
 20040 1 251247
 20041 51314563
 20042 25511231
 20043 12126462
 20044 25247312
 20045 13314431

BCD ' TIMES ARE THE SAME, BY A DELTA, THE CHART WILL BE PRINTED'

BCD ' ON THE ERROR DEVICE, AND WHEN THE PRINTER IS USED, TIMING'

20046 45271212
 20047 52314212
 20050 21474751
 20051 46673144
 20052 21632543
 20053 7 124445
 20054 25124431
 20055 45612151
 20056 44331226
 20057 14452263
 20060 31464512
 20061 15215131
 20062 11224225
 20063 10122151
 20064 25121212
 20065 22426221
 20066 51431221
 20067 45241225
 20070 45247312
 20071 14303123
 20072 31122151
 20073 25121263
 20074 11514331
 20075 45271221
 20076 45241225
 20077 45243145
 20100 27122431
 20101 12230212
 20102 52512562
 20103 47252263
 20104 31652543
 20105 70127400
 20106 36456444
 20107 22255136
 20110 13071240
 20111 12462263

BCD ' IS APPROXIMATELY ONE MIN/ARM, FUNCTION VARIABLES ARE'

BCD ' START AND END, WHICH ARE STARTING AND ENDING DISCS'

BCD ' RESPECTIVELY (04NUMBER*37 = OCTAL).!!

DISCP TAP=3.0 04/25 20100 PAGE 249

20112 21433433
20113 37121212

DISCP TAP=3.0 04/25 20100 PAGE 250

0000055 UTIME EQU 450
0000012 LTIME EQU 100
0000046 LINES EQU UTIME*LTIME*3
0001006 WORDS EQU LINES*170
00034000 TABLE EQU 34000
00035007 FTBLE EQU TABLE*WORDS*1
0000004 TENS EQU UTIME/100
0000005 UNITS EQU UTIME*TENS*100
02040000 HILBL EQU UNITS*100B*TENS*10000B+5200000B

FUNCTION 20 - MULTIPLE INCREMENT VS. TIME PLOTTER

```

*
*
*
*
20114 0 76 00404  FUNC20 LDA  DSCSIZ
20115 0 66 00017      RSH  150
20116 0 14 33426      ETR  *70
20117 0 54 15432      SUB  BIT23
20120 0 35 23327      STA  ENDISC
20121 0 35 23315      STA  VAR1
20122 0 43 00424  F20L1 BRM  FUNCTN
20123 0 20 20554      NOP  FPT20
20124 0 43 00454      BRM  REPORT      OUTPUT FUNCTION ID
20125 0 20 20566      NOP  FIM20
20126 0 43 23045      BRM  TERM        GO TO CONTROL
20127 0 43 00440      BRM  RETURN
20130 0 20 23351      NOP  ENTER
20131 0 76 23327      LDA  ENDISC
20132 0 73 23315      SKG  VAR1
20133 0 01 20135      BRU  *42
20134 0 43 00460      BRM  ERROR      HIGH ARM TOO LARGE
20135 0 20 33114      NOP  F20M1
20136 0 55 15432      ADD  BIT23
20137 0 73 23326      SKG  STDISC
20140 0 43 00460      BRM  ERROR      LOW ARM > HIGH ARM
20141 0 20 33122      NOP  F20M2
20142 0 76 23326      LDA  STDISC      ARM 1 FIRST ARM
20143 0 35 23316      STA  VAR2
20144 0 43 00430  STRTIT BRM  OBJECT
20145 0 43 20366      BRM  CLCHT
20146 0 43 20423      BRM  CHART
20147 0 43 20162      BRM  PLOT
20150 0 43 20541      BRM  FORT
20151 0 43 00454      BRM  REPORT
20152 4 20 33146      NOP  TITLE,4

```

```

20153 0 40 34000      NOP  TABLE
20154 0 43 00434  ENDIT BRM  END
20155 0 01 23316      *IN  VAR2
20156 0 76 23316      LDA  VAR2
20157 0 73 23327      SKG  ENDISC
20160 0 01 20144      BRU  STRTIT
20161 0 01 20122      BRU  F20L1

```

DISCF TAP=3.0 04/25 20100 PAGE 253

20162	0 00 00000	PLBT	PZE		
20163	0 75 33272		LDB	#0	POTWRD = CURRENT ARM TO PDS 0
20164	0 76 23316		LDA	VAR2	
20165	0 47 00015		LSH	130	
20166	0 43 23022		BRM	DISCCK	USE THIS DISC
20167	0 01 20154		BRU	ENDIT	NO
20170	0 40*10126		SKS*	10126	DISC FILE READY TEST
20171	0 01 20170		BRU	**1	
20172	0 06 10126		EOD	10126	ALERT DISC FILE
20173	0 13 23332		PBT	PBTWRD	
20174	0 35 23317		STA	VAR3	VAR3 = PBT WORD FOR PDS 0
20175	0 76 33272		LDA	#0	
20176	0 35 23320		STA	VAR4	
20177	0 76 15432		LDA	BIT23	
20200	0 35 23321		STA	VAR5	
20201	0 76 33272	PLBT1	LDA	#0	
20202	0 35 23322		STA	VAR6	
20203	0 35 23320		STA	VAR4	
20204	0 76 33273		LDA	**1	
20205	0 35 23323		STA	VAR7	PRESET VAR7 AND VAR8
20206	0 76 33257		LDA	#5000	
20207	0 35 23324		STA	VAR8	
20210	0 40*10126		SKS*	10126	DISC FILE READY TEST
20211	0 01 20210		BRU	**1	
20212	0 75 33272		LDB	#0	
20213	0 76 23322		LDA	VAR6	
20214	0 67 00007		LSH	7	
20215	0 16 23317		MRG	VAR3	
20216	0 35 23332		STA	PBTWRD	
20217	0 06 10126		EOD	10126	ALERT DISC FILE
20220	0 13 23332		PBT	PBTWRD	
20221	0 74 23320	PLBT2	LDA	VAR4	
20222	0 55 23321		ADD	VAR5	
20223	0 73 33306		SKG	#77	ROOM TO MOVE ANOTHER INCREMENT
20224	0 01 20226		BRU	**2	YES
20225	0 01 20306		BRU	PLBT3	

DISCF TAP=3.0 04/25 20100 PAGE 254

20226	0 35 23320		STA	VAR4	
20227	0 75 33272		LDB	#0	
20230	0 67 00007		LSH	7	
20231	0 16 23317		MRG	VAR3	
20232	0 35 23332		STA	PBTWRD	
20233	0 71 15414		LDX	BIT9	
20234	0 40*10126		SKS*	12126	TRACK VERIFIED TEST
20235	0 01 20237		BRU	**2	
20236	0 01 20244		BRU	PLBT2B	
20237	0 67 20060		LCY	48D	
20240	0 67 20060		LCY	48D	
20241	0 67 20060		LCY	48D	
20242	0 41 20234		BRX	PLBT2A	
20243	0 01 20533		BRU	VERERR	
20244	0 06 10126		EOD	10326	CLEAR FILE
20245	0 40*10126		SKS*	10126	DISC FILE READY TEST
20246	0 01 20245		BRU	**1	
20247	0 06 10126		EOD	10126	ALERT DISC FILE
20250	0 13 23332		PBT	PBTWRD	
20251	0 76 33272		LDA	#0	
20252	0 67 20060	TMIT	LCY	48D	TIME MOVEMENT
20253	0 71 33444		LDX	**450	TIMING = 500 US. PER LOOP
20254	0 67 20060		LCY	48D	
20255	0 41 20254		BRX	**1	
20256	0 55 15432		ADD	BIT23	
20257	0 73 33447		SKG	#10000	HAS 500 MS ELAPSED YET
20260	0 01 20262		BRU	**2	NO
20261	0 01 20533		BRU	VERERR	
20262	0 40*10126		SKS*	12126	TRACK VERIFIED TEST
20263	0 01 20252		BRU	TMIT	
20264	0 55 33453		ADD	#100	ROUND OFF TO NEAREST 10 MS.
20265	0 66 00002		RSH	2	DIVIDE BY 2
20266	0 75 33273		LDB	**1	INITIALIZE COUNTER
20267	0 36 23310		STB	TEMP	
20270	0 61 23310	TMIT1	MIN	TEMP	SIMULATE DIVIDE BY 2
20271	0 54 33450		SUB	#5	

DISCF TAP=3.0 04/25 20100 PAGE 255

20272	0 72	15403	SKA	BIT0
20273	0 01	20275	BRU	**2
20274	0 01	20270	BRU	TMIT1
20275	0 74	23310	LDA	TEMP
20276	0 73	23323	SKG	VAR7
20277	0 01	20301	BRU	**2
20300	0 35	23323	STA	VAR7
20301	0 73	23324	SKG	VAR8
20302	0 35	23324	STA	VAR8
20303	0 40	20040	SKS	20040
20304	0 43	23045	BRM	TERM
20305	0 01	20221	BRU	PL0T2
20306	0 61	23322	PL0T3 MIN	VAR6
20307	0 76	23322	LDA	VAR6
20310	0 75	23373	LDB	*77777777
20311	0 70	23341	SKM	VAR5
20312	0 01	20314	BRU	**2
20313	0 01	20323	BRU	PL0T4
20314	0 55	23321	ADD	VAR5
20315	0 73	23306	SKG	*77
20316	0 01	20320	BRU	**2
20317	0 01	20323	BRU	PL0T4
20320	0 76	23322	LDA	VAR6
20321	0 35	23320	STA	VAR4
20322	0 01	20210	BRU	PL0T1A
20323	0 43	20251	PL0T4 BR	ENTIM
20324	0 61	23321	MIN	VAR5
20325	0 76	23321	LDA	VAR5
20326	0 73	23306	SKG	*77
20327	0 01	20201	BRU	PL0T1
20330	0 40	10126	SKS*	10126
20331	0 01	20330	BRU	**1
20332	0 76	23317	LDA	VAR3
20333	0 35	23332	STA	POSTARD
20334	0 06	10126	E0D	10126
20335	0 13	23332	P0T	POSTARD

GET QUBTIENT
CHANGE VAR7 OR VAR8 IF APPROPRIATE

BREAKPOINT 4 TEST
GO TO CONTROL

LAST PASS THIS INCREMENT VALUE
NO

ENTER VAR7 AND VAR8 INTO CHART

LAST INCREMENT VALUE
NO
DISC FILE READY TEST

ALERT DISC FILE

DISCF TAP=3.0 04/25 20100 PAGE 256

20336	0 74	23454	LDX	*40000
20337	0 40	10126	SKS*	10126
20340	0 01	20342	BRU	**2
20341	0 01	20347	BRU	PL0T4B
20342	0 67	20060	LCY	48D
20343	0 67	20060	LCY	48D
20344	0 67	20060	LCY	48D
20345	0 01	20337	BRX	PL0T4A
20346	0 01	20333	BRU	VERERR
20347	0 06	10126	E0D	10326
20350	0 51	20162	BRR	PL0T

TRACK VERIFIED TEST

CLEAR FILE

DISCF TAP=3.0 04/25 20100 PAGE 257

20351	0 00 00000	FNTIM	PZE		
20352	0 76 23323		LDA	VAR7	
20353	0 73 33455		SKG	#UTIME	VAR7 > 450MS
20354	0 01 20356		HRI	#+2	
20355	0 76 33455		LDA	#UTIME	YES = ENTER 450MS INTO CHART
20356	0 43 2 374		BRM	PUT	
20357	0 76 33324		LDA	VAR8	
20360	0 73 33453		SKG	#LTIME	VAR8 < 100MS
20361	0 76 33453		LDA	#LTIME	YES
20362	0 75 33273		LDB	#+1	
20363	0 70 23323		SKM	VAR7	VAR7 = VAR8
20364	0 43 2 374		BRM	PUT	NO = ENTER VAR8 INTO CHART
20365	0 51 20351		BRR	ENTIM	

20366	0 00 00000	CLCHT	PZE	0	CLEAR CHART
20367	0 71 33456		LDX	#WORDS=1	
20370	0 76 33432		LDA	#60606060	
20371	0 35 35207		STA	ETBLE#2	
20372	0 41 20371		BRX	#+1	
20373	0 51 20366		BRR	CLCHT	

DISCF TAP=3.0 04/25 20100 PAGE 258

20374	0 00 00000	PUT	PZE	0	A = NO OF SMS COUNTS
20375	0 35 20311		STA	TEMPA	
20376	0 76 33455		LDA	#UTIME	
20377	0 54 20311		SUB	TEMPA	TEMPA = NO OF LINES FROM TOP
20400	0 35 20311		STA	TEMPA	
20401	0 75 33272		LDB	#0	
20402	0 67 0 004		LSH	4	
20403	0 55 20311		ADD	TEMPA	TEMPA = FIRST WORD OF CORRECT LINE
20404	0 35 20311		STA	TEMPA	= EQUALS LINES * 170
20405	0 76 23321		LDA	VAR6	
20406	0 67 0 002		RSH	2	A = HORIZONTAL DEFLECTION
20407	0 55 20311		ADD	TEMPA	ADD VERTICAL COMPONENT
20410	0 55 33337		ADD	#TABLE	ADD ADDRESS BIAS
20411	0 55 10432		ADD	BIT#3	ADD 1 WORD TO CLEAR Y=AXIS WORD
20412	0 35 20325		STA	VAR9	
20413	0 76 33272		LDA	#0	
20414	0 67 0 002		LSH	2	A = CHARACTER IN WORD TO BE CHANGED
20415	0 35 20311		STA	TEMPA	
20416	0 71 20311		LDX	TEMPA	
20417	0 76 20362		LDA	VARC#2	
20420	0 17 20325		EOR	VAR6	ALTER WORD
20421	0 35 20325		STA	VAR9	STORE WORD IN TABLE
20422	0 51 20374		BRR	PUT	

DISCP TAP-3.0 04/25 20100 PAGE 259

20423	0 00 00000	CHART	PZE		
20424	0 71 33272		LDX	#0	
20425	0 75 33457		LDB	#1700	
20426	0 76 33460		LDA	#LINES=4	
20427	0 35 15453		STA	COUNT	
20430	0 76 33461		LDA	#HILBL	
20431	0 35 23311	CHART1	STA	TEMPA	MAKE UP VERTICAL AXIS
20432	0 76 33435		LDA	#052606054	
20433	2 35 34000		STA	TABLE,2	
20434	0 76 23311		LDA	TEMPA	
20435	0 70 33272		SKM	#0	
20436	0 01 20440		BRU	**2	
20437	2 35 34000		STA	TABLE,2	
20440	0 70 33462		SKM	#500	
20441	0 01 20443		BRU	**2	
20442	2 35 34000		STA	TABLE,2	
20443	0 54 15424		SUB	BIT17	
20444	0 72 33436		SKA	#6000	
20445	0 54 33437		SUB	#6600	
20446	2 77 00021		EAX	17D,2	
20447	0 60 15453		SKR	COUNT	
20450	0 01 20451		BRU	**1	
20451	0 53 15453		SKN	COUNT	
20452	0 01 20431		BRU	CHART1	
20453	0 76 33463		LDA	#52010000	MAKE UP HORIZONTAL AXIS
20454	2 35 34000		STA	TABLE,2	
20455	0 76 33274		LDA	#7	
20456	0 35 15453		STA	COUNT	
20457	2 77 00001	CHART2	EAX	1,2	
20460	0 76 33440		LDA	#54545454	
20461	2 35 34000		STA	TABLE,2	
20462	2 77 00001		EAX	1,2	
20463	2 35 34000		STA	TABLE,2	
20464	0 60 15453		SKR	COUNT	
20465	0 01 20466		BRU	**1	
20466	0 53 15453		SKN	COUNT	

DISCP TAP-3.0 04/25 20100 PAGE 260

20467	0 01 20457		BRU	CHART2	
20470	2 77 00001		EAX	1,2	
20471	0 76 33441		LDA	#52606060	MAKE UP HORIZONTAL SCALE
20472	2 35 34000		STA	TABLE,2	
20473	0 76 33274		LDA	#7	
20474	0 35 15453		STA	COUNT	
20475	0 76 33442		LDA	#00606060	
20476	0 75 33432		LDB	#60606060	
20477	2 77 00001	CHART3	EAX	1,2	
20500	2 35 34000		STA	TABLE,2	
20501	2 77 00001		EAX	1,2	
20502	2 36 34000		STB	TABLE,2	
20503	0 58 15410		ADD	BIT5	
20504	0 01 15453		SKR	COUNT	
20505	0 01 20506		BRU	**1	
20506	0 53 15453		SKN	COUNT	
20507	0 01 20477		BRU	CHART3	
20510	2 77 00001		EAX	1,2	
20511	0 76 33441		LDA	#52606060	
20512	2 35 34000		STA	TABLE,2	
20513	0 76 33274		LDA	#7	
20514	0 35 15453		STA	COUNT	
20515	2 77 00001	CHART4	EAX	1,2	
20516	0 76 33443		LDA	#10203	
20517	2 35 34000		STA	TABLE,2	
20520	2 77 00001		EAX	1,2	
20521	0 58 33464		ADD	#04040404	
20522	2 35 34000		STA	TABLE,2	
20523	0 60 15453		SKR	COUNT	
20524	0 01 20525		BRU	**1	
20525	0 53 15453		SKN	COUNT	
20526	0 01 20515		BRU	CHART4	
20527	2 77 00001		EAX	1,2	
20530	0 76 33465		LDA	#37121212	ADD TERMINAL CHARACTER
20531	2 35 34000		STA	TABLE,2	
20532	0 51 20423		BRR	CHART	

DISCP TAP=3.0 04/25 20100 PAGE 261

20533	0 43 20541	VERERR	BRM	FORT
20534	0 43 00460		BRM	ERROR
20535	4 20 33127		NBP	F20M3,4
20536	0 20 33153		NBP	TITLE1
20537	0 06 10926		EDD	10326
20540	0 01 20154		BRU	ENDIT
20541	0 00 00000	FORT	PZE	0
20542	0 75 33272		LDB	#0
20543	0 76 23316		LDA	VAR2
20544	0 67 00003		LSH	3
20545	0 14 33367		ETR	#700
20546	0 16 23316		MRG	VAR2
20547	0 14 33427		ETR	#707
20550	0 67 00014		LSH	12D
20551	0 16 33430		MRG	#3737
20552	0 35 33153		STA	TITLE1
20553	0 51 20541		BRR	FORT

CLEAR FILE

PUT ARM NUMBER INTO BCD

DISCP TAP=3.0 04/25 20100 PAGE 262

FUNCTION PARAMETER TABLES

20554	0 20 20566	FPT20	NBP	FIM20	FUNCTION IDENTIFIER MESSAGE
20555	0 20 20600		NBP	FAM20	FUNCTION ABSTRACT MESSAGE
20556	0 20 17107		NBP	FVM1R	FUNCTION VARIABLES MESSAGE
20557	0 02 23326		TWS	STDISC	FUNCTION VARIABLES POINTER
20560	0 00 21100		PZE	FUNC21	POINTER TO NEXT FUNCTION
20561	00000010		DATA	10	FUNCTION IDENTIFIER BIT (BIT 20)

FUNCTION MESSAGES

20562	34000000	NBRD	DATA	3486,3484,3+R2,3*
20563	00340000			
20564	00003400			
20565	00000334			

FIM20 BCD 1 F 20 = ARM MOVEMENT VS. TIME PLOTTER 1

20566	52261002			
20567	00124012			
20570	21514412			
20571	44460525			
20572	44254563			
20573	12650033			
20574	12633144			
20575	05124743			
20576	46630725			
20577	01371212			
20600	52322451	FAM20	BCD	1 ARM MOVEMENT VS. TIME PLOTTER, 1
20601	44124446			
20602	45254425			
20603	44630565			
20604	02331263			
20605	31442512			
20606	47434663			
20607	63255133			
20610	52121212			

2.611	82633031	BCD	THIS ROUTINE TIMES ARE MOVEMENTS IN MILLISEC AND PLATO
2.612	82125146		
2.613	84633145		
2.614	85126231		
2.615	44256012		
2.616	81514412		
2.617	44466225		
2.620	44256163		
2.621	82123145		
2.622	12443143		
2.623	43316225		
2.624	84126145		
2.625	84124743		
2.626	84633012		
2.627	80433025	BCD	THE HIGH AND LOW TIMES VERSES INCREMENTS MOVED BY A1
2.630	12307127		
2.631	82126145		
2.632	84124746		
2.633	84126231		
2.634	44256012		
2.635	82556162		
2.636	85621031		
2.637	44235125		
2.640	44256163		
2.641	82124446		
2.642	82556012		
2.643	44651021		
2.644	52234021	BCD	CHART. THE HORIZONTAL SCALE OF THE CHART IS NUMBER OF I
2.645	11633012		
2.646	83307012		
2.647	81465131		
2.650	71466163		
2.651	81431062		
2.652	82214025		
2.653	12462612		
2.654	83307012		

2.655	12307127		
2.656	83123162		
2.657	12466044		
2.660	12255112		
2.661	46261012		
2.662	81314523	BCD	INCREMENTS MOVED, AND THE VERTICLE SCALE IS MILLISEC.
2.663	81254425		
2.664	45630012		
2.665	44466225		
2.666	74731021		
2.667	45241062		
2.670	81251065		
2.671	84510231		
2.672	12430712		
2.673	82222143		
2.674	85123162		
2.675	12440143		
2.676	43316225		
2.677	83307012		
2.700	82310612	BCD	IF A SEEK OR SEARCH TIME ERROR OCCURS (500 MILLISEC
2.701	81126225		
2.702	84401046		
2.703	81126225		
2.704	81510230		
2.705	12633144		
2.706	85122651		
2.707	81465112		
2.710	46232364		
2.711	81256012		
2.712	74651000		
2.713	12443143		
2.714	43316225		
2.715	83121012		
2.716	82316012	BCD	IS ALLOWED), THE OPERATION IS ABORTED AND AN ERROR MSJ
2.717	81431046		
2.720	84255134		

DISCF TAP=3.0 04/25 20100 PAGE 265

20721 73126930
20722 25124447
20723 25512163
20724 3146441P
20725 31621221
20726 22466163
20727 25241221
20730 45241221
20731 45122551
20732 51466112
20733 44622712
20734 52316212
20735 47513145
20736 63252433
20737 52121212
20740 52633025
20741 51251221
20742 51251263
20743 66461226
20744 64452363
20745 31464412
20746 65215131
20747 21224325
20750 62731262
20751 63215163
20752 12214524
20753 12254524
20754 33121212
20755 52626321
20756 51631231
20757 62124751
20760 25622563
20761 12634612
20762 00000012
20763 21452412
20764 25452412

BCD ' IS PRINTED. '

BCD ' THERE ARE TWO FUNCTION VARIABLES, START AND END. '

BCD ' START IS PRESET TO 000 AND END IS PRESET BY THE '

DISCF TAP=3.0 04/25 20100 PAGE 266

20765 31621247
20766 51256225
20767 63122270
20770 12633025
20771 52627462
20772 63254412
20773 65215131
20774 21224325
20775 1240246P
20776 23623171
20777 40331263
21000 30256225
21001 12652151
21002 31212243
21003 25621244
21004 21701222
21005 25126225
21006 63121212
21007 52634612
21010 62254325
21011 23631221
21012 45701223
21013 46442231
21014 45216331
21015 46451246
21016 26122346
21017 45622523
21020 64633165
21021 25122151
21022 44623312
21023 63302512
21024 52512145
21025 27251226
21026 46511262
21027 63215163
21030 12214524

BCD ' SYSTEM VARIABLE #DSCSIz# THESE VARIABLES MAY BE SET'

BCD ' TO SELECT ANY COMBINATION OF CONSECUTIVE ARMS, THE'

BCD ' RANGE FOR START AND END IS 0<NUMBER<37. '

DISCF TAP-3.0 04/25 20100 PAGE 267

21031 12254524
21032 12316212
21033 00364564
21034 44222551
21035 36030733
21036 52121212
21037 52633144
21040 31452712
21041 26465112
21042 25212330
21043 12243162
21044 23123162
21045 12214747
21046 51466731
21047 44216325
21050 43701202
21051 00124431
21052 45646325
21053 62331212
21054 52216312
21055 63302512
21056 23464447
21057 43256331
21060 46451246
21061 26126330
21062 25124321
21063 62631221
21064 51447312
21065 23464563
21066 51464312
21067 66314343
21070 12222512
21071 52512563
21072 64514525
21073 24126346
21074 12633025

BCD . TIMING FOR EACH DISC IS APPROXIMATELY 20 MINUTES. .

BCD . AT THE COMPLETION OF THE LAST ARM, CONTROL WILL BE .

BCD . RETURNED TO THE EXECUTIVE. . .

DISCF TAP-3.0 04/25 20100 PAGE 268

21075 12256725
21076 23644331
21077 65253337

```

*
*
*   FUNCTION 21 - WRITE HEADERS
*
21100 0 76 33272 FUNC21 LDA #0          PRESET STDISC AND ENDISC
21101 0 35 23326 STA STDISC
21102 0 76 00404 LDA DSCSIZ
21103 0 66 00017 RSH 15D
21104 0 14 33426 ETR #70
21105 0 54 15432 SUB BIT23
21106 0 67 00015 LSH 13D
21107 0 16 33315 MRG #17777
21110 0 35 23327 STA ENDISC
21111 0 43 00424 F21E2 BRM FUNCTN      SET FUNCTION LINKS
21112 0 20 21233 NOP FPT21
21113 0 43 00454 BRM REPORT          OUTPUT FUNCTION ID
21114 0 20 21241 NOP FIM21
21115 0 43 23045 BRM TERM           GO TO CONTROL
21116 0 43 00440 BRM RETURN        SET INTERRUPT AND TRAP LINKAGES
21117 0 20 23351 NOP ENTER
21120 0 76 23326 LDA STDISC
21121 0 14 33466 ETR #777600       START AT HEADPAIR AND SECTOR ZERO
21122 0 35 23326 STA STDISC
21123 0 76 23327 LDA ENDISC
21124 0 14 33326 ETR #777777
21125 0 35 23327 STA ENDISC
21126 0 73 23376 SKG STDISC        ENDISC > STDISC
21127 0 43 00460 BRM ERROR        NO
21130 0 20 33154 NOP F21M1
21131 0 76 23326 LDA STDISC
21132 0 35 23312 STA TEMPB        SET STARTING DISC ADDRESS
*
*   BUILD INTERLACE PBT WORD
*
21133 0 76 23312 F21E0 LDA TEMPB      CHECK FOR LAST TRACK

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21134 0 16 33307 MRG #177
21135 0 65 15432 ADD BIT23
21136 0 73 23327 SKG ENDISC        LAST TRACK
21137 0 61 21150 BRU F21E1        NO
21140 0 76 23327 LDA ENDISC        YES - PICK UP SECTOR COUNT
21141 0 54 23312 SUB TEMPB
21142 0 65 15432 ADD BIT23
21143 0 75 33272 LDB #0
21144 0 67 00016 LSH 14D
21145 0 16 33337 MRG #STADDR
21146 0 35 23311 STA TEMPB
21147 0 61 21152 BRU F21E1*2
21150 0 76 33347 F21F1 LDA #1B7*STADDR  AC = 128D, ADDR = STADDR
21151 0 35 23311 STA TEMPB
*
*   BUILD HEADER TABLE
*
21152 0 76 23312 LDA TEMPB
21153 0 75 33272 LDB #0
21154 0 67 00006 LSH 6
21155 0 71 33467 LDX #*128D
21156 0 35 34200 STA STADDR+128D,2
21157 0 65 15424 ADD BIT17
21160 0 41 21156 BRX #*2
*
*   DISC DRIVER
*
21161 0 43 00430 BRM OBJECT
21162 0 62 20004 JIR
21163 0 40*10326 SKS# 10326      DISABLE INTERRUPTS
21164 0 43 00460 BRM ERROR      FILE ON LINE TEST
21165 0 20 33161 NOP F21M2          FILE NOT ON LINE
21166 0 40*10126 SKS# 10126      DISC FILE READY TEST
21167 0 41 21166 BRU #*1          FILE NOT READY
21170 0 40*14126 SKS# 14126      WRITE HEADER TEST
21171 0 61 21173 BRU #*2

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DISCF TAP#3.0 04/25 20100 PAGE 271

21172	C 43 00460	BRM	ERROR	HEADER SWITCH NOT UP
21173	C 20 33166	NBP	F21M3	
21174	C 40*14100	SKS*	14100	CHANNEL ACTIVE TEST
21175	C 01 21174	BRU	**1	CHANNEL ACTIVE
21176	C 06 10126	EBD	10126	ALERT DISC FILE
21177	C 13 23312	PBT	TEMPB	
21200	C 0A*10100	EOD*	10100	ALERT CHANNEL
21201	C 06 14200	EOD	14200	EXTENDED MODE EOD
21202	C 13 23311	PBT	TEMPA	
21203	C 06 02766	EOD	2766	WRITE DISC FILE - CHAIN
21204	C 40*14100	SKS*	14100	CHANNEL ACTIVE TEST
21205	C 01 21204	BRU	**1	WAIT FOR CHANNEL INACTIVE
21206	C 40*12100	SKS*	12100	CHANNEL ZERO WORD COUNT TEST
21207	C 43 00460	BRM	ERROR	WORD COUNT NOT ZERO
21210	C 20 33175	NBP	F21M4	
21211	C 40*13126	SKS*	13126	DISC WRITE PROTECT TEST
21212	C 43 00460	BRM	ERROR	DISC WRITE PROTECTED
21213	C 20 33205	NBP	F21M5	
21214	C 40*11100	SKS*	11100	CHANNEL ERROR TEST
21215	C 43 00460	BRM	ERROR	CHANNEL ERROR SET
21216	C 20 33213	NBP	F21M6	
21217	C 40*11126	SKS*	11126	DISC FILE ERROR TEST
21220	C 43 00460	BRM	ERROR	CONTROLLER ERROR SET
21221	C 20 33217	NBP	F21M7	
21222	C 43 00434	BRM	END	
21223	C 76 23312	LDA	TEMPB	UPDATE DISC ADDRESS
21224	C 55 15423	ADD	BIT16	
21225	C 35 23312	STA	TEMPB	
21226	C 76 23327	LDA	ENDISC	
21227	C 73 23312	SKG	TEMPB	ENDISC > TEMPB
21230	C 01 21232	BRU	**2	NO - EXIT
21231	C 01 21133	BRU	F21E0	
21232	C 01 21111	BRU	F21E2	

DISCF TAP#3.1 04/25 20100 PAGE 272

				FUNCTION TABLES	
21233	C 20 21241	FPT21	NBP	FIM21	FUNCTION IDENTIFIER MESSAGE
21234	C 20 21251		NBP	FAM21	FUNCTION ABSTRACT MESSAGE
21235	C 20 17107		NBP	FVM18	FUNCTION VARIABLE MESSAGE
21236	C 12 23326		TAB	STDISC	FUNCTION VARIABLE TABLE
21237	C 00 21273		PZE	FUNC22	LINK TO FUNCTION 22
21240	C 00000004		DATA	4	FUNCTION IDENTIFIER - BIT 21
				FUNCTION MESSAGES	
21241	52261002	FIM21	BCD	1 F 21 - WRITE HEADER ROUTINE 1	
21242	01124012				
21243	64513163				
21244	25122025				
21245	21242051				
21246	02514664				
21247	63314525				
21250	37121012				
21251	32320451	FAM21	BCD	1 WRITE HEADER ROUTINE 1	
21252	31630412				
21253	30250174				
21254	04511051				
21255	44644031				
21256	43255012				
21257	52633031	BCD		1 THIS SPECIAL FUNCTION WILL WRITE THE HEADERS 6N1	
21260	02126247				
21261	25233071				
21262	43120464				
21263	45230031				
21264	46451266				
21265	31434012				
21266	64513163				
21267	25126330				
21270	25122025				

21271	21242551		
21272	62124645		
21273	52622550	BCD	! SEQUENTIAL TRACKS ACCORDING TO THE FUNCTION VARIABLES!
21274	54254553		
21275	31214712		
21276	63512123		
21277	42621221		
21300	23234651		
21301	24314527		
21302	12634612		
21303	63302512		
21304	26644523		
21305	63314645		
21306	12652151		
21307	31212243		
21310	25621212		
21311	52626721	BCD	! START AND END, THESE VARIABLES ARE IN THE FORM OF THE!
21312	51631221		
21313	45241225		
21314	45243312		
21315	63302562		
21316	25126521		
21317	51312122		
21320	43256212		
21321	21512512		
21322	31451263		
21323	30251224		
21324	46514412		
21325	46261263		
21326	30251212		
21327	52243162	BCD	! DISC PGT WORDS.!
21330	23124746		
21331	63126646		
21332	51246233		
21333	52626321	BCD	! START SHOULD HAVE AN ADDRESS WITH SECTOR 0, HEAD!
21334	51631262		

21335	20466443		
21336	24123021		
21337	65251221		
21340	45122124		
21341	24512562		
21342	62126631		
21343	63301262		
21344	25236346		
21345	51126073		
21346	12302521		
21347	24121212		
21350	52472131	BCD	! PAIR 0, I.E. 777600 WOULD BE DISC 37, POSITION!
21351	51120033		
21352	12313325		
21353	33120707		
21354	70600000		
21355	12664664		
21356	43241222		
21357	25122431		
21360	62231203		
21361	07731247		
21362	46623163		
21363	31464512		
21364	52070773	BCD	! 77, HEAD PAIR 0, SECTOR 0,!!
21365	12302521		
21366	24124721		
21367	51511200		
21370	73126225		
21371	23634651		
21372	12003337		

DISCF TAP=3.0 04/25 20100 PAGE 277

•
• FUNCTION TABLES

21471	0 20 21477	FPT22	NOP	FIM22	FUNCTION IDENTIFIER MESSAGE
21472	0 20 21506		NOP	FAM22	FUNCTION ABSTRACT MESSAGE
21473	0 20 17107		NOP	FVM18	FUNCTION VARIABLE MESSAGE
21474	0 02 23326		TWB	STDISC	FUNCTION VARIABLE TABLE
21475	0 00 21762		PZE	FUNC23	LINK TO NEXT FUNCTION
21476	00000002		DATA	?	FUNCTION IDENTIFIER = BIT 22

•
• FUNCTION MESSAGES

21477	52261202	FIM22	BCD	' F 22 = WRITE HEADER TEST !'
21500	02174012			
21501	66513163			
21502	25123025			
21503	21242551			
21504	12632562			
21505	63371212			
21506	52326651	FAM22	BCD	' WRITE HEADER TEST !'
21507	31632012			
21510	30252124			
21511	25511263			
21512	25626352			
21513	52633025	BCD		' THE PURPOSE OF THIS SPECIAL FUNCTION IS TO PROVIDE'
21514	12476451			
21515	47462225			
21516	12462612			
21517	63303162			
21520	12624725			
21521	23312143			
21522	12266445			
21523	23633146			
21524	45123162			
21525	12634612			
21526	47514665			

DISCF TAP=3.0 04/25 20100 PAGE 278

21527	31242512			
21530	52633025	BCD		' THE OPERATOR WITH A TOOL FOR USE IN LOCATING PROBL'
21531	12464725			
21532	51216246			
21533	51126631			
21534	63301221			
21535	12634646			
21536	43122646			
21537	51126662			
21540	25123145			
21541	12434423			
21542	21633145			
21543	27124751			
21544	46224012			
21545	52432244	BCD		' LEMS ENCOUNTERED DURING HEADER WRITING. NO ATTEMPT'
21546	62122245			
21547	23466445			
21550	63255125			
21551	24122464			
21552	51314527			
21553	12302521			
21554	24255112			
21555	66513163			
21556	31457733			
21557	12454612			
21560	21637325			
21561	44476312			
21562	52316212	BCD		' IS MADE TO DIAGNOSE ERRORS. HOWEVER, THE FOLLOWING'
21563	44212425			
21564	12634612			
21565	24312127			
21566	45466225			
21567	12255151			
21570	46516233			
21571	12304666			
21572	25652651			

DISCF TAP=3.0 04/25 20:00 PAGE 279

21573	73126330		
21574	25122446		
21575	43434666		
21576	31452712		
21577	52255151	BCD	' ERROR CONDITIONS WILL BE TYPED;'
21600	46511223		
21601	46442431		
21602	63314445		
21603	62126631		
21604	43431222		
21605	25126370		
21606	47252415		
21607	52263143	BCD	' FILE NOT ON LINE'
21610	25124546		
21611	63124445		
21612	12433145		
21613	25121212		
21614	52302521	BCD	' HEADER SWITCH DOWN'
21615	24255112		
21616	62663163		
21617	43301224		
21620	46664512		
21621	52243162	BCD	' DISC WRITE PROTECTED'
21622	23126651		
21623	31632512		
21624	47514663		
21625	25236725		
21626	24121212		
21627	52233221	BCD	' CHANNEL ERROR'
21630	45452543		
21631	12255151		
21632	46511212		
21633	52234445	BCD	' CONTROLLER ERROR.'
21634	43514443		
21635	43255112		
21636	25515146		

DISCF TAP=3.0 04/25 20:00 PAGE 280

21637	51331212		
21640	52266445	BCD	' FUNCTION VARIABLES ARE START AND END, (STARTING'
21641	23633146		
21642	45122521		
21643	51311222		
21644	43254212		
21645	21512512		
21646	62632151		
21647	43122145		
21650	24122545		
21651	24731274		
21652	62632151		
21653	43314527		
21654	52214524	BCD	' AND ENDING DISC ADDRESSES, RESPECTIVELY). THE SAME'
21655	12254524		
21656	31452712		
21657	24316223		
21660	12211424		
21661	51251262		
21662	25627312		
21663	51251247		
21664	25236731		
21665	45254720		
21666	34331263		
21667	40251262		
21670	21442512		
21671	52262151	BCD	' VARIABLES WILL BE USED UNTIL BREAKPOINT ONE IS RE-'
21672	31212243		
21673	25621266		
21674	31434712		
21675	22251264		
21676	62252412		
21677	64456331		
21700	43122751		
21701	25214247		
21702	46314563		

DISCF TAP-3.0 04/25 20100 PAGE 281

21703	12464525		
21704	12316212		
21705	51254012		
21706	52422563	BCD	' SET; AT WHICH PRINT AN END MESSAGE IS TYPED. FUNC.'
21707	73122163		
21710	12663031		
21711	23301247		
21712	46314463		
21713	12214512		
21714	25452412		
21715	44256262		
21716	21272512		
21717	31621263		
21720	70472524		
21721	33122664		
21722	45234012	BCD	' TION VARIABLES MAY NOW BE CHANGED OR ANOTHER FUNC.'
21723	52633146		
21724	45126521		
21725	51312122		
21726	43246212		
21727	44217012		
21730	45466612		
21731	22251223		
21732	30214527		
21733	25241246		
21734	51122145		
21735	46633025		
21736	51122664		
21737	45234012		
21740	52633146	BCD	' TION OR UNIT MAY BE ACCESSED. MAXIMUM SECTOR COUNT'
21741	45124651		
21742	12644531		
21743	63124421		
21744	70122025		
21745	12212423		
21746	25626025		

DISCF TAP-3.0 04/25 20100 PAGE 282

21747	24331244		
21750	21673144		
21751	64441262		
21752	25236346		
21753	51122346		
21754	64456312		
21755	52316212	BCD	' IS 177 (OCTAL).''
21756	51070712		
21757	74462363		
21760	21433433		
21761	37121212		

FUNCTION 23 - SECTOR DUMP

21762	0 43 00424	FUNC23 BRM	FUNCTN	FUNCTION LINK
21763	0 20 22051	NOP	FRT23	
21764	0 43 00440	BRM	RETURN	SET INTERRUPT LINKAGE
21765	0 20 23351	NOP	ENTER	
21766	0 02 20004	DIR		DISABLE INTERRUPTS
21767	0 43 00430	BRM	OBJECT	OBJECT LINK
21770	0 43 00454	BRM	REPRT	OUTPUT FUNCTION IDENTIFIER
21771	0 20 22057	NOP	FIM23	
21772	0 43 23045	BRM	TERM	GO TO CONTROL

DRIVE DISC

21773	0 43 00430	BRM	OBJECT	
21774	0 43 00440	BRM	RETURN	SET INTERRUPT LINKAGE
21775	0 20 23351	NOP	ENTER	
21776	0 76 23326	LDA	STDISC	SET DISC ADDRESS
21777	0 35 23332	STA	PRTADR	
22000	0 43 23153	BRM	PRTOUT	PRT TO DISC
22001	0 01 22046	BRU	F23E1	ERROR ABORT
22002	0 06 00100	EBD	100	DISCONNECT CHANNEL
22003	0 06*10100	EBD*	10100	ALERT CHANNEL
22004	0 06 14000	EBD	14000	EXTENDED MODE EBD
22005	0 13 33471	PBT	*486*STADDR	*C # 64
22006	0 06 03726	EBD	3726	READ DISC FILE - SECTOR
22007	0 43 23123	BRM	*A17	*WAIT FOR CONTROLLER READY
22010	0 01 22046	BRU	F23E1	ERROR ABORT
22011	0 40*11100	SKS*	11100	CHANNEL ERROR TEST
22012	0 01 22014	BRU	**2	CHANNEL ERROR SET
22013	0 01 22017	BRU	**4	
22014	0 43 00460	BRM	ERROR	
22015	0 20 23067	NOP	U19M8	

22016	0 01 22046	BRU	F23E1	
22017	0 40*12100	SKS*	12100	CHANNEL ZERO WORD COUNT TEST
22020	0 01 22022	BRU	**2	WORD COUNT NOT ZERO
22021	0 01 22025	BRU	**4	
22022	0 43 00460	BRM	ERROR	
22023	0 20 23441	NOP	U19M13	
22024	0 01 22046	BRU	F23E1	
22025	0 43 23053	BRM	CHECK	CHECK FOR CHANNEL INACTIVE
22026	0 01 22046	BRU	F23E1	ERROR ABORT
22027	0 76 33337	LDA	*STADDR	SET UP POINTER
22030	0 16 15410	YRG	BIT5	
22031	0 35 22035	STA	F23L1	
22032	0 76 15427	LDA	BIT20	
22033	0 43 00454	F23L2 BRM	REPRT	DUMP 8 WORDS
22034	4 20 22454	F23L2 BRM	REP	CARRIAGE RETURN
22035	0 10 34000	F23L1 BRM	EIGHT STADDR	DATA
22036	0 46 00014	XAB		
22037	0 76 22035	LDA	F23L1	UPDATE ADDRESS
22040	0 55 15427	ADD	BIT20	
22041	0 55 22035	STA	F23L1	
22042	0 46 00014	XAB		
22043	0 54 15432	SUB	BIT20	
22044	0 72 33273	SKA	*01	FINISHED
22045	0 01 22037	BRU	F23L2	NO
22046	0 43 00434	F23E1 BRM	END	
22047	0 01 21762	BRU	FUNC23	
22050	0 43 00452	LAST BRM	DONE	

```

*
* FUNCTION PARAMETER TABLE
*
22051 0 20 22057 FPM23 NOP FIM23 FUNCTION IDENTIFIER MESSAGE
22052 0 20 22067 NOP FAM23 FUNCTION ABSTRACT MESSAGE
22053 0 20 22064 NOP FVM23 FUNCTION VARIABLES MESSAGE
22054 0 01 23326 ONE STDISC FUNCTION VARIABLE
22055 0 00 22050 PZE LAST LINK TO CONTROL
22056 00000001 DATA 1 FUNCTION IDENTIFIER - BIT 23

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*
* FUNCTION MESSAGES
*
22057 52261202 FIM23 BCD ' F 23 - SECTOR DUMP!!
22060 03124012
22061 62252363
22062 46511224
22063 64444737
22064 52126225 FVM23 BCD ' SECTOR !!
22065 23634451
22066 52371212
22067 52326330 FAM23 BCD ' THIS SPECIAL FUNCTION DUMPS THE CONTENTS OF ANY!
22070 31621262
22071 47252331
22072 21431226
22073 64452363
22074 31464512
22075 24644447
22076 62126330
22077 25122346
22100 45637545
22101 63621246
22102 26122145
22103 70121212
22104 52243162 BCD ' DISC SECTOR TO THE ERROR DEVICE, WHEN COMPLETED, I
22105 23126225
22106 23634451

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22107 12634412
22110 63302512
22111 25515146
22112 51122425
22113 65312325
22114 33126630
22115 25451223
22116 46444743
22117 25637624
22120 73121212 BCD ' CONTROL WILL BE RETURNED TO THE KEYBOARD, THE ONLY!
22121 52234445
22122 63514443
22123 12663143
22124 43122225
22125 12512563
22126 64514625
22127 24126346
22130 12633225
22131 12422270
22132 2462151
22133 24331263
22134 30251246
22135 45437012
22136 52266445 BCD ' FUNCTION VARIABLE IS *SECTOR*, WHICH IS THE ADDRESS!
22137 23633146
22140 45126521
22141 51312122
22142 43251231
22143 62124262
22144 25236346
22145 51407312
22146 66303123
22147 30123162
22150 12633225
22151 12212424
22152 51256262

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DISCF  TAP=3.0      04/25  20100  PAGE 287
22153  52462612      BCD      1 OF THE SECTOR WHICH WILL BE DUMPED. AFTER CHANGING
22154  63302512
22155  62252363
22156  46511766
22157  30312330
22160  12663147
22161  43122225
22162  12246444
22163  47252433
22164  12212663
22165  25511223
22166  30214527
22167  31452712
22170  52633031      BCD      1 THIS VARIABLE, TYPE =T TO CONTINUE.'1
22171  62126521
22172  51312122
22173  43257312
22174  63704725
22175  12406312
22176  63461223
22177  46456331
22200  45642533
22201  37121212

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DISCF  TAP=3.0      04/25  20100  PAGE 288
*
*
*      SUBROUTINES
*
*
*      TEST ZA14 = ZA00 AND C23 = C10
*
22202  0 00 00000      FIS1  PZE      0
22203  0 77 22202      EAX+   FIS1      GET BIAS
22204  2 76 00003      LDA      312      XMODE E0D
22205  0 35 22224      STA      FIS1B     MESSAGE POINTER
22206  2 76 00004      LDA      472
22207  0 35 22222      STA      FIS1A
22210  0 16 15403      YRG      BITC
22211  0 35 22237      STA      FIS1C
22212  0 43 00440      BRM      RETURN     SET SPIT LINKAGE
22213  0 20 22251      LBP      ENTER
22214  0 43 04754      BRM      CLRCHN     CLEAR CHANNEL
22215  0 16 12100      E0D      12100     ALERT TO PIN CHANNEL ADDRESS
22216  0 33 22310      PIN      TEMP     PIN CHANNEL ADDRESS
22217  0 76 22310      LDA      TEMP
22220  2 72 01001      SKA      172      SKIP IF BIT RESET
22221  0 43 00467      BRM      FRRRR
22222  0 00 00000      FIS1A PZE      0      MESSAGE POINTER
22223  0 06 10100      E0D+   10100     ALERT CHANNEL
22224  0 00 00000      FIS1B PZE      0      XMODE E0D
22225  2 13 00002      P0T      272      SET ADDRESS BIT
22226  0 06 12100      E0D      12100     ALERT TO PIN CHANNEL ADDRESS
22227  0 33 22310      PIN      TEMP     PIN CHANNEL ADDRESS
22230  2 75 00001      LDB      172      CORRECT TEST WORD
22231  0 76 22310      LDA      TEMP
22232  2 70 00001      SKM      172      IS TEST FLIP-FL0P SET
22233  0 01 22235      BRU      *+2      NO
22234  0 01 22241      BRU      FIS1D
22235  0 71 00430      LDX      00JEC     ADDRESS OF OBJECT TEST

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DISCF  TAP-3.0      04/25  20100  PAGE 289

22236  0 43 00460    BRM    ERROR    REPORT ERROR
22237  0 00 00000    F191C PZE     0        MESSAGE POINTER
22240  2 20 24350    NOP    M2013B,2  HEADING AND REGISTERS
22241  0 43 00434    F191D BRM    END
22242  2 01 00004    BRU    4,2    GO TO NEXT OBJECT TEST
*
*   TEST ZC14 = ZC0 AND C9 = C0
*
22243  0 00 00000    F192  PZE     0
22244  0 77*22243    EAX*   F192    SET BIAS
22245  2 76 00001    LDA    1,2    XMODE EOD
22246  0 35 27254    STA    F192A
22247  2 76 00003    LDA    3,2    MESSAGE POINTER
22250  0 35 22261    STA    F192B
22251  0 43 00440    BRM    RETURN   SET SPIT LINKAGE
22252  0 20 23351    NOP    ENTER
22253  0 06*10100    EOD*   10100  ALERT CHANNEL
22254  0 00 00000    F192A PZE     0        XMODE EOD
22255  2 13 00002    PBT    2,2
22256  0 40*12100    SKS*   12100  CHANNEL ZERO WORD COUNT TEST
22257  0 01 22261    BRU    **2    WORD COUNT NOT ZERO = 6K
22260  0 43 00460    BRM    ERROR
22261  0 00 00000    F192B PZE     0        MESSAGE POINTER
22262  0 43 00434    BRM    END
22263  2 01 00003    BRU    3,2    GO TO NEXT OBJECT TEST
*
*   TEST SKS FOR NO SKIP
*
22264  0 00 00000    F2S1  PZE     0
22265  0 77*22264    EAX*   **1
22266  2 76 00001    LDA    1,2    SET SKS
22267  0 35 22275    STA    F2S1A
22270  2 76 00002    LDA    2,2    GET MESSAGE
22271  0 35 22300    STA    F2S1B
22272  0 43 00440    BRM    RETURN   SET INTERRUPT LINKAGE
22273  0 20 23351    NOP    ENTER

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DISCF  TAP-3.0      04/25  20100  PAGE 290

22274  0 06 10326    EBD    10326  CLEAR FILE
22275  0 00 00000    F2S1A PZE     0        SHOULD NOT SKIP
22276  0 01 22300    BRU    **2
22277  0 43 00460    BRM    ERROR
22300  0 00 00000    F2S1B PZE     0
22301  0 43 00434    BRM    END
22302  0 51 22264    BRU    F2S1    RETURN
*
*   TEST SKS FOR SKIP
*
22303  0 00 00000    F2S2  PZE     0
22304  0 77*22303    EAX*   **1
22305  2 76 00001    LDA    1,2    GET SKS
22306  0 35 22314    STA    F2S2A
22307  2 76 00002    LDA    2,2    GET MESSAGE
22310  0 35 22316    STA    F2S2B
22311  0 43 00440    BRM    RETURN   SET INTERRUPT LINKAGE
22312  0 20 23351    NOP    ENTER
22313  0 06 10326    EOD    10326  CLEAR FILE
22314  0 00 00000    F2S2A PZE     0        SHOULD SKIP
22315  0 43 00460    BRM    ERROR
22316  0 00 00000    F2S2B PZE     0
22317  0 43 00434    BRM    END
22320  0 51 22303    BRU    F2S2    RETURN
*
*   TEST ADDRESS REGISTER IN CONTROLLER
*
22321  0 00 00000    F2S3  PZE     0
22322  0 61 22321    MIN    F2S3    INCREMENT RETURN
22323  0 77*22321    EAX*   F2S3
22324  2 76 00001    LDA    1,2    MESSAGE
22325  0 35 22337    STA    F2S3A
22326  0 43 00440    BRM    RETURN   SET INTERRUPT LINKAGE
22327  0 20 23351    NOP    ENTER
22330  0 76 33272    LDA    #0    PBT A
22331  0 43 22243    BRM    PRTPIN

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DISCF  TAP=3.0    04/25  20100  PAGE 291
22332  0 76*22321    LDA*  F2S3    POT B
22333  0 43 23243    BRM    POTPIN
22334  0 72*22321    SKA*   F2S3    IS ADDRESS BIT SET
22335  0 01 22337    BRU    *+2    YES
22336  0 43 00460    BRM    ERROR
22337  0 00 00000    F2S3A PZE    0
22340  0 43 00434    BRM    END
22341  0 51 22321    BRM    F2S3    RETURN

```

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*
*   TEST ADDRESS REGISTER IN CONTROLLER
*

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22342  0 00 00000    F2S4 PZE    0
22343  0 61 22342    MIN    F2S4    INCREMENT RETURN
22344  0 77*22342    EAX*   F2S4
22345  2 76 00001    LDA    1,2    MESSAGE
22346  0 35 22357    STA    F2S4A
22347  0 43 00440    BRM    RETURN    SET INTERRUPT LINKAGE
22350  0 20 23351    NOP    ENTER
22351  0 76 33326    LDA    *777777    POT A
22352  0 43 23243    BRM    POTPIN
22353  0 76 33272    LDA    *0        POT B
22354  0 43 23243    BRM    POTPIN
22355  0 72*22342    SKA*   F2S4    ADDRESS BIT RESET
22356  0 43 00460    BRM    ERROR    NO
22357  0 00 00000    F2S4A PZE    0
22360  0 43 00434    BRM    END
22361  0 51 22342    BRM    F2S4    RETURN

```

```

*
*   TEST VERIFICATION LOGIC
*

```

```

22362  0 00 00000    F2S5 PZE    0
22363  0 61 22362    MIN    F2S5    INCREMENT RETURN
22364  0 77*22362    EAX*   F2S5
22365  2 76 00001    LDA    1,2    MESSAGE
22366  0 35 22404    STA    F2S5A
22367  2 76 00000    LDA    0,2    POT A

```

```

DISCF  TAP=3.0    04/25  20100  PAGE 292
22370  0 43 22747    BRM    SETUP3
22371  0 51 22405    BRU    F2S5B
22372  0 17 15423    EOR    BIT16    DO NOT USE ADDRESSED DISC
22373  0 55 23310    STA    TEMP    BUILD POT B
22374  0 06 10126    EOD    10126    ALERT DISC FILE
22375  0 13 23310    POT    TEMP    POT B
22376  0 43 23106    BRM    NORMAL    NORMALIZE DISC
22377  0 06 10126    EOD    10126    ALERT DISC FILE
22400  0 13 23332    POT    POTARD    POT A
22401  0 43 23275    BRM    *500    *WAIT 500 MILLISEC
22402  0 40*12126    SKS*   12126    TRACK VERIFIED TEST
22403  0 43 22460    BRM    ERROR    TRACK NOT VERIFIED
22404  0 00 00000    F2S5A PZE    0
22405  0 43 00434    F2S5B BRM    END
22406  0 51 22762    BRM    F2S5    RETURN

```

```

*
*   TEST PALA LOGIC
*

```

```

22407  0 00 00000    F2S6 PZE    0
22410  0 77*22407    EAX*   F2S6
22411  2 76 00003    LDA    3,2    MESSAGE
22412  0 35 22437    STA    F2S6B
22413  2 76 00002    LDA    2,2    POT B
22414  0 43 23222    BRM    DISCK    USE THIS DISC
22415  0 01 22440    BRU    F2S6C    NO
22416  2 76 00001    LDA    1,2    POT A
22417  0 43 22747    BRM    SETUP3
22420  0 01 22440    BRU    F2S6C
22421  0 06 10126    EOD    10126    DO NOT USE ADDRESSED DISC
22422  0 13 23332    POT    POTARD    POT A
22423  0 43 23106    BRM    NORMAL
22424  0 06 10126    EOD    10126    ALERT DISC FILE
22425  2 13 00002    POT    2,2    POT B
22426  0 43 23275    BRM    *500    *WAIT 500 MILLISEC
22427  0 71 33472    LDX    *10000D
22430  0 06 10126    EOD    10126    ALERT DISC FILE

```


DISCF TAP#3.C 04/25 20100 PAGE 293

22431	0	13	23332	PBT	PBTWRD	PBT A
22432	0	41	22434	F2S6A	BRX	*+2
22433	0	01	22437	BRU	F2S6B	VERIFICATION TIME > 70 MS. = 0K
22434	0	40	12126	SKS*	12126	TRACK VERIFIED TEST
22435	0	01	22432	BRU	F2S6A	TRACK NOT VERIFIED = LOOP
22436	0	43	00460	BRM	ERROR	TRACK VERIFIED TOO SOON
22437	0	00	00000	F2S6B	PZE	0
22440	0	43	23106	F2S6C	BRM	NORMAL
22441	0	43	00434	BRM	END	NORMALIZE DISC
22442	0	61	22407	MIN	F2S6	INCREMENT RETURN
22443	0	61	22407	MIN	F2S6	INCREMENT RETURN
22444	0	51	22407	BRR	F2S6	RETURN

TEST SECTOR VERIFICATION LOGIC

22445	0	00	00000	F2S7	PZE	0
22446	0	77	22445	EAX*	F2S7	
22447	2	75	00002	LDB	2,2	MESSAGE
22450	0	36	22464	STB	F2S7B	
22451	2	76	00001	LDA	1,2	POTWORD
22452	0	43	22755	BRM	SETUP4	
22453	0	01	22465	BRU	F2S7C	ERROR OR DISC OUT OF BOUNDS
22454	0	06	10126	EOD	10126	ALERT DISC FILE
22455	0	13	23332	PBT	PBTWRD	PBT SAME ADDRESS
22456	0	71	33472	LDX	##100000	
22457	0	40	12126	SKS*	12126	TRACK VERIFIED TEST
22460	0	01	22462	BRU	*+2	TRACK NOT VERIFIED
22461	0	01	22465	BRU	F2S7C	
22462	0	41	22457	BRX	F2S7A	
22463	0	43	00460	BRM	ERROR	TIME > 70 MILLISEC
22464	0	00	00000	F2S7B	PZE	0
22465	0	43	00434	F2S7C	BRM	END
22466	0	61	22445	MIN	F2S7	INCREMENT RETURN
22467	0	51	22445	BRR	F2S7	RETURN

TEST 2MFAA

DISCF TAP#3.C 04/25 20100 PAGE 294

22470	0	00	00000	F3S1	PZE	0
22471	0	61	22470	MIN	F3S1	INCREMENT RETURN
22472	0	76	33272	LDA	*0	POTWORD
22473	0	43	22755	BRM	SETUP4	SET UP OBJECT TEST
22474	0	01	22514	BRU	F3S1C	ABORT
22475	0	77	22470	EAX*	F3S1	
22476	2	76	00000	LDA	0,2	EOM
22477	0	35	22505	STA	F3S1A	
22500	2	76	00001	LDA	1,2	MESSAGE
22501	0	35	22512	STA	F3S1B	
22502	0	06	10100	EOD*	10100	ALERT CHANNEL
22503	0	06	14200	EOD	14200	EXTENDED MODE EOD
22504	0	13	33233	PBT	##4B4*STADDR	IC # 1
22505	0	00	00000	F3S1A	PZE	0
22506	0	77	30706	EAX	*5700	EOM
22507	0	41	22507	BRX	*	WAIT 1 MILLISEC
22510	0	40	12126	SKS*	12126	TRACK VERIFIED TEST
22511	0	43	00460	BRM	ERROR	CONTROLLER EXITED FROM STATE 1
22512	0	00	00000	F3S1B	PZE	0
22513	0	06	00100	EOD	100	DISCONNECT CHANNEL
22514	0	51	22470	F3S1C	BRR	F3S1

TEST WRITE PARITY CHECKING

22515	0	00	00000	F3S2	PZE	0
22516	0	61	22515	MIN	F3S2	INCREMENT RETURN
22517	0	76	33272	LDA	*0	POTWORD
22520	0	43	22755	BRM	SETUP4	
22521	0	01	22535	BRU	F3S2B	ABORT
22522	0	76	22515	LDA*	F3S2	DATA WORD
22523	0	35	34200	STA	STADDR	
22524	0	61	22515	MIN	F3S2	INCREMENT RETURN
22525	0	76	22515	LDA*	F3S2	MESSAGE
22526	0	35	22534	STA	F3S2A	
22527	0	43	22766	BRM	CPST1	PBT TO CHANNEL

```

DISCF  TAP=3.C      04/25  20100  PAGE 295
22530  0 00074000      DATA  484*STADDR
22531  0 43 23265      BRM    W200      WAIT 200 MILLISEC
22532  0 40*11126      SKS*   11126    DISC FILE ERROR TEST
22533  0 43 00460      BRM    ERROR    CONTROLLER ERROR SET
22534  0 00 00000      F392A PZE     0
22535  0 43 00434      F392B BRM    END
22536  0 51 22515      BRM    F392      RETURN
*
* TEST INCREMENTING OF ADDRESS REGISTER
*
22537  0 00 00000      F393 PZE     0
22540  0 61 22837      MIN    F393      INCREMENT RETURN
22541  0 77*22537      LAX*   F393
22542  0 76 00001      LDA    1,2      MESSAGE POINTER
22543  0 35 22611      STA    F393B    P8TWORD
22544  0 76 00000      LDA    0,2
22545  0 55 15432      ADD    BIT23
22546  0 43 23222      BRM    DISCK    USE THIS ADDRESS
22547  0 01 22612      BRU    F393C    NO
22550  0 76 00000      LDA    0,2      P8TWORD
22551  0 43 22755      BRM    SETUP4   SET UP
22552  0 01 22612      BRU    F393C    ABOUT
22553  0 43 22766      BRM    CP8T1    P8T TO CHANNEL
22554  0 40 74000      DATA  40434*STADDR
22555  0 43 23123      BRM    WAIT     WAIT FOR CONTROLLER READY
22556  0 01 22612      BRU    F393C
22557  0 40*12100      SKS*   12100    CHANNEL ZERO WORD COUNT TEST
22560  0 01 22562      BRU    **2      WORD COUNT NOT ZERO
22561  0 01 22573      BRU    F393A
22562  0 06 12100      EBD    12100    ALERT TO PIN CHANNEL ADDRESS
22563  0 33 23310      PIN    TEMP
22564  0 76 23310      LDA    TEMP
22565  0 54 33337      SUB    #STADDR  A = WORD COUNT
22566  0 75 33344      LDB    #101
22567  0 71 33337      LDX    #STADDR
22570  0 43 00460      BRM    ERROR

```

```

DISCF  TAP=3.C      04/25  20100  PAGE 296
22571  0 20 30222      NOP    F3M20,2
22572  0 01 22612      BRU    F393C
22573  0 06 14126      EBD    10126    ALERT DISC FILE
22574  0 33 23310      PIN    TEMP      PIN CONTROLLER ADDRESS
22575  0 75 33273      LDB    **1      MASK
22576  0 76*22537      LDA*   F393     P8TWORD
22577  0 55 15432      ADD    BIT23
22600  0 70 23310      SKM    TEMP
22601  0 01 22603      BRU    **2      DID REGISTER INCREMENT CORRECTLY
22602  0 01 22612      BRU    F393C    NO
22603  0 46 00014      XAB
22604  0 76 23310      LDA    TEMP      REPORT ERROR
22605  0 71*22537      LDX*   F393
22606  0 43 00454      BRM    REPORT
22607  0 20 31102      NOP    F3M32,2
22610  0 43 00460      BRM    ERROR
22611  0 00 00000      F393B PZE     0
22612  0 43 00434      F393C BRM    END
22613  0 51 22537      BRM    F393     RETURN
*
* GENERATE CONTROLLER READ ERROR
*
22614  0 00 00000      F394 PZE     0
22615  0 76 33272      LDA    #0      P8TWORD
22616  0 43 22755      BRM    SETUP4   SET UP
22617  0 01 22657      BRU    F394A    ABOUT
22620  0 76 33306      LDA    #77     DATA WORD 1
22621  0 35 34000      STA    STADDR
22622  0 76 33272      LDA    #0      DATA WORDS 2-64
22623  0 77 37701      LAX    #63D
22624  0 35 34000      STA    STADDR+64D,2
22625  0 41 22624      BRX    **1
22626  0 43 22766      BRM    CP8T1    P8T TO CHANNEL
22627  0 40 34000      DATA  486*STADDR
22630  0 43 23123      BRM    WAIT     WAIT FOR CONTROLLER READY
22631  0 01 22657      BRU    F394A

```

DISC# TAP=3.0 04/25 20100 PAGE 297

```
22632 0 35 34000 STA STADDR CLEAR FIRST WORD
22633 0 43 23053 BRM CHECK CHECK FOR CHANNEL READY
22634 0 01 22657 BRU F384A
22635 0 43 23153 BRM PBTOUT POT TO DISC
22636 0 01 22657 BRU F384A
22637 0 76 33351 LDA #STADDR+3 COMPARE ADDRESS
22640 0 75 33273 LDB #1 MASK
22641 0 43 22766 BRM CPBT1 POT TO CHANNEL
22642 0 04034000 DATA 486*STADDR
22643 0 06 12100 EOD 12100 ALERT TO PIN CHANNEL ADDRESS
22644 0 33 23310 PIN TEMP PIN CHANNEL ADDRESS
22645 0 70 23310 SKM TEMP DO ADDRESSES COMPARE
22646 0 01 22643 BRU #3 NO
22647 0 06 10326 EOD 10326 CLEAR FILE
22650 0 06 00100 EOD 100 DISCONNECT CHANNEL
22651 0 43 23153 BRM PBTOUT POT TO DISC
22652 0 01 22657 BRU F384A
22653 0 43 22775 BRM CPBT2 POT TO CHANNEL
22654 0 04034000 DATA 486*STADDR
22655 0 43 23265 BRM #200 WAIT 200 MILLISEC
22656 0 61 22614 MIN F384 INCREMENT RETURN
22657 0 51 22614 F384 BRR F384 RETURN
```

* TEST PDBA LOGIC IN 5045 FILE (POSITION DECODER)

```
22660 0 00 00000 F551 PZE 0
22661 0 77*22460 EAX* F551 BIAS
22662 2 76 00001 LDA 1,2 POT A
22663 0 43 23022 BRM DISCK USE THIS ADDRESS
22664 0 01 22736 BRU F551G NO
22665 0 43 22740 BRM SETUP2 SET UP
22666 0 76 33305 LDA #310 LOOP COUNT = 32
22667 0 35 23310 STA TEMP
22670 0 06 10126 EOD 10126 ALERT DISC FILE
22671 2 13 00001 PBT 1,2 POT A
22672 0 43 23275 BRM #500 WAIT 500 MILLISEC
```

DISC# TAP=3.0 04/25 20100 PAGE 298

```
22673 0 40*11126 SKS* 11126 DISC FILE ERROR TEST
22674 0 01 22476 BRU #2 CONTROLLER ERROR
22675 0 01 22700 BRU F551B MESSAGE
22676 2 76 00003 LDA 3,2
22677 0 01 22731 BRU F551F
22700 0 40*10126 SKS* 10126 DISC FILE READY TEST
22701 0 01 22703 BRU #2 CONTROLLER NOT READY
22702 0 01 22703 BRU F551C
22703 2 76 00004 LDA 4,2
22704 0 01 22731 BRU F551F
22705 0 06 10126 EOD 10126 ALERT DISC FILE
22706 2 13 00002 PBT 2,2 POT B
22707 0 43 23275 BRM #500 WAIT 500 MILLISEC
22710 0 40*11126 SKS* 11126 DISC FILE ERROR TEST
22711 0 01 22713 BRU #2 CONTROLLER ERROR SET
22712 0 01 22715 BRU F551D
22713 2 76 00005 LDA 5,2 MESSAGE
22714 0 01 22731 BRU F551F
22715 0 40*10126 SKS* 10126 DISC FILE READY TEST
22716 0 01 22720 BRU #2 CONTROLLER NOT READY
22717 0 01 22722 BRU F551E
22720 2 76 00006 LDA 6,2 MESSAGE
22721 0 01 22731 BRU F551F
22722 0 60 23310 F551E SKR TEMP DECREMENT TEMP
22723 0 20 00000 #9P 0
22724 0 40 20040 SKS 20040 BREAKPOINT & TEST
22725 0 43 23045 BRM TERM GO TO CONTROL
22726 0 53 23310 SKM TEMP FINISHED
22727 0 01 22670 BRU F551A NO = LOOP
22730 0 01 22736 BRU F551G YES = EXIT
22731 0 35 22735 F551F STA F551H MESSAGE
22732 0 06 10326 EOD 10326 CLEAR FILE
22733 0 43 00460 BRM ERROR
22734 4 20 32432 #OP F551H
22735 0 00 00000 F551H PZE 0
22736 0 43 00434 F551G BRR END
```

```

DISCF  TAP=3.0      04/25  20100  PAGE 299
22737  2 01 00007    BRU      7,7      RETURN

```

```

DISCF  TAP=3.0      04/25  20100  PAGE 300

```

```

      *
      *      SETUP ROUTINE NUMBER 2
      *
22740  0 00 00000    SETUP2 PZE      0
22741  0 35 23310    STA      TEMP      SAVE A REG
22742  0 43 00440    BRM      RETURN    SET INTERRUPT LINKAGE
22743  0 20 23351    NBP      ENTER
22744  0 76 23310    LDA      TEMP      GET A REG
22745  0 43 23106    BRM      NORMAL    NORMALIZE DISC AND CHANNEL
22746  0 51 22740    BRR      SETUP2    RETURN
      *
      *      SETUP ROUTINE NUMBER 3
      *
22747  0 00 00000    SETUP3 PZE      0
22750  0 43 22740    BRM      SETUP2    SET SPIT LINKAGE, NORMALIZE
22751  0 43 23022    BRM      DISCCK    USE ADDRESSED DISC
22752  0 51 22747    BRR      SETUP3    NO * RETURN
22753  0 61 22747    YIA      SETUP3    INCREMENT RETURN
22754  0 51 22747    BRR      SETUP3    RETURN
      *
      *      SETUP ROUTINE NUMBER 4
      *
22755  0 00 00000    SETUP4 PZE      0
22756  0 43 22740    BRM      SETUP2    SET SPIT LINKAGE, NORMALIZE
22757  0 43 23022    BRM      DISCCK    ADDRESSED DISC TO BE USED
22760  0 51 22755    BRR      SETUP4    NO * RETURN
22761  0 43 23153    BRM      PBTOUT    PBT TO DISC
22762  0 51 22755    BRR      SETUP4    ERROR
22763  0 61 22755    YIN      SETUP4    INCREMENT RETURN
22764  0 71 15414    LDX      PIT9      SET X NEGATIVE
22765  0 51 22755    BRR      SETUP4    RETURN

```

DISCF TAP=3.0 04/25 20100 PAGE 301

```

*
* PBT TO CHANNEL
*
22766 0 00 00000 CPBT1 PZE 0
22767 0 61 22766 MIN CPBT1 INCREMENT RETURN
22770 0 06*10100 EBD* 10100 ALERT CHANNEL
22771 0 06 14200 EBD 14200 EXTENDED MODE EBD
22772 0 13*22766 PBT* CPBT1 PBT TO CHANNEL
22773 0 06 03766 EBD 3766 WRITE DISC FILE - SECTOR
22774 0 51 22766 BRR CPBT1 RETURN
*
* PBT TO CHANNEL
*
22775 0 00 00000 CPBT2 PZE 0
22776 0 61 22775 MIN CPBT2 INCREMENT RETURN
22777 0 06*10100 EBD* 10100 ALERT CHANNEL
23000 0 06 14000 EBD 14000 EXTENDED MODE EBD
23001 0 13*22775 PBT* CPBT2 PBT TO CHANNEL
23002 0 06 03726 EBD 3726 READ DISC FILE - SECTOR
23003 0 51 22775 BRR CPBT2 RETURN
*
* PBT TO CHANNEL
*
23004 0 00 00000 CPBT3 PZE 0
23005 0 61 23004 MIN CPBT3 INCREMENT RETURN
23006 0 06*10100 EBD* 10100 ALERT CHANNEL
23007 0 06 14200 EBD 14200 EXTENDED MODE EBD
23010 0 13*23004 PBT* CPBT3 PBT TO CHANNEL
23011 0 06 02766 EBD 2766 WRITE DISC FILE - CHAIN
23012 0 51 23004 BRR CPBT3 RETURN
*
* PBT TO CHANNEL
*
23013 0 00 00000 CPBT4 PZE 0
23014 0 61 23013 MIN CPBT4 INCREMENT RETURN
23015 0 06*10100 EBD* 10100 ALERT CHANNEL

```

DISCF TAP=3.0 04/25 20100 PAGE 302

```

23016 0 06 14000 EBD 14000 EXTENDED MODE EBD
23017 0 13*23013 PBT* CPBT4 PBT TO CHANNEL
23020 0 06 02726 EBD 2726 READ DISC FILE - CHAIN
23021 0 51 23013 BRR CPBT4 RETURN
*
* DISCK - STORES 'A' IN PBTWRD AND CHECKS TO SEE IF ADDRESSED DISC
* IS TO BE USED. IF DISC IS TO BE USED, THE ROUTINE EXITS SKIPPING.
*
DISCK PZE 0
23022 0 00 00000 STA PBTWRD SAVE REGISTERS
23023 0 35 23332 BRM SAV
23024 0 43 15224 RSH 130 RIGHT JUSTIFY DISC NUMBER
23025 0 66 00015 LDB #0
23026 0 75 33272 SKA BIT19 IS DISC NUMBER > 17
23027 0 72 15426 LDB BIT23 YES
23030 0 75 15432 ETR #17 CLEAR HIGH ORDER BIT
23031 0 14 33304 STA TEMP A TO X
23032 0 35 23310 LDX TEMP
23033 0 71 23310 LDA BIT0 FORM COMPARE WORD
23034 0 76 15403 STB TEMP SAVE B
23035 0 36 23310 LDB #0
23036 0 75 33272 RCY C,2
23037 2 66 20000 LDX TEMP
23040 0 71 23310 SKA DOBT17,2 IS DISC TO BE USED
23041 2 72 04767 MIN DISCK NO
23042 0 61 23022 BRM GET GET REGISTERS
23043 0 43 15231 BRR DISCK RETURN
*
* TERM - EXITS TO CONTROL VIA TERRORI, ERROR COUNTER WILL NOT
* BE INCREMENTED
*
TERM PZE 0
23045 0 00 00000 SKR ERRORS DECREMENT ERROR COUNTER
23046 0 60 00414 NBP 0
23047 0 20 00000 BRM ERRORR GO TO CONTROL
23050 0 43 00460 NBP 019412 NO MESSAGE
23051 0 20 23640

```

DISCF TAP=3.C 04/25 20100 PAGE 303

```
23052 0 51 23045 BRR TERM RETURN
*
* CHECK - CHECKS CHANNEL FOR READY AND NO ERROR. IF CHANNEL ERROR
* OR NOT READY FOR 500 MILLISEC, A MESSAGE WILL BE PRINTED AND THE
* ROUTINE WILL EXIT WITHOUT SKIPPING.
*
23053 0 00 00000 CHECK PZE 0
23054 0 35 23305 STA A SAVE A REG
23055 0 76 33272 LDA #0 CLEAR TIMEOUT FLAG
23056 0 35 23331 STA TIMEOUT
23057 0 40 14100 SKS# 14100 CHANNEL ACTIVE TEST
23060 0 01 23062 BRU #+2 CHANNEL ACTIVE
23061 0 01 23071 BRU CHECK1
23062 0 40 11100 SKS# 11100 CHANNEL ERROR TEST
23063 0 01 23065 BRU #+2 CHANNEL ERROR SET
23064 0 01 23074 BRU CHECK2
23065 0 43 00460 BRM ERROR
23066 0 20 23567 NOP J19M8
23067 0 76 23305 LDA A RESTORE A REG
23070 0 51 23053 BRR CHECK
*
23071 0 61 23053 CHECK1 MIN CHECK EXIT SKIPPING
23072 0 76 23305 LDA A
23073 0 51 23053 BRR CHECK
23074 0 55 15432 CHECK2 ADD BIT23
23075 0 73 33473 SKG #23809D 500 MILLISEC ELAPSED YET
23076 0 01 23057 BRU CHECK#4 NO
23077 0 06 00100 EOD 100 DISCONNECT CHANNEL
23100 0 43 00460 BRM ERROR REPORT TIMEOUT ERROR
23101 0 20 23607 NOP J19M9
23102 0 76 33273 LDA #+1 SET TIMEOUT FLAG
23103 0 35 23331 STA TIMEOUT
23104 0 76 23305 LDA A RESTORE A REG
23105 0 51 23053 BRR CHECK EXIT
*
* NORMALIZE DISC CONTROLLER AND CHANNEL
*
```

DISCF TAP=3.C 04/25 20100 PAGE 304

```
23106 0 00 00000 NORMAL PZE 0
23107 0 35 23305 STA A SAVE A REGISTER
23110 0 76 33272 LDA #0
23111 0 40 10126 SKS# 10126 DISC FILE READY TEST
23112 0 01 23114 BRU #+2 CONTROLLER NOT READY
23113 0 01 23117 BRU NORMAL2
23114 0 55 15432 ADD BIT23
23115 0 73 33331 SKG #35714D 500 MILLISEC UP YET
23116 0 01 23111 BRU NORMAL1 NO
23117 0 06 10326 EOD 10326 CLEAR FILE
23120 0 06 00100 EOD 100 DISCONNECT CHANNEL
23121 0 76 23305 LDA A SAVE A REGISTER
23122 0 51 23106 BRR NORMAL
*
* WAIT - WAITS 1 SECOND FOR CONTROLLER TO COME READY. IF CONTROLLER
* ERROR SETS OR NOT READY WITHIN 1 SECOND, A MESSAGE WILL BE GIVEN
* AND THE ROUTINE WILL EXIT NOT SKIPPING.
*
23123 0 00 00000 WAIT PZE 0
23124 0 35 23305 STA A SAVE A REG
23125 0 76 33272 LDA #0 CLEAR TIMEOUT FLAG
23126 0 35 23331 STA TIMEOUT
23127 0 40 10126 SKS# 10126 DISC FILE READY TEST
23130 0 01 23132 BRU #+2 CONTROLLER NOT READY
23131 0 01 23150 BRU WAIT4
23132 0 40 11126 SKS# 11126 DISC FILE ERROR TEST
23133 0 01 23145 BRU WAIT3 CONTROLLER ERROR SET
23134 0 55 15432 ADD BIT23
23135 0 73 33474 SKG #51948D TIMED OUT YET
23136 0 01 23127 BRU WAIT1 NO
23137 0 43 00460 BRM ERROR
23140 0 20 23620 NOP J19M10
23141 0 76 33273 LDA #+1 SET TIMEOUT FLAG
23142 0 35 23331 STA TIMEOUT
23143 0 76 23305 LDA A RESTORE A REG
23144 0 51 23123 BRR WAIT EXIT
```

DISCF TAP-3.0 04/25 20100 PAGE 305

23145	0 43 00460	WAIT3	BRM	ERRR	HEPRT CONTROLLER ERROR
23146	0 20 23632		NOP	U19M1	
23147	0 01 23143		BRU	WAIT2	
23150	0 76 23305	WAIT4	LDA	A	RESTORE A REG
23151	0 61 23123		MIN	WAIT	
23152	0 51 23123		BRR	WAIT	EXIT SKIPPING

*
* PBTOUT - ROUTINE TO POSITION AN ARM, CHECKS FOR FILE ON LINE,
* WRITE HEADER SWITCH OFF, TRACK VERIFIED, DISC WRITE PROTECTED,
* AND CONTROLLER ERROR. IF NO ERROR OCCURES, ROUTINE WILL EXIT
* SKIPPING.
*

23153	0 00 00000	PBTOUT	PZE	0	
23154	0 35 23305		STA	A	SAVE A REG
23155	0 40 10326		SKS*	10326	FILE ON LINE TEST
23156	0 01 23160		BRU	**2	FILE NOT ON LINE
23157	0 01 23163		BRU	P01	
23160	0 43 00460		BRM	ERRR	
23161	0 20 23471		NOP	U19M1	
23162	0 01 23214		BRU	P05	
23163	0 40 14126		SKS*	14126	WRITE HEADER TEST
23164	0 01 23166		BRU	**2	WRITE HEADER SWITCH ON
23165	0 01 23171		BRU	P02	
23166	0 43 00460		BRM	ERRR	
23167	0 20 23476		NOP	U19M2	
23170	0 01 23214		BRU	P05	
23171	0 06 10326		E0D	10326	CLEAR FILE
23172	0 40 10126		SKS*	10126	DISC FILE READY TEST
23173	0 01 23172		BRU	**1	WAIT FOR CONTROLLER READY
23174	0 06 10126		E0D	10126	ALERT DISC FILE
23175	0 13 23332		PBT	PATARD	POT TO CONTROLLER
23176	0 76 33272		LDA	00	
23177	0 40 12126		SKS*	12126	TRACK VERIFIED TEST
23200	0 01 23207		BRU	**2	TRACK NOT VERIFIED
23201	0 01 23216		BRU	P06	
23202	0 55 15432		ADD	BIT23	

DISCF TAP-3.0 04/25 20100 PAGE 306

23203	0 73 33331		SKG	#35714D	500 MILLISEC ELAPSED YET
23204	0 01 23177		BRU	P03	NS
23205	0 40 11126		SKS*	11126	DISC FILE ERROR TEST
23206	0 01 23212		BRU	P04	CONTROLLER ERROR NOT SET
23207	0 43 00460		BRM	ERRR	
23210	0 20 23505		NOP	U19M3	
23211	0 01 23214		BRU	P05	
23212	0 43 00460	P04	BRM	ERRR	
23213	0 20 23517		NOP	U19M4	
23214	0 76 23305	P05	LDA	A	RESTORE A REG
23215	0 51 23153		BRR	PBTOUT	EXIT
23216	0 40 13126		SKS*	13126	DISC WRITE PROTECT TEST
23217	0 01 23221		BRU	**2	DISC WRITE PROTECTED
23220	0 01 23224		BRU	P07	
23221	0 43 00460		BRM	ERRR	
23222	0 20 23530		NOP	U19M5	
23223	0 01 23214		BRU	P05	
23224	0 40 11126		SKS*	11126	DISC FILE ERROR TEST
23225	0 01 23227		BRU	**2	CONTROLLER ERROR SET
23226	0 01 23232		BRU	P08	
23227	0 43 00460		BRM	ERRR	
23230	0 20 23536		NOP	U19M6	
23231	0 01 23214		BRU	P05	
23232	0 76 23305	P08	LDA	A	RESTORE A REG
23233	0 01 23153		MIN	PBTOUT	INCREMENT RETURN
23234	0 51 23153		BRR	PBTOUT	EXIT SKIPPING (NO ERROR)

*
* CLINT - CLEARS ONE INTERRUPT LEVEL
*

23235	0 00 00000	CLINT	PZE	0	
23236	0 53 23330		SKN	YFFLG	IS MACHINE A 940
23237	0 01 23241		BRU*	**2	NO - USE BRU*
23240	0 11 23241		BRI	**1	YES - USE BRI
23241	0 20 23242		NOP	**1	
23242	0 51 23235		BRR	CLINT	EXIT ROUTINE

DISCF TAP=3.0 04/25 20100 PAGE 307

```

*
* POTPIN - SUBROUTINE USED IN FUNCTION 2
*
23243 0 00 00000 POTPIN PZE 0
23244 0 35 23332 STA POTWRD
23245 0 46 30003 CLR
23246 0 40*10126 SKG# 10126 DISC FILE READY TEST
23247 0 01 23251 BRU #2 NOT READY
23250 0 01 23254 BRU PTPN2
23251 0 55 15432 ADD BIT23
23252 0 73 33331 SKG #35714D
23253 0 01 23246 BRU PTPN1
23254 0 06 10326 EDD 10326
23255 0 40*10126 SKG# 10126 DISC FILE READY TEST
23256 0 01 23255 BRU #1 WAIT FOR CONTROLLER READY
23257 0 06 10126 EDD 10126 ALERT DISC FILE
23260 0 13 23332 POT POTWRD POT TO CONTROLLER
23261 0 06 10126 EDD 10126 ALERT DISC FILE
23262 0 33 23310 PIN TEMP PIN CONTROLLER ADDRESS REGISTER
23263 0 76 23310 LDA TEMP
23264 0 51 23243 BRR POTPIN RETURN

```

```

*
* ROUTINE TO WAIT 200 MILLISEC
*
23265 0 00 00000 #200 PZE 0
23266 0 35 23305 STA A SAVE A REG
23267 0 76 33272 LDA #0
23270 0 55 15432 ADD BIT23
23271 0 73 33475 SKG #22858D 200 MILLISEC UP YET
23272 0 01 23270 BRU #2 NO
23273 0 76 23305 LDA A RESTORE A REG
23274 0 51 23265 BRR #200 RETURN

```

```

*
* ROUTINE TO WAIT 500 MILLISEC
*
23275 0 00 00000 #500 PZE 0
23276 0 35 23305 STA A SAVE A REG

```

DISCF TAP=3.0 04/25 20100 PAGE 308

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23277 0 76 33272 LDA #0
23300 0 55 15432 ADD BIT23
23301 0 73 33476 SKG #57142D 500 MILLISEC UP YET
23302 0 01 23300 BRU #2 NO
23303 0 76 23305 LDA A RESTORE A REG
23304 0 51 23275 BRR #500 RETURN

```



```

*
*   CONSTANTS AND TEMPORARY STORAGE CELLS
*
23305 0 00 00000 A   PZE   0   LOCATIONS WHERE REGISTERS SAVED
23306 0 00 00000 B   PZE   0
23307 0 00 00000 X   PZE   0
23310 0 00 00000 TEMP PZE   0   TEMPORARY STORAGE
23311 0 00 00000 TEMPA PZE   0
23312 0 00 00000 TEMPB PZE   0
23313 0 00 00000 TEMPC PZE   0
23314 0 00 00000 TEMPD PZE   0
23315 0 00 00000 VAR1 PZE   0   COMMON VARIABLE STORAGE
23316 0 00 00000 VAR2 PZE   0
23317 0 00 00000 VAR3 PZE   0
23320 0 00 00000 VAR4 PZE   0
23321 0 00 00000 VAR5 PZE   0
23322 0 00 00000 VAR6 PZE   0
23323 0 00 00000 VAR7 PZE   0
23324 0 00 00000 VAR8 PZE   0
23325 0 00 00000 VAR9 PZE   0
23326 0 00 00000 STDISC PZE   0   STARTING DISC ADDRESS (F18=23)
23327 0 00 00000 FNDISC PZE   0   ENDING DISC ADDRESS (F18=23)
23330 0 00 00000 NFFLG PZE   0   940 FLAG
23331 0 00 00000 TIMOUT PZE   0   TIMEOUT ERROR FLAG
23332 0 00 00000 PBTWRD PZE   0   COMMON CELL FOR DISC PBT WORD

```

```

*
*   INTERRUPT PROCESSORS
*
*   PROCESS I2 INTERRUPT
*
23333 0 02 20004 P12 DIR   0   DISABLE INTERRUPTS
23334 0 43 15224 BRM   SAV   0   SAVE REGISTERS
23335 0 76 00450 LDA   DIVERT 0   GET INTERRUPT MARK ADDRESS
23336 0 14 33301 ETR   #3777 0   EXTRACT ADDRESS PORTION
23337 0 75 33273 LDB   #1     0   MASK
23340 0 70 33424 SKM   #IX2  0   WAS INTERRUPT AN I2
23341 0 43 23357 BRM   SPUR   0   NO
23342 0 20 33477 NBP   #67   0
23343 0 76 33273 LDA   #1     0   SET I2 FLAG
23344 0 35 15443 STA   I2FLAG 0
23345 0 43 15231 BRM   GET   0   GET REGISTERS
23346 0 53 23330 SKM   NFFLG  0   IS MACHINE A 940
23347 0 01 00316 BRU   INTX2  0   NO = RETURN
23350 0 11 00316 BRI   INTX2  0   YES = RETURN

*
*   ALL INTERRUPTS AND TRAPS SPURIOUS
*
23351 0 02 20004 ENTER DIR   0   DISABLE INTERRUPTS
23352 0 43 15224 BRM   SAV   0   SAVE REGISTERS
23353 0 76 00450 LDA   DIVERT 0   GET INTERRUPT MARK ADDRESS
23354 0 14 33301 ETR   #3777 0   EXTRACT ADDRESS PORTION
23355 0 43 23357 BRM   SPUR   0   PROCESS SPURIOUS INTERRUPT/TRAP
23356 0 20 33272 NBP   #0    0

*
*   PROCESS SPURIOUS POP, INTERRUPT, OR TRAP
*
23357 0 00 00000 SPUR PZE   0
23360 0 73 33306 SKG   #77   0   WAS SPIT LEGAL
23361 0 01 23372 BRU   IEXT  0   NO
23362 0 73 33307 SKG   #177  0   WAS IT A POP

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DISCF TAP=3.0 04/25 20100 PAGE 311
23363 0 01 23376 BRU POP YES
23364 0 73 33500 SKG #237 WAS IT LEGAL
23365 0 01 23377 BRU TEXT NO
23366 0 73 33501 SKG #273 WAS IT 130 = T44
23367 0 01 23402 BRU I30T44 YES
23370 0 73 33502 SKG #337 WAS IT 156 = 174
23371 0 01 23401 BRU I56174 YES
*
* PROCESS ILLEGAL OR EXTERNAL INTERRUPT
*
23372 0 76 33273 TEXT LDA #1
23373 0 35 23442 STA ITABLE+1 RECEIVED
23374 0 76 00450 LDA DIVERT MARK
23375 0 01 23410 BRU COMMON
*
* PROCESS SPURIOUS POPS
*
23376 0 35 23442 POP STA ITABLE+1 RECEIVED
23377 0 76 00000 LDA 0 MARK
23400 0 01 23410 BRU COMMON
*
* PROCESS 156 THROUGH 174
*
23401 0 55 15426 I56174 ADD BIT19
*
* PROCESS 130 THROUGH T44
*
23402 0 54 33375 I30T44 SUB #161
23403 0 66 00001 RSH 1
23404 0 35 23442 STA ITABLE+1 RECEIVED
23405 0 77 00450 EAX# DIVERT
23406 2 77 37777 EAX #12
23407 2 76 00000 LDA 0,2
*
* COMMON INTERRUPT ROUTINE
*

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DISCF TAP=3.0 04/25 20100 PAGE 312
23410 0 35 23443 COMMON STA ITABLE+2 MARK
23411 0 76 23443 LDA# ITABLE+2
23412 0 35 23444 STA ITABLE+3 INSTRUCTION
23413 0 01 23357 YIN SPUR
23414 0 77 23357 EAX# SPUR
23415 2 76 00000 LDA# 0,2
23416 0 35 23441 STA ITABLE EXPECTED
23417 0 43 23427 BRM CLEAR CLEAR ALL PENDING INTERRUPTS
23420 0 43 15231 BRM GET RESTORE REGISTERS
23421 0 43 00454 BRM REPORT REPORT ERROR
23422 4 20 23446 NOP IMSG2,4 MESSAGE
23423 0 04 23441 FOUR ITABLE DATA
23424 0 43 00460 SKM ERROR GO TO CONTROL
23425 0 20 23445 NOP IMSG1 (NO MESSAGE)
23426 0 01 00430 BRU# BRJCT RETURN TO LAST BRJCT TRANSFER
*
* CLEAR ALL PENDING INTERRUPTS
*
23427 0 00 00000 CLEAR PZE 0
23430 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
23431 0 20 23433 NOP #+2
23432 0 02 20002 EIR ENABLE INTERRUPTS
23433 0 53 23330 SKN #FFL3 CLEAR INTERRUPT
23434 0 01 23436 BRU# #+2 925/930
23435 0 11 23436 BR1 #+1 940/945
23436 0 20 23436 NOP
23437 0 02 20004 DIR DISABLE INTERRUPTS
23440 0 51 23427 BRR CLEAR RETURN
*
* MESSAGES
*
23441 0 00 00000 ITABLE PZE 0 INTERRUPTS EXPECTED
23442 0 00 00000 PZE 0 INTERRUPT RECEIVED
23443 0 00 00000 PZE 0 LOCATION AT TIME OF INTERRUPT/TRAP
23444 0 00 00000 FZE 0 INSTRUCTION BEING EXECUTED
23445 0 37121212 IMSG1 BCD 111

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DISCF TAP#3.0 04/25 20100 PAGE 313

23446	52526247	MSG2	BCD	' SPURIOUS P8P, INTERRUPT, OR TRAP'
23447	64513146			
23450	64621247			
23451	44477312			
23452	31456725			
23453	51516447			
23454	63731246			
23455	51126351			
23456	21471212			
23457	52256747	BCD		' EXPECTED RECEIVED LOCATION CONTENTS ''
23460	25236325			
23461	44125125			
23462	23253165			
23463	25241243			
23464	46237163			
23465	31464512			
23466	23464563			
23467	25456362			
23470	52371212			

DISCF TAP#3.0 04/25 20100 PAGE 314

*
* UNIT MESSAGES
*

23471	52522431	U19M1	BCD	' FILE NOT ON LINE''
23472	43251245			
23473	46631246			
23474	45124331			
23475	45253712			
23476	52526651	U19M2	BCD	' WRITE HEADER SWITCH ON''
23477	31632512			
23500	30252124			
23501	25511262			
23502	66316323			
23503	30124445			
23504	37121212			
23505	52520500	U19M3	BCD	' 500 MILLISEC TIMEOUT ERROR NOT SET''
23506	30124431			
23507	43433162			
23510	25231263			
23511	31442546			
23512	64675225			
23513	51514451			
23514	12454463			
23515	12627563			
23516	37121212			
23517	52520500	U19M4	BCD	' 500 MILLISEC TIMEOUT ERROR SET''
23520	30124431			
23521	43433162			
23522	25231263			
23523	31442546			
23524	44635225			
23525	51514451			
23526	12627563			
23527	37121212			
23530	52522431	U19M5	BCD	' DISC WRITE PROTECTED''
23531	62231266			

DISCF TAP=3.0 04/25 20100 PAGE 315

23532	51316325		
23533	12475146		
23534	63252363		
23535	25243712		
23536	52522346	U19M6 BCD	' CONTROLLER ERROR AFTER TRACK VERIFICATION''
23537	45635146		
23540	43432551		
23541	12255151		
23542	46511221		
23543	26632551		
23544	12635121		
23545	23421265		
23546	25513126		
23547	31232163		
23550	31464537		
23551	52522331	U19M7 BCD	' DISC FILE NOT ON LINE UNIT ABORTED AFTER FUNCTION 10''
23552	62231226		
23553	31432512		
23554	45466312		
23555	46451243		
23556	31452552		
23557	64453163		
23560	12212246		
23561	51632524		
23562	12212463		
23563	25511226		
23564	64452363		
23565	31464512		
23566	01333712		
23567	52522330	U19M8 BCD	' CHANNEL ERROR SET AFTER DATA TRANSMISSION OR SECTO''
23570	21454525		
23571	43122551		
23572	51465112		
23573	62252312		
23574	21266225		
23575	51122421		

DISCF TAP=3.0 04/25 20100 PAGE 316

23576	63211263		
23577	51214562		
23600	44312262		
23601	31464512		
23602	46511262		
23603	52322446		
23604	51122325	BCD	' R SEARCH''
23605	21512330		
23606	37121212		
23607	52522330	U19M9 BCD	' CHANNEL ACTIVE AFTER 500 MILLISEC''
23610	21454525		
23611	43122123		
23612	53312525		
23613	12212463		
23614	25511205		
23615	20021244		
23616	31434331		
23617	62252337		
23620	52522346	U19M10 BCD	' CONTROLLER NOT READY AFTER 1 SECOND''
23621	45635146		
23622	43432551		
23623	12454463		
23624	12512521		
23625	24721221		
23626	26632551		
23627	12011262		
23630	25234445		
23631	24371212		
23632	52522346	U19M11 BCD	' CONTROLLER ERROR SET''
23633	45635146		
23634	43432551		
23635	12255151		
23636	46511262		
23637	25633712		
23640	37121212	U19M12 BCD	' ''
23641	52522330	U19M13 BCD	' CHANNEL INTERLACE NOT AT ZERO WORD COUNT''

DISCF TAP=3.0 04/25 20100 PAGE 317

23642 21454525
23643 43123145
23644 63245143
23645 21212712
23646 45466312
23647 21631271
23650 25514612
23651 66465124
23652 12234664
23653 45633337
23654 52371212 U19M14 BCD 1 11

DISCF TAP=3.0 04/25 20100 PAGE 318

*
* MESSAGES - FUNCTION 1
*
23655 12002401 BCD '20C14(41),20C28(41),11C31(34),08C16(34)''
23656 34740401
23657 34730200
23660 23C21474
23661 44C13473
23662 11212303
23663 01740304
23664 34730110
23665 23C10474
23666 03043437
23667 52310171 M1001A BCD 'I1Z,I2Z=21B,15B,27D I2K=15B I2J=20B I2C,ST=15B EIE=26D''
23670 73310271
23671 40020122
23672 73010522
23673 73020724
23674 12317142
23675 40010522
23676 12317141
23677 40020122
23700 12317123
23701 20626740
23702 11052712
23703 25312540
23704 02062437
23705 52715125 M1003A BCD 'ZREG=25B,22B,24C,18B SKRX=22E''
23706 27400205
23707 22730202
23710 22730204
23711 23730110
23712 22126242
23713 51674202
23714 02253712
23715 52624251 M1004A BCD 'SKRZ=22E,22F C13=27E IZ=16B IZC=ST=15B IZMC=26C ZCD=28B ZC=9B,10B,11B,

DISCF TAP=3.C 04/25 20100 PAGE 319

23716	7140020P		
23717	25730210		
23720	26122301		
23721	03400207		
23722	25123171		
23723	40010622		
23724	12317123		
23725	20626340		
23726	01052212		
23727	31714423		
23730	40020623		
23731	12712324		
23732	40021022		
23733	12712340		
23734	11227301		
23735	00227301		
23736	01227301		
23737	02223712		
23740	52230203	"1005A BCD	' C23=32E ZA14=9B IZP=16B''
23741	40030225		
23742	12712101		
23743	04401122		
23744	12317147		
23745	40010622		
23746	37121212		
23747	52230202	"1006A BCD	' C22=32E ZA13=9B IZP=16B''
23750	40030225		
23751	12712101		
23752	03401122		
23753	12317147		
23754	40010622		
23755	37121212		
23756	52230201	"1007A BCD	' C21=32E ZA12=8B IZP=16B''
23757	40030225		
23760	12712101		
23761	02401022		

DISCF TAP=3.C 04/25 20100 PAGE 320

23762	12317147		
23763	40010622		
23764	37121212		
23765	52230200	"1008A BCD	' C20=32E ZA11=8B IZP=16B''
23766	40030225		
23767	12712101		
23770	01401022		
23771	12317147		
23772	40010622		
23773	37121212		
23774	52230111	"1009A BCD	' C19=32E ZA10=8B IZP=16B''
23775	40030225		
23776	12712101		
23777	00401022		
24000	12317147		
24001	40010622		
24002	37121212		
24003	52230110	"1010A BCD	' C18=28E ZA09=7B IZP=16B''
24004	40021025		
24005	12712100		
24006	11400722		
24007	12317147		
24010	40010622		
24011	37121212		
24012	52230107	"1011A BCD	' C17=28E ZA08=7B IZP=16B''
24013	40021025		
24014	12712100		
24015	10400722		
24016	12317147		
24017	40010622		
24020	37121212		
24021	52230106	"1012A BCD	' C16=28E ZA07=7B IZP=16B''
24022	40021025		
24023	12712100		
24024	07400722		
24025	12317147		

DISCP	TAP=3.0	04/25	20100	PAGE 321
24026	40010622			
24027	37121212			
24030	52230105	M1013A	BCD	' C15=31E ZA06=6B IZP=16B''
24031	40030125			
24032	12712100			
24033	06400422			
24034	12317147			
24035	40010622			
24036	37121212			
24037	52230104	M1014A	BCD	' C14=31E ZA05=6B IZP=16B''
24040	40030125			
24041	12712100			
24042	05400622			
24043	12317147			
24044	40010622			
24045	37121212			
24046	52230103	M1015A	BCD	' C13=27E ZA04=6B IZP=16B''
24047	40020725			
24050	12712100			
24051	04400622			
24052	12317147			
24053	40010622			
24054	37121212			
24055	52230102	M1016A	BCD	' C12=31I ZA03=5B ZR3=20C,18D''
24056	40030131			
24057	12712100			
24060	03400522			
24061	12715103			
24062	40020023			
24063	73011024			
24064	37121212			
24065	52230101	M1017A	BCD	' C11=32E ZA02=5B ZR2=19C,18D''
24066	40030025			
24067	12712100			
24070	02400522			
24071	12715102			

DISCP	TAP=3.0	04/25	20100	PAGE 322
24072	40011123			
24073	73011024			
24074	37121212			
24075	52230100	M1018A	BCD	' C10=32E ZA01=5B ZR1=17C,18D''
24076	40030025			
24077	12712100			
24100	01400522			
24101	12715101			
24102	40010723			
24103	73011024			
24104	37121212			
24105	52230110	M1019A	BCD	' C18=28E ZA0=4B ZR0=17C IZE=17B,24B''
24106	40021024			
24107	12712100			
24110	40042012			
24111	71510040			
24112	01072012			
24113	31712540			
24114	01072073			
24115	02042037			
24116	52230107	M1020A	BCD	' C17=28E ZA00=4B ZR00=18D IZE=17B,24B''
24117	40021025			
24120	12712100			
24121	00400422			
24122	12715146			
24123	46400110			
24124	24123171			
24125	25400107			
24126	22730004			
24127	22371212			
24130	52230011	M1023A	BCD	' C09=32E ZC14=9B IZP=16B''
24131	40030025			
24132	12712301			
24133	04401122			
24134	12317147			
24135	40010622			

DISC#	TAP#	DATE	TIME	PAGE
24136	37121212	04/25	20100	323
24137	52230010	M1024A	BCD	' C08=31E ZC13=108 IZP=168''
24140	40030125			
24141	12712301			
24142	03400100			
24143	22123171			
24144	47400106			
24145	22371212			
24146	52230007	M1025A	BCD	' C07=31E ZC12=108 IZP=168''
24147	40030125			
24150	12712301			
24151	02400100			
24152	22123171			
24153	47400106			
24154	22371212			
24155	52230006	M1026A	BCD	' C06=31E ZC11=108 IZP=168''
24156	40030125			
24157	12712301			
24160	01400100			
24161	22123171			
24162	47400106			
24163	22371212			
24164	52230005	M1027A	BCD	' C05=31E ZC10=11B IZP=168''
24165	40030125			
24166	12712301			
24167	00400101			
24170	22123171			
24171	47400106			
24172	22371212			
24173	52230004	M1028A	BCD	' C04=31E ZC09=11B IZP=168''
24174	40030125			
24175	12712300			
24176	11400101			
24177	22123171			
24200	47400106			
24201	22371212			

DISC#	TAP#	DATE	TIME	PAGE
24202	52230003	M1029A	BCD	' C03=31E ZC08=11B IZP=168''
24203	40030125			
24204	12712300			
24205	10400101			
24206	22123171			
24207	47400106			
24210	22371212			
24211	52230002	M1030A	BCD	' C02=31E ZC07=12B IZP=168''
24212	40030125			
24213	12712300			
24214	07400102			
24215	22123171			
24216	47400106			
24217	22371212			
24220	52230001	M1031A	BCD	' C01=31E ZC06=12B IZP=168''
24221	40030125			
24222	12712300			
24223	04400102			
24224	22123171			
24225	47400106			
24226	22371212			
24227	52230000	M1032A	BCD	' C00=31E ZC05=12B IZP=168''
24230	40030125			
24231	12712300			
24232	05400102			
24233	22123171			
24234	47400106			
24235	22371212			
24236	52230003	M1033A	BCD	' C03=32E ZC4=13B IZE=17B,24B''
24237	40030125			
24240	12712304			
24241	40010322			
24242	12317125			
24243	40010722			
24244	73020422			
24245	37121212			

DISCF TAP=3.0 04/25 20100 PAGE 325

24246	52230207	*1034A BCD	' C22=32E ZC3=13B IZE=17B,24B''
24247	40030225		
24250	12712303		
24251	40010322		
24252	12317125		
24253	40010722		
24254	73020422		
24255	37121212		
24256	52230201	*1035A BCD	' C21=32E ZC2=13B IZE=17B,24B''
24257	40030225		
24260	12712302		
24261	40010322		
24262	12317125		
24263	40010722		
24264	73020422		
24265	37121212		
24266	52230200	*1036A BCD	' C20=32E ZC1=14B IZE=17B,24B''
24267	40030225		
24270	12712301		
24271	40010422		
24272	12317125		
24273	40010722		
24274	73020422		
24275	37121212		
24276	52230111	*1037A BCD	' C19=32E ZC0=14B IZE=17B,24B''
24277	40030225		
24300	12712300		
24301	40010422		
24302	12317125		
24303	40010722		
24304	73020422		
24305	37121212		
24306	52712551	*1038A BCD	' ZERO ERROR ZMP=19E,20E IZM=28D,27D''
24307	46122551		
24310	51465112		
24311	71444740		

DISCF TAP=3.0 04/25 20100 PAGE 326

24312	01112573		
24313	02002512		
24314	31714440		
24315	02102473		
24316	02072437		
24317	52714447	*1039A BCD	' ZMP3=20E ZMR=27D''
24320	03400200		
24321	25127144		
24322	51400207		
24323	24371212		
24324	52714447	*1040A BCD	' ZMP2=20E ZMR=27D''
24325	02400200		
24326	25127144		
24327	51400207		
24330	24371212		
24331	52714447	*1041A BCD	' ZMP1=20E ZMR=27D''
24332	01400200		
24333	25127144		
24334	51400207		
24335	24371212		
24336	52714447	*1042A BCD	' ZMP0=19E ZMR=27D''
24337	00400111		
24340	25127144		
24341	51400207		
24342	24371212		
24343	52714447	*1043A BCD	' ZMP00=19E ZMR=27D''
24344	00004001		
24345	11251271		
24346	44514702		
24347	07243712		
24350	52122221	*20138 BCD	' BAD WRD S/B OBJ TEST OVRFLD ERRORS ''
24351	24126451		
24352	24121212		
24353	12626122		
24354	12121212		
24355	46224112		

24356	63256263
24357	12466451
24360	26434412
24361	12122551
24362	51465162
24363	52371712

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*
*
*   MESSAGES - FUNCTION 2
*
F2M1 BCD      ' FILE ON LINE TEST FAILS'

24364 52522431
24365 43251244
24366 45124731
24367 45251263
24370 25626312
24371 26213143
24372 62121212
24373 52116231 BCD      ' 9S19A*29LSA*8C16A*2CAAA*4SkSC'
24374 46211402
24375 46436221
24376 33122301
24377 16213302
24400 73212121
24401 33046242
24402 62231212
24403 52121202 BCD      ' 2CAAA*8C17V*8C19A*9C20A*8C21A*8C22A*9C23A'
24404 23212121
24405 13122301
24406 07653310
24407 23011121
24410 33112302
24411 00213310
24412 23020121
24413 33122302
24414 02213311
24415 23020221
24416 52121202 BCD      ' 29LSA*20LCA*5C12A*3C13A*3C14A'
24417 46436221
24420 13024443
24421 00213305
24422 23010221
24423 33032301
24424 03213303

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DISCF TAP=3.0 04/25 20100 PAGE 329

24425	23010421				
24426	52056101				
24427	03740305		BCD		' 5/13(35),2/17,2/21,2/25,3/18,5/07,5/09,5/12,6/01,1
24430	34730261				
24431	01077302				
24432	61020173				
24433	02610205				
24434	73036101				
24435	10730561				
24436	00077305				
24437	61001173				
24440	05610102				
24441	73066100				
24442	01731212				
24443	52066100		BCD		' 6/05,6/06,6/07,6/11,6/22''
24444	05730661				
24445	00067306				
24446	61000773				
24447	06610101				
24450	73066102				
24451	02371212				
24452	52526242	F2M2	BCD		' SKS 10227 SKIPS'
24453	62120100				
24454	02020712				
24455	62423147				
24456	62121212				
24457	52022321		BCD		' 2CAAA'
24460	21211212				
24461	52036101		BCD		' 3/18(45),2/25,5/07,5/12,5/13,6/05,6/22''
24462	10740405				
24463	34730261				
24464	02057305				
24465	61000773				
24466	05610102				
24467	73056101				
24470	03730661				

DISCF TAP=3.0 04/25 20100 PAGE 330

24471	00057306				
24472	61020237				
24473	52526242	F2M3	BCD		' SKS 10224 SKIPS'
24474	62120100				
24475	02020412				
24476	62423147				
24477	62121212				
24500	52022321		BCD		' 2CAAA'
24501	21211212				
24502	52026102		BCD		' 2/25,6/05''
24503	05730661				
24504	00053712				
24505	52526242	F2M4	BCD		' SKS 10222 SKIPS'
24506	62120100				
24507	02020212				
24510	62423147				
24511	62121212				
24512	52022321		BCD		' 2CAAA'
24513	21211212				
24514	52026102		BCD		' 2/25,6/05''
24515	05730661				
24516	00053712				
24517	52526242	F2M6	BCD		' SKS 10206 SKIPS'
24520	62120100				
24521	02000612				
24522	62423147				
24523	62121212				
24524	52022321		BCD		' 2CAAA'
24525	21211212				
24526	52026101		BCD		' 2/17,6/05''
24527	07730661				
24530	00053712				
24531	52526242	F2M7	BCD		' SKS 10326 SKIPS'
24532	62120100				
24533	03020612				
24534	62423147				

DISCF TAP=3.0 04/25 20100 PAGE 331

24535	62121212			
24536	52022321	BCD	' 2CAAAA'	
24537	21211212			
24540	52026101	BCD	' 2/17,6/11''	
24541	07730661			
24542	01013712			
24543	52526242	F2M8 BCD	' SKS 17026 SKIPS'	
24544	62120107			
24545	00020612			
24546	62423147			
24547	62121212			
24550	52066231	BCD	' 6S19A0*8S18F'	
24551	46210013			
24552	10623146			
24553	26121212			
24554	52056100	BCD	' 5/09(35),5/10,5/13,6/03''	
24555	11740305			
24556	34730561			
24557	01007305			
24560	61010373			
24561	06610003			
24562	37121212			
24563	52526242	F2M9 BCD	' SKS 11226 SKIPS'	
24564	62120101			
24565	02020612			
24566	62423147			
24567	62121212			
24570	52066231	BCD	' 6S19A0*20LSA*8C16A'	
24571	46210013			
24572	02444362			
24573	21331123			
24574	01062112			
24575	52056101	BCD	' 5/12(35),2/21,5/07,5/08,5/09,5/10,6/01,6/06,6/22''	
24576	02740305			
24577	34730261			
24600	02017305			

DISCF TAP=3.0 04/25 20100 PAGE 332

24601	61000773			
24602	05610010			
24603	73056100			
24604	11730561			
24605	01007306			
24606	61001173			
24607	06610006			
24610	73056102			
24611	02371212			
24612	52526242	F2M10 BCD	' SKS 12226 SKIPS'	
24613	62121102			
24614	02020612			
24615	62423147			
24616	62121212			
24617	52064643	BCD	' 69LSA0'	
24620	62210012			
24621	52056100	BCD	' 5/07,5/08,5/09,5/10,6/22''	
24622	07730561			
24623	0107305			
24624	61001173			
24625	05610100			
24626	73056102			
24627	02371212			
24630	52526242	F2M11 BCD	' SKS 13226 SKIPS'	
24631	62121103			
24632	02020612			
24633	62423147			
24634	62121212			
24635	52054643	BCD	' 60LSA0'	
24636	62210012			
24637	52056100	BCD	' 5/08,5/09,5/10,6/22''	
24640	10730561			
24641	00117305			
24642	61010073			
24643	06610202			
24644	37121212			

DISCF	TAP=3.C	04/25	20100	PAGE 333
24645	52526242	F2M12	BCD	' SKS 14226 SKIPS'
24646	62120104			
24647	02020612			
24650	62423147			
24651	62121212			
24652	52064443		BCD	' 69LSAQ'
24653	62210012			
24654	52056100		BCD	' 5/03,5/07,5/08,5/10,6/06,6/07,6/22''
24655	03730561			
24656	00077305			
24657	61001073			
24660	05610100			
24661	73066100			
24662	06730661			
24663	00077306			
24664	61020237			
24665	52526242	F2M13	BCD	' SKS 15226 SKIPS'
24666	62120105			
24667	02020612			
24670	62423147			
24671	62121212			
24672	52064443		BCD	' 69LSAQ'
24673	62210012			
24674	52056100		BCD	' 5/08,6/22''
24675	10730661			
24676	02023712			
24677	52526242	F2M14	BCD	' SKS 16226 SKIPS'
24700	62120106			
24701	02020612			
24702	62423147			
24703	62121212			
24704	52064443		BCD	' 69LSAQ'
24705	62210012			
24706	52056100		BCD	' 5/08,6/22''
24707	10730661			
24710	02023712			

DISCF	TAP=3.C	04/25	20100	PAGE 334
24711	52526242	F2M15	BCD	' SKS 17226 SKIPS'
24712	62120107			
24713	02020612			
24714	62423147			
24715	62121212			
24716	52064443		BCD	' 69LSAQ'
24717	62210012			
24720	52056101		BCD	' 5/10,6/22''
24721	00730661			
24722	02023712			
24723	52526651	F2M16	BCD	' WRITE HEADER SWITCH TEST FAILS'
24724	31632512			
24725	30252124			
24726	25511262			
24727	66316323			
24730	30126325			
24731	62631226			
24732	21314362			
24733	52066231		BCD	' 6S18AQ*4SKSC*2CAAA*2C12A*3C13A,3C14A*3C16A*3WHRA'
24734	46210013			
24735	04624262			
24736	23330223			
24737	21212133			
24740	02230102			
24741	21330323			
24742	01032133			
24743	03230104			
24744	21330323			
24745	01062133			
24746	03663051			
24747	21121212			
24750	52056101		BCD	' 5/10(35),5/03,5/07,6/01,6/06''
24751	00740305			
24752	34730561			
24753	00037305			
24754	61000773			

DISCP TAP=3.0 04/25 20100 PAGE 335

24755	06610001			
24756	73066100			
24757	06371212			
24760	52526242	F2M17	BCD	' SKS 15026 SKIPS'
24761	62120105			
24762	00220412			
24763	62423147			
24764	62121212			
24765	52066231		BCD	' 6S10A0'
24766	46210012			
24767	52056101		BCD	' 5/1011'
24770	00371212			
24771	52526242	F2M18	BCD	' SKS 16026 SKIPS'
24772	62120106			
24773	00020612			
24774	62423147			
24775	62121212			
24776	52066231		BCD	' 6S10A0'
24777	46210012			
25000	52056101		BCD	' 5/10,6/01,6/0611'
25001	00730661			
25002	00017306			
25003	61000637			
25004	52526242	F2M19	BCD	' CONTROLLER READY TEST FAILS'
25005	45635146			
25006	43432551			
25007	12512521			
25010	24701263			
25011	65626212			
25012	26213143			
25013	62121212			
25014	52066231		BCD	' 6S10A0,200FA,1E04A,2IGDA,5C12A,3C13A,3C14A,3C16A'
25015	46210013			
25016	02000026			
25017	21330125			
25020	00042133			

DISCP TAP=3.0 04/25 20100 PAGE 336

25021	02310724			
25022	21331523			
25023	01020133			
25024	03231103			
25025	21331223			
25026	01040133			
25027	02231106			
25030	21121212			
25031	52026101		BCD	' 2/14(35),1/15,1/20,1/22,2/15,2/24,2/25,3/15,3/19,1'
25032	04740205			
25033	34730161			
25034	01057301			
25035	61021073			
25036	01610202			
25037	73026101			
25040	05730261			
25041	02047302			
25042	61020573			
25043	03611105			
25044	73036101			
25045	11731012			
25046	52040102		BCD	' 4/23,5/09,5/10,5/12,6/13,6/14,6/2311'
25047	05730261			
25050	00117305			
25051	61010073			
25052	05610102			
25053	73066101			
25054	03730661			
25055	01047306			
25056	61020337			
25057	02526242	F2M20	BCD	' TRACK VERIFIED TEST ERRONEOUSLY SKIPS'
25060	21234212			
25061	65251131			
25062	24317524			
25063	12632562			
25064	43122551			

DISCF TAP=3.0 04/25 20100 PAGE 337

25065	51464531		
25066	46646243		
25067	70126242		
25070	31476212		
25071	52066231	BCD	' 6S18A0#20;FA#5C12A.2C13A.3C14A.3C16A'
25072	46210019		
25073	02000126		
25074	21330529		
25075	01022133		
25076	02230103		
25077	21330323		
25100	01042133		
25101	03230106		
25102	21121212		
25103	52056100	BCD	' 5/09(35);1/15;3/15;B/10;6/01''
25104	11740305		
25105	34730161		
25106	01057303		
25107	61010573		
25110	05610100		
25111	73066100		
25112	01371212		
25113	52522346	F2M21 BCD	' CONTROLLER ERROR TEST FAILS'
25114	45635146		
25115	43432551		
25116	12255151		
25117	46511263		
25120	25626312		
25121	26213143		
25122	62121212		
25123	52066231	BCD	' 6S18A0#312EA.1E04.5C12A.3C13A.2C14A.3C16A'
25124	46210013		
25125	03010725		
25126	21330125		
25127	00043305		
25130	23010221		

DISCF TAP=3.0 04/25 20100 PAGE 338

25131	33032701		
25132	03213302		
25133	23010421		
25134	33032701		
25135	06211212		
25136	52056101	BCD	' 5/10(35);1/20;2/11;6/22''
25137	00740305		
25140	34730161		
25141	02007302		
25142	61010173		
25143	06610702		
25144	37121212		
25145	52526451	F2M22 BCD	' WRITE PROTECT SWITCH TEST FAILS'
25146	31632512		
25147	47514663		
25150	25236312		
25151	62663163		
25152	23301263		
25153	25626312		
25154	26213143		
25155	62121212		
25156	52066231	BCD	' 6S18A0#9WLKA.5C12A.2C13A.2C14A.3C16A'
25157	46210013		
25160	11664742		
25161	21330529		
25162	01022133		
25163	02230103		
25164	21330223		
25165	01042133		
25166	03230106		
25167	21121212		
25170	52056100	BCD	' 5/09(35);5/10''
25171	11740305		
25172	34730561		
25173	01003712		
25174	52527021	F2M32 BCD	' YA23A#2LARA#8C23A'

DISCF TAP=3.0 04/25 20100 PAGE 339

25175	02032113		
25176	02432151		
25177	21331023		
25200	02032112		
25201	52024321	BCD	' 2LARA#2U01A,200FA,0X04A,8PT2A'
25202	51211302		
25203	64000121		
25204	33020000		
25205	26213300		
25206	67000421		
25207	33104763		
25210	02211212		
25211	52046100	BCD	' 4/07(15),2/07,2/11,3/07,3/13,3/18,3/19,4/01,4/02,'
25212	07740105		
25213	34730261		
25214	00077302		
25215	61010173		
25216	03610007		
25217	73030101		
25220	03730361		
25221	01107303		
25222	61011173		
25223	04610001		
25224	73046100		
25225	02731212		
25226	52046100	BCD	' 4/03,4/23,5/02,5/03,5/04,5/06,5/07,6/05,6/08'
25227	03730461		
25230	02037305		
25231	61000273		
25232	05610003		
25233	73056100		
25234	04730561		
25235	00067305		
25236	61000773		
25237	06610005		
25240	73066100		

DISCF TAP=3.0 04/25 20100 PAGE 340

25241	01121212		
25242	02112102	BCD	' 9A23A#0X04A,0A23A'
25243	03211300		
25244	67000421		
25245	33002102		
25246	03211212		
25247	52006700	BCD	' 0X04A#8P1.A,0X01A,1F01A'
25250	04211310		
25251	47314521		
25252	33006700		
25253	01213301		
25254	26000121		
25255	52050101	BCD	' 5/18(34),4/01,4/02,5/03,5/07,6/07,6/08''
25256	10740304		
25257	34730461		
25260	00017304		
25261	61000273		
25262	05610003		
25263	73056100		
25264	07730461		
25265	00077306		
25266	61001037		
25267	52525121	F2-33 BCD	' 9A23A#3RGRA'
25270	02032113		
25271	03512751		
25272	21121212		
25273	52065127	BCD	' 6RGRA0#200FA#2U01A,1X04A'
25274	51210113		
25275	02000026		
25276	21330264		
25277	00012133		
25300	01670004		
25301	21121212		
25302	52046100	BCD	' 4/07(15),3/18,5/02,5/06,6/05,5/18''
25303	07740105		
25304	34730261		

DISCF TAP=3.C 04/25 20100 PAGE 341

25305	01107305			
25306	61000273			
25307	05410004			
25310	73066100			
25311	05730561			
25312	01103712			
25313	52527021	F2M34	BCD	' YA22A'
25314	02022112			
25315	52046100		BCD	' 4/08(15),5/02,4/04,5/18''
25316	10740105			
25317	34730561			
25320	00027304			
25321	61000473			
25322	05610110			
25323	37121212			
25324	52525121	F2M35	BCD	' RA22A#3RARA'
25325	02022113			
25326	03512151			
25327	21121212			
25330	52065121		BCD	' 6RARA0#200FA#2U01A,1X04A'
25331	51210013			
25332	02000026			
25333	21330264			
25334	00012133			
25335	01670004			
25336	21121212			
25337	52046100		BCD	' 4/08(15),5/02,5/03,5/04,5/18''
25340	10740105			
25341	34730561			
25342	00027305			
25343	61000373			
25344	05610004			
25345	73056101			
25346	10371212			
25347	52527021	F2M36	BCD	' YA21A'
25350	02012112			

DISCF TAP=3.C 04/25 20100 PAGE 342

25351	52046100		BCD	' 4/08(15),5/18,5/02,4/04''
25352	10740105			
25353	34730561			
25354	01107305			
25355	61000273			
25356	04610004			
25357	37121212			
25360	52525121	F2M37	BCD	' RA21A'
25361	02012112			
25362	52046100		BCD	' 4/08(15),5/02,5/18,6/05''
25363	10740105			
25364	34730561			
25365	00027305			
25366	61011073			
25367	06610005			
25370	37121212			
25371	52527021	F2M38	BCD	' YA20A'
25372	02002112			
25373	52046100		BCD	' 4/08(15),5/02,5/18,6/05''
25374	10740105			
25375	34730561			
25376	00027305			
25377	61011073			
25400	06610005			
25401	37121212			
25402	52525121	F2M39	BCD	' RA20A'
25403	02002112			
25404	52046100		BCD	' 4/08(15),5/02,5/18''
25405	10740105			
25406	34730561			
25407	00027305			
25410	61011037			
25411	52527021	F2M40	BCD	' YA19A'
25412	01112112			
25413	52046100		BCD	' 4/08(15),5/02,5/18''
25414	10740105			

DISCF	TAP#3.0	04/25	20100	PAGE 343
25415	34730561			
25416	00027305			
25417	61011037			
25420	52527021	F2M41	BCD	' RA19A'
25421	01102112			
25422	52046100		BCD	' 4/08(14),5/02,5/18''
25423	10740104			
25424	34730561			
25425	00027305			
25426	61011037			
25427	52527021	F2M42	BCD	' YA18A'
25430	01102112			
25431	52046100		BCD	' 4/09(14),5/02,5/18,6/06''
25432	11740104			
25433	34730561			
25434	00027305			
25435	61011073			
25436	06610006			
25437	37121212			
25440	52527021	F2M43	BCD	' RA18A'
25441	01102112			
25442	52046100		BCD	' 4/09(14),5/02,5/18,6/06''
25443	11740104			
25444	34730561			
25445	00027305			
25446	61011073			
25447	06610006			
25450	37121212			
25451	52527021	F2M44	BCD	' YA17A'
25452	01072112			
25453	52046100		BCD	' 4/09(14),5/02,5/18,6/06''
25454	11740104			
25455	34730561			
25456	00027305			
25457	61011073			
25460	06610006			

DISCF	TAP#3.0	04/25	20100	PAGE 344
25461	37121212			
25462	52527021	F2M45	BCD	' RA17A'
25463	01072112			
25464	52046100		BCD	' 4/09(14),5/02,5/18,6/06''
25465	11740104			
25466	34730561			
25467	00027305			
25470	61011073			
25471	06610006			
25472	37121212			
25473	52527021	F2M46	BCD	' YA16A'
25474	01062112			
25475	52046100		BCD	' 4/09(14),5/02,5/17''
25476	11740104			
25477	34730561			
25500	00027305			
25501	61011073			
25502	52527021	F2M47	BCD	' RA16A'
25503	01062112			
25504	52046100		BCD	' 4/09(14),5/02,5/17''
25505	11740104			
25506	34730561			
25507	00027305			
25510	61011073			
25511	52527021	F2M48	BCD	' YA15A'
25512	01052112			
25513	52046100		BCD	' 4/08(14),5/02,5/17,6/06''
25514	11740104			
25515	34730561			
25516	00027305			
25517	61011073			
25520	06610006			
25521	37121212			
25522	52527021	F2M49	BCD	' RA15A'
25523	01052112			
25524	52046100		BCD	' 4/09(14),5/02,5/17,6/06''

DISCF TAP=3.0 04/25 20100 PAGE 345

25525	11740104				
25526	34730661				
25527	00027305				
25530	61010773				
25531	06610006				
25532	07121212				
25533	52527021	F2M50	BCD	'	YA14A'
25534	01042112				
25535	52046101		BCD	'	4/10(14),5/02,5/17''
25536	00740104				
25537	34730661				
25540	00027305				
25541	61010773				
25542	52525121	F2M51	BCD	'	RA14A'
25543	01042112				
25544	52046101		BCD	'	4/10(14),5/02,5/17''
25545	00740104				
25546	34730661				
25547	00027305				
25550	61010773				
25551	52527021	F2M52	BCD	'	YA13A'
25552	01042112				
25553	52046101		BCD	'	4/10(14),6/01,5/17,5/01,3/20''
25554	00740104				
25555	34730661				
25556	00017305				
25557	61010773				
25560	0561001				
25561	73036102				
25562	00371212				
25563	52525121	F2M53	BCD	'	RA13A'
25564	01042112				
25565	52046101		BCD	'	4/10(14),6/01,5/17,5/01,3/20''
25566	00740104				
25567	34730661				
25570	00017305				

DISCF TAP=3.0 04/25 20100 PAGE 346

25571	61010773				
25572	0561001				
25573	73036102				
25574	00371212				
25575	52527021	F2M54	BCD	'	YA12A'
25576	01042112				
25577	52046101		BCD	'	4/10(14),6/01,5/17,5/01,3/20''
25600	00740104				
25601	34730661				
25602	00017305				
25603	61010773				
25604	0561001				
25605	73036102				
25606	00371212				
25607	52525121	F2M55	BCD	'	RA12A'
25610	01042112				
25611	52046101		BCD	'	4/10(14),6/01,5/17,5/01,3/20''
25612	00740104				
25613	34730661				
25614	00017305				
25615	61010773				
25616	0561001				
25617	73036102				
25620	00371212				
25621	52527021	F2M56	BCD	'	YA11A'
25622	01042112				
25623	52046101		BCD	'	4/10(14),5/01,4/21,5/17,6/07''
25624	00740104				
25625	34730661				
25626	00017305				
25627	61010773				
25630	0561001				
25631	73036102				
25632	00371212				
25633	52525121	F2M57	BCD	'	RA11A'
25634	01042112				

DISCF	TAP-3.C	04/25	20100	PAGE 347
25635	52046101		BCD	' 4/10(14),5/01,4/21,5/17,6/07''
25636	00740104			
25637	34730661			
25640	00017304			
25641	61020173			
25642	05610001			
25643	73066100			
25644	07371212			
25645	52527021	F2M58	BCD	' YA10A'
25646	01002112			
25647	52046101		BCD	' 4/11(14),6/07,5/17,5/01,4/21''
25650	01740104			
25651	34730661			
25652	00077305			
25653	61010773			
25654	05610001			
25655	73046102			
25656	01371212			
25657	52525121	F2M59	BCD	' RA10A'
25660	01002112			
25661	52046101		BCD	' 4/11(14),6/07,5/17,5/01,4/21''
25662	01740104			
25663	34730661			
25664	00077305			
25665	61010773			
25666	05610001			
25667	73046102			
25670	01371212			
25671	52527021	F2M60	BCD	' YA09A'
25672	00112112			
25673	52046101		BCD	' 4/11(14),6/07,5/16,5/01''
25674	01740104			
25675	34730661			
25676	00077305			
25677	61010673			
25700	05610001			

DISCF	TAP-3.C	04/25	20100	PAGE 348
25701	37121212			
25702	52525121	F2M61	BCD	' RA09A'
25703	00112112			
25704	52046101		BCD	' 4/11(14),6/07,5/16,5/01''
25705	01740104			
25706	34730661			
25707	00077305			
25710	61010673			
25711	05610001			
25712	37121212			
25713	52527021	F2M62	BCD	' YA08A'
25714	00102112			
25715	52046101		BCD	' 4/11(14),6/07,5/16,5/01''
25716	01740104			
25717	34730661			
25720	00077305			
25721	61010673			
25722	05610001			
25723	37121212			
25724	52525121	F2M63	BCD	' RA08A'
25725	00102112			
25726	52046101		BCD	' 4/11(14),6/07,5/16,5/01''
25727	01740104			
25730	34730661			
25731	00077305			
25732	61010673			
25733	05610001			
25734	37121212			
25735	52527021	F2M64	BCD	' YA07A'
25736	00072112			
25737	52046101		BCD	' 4/11(14),6/07,5/16,5/01''
25740	01740104			
25741	34730661			
25742	00077305			
25743	61010673			
25744	05610001			

DISCF	TAP=3.0	04/25	20100	PAGE 349
25745	37121212			
25746	52525121	F2M65	BCD	' RA07A'
25747	00072112			
25750	52046101		BCD	' 4/11(14),4/07,5/16,5/01''
25751	01740104			
25752	34730661			
25753	00077305			
25754	61010673			
25755	05610001			
25756	37121212			
25757	52527021	F2M66	BCD	' YA06A'
25760	00062112			
25761	52046101		BCD	' 4/12(14),5/01,5/16,6/08''
25762	02740104			
25763	34730661			
25764	00017305			
25765	61010673			
25766	06610010			
25767	37121212			
25770	52525121	F2M67	BCD	' RA06A'
25771	00062112			
25772	52046101		BCD	' 4/12(14),5/01,5/16,6/08''
25773	02740104			
25774	34730661			
25775	00017305			
25776	61010673			
25777	06610010			
26000	37121212			
26001	52520021	F2M68	BCD	' 0A05A TESTS SET'
26002	00052112			
26003	63256263			
26004	62126225			
26005	63121212			
26006	52056101		BCD	' 5/16(37),4/12=18 NOT GROUNDED (14)''
26007	06740307			
26010	34730661			

DISCF	TAP=3.0	04/25	20100	PAGE 350
26011	01024001			
26012	01024546			
26013	63122751			
26014	46644524			
26015	25241274			
26016	01043437			
26017	52520021	F2M69	BCD	' 0A04A TESTS SET'
26020	00042112			
26021	63256263			
26022	62126225			
26023	63121212			
26024	52056101		BCD	' 5/16(37),4/12=33 NOT GROUNDED (14)''
26025	06740307			
26026	34730661			
26027	01024001			
26030	03124546			
26031	63122751			
26032	46644524			
26033	25241274			
26034	01043437			
26035	52520021	F2M70	BCD	' 0A03A TESTS SET'
26036	00032112			
26037	63256263			
26040	62126225			
26041	63121212			
26042	52056101		BCD	' 5/16(37),4/12=36 NOT GROUNDED (14)''
26043	06740307			
26044	34730661			
26045	01024001			
26046	03124546			
26047	63122751			
26050	46644524			
26051	25241274			
26052	01043437			
26053	52522346	F2M71	BCD	' CONTROLLER ADDRESS REGISTER AFFECTED BY P0T T01
26054	45635146			

DISCP TAP=3.0 04/25 20100 PAGE 351

26055	43432551		
26056	12212424		
26057	51256262		
26060	12512527		
26061	31626325		
26062	51122126		
26063	26752763		
26064	25241222		
26065	70124746		
26066	63126346		
26067	12233021	BCD	' CHANNEL'
26070	45452543		
26071	52056100	BCD	' 5/04(15),5/01,5/02''
26072	04740105		
26073	34730561		
26074	00017305		
26075	61000237		
26076	52522346	F2M72 BCD	' CONTROLLER INTERFERING WITH CHANNEL PIN'
26077	45635146		
26100	43432551		
26101	12314563		
26102	25512425		
26103	51314527		
26104	12663163		
26105	30122330		
26106	21454525		
26107	43124731		
26110	45121212		
26111	52056101	BCD	' 5/16,5/17,5/18''
26112	06730561		
26113	01077305		
26114	61011037		
26115	52522124	F2M73 BCD	' ADDRESS 00=000=00 NOT VERIFIED IN 120 MILLISEC'
26116	24512562		
26117	62120000		
26120	40000000		

DISCP TAP=3.0 04/25 20100 PAGE 352

26121	40000012		
26122	45460312		
26123	65255131		
26124	26312524		
26125	12314512		
26126	01020012		
26127	44314343		
26130	31622523		
26131	52622321	BCD	' STATE SEQUENCING SHOULD BE STATES 0=4=1''
26132	63251262		
26133	25506425		
26134	45233145		
26135	27126230		
26136	46644324		
26137	12222512		
26140	02632163		
26141	25621200		
26142	40044001		
26143	37121212		
26144	52522124	F2M73A BCD	' ADDRESS 00=000=00 VERIFIED WITHIN 70 MILLISEC'
26145	24512562		
26146	62120000		
26147	40000000		
26150	40000012		
26151	45255131		
26152	26312524		
26153	12663163		
26154	30314512		
26155	07001244		
26156	31434331		
26157	62252312		
26160	52633144	BCD	' TIME SHOULD BE 116 MILLISEC'
26161	25124230		
26162	46644324		
26163	12222512		
26164	0101612		

DISCF TAP=3.0 04/25 20100 PAGE 353

26165	44314343		
26166	31622523		
26167	52626321	BCD	STATE SEQUENCING SHOULD BE STATES 0=4=1!!
26170	63251262		
26171	25506425		
26172	45233145		
26173	27126730		
26174	46644324		
26175	12222512		
26176	62632163		
26177	25621200		
26200	40044001		
26201	37121212		
26202	52522124	F2M74 BCD	ADDRESS 00=000=00 NOT VERIFIED IN 500 MILLISEC!
26203	24512562		
26204	62120000		
26205	40000000		
26206	40000012		
26207	45466312		
26210	65255131		
26211	26312524		
26212	12314512		
26213	05000012		
26214	44314343		
26215	31622523		
26216	52626321	BCD	STATE SEQUENCING SHOULD BE STATES 0=4=2=1!!
26217	63251262		
26220	25506425		
26221	45233145		
26222	27126730		
26223	46644324		
26224	12222512		
26225	62632163		
26226	25621200		
26227	40044002		
26230	40013712		

DISCF TAP=3.0 04/25 20100 PAGE 354

26231	52522124	F2M74A BCD	ADDRESS 00=000=00 VERIFIED WITHIN 120 MILLISEC!
26232	24512562		
26233	62120000		
26234	40000000		
26235	40000012		
26236	65255131		
26237	26312524		
26240	12663163		
26241	30314512		
26242	01020012		
26243	44314343		
26244	31622523		
26245	52633144	BCD	TIME SHOULD BE GREATER THAN 140 MILLISEC!
26246	25126730		
26247	46644324		
26250	12222512		
26251	27512521		
26252	63255112		
26253	63302145		
26254	12010400		
26255	12443143		
26256	43316225		
26257	23121212		
26260	52626321	BCD	STATE SEQUENCING SHOULD BE STATES 0=4=2=1!!
26261	63251262		
26262	25506425		
26263	45233145		
26264	27126730		
26265	46644324		
26266	12222512		
26267	62632163		
26270	25621200		
26271	40044002		
26272	40013712		
26273	52522124	F2M75 BCD	ADDRESS 37=377=37 NOT VERIFIED IN 500 MILLISEC!
26274	24512562		

DISCF TAP=3.0 04/25 20100 PAGE 355

26275	02127307		
26276	40030707		
26277	40030712		
26300	45466312		
26301	65255131		
26302	26312524		
26303	12314512		
26304	05000012		
26305	44314343		
26306	31622523		
26307	52506423	BCD	' QUCAO, VUCAO, XUCAO, ZUCAO, OR BAD HEADER'
26310	21007312		
26311	65642321		
26312	00731267		
26313	04232100		
26314	73127164		
26315	23210073		
26316	12465112		
26317	22212412		
26320	30252124		
26321	25511212		
26322	52026100	BCD	' 2/01,2/05,3/01,3/02,3/03,3/04,3/05,3/08,3/09,3/10,'
26323	01730261		
26324	00057303		
26325	61000173		
26326	03610002		
26327	73036100		
26330	03730361		
26331	00047303		
26332	61000573		
26333	03610010		
26334	73036100		
26335	11730361		
26336	01007312		
26337	52036101	BCD	' 3/17,3/18''
26340	07730361		

DISCF TAP=3.0 04/25 20100 PAGE 356

26341	01103712		
26342	52522124	F276 BCD	' ADDRESS 20=000=00 NOT VERIFIED IN 500 MILLISEC'
26343	24512562		
26344	62121200		
26345	40000000		
26346	43000012		
26347	45466312		
26350	65255131		
26351	26312524		
26352	12314512		
26353	05000012		
26354	44314343		
26355	31622523		
26356	52220124	BCD	' BAD HEADER'
26357	12302521		
26360	24255112		
26361	52016100	BCD	' 1/05,1/06,3/04,3/05,3/08,3/09,3/11,3/12(26=28)''
26362	05730361		
26363	00047303		
26364	61000473		
26365	03610005		
26366	73036100		
26367	10730361		
26370	00117303		
26371	61000173		
26372	03610102		
26373	74020440		
26374	02103437		
26375	52522124	F277 BCD	' ADDRESS 10=000=00 NOT VERIFIED IN 500 MILLISEC'
26376	24512562		
26377	62121100		
26400	40000000		
26401	40000012		
26402	45466312		
26403	65255131		
26404	26312524		

DISCF TAP=3.0 04/25 20100 PAGE 357

26405	12314512			
26406	05000012			
26407	44314343			
26410	31622523			
26411	52222124	BCD		' BAD HEADER'
26412	12302521			
26413	24255112			
26414	52036100	BCD		' 3/04,3/05,3/09(27=28)''
26415	04730361			
26416	00057303			
26417	61001174			
26420	02074002			
26421	10343712			
26422	52522124	F2M78	BCD	' ADDRESS 04=000=00 NOT VERIFIED IN 500 MILLISEC'
26423	24512562			
26424	62120004			
26425	40000000			
26426	40000012			
26427	45466312			
26430	65255131			
26431	26312524			
26432	12314512			
26433	05000012			
26434	44314343			
26435	31622523			
26436	52222124	BCD		' BAD HEADER'
26437	12302521			
26440	24255112			
26441	52026100	BCD		' 2/05,3/02,3/04,3/11,3/12(26=28)''
26442	05730361			
26443	00027303			
26444	61000473			
26445	03610101			
26446	73030101			
26447	02740206			
26450	40021034			

DISCF TAP=3.0 04/25 20100 PAGE 358

26451	37121212			
26452	52522124	F2M79	BCD	' ADDRESS 02=000=00 NOT VERIFIED IN 500 MILLISEC'
26453	24512562			
26454	62120002			
26455	40000000			
26456	40000012			
26457	45466312			
26460	65255131			
26461	26312524			
26462	12314512			
26463	05000012			
26464	44314343			
26465	31622523			
26466	52222124	BCD		' BAD HEADER'
26467	12302521			
26470	24255112			
26471	52026100	BCD		' 2/05,3/02,3/04,3/11(26=28)''
26472	05730361			
26473	00027303			
26474	61000473			
26475	03610101			
26476	74020640			
26477	02103437			
26500	52522124	F2M80	BCD	' ADDRESS 01=000=00 NOT VERIFIED IN 500 MILLISEC'
26501	24512562			
26502	62120001			
26503	40000000			
26504	40000012			
26505	45466312			
26506	65255131			
26507	26312524			
26510	12314512			
26511	05000012			
26512	44314343			
26513	31622523			
26514	52222124	BCD		' BAD HEADER'

DISCF TAP=3.0 04/25 20100 PAGE 359

26515	12302521		
26516	24255112		
26517	52016100	BCD	' 1/01,1/03,1/04,1/06,2/05,3/02,3/04,3/08,3/11,3/12'
26520	01730161		
26521	00037301		
26522	61000473		
26523	01610006		
26524	73026100		
26525	05730361		
26526	00027303		
26527	61000473		
26530	03610010		
26531	73036101		
26532	01730161		
26533	01021212		
26534	52740206	BCD	' (26=28)''
26535	40021034		
26536	37121212		
26537	52522124	F2M81 BCD	' ADDRESS 00=200=00 NOT VERIFIED IN 500 MILLISEC'
26540	24512562		
26541	62120000		
26542	40020000		
26543	40000012		
26544	45460312		
26545	65255131		
26546	26312524		
26547	12314512		
26550	05000012		
26551	44314343		
26552	31620523		
26553	52222124	BCD	' BAD HEADER'
26554	12302521		
26555	24255112		
26556	52016100	BCD	' 1/04,3/05,3/08''
26557	04730161		
26560	00057303		

DISCF TAP=3.0 04/25 20100 PAGE 360

26561	1001037		
26562	52522124	F2M82 BCD	' ADDRESS 00=100=00 NOT VERIFIED IN 500 MILLISEC'
26563	24512562		
26564	62120000		
26565	40020000		
26566	40000012		
26567	45460312		
26570	65255131		
26571	26312524		
26572	12314512		
26573	05000012		
26574	44314343		
26575	31620523		
26576	52222124	BCD	' BAD HEADER'
26577	12302521		
26600	24255112		
26601	52036100	BCD	' 3/08,3/09(27)''
26602	01730161		
26603	00117402		
26604	07343712		
26605	52522124	F2M83 BCD	' ADDRESS 00=040=00 NOT VERIFIED IN 500 MILLISEC'
26606	24512562		
26607	62120000		
26610	40020000		
26611	40000012		
26612	45460312		
26613	65255131		
26614	26312524		
26615	12314512		
26616	05000012		
26617	44314343		
26620	31620523		
26621	52222124	BCD	' BAD HEADER'
26622	12302521		
26623	24255112		
26624	52036100	BCD	' 3/04,3/05,3/09,3/11(26=28)''

DISCF TAP=3.0 04/25 20100 PAGE 361

26625	04730361			
26626	00057303			
26627	61001173			
26630	03610101			
26631	74020640			
26632	02103437			
26633	52522124	F2M84	BCD	' ADDRESS 00=020=00 NOT VERIFIED IN 500 MILLISEC'
26634	24512562			
26635	62120000			
26636	40000200			
26637	40000012			
26640	45466312			
26641	65255131			
26642	26312524			
26643	12314512			
26644	05000012			
26645	44314343			
26646	31622523			
26647	52222124	BCD		' BAD HEADER'
26650	12302521			
26651	24255112			
26652	52036100	BCD		' 3/02,3/04(27=28)''
26653	02730361			
26654	00047402			
26655	07400210			
26656	34371212			
26657	52522124	F2M85	BCD	' ADDRESS 00=010=00 NOT VERIFIED IN 500 MILLISEC'
26660	24512562			
26661	62120000			
26662	40000100			
26663	40000012			
26664	45466312			
26665	65255131			
26666	26312524			
26667	12314512			
26670	05000012			

DISCF TAP=3.0 04/25 20100 PAGE 362

26671	44314343			
26672	31622523			
26673	52222124	BCD		' BAD HEADER'
26674	12302521			
26675	24255112			
26676	52036100	BCD		' 3/02,3/04,3/11(26=28)''
26677	02730361			
26700	00047303			
26701	61010174			
26702	02064002			
26703	10343712			
26704	52522124	F2M86	BCD	' ADDRESS 00=004=00 NOT VERIFIED IN 500 MILLISEC'
26705	24512562			
26706	62120000			
26707	40000004			
26710	40000012			
26711	45466312			
26712	65255131			
26713	26312524			
26714	12314512			
26715	05000012			
26716	44314343			
26717	31622523			
26720	52222124	BCD		' BAD HEADER'
26721	12302521			
26722	24255112			
26723	52026100	BCD		' 2/05,3/02,3/05(27=28)''
26724	05730361			
26725	00027303			
26726	61000574			
26727	02074002			
26730	10343712			
26731	52522124	F2M87	BCD	' ADDRESS 00=002=00 NOT VERIFIED IN 500 MILLISEC'
26732	24512562			
26733	62120000			
26734	40000002			

DISCF TAP=3.0 04/25 20100 PAGE 363

26735	40000012			
26736	45466312			
26737	65255131			
26740	26312524			
26741	12314512			
26742	05000012			
26743	44314343			
26744	31622523			
26745	52222124	BCD		' BAD HEADER'
26746	12302521			
26747	24255112			
26750	52036100	BCD		' 3/02,3/05(27*28)''
26751	02730361			
26752	00057402			
26753	07400210			
26754	34371212			
26755	52522124	F2M88 BCD		' ADDRESS 00=001=00 NOT VERIFIED IN 500 MILLIBEC'
26756	24512562			
26757	62120000			
26760	40000001			
26761	40000012			
26762	45466312			
26763	65255131			
26764	26312524			
26765	12314512			
26766	05000012			
26767	44314343			
26770	31622523			
26771	52222124	BCD		' BAD HEADER'
26772	12302521			
26773	24255112			
26774	52036100	BCD		' 3/05(28)''
26775	05740210			
26776	34371212			
26777	52522124	F2M89 BCD		' PAVA ERRONIOUSLY LOW'
27000	65211225			

DISCF TAP=3.0 04/25 20100 PAGE 364

27001	11514445			
27002	31466462			
27003	43701243			
27004	46661212			
27005	52026102	BCD		' 2/21,2/21,2/23,2/24(29),6/21(47)''
27006	01730361			
27007	02617302			
27010	61020373			
27011	02610204			
27012	74021134			
27013	73066102			
27014	11740407			
27015	34371212			
27016	32520747	F2M90 BCD		' 7PAVAQ'
27017	21652100			
27020	52026102	BCD		' 2/21(29)''
27021	01740211			
27022	34371212			
27023	52520747	F2M91 BCD		' 7PAVAQ'
27024	21652100			
27025	52026102	BCD		' 2/22(29)''
27026	02740211			
27027	34371212			
27030	52520747	F2M92 BCD		' 7PAVAQ'
27031	21652100			
27032	52026102	BCD		' 2/22(29)''
27033	02740211			
27034	34371212			
27035	52520747	F2M93 BCD		' 7PAVAQ'
27036	21652100			
27037	52026102	BCD		' 2/22(29)''
27040	02740211			
27041	34371212			
27042	52520747	F2M94 BCD		' 7PAVAQ'
27043	21652100			
27044	52026102	BCD		' 2/22(29)''

DISCF	TAP=3.0	04/25	20100	PAGE 365
27045	02740211			
27046	34371212			
27047	52520747	F2M95	BCD	' 7PAVA01
27050	21652100			
27051	52026102		BCD	' 2/22(29)''
27052	02740211			
27053	34371212			
27054	52520747	F2M96	BCD	' 7PAVA01
27055	21652100			
27056	52026102		BCD	' 2/23(29)''
27057	03740211			
27060	34371212			
27061	52074721	F2M97	BCD	' 7PAVA01
27062	65210012			
27063	52026102		BCD	' 2/23(29)''
27064	03740211			
27065	34371212			
27066	52520747	F2M98	BCD	' 7PAVA01
27067	21652100			
27070	52026102		BCD	' 2/23(29)''
27071	03740211			
27072	34371212			
27073	52520747	F2M99	BCD	' 7PAVA01
27074	21652100			
27075	52026102		BCD	' 2/23(29)''
27076	03740211			
27077	34371212			
27100	52520747	F2M100	BCD	' 7PAVA01
27101	21652100			
27102	52026102		BCD	' 2/23(29)''
27103	03740211			
27104	34371212			
27105	52520747	F2M101	BCD	' 7PAVA01
27106	21652100			
27107	52026102		BCD	' 2/21(29),6/21(47)''
27110	01740211			

DISCF	TAP=3.0	04/25	20100	PAGE 366
27111	34730661			
27112	02017404			
27113	07343712			
27114	52520747	F2M102	BCD	' 7PAVA01
27115	21652100			
27116	52026102		BCD	' 2/22(29),6/21(47)''
27117	02740211			
27120	34730661			
27121	02017404			
27122	07343712			
27123	52520747	F2M103	BCD	' 7PAVA01
27124	21652100			
27125	52026102		BCD	' 2/22(29),6/21(47)''
27126	02740211			
27127	34730661			
27130	02017404			
27131	07343712			
27132	52520747	F2M104	BCD	' 7PAVA01
27133	21652100			
27134	52026102		BCD	' 2/22(29),6/21(47)''
27135	02740211			
27136	34730661			
27137	02017404			
27140	07343712			
27141	52520747	F2M105	BCD	' 7PAVA01
27142	21652100			
27143	52026102		BCD	' 2/22(29),6/21(47)''
27144	02740211			
27145	34730661			
27146	02017404			
27147	07343712			
27150	52520747	F2M106	BCD	' 7PAVA01
27151	21652100			
27152	52026102		BCD	' 2/22,2/24(29),6/21(47)''
27153	02730661			
27154	02047402			

DISCF	TAF=3.0	04/25	20100	PAGE 367
27155	11347306			
27156	61020174			
27157	64073437			
27160	62520747	F2M107	BCD	' 7PAVA01
27161	21652100			
27162	62026102		BCD	' 2/23(29),6/21(47)!!
27163	63740211			
27164	64730661			
27165	62017404			
27166	67343712			
27167	62520747	F2M108	BCD	' 7PAVA01
27170	21652100			
27171	62026102		BCD	' 2/23(29),6/21(47)!!
27172	63740211			
27173	64730661			
27174	62017404			
27175	67343712			
27176	62520747	F2M109	BCD	' 7PAVA01
27177	21652100			
27200	62026102		BCD	' 2/23(29),6/21(47)!!
27201	63740211			
27202	64730661			
27203	62017404			
27204	67343712			
27205	62520747	F2M110	BCD	' 7PAVA01
27206	21652100			
27207	62026102		BCD	' 2/23(29),6/21(47)!!
27210	63740211			
27211	64730661			
27212	62017404			
27213	67343712			
27214	62520747	F2M111	BCD	' 7PAVA01
27215	21652100			
27216	62026102		BCD	' 2/23,2/24(29),6/21(47)!!
27217	63740211			
27220	6047402			

DISCF	TAF=3.0	04/25	20100	PAGE 368
27221	11347306			
27222	61020174			
27223	64073437			
27224	62520747	F2M112	BCD	' 6S18A01
27225	31462100			
27226	62026102		BCD	' 2/14,5/10,5/12(35)!!
27227	64730661			
27230	61020174			
27231	61010274			
27232	63053437			
27233	62520747	F2M113	BCD	' 6S18A01
27234	31462100			
27235	62026102		BCD	' 5/10(35)!!
27236	60740305			
27237	64371212			
27240	62520747	F2M114	BCD	' SKS 16026 SKIPS IN STATE !!
27241	62120145			
27242	60200412			
27243	62420147			
27244	62120145			
27245	12620221			
27246	63251201			
27247	62026102		BCD	' 5/10(35)!!
27250	60740305			
27251	64371212			
27252	62520747	F2M115	BCD	' SKS 12226 SKIPS IN STATE !!
27253	62120145			
27254	62026102			
27255	62420147			
27256	62120145			
27257	12620221			
27260	63251201			
27261	62026102		BCD	' 5/10(35)!!
27262	60740305			
27263	64371212			
27264	62520747	F2M116	BCD	' ADDRESS 00=000=00 NOT VERIFIED IN 500 MILLISEC!

27265 24512562
 27266 62120000
 27267 40000000
 27270 40000012
 27271 4546631P
 27272 65255131
 27273 26312524
 27274 12314512
 27275 05000012
 27276 44314343
 27277 31622523
 27300 52626321
 27301 63251262
 27302 25506425
 27303 45233145
 27304 27126230
 27305 46644324
 27306 12222512
 27307 62632163
 27310 25621200
 27311 40034204
 27312 40013712
 27313 62522124
 27314 24512562
 27315 62120000
 27316 40000000
 27317 40000012
 27320 4546631P
 27321 65255131
 27322 26312524
 27323 12663163
 27324 30314512
 27325 07001244
 27326 31434331
 27327 62252312
 27330 52626321

BCD ' STATE SEQUENCING SHOULD BE STATES 0=3=4=1'

F2=117 BCD ' ADDRESS 00=000=00 NOT VERIFIED WITHIN 70 MILLISEC'

BCD ' STATE SEQUENCING SHOULD BE STATES 0=3=4=1'

27331 63251262
 27332 25506425
 27333 45233145
 27334 27126230
 27335 46644324
 27336 12222512
 27337 62632163
 27340 25621200
 27341 40034204
 27342 40011212
 27343 52302521
 27344 24255112
 27345 44217012
 27346 30214525
 27347 12222525
 27350 45124431
 27351 62512521
 27352 24124445
 27353 63253712
 27354 52522124
 27355 24512562
 27356 62127307
 27357 40030707
 27360 40030712
 27361 4546631P
 27362 65255131
 27363 26312524
 27364 12663163
 27365 30314512
 27366 07001244
 27367 31434331
 27370 62252312
 27371 52314512
 27372 62632163
 27373 25120312
 27374 52222124

BCD ' HEADER MAY HAVE BEEN MISREAD ONCE'

F2=118 BCD ' ADDRESS 37=377=37 NOT VERIFIED WITHIN 70 MILLISEC'

BCD ' IN STATE 3'

BCD ' BAD HEADER'

DISCF TAP=3.C 04/25 20100 PAGE 371

27375	12302521		
27376	24255112		
27377	52026100	BCD	' 2/01,3/10(28)''
27400	01730361		
27401	01007402		
27402	10343712		
27403	52522124	F2M19 BCD	' ADDRESS 00=000=02 NOT VERIFIED WITHIN 70 MILLISEC'
27404	24512562		
27405	62120000		
27406	40000000		
27407	40000212		
27410	45466312		
27411	65255131		
27412	26312524		
27413	12663163		
27414	30314512		
27415	07001244		
27416	31434331		
27417	62252312		
27420	52314512	BCD	' IN STATE 3'
27421	62632163		
27422	25120312		
27423	52222124	BCD	' BAD HEADER'
27424	12302521		
27425	24255112		
27426	52026100	BCD	' 2/05,3/05(28)''
27427	05730361		
27430	00057402		
27431	10343712		
27432	52522124	F2M120 BCD	' ADDRESS 00=000=01 NOT VERIFIED WITHIN 70 MILLISEC'
27433	24512562		
27434	62120000		
27435	40000000		
27436	40000112		
27437	45466312		
27440	65255131		

DISCF TAP=3.C 04/25 20100 PAGE 372

27441	26312524		
27442	12663163		
27443	30314512		
27444	07001244		
27445	31434331		
27446	62252312		
27447	52314512	BCD	' IN STATE 3'
27450	62632163		
27451	25120312		
27452	52222124	BCD	' BAD HEADER'
27453	12302521		
27454	24255112		
27455	52026100	BCD	' 2/05(28)''
27456	05740310		
27457	34371212		
27460	52522551	F2M121 BCD	' ERROR SET DURING VERIFICATION OF ADDRESS 00=000=00'
27461	51465112		
27462	62252312		
27463	45466313		
27464	45271265		
27465	25513126		
27466	31232163		
27467	31464512		
27470	44261221		
27471	24245125		
27472	62621200		
27473	00400000		
27474	00400000		
27475	52212500	BCD	' AEO2A=203FA,2G03A,2IXDA''
27476	02211302		
27477	00032421		
27500	33022700		
27501	03213302		
27502	31672421		
27503	37121212		
27504	52522551	F2M122 BCD	' ERROR SET DURING VERIFICATION OF ADDRESS 00=000=00'

DJSCF TAF=3.0 04/25 20100 PAGE 373

27505	5144F112		
27506	62250312		
27507	24644431		
27510	46271245		
27511	25513126		
27512	31232163		
27513	31464412		
27514	46261221		
27515	24245125		
27516	62621200		
27517	00402000		
27520	00400000		
27521	62621224	BCD	' SLD40#0G01A#202FA#0G02A#2TUGA'
27522	21001200		
27523	27001121		
27524	33021002		
27525	26213300		
27526	27001121		
27527	33021164		
27530	27211212		
27531	62702421	BCD	' YEAA0#1G01A#1G02A#1G03A#204FA#2M0NA'
27532	21001201		
27533	27001121		
27534	33010700		
27535	22213301		
27536	27001121		
27537	33021004		
27540	26213302		
27541	44464421		
27542	52121212	BCD	' +202FA#2M0NA#2CKGA'
27543	12122102		
27544	00022421		
27545	33021446		
27546	45013302		
27547	23420021		
27550	37121212		

DJSCF TAF=3.0 04/25 20100 PAGE 374

•
• MESSAGES - FUNCTION 3
•
F3-1

27551	52522167	BCD	' AX03A#3C12A#2MHAA#8BLCA'
27552	00030113		
27553	03201102		
27554	21331944		
27555	30215133		
27556	10224423		
27557	21121212		
27560	52121212	BCD	' 7MHAA0#9Y10A#8Y11A#9Y12A#9Y13A#8Y14A'
27561	07443021		
27562	21001211		
27563	70010021		
27564	20107001		
27565	01210211		
27566	70010021		
27567	20117001		
27570	03212010		
27571	70010421		
27572	52214400	BCD	' A002A#201FA#2FHZB#2BNCA#6020A'
27573	02211302		
27574	00012621		
27575	33022451		
27576	71223302		
27577	02452321		
27600	03065002		
27601	00211212		
27602	02121202	BCD	' 2BNCA#8FHAF#2X03A'
27603	22452321		
27604	13102430		
27605	21263302		
27606	27001121		
27607	52212400	BCD	' AF02A#201FA#21JFA#4020A'
27610	02211302		
27611	00012421		

DISCF TAP-3. 04/25 20100 PAGE 375

27612	33023164			
27613	26212304			
27614	50020221			
27615	52016101	BCD		' 1/12,1/14(2),4/01,4/03(2),5/04,5/05(36),1/16,2/13(39),1
27616	02731161			
27617	01047402			
27620	34730461			
27621	00017304			
27622	61000374			
27623	02040473			
27624	05610004			
27625	23050100			
27626	05740306			
27627	04730161			
27630	01067302			
27631	61010374			
27632	03113473			
27633	02060100	BCD		' 6/01(41),6/13(42),1/22,2/25(45),6/12(46)''
27634	01740001			
27635	34730461			
27636	01030404			
27637	03340301			
27640	01020373			
27641	02710005			
27642	74040534			
27643	23060101			
27644	02740306			
27645	04370112			
27646	02520444	FB32 BCD		' 2MHAA'
27647	03010112			
27650	02060101	BCD		' 6/13(42),5/04,5/05(36),4/01(24)''
27651	03740002			
27652	34730161			
27653	02047305			
27654	61000374			
27655	02060473			

DISCF TAP-3. 04/25 20100 PAGE 376

27656	04710101			
27657	74040534			
27660	02120112			
27661	02520444	FB33 BCD		' 2MHAA'
27662	03010112			
27663	02060101	BCD		' 6/13(42),5/05(36)''
27664	03740002			
27665	34730161			
27666	02067403			
27667	01340312			
27670	02520444	FB34 BCD		' 2MHAA'
27671	03010112			
27672	02060101	BCD		' 6/12(46),5/05(36)''
27673	02740306			
27674	34730161			
27675	02050403			
27676	01340312			
27677	02520444	FB36 BCD		' FCW NBT RECEIVED DURING WRITE ATTEMPT'
27700	66104046			
27701	61120125			
27702	02050164			
27703	05240224			
27704	04510145			
27705	02120112			
27706	01630512			
27707	01630325			
27710	04470112			
27711	02210100	BCD		' A001A*207FA*20K0A'
27712	01010302			
27713	00020201			
27714	03020442			
27715	02010112			
27716	02020342	BCD		' 20K3A*207FA*2001A*20K0A'
27717	02210302			
27720	00070401			
27721	03020100			

DISCP TAP=3.C 04/25 20100 PAGE 377

27722	01213302			
27723	23420021			
27724	52216400	BCD		' A004A#207FA.3U02A.2H07A.2CT1A.2CK0A'
27725	04211302			
27726	00072621			
27727	33036400			
27730	02213302			
27731	30000721			
27732	33022363			
27733	01213302			
27734	23420021			
27735	52226400	BCD		' BU04A#207FA.3U02A.246BA.2CK0A'
27736	04211302			
27737	00072621			
27740	33036400			
27741	02213302			
27742	04062221			
27743	33022342			
27744	00211212			
27745	52062523	BCD		' 6ECYAO#207FA.2U04A'
27746	70210013			
27747	02000726			
27750	21330264			
27751	00042137			
27752	52522346	F3M7 BCD		' CNTRBLLER DID NOT SEQUENCE TO STATE 0 FROM STATE 7''
27753	45635146			
27754	43432551			
27755	12243124			
27756	12454463			
27757	12622550			
27760	64254523			
27761	25126346			
27762	12626321			
27763	63251200			
27764	12265146			
27765	44126263			

DISCP TAP=3.C 04/25 20100 PAGE 378

27766	21632512			
27767	07371212			
27770	52522226	F3M8 BCD		' BF03A'
27771	00032112			
27772	52016101	BCD		' 1/10,1/14(11)''
27773	00730161			
27774	01047401			
27775	01343712			
27776	52522346	F3M9 BCD		' CNTRBLLER NOT READY AFTER 112 MILLISEC''
27777	45635146			
30000	43432551			
30001	12454463			
30002	12512521			
30003	24701221			
30004	26632551			
30005	12010102			
30006	12443143			
30007	43316225			
30010	23371212			
30011	52522651	F3M10 BCD		' WRITE MONITR BR SEARCH ERROR * ADDRESS 00#00#00''
30012	31632512			
30013	44464531			
30014	63465112			
30015	46511262			
30016	25215123			
30017	00122551			
30020	51465112			
30021	40122124			
30022	24512562			
30023	62120000			
30024	40000000			
30025	40001237			
30026	52522625	F3M11 BCD		' 6ECYAO#207FA.2U04A'
30027	23702100			
30030	13020007			
30031	26212702			

DISCP TAP=3.0 04/25 20100 PAGE 379

30032	64000421			
30033	52216400	BCD		' AU04A#207FA#21UEA#2CT2A#2CK0A'
30034	04211302			
30035	00072621			
30036	33023164			
30037	25213302			
30040	23630221			
30041	33022742			
30042	00211212			
30043	52226400	BCD		' BU04A#2VFGA#2U02A#2CT5A'
30044	04211302			
30045	65262721			
30046	33026400			
30047	02213302			
30050	23630221			
30051	52026100	BCD		' 2/02,2/07,2/13,2/21,2/18,3/05,1/16,3/14''
30052	07730261			
30053	00077302			
30054	61010273			
30055	02610201			
30056	73026101			
30057	10730361			
30060	00057301			
30061	61010473			
30062	03610104			
30063	37121212			
30064	52522147	F3*12 BCD		' AP01A#29GSX#84POA'
30065	00012113			
30066	02622762			
30067	07331151			
30070	47002112			
30071	52226200	BCD		' BS01A#2SSRX#1S02A'
30072	01211302			
30073	62625167			
30074	33016200			
30075	02211212			

DISCP TAP=3.0 04/25 20100 PAGE 380

30076	52074723	BCD		' 7PCHA0#CP,1A#1S01A#1PC1A#CS01A'
30077	00210213			
30100	00470201			
30101	21331162			
30102	00012120			
30103	01470201			
30104	21331162			
30105	00012112			
30106	52212500	BCD		' AE01A#207FA#2U02A#2CT5A#8PCHA#2X03A#2CK0A'
30107	01211302			
30110	00072621			
30111	33026400			
30112	07213302			
30113	23630221			
30114	33104723			
30115	30213302			
30116	47002721			
30117	33026400			
30120	00211212			
30121	52226200	BCD		' BE02A# SAME'
30122	02211312			
30123	62214425			
30124	52212500	BCD		' AE03A# SAME'
30125	03211312			
30126	62214425			
30127	52040102	BCD		' 4/24,3/23,3/22,3/24,6//11,4/15,4/16,4/24,4/25,4/20,4/19,1'
30130	04730361			
30131	07037303			
30132	61020273			
30133	03610204			
30134	73064161			
30135	01017204			
30136	61010573			
30137	04610106			
30140	73046102			
30141	04730461			

DISCF TAP=3.0 04/25 20100 PAGE 381

30142	02057304			
30143	61020073			
30144	04610111			
30145	73121212			
30146	52036102	BCD	' 3/21,5/03,5/04,1/17,6/11,6/12''	
30147	01730761			
30150	00037905			
30151	61000473			
30152	01610107			
30153	73066101			
30154	01730661			
30155	01023712			
30156	52526651	F3M13 BCD	' WRITE ERROR = DATA#40000000'	
30157	31632512			
30160	25515146			
30161	51124012			
30162	24216321			
30163	13000000			
30164	00000000			
30165	00121212			
30166	52046101	BCD	' 4/15,4/24,4/25,6/23,6/12,3/20,3/18,1/17''	
30167	05730461			
30170	02047304			
30171	61020073			
30172	06610203			
30173	73066101			
30174	02730761			
30175	02007303			
30176	61011073			
30177	01610107			
30200	07121212			
30201	52526651	F3M14 BCD	' WRITE ERROR = DATA#20000000'	
30202	31632512			
30203	25515146			
30204	51124012			
30205	24216321			

DISCF TAP=3.0 04/25 20100 PAGE 382

30206	13000000			
30207	00000000			
30210	00121212			
30211	52046102	BCD	' 4/24,4/25,4/15,6/12''	
30212	04730461			
30213	02057304			
30214	61010573			
30215	06610102			
30216	07121212			
30217	52526651	F3M15 BCD	' WRITE ERROR = DATA#10000000'	
30220	31632512			
30221	25515146			
30222	51124012			
30223	24216321			
30224	13000000			
30225	00000000			
30226	00121212			
30227	52046101	BCD	' 4/15,4/19,4/20,4/25,6/12''	
30230	05730461			
30231	01117304			
30232	61020073			
30233	04610705			
30234	73066101			
30235	02371212			
30236	52526651	F3M16 BCD	' WRITE ERROR = DATA#04000000'	
30237	31632512			
30240	25515146			
30241	51124012			
30242	24216321			
30243	13000000			
30244	00000000			
30245	00121212			
30246	52046102	BCD	' 4/20,4/15,4/19,6/12''	
30247	00730461			
30250	01057304			
30251	61011173			

DISCF TAP=3.0 04/25 20100 PAGE 383

30252	06610102			
30253	37121212			
30254	52526A51	F3M17	BCD	' WRITE ERROR = DATA#02000000'
30255	31632512			
30256	25515146			
30257	51124012			
30260	24216321			
30261	13000200			
30262	00000000			
30263	00121212			
30264	52036102	BCD		' 3/23,4/16,4/19,6/12''
30265	0730461			
30266	01067304			
30267	61011173			
30270	06610102			
30271	37121212			
30272	52526A51	F3M18	BCD	' WRITE ERROR = DATA#01000000'
30273	31632512			
30274	25515146			
30275	51124012			
30276	24216321			
30277	13000100			
30300	00000000			
30301	00121212			
30302	52036102	BCD		' 3/23,3/21,4/16,6/11,5/03''
30303	0730361			
30304	02017104			
30305	61010473			
30306	26610101			
30307	72050100			
30310	03371212			
30311	52526A51	F3M19	BCD	' CHANNEL ACTIVE AFTER 500 MILLISEC''
30312	21454E25			
30313	43122123			
30314	63314E25			
30315	12212663			

DISCF TAP=3.0 04/25 20100 PAGE 384

30316	25515146			
30317	00001244			
30320	31434731			
30321	62252737			
30322	52526A51	F3M20	BCD	' CHANNEL ADDRESS OR WORD COUNT INCREMENTING ERROR OR'
30323	21454E25			
30324	43122124			
30325	24512E42			
30326	62124451			
30327	12464451			
30330	24122246			
30331	64456712			
30332	31432351			
30333	25442E45			
30334	63314E27			
30335	12255151			
30336	46511246			
30337	51121212			
30340	52475125	BCD		' PREMATURE DISCONNECT''
30341	44216764			
30342	51251224			
30343	31622746			
30344	45452E23			
30345	63121212			
30346	52234764	BCD		' COUNT IS COUNT SB CORE ADD OVERFLOW ERRORS''
30347	45631731			
30350	52122746			
30351	64456712			
30352	62221223			
30353	46512E12			
30354	21242412			
30355	46652E51			
30356	26474466			
30357	12122E51			
30360	51465162			
30361	52371212			

DISCF	TAP=3.C	04/25	20100	PAGE 385
30362	52522431	F3M21	BCD	' DISC ERROR ON WRITE=DATA ; 0, ADDRESS = 00=000=00''
30363	62231225			
30364	51514451			
30365	12464512			
30366	66513163			
30367	25402421			
30370	63211213			
30371	12007312			
30372	21242451			
30373	25622212			
30374	13120000			
30375	40000000			
30376	40000037			
30377	52522124	F3M22	BCD	' ADDRESS 00=000=01 NOT VERIFIED AFTER 500 MILLISEC'
30400	24512562			
30401	62120000			
30402	40000000			
30403	40000112			
30404	45466312			
30405	65255131			
30406	26312524			
30407	12212663			
30410	25511205			
30411	00001244			
30412	31434731			
30413	62252312			
30414	52212663	BCD		' AFTER 200 WORDS WRITTEN STARTING AT SECTOR 01
30415	25511202			
30416	00001266			
30417	46512462			
30420	12665131			
30421	63632545			
30422	12626921			
30423	51632145			
30424	27122163			
30425	12622523			

DISCF	TAP=3.C	04/25	20100	PAGE 386
30426	67465112			
30427	00121212			
30430	52221251	BCD		' B REGISTER NOT COUNTING PROPERLY'
30431	25273162			
30432	63255112			
30433	45466312			
30434	23466445			
30435	63314527			
30436	12475146			
30437	47255143			
30440	70121212			
30441	52226400	BCD		' BJO1A=207FA,2FLBA,2CK0A'
30442	01211302			
30443	00077621			
30444	37022643			
30445	22213202			
30446	23420021			
30447	52016100	BCD		' 1/03,1/05,1/06(26),2/12(13)''
30450	03730161			
30451	00057301			
30452	61002474			
30453	02063473			
30454	02610102			
30455	74017334			
30456	37121212			
30457	52522523	F3M23	BCD	' ECW NOT RECEIVED DURING READ ATTEMPT'
30460	66124546			
30461	63125125			
30462	22253165			
30463	25241224			
30464	04512145			
30465	27125125			
30466	21241221			
30467	63632544			
30470	47631212			
30471	52627045	BCD		' SYNC BIT NOT RECORDED PROPERLY IN STATE 7'

DISCF TAP=3.C 04/25 20100 PAGE 387

30472	23122231		
30473	63124544		
30474	63125125		
30475	23465124		
30476	25241247		
30477	51464725		
30500	51477112		
30501	31451262		
30502	63216325		
30503	12071212		
30504	52062523	BCD	' 6ECYA0#205FA#0U04A'
30505	70210013		
30506	02000526		
30507	21330064		
30510	00042112		
30511	52121221	BCD	' AU04A#2RDTA#3U03A'
30512	64000421		
30513	13025124		
30514	63213307		
30515	64000321		
30516	52121222	BCD	' BU04A#205FA#2CT3A#2RDKA'
30517	64000421		
30520	13020005		
30521	26213302		
30522	23630721		
30523	33025124		
30524	42211212		
30525	52026100	BCD	' 2/02,2/03,2/12,2/15,2/21,3/01,3/02,3/09,3/16,3/25,4/04,1'
30526	02730261		
30527	10037302		
30530	41010773		
30531	02610105		
30532	73026102		
30533	01730761		
30534	00017303		
30535	01020273		

DISCF TAP=3.C 04/25 20100 PAGE 388

30536	13410711		
30537	73036101		
30540	06730361		
30541	12057304		
30542	61030473		
30543	52046100	BCD	' 4/06,5/14,2/09,2/13,2/01,3/04,5/05''
30544	06730361		
30545	11047302		
30546	61001173		
30547	02610103		
30550	73026100		
30551	01730761		
30552	10047305		
30553	01000537		
30554	52026100	F3#24 BCD	' 3F01A#2BGCA#2IGAA'
30555	00012113		
30556	02227223		
30557	21330231		
30560	07212112		
30561	52220600	BCD	' BF03A#2BGCA#2IGAA'
30562	03211302		
30563	22272321		
30564	33023127		
30565	21211212		
30566	52016101	BCD	' 1/12,1/13(7)''
30567	02730161		
30570	01037407		
30571	34371212		
30572	52522346	F3#25 BCD	' CONTROLER DID NOT SEQUENCE TO STATE 0 FROM STATE 5'
30573	45635146		
30574	43432551		
30575	12243124		
30576	12454463		
30577	12622550		
30600	64254523		
30601	25126346		

30602	12626321		
30603	63251200		
30604	12265146		
30605	44126263		
30606	21632512		
30607	05121212		
30610	52472123	BCD	' PACKET BIT FOR PACKET 4 NOT RESET DURING PREVIOUS'
30611	42256312		
30612	22316312		
30613	26465112		
30614	47212342		
30615	25631204		
30616	12454663		
30617	12512562		
30620	25631224		
30621	64513145		
30622	27124751		
30623	25653146		
30624	64621212		
30625	52462241	BCD	' OBJECT TEST DURING WRITE PHASE'
30626	25236312		
30627	63256263		
30630	12246451		
30631	31452712		
30632	64513163		
30633	25124730		
30634	21622512		
30635	52016101	BCD	' 1/12,1/13,2/02,2/04,2/08,2/09,2/12,2/13,2/15,2/16,4/04,1'
30636	02730161		
30637	01037302		
30640	61000273		
30641	02610004		
30642	73026100		
30643	10730261		
30644	00117302		
30645	61010273		

30646	02610103		
30647	73026101		
30650	05730261		
30651	01067304		
30652	61000473		
30653	52046102	BCD	' 4/2211'
30654	02371212		
30655	02525125	F326 BCD	' READ DATA ERROR'
30656	21241224		
30657	21632112		
30660	25515146		
30661	51121212		
30662	52242163	BCD	' DATA IS DATA S8 CORE ADD OVERFLOW ERRORS 11'
30663	21123162		
30664	12122421		
30665	63211262		
30666	22121223		
30667	46512512		
30670	01242412		
30671	46652551		
30672	26434666		
30673	12255151		
30674	46516252		
30675	07121212		
30676	52016101	F327 BCD	' 1/19,1/23,2/18,2/19,2/24,3/18,3/20,3/22,3/23,3/25,3/35,1'
30677	11730161		
30700	02037302		
30701	61011073		
30702	02610111		
30703	73026102		
30704	04730361		
30705	01107303		
30706	61026073		
30707	03610202		
30710	73036102		
30711	03730361		

DISCP TAP=3.0 04/25 20100 PAGE 391

30712	02057303			
30713	61030573			
30714	52046101	BCD		' 4/13,4/14,4/22,4/25,5/15,5/21,6/12,6/14''
30715	03730461			
30716	01047304			
30717	61020273			
30720	04610205			
30721	73086101			
30722	05730861			
30723	02017306			
30724	61010273			
30725	06610104			
30726	37121212			
30727	52016101	F3M28 BCD		' 1/19,4/13,4/14,6/15''
30730	11730461			
30731	01037304			
30732	61010473			
30733	05610105			
30734	37121212			
30735	52522330	F3M29 BCD		' CHANNEL ERROR SET AFTER READ'
30736	21454525			
30737	43122551			
30740	51465112			
30741	62256312			
30742	21266325			
30743	51125125			
30744	21241212			
30745	52242163	BCD		' DATA = 00000000'
30746	21121312			
30747	00000000			
30750	00000000			
30751	52016100	BCD		' 1/03,1/04,1/17,2/16,2/18,2/19,2/20,3/18,3/20,3/21,3/22,1'
30752	03730461			
30753	00047301			
30754	61010773			
30755	02610106			

DISCP TAP=3.0 04/25 20100 PAGE 392

30756	73020101			
30757	11730461			
30760	01117302			
30761	61020273			
30762	03611110			
30763	73030402			
30764	00730461			
30765	02017303			
30766	61020273			
30767	52036102	BCD		' 3/23,3/24,4/16,4/17,4/18,4/19,4/20,4/22,4/24,4/25,5/03,1'
30770	03730461			
30771	02047304			
30772	61010473			
30773	04610107			
30774	73040101			
30775	11730461			
30776	01117304			
30777	61020273			
31000	04610202			
31001	73046102			
31002	04730461			
31003	02057305			
31004	61000273			
31005	52056100	BCD		' 5/04,5/06''
31006	04730861			
31007	00063712			
31010	52522330	F3M30 BCD		' CHANNEL ERROR SET AFTER READ'
31011	21454525			
31012	43122551			
31013	51465112			
31014	62256312			
31015	21266325			
31016	51125125			
31017	21241212			
31020	52242163	BCD		' DATA = 00000077'
31021	21121312			

DISCP TAP=3.0 04/25 20100 PAGE 393

31022	00000000		
31023	00000707		
31024	52036101	BCD	' 3/18,3/21,3/22,3/23,4/16,4/17,4/18,4/19,4/20,4/24,4/25,1
31025	10730361		
31026	02017303		
31027	61020273		
31030	03610203		
31031	73046101		
31032	06730461		
31033	01077304		
31034	61011073		
31035	04610111		
31036	73046102		
31037	00730461		
31040	02047304		
31041	61020573		
31042	52036102	BCD	' 3/25,1/2311
31043	05730161		
31044	02033712		
31045	52526630	F3M31 BCD	' XHS NOT RECEIVED FROM CONTROLLER'
31046	62124546		
31047	63125128		
31050	23253165		
31051	25241224		
31052	51464412		
31053	23464563		
31054	51464343		
31055	25511212		
31056	52067030	BCD	' 6YHSA0=0X06A'
31057	62210013		
31060	00670006		
31061	21121212		
31062	52121270	BCD	' YX06A=2B8CA,21GAA'
31063	67000621		
31064	13022227		
31065	23213302		

DISCP TAP=3.0 04/25 20100 PAGE 394

31066	31272121		
31067	52016102	BCD	' 1/22,1/25,2/12,3/19,4/01,4/02,4/03,5/0711
31070	02730161		
31071	02057302		
31072	61010273		
31073	03610111		
31074	73046100		
31075	01730461		
31076	00027304		
31077	61000373		
31100	05610007		
31101	37121212		
31102	52522346	F3M32 BCD	' CONTROLLER ADDRESS INCREMENTING ERROR DURING STATE 7'
31103	45635146		
31104	43432551		
31105	12212424		
31106	51254262		
31107	12314522		
31110	51254425		
31111	45633145		
31112	27122551		
31113	51465112		
31114	24645131		
31115	45271262		
31116	63216325		
31117	12071212		
31120	52212424	BCD	' ADDR IS ADDR S8 ST ADDR OVERFLOW ERRORS 1'
31121	51123162		
31122	12122124		
31123	24511262		
31124	22121262		
31125	63122124		
31126	24511212		
31127	46652551		
31130	26434666		
31131	12255151		

DISCF TAP=3.C 04/25 20100 PAGE 395

31132	46516252			
31133	37121212			
31134	52022342	F3M33	BCD	' 2CKRA=2BQDA,2X03A'
31135	51211302			
31136	22272421			
31137	33026700			
31140	03211212			
31141	52046100		BCD	' 4/07(15),3/15,2/21,5/04,5/06,4/04''
31142	07740105			
31143	34730361			
31144	01057302			
31145	61020173			
31146	05610004			
31147	73056100			
31150	06730461			
31151	00043712			
31152	52046100	F3M34	BCD	' 4/07,4/08(15),5/06(39)''
31153	07730461			
31154	00107401			
31155	05347305			
31156	61000474			
31157	03113437			
31160	52056100	F3M35	BCD	' 5/06(39)''
31161	06740311			
31162	34371212			
31163	52046100	F3M36	BCD	' 4/08,4/04(15),5/04,5/06(30)''
31164	10730461			
31165	00047401			
31166	05347305			
31167	61000473			
31170	05610006			
31171	74030034			
31172	37121212			
31173	52046100	F3M37	BCD	' 4/08(15)''
31174	10740105			
31175	34371212			

DISCF TAP=3.C 04/25 20100 PAGE 396

31176	52046100	F3M38	BCD	' 4/09(14),4/08(15),5/06(39)''
31177	11740104			
31200	34730461			
31201	00107401			
31202	05347305			
31203	61000474			
31204	03113437			
31205	52046100	F3M39	BCD	' 4/04,4/09,5/02(14),5/04,5/06(39)''
31206	04730461			
31207	00117305			
31210	61000274			
31211	11043473			
31212	05610004			
31213	73056100			
31214	06740311			
31215	34371212			
31216	52056100	F3M40	BCD	' 5/06(39)''
31217	06740311			
31220	34371212			
31221	52046100	F3M41	BCD	' 4/04(14)''
31222	04740104			
31223	34371212			
31224	52046100	F3M42	BCD	' 4/09(14)''
31225	11740104			
31226	34371212			
31227	52046100	F3M43	BCD	' 4/09,4/10(14),5/05(30)''
31230	11730461			
31231	01007401			
31232	04347305			
31233	61000474			
31234	03003437			
31235	52046100	F3M44	BCD	' 4/04,4/10,5/02(14),5/05(30)''
31236	04730461			
31237	01007305			
31240	61000274			
31241	11043473			

DISCP TAP#3.0 04/25 20:00 PAGE 397

31242	05610005			
31243	74030034			
31244	37121212			
31245	52056100	F3M45	BCD	' 5/05(39)''
31246	05740311			
31247	34371212			
31250	52046101	F3M46	BCD	' 4/10(14)''
31251	00740104			
31252	34371212			
31253	52046101	F3M47	BCD	' 4/10,4/11(14),5/05(30)''
31254	00730461			
31255	01017401			
31256	04347305			
31257	61000574			
31260	03003437			
31261	52046100	F3M48	BCD	' 4/04,4/11,5/02(14),5/05(30)''
31262	04730461			
31263	01017305			
31264	61000274			
31265	01043473			
31266	05610005			
31267	74030034			
31270	37121212			
31271	52056100	F3M49	BCD	' 5/02(14)''
31272	02740104			
31273	34371212			
31274	52046101	F3M50	BCD	' 4/11(14)''
31275	01740104			
31276	34371212			
31277	52046101	F3M51	BCD	' 4/11,4/12(14)''
31300	01730461			
31301	01027401			
31302	04343712			
31303	52046101	F3M52	BCD	' 4/12(14)''
31304	02740104			
31305	34371212			

DISCP TAP#3.0 04/25 20:00 PAGE 398

31306	02521623	F3M53	BCD	' 6CKRAD'
31307	42512100			
31310	52026102		BCD	' 2/21(11)''
31311	01740101			
31312	34371212			
31313	52521026	F3M54	BCD	' 0FOZA ERKONIBUSLY RESET AT TERMINATION OF STATE 7'
31314	02022112			
31315	25515146			
31316	45314464			
31317	62437012			
31320	51256225			
31321	63122163			
31322	12632551			
31323	44314521			
31324	63314445			
31325	12462412			
31326	62632163			
31327	25120712			
31330	52016101		BCD	' 1/10(11)''
31331	00740101			
31332	34371212			
31333	52522346	F3M55	BCD	' CONTROLLER ERKONIBUSLY CYCLED TO STATE 0 FROM STATE 7'
31334	45635146			
31335	43432551			
31336	12255151			
31337	46452146			
31340	64624270			
31341	12237023			
31342	43252412			
31343	63461262			
31344	63216325			
31345	12001026			
31346	51464412			
31347	62632163			
31350	25120712			
31351	52623046		BCD	' SHOULD BE IN STATE 3'

DISCF TAP=3.0 04/25 20100 PAGE 399

31352	64432412		
31353	22251231		
31354	45126263		
31355	21632512		
31356	03121212		
31357	52066102	BCD	' 6/23(47),3/06(18)''
31360	03740407		
31361	34730361		
31362	00067401		
31363	10343712		
31364	52522421	F3M56 BCD	' DATA NOT BEING TRANSMITTED WITHIN 1 MILLISEC OF '
31365	63211245		
31366	46631222		
31367	25314527		
31370	12635121		
31371	45624431		
31372	63632524		
31373	12663163		
31374	30314512		
31375	01124431		
31376	43433162		
31377	25231246		
31400	26121212		
31401	52665131	BCD	' WRITING LAST DATA ON PREVIOUS SECTOR'
31402	63314527		
31403	12432162		
31404	63122421		
31405	63211246		
31406	45124751		
31407	25653146		
31410	04621262		
31411	25236346		
31412	51121212		
31413	52302521	BCD	' HEADER NOT VERIFIED ON FIRST ATTEMPT'
31414	24255112		
31415	45466312		

DISCF TAP=3.0 04/25 20100 PAGE 400

31416	45255131		
31417	26312524		
31420	12444512		
31421	26315162		
31422	63122163		
31423	63254447		
31424	63121212		
31425	52010101	BCD	' 1/10(11),3/06,5/04,5/06(18)''
31426	03740101		
31427	34730361		
31430	00067305		
31431	01002473		
31432	25611006		
31433	74011034		
31434	3/121212		
31435	52526225	F3M57 BCD	' SEARCH ERROR OCCURED WHILE LOOKING FOR ADDRESS'
31436	21512330		
31437	12255151		
31440	45511246		
31441	23230451		
31442	25241266		
31443	30314325		
31444	12434446		
31445	42314527		
31446	12264451		
31447	12212424		
31450	51256262		
31451	52000400	BCD	' 00=002=00 AFTER INITIATING A WRITE FROM ADDRESS'
31452	00002240		
31453	00001221		
31454	26632551		
31455	12314531		
31456	03312163		
31457	31452712		
31460	21124651		
31461	31632512		

DISCF	TAP=3.0	04/25	20100	PAGE 401
31462	26514444			
31463	12212424			
31464	51256262			
31465	52000040			
31466	00000140			
31467	07071212			
31470	52032443			
31471	62211212			
31472	52056100			
31473	04730561			
31474	00067401			
31475	10730300			
31476	34371212			
31477	52522431	F3M58	BCD	' DISC ERRONIOUSLY CYCLED TO STATE 0 FROM STATE 7'
31500	62231225			
31501	51514445			
31502	31466462			
31503	43701223			
31504	70234325			
31505	24126746			
31506	12626321			
31507	63251200			
31510	12265146			
31511	44126263			
31512	21632512			
31513	07121212			
31514	52016101			
31515	01740101			
31516	34371212			
31517	52522446	F3M59	BCD	' CONTROLLER HUNG WITH NO ERROR INDICATED'
31520	45635146			
31521	43432551			
31522	12306445			
31523	27126431			
31524	63301245			
31525	46122551			

DISCF	TAP=3.0	04/25	20100	PAGE 402
31526	51465112			
31527	31452431			
31530	23216325			
31531	24121212			
31532	52016101			
31533	00740101			
31534	04730361			
31535	00067401			
31536	10343712			
31537	52522425	F3M60	BCD	' HEADER FOR ADDRESS 00=002=00 DESTROYED'
31540	11242551			
31541	12264451			
31542	12212424			
31543	51256262			
31544	12000040			
31545	00000340			
31546	00001224			
31547	25620351			
31550	46702524			
31551	52016101			
31552	00740101			
31553	34371212			
31554	52522446	F3M61	BCD	' CONTROLLER ERRONIOUSLY CYCLED TO STATE 0 FROM STATE 5'
31555	45635146			
31556	43432551			
31557	12255151			
31560	44453146			
31561	04624370			
31562	12277023			
31563	43252412			
31564	03461262			
31565	63216325			
31566	12001226			
31567	51464412			
31570	62632163			
31571	25120512			

DISCF TAP=3.0 04/25 20100 PAGE 403

31572	52016101	BCD	' 1/12,2/16(7)''
31573	02730261		
31574	01067407		
31575	34371212		
31576	52522746	F3M62 BCD	' CONTROLLER ERRONIOUSLY CYCLED TO STATE 0 FROM STATE 5'
31577	45635146		
31600	43432551		
31601	12255151		
31602	46453146		
31603	64624370		
31604	12237023		
31605	43237412		
31606	63461262		
31607	63216725		
31610	12001226		
31611	51464412		
31612	62632163		
31613	25125512		
31614	52026101	BCD	' 2/12,2/16(7),4/01,4/02,4/03(24),1/03,1/04(26),2/19,'
31615	02730261		
31616	01067407		
31617	34730461		
31620	00017704		
31621	61000273		
31622	04610003		
31623	74020434		
31624	73016100		
31625	03730161		
31626	00047402		
31627	06347402		
31630	61011173		
31631	52026102	BCD	' 2/20(12)''
31632	02740102		
31633	34371212		
31634	52522742	F3M63 BCD	' DATA NOT BEING READ WITHING 1 MILLISEC OF READING LAST'
31635	42211245		

DISCF TAP=3.0 04/25 20100 PAGE 404

31636	46631222		
31637	25314527		
31640	12512521		
31641	24126631		
31642	63302145		
31643	27125112		
31644	44314243		
31645	01622523		
31646	12462412		
31647	51252124		
31650	21452712		
31651	42216263		
31652	52247163	BCD	' DATA ON PREVIOUS SECTOR'
31653	21124445		
31654	12471125		
31655	05314664		
31656	02126225		
31657	22634651		
31660	52302621	BCD	' HEADER NOT VERIFIED ON FIRST ATTEMPT'
31661	04255112		
31662	45461712		
31663	05255131		
31664	26312524		
31665	12464412		
31666	2A315162		
31667	02122163		
31670	03254447		
31671	63121212		
31672	52016101	BCD	' 1/10,1/13(7)''
31673	02730161		
31674	01067407		
31675	34371212		
31676	52522731	F3M64 BCD	' 2IGAA'
31677	27212112		
31700	52026101	BCD	' 2/12,2/16,1/12(7)''
31701	02730261		

DISCF TAP=3.0 04/25 20100 PAGE 405

31702	01067301			
31703	61010274			
31704	07343712			
31705	52520231	F3M65	BCD	' 2IGAA'
31706	27212112			
31707	52026101		BCD	' 2/12(7)''
31710	02740734			
31711	37121212			
31712	52522330	F3M66	BCD	' CHAIN BIT NOT RECORDED AS 0 OR CHECKED DURING READ'
31713	21314512			
31714	22316312			
31715	45466312			
31716	51252346			
31717	51242524			
31720	12216212			
31721	00124651			
31722	12233025			
31723	23422524			
31724	12246451			
31725	31452712			
31726	51252124			
31727	52026101		BCD	' 2/12(7),2/18(11),2/20(11,12)''
31730	02740734			
31731	73026101			
31732	10740101			
31733	34730261			
31734	02007401			
31735	01730102			
31736	34371212			
31737	52525126	F3M67	BCD	' RFAAO=2BGCA+2FLSA'
31740	23210013			
31741	02222723			
31742	21330226			
31743	43622112			
31744	52016101		BCD	' 1/10(7)''
31745	02740734			

DISCF TAP=3.0 04/25 20100 PAGE 406

31746	37121212			
31747	52525126	F3M68	BCD	' RFAAO=2BGCA+3FLSA+2IGAA+2BGCA (BOTH TERMS L6*)'
31750	23210013			
31751	02222723			
31752	21330226			
31753	43622112			
31754	2312721			
31755	21330222			
31756	27232112			
31757	74224663			
31760	30126325			
31761	51440212			
31762	43466434			
31763	52016101		BCD	' 1/13(7)''
31764	02740734			
31765	37121212			
31766	52526226	F3M69	BCD	' SFBAO=2BGCA+3IGAA+3FLSA (SHOULD BE L6*)'
31767	22210013			
31770	02222723			
31771	21330331			
31772	27210133			
31773	03264362			
31774	21127462			
31775	30466443			
31776	24122225			
31777	12434666			
32000	34121212			
32001	52016101		BCD	' 1/12(7)''
32002	02740734			
32003	37121212			
32004	52520670	F3M70	BCD	' 6YHTAO'
32005	30632100			
32006	52056100		BCD	' 5/07(7)''
32007	02740734			
32010	37121212			
32011	52520623	F3M71	BCD	' 6CKRAO'

DISCF	TAP=3.0	04/25	20100	PAGE 407
32012	42512100			
32013	52026102		BCD	' 2/21(7)!!'
32014	01740734			
32015	37121212			
32016	52522330	F3*72	BCD	' CHANNEL ERROR ON READ'
32017	21454525			
32020	43122551			
32021	51465112			
32022	46451251			
32023	25212412			
32024	52242163		BCD	' DATA = 77777777'
32025	21121312			
32026	07070707			
32027	07070707			
32030	52056101		BCD	' 5/15(34),4/24(7,8),4/20,4/21,3/20(7),5/12,6/21,6/11(8)!!'
32031	05740304			
32032	34730461			
32033	02047407			
32034	73103473			
32035	04610200			
32036	73046102			
32037	01730361			
32040	02007407			
32041	34730461			
32042	01027306			
32043	61020173			
32044	06610101			
32045	74103437			
32046	52522330	F3*73	BCD	' CHANNEL ERROR ON READ'
32047	21454525			
32050	43122551			
32051	51465112			
32052	46451251			
32053	25212412			
32054	52242163		BCD	' DATA = 00000000'
32055	21121312			

DISCF	TAP=3.0	04/25	20100	PAGE 408
32056	00000000			
32057	00000000			
32060	52036103		BCD	' 3/30,4/22,4/28(8),3/20,4/21(7)!!'
32061	00730461			
32062	02027304			
32063	01021074			
32064	00347303			
32065	01020073			
32066	04410201			
32067	74073437			
32070	52522330	F3*74	BCD	' CHANNEL ERROR ON READ'
32071	21454525			
32072	43122551			
32073	51465112			
32074	46451251			
32075	25212412			
32076	52242163		BCD	' DATA = 25522552'
32077	21121312			
32100	00000000			
32101	00000000			
32102	02040102		BCD	' 4/20,4/24(7),5/15(34)!!'
32103	00730461			
32104	02047407			
32105	34730461			
32106	01057403			
32107	04343712			
32110	52522330	F3*75	BCD	' ZEROS NOT WRITTEN ON ADDRESS 00*000*00 AFTER CHANNEL'
32111	51466212			
32112	45466212			
32113	46512163			
32114	03254512			
32115	46451221			
32116	24245125			
32117	02621200			
32120	00400000			
32121	00400000			

DISCF TAP=3.C 04/25 20100 PAGE #09

32122	12212663			
32123	25511223			
32124	30214445			
32125	25431212			
32126	52243162	BCD		' DISCONNECTED'
32127	23464445			
32130	25236325			
32131	24121212			
32132	52664651	BCD		' WORD NO DATA IS IGNORE OVERFLOW ERRORS !!'
32133	24124546			
32134	12122421			
32135	43211231			
32136	62121231			
32137	27454451			
32140	25121212			
32141	46652551			
32142	26434466			
32143	12255151			
32144	46516252			
32145	37121212			
32146	52371212	F3M76 BCD		' !!'
32147	52036102	F3M77 BCD		' 3/20,3/21,3/23,4/19,4/20,4/24,4/25(23),3/22(13),2/03,1'
32150	00730361			
32151	02017303			
32152	61020373			
32153	04610111			
32154	73046102			
32155	00730461			
32156	02047304			
32157	61020574			
32160	02033473			
32161	02610202			
32162	74010334			
32163	73026100			
32164	03731212			
32165	52026100	BCD		' 2/06(11)!!'

DISCF TAP=3.C 04/25 20100 PAGE #10

32166	06747101			
32167	34371212			
32170	52522346	F3M78 BCD		' CONTROLLER DID NOT ENTER STATE 0 FROM STATE 7 WHEN'
32171	45635146			
32172	43432551			
32173	12243124			
32174	12454463			
32175	12254563			
32176	25511262			
32177	63216325			
32200	12001226			
32201	01464412			
32202	62632163			
32203	24120712			
32204	66302545			
32205	52254444	BCD		' EAM 10226 ISSUED'
32206	12010202			
32207	02061231			
32210	62626425			
32211	24121212			
32212	52016101	BCD		' 1/15(20),3/19,4/23,5/12(1),6/23(47)!!'
32213	05740200			
32214	34730761			
32215	01117304			
32216	61020373			
32217	06610102			
32220	74010473			
32221	06610203			
32222	74040734			
32223	37121212			
32224	52520226	F3M79 BCD		' CF03A NOT RESET BY 32BFA'
32225	12032112			
32226	45466312			
32227	51256225			
32230	63120270			
32231	12037122			

DISCF	TAP#3.0	04/25	20100	PAGE 411
32232	26211212			
32233	52016101		BCD	' 1/15(20)''
32234	05740200			
32235	34371212			
32236	52520623	F3M80	BCD	' 6CLMA0'
32237	43442100			
32240	52056101		BCD	' 5/12(1)''
32241	02740134			
32242	37121212			
32243	52520623	F3M81	BCD	' 6CLMA0'
32244	43442100			
32245	52056101		BCD	' 5/12(1)''
32246	02740134			
32247	52103146		BCD	' 810CA'
32250	23211212			
32251	52066101		BCD	' 6/13,6/14(42)''
32252	03730661			
32253	11047404			
32254	02342712			
32255	52522267	F3M82	BCD	' BX03A#2MHAA#8IY0A'
32256	00032113			
32257	02443021			
32260	21331031			
32261	70002112			
32262	52046100		BCD	' 4/01(24),6/13,6/14(42)''
32263	01740204			
32264	34730661			
32265	11037306			
32266	61011474			
32267	04022437			
32270	52520667	F3M83	BCD	' 0X02A'
32271	00022112			
32272	52046100		BCD	' 4/03(24)''
32273	03740204			
32274	34371212			
32275	52520661	F3M84	BCD	' 2/08(8),2/18(13)''

DISCF	TAP#3.0	04/25	20100	PAGE 412
32276	01107410			
32277	34730661			
32300	01107401			
32301	03343712			
32302	52520661	F3M85	BCD	' 2/08(8),2/18(12)''
32303	01107410			
32304	34730661			
32305	01107401			
32306	02342712			
32307	52521170	F3M94	BCD	' 9YESA'
32310	25622112			
32311	52056101		BCD	' 5/14(36),4/04,5/09(7)''
32312	04740306			
32313	34730661			
32314	00047306			
32315	61001174			
32316	02343712			
32317	52521170	F3M95	BCD	' 9YHSA'
32320	30622112			
32321	52056101		BCD	' 5/14(36)''
32322	04740306			
32323	34371212			

DISCF TAP=3.0 04/25 20100 PAGE 413

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• MESSAGES - FUNCTION 4

F4M1 BCD ' DISC KEYING ERROR'
32324 52522431
32325 62231242
32326 25703145
32327 27122551
32330 51465112
32331 52662412 BCD ' WD CT IS WD CT SB PBT ADDR PIN ADDR CHN ERR CON ER'
32332 23631231
32333 62126624
32334 12236312
32335 62221247
32336 46631221
32337 24245112
32340 47314512
32341 21242451
32342 12233445
32343 12255151
32344 12122346
32345 45122551
32346 51121263 BCD 'R TIMEOUT ''
32347 31442546
32350 64635237
32351 52371212 F4M2 BCD ' ''
32352 52522431 F4M3 BCD ' DISC ERROR DURING READ ATTEMPT'
32353 62231225
32354 51514451
32355 12246451
32356 31452712
32357 51252124
32360 12216763
32361 25444763
32362 52662412 BCD ' WD CT IS WD CT SB PBT ADDR PIN ADDR CHN ERR CON ER'
32363 23631231
32364 62126624

DISCF TAP=3.0 04/25 20100 PAGE 414

32365 12236312
32366 62221247
32367 46631221
32370 24245112
32371 47314512
32372 21242451
32373 12233445
32374 12255151
32375 12122346
32376 45122551
32377 51121263 BCD 'R TIMEOUT ''
32400 31442546
32401 64635237
32402 52522431 F4M4 BCD ' DATA ERROR OR DISC ADDRESSING ERROR.'
32403 62211225
32404 51514451
32405 12465112
32406 24316223
32407 12212424
32410 51256262
32411 31452712
32412 2551446
32413 51311212
32414 52242163 BCD ' DATA CORRESPONDS TO DISC ADDRESS.'
32415 21122346
32416 51512562
32417 47464824
32420 62126746
32421 12243162
32422 23122124
32423 24512562
32424 62231212
32425 52242163 BCD ' DATA SB DATA IS ''
32426 21126222
32427 12122421
32430 62211231

DISCF TAP=3.0 04/25 20100 PAGE 415
32431 62523712

DISCF TAP=3.0 04/25 20100 PAGE 416

*
* MESSAGES - FUNCTION 5
*

32432	52594724	F5Y1	BCD	' POBA RELAY FAILURE - ''
32433	22211251			
32434	25432170			
32435	12262131			
32436	43641125			
32437	12401237			
32440	42017342	F5Y2	BCD	'K1,K3,K4,K8''
32441	03734204			
32442	73421137			
32443	42021224	F5Y3	BCD	'K2 DR0P0UT''
32444	51464746			
32445	64633712			
32446	42017342	F5Y4	BCD	'K1,K3,K4,K8''
32447	03734204			
32450	73421137			
32451	42021224	F5Y5	BCD	'K6 DR0P0UT''
32452	51464746			
32453	64633712			
32454	42017342	F5Y6	BCD	'K1,K3,K4''
32455	03734204			
32456	37121212			
32457	42021224	F5Y7	BCD	'K2 DR0P0UT''
32460	51464746			
32461	64633712			
32462	42017342	F5Y8	BCD	'K1,K2,K4''
32463	03734204			
32464	37121212			
32465	42021224	F5Y9	BCD	'K3 DR0P0UT''
32466	51464746			
32467	64633712			
32470	42027342	F5Y10	BCD	'K2,K4,K6''
32471	04734206			
32472	37121212			

DISCF	TAP=3.0	04/25	20100	PAGE 417
32473	42031224	F5M11	BCD	'K3 DR0P0UT''
32474	51464746			
32475	64633712			
32476	42027342	F5M12	BCD	'K2,K3,K6''
32477	03734206			
32500	37121212			
32501	42041224	F5M13	BCD	'K4 DR0P0UT''
32502	51464746			
32503	64633712			
32504	42037342	F5M14	BCD	'K3,K6,K8''
32505	06734210			
32506	37121212			
32507	42041224	F5M15	BCD	'K4 DR0P0UT''
32510	51464746			
32511	64633712			
32512	42037342	F5M16	BCD	'K3,K4,K8''
32513	04734210			
32514	37121212			
32515	42061224	F5M17	BCD	'K6 DR0P0UT''
32516	51464746			
32517	64633712			
32520	42057342	F5M18	BCD	'K5,K9,K10,K12''
32521	11734201			
32522	00734201			
32523	02371212			
32524	42071224	F5M19	BCD	'K7 DR0P0UT''
32525	51464746			
32526	64633712			
32527	42057342	F5M20	BCD	'K5,K9,K10,K12''
32530	11734201			
32531	00734201			
32532	02371212			
32533	42010112	F5M21	BCD	'K11 DR0P0UT''
32534	24514447			
32535	46646337			
32536	42057342	F5M22	BCD	'K5,K9,K10''

DISCF	TAP=3.0	04/25	20100	PAGE 418
32537	11734201			
32540	00371212			
32541	42071224	F5M23	BCD	'K7 DR0P0UT''
32542	51464746			
32543	64633712			
32544	42057342	F5M24	BCD	'K5,K7,K10''
32545	07734201			
32546	00371212			
32547	42111224	F5M25	BCD	'K9 DR0P0UT''
32550	51464746			
32551	64633712			
32552	42077342	F5M26	BCD	'K7,K10,K11''
32553	01007342			
32554	01013712			
32555	42111224	F5M27	BCD	'K9 DR0P0UT''
32556	51464746			
32557	64633712			
32560	42077342	F5M28	BCD	'K7,K9,K11''
32561	11734201			
32562	01371212			
32563	42010012	F5M29	BCD	'K10 DR0P0UT''
32564	24514447			
32565	46646337			
32566	42117342	F5M30	BCD	'K9,K11,K12''
32567	01017342			
32570	01023712			
32571	42010012	F5M31	BCD	'K10 DR0P0UT''
32572	24514447			
32573	46646337			
32574	42117342	F5M32	BCD	'K9,K10,K12''
32575	01007342			
32576	01023712			
32577	42010112	F5M33	BCD	'K11 DR0P0UT''
32600	24514447			
32601	46646337			
32602	02526225	F5M34	BCD	' SEEK ERR0R AFTER EXECUTING E0F 10326 (CLEAR)'

DISCF TAP=3.0 04/25 20100 PAGE 419

32603 25421225
32604 51514451
32605 12212663
32606 25511225
32607 67252964
32610 63314527
32611 12254424
32612 12010003
32613 12061274
32614 23432521
32615 51341212
32616 52262946
32617 40060102
32620 01124546
32621 63123145
32622 23465147
32623 25512163
32624 23241212
32625 52234951
32626 12434227
32627 31231240
32630 12240105
32631 73250105
32632 12401224
32633 47124346
32634 27312312
32635 47212725
32636 62120112
32637 21452412
32640 02371212
32641 52526331
32642 44251263
32643 46126525
32644 51312470
32645 12474622
32646 31633146

BCD ' FCG=6121 NOT INCORPORATED'

BCD ' CLR LOGIC = D15,E15 = DP LOGIC PAGES 1 AND 211

F5*35 BCD ' TIME TO VERIFY POSITION WITH POWER INITIALLY OFF'

DISCF TAP=3.0 04/25 20100 PAGE 420

32647 45124431
32650 63301247
32651 44662551
32652 12314531
32653 63312443
32654 44701246
32655 24261212
32656 52271125
32657 01632551
32660 12632021
32661 44120101
32662 10124431
32663 44433162
32664 25232212
32665 22446443
32666 64310531
32667 22510163
32670 44511231
32671 45124346
32672 22214331
32673 44451223
32674 16127421
32675 12232562
32676 42122234
32677 12401244
32700 65227112
32701 40121212
32702 2222346
32703 24432412
32704 22251262
32705 25631226
32706 44511202
32707 12443143
32710 43316225
32711 23122464
32712 51216331

BCD ' GREATER THAN 118 MILLISEC.'

BCD ' MULTIVIBRATOR IN LOCATION C6 (ACCESS B) = MVBA =1

BCD ' SHOULD BE SET FOR 2 MILLISEC DURATION'

DISCF TAP=3.0 04/25 20100 PAGE 421

32713	46451212			
32714	52512526			
32715	15126331			
32716	44314527			
32717	12233021			
32720	51631240			
32721	12263127			
32722	12044001			
32723	00731224			
32724	47124421			
32725	45642143			
32726	12473304			
32727	40030637			
32730	52522124	F5M36	BCD	' ADDRESS 00=000=00 NOT VERIFIED WITHIN 500 MILLISEC''
32731	24512562			
32732	62120000			
32733	40000000			
32734	40000012			
32735	45466312			
32736	45255131			
32737	26312524			
32740	12663163			
32741	30314512			
32742	15000012			
32743	44314343			
32744	31622523			
32745	37121212			

DISCF TAP=3.0 04/25 20100 PAGE 422

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•
MESSAGES - FUNCTION 10

32746	52522464	F10M1	BCD	' FUNCTION PARAMETER ERROR''
32747	45236331			
32750	44451247			
32751	21512144			
32752	25632551			
32753	12255151			
32754	46512712			
32755	52434424	F10M2	BCD	' LBDISC''
32756	31622737			
32757	52434423	F10M3	BCD	' LCB9RE''
32760	46512537			
32761	52432545	F10M4	BCD	' LENGTH''
32762	27633237			
32763	52464744	F10M5	BCD	' BPH9DE''
32764	46242537			
32765	52432124	F10M6	BCD	' MIDISC''
32766	31622737			
32767	52371212	F10M7	BCD	' ''
32770	12664651	F10M8	BCD	' WORDS DISC ADD CORE ADD STRTDISC LENGTH WORD NO ERROR NO
32771	24316212			
32772	12126446			
32773	51246222			
32774	12122431			
32775	62231221			
32776	24241223			
32777	46512512			
33000	21242412			
33001	42635163			
33002	24316223			
33003	12124225			
33004	45276330			
33005	12126446			
33006	51241245			

DISCF TAP=3.0 04/25 20100 PAGE 423

33007	46121225			
33010	51514451			
33011	12454437			
33012	52523025	F10M9	BCD	HEADER
33013	21242551			
33014	52371212			
33015	52303123	F10M10	BCD	MICRORE
33016	46512537			
33017	52255151	F10M11	BCD	ERR FLAG 0STATUS T S.-TSB SRT DISC END DISC SRT CORE END CORE BLK LG1
33020	12264321			
33021	27123146			
33022	62637163			
33023	64621263			
33024	31624040			
33025	63622012			
33026	62516312			
33027	24316223			
33030	12254624			
33031	12243162			
33032	23126251			
33033	63122746			
33034	51251225			
33035	45241223			
33036	46512512			
33037	22434012			
33040	43276330			
33041	37121012			

DISCF TAP=3.0 04/25 20100 PAGE 424

				* * MESSAGES - FUNCTION 18 *
33042	52303127	F18M1	BCD	HIGH ARM TOO LARGE
33043	30122151			
33044	44126346			
33045	46124321			
33046	51272537			
33047	52303127	F18M2	BCD	HIGH ARM LESS THAN LO. ARM
33050	31221151			
33051	44124325			
33052	62621263			
33053	50214012			
33054	43466012			
33055	21514437			
33056	52661031	F18M3	BCD	WRITE PROTECTED - DISC
33057	62251247			
33060	31461325			
33061	23632524			
33062	12401224			
33063	31622312			
33064	12121237	F18M4	BCD	

DISCF TAP=3.0 04/25 20100 PAGE 425

*
* MESSAGES - FUNCTION 19
*

33065	52303127	F19M1	BCD	' HIGH ARM TOO LARGE!!
33066	30122151			
33067	44126346			
33070	46124321			
33071	51272537			
33072	52434666	F19M2	BCD	' LOW ARM > HIGH ARM!!
33073	12215144			
33074	12161230			
33075	51273012			
33076	21514437			
33077	52325454	F19M3	BCD	' *****DISC *'
33100	54545454			
33101	54545454			
33102	54545454			
33103	54545424			
33104	31627312			
33105	40121212			
33106	37121212	F19M4	BCD	!!!
33107	52243162	F19M5	BCD	' DISC TIMEOUT ERROR!!
33110	23126331			
33111	44254464			
33112	63122551			
33113	51465137			

DISCF TAP=3.0 04/25 20100 PAGE 426

*
* MESSAGES - FUNCTION 20
*

33114	52303127	F20M1	BCD	' HIGH ARM TOO LARGE!!
33115	30122151			
33116	44126346			
33117	46124321			
33120	51272537			
33121	37121212			
33122	52434666	F20M2	BCD	' LOW ARM TOO LARGE!!
33123	12215144			
33124	12634666			
33125	12432151			
33126	77250337			
33127	52255151	F20M3	BCD	' ERROR - TRACK NOT VERIFIED WITHIN 500MSEC.'
33130	46511240			
33131	12635121			
33132	23421245			
33133	46631265			
33134	25513126			
33135	01252412			
33136	66316330			
33137	31451205			
33140	10004462			
33141	25233212			
33142	52215144	BCD		' ARM NUMBER *'
33143	12457444			
33144	22255112			
33145	13123712			
33146	52325454	TITLE	BCD	' ***** DISC '
33147	54545454			
33150	54545454			
33151	12243162			
33152	23121212			
33153	00000000	TITLE1	PZE	

DISCF TAP=3.C 04/25 20100 PAGE 427

*
* MESSAGES - FUNCTION 21
*

33154	52303124	F21M1	BCD	' MIDISC < LBDISC''
33155	31622312			
33156	36124346			
33157	24316223			
33160	37121212			
33161	52263143	F21M2	BCD	' FILE NOT ON LINE''
33162	25124546			
33163	63124646			
33164	12433145			
33165	25371212			
33166	52233221	F21M3	BCD	' CHANGE WRITE HEADER SWITCH''
33167	45272512			
33170	66513163			
33171	25123225			
33172	21242551			
33173	12626631			
33174	63233237			
33175	52475125	F21M4	BCD	' PREMATURE CHANNEL DISCONNECT''
33176	44210364			
33177	51251223			
33200	30214545			
33201	25431224			
33202	31622346			
33203	45452523			
33204	63371212			
33205	52243162	F21M5	BCD	' DISC WRITE PROTECTED''
33206	24121651			
33207	34632412			
33210	47514463			
33211	25234325			
33212	24371212			
33213	52233221	F21M6	BCD	' CHANNEL ERROR''
33214	45452543			

DISCF TAP=3.C 04/25 20100 PAGE 428

33215	12255151			
33216	46513712			
33217	52665131	F21M7	BCD	' WRITE MONITOR ERROR''
33220	63251244			
33221	46453163			
33222	46511225			
33223	51514651			
33224	37121212			

DISCF TAP-3.0 04/25 20100 PAGE 429

*
* MESSAGES - FUNCTION 22
*

33225	52254524	F22M1	BCD	ENDISC < STDISC
33226	31622312			
33227	36127263			
33230	24316223			
33231	37131212			
33232	52222573	F22M2	BCD	SECTOR COUNT ERROR
33233	63465112			
33234	23466445			
33235	63122551			
33236	51465137			
33237	52263143	F22M3	BCD	FILE NOT ON LINE
33240	25124446			
33241	63124445			
33242	12433145			
33243	25371212			
33244	52232221	F22M4	BCD	CHANGE WRITE HEADER SWITCH
33245	45272512			
33246	66513163			
33247	25123225			
33250	21242551			
33251	12424431			
33252	63233237			
33253	52243162	F22M5	BCD	DISC WRITE PROTECTED
33254	23126651			
33255	31632512			
33256	47514663			
33257	25236225			
33260	24371212			
33261	52233221	F22M6	BCD	CHANNEL ERROR
33262	45452543			
33263	12255151			
33264	44513712			
33265	52234445	F22M7	BCD	CONTROLLER ERROR

DISCF TAP-3.0 04/25 20100 PAGE 430

33266	53514443			
33267	43255112			
33270	25515146			
33271	51371212			

END

LITERALS USED:

33272	0007000
33273	77777777
33274	00000007
33275	77600000
33276	00177400
33277	00000003
33300	77765115
33301	00037777
33302	00000315
33303	00000666
33304	00000017
33305	00000037
33306	00000077
33307	00000077
33310	00000377
33311	00000777
33312	00001777
33313	00003777
33314	00007777
33315	00017777
33316	00004001
33317	00010002
33320	00020004
33321	00040010
33322	00100020
33323	00043777
33324	00174000
33325	07000000
33326	00777777
33327	00025773

DISCF TAP=3.0 04/25 20100 PAGE 431

33330 00011410
33331 00105602
33332 77770143
33333 00074000
33334 00234000
33335 00017500
33336 00034000
33337 00034000
33340 00034077
33341 04074000
33342 00034100
33343 00062566
33344 00000101
33345 00034040
33346 00037000
33347 00034000
33350 25522552
33351 00034003
33352 77774000
33353 77760000
33354 00760000
33355 77777775
33356 77776720
33357 00000764
33360 00000166
33361 00700000
33362 22026410
33363 77770007
33364 00005520
33365 70000000
33366 00007000
33367 00000700
33370 70005500
33371 00004400
33372 00003300
33373 00002200

DISCF TAP=3.0 04/25 20100 PAGE 432

33374 00000941
33375 00000161
33376 00177777
33377 00070000
33400 00000907
33401 00000160
33402 00000000
33403 00000000
33404 77077777
33405 00760000
33406 00001140
33407 77777771
33410 77777001
33411 77777000
33412 00017400
33413 77770011
33414 77770720
33415 77771434
33416 77771431
33417 00000037
33420 71007000
33421 00000100
33422 00000170
33423 00041031
33424 00000017
33425 00660067
33426 00000070
33427 00000007
33430 00000037
33431 77770716
33432 00600060
33433 00000016
33434 00000000
33435 02600054
33436 00000000
33437 00006400

33440 54545454
 33441 52606060
 33442 00606060
 33443 00010203
 33444 04050607
 33445 77777777
 33446 77777723
 33447 00001750
 33450 00000005
 33451 00000062
 33452 00000074
 33453 0000001P
 33454 00040000
 33455 00000055
 33456 77776571
 33457 00001700
 33460 0000004P
 33461 52040500
 33462 00001500
 33463 52010000
 33464 04040404
 33465 07121212
 33466 00777600
 33467 77777600
 33470 00777740
 33471 04034000
 33472 77754360
 33473 00056401
 33474 00145354
 33475 00054512
 33476 01157466
 33477 00000067
 33500 00000037
 33501 00000073
 33502 00000037

33503 CELLS USED BY PROGRAM
 LOCAL SYMBOLS USED -

AI	15455+	ABORT	14677+	ABORT1	14707+
A	23325+	B1A2A	13427+	B1A2B	13433+
B1AND2	13363+	B19*LY	13331+	B1	15456+
B2BNLY	13333+	BADTIM	15450+	BEGN1P	17023+
BIT0	15403+	BIT1	15404+	BIT10	15415+
BIT11	15416+	BIT12	15417+	BIT13	15420+
BIT14	15421+	BIT15	15422+	BIT16	15423+
BIT17	15424+	BIT18	15425+	BIT19	15426+
BIT2	15405+	BIT20	15427+	BIT21	15430+
BIT22	15431+	BIT23	15432+	BIT3	15406+
BIT4	15407+	BIT5	15410+	BIT6	15411+
BIT7	15412+	BIT6	15413+	BIT9	15414+
BLKMAX	15452+	B	23306+	C1A2A	15061+
C1A2B	15076+	C1A2C	15116+	C1A2D	15120+
C1AND2	15047+	CAPTRL	15470+	CCVR1	14426+
CCVR2	14436+	CCVR3	14437+	CCVR4	14441+
CCVR5	14460+	CCVR6	14467+	CCVR7	14506+
CHART	20423+	CHART1	20431+	CHART2	20457+
CHART3	20477+	CHART4	20515+	CHACK	23053+
CHCK1	00071+	CHCK2	23074+	CH*CK	14525+
CHCK3	14566+	CHCK1	14502+	CH*CK2	14604+
CHCK3	14617+	CHCK4	14560+	CH*CK3	14417+
CK0	13110+	CK1	13132+	CK2	13140+
CK3	13163+	CK4	13166+	CLCHT	20366+
CLLAR	22427+	CLJNT	23235+	CLRCH*	4754+
CLTRS	15675+	CM*EM	23410+	CM*P1	13476+
CM*PAR	12446+	CM*KEY	13525+	CMJNT	15453+
CP9T1	22766+	CP9T2	22775+	CP9T3	23004+
CP9T4	22013+	DOOT17	4767+	D20T37	4770+
DATA1	14726+	DATA2	14740+	DATA3	14762+
DATA4	14765+	DATA5	15004+	DATA6	15012+

DATA7	15025+	DATA8	15045+	DATA9	14712+
DATERK	14135+	DDV40	14254+	DDVR1	14265+
DDVR2	14275+	DDV43	14345+	DLVR4	14357+
DDVR5	14405+	DELTA	17620+	DERR1	15205+
DEAR2	15214+	DHEAD	15437+	DISCCK	23022+
DIABRT	450	DBNE	452	DKIVE1	14241+
DRIVER	14212+	DSCDVR	14244+	DSCS1Z	404
END	434	END1	4646+	END19	17544+
ENDP1	21232+	ENDF10	13362+	ENDF2	6641+
ENDF3	11460+	ENDF4	12155+	ENDF5	12615+
ENDISC	23327+	ENDIT	20154+	ENDP0S	15243+
ENTER	23351+	ENTIM	20351+	EKR0R	460
ERR0RS	414	ERRTRL	15460+	ETBLE	30207
F1001A	4062+	F1001B	4076+	F1001C	4100+
F1001D	4072+	F1002A	4116+	F1002B	4132+
F1002C	4134+	F1002D	4126+	F1003A	4147+
F1003B	4152+	F10END	13362+	F10M1	32746+
F10M10	32015+	F10M11	33017+	F10M2	32755+
F10M3	32757+	F10M4	32761+	F10M5	32763+
F10M6	32765+	F10M7	32767+	F10M8	32770+
F10M9	32012+	F18E1	17043+	F18M1	33042+
F18M2	33047+	F18M3	33056+	F18M4	33064+
F1911	17255+	F19110	17522+	F19111	17545+
F19112	17324+	F19113	17536+	F19114	17614+
F19115	17233+	F1912	17267+	F1913	17306+
F1914	17344+	F1915	17370+	F1916	17403+
F1917	17417+	F1917A	17450+	F1918	17454+
F1919	17471+	F19M1	33065+	F19M2	33072+
F19M3	33077+	F19M4	33104+	F19M5	33107+
F1S1	22222+	F1S1A	22222+	F1S1B	22224+
F1S1C	22237+	F1S1D	22241+	F1S2	22243+
F1S2A	22254+	F1S2B	22261+	F20L1	20122+
F20M1	23114+	F20M2	33122+	F20M3	33127+
F21E0	21133+	F21F1	21150+	F21E2	21111+
F21M1	33154+	F21M2	33161+	F21M3	33166+
F21M4	33174+	F21M5	33205+	F21M6	33213+

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F21M7	33217+	F22M1	33225+	F22M2	33232+
F22M3	33237+	F22M4	33244+	F22M5	33253+
F22M6	33241+	F22M7	33265+	F23E1	22246+
F23L1	22035+	F23L2	22033+	F2E10	6173+
F2E49	6534+	F2E50	6551+	F2E51	6566+
F2E52	6227+	F2E54	6621+	F2E57	4640+
F2E58	6520+	F2E59	6146+	F2L1	6132+
F2L2	6162+	F2L3	6170+	F2L31	6206+
F2L32	6217+	F2M1	24364+	F2M10	24612+
F2M100	27102+	F2M101	27105+	F2M10F	27114+
F2M102	27123+	F2M104	27132+	F2M105	27141+
F2M106	27152+	F2M107	27160+	F2M108	27167+
F2M109	27176+	F2M11	24630+	F2M110	27205+
F2M111	27214+	F2M112	27224+	F2M113	27233+
F2M114	27242+	F2M115	27252+	F2M116	27264+
F2M117	27313+	F2M115	27354+	F2M119	27403+
F2M12	24645+	F2M120	27432+	F2M121	27460+
F2M122	27524+	F2M13	24665+	F2M14	24677+
F2M15	24711+	F2M14	24723+	F2M17	24760+
F2M18	24771+	F2M19	25004+	F2M2	24452+
F2M20	25057+	F2M21	25113+	F2M22	25145+
F2M3	24471+	F2M32	25174+	F2M33	25267+
F2M34	25317+	F2M35	25324+	F2M36	25347+
F2M37	25362+	F2M38	25371+	F2M39	25402+
F2M4	24525+	F2M40	25411+	F2M41	25420+
F2M42	25427+	F2M43	25440+	F2M44	25451+
F2M45	25462+	F2M46	25473+	F2M47	25502+
F2M48	25511+	F2M49	25522+	F2M50	25533+
F2M51	25542+	F2M52	25551+	F2M53	25563+
F2M54	25575+	F2M55	25607+	F2M56	25621+
F2M57	25633+	F2M58	25645+	F2M59	25657+
F2M6	24517+	F2M60	25671+	F2M61	25702+
F2M62	25713+	F2M63	25724+	F2M64	25735+
F2M65	25746+	F2M66	25757+	F2M67	25770+
F2M68	26001+	F2M69	26017+	F2M7	24531+
F2M70	26035+	F2M71	26053+	F2M72	26076+

F2M73	26115+	F2M73A	26144+	F2M74	26202+
F2M74A	26231+	F2M75	26273+	F2M76	26342+
F2M77	26375+	F2M78	26422+	F2M79	26452+
F2M8	26543+	F2M80	26500+	F2M81	26537+
F2M82	26662+	F2M83	26605+	F2M84	26633+
F2M85	26657+	F2M86	26704+	F2M87	26731+
F2M88	26755+	F2M89	26777+	F2M9	24563+
F2M90	27016+	F2M91	27023+	F2M92	27030+
F2M93	27035+	F2M94	27042+	F2M95	27047+
F2M96	27054+	F2M97	27061+	F2M98	27066+
F2M99	27073+	F2S1	22264+	F2S1A	22275+
F2S1B	22300+	F2S2	22303+	F2S2A	22314+
F2S2B	22316+	F2S3	22321+	F2S3A	22337+
F2S4	22342+	F2S4A	22357+	F2S5	22362+
F2S5A	22404+	F2S5B	22405+	F2S6	22407+
F2S6A	22432+	F2S6B	22437+	F2S6C	22440+
F2S7	22445+	F2S7A	22457+	F2S7B	22464+
F2S7C	22465+	F3E1	7072+	F3E10	7237+
F3E11	7254+	F3E18	7363+	F3E19	7400+
F3E2	7105+	F3E20	7423+	F3E21	7472+
F3E22	7541+	F3E23	7566+	F3E24	7613+
F3E25	7705+	F3E3	7115+	F3E60	10235+
F3E61	10254+	F3E62	7647+	F3E63	7761+
F3E64	10323+	F3E65	10353+	F3E66	10406+
F3E67	10440+	F3E68	10564+	F3E69	10631+
F3E70	10662+	F3E71	10711+	F3E72	10763+
F3E73	11035+	F3E74	11110+	F3E75	11215+
F3E76	11244+	F3E77	11267+	F3E78	11312+
F3E79	11336+	F3E8	7151+	F3E81	11370+
F3E82	11416+	F3E83	10807+	F3E85	11427+
F3E86	11457+	F3E9	7280+	F3L1	7216+
F3L2	7234+	F3L3	7317+	F3L4	7330+
F3L44	10221+	F3L45	7624+	F3L46	7641+
F3L47	7644+	F3L48	7716+	F3L49	7723+
F3L5	7345+	F3L50	7734+	F3L51	7741+
F3L52	7747+	F3L53	7751+	F3L54	10275+

F3L55	10312+	F3L56	10315+	F3L57	10374+
F3L58	10427+	F3L59	10530+	F3L6	7353+
F3L60	10544+	F3L61	10551+	F3L62	10563+
F3L63	10614+	F3L64	10747+	F3L65	10760+
F3L66	11021+	F3L67	11032+	F3L68	11073+
F3L69	11105+	F3L7	7421+	F3L70	11165+
F3L71	11170+	F3L72	11204+	F3L73	11226+
F3L74	11242+	F3L75	11256+	F3L76	11301+
F3L77	11324+	F3L78	10901+	F3L8	7460+
F3L9	7527+	F3M1	27351+	F3M10	30011+
F3M11	30026+	F3M12	30364+	F3M13	30156+
F3M14	30201+	F3M15	30217+	F3M16	30236+
F3M17	30254+	F3M18	30272+	F3M19	30311+
F3M2	30646+	F3M20	30322+	F3M21	30362+
F3M22	30377+	F3M23	30457+	F3M24	30554+
F3M25	30572+	F3M26	30655+	F3M27	30676+
F3M28	30727+	F3M29	30735+	F3M3	27661+
F3M30	31010+	F3M31	31245+	F3M32	31102+
F3M33	31134+	F3M34	31152+	F3M35	31160+
F3M36	31163+	F3M37	31173+	F3M38	31176+
F3M39	31205+	F3M4	27670+	F3M40	31216+
F3M41	31221+	F3M42	31224+	F3M43	31227+
F3M44	31235+	F3M45	31245+	F3M46	31250+
F3M47	31253+	F3M48	31261+	F3M49	31271+
F3M50	31274+	F3M51	31277+	F3M52	31303+
F3M53	31306+	F3M54	31313+	F3M55	31333+
F3M56	31364+	F3M57	31435+	F3M58	31477+
F3M59	31517+	F3M6	27677+	F3M60	31537+
F3M61	31554+	F3M62	31576+	F3M63	31634+
F3M64	31676+	F3M65	31705+	F3M66	31712+
F3M67	31737+	F3M68	31747+	F3M69	31766+
F3M7	27752+	F3M70	32004+	F3M71	32011+
F3M72	32016+	F3M73	32046+	F3M74	32070+
F3M75	32110+	F3M76	32146+	F3M77	32147+
F3M78	32170+	F3M79	32224+	F3M8	27770+
F3M80	32236+	F3M81	32243+	F3M82	32255+

F3M9	32270+	F3M84	32275+	F3M85	32302+
F3M9	27776+	F3M94	32307+	F3M95	32317+
F3S1	22470+	F3S1A	22505+	F3S1B	22512+
F3S1C	22514+	F3S2	22519+	F3S2A	22534+
F3S2B	22535+	F3S3	22537+	F3S3A	22573+
F3S3B	22611+	F3S3C	22612+	F3S4	22614+
F3S4A	22657+	F4E1	12037+	F4E2	12154+
F4L1	11731+	F4L10	12116+	F4L11	12156+
F4L11A	12174+	F4L2	11743+	F4L3	11754+
F4L4	12001+	F4L5	11767+	F4L6	12043+
F4L7	12055+	F4L8	12076+	F4L9	12104+
F4M1	22324+	F4M2	32351+	F4M3	32352+
F4M4	32402+	F4B1	12041+	F5E10	12614+
F5E9	12554+	F5L49	12527+	F5L50	12574+
F5L51	12611+	F5M1	32432+	F5M10	32470+
F5M11	32473+	F5M12	32476+	F5M13	32501+
F5M14	32504+	F5M15	32507+	F5M16	32512+
F5M17	32515+	F5M18	32520+	F5M19	32524+
F5M2	32440+	F5M20	32527+	F5M21	32533+
F5M22	32536+	F5M23	32541+	F5M24	32544+
F5M25	32547+	F5M26	32552+	F5M27	32555+
F5M28	32560+	F5M29	32563+	F5M3	32443+
F5M30	32564+	F5M31	32571+	F5M32	32574+
F5M33	32577+	F5M34	32602+	F5M35	32641+
F5M36	32730+	F5M4	32446+	F5M5	32451+
F5M6	32454+	F5M7	32457+	F5M8	32462+
F5M9	32465+	F5S1	22660+	F5S1A	22670+
F5S14	22700+	F5S1C	22705+	F5S1D	22715+
F5S1E	22722+	F5S1F	22731+	F5S1G	22736+
F5S1H	22735+	FAM1	5343+	FAM10	12730+
FAM12	17114+	FAM19	17655+	FAM2	2470+
FAM20	22600+	FAM21	21251+	FAM22	21506+
FAM23	22067+	FAM3	11506+	FAM4	12216+
FAM5	12635+	FDMF	456	FIM1	5335+
FIM10	12674+	FIM18	17076+	FIM19	17642+
FIM2	16650+	FIM20	20566+	FIM21	21241+

FIM22	22477+	FIM23	22057+	FIM3	11467+
FIM4	12203+	FIM5	12624+	FIXC	13772+
FIXD	12617+	FLAGS	332	FBRT	20541+
FPT1	17771+	FPT10	15660+	FPT18	17070+
FPT19	17634+	FPT2	6642+	FPT20	20554+
FPT21	21233+	FPT22	21471+	FPT23	22051+
FPT3	11461+	FPT4	12175+	FPT5	12616+
FSTART	12046+	FUNCTN	424	FUNC1	4044+
FUNC10	12740+	FUNC18	16771+	FUNC19	17225+
FUNC2	5444+	FUNC20	20114+	FUNC21	21100+
FUNC22	21373+	FUNC23	21762+	FUNC2A	5460+
FUNC3	7042+	FUNC4	11707+	FUNC5	12412+
FVM1	5436+	FVM10	15705+	FVM18	17107+
FVM23	22044+	FVT1	4777+	GET	15231+
GETCAP	15255+	GETIME	15266+	HICBRE	15670+
HIDISC	15672+	HILBL	52240500	IIFLAG	15442+
IIFLAG	15443+	I30T44	23402+	I31	243
I43	247	I56174	23401+	I64	311
I65	313	I66	315	I67	317
ILXT	23372+	IMSG1	23445+	IMSG2	23446+
IKMNT	4731+	IKMNT1	4630+	IKMNT	4622+
INP8S1	12025+	INP8S2	13230+	INP8S3	13036+
INP8S4	12043+	INT31	242	INT33	246
INT64	310	INT65	312	INT66	314
INT67	316	INTER	15350+	INTER1	15366+
INTRPT	15441+	INTX1	314	INTX2	316
ISHEAC	15440+	ISSTAT	15335+	ITABLE	23441+
IS1	315	IX2	317	KEY	15445+
LAST	22050+	LENGTH	15673+	LINES	46
LECBRE	15667+	LEDISC	15671+	LTIME	12
M1001A	23667+	M1003A	23705+	M1004A	23715+
M1005A	23740+	M1006A	23747+	M1007A	23756+
M1008A	23745+	M1009A	23774+	M1010A	24003+
M1011A	24012+	M1012A	24021+	M1013A	24030+
M1014A	24037+	M1015A	24046+	M1016A	24055+
M1017A	24065+	M1018A	24075+	M1019A	24105+

M1020A	24116+	M1023A	24130+	M1024A	24137+
M1025A	24146+	M1026A	24155+	M1027A	24164+
M1028A	24173+	M1029A	24202+	M1030A	24211+
M1031A	24220+	M1032A	24227+	M1033A	24236+
M1034A	24246+	M1035A	24256+	M1036A	24266+
M1037A	24276+	M1038A	24306+	M1039A	24317+
M1040A	24324+	M1041A	24331+	M1042A	24336+
M1043A	24343+	M2013B	24350+	MASK	17624+
MINUS	17630+	M8VTIM	15451+	NEWSSEC	15447+
NFFLG	23330+	N8RMAL	23106+	N8RML1	23111+
N8RML2	23117+	88JECT	430	88M8DE	15666+
PLT18	17051+	PATERN	15674+	PERR1	13306+
PERR2	13313+	PHASE	15457+	PI2	23333+
PLBT	20162+	PLBT1	20201+	PLBT1A	20210+
PLBT2	20221+	PLBT2A	20234+	PLBT2B	20244+
PLBT3	20306+	PLBT4	20323+	PLBT4A	20337+
PLBT4B	20347+	PB1	23163+	PB2	23171+
PB3	23177+	PB4	23212+	PB5	23214+
PB6	23216+	PB7	23224+	PB8	23232+
PBP	23374+	PBTOUT	23153+	PETP1:	23243+
PBTARD	23332+	PRE1	12753+	PHE2	12760+
PRE3	12762+	PRE4	13013+	PHE5	13017+
PTPN1	23246+	PTPN2	23254+	PUT	20374+
RANC1	13733+	RANC2	13741+	RANC3	13742+
RAND	13760+	RANCBM	15337+	READ	15434+
REP1	14670+	REPERR	14620+	REPORT	454
RESET	14236+	RETRY	15454+	RETURN	440
RL1	418	RL2	416	RMBDE	15433+
RMSA	15446+	SAV	15224+	SAVDP	13627+
SCARET	13775+	SDVH0	14032+	SDVH2	14044+
SDVH3	14060+	SDVH4	14047+	SDVH5	14056+
SDVH6	14044+	SEE	406	SECC	13747+
SEND	12572+	SEGD1	13601+	SETCAD	13710+
SETDVA	13777+	SETCAD	13551+	SETUPP	22740+
SETUP3	22747+	SETUP4	22755+	SLEN	13630+
SLEND	13636+	SLEH1	13642+	SLEN2	13645+

SLEN3	13656+	SLEN4	13666+	SLEN5	13701+
SLEN6	13675+	SPR1	14101+	SPR2	14113+
SPR3	14134+	SPR4	14155+	SPR5	14173+
SPR6	14210+	SPRAD	14064+	SPUR	23357+
STADOR	34020	START	13320+	STATUS	401
STDISC	23384+	STFLAG	15444+	START1:	17025+
STRIT1	23144+	SYSIZE	405	TABLE	34000
TABLE1	15530+	TABLE2	15540+	TABLE3	15550+
TEMP	23310+	TEMPA	23311+	TEMPB	23312+
TEMPC	23313+	TEMPD	23314+	TENS	4
TEMP	23045+	TIMOUT	23331+	TINTBL	15560+
TITLE	23146+	TITLE1	23153+	T-IT	22252+
TIT1	22270+	U19M1	23471+	U19M10	23620+
U19M11	23638+	U19M12	23640+	U19M13	23641+
U19M14	23654+	U19M2	23472+	U19M3	23505+
U19M5	23517+	U19M5	23530+	U19M6	23536+
U19M7	23551+	U19M8	23567+	U19M9	23607+
UNIT	5007+	UNIT	5006+	UNITS	5
UNIT	420	UPT	4761+	UTIME	55
UNIT	23326+	UVT	4766+	VAR1	23315+
VAR2	23316+	VAR3	23317+	VAR4	23320+
VAR5	23321+	VAR4	23322+	VAR7	23323+
VAR8	23324+	VAR9	23325+	VERERR	23533+
XC00	23265+	XC00	23275+	XA1T	23123+
XA1T1	23127+	XA1T2	23143+	XA1T3	23145+
XA1T4	23150+	XA1T	14510+	XA1P1	14514+
XA1P2	14523+	XA1P3	14526	XA1P4	23562+
XA1T5	15435+	XA1P5	15436+	X	23307+

