

**SDS 940 OLDS DIAGNOSTIC
SYSTEM**

UNIT 21 W DISC TEST LISTING

SDS 870038-51A

February 1969

SDS

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 *
 * UNIT 21 - CHANNEL DISC
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 * THIS UNIT TESTS THE DISC ON CHANNEL W. THE FUNCTIONS INCLUDED
 * IN THIS UNIT ARE:
 *
 * FUNCTION 1 - TMCC 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:
 *
 * PAW 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.
 * DOOT17 ACTIVATION BITS FOR ARMS 0 THROUGH 17 (OCTAL). BITS IN
 * THE MOST SIGNIFICANT PORTION OF THIS WORD PERMIT THE COR-
 * RESPONDING DISCS TO BE USED. THE ABSENCE OF A BIT PRO-
 * HIBITS 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 VAR-
 * IABLE COMBINES WITH THE VARIABLE DOOT17 TO PROVIDE SELEC-
 * TIVE CONTROL FOR ALL DISCS. THESE VARIABLES HAVE PRIORITY
 * OVER ALL FUNCTION VARIABLES, PERMITTING DISCS TO BE SKIP-
 * PED WITHIN A LARGE OPERATING RANGE OF DISCS. I.E. FOR A 35
 * DISC SYSTEM, DOOT17 = 73777400, D20T37 = 37777400,
 * HDISC = 777777, AND HODISC = 0 WOULD ALLOW ALL DISCS TO
 * BE USED EXCEPT FOR DISCS 3 AND 20 (OCTAL). THESE VAR-
 * IABLES ARE PRESET WHEN THE UNIT IS LOADED ACCORDING TO
 * THE SYSTEM VARIABLE 'DISCSIZ'.
 *
 * 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 21) BE EX-
 * ECUTED. HOWEVER, IN MOST CASES, CHANGING (DOOT17) AND
 * (D20T37) DOES NOT REQUIRE RESTARTING THE UNIT, AND A
 * CONTINUE (=T) IS SUFFICIENT. IT SHOULD BE NOTED, HOWEVER,
 * IF THE FILE IS KEYS IN THE EXERCISER WITH A DISC DE-
 * ACTIVATED, 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) FOL-
 * Lows IN ORDER TO CHECK AND INCORPORATE THE CHANGE. THE
 * 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 ON 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-
 * QUIREMENTS AND EXECUTE A CONTINUE (=T). WHEN THE OPER.

ATION 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 KEYED IN THE FIRST PASS, WHEN THE DISC HAS BEEN KEYED, 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 - TMCC DIAGNOSTIC

THIS FUNCTION TESTS SEVERAL BASIC TMCC 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). I.E. 20D43(25) INDICATES THAT THE SUSPECTED PROBLEM IS LOCATED ON CARD 20D, PIN 43, AND THE SIGNAL CAN BE FOUND ON LOGIC PAGE 25.

THERE ARE NO FUNCTION VARIABLES.

FUNCTION 2 - CONTROLLER DIAGNOSTIC WITHOUT DATA TRANSFER

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 OCCURES. 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 'D00T17' AND 'D20T37' 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 'D00T17' AND 'D20T37' 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
OWN 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 'D00T17' AND 'D20T37'
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 8048 DISC FILE DIAGNOSTIC

THIS FUNCTION CONTAINS OBJECT TESTS WHICH ARE DESIGNED
TO LOCATE SOME OF THE PROBLEMS IN THE DATA PRODUCTS
8048 DISC FILE. SOME OF THE POSITION DECODER (PDCA)
LOGIC IS TESTED, AS WELL AS SOME OF THE TIMING AND
THE CLEAR LOGIC.

OBJECT TESTS USING DISCS DELETED FROM 'D00T17' AND
'D20T37' 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:

OPMODE CONTROL WORD FOR MODE OF OPERATION
LCORE STARTING CORE ADDRESS. THIS MUST BE GREATER THAN
34000
HCORE ENDING CORE ADDRESS. FOR A 985/930, MAXIMUM CORE
ADDRESS IS 37777. FOR A 940, IT IS 17777.
LDDISC STARTING DISC ADDRESS
HDDISC ENDING DISC ADDRESS. MAXIMUM DISC IS 77777 FOR
A 32 DISC SYSTEM.
LENGTH CONTROL FOR TRANSMISSION LENGTH. IF LENGTH IS
NEGATIVE, RANDOM LENGTH RECORDS WILL BE USED. IF
LENGTH 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 'COMPARE MODE', THE MAXIMUM FIXED LENGTH
IS 160 SECTORS (7K). IN ANY EVENT, THE LENGTH
CANNOT BE GREATER THAN THE DIFFERENCE OF 'HCORE'
AND 'LCORE'.
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 'OPMODE' HAVE THE FOLLOWING
SIGNIFICANCE:

*
*
* 0 • FIXED DISC ADDRESSING (USES ADDRESS IN (L0DISC))
* 1 • SEQUENTIAL DISC ADDRESSING
* 2 • RANDOM DISC ADDRESSING
* 3 • FIXED CORE ADDRESSING (USES ADDRESS IN (LOCORE))
* 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 TRANSFERING 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 SEEK BEFORE EACH DISC ACCESS
* 22 • TIME ALL SEEKS
* 23 • TIME ALL SEARCHES
*
* IN THE COMPARE MODE, OPERATION IS CONTROLLED BY THE STATUS
* OF 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
* LOCORE LESS THAN 340008
* HICORE GREATER THAN 1777778
* HICORE GREATER THAN 377778, NOT 940
* HICORE MINUS LOCORE LESS THAN 640 (1 SECTOR)
* MIDISC LESS THAN L0DISC
* MIDISC 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 * N/A
 * 16 * N/A
 * 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 NO WORD NUMBER WITHIN THE SECTOR
 * ERROR NO 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 = 11138887).

* IN ORDER TO RESET THE SEQUENTIAL DISC POINTER, TYPE
 * #0 15271T. 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.

* 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 'D06T17' AND 'D20T37' 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 ON 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 ISTART, AND ENDING WITH IEND, 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
VERTICLE 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 FUNCTIONS 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 ISTART TO IEND, 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


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* 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 POT 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.
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* FUNCTION 22 * WRITE HEADER TEST
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* 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.
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* THE FUNCTION VARIABLES ARE 'START' AND 'END', WHICH ARE
* THE STARTING AND ENDING DISC ADDRESSES IN THE FORM OF
* DISC POT 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.
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* FUNCTION 23 * SECTOR DUMP
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*
* 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.
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* THE ONLY VARIABLE IS 'SECTOR', WHICH IS THE DISC ADDRESS
* TO BE DUMPED.
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          00010          *          OCTAL
          *          *
          *          *          EQU'S
          *
0 01 00000 ONE      0PD      0100000,1
0 02 00000 TWO     0PD      0200000,1
0 03 00000 THREE   0PD      0300000,1
0 04 00000 FOUR    0PD      0400000,1
0 05 00000 FIVE    0PD      0500000,1
0 06 00000 SIX     0PD      0600000,1
0 07 00000 SEVEN   0PD      0700000,1
0 10 00000 EIGHT   0PD      01000000,1
          *
00000242 INT31 EQU    242
00000243 I31 EQU     243
00000246 INT33 EQU    246
00000247 I33 EQU     247
00000332 FLAGS EQU   332
00000401 STATUS EQU  401
00000404 DSC91Z EQU  404
00000405 SYSIZE EQU  405
00000406 SEED EQU    406
00000414 ERRORS EQU  414
00000415 RL1 EQU     415
00000416 RL2 EQU     416
00000420 UNIT EQU    420
00000424 FUNCTN EQU  424
00000430 SUBJECT EQU  430
00000434 END EQU     434
00000440 RETURN EQU  440
00000450 DIVERT EQU  450
00000452 DONE EQU    452
00000454 REPORT EQU  454
00000456 FDONE EQU   456
00000460 ERROR EQU   460
00030000 STADDR EQU 34000

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	DISCK	IDENT		
00000242	INTX1	EQU	INT31	
00000246	INTX2	EQU	INT33	
00000243	IX1	EQU	I31	
00000247	IX2	EQU	I33	
	*			
	*	9PD'S FOR 925 COMPATABILITY		
	*			
0 46 10012	RAC	9PD	04610012,2	
0 46 20005	ABC	9PD	04620005,2	
0 46 30003	CLR	9PD	04630003,2	
	*			
	*	UNCONDITIONAL MACRO DEFINITIONS		
	*			
	DSCC	MACRO	D	
		EBM	0	DISCONNECT CHANNEL
		ENDM		
	ALCC	MACRO	D	
		EBM	10000	ALERT CHANNEL
		ENDM		
	ASCC	MACRO	D	
		EBM	12000	ALERT TO PIN CHANNEL ADDRESS
		ENDM		
	T9PC	MACRO	D	
		EBM	14000	TERMINATE OUTPUT
		ENDM		
	CATC	MACRO	D	
		SKS	14000	CHANNEL ACTIVE TEST
		ENDM		
	CETC	MACRO	D	
		SKS	11000	CHANNEL ERROR TEST
		ENDM		
	CITC	MACRO	D	
		SKS	10400	CHANNEL INTER-RECORD TEST
		ENDM		
	CZTC	MACRO	D	

		SKS	12000	CHANNEL ZERO WORD COUNT TEST
		ENDM		
	BETC	MACRO	D	
		SKS	20010	W-BUFFER ERROR TEST
		ENDM		
	BRTC	MACRO	D	
		SKS	21000	W-BUFFER READY TEST
		ENDM		
	D0LT	MACRO	D	
		SKS	10226	FILE ON LINE TEST
		ENDM		
	DFRT	MACRO	D	
		SKS	10026	DISC FILE READY TEST
		ENDM		
	DFET	MACRO	D	
		SKS	11026	DISC FILE ERROR TEST
		ENDM		
	DFVT	MACRO	D	
		SKS	12026	TRACK VERIFIED TEST
		ENDM		
	DWPT	MACRO	D	
		SKS	13026	DISC WRITE PROTECT TEST
		ENDM		
	DWHT	MACRO	D	
		SKS	14026	WRITE HEADER TEST
		ENDM		
	ALDF	MACRO	D	
		EBM	10026	ALERT DISC FILE
		ENDM		
	CLDF	MACRO	D	
		EBM	10226	CLEAR FILE
		ENDM		
	WDFC	MACRO	D	
		EBM	2666	WRITE DISC FILE . CHAIN
		ENDM		
	WDFS	MACRO	D	

	EOM	3666	WRITE DISC FILE . SECTOR
	ENDM		
RDFC	MACRO	D	
	EOM	2626	HEAD DISC FILE . CHAIN
	ENDM		
RDFS	MACRO	D	
	EOM	3626	READ DISC FILE . SECTOR
	ENDM		
DEEM	MACRO	D	
	EOM	2045	DUMMY EOM
	ENDM		
XEBM	MACRO	D	
	EOM	D(1)	EXTENDED MODE EOM
	ENDM		

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PRESET UNIT PARAMETERS

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00000		04000	BSS	4000	
04000	0	00000	NOB	0	DUMMY CELL
04001	0	04773	NOB	UPT	UNIT PARAMETER TABLES
04002	0	33550	LDB	#0	SET 940 FLAG
04003	0	00401	LDA	STATUS	
04004	0	15463	SKA	BIT21	
04005	0	33551	LDB	#1	
04006	0	23350	STB	NFFLG	
04007	0	00404	LDA	DSCSIZ	PRESET D00T17 AND D20T37
04010	0	00011	RSH	9D	
04011	0	33552	ETR	#7	
04012	0	33550	LDB	#0	
04013	0	33550	SKG	#0	
04014	0	04020	BRU	***	
04015	0	00014	XAB		
04016	0	33553	MRG	#77600000	
04017	0	00014	XAB		
04020	0	15465	SKG	BIT23	
04021	0	04025	BRU	***	
04022	0	00014	XAB		
04023	0	33554	MRG	#177400	
04024	0	00014	XAB		
04025	0	05001	STB	D00T17	
04026	0	33550	LDB	#0	
04027	0	15464	SKG	BIT22	
04030	0	04034	BRU	***	
04031	0	00014	XAB		
04032	0	33553	MRG	#77600000	
04033	0	00014	XAB		
04034	0	33555	SKG	#3	
04035	0	04041	BRU	***	


```

04073 0 43 00430 BRM OBJECT
04074 0 43 00440 BRM RETURN
04075 0 20 23371 NOP ENTER
04076 0 02 00000 EOM 0 DISCONNECT CHANNEL
04077 0 40 21000 SKS 21000 W=BUFFER READY TEST
04100 0 43 00460 BRM ERROR CHANNEL TESTED ACTIVE
04101 0 20 23713 NOP F1M3
04102 0 43 00434 BRM END

```

TEST BRTW (ACTIVE CONDITION)

```

04103 0 43 00430 BRM OBJECT
04104 0 43 00440 BRM RETURN
04105 0 20 23371 NOP ENTER
04106 0 02 20004 DIR DISABLE INTERRUPTS
04107 0 02 00000 EOM 0 DISCONNECT CHANNEL
04110 0 02 14000 EOM 14000 TERMINATE OUTPUT
04111 0 40 21000 SKS 21000 W=BUFFER READY TEST
04112 0 01 04115 BRU **3
04113 0 02 00000 EOM 0 DISCONNECT CHANNEL
04114 0 43 00460 BRM ERROR CHANNEL TESTED NOT ACTIVE
04115 0 20 23716 NOP F1M4
04116 0 02 00000 EOM 0 DISCONNECT CHANNEL
04117 0 43 00434 BRM END

```

TEST CET (NO ERROR CONDITION)

```

04120 0 43 00430 BRM OBJECT
04121 0 43 00440 BRM RETURN
04122 0 20 23371 NOP ENTER
04123 0 02 00000 EOM 0 DISCONNECT CHANNEL
04124 0 40 11000 SKS 11000 CHANNEL ERROR TEST
04125 0 43 00460 BRM ERROR CHANNEL TESTED SET
04126 0 20 23721 NOP F1M5
04127 0 43 00434 BRM END

```

TEST BETA (NO ERROR CONDITION)

```

04130 0 43 00430 BRM OBJECT
04131 0 43 00440 BRM RETURN
04132 0 20 23371 NOP ENTER
04133 0 02 00000 EOM 0 DISCONNECT CHANNEL
04134 0 40 20010 SKS 20010 W=BUFFER ERROR TEST
04135 0 43 00460 BRM ERROR CHANNEL TESTED SET
04136 0 20 23727 NOP F1M6
04137 0 43 00434 BRM END

```

TEST TOP

```

04140 0 43 00430 BRM OBJECT
04141 0 43 00440 BRM RETURN
04142 0 20 23371 NOP ENTER
04143 0 02 20004 DIR DISABLE INTERRUPTS
04144 0 02 02045 EOM 2045 DUMMY EOM
04145 0 02 14000 EOM 14000 TERMINATE OUTPUT
04146 0 40 14000 SKS 14000 CHANNEL ACTIVE TEST
04147 0 43 00460 BRM ERROR CHANNEL TESTED ACTIVE
04150 0 20 23732 NOP F1M7
04151 0 02 00000 EOM 0 DISCONNECT CHANNEL
04152 0 43 00434 BRM END

```

TEST *14

```

04153 0 43 00430 BRM OBJECT
04154 0 43 00440 BRM RETURN
04155 0 20 23371 NOP ENTER
04156 0 02 20004 DIR DISABLE INTERRUPTS
04157 0 02 00001 EOM 01 SET *14
04160 0 40 14000 SKS 14000 CHANNEL ACTIVE TEST
04161 0 01 04164 BRU **3
04162 0 02 00000 EOM 0 DISCONNECT CHANNEL

```

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04163	0 43 00460	BRM	ERROR	CHANNEL NOT ACTIVE
04164	0 20 23745	NBP	F1M8	
04165	0 02 00000	EBM	0	DISCONNECT CHANNEL
04166	0 43 00434	BRM	END	

TEST #13

04167	0 43 00430	BRM	OBJECT	
04170	0 43 00440	BRM	RETURN	
04171	0 20 23371	NBP	ENTER	
04172	0 02 20004	DIR		DISABLE INTERRUPTS
04173	0 02 00002	EBM	02	SET #13
04174	0 40 14000	SKS	14000	CHANNEL ACTIVE TEST
04175	0 01 04200	BRU	**3	
04176	0 02 00000	EBM	0	DISCONNECT CHANNEL
04177	0 43 00460	BRM	ERROR	CHANNEL NOT ACTIVE
04200	0 20 23760	NBP	F1M9	
04201	0 02 00000	EBM	0	DISCONNECT CHANNEL
04202	0 43 00434	BRM	END	

TEST #12

04203	0 43 00430	BRM	OBJECT	
04204	0 43 00440	BRM	RETURN	
04205	0 20 23371	NBP	ENTER	
04206	0 02 20004	DIR		DISABLE INTERRUPTS
04207	0 02 00004	EBM	04	SET #12
04210	0 40 14000	SKS	14000	CHANNEL ACTIVE TEST
04211	0 01 04214	BRU	**3	
04212	0 02 00000	EBM	0	DISCONNECT CHANNEL
04213	0 43 00460	BRM	ERROR	CHANNEL NOT ACTIVE
04214	0 20 23770	NBP	F1M10	
04215	0 02 00000	EBM	0	DISCONNECT CHANNEL
04216	0 43 00434	BRM	END	

TEST #10

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04217	0 43 00430	BRM	OBJECT	
04220	0 43 00440	BRM	RETURN	
04221	0 20 23371	NBP	ENTER	
04222	0 02 20004	DIR		DISABLE INTERRUPTS
04223	0 02 00002	EBM	20	SET #10
04224	0 40 14000	SKS	14000	CHANNEL ACTIVE TEST
04225	0 01 04230	BRU	**3	
04226	0 02 00000	EBM	0	DISCONNECT CHANNEL
04227	0 43 00460	BRM	ERROR	CHANNEL NOT ACTIVE
04230	0 20 24000	NBP	F1M11	
04231	0 02 00000	EBM	0	DISCONNECT CHANNEL
04232	0 43 00434	BRM	END	

TEST CZT (COUNT = 0 CONDITION)

04233	0 43 00430	BRM	OBJECT	
04234	0 43 00440	BRM	RETURN	
04235	0 20 23371	NBP	ENTER	
04236	0 02 20004	DIR		
04237	0 76 33556	LDA	*77740000	
04240	0 35 23352	STA	PBT*RD	
04241	0 02*10000	EBM*	10000	ALERT CHANNEL
04242	0 02 14037	EBM	14037	EXTENDED MODE EB*
04243	0 13 23352	PBT	PBT*RD	SET *ORD COUNT TO 77777
04244	0 76 33550	LDA	*0	
04245	0 35 23352	STA	PBT*RD	
04246	0 02*10000	EBM*	10000	ALERT CHANNEL
04247	0 02 14000	EBM	14000	EXTENDED MODE EB*
04250	0 13 23352	PBT	PBT*RD	*C*0
04251	0 40 12000	SKS	12000	CHANNEL ZERO WORD COUNT TEST
04252	0 43 00460	BRM	ERROR	WORD COUNT TESTED NOT ZERO
04253	0 20 24010	NBP	F1M12	
04254	0 43 00434	BRM	END	

TEST #C14

```

04255 0 43 00430 BRM OBJECT
04256 0 43 22212 BRM F151 PERFORM TEST
04257 00040000 DATA 40000
04260 0 02 14000 EOM 14000 EXTENDED MODE EOM
04261 0 20 24016 NOP F1M13

*
* TEST WC13
*
04262 0 43 00430 BRM OBJECT
04263 0 43 22212 BRM F151 PERFORM TEST
04264 00100000 DATA 100000
04265 0 02 14000 EOM 14000 EXTENDED MODE EOM
04266 0 20 24026 NOP F1M14

*
* TEST WC12
*
04267 0 43 00430 BRM OBJECT
04270 0 43 22212 BRM F151 PERFORM TEST
04271 00200000 DATA 200000
04272 0 02 14000 EOM 14000 EXTENDED MODE EOM
04273 0 20 24036 NOP F1M15

*
* TEST WC11
*
04274 0 43 00430 BRM OBJECT
04275 0 43 22212 BRM F151 PERFORM TEST
04276 00400000 DATA 400000
04277 0 02 14000 EOM 14000 EXTENDED MODE EOM
04300 0 20 24046 NOP F1M16

*
* TEST WC10
*
04301 0 43 00430 BRM OBJECT
04302 0 43 22212 BRM F151 PERFORM TEST
04303 01000000 DATA 1000000

```

```

04304 0 02 14000 EOM 14000 EXTENDED MODE EOM
04305 0 20 24056 NOP F1M17

*
* TEST WC9
*
04306 0 43 00430 BRM OBJECT
04307 0 43 22212 BRM F151 PERFORM TEST
04310 02000000 DATA 2000000
04311 0 02 14000 EOM 14000 EXTENDED MODE EOM
04312 0 20 24066 NOP F1M18

*
* TEST WC8
*
04313 0 43 00430 BRM OBJECT
04314 0 43 22212 BRM F151 PERFORM TEST
04315 04000000 DATA 4000000
04316 0 02 14000 EOM 14000 EXTENDED MODE EOM
04317 0 20 24076 NOP F1M19

*
* TEST WC7
*
04320 0 43 00430 BRM OBJECT
04321 0 43 22212 BRM F151 PERFORM TEST
04322 10000000 DATA 10000000
04323 0 02 14000 EOM 14000 EXTENDED MODE EOM
04324 0 20 24106 NOP F1M20

*
* TEST WC6
*
04325 0 43 00430 BRM OBJECT
04326 0 43 22212 BRM F151 PERFORM TEST
04327 20000000 DATA 20000000
04330 0 02 14000 EOM 14000 EXTENDED MODE EOM
04331 0 20 24116 NOP F1M21

*
* TEST WC5

```

```

04332 0 43 00430 * BRM OBJECT
04333 0 43 22212 * BRM F1S1 PERFORM TEST
04334 00000000 * DATA 40000000
04335 0 02 14000 * EBM 14000 EXTENDED MODE EBM
04336 0 20 24126 * NOP F1M22

*
* TEST WCA
*
04337 0 43 00430 BRM OBJECT
04340 0 43 22212 BRM F1S1 PERFORM TEST
04341 00000000 DATA 0
04342 0 02 14001 EBM 14001 EXTENDED MODE EBM
04343 0 20 24136 NOP F1M23

*
* TEST WC3
*
04344 0 43 00430 BRM OBJECT
04345 0 43 22212 BRM F1S1 PERFORM TEST
04346 00000000 DATA 0
04347 0 02 14002 EBM 14002 EXTENDED MODE EBM
04350 0 20 24153 NOP F1M24

*
* TEST WC2
*
04351 0 43 00430 BRM OBJECT
04352 0 43 22212 BRM F1S1 PERFORM TEST
04353 00000000 DATA 0
04354 0 02 14004 EBM 14004 EXTENDED MODE EBM
04355 0 20 24163 NOP F1M25

*
* TEST WC1
*
04356 0 43 00430 BRM OBJECT
04357 0 43 22212 BRM F1S1 PERFORM TEST
04360 00000000 DATA 0

```

```

04361 0 02 14010 EBM 14010 EXTENDED MODE EBM
04362 0 20 24173 NOP F1M26

*
* TEST WCC
*
04363 0 43 00430 BRM OBJECT
04364 0 43 22212 BRM F1S1 PERFORM TEST
04365 00000000 DATA 0
04366 0 02 14020 EBM 14020 EXTENDED MODE EBM
04367 0 20 24203 NOP F1M27

*
* TEST WA14
*
04370 0 43 00430 BRM OBJECT
04371 0 43 22235 BRM F1S2 PERFORM TEST
04372 00000001 DATA 1
04373 00000001 DATA 1
04374 0 02 14000 EBM 14000 EXTENDED MODE EBM
04375 0 20 24213 NOP F1M28
04376 0 20 24230 NOP F1M29

*
* TEST WA13
*
04377 0 43 00430 BRM OBJECT
04400 0 43 22235 BRM F1S2 PERFORM TEST
04401 00000002 DATA 2
04402 00000002 DATA 2
04403 0 02 14000 EBM 14000 EXTENDED MODE EBM
04404 0 20 24243 NOP F1M30
04405 0 20 24251 NOP F1M31

*
* TEST WA12
*
04406 0 43 00430 BRM OBJECT
04407 0 43 22235 BRM F1S2 PERFORM TEST
04410 00000004 DATA 4

```


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04411	0	00000004	DATA	4	
04412	0	02 14000	EBM	14000	EXTENDED MODE EBM
04413	0	20 24257	NBP	F1M32	
04414	0	20 24265	NBP	F1M33	

TEST WA11

04415	0	43 00430	BRM	OBJECT	
04416	0	43 22235	BRM	F1S2	PERFORM TEST
04417	0	00000010	DATA	10	
04420	0	00000010	DATA	10	
04421	0	02 14000	EBM	14000	EXTENDED MODE EBM
04422	0	20 24273	NBP	F1M34	
04423	0	20 24301	NBP	F1M35	

TEST WA10

04424	0	43 00430	BRM	OBJECT	
04425	0	43 22235	BRM	F1S2	PERFORM TEST
04426	0	00000020	DATA	20	
04427	0	00000020	DATA	20	
04430	0	02 14000	EBM	14000	EXTENDED MODE EBM
04431	0	20 24307	NBP	F1M36	
04432	0	20 24315	NBP	F1M37	

TEST WA9

04433	0	43 00430	BRM	OBJECT	
04434	0	43 22235	BRM	F1S2	PERFORM TEST
04435	0	00000040	DATA	40	
04436	0	00000040	DATA	40	
04437	0	02 14000	EBM	14000	EXTENDED MODE EBM
04440	0	20 24323	NBP	F1M38	
04441	0	20 24333	NBP	F1M39	

TEST WA8

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04442	0	43 00430	BRM	OBJECT	
04443	0	43 22235	BRM	F1S2	PERFORM TEST
04444	0	00000100	DATA	100	
04445	0	00000100	DATA	100	
04446	0	02 14000	EBM	14000	EXTENDED MODE EBM
04447	0	20 24341	NBP	F1M40	
04450	0	20 24347	NBP	F1M41	

TEST WA7

04451	0	43 00430	BRM	OBJECT	
04452	0	43 22235	BRM	F1S2	PERFORM TEST
04453	0	00000200	DATA	200	
04454	0	00000200	DATA	200	
04455	0	02 14000	EBM	14000	EXTENDED MODE EBM
04456	0	20 24355	NBP	F1M42	
04457	0	20 24363	NBP	F1M43	

TEST WA6

04460	0	43 00430	BRM	OBJECT	
04461	0	43 22235	BRM	F1S2	PERFORM TEST
04462	0	00000400	DATA	400	
04463	0	00000400	DATA	400	
04464	0	02 14000	EBM	14000	EXTENDED MODE EBM
04465	0	20 24371	NBP	F1M44	
04466	0	20 24377	NBP	F1M45	

TEST WA5

04467	0	43 00430	BRM	OBJECT	
04470	0	43 22235	BRM	F1S2	PERFORM TEST
04471	0	00001000	DATA	1000	
04472	0	00001000	DATA	1000	
04473	0	02 14000	EBM	14000	EXTENDED MODE EBM

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04474 0 20 24405 NBP F1M46
04475 0 20 24413 NBP F1M47

TEST WA4

04476 0 43 00430 BRM OBJECT
04477 0 43 22235 BRM F1S2 PERFORM TEST
04500 0 00020000 DATA 2000
04501 0 00020000 DATA 2000
04502 0 02 14000 EBM 14000 EXTENDED MODE EBM
04503 0 20 24421 NBP F1M48
04504 0 20 24427 NBP F1M49

TEST WA3

04505 0 43 00430 BRM OBJECT
04506 0 43 22235 BRM F1S2 PERFORM TEST
04507 0 00040000 DATA 4000
04510 0 00040000 DATA 4000
04511 0 02 14000 EBM 14000 EXTENDED MODE EBM
04512 0 20 24435 NBP F1M50
04513 0 20 24443 NBP F1M51

TEST WA2

04514 0 43 00430 BRM OBJECT
04515 0 43 22235 BRM F1S2 PERFORM TEST
04516 0 00010000 DATA 10000
04517 0 00010000 DATA 10000
04520 0 02 14000 EBM 14000 EXTENDED MODE EBM
04521 0 20 24451 NBP F1M52
04522 0 20 24457 NBP F1M53

TEST WA1

04523 0 43 00430 BRM OBJECT

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04524 0 43 22235 BRM F1S2 PERFORM TEST
04525 0 00020000 DATA 20000
04526 0 00020000 DATA 20000
04527 0 02 14000 EBM 14000 EXTENDED MODE EBM
04530 0 20 24465 NBP F1M54
04531 0 20 24473 NBP F1M55

TEST WAC

04532 0 43 00430 BRM OBJECT
04533 0 43 22235 BRM F1S2 PERFORM TEST
04534 0 00000000 DATA 0
04535 0 00040000 DATA 40000
04536 0 02 14040 EBM 14040 EXTENDED MODE EBM
04537 0 20 24501 NBP F1M56
04540 0 20 24511 NBP F1M57

TEST WAC0

04541 0 43 00430 BRM OBJECT
04542 0 43 22235 BRM F1S2 PERFORM TEST
04543 0 00000000 DATA 0
04544 0 00100000 DATA 100000
04545 0 02 14100 EBM 14100 EXTENDED MODE EBM
04546 0 20 24514 NBP F1M58
04547 0 20 24517 NBP F1M59

TEST INCREMENTING OF WA1-WA14

04550 0 76 15447 LDA BIT9
04551 0 35 23352 STA PORTARD
04552 0 43 00430 File1 BRM OBJECT
04553 0 43 00440 BRM RETURN
04554 0 20 23371 NBP ENTER
04555 0 02 20004 DJR
04556 0 75 33557 LDB #177777

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04557	0	02	10000	EDM*	10000	ALERT CHANNEL
04560	0	02	14000	EDM	14000	EXTENDED MODE EDM
04561	0	13	23352	PBT	PBTWRD	WC=1
04562	0	02	02045	EDM	2045	DUMMY EDM
04563	0	76	33560	LDA	PBTWRD	
04564	0	14	33560	ETR	#37777	EXTRACT ADDRESS FROM PBT WORD
04565	0	55	15465	ADD	BIT23	
04566	0	02	00000	EDM	0	DISCONNECT CHANNEL
04567	0	02	12000	EDM	12000	ALERT TO PIN CHANNEL ADDRESS
04570	0	33	23330	PIN	TEMP	
04571	0	70	23330	SKM	TEMP	DID ADDRESS REGISTER INCREMENT
04572	0	01	04574	BRU	**2	NO
04573	0	01	04576	BRU	**3	
04574	0	75	23330	LDB	TEMP	A=CORRECT VALUE, B=INCORRECT VALUE
04575	0	43	00460	BRM	ERROR	
04576	2	20	24522	NOP	F1M60,2	
04577	0	43	00434	BRM	END	
04600	0	61	23352	MIN	PBTWRD	
04601	0	76	23352	LDA	PBTWRD	
04602	0	73	33561	SKG	#77777	LAST PASS
04603	0	01	04552	BRU	F1M61	NO

TEST INCREMENTING OF #A00

04604	0	43	00430	BRM	SUBJECT	
04605	0	43	00440	BRM	RETURN	
04606	0	20	23371	NOP	ENTER	
04607	0	02	20004	DIR		
04610	0	76	33561	LDA	#77777	
04611	0	35	23352	STA	PBTWRD	
04612	0	02	10000	EDM*	10000	ALERT CHANNEL
04613	0	02	14040	EDM	14040	EXTENDED MODE EDM
04614	0	13	23352	PBT	PBTWRD	WC=1, WA=77777
04615	0	02	02045	EDM	2045	DUMMY EDM
04616	0	75	33557	LDB	#177777	
04617	0	76	15446	LDA	BITR	

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04620	0	02	00000	EDM	0	DISCONNECT CHANNEL
04621	0	02	12000	EDM	12000	ALERT TO PIN CHANNEL ADDRESS
04622	0	33	23330	PIN	TEMP	
04623	0	70	23330	SKM	TEMP	WA=100000
04624	0	01	04626	BRU	**2	NO
04625	0	01	04630	BRU	**3	
04626	0	75	23330	LDB	TEMP	A=EXPECTED VALUE, B=INCORRECT VALUE
04627	0	43	00460	BRM	ERROR	
04630	2	20	24522	NOP	F1M60,2	
04631	0	43	00434	BRM	END	

TEST #RAP AROUND INCREMENTING

04632	0	43	00430	BRM	SUBJECT	
04633	0	43	00440	BRM	RETURN	
04634	0	20	23371	NOP	ENTER	
04635	0	02	20004	DIR		
04636	0	76	33561	LDA	#77777	
04637	0	35	23352	STA	PBTWRD	
04640	0	02	10000	EDM*	10000	ALERT CHANNEL
04641	0	02	14140	EDM	14140	EXTENDED MODE EDM
04642	0	13	23352	PBT	PBTWRD	WC=1, WA=177777
04643	0	02	02045	EDM	2045	DUMMY EDM
04644	0	75	33557	LDB	#177777	
04645	0	76	33550	LDA	#0	
04646	0	02	00000	EDM	0	DISCONNECT CHANNEL
04647	0	02	12000	EDM	12000	ALERT TO PIN CHANNEL ADDRESS
04650	0	33	23330	PIN	TEMP	
04651	0	70	23330	SKM	TEMP	WA=0
04652	0	01	04654	BRU	**2	NO
04653	0	01	04656	BRU	**3	
04654	0	75	23330	LDB	TEMP	A=EXPECTED VALUE, B=INCORRECT VALUE
04655	0	43	00460	BRM	ERROR	
04656	2	20	24522	NOP	F1M60,2	
04657	0	43	00434	BRM	END	

* * * TEST ZERO WORD COUNT INTERRUPT

04660	0 43 00430	BRM	0BJECT	
04661	0 43 00440	BRM	RETURN	
04662	0 20 04737	NBP	XTI2	
04663	0 76 15447	LDA	BIT9	
04664	0 35 23352	STA	PBTWRD	
04665	0 02 20002	EIR		
04666	0 02 10000	EBM*	10000	ALERT CHANNEL
04667	0 02 15000	EBM	15000	EXTENDED MODE EBM
04670	0 13 23352	PBT	PBTWRD	
04671	0 02 20045	EBM	2045	DUMMY EBM
04672	0 67 20060	LCY	48D	5 DUMMY CYCLES
04673	0 02 20000	EBM	0	DISCONNECT CHANNEL
04674	0 02 20004	DIR		
04675	0 43 00460	BRM	ERROR	NO I1 INTERRUPT
04676	4 20 24542	NBP	F1M65,4	
04677	0 20 24551	NBP	F1M66	
04700	0 43 00434	BRM	END	

* * * TEST END OF RECORD INTERRUPT

04701	0 43 00430	BRM	0BJECT	
04702	0 43 00440	BRM	RETURN	
04703	0 20 04755	NBP	XTI3	
04704	0 76 15447	LDA	BIT9	
04705	0 35 23352	STA	PBTWRD	
04706	0 02 20002	EIR		
04707	0 02 10000	EBM*	10000	ALERT CHANNEL
04710	0 02 16000	EBM	16000	EXTENDED MODE EBM
04711	0 13 23352	PBT	PBTWRD	
04712	0 02 00000	EBM	0	DISCONNECT CHANNEL
04713	0 67 20060	LCY	48D	5 DUMMY CYCLES
04714	0 67 20060	LCY	48D	5 DUMMY CYCLES
04715	0 02 20004	DIR		
04716	0 43 00460	BRM	ERROR	

04717	4 20 24405	NBP	F1M70,4
04720	0 20 24414	NBP	F1M71
04721	0 43 00434	BRM	END

* * * TEST END OF WORD INTERRUPT

04722	0 43 00430	BRM	0BJECT	
04723	0 43 00440	BRM	RETURN	
04724	0 20 04737	NBP	XTI2	
04725	0 02 20002	EIR		
04726	0 02 20045	EBM	2045	DUMMY EBM
04727	0 67 20060	LCY	48D	5 DUMMY CYCLES
04730	0 02 20000	EBM	0	DISCONNECT CHANNEL
04731	0 02 20004	DIR		
04732	0 43 00460	BRM	ERROR	NO I1 INTERRUPT RECEIVED
04733	4 20 24542	NBP	F1M65,4	
04734	0 20 24565	NBP	F1M67	
04735	0 43 00434	BRM	END	
04736	0 43 00456	BRM	FDBNE	EXIT TO NEXT FUNCTION

* * * INTERRUPT ENTRANCES

04737	0 02 20004	XTI2	DIR	
04740	0 02 00000		EBM	0
04741	0 76 00450		LDA	DIVERT
04742	0 14 33560		ETR	#37777
04743	0 75 33551		LOB	#=1
04744	0 70 33562		SKM	#IX1
04745	0 43 23377		BRM	SPUR
04746	0 20 33562		NBP	#IX1
04747	0 76 00242		LDA	INTX1
04750	0 55 33563		ADD	#5
04751	0 35 00242		STA	INTX1
04752	0 53 23352		SKN	FFFLG
04753	0 01 00242		BRM*	INTX1
04754	0 11 00242		BRI	INTX1

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NO

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04755	0 02 20004	XTI3	DIR		
04756	0 02 00000		EQM	0	DISCONNECT CHANNEL
04757	0 76 00450		LDA	DIVERT	
04760	0 14 33560		ETR	#37777	
04761	0 75 33551		LDB	#=1	
04762	0 70 33564		SKM	#IX2	12 INTERRUPT RECEIVED
04763	0 43 23377		BRM	SPUR	NO = SPURIOUS
04764	0 20 33564		NBP	#IX2	
04765	0 76 00246		LDA	INTX2	
04766	0 55 15463		ADD	BIT21	
04767	0 35 00246		STA	INTX2	
04770	0 53 23350		SKN	NFFLG	IS MACHINE A 940
04771	0 01 00246		BRU	INTX2	
04772	0 11 00246		BRI	INTX2	

DISCW TAP=3.0 PAGE 38

*
* UNIT, FUNCTION TABLES
*
04773 0 20 05012 UPT NBP UIM UNIT IDENTIFIER MESSAGE
04774 0 20 05022 NBP UAM UNIT ABSTRACT MESSAGE
04775 0 20 05341 NBP JVM UNIT VARIABLE MESSAGE
04776 0 03 05000 THREE UVT UNIT VARIABLE TABLE
04777 00000004 DATA 4 UNIT IDENTIFIER = BIT 21
05000 37020000 UVT DATA 37020000 INITIALIZE FUNCTIONS 1 THROUGH 5 AND 10
05001 0 00 00000 D00T17 PZE 0 DISCS 0 THROUGH 17 ACTIVATION BITS
05002 0 00 00000 D20T37 PZE 0 DISCS 20 THROUGH 37 ACTIVATION BITS
05003 0 20 05350 FRT1 NBP FIM1 FUNCTION IDENTIFIER MESSAGE
05004 0 20 05356 NBP FAM1 FUNCTION ABSTRACT MESSAGE
05005 0 20 05476 NBP FVM1 FUNCTION VARIABLE MESSAGE
05006 0 01 05011 ONE FVT1 FUNCTION VARIABLE TABLE
05007 0 00 05504 PZE FUNC2 POINTER TO NEXT FUNCTION
05010 20000000 DATA 2B7 FUNCTION IDENTIFIER = BIT 1
05011 0 00 00000 FVT1 PZE 0 FUNCTION VARIABLE TABLE (NO VARIABLES)
*
* UNIT, FUNCTION MESSAGES
*
05012 52641202 UIM BCD ' U 21 = W CHANNEL DISC = 3.011
05013 01124012
05014 66122330
05015 21454525
05016 43122431
05017 62231240
05020 12033300
05021 37121212
05022 52326445 UAM BCD ' UNIT 21 = W CHANNEL DISC DIAGNOSTICS AND EXERCISERS 3.01
05023 31631202
05024 01124012
05025 66402330
05026 21454525
05027 43122431
05030 62231224

DISC# TAP=3.0

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05031 31212745
05032 46626331
05033 23621221
05034 45241225
05035 67255123
05036 31622551
05037 62120333
05040 00121212
05041 52526330
05042 31621264
05043 45316312
05044 23464463
05045 21314462
05046 12243121
05047 27454662
05050 63312362
05051 73122567
05052 25512331
05053 62255162
05054 73122145
05055 24126247
05056 25233121
05057 43122464
05060 45236331
05061 46456212
05062 24256546
05063 63252412
05064 52634412
05065 63302512
05066 11010604
05067 40000112
05070 21452412
05071 11010605
05072 40000112
05073 24316223
05074 12263143

BCD : THIS UNIT CONTAINS DIAGNOSTICS, EXERCISERS, AND SPECIAL FUNCTIONS DEVOTED:

BCD : TO THE 9164=01 AND 9165=01 DISC FILE. THERE ARE THREE UNIT VARIABLES:

DISC# TAP=3.0

PAGE 40

05075 25331263
05076 30255125
05077 12215125
05100 12633051
05101 25251264
05102 45316312
05103 65215131
05104 21224325
05105 62151212
05106 52522621
05107 66124012
05110 26644523
05111 63314645
05112 12212363
05113 31652163
05114 31464512
05115 66465124
05116 33124325
05117 27214312
05120 26644523
05121 63314445
05122 62122151
05123 25122664
05124 45236331
05125 46456212
05126 01400512
05127 74243121
05130 27401212
05131 52454662
05132 63312362
05133 34731226
05134 64452363
05135 31464512
05136 01001274
05137 25672551
05140 23316225

BCD : FAX = FUNCTION ACTIVATION WORD. LEGAL FUNCTIONS ARE FUNCTIONS 1-5 (DIAG=1

BCD : NOSTICS), FUNCTION 10 (EXERCISER), AND FUNCTIONS 18-23 (SPECIAL FUNCTIONS):

DISCW TAP=3.0

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05141 51347312
05142 21452412
05143 26644523
05144 63314645
05145 62120110
05146 40020312
05147 74624725
05150 23312143
05151 12266445
05152 23633146
05153 45623433
05154 52240000
05155 63010712
05156 21452412
05157 24020063
05160 03071240
05161 12212363
05162 31652163
05163 31464512
05164 22316362
05165 12264451
05166 12215144
05167 62120040
05170 03073312
05171 22316362
05172 12314512
05173 63302512
05174 44466263
05175 12623127
05176 45312640
05177 52312321
05200 45631201
05201 06122231
05202 63621246
05203 26122521
05204 23301266

BCD 1 D00T17 AND D20T37 = ACTIVATION BITS FOR ARMS 0-37. BITS IN THE MOST SIGNIF=1

BCD 1 ICANT 16 BITS OF EACH WORD PERMIT THE CORRESPONDING DISC TO BE USED, IF A1

DISCW TAP=3.0

PAGE 42

05205 46512412
05206 47255144
05207 31631263
05210 30251223
05211 46515125
05212 62474445
05213 24314527
05214 12243162
05215 23126346
05216 12222512
05217 64622524
05220 33123126
05221 12211212
05222 52001231
05223 62123145
05224 12211222
05225 31637312
05226 63302512
05227 23465151
05230 25624746
05231 45243145
05232 27122151
05233 44126631
05234 43431245
05235 46631222
05236 25126462
05237 25243312
05240 52464512
05241 63302512
05242 26315162
05243 63124721
05244 62627312
05245 21434312
05246 24312127
05247 45466263
05250 31236212

BCD 1 0 IS IN A BIT, THE CORRESPONDING ARM WILL NOT BE USED.1

BCD 1 ON THE FIRST PASS, ALL DIAGNOSTICS WILL BE RUN, AND THE DISC WILL BE KEYED.1

DISC# TAP=3.0

PAGE 43

05251 66314743
05252 12222512
05253 51644473
05254 12214424
05255 12633425
05256 12243162
05257 23126631
05260 43431222
05261 25124225
05262 70252433
05263 52464512
05264 62642262
05265 25506425
05266 45631247
05267 21626225
05270 62731246
05271 45437012
05272 63302512
05273 24312127
05274 45466263
05275 31236212
05276 66303123
05277 30122446
05300 12454663
05301 12242562
05302 63514470
05303 12633125
05304 12314563
05305 25275131
05306 63701212
05307 52462412
05310 63302512
05311 24316223
05312 12663143
05313 43125164
05314 45731221

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

BCD OF THE DISC WILL RUN, AS WELL AS THE EXERCISER. FUNCTIONS 18-23 WILL NOT!

DISC# TAP=3.0

PAGE 44

05315 62126625
05316 43431221
05317 62126330
05320 25122567
05321 25512731
05322 62255133
05323 12266445
05324 23633146
05325 45621201
05326 10400203
05327 12663143
05330 43124546
05331 63121212
05332 52516445
05333 12644543
05334 25626212
05335 63512145
05336 62262551
05337 25241263
05340 46333712
05341 52121212
05342 26216412
05343 12121224
05344 00006301
05345 07121212
05346 24020063
05347 03075237

BCD RUN UNLESS TRANSFERED TO...

UVM BCD FAW D00T17 D20T37 !!

05350 52261200
05351 01124412
05352 63442323
05353 12243121
05354 27454662
05355 63312737

*
*
*
FI-1 BCD F 01 = TMCC DIAGNOSTIC !!

DISCH TAP=3.0

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05356	52326944	FAM1	BCD	' TMCC DIAGNOSTIC '
05357	23231224			
05360	31212745			
05361	46626331			
05362	23521212			
05363	52633431	BCD		' THIS DIAGNOSTIC TESTS AS MANY TMCC FUNCTIONS AS'
05364	62122431			
05365	21274546			
05366	62433123			
05367	12632562			
05370	63621221			
05371	62124421			
05372	45701263			
05373	44232212			
05374	26644523			
05375	63314445			
05376	62122162			
05377	52474462	BCD		' POSSIBLE WITHOUT USE OF AN EXTERNAL DEVICE. '
05400	62312243			
05401	25126431			
05402	63304664			
05403	63126462			
05404	25124426			
05405	12214512			
05406	25676325			
05407	51452143			
05410	12242565			
05411	31232533			
05412	52121212			
05413	52255151	BCD		' ERRORS ARE REPORTED AS SOURCE LOCATION AND LOGIC'
05414	44516212			
05415	21512512			
05416	51254746			
05417	51632524			
05420	12216212			
05421	62466451			

DISCH TAP=3.0

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05422	23251243			
05423	46232163			
05424	31444512			
05425	21452412			
05426	43462731			
05427	23121212			
05430	52472127	BCD		' PAGE, I.E. 20025(43) INDICATES THAT THE SUSPECTED'
05431	25331231			
05432	33253312			
05433	12020024			
05434	02057404			
05435	03341231			
05436	45243123			
05437	21632562			
05440	12630021			
05441	63126330			
05442	25126264			
05443	62472523			
05444	63252412			
05445	52635146	BCD		' TROUBLE IS ON CARD 20D, PIN 25, AND THE LOGIC DRAWING'
05446	64224325			
05447	12316212			
05450	46451223			
05451	21512412			
05452	02002473			
05453	12473145			
05454	12020573			
05455	12214524			
05456	12633025			
05457	12474627			
05460	31231224			
05461	51216631			
05462	45271212			
05463	52462612	BCD		' OF THIS CIRCUIT CAN BE FOUND ON PAGE 43.11'
05464	63303162			
05465	12236451			

DISCK TAP=3.C

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05604 0 43 22304 BRM F2S1 PERFORM TEST
05605 0 40 16226 SKS 16226
05606 0 20 25155 NBP F2M14

TEST 60LSA0

05607 0 43 00430 BRM OBJECT
05610 0 43 22304 BRM F2S1 PERFORM TEST
05611 0 40 17226 SKS 17226
05612 0 20 25167 NBP F2M15

WRITE-HEADER SWITCH TEST (SWITCH OFF CONDITION)

05613 0 43 00430 BRM OBJECT
05614 0 43 22323 BRM F2S2 PERFORM TEST
05615 0 40 14026 SKS 14026 WRITE HEADER TEST
05616 0 20 25201 NBP F2M16

TEST 6S10A0

05617 0 43 00430 BRM OBJECT
05620 0 43 22304 BRM F2S1 PERFORM TEST
05621 0 40 15026 SKS 15026
05622 0 20 25236 NBP F2M17

TEST 6S18A0

05623 0 43 00430 BRM OBJECT
05624 0 43 22304 BRM F2S1 PERFORM TEST
05625 0 40 16026 SKS 16026
05626 0 20 25247 NBP F2M18

CONTROLLER READY TEST (READY CONDITION)

05627 0 43 00430 BRM OBJECT
05630 0 43 22323 BRM F2S2 PERFORM TEST

DISCK TAP=3.C

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05631 0 40 10026 SKS 10026 DISC FILE READY TEST
05632 0 20 25262 NBP F2M19

TRACK VERIFIED AND PHASE ONE TEST (CONTROLLER IN PHASE 0)

05633 0 43 00430 BRM OBJECT
05634 0 43 22304 BRM F2S1 PERFORM TEST
05635 0 40 17026 SKS 12026 TRACK VERIFIED TEST
05636 0 20 25335 NBP F2M20

CONTROLLER ERROR TEST (NO ERROR CONDITION)

05637 0 43 00430 BRM OBJECT
05640 0 43 22323 BRM F2S2 PERFORM TEST
05641 0 40 11026 SKS 11026 DISC FILE ERROR TEST
05642 0 20 25371 NBP F2M21

WRITE PROTECT SWITCH TEST (NOT WRITE PROTECTED CASE)

05643 0 43 00430 BRM OBJECT
05644 0 43 22323 BRM F2S2 PERFORM TEST
05645 0 40 13026 SKS 13026 DISC WRITE PROTECT TEST
05646 0 20 25423 NBP F2M22

TEST 0A23A (SET)

05647 0 43 00430 BRM OBJECT
05650 0 43 22341 BRM F2S3 PERFORM OBJECT TEST
05651 00000001 DATA 1
05652 0 20 25452 NBP F2M32

TEST 0A23A (RESET)

05653 0 43 00430 BRM OBJECT
05654 0 43 22362 BRM F2S4 PERFORM OBJECT TEST
05655 00000001 DATA 1

```

DISCW  TAP=3.0                PAGE 53
05656  0 20 25545             NOP      F2M33
      *
      * TEST 0A22A (SET)
      *
05657  0 43 00430             BRM      OBJECT
05660  0 43 22341             BRM      F253      PERFORM OBJECT TEST
05661  00000002             DATA    2
05662  0 20 25571             NOP      F2M34
      *
      * TEST 0A22A (RESET)
      *
05663  0 43 00430             BRM      OBJECT
05664  0 43 22362             BRM      F254      PERFORM OBJECT TEST
05665  00000002             DATA    2
05666  0 20 25602             NOP      F2M35
      *
      * TEST 0A21A (SET)
      *
05667  0 43 00430             BRM      OBJECT
05670  0 43 22341             BRM      F253      PERFORM OBJECT TEST
05671  00000004             DATA    4
05672  0 20 25625             NOP      F2M36
      *
      * TEST 0A21A (RESET)
      *
05673  0 43 00430             BRM      OBJECT
05674  0 43 22362             BRM      F254      PERFORM OBJECT TEST
05675  00000004             DATA    4
05676  0 20 25636             NOP      F2M37
      *
      * TEST 0A20A (SET)
      *
05677  0 43 00430             BRM      OBJECT
05700  0 43 22341             BRM      F253      PERFORM OBJECT TEST
05701  00000010             DATA    10
05702  0 20 25647             NOP      F2M38

```

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DISCW  TAP=3.0                PAGE 54
      *
      * TEST 0A20A (RESET)
      *
05703  0 43 00430             BRM      OBJECT
05704  0 43 22362             BRM      F254      PERFORM OBJECT TEST
05705  00000010             DATA    10
05706  0 20 25660             NOP      F2M39
      *
      * TEST 0A19A (SET)
      *
05707  0 43 00430             BRM      OBJECT
05710  0 43 22341             BRM      F253      PERFORM OBJECT TEST
05711  00000020             DATA    20
05712  0 20 25667             NOP      F2M40
      *
      * TEST 0A19A (RESET)
      *
05713  0 43 00430             BRM      OBJECT
05714  0 43 22362             BRM      F254      PERFORM OBJECT TEST
05715  00000020             DATA    20
05716  0 20 25676             NOP      F2M41
      *
      * TEST 0A18A (SET)
      *
05717  0 43 00430             BRM      OBJECT
05720  0 43 22341             BRM      F253      PERFORM OBJECT TEST
05721  00000040             DATA    40
05722  0 20 25705             NOP      F2M42
      *
      * TEST 0A18A (RESET)
      *
05723  0 43 00430             BRM      OBJECT
05724  0 43 22362             BRM      F254      PERFORM OBJECT TEST
05725  00000040             DATA    40
05726  0 20 25716             NOP      F2M43

```

```

*
* TEST 0A17A (SET)
05727 0 43 00430 BRM 0BJECT
05730 0 43 22341 BRM F2S3 PERFORM 0BJECT TEST
05731 00000100 DATA 100
05732 0 20 25727 NBP F2M44
*
* TEST 0A17A (RESET)
05733 0 43 00430 BRM 0BJECT
05734 0 43 22362 BRM F2S4 PERFORM 0BJECT TEST
05735 00000100 DATA 100
05736 0 20 25740 NBP F2M45
*
* TEST 0A16A (SET)
05737 0 43 00430 BRM 0BJECT
05740 0 43 22341 BRM F2S3 PERFORM 0BJECT TEST
05741 00000200 DATA 200
05742 0 20 25751 NBP F2M46
*
* TEST 0A16A (RESET)
05743 0 43 00430 BRM 0BJECT
05744 0 43 22362 BRM F2S4 PERFORM 0BJECT TEST
05745 00000200 DATA 200
05746 0 20 25760 NBP F2M47
*
* TEST 0A15A (SET)
05747 0 43 00430 BRM 0BJECT
05750 0 43 22341 BRM F2S3 PERFORM 0BJECT TEST
05751 00000400 DATA 400
05752 0 20 25767 NBP F2M48
*
* TEST 0A15A (RESET)

```

```

*
* BRM 0BJECT
05753 0 43 00430 BRM F2S4 PERFORM 0BJECT TEST
05754 0 43 22362 BRM F2S4
05755 00000400 DATA 400
05756 0 20 26000 NBP F2M49
*
* TEST 0A14A (SET)
05757 0 43 00430 BRM 0BJECT
05760 0 43 22341 BRM F2S3 PERFORM 0BJECT TEST
05761 00001000 DATA 1000
05762 0 20 26011 NBP F2M50
*
* TEST 0A14A (RESET)
05763 0 43 00430 BRM 0BJECT
05764 0 43 22362 BRM F2S4 PERFORM 0BJECT TEST
05765 00001000 DATA 1000
05766 0 20 26020 NBP F2M51
*
* TEST 0A13A (SET)
05767 0 43 00430 BRM 0BJECT
05770 0 43 22341 BRM F2S3 PERFORM 0BJECT TEST
05771 00002000 DATA 2000
05772 0 20 26027 NBP F2M52
*
* TEST 0A13A (RESET)
05773 0 43 00430 BRM 0BJECT
05774 0 43 22362 BRM F2S4 PERFORM 0BJECT TEST
05775 00002000 DATA 2000
05776 0 20 26041 NBP F2M53
*
* TEST 0A12A (SET)

```

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05777	0 43 00430	BRM	OBJECT	
06000	0 43 22341	BRM	F253	PERFORM OBJECT TEST
06001	00004000	DATA	4000	
06002	0 20 26053	NBP	F2M54	
			TEST 0A12A (RESET)	
06003	0 43 00430	BRM	OBJECT	
06004	0 43 22362	BRM	F254	PERFORM OBJECT TEST
06005	00004000	DATA	4000	
06006	0 20 26065	NBP	F2M55	
			TEST 0A11A (SET)	
06007	0 43 00430	BRM	OBJECT	
06010	0 43 22341	BRM	F253	PERFORM OBJECT TEST
06011	00010000	DATA	10000	
06012	0 20 26077	NBP	F2M56	
			TEST 0A11A (RESET)	
06013	0 43 00430	BRM	OBJECT	
06014	0 43 22362	BRM	F254	PERFORM OBJECT TEST
06015	00010000	DATA	10000	
06016	0 20 26111	NBP	F2M57	
			TEST 0A10A (SET)	
06017	0 43 00430	BRM	OBJECT	
06020	0 43 22341	BRM	F253	PERFORM OBJECT TEST
06021	00020000	DATA	20000	
06022	0 20 26123	NBP	F2M58	
			TEST 0A10A (RESET)	
06023	0 43 00430	BRM	OBJECT	

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06024	0 43 22362	BRM	F254	PERFORM OBJECT TEST
06025	00020000	DATA	20000	
06026	0 20 26135	NBP	F2M59	
			TEST 0A09A (SET)	
06027	0 43 00430	BRM	OBJECT	
06030	0 43 22341	BRM	F253	PERFORM OBJECT TEST
06031	00040000	DATA	40000	
06032	0 20 26147	NBP	F2M60	
			TEST 0A09A (RESET)	
06033	0 43 00430	BRM	OBJECT	
06034	0 43 22362	BRM	F254	PERFORM OBJECT TEST
06035	00040000	DATA	40000	
06036	0 20 26160	NBP	F2M61	
			TEST 0A08A (SET)	
06037	0 43 00430	BRM	OBJECT	
06040	0 43 22341	BRM	F253	PERFORM OBJECT TEST
06041	00100000	DATA	100000	
06042	0 20 26171	NBP	F2M62	
			TEST 0A08A (RESET)	
06043	0 43 00430	BRM	OBJECT	
06044	0 43 22362	BRM	F254	PERFORM OBJECT TEST
06045	00100000	DATA	100000	
06046	0 20 26202	NBP	F2M63	
			TEST 0A07A (SET)	
06047	0 43 00430	BRM	OBJECT	
06050	0 43 22341	BRM	F253	PERFORM OBJECT TEST

DISCK TAP=3.0

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06051 0 00200000
06052 0 20 26213

DATA 200000
NBP F2M64

TEST 0A07A (RESET)

06053 0 43 00430
06054 0 43 22362
06055 0 00200000
06056 0 20 26224

BRM 8BJECT
BRM F2S4
DATA 200000
NBP F2M65

PERFORM 8BJECT TEST

TEST 0A06A (SET)

06057 0 43 00430
06060 0 43 22341
06061 0 00400000
06062 0 20 26235

BRM 8BJECT
BRM F2S3
DATA 400000
NBP F2M66

PERFORM 8BJECT TEST

TEST 0A06A (RESET)

06063 0 43 00430
06064 0 43 22362
06065 0 00400000
06066 0 20 26246

BRM 8BJECT
BRM F2S4
DATA 400000
NBP F2M67

PERFORM 8BJECT TEST

TEST FOR 0A05A GROUNDED

06067 0 43 00430
06070 0 43 00440
06071 0 20 23371
06072 0 76 15443
06073 0 43 23263
06074 0 72 15443
06075 0 43 00460
06076 0 20 26257
06077 0 43 00434

BRM 8BJECT
BRM RETURN
NBP ENTER
LDA BITS
BRM P8TPIN
SKA BITS
BRM ERR9R
NBP F2M68
BRM END

SET INTERRUPT LINKAGE

P8TWORD

ADDRESS BIT SET
YES

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TEST FOR 0A04A GROUNDED

06100 0 43 00430
06101 0 43 00440
06102 0 20 23371
06103 0 76 15442
06104 0 43 23263
06105 0 72 15442
06106 0 43 00460
06107 0 20 26275
06110 0 43 00434

BRM 8BJECT
BRM RETURN
NBP ENTER
LDA BIT4
BRM P8TPIN
SKA BIT4
BRM ERR9R
NBP F2M69
BRM END

SET INTERRUPT LINKAGE

P8TWORD

ADDRESS BIT SET
YES

TEST FOR 0A03A GROUNDED

06111 0 43 00430
06112 0 43 00440
06113 0 20 23371
06114 0 76 15441
06115 0 43 23263
06116 0 72 15441
06117 0 43 00460
06120 0 20 26313
06121 0 43 00434

BRM 8BJECT
BRM RETURN
NBP ENTER
LDA BIT3
BRM P8TPIN
SKA BIT3
BRM ERR9R
NBP F2M70
BRM END

SET INTERRUPT LINKAGE

P8TWORD

ADDRESS BIT SET
YES

CHECK FOR INTERFERENCE OF CHANNEL P8TS WITH CONTROLLER

06122 0 43 00430
06123 0 43 22760
06124 0 02 10026
06125 0 13 33550
06126 0 02 10000
06127 0 13 33566
06130 0 02 10026
06131 0 33 23330
06132 0 76 23330
06133 0 72 33551

BRM 8BJECT
BRM SETUP2
E8M 10026
P8T #0
E8M 10000
P8T #777777
E8M 10026
PIN TEMP
LDA TEMP
SKA #=1

ALERT DISC FILE
CLEAR ADDRESS REGISTER
ALERT CHANNEL
P8T TO CHANNEL
ALERT DISC FILE
PIN CONTROLLER ADDRESS REGISTER
ANY ADDRESS REGISTER F=FIS SET

DISCW TAP=3.0

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06134 0 43 00460
06135 0 20 26331
06136 0 43 00434

BRM ERR9R YES
NOP F2M71
BRM END

CHECK FOR INTERFERENCE OF CHANNEL PINS WITH CONTROLLER

06137 0 43 00430
06140 0 43 22760
06141 0 02 10026
06142 0 13 33566
06143 0 02 10000
06144 0 02 14000
06145 0 13 33550
06146 0 02 12000
06147 0 33 23330
06150 0 76 23330
06151 0 72 33551
06152 0 43 00460
06153 0 20 26354
06154 0 43 00434

BRM OBJECT
BRM SETUP2
EOM 10026 ALERT DISC FILE
POT #777777 SET CONTROLLER ADDRESS REGISTER
EOM 10000 ALERT CHANNEL
EOM 14000 EXTENDED MODE EOM
POT #0
EOM 12000 ALERT T3 PIN CHANNEL ADDRESS
PIN TEMP PIN CHANNEL ADDRESS REGISTER
LDA TEMP
SKA #1 CHANNEL ADDRESS REGISTER TEST ZEROS
BRM ERR9R NO
NOP F2M72
BRM END

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

06155 0 43 23126
06156 0 40 10026
06157 0 01 06156
06160 0 02 10026
06161 0 13 33550
06162 0 43 00430
06163 0 7A 33550
06164 0 43 22767
06165 0 01 06204
06166 0 02 10026
06167 0 13 23352
06170 0 40 12026
06171 0 01 06173

BRM NORMAL NORMALIZE DISC
SKS 10026 DISC FILE READY TEST
BRU #1 WAIT FOR CONTROLLER READY
EOM 10026 ALERT DISC FILE
POT #0
BRM OBJECT
LDA #0 P0TH0RD
BRM SETUP3
BRU F2E9 DO NOT USE THIS DISC
EOM 10026 ALERT DISC FILE
POT #0 SELECT PRESENT POSITION
SKS 12026 TRACK VERIFIED TEST
BRU #2 ADDRESS NOT VERIFIED

DISCW TAP=3.0

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06172 0 01 06201
06173 0 55 15465
06174 0 73 33567
06175 0 01 06170
06176 0 43 00460
06177 0 20 26373
06200 0 01 06204
06201 0 73 33570
06202 0 43 00460
06203 0 20 26422
06204 0 43 00434

F2E9 BRU F2E9#3 BK
ADD BIT23
SKG #85710 120 MILLISEC ELAPSED YET
BRU F2L1 NO
BRM ERR9R TIMEOUT ERROR
NOP F2M73
BRU F2E9
SKG #50000 TIME GREATER THAN 70 MILLISEC
BRM ERR9R NO - TIME TOO SHORT
NOP F2M73A
BRM END

LOGIC FLOW FOR PRECEEDING OBJECT TEST

* 1 AX01A # 2CAAA.3C12A.819CA.3C16A SET X01
* 2 AU01A # 2PTFA.3X04A.21GDA.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.0X04A.2U01A.8PT2A.8C23A SET A REG
* 6 AU02A # 200FA.2U01A.4NBSB.3WHRA SET U02
* 7 BU01A # 200FA.0X04A.8PT2A RESET U01
* 8 2RT0A # 0X04A.3U01A POT RELEASE
* 9 AG01A # 2PTFA.3U01A.3BYPA.8PT2A.0X04A SET G01
* AG03A # 2PTFA.3U01A.3BYPA.8PT2A.0X04A SET G03
* 2BYPA#2U02A.2PAVA.2RDYA ST # BYPASS
* 10 BX04A # 200FA.8PT1A RESET X04
* BU02A # 200FA.8PT1A RESET U02
* BX01A # 200FA.8PT1A RESET X01
* AF01A # 2PTFA.3U01A.3BYPA.8PT2A.0X04A STATE # NEXT
* 11 TK01A # 0X01A.204FA RESET K01
* TK02A # 0X02A.204FA RESET K02
* 6RBHAO # 204FA.3U01A RESET B01-04
* 6RBLAO # 204FA.3U01A RESET B05-08
* BB09A # 204FA.3U01A.2CK0A RESET B09

* 12	AD04A	* 2SC1A	D REGISTER -
*		2SC1A=SECTOR 1 PULSE	USED TO
*	B004A	* 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	Z1Z5A	* 0X05A	
* 15	SG8A0	* 2G03A+2CKGA	SET G02
*	RGCA0	* 2CKGA	RESET G03
*		2CKGA=3J01A+204FA+21Z5A	
* 16	SGCA0	* 2CKGA	SET G03
* 17	AU01A	* 204FA+207GA+1U04A+9RDYA+21Z5A	SET U01
*		207GA= G01A, G02A, G03A	
*		9RDYA=FILE NOT READY	
* 18	AP01A	* 2U01A+204FA+2CK0A	SET P01
*	BP01A	* AF01A	RESET P01
*	AJ03A	* 204FA+2U01A+2SC1A+21Z5A+2RDYA	SET U03
* 19	BW03A	* 204FA+2U01A+21Z5A	RESET U03
*	BW01A	* 204FA+2U03A+21Z5A	RESET U01
* 20	BW01A	* 204FA+3U02A+3U01A+2BGAA	RESET F01
* 21	BF01A	* 2BGAA+2RDYA+2PAVA+21Z5A+207GA	STATE 1 NEXT
*	AF03A	* 204FA+3U02A+3U01A+2BGAA	SET F03
* 22	AJ04A	* 2C1FA+3U03A+8HLTB+6Q20A	SET U04
*		8HLTB=FORCED TRUE IN SINGLE ACCESS	
* 23	81NLA	* 2C1FA+2U04A+1X03A	SEND INT
* 24	AJ03A	* 2C1FA+2U04A+8Q20A	SET U03
* 25	BW04A	* 2C1FA+2U03A+6Q20A	RESET U04
*			
*		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
*
06205 0 43 0C430 BRM OBJECT
06206 0 76 33F50 LDA #0 PBTWRD
06207 0 43 22767 BRM SETUP3
06210 0 01 06231 BRU F2E10 DO NOT USE THIS DISC
06211 0 02 10026 EBM 10026 ALERT DISC FILE
06212 0 13 15456 PBT BIT16 MOVE TO POSITION 1
06213 0 43 23315 BRM *500 WAIT 500 MILLISEC
06214 0 02 10026 EBM 10026 ALERT DISC FILE
06215 0 13 23352 PBT PBTWRD MOVE TO POSITION 0
06216 0 40 12026 SKS 12026 TRACK VERIFIED TEST
06217 0 01 06221 BRU **2 TRACK NOT VERIFIED
06220 0 01 06226 BRU F2L3
06221 0 55 15465 ADD BIT23
06222 0 73 33571 SKG #35714D 500 MILLISEC ELAPSED YET
06223 0 01 06216 BRU F2L2 NO
06224 0 43 0C460 BRM ERR6R 500 MILLISEC TIMEOUT
06225 0 20 24460 NBP F2M74
06226 0 73 33567 F2L3 SKG #8571D TIME > 120 MILLISEC
06227 0 43 0C460 BRM ERR6R NO = TIME TOO SHORT
06230 0 20 26507 NBP F2M74A
06231 0 43 0C434 F2E10 BRM END
*
* LOGIC FLOW FOR PRECEDING OBJECT TEST
*
* 1 AX01A * 2CAAA+3C12A+810CA+3C16A SET X01
* 2 AU01A * 2PTFA+3X04A+2IGDA+0X01A+8PT2A SET U01
* 3 6RARA0 * 200FA+2U01A+1X04A RESET A REG
* 6RGRA0 * 200FA+2U01A+1X04A RESET G REG
* 6RERA0 * 200FA+2U01A RESET E REG
* 4 AX04A * 200FA+2U01A+8PT2A SET X04
* 5 YA23A * 200FA+0X04A+2U01A+8PT2A+8C23A SET A REG

```

* 6	AJ02A	200FA,2U01A,4N888,3WHRA	SET U02
* 7	BU01A	200FA,0X04A,8PT2A	RESET U01
* 8	2RT0A	0X04A,3U01A	POT RELEASE
* 9	AG01A	2PTFA,3U01A,3BYPA,8PT2A,0X04A	SET G01
* 9	AG03A	2PTFA,3U01A,3BYPA,8PT2A,0X04A	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,3BYPA,8PT2A,0X04A	STATE 4 NEXT
* 11	TK01A	0K01A,204FA	RESET K01
	TK02A	0K02A,204FA	RESET K02
	6RBHA0	204FA,3U01A	RESET B01=04
	6RBLA0	204FA,3U01A	RESET B05=08
	BB09A	204FA,3U01A,2CKQA	RESET B09
* 13	SGBA0	2G03A,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,28C1A,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	AJ01A	223FA,2SECA	SET U01
		2SECA,2IZSA,2IZHA	
* 22	2CKBA	223FA,2IUBA,2CKQA	B REG CLOCK
		7IUBA0,2U02A,3U01A	
		2CKQA,FILE WRITE CLOCK	
* 23	SB09A	2CKBA,1B09A	SET B09
	RB09A	2CKBA,0B09A	RESET B09
	SB08A	2CKBA,1B08A,0B09A,1B07A	SET B08

* 24	RB08A	2CKBA,0B08A,0B09A,1B07A	RESET B08
	SB07A	2CKBA,1B07A,2CT3A	SET B07
		2CT3A,0B08A,0B09A	
	RB07A	2CKBA,0B07A,2CT5A	RESET B07
		2CT5A,0B07A,0B09A	
	SB06A	2CKBA,1B06A,2CT5A	SET B06
	RB06A	2CKBA,0B06A,2CT5A	RESET B06
	SB05A	2CKBA,1B05A,0B06A,2CT5A	SET B05
	RB05A	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	
		0B03A,0B05A,2CT5A	
* 24	2658A	223FA,2658A,2CKQA	COUNT = 65
* 25	BU01A	223FA,2658A,2CKQA	RESET U01
	AU02A	223FA,2658A,2CKQA	SET U02
* 26	CB03A	202FA,3U01A,0B03A,2CKQA	RESET B03
	3RBLA	202FA,3U01A	RESET B05=08
	BB09A	202FA,3U01A,2CKQA	RESET B09
	AU03A	223FA,2IUBA,2RDKA	SET U03
		2RDKA,2RDQA,2RD1A	
* 27	AU01A	223FA,2U02A,2RD1A	SET U01
* 28	2CKBA	223FA,2BUAA,2RDKA	B REG CLOCK
		2BUAA,2U01A,2U02A	
* 29	AU04A	223FA,2U02A,2H0GA,2CT1A,2RDKA	SET U04
		2H0GA,1B05A,1B06A	
		2CT1A,1B07A,1B08A,0B09A	
* 30	JP02A	223FA,3U01A	SET P02
	AP02A	223FA,2BUAA,2RD1A	SET P02
	BP02A	223FA,2BUAA,2RD1A	RESET P02
* 31	2CKGA	223FA,2IXDA	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+ZUCA0+VUCA0 ■ INEQUALITY
* 6RBH00 ■ 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 HU04A ■ 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,3BNCA,2IGCA
*          ■ 7IGCA0+1K01A+1K02A+2SECA+1B01A+1B02A
*          ■ 2BNCA+2X03A,8FHAF
* BU03A ■ 202FA,2IGCA ■ BUFFER CONN.
* BG01A ■ 202FA,2IGCA ■ RESET G01
* BG02A ■ 202FA,2IGCA ■ RESET G02
* BG03A ■ 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:

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*
* AE03A ■ 202FA,0G01A,0G02A,2TUGA ■ SET E03
*          ■ 2TUGA+NB1 (1U04A+1G03A)
* 8INLA ■ 202FA,0G01A,0G02A,2TUGA ■ INTERRUPT
* 9YMSA ■ NB1 (0X06A,2MHAA)
* BF02A ■ 202FA,0G01A,0G02A,2TUGA ■ SET X06
*          ■ STATE 0 NEXT
*
* NOTE: 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

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06232	0	43	00430	BRM	OBJECT	
06233	0	76	33550	LDA	#0	P0TWORD
06234	0	43	22767	BRM	SETUP3	
06235	0	41	06261	BRU	F2E52	DO NOT USE THIS DISC
06236	0	02	10026	E0M	10026	ALERT DISC FILE
06237	0	13	23352	P0T	P0TWRD	P0T TO CONTROLLER
06240	0	43	23143	BRM	WAIT	WAIT FOR CONTROLLER READY
06241	0	01	06261	BRU	F2E52	ERROR ABRRT
06242	0	02	10026	E0M	10026	ALERT DISC FILE
06243	0	13	23352	P0T	P0TWRD	P0T TO CONTROLLER
06244	0	40	12026	SKS	12026	TRACK VERIFIED TEST
06245	0	01	06247	BRU	**2	TRACK NOT VERIFIED
06246	0	1	06255	BRU	F2L32	
06247	0	55	15465	ADD	B1T23	
06250	0	73	33571	SKG	#357140	500 MILLISEC ELAPSED YET
06251	0	01	06244	BRU	F2L31	NO • LOOP
06252	0	43	00460	BRM	ERR0R	500 MILLISEC TIMEOUT
06253	0	20	27542	N0P	F2M116	
06254	0	01	06256	BRU	**2	
06255	0	73	33570	SKG	#50000	TIME < 70 MILLISEC
06256	0	01	06260	BRU	**2	YES • OK
06257	0	43	00460	BRM	ERR0R	TIME TOO LONG

06260 0 20 27571
06261 0 43 00434F2E52 NBP F2M117
BRM END*
* LOGIC FLOW FOR PRECEEDING OBJECT TEST

* 1	AX01A	* 2CAAA.3C12A.810CA.3C16A	SET X01
* 2	AU01A	* 2PTFA.3X0AA.21GDA.0X01A.8PT2A	SET U01
* 3	6RARA0	* 200FA.2U01A.1X04A	RESET A REG
* 4	6RGRA0	* 200FA.2U01A.1X04A	RESET G REG
* 5	6RERA0	* 200FA.2U01A	RESET E REG
* 6	AX04A	* 200FA.2U01A.8PT2A	SET X04
* 7	YA23A	* 200FA.0X0AA.2U01A.8PT2A.8C23A	SET A REG
* 8	AU02A	* 200FA.2U01A.4NB5B.3WHRA	SET U02
* 9	BU01A	* 200FA.0X0AA.8PT2A	RESET U01
* 10	2RT0A	* 0X0AA.3U01A	POT RELEASE
* 11	AF02A	* 2PTFA.2BYPFA	STATE 3 NEXT
* 12	AF03A	* 2BYPFA.2U02A.2PAVA.2RDYA	ST. 4 BYPASS
* 13	BU02A	* 2PTFA.2BYPFA	RESET U02
* 14	BX01A	* 200FA.8PT1A	RESET X01
* 15	BX04A	* 200FA.8PT1A	RESET X04
* 16	6RBHA0	* 0F03A.3U01A	RESET B01=04
* 17	6RBLA0	* 0F03A.3U01A	RESET B05=08
* 18	RBIA0	* 0F03A.3U01A.2CK0A	RESET B09
* 19	AU01A	* 223FA.2SECA	SET U01
* 20	2CKBA	* 223FA.21U8A.2CK0A	B REG CLOCK
* 21	265BA	* 0903A.0805A.2CT3A	COUNT = 65
* 22	BU01A	* 223FA.265BA.2CK0A	RESET U01
* 23	AU02A	* 223FA.265BA.2CK0A	SET U02
* 24	6RBHA0	* 0F03A.3U01A	RESET B01=04
* 25	6RBLA0	* 0F03A.3U01A	RESET B05=08
* 26	RBIA0	* 0F03A.3U01A.2CK0A	RESET B09
* 27	AU03A	* 223FA.21UAA.2RDKA	SET U03
* 28	AU01A	* 223FA.2U02A.2RD1A	SET U01
* 29	2CKBA	* 223FA.2U01A.2U02A.2RDKA	B REG CLOCK
* 30	AU04A	* 223FA.2U01A.2H00A.2CT1A.2RDKA	SET U04

* 31	BU03A	* 223FA.2U02A.2H03A.2CT2A.0P02A.2RDCA * 223FA.2U02A.2H03A.2CT2A.1P02A.2RD1A * 3UCA* XUCA* VUCA* ZUCA	PARITY ERROR
* 32	RJ04A	* 2RDKA.2CT1A.2H03A.2U02A.203FA	INEQUALITY
* 33	BU02A	* 223FA.2RDKA.2CT3A.2H03A	RESET U04
* 34	BU03A	* 203FA.21UAA.2RDKA.2CT3A.2H03A	RESET U02
* 35	BU01A	* 21UAA* U01* U02* U03	RESET U03
* 36	AG01A	* 2U02A.2RDKA.2CT3A.2H03A.223FA	RESET U01
* 37	BG02A	* 203FA.21UAA.2RDKA.2CT3A.2H03A	SET G REG TO
* 38	AG03A	* 203FA.21UAA.2RDKA.2CT3A.2H03A	FIVE
* 39	AF01A	* 203FA.21UAA.2RDKA.2CT3A.2H03A	STATE 4 NEXT
* 40	BF02A	* 203FA.21UAA.2RDKA.2CT3A.2H03A.3Y9CA	
* 41	BF03A	* 203FA.21UAA.2RDKA.2CT3A.2H03A.3B9CA	
* 42	TK01A	* 0K01A.204FA	RESET K01
* 43	TK02A	* 0K02A.204FA	RESET K02
* 44	6RBHA0	* 204FA.3U01A	RESET B01=04
* 45	6RBLA0	* 204FA.3U01A	RESET B05=08
* 46	BB09A	* 204FA.3U01A.2CK0A	RESET B09
* 47	2CKGA	* 3U01A.204FA.21ZSA	G REG CLOCK
* 48	AU03A	* 204FA.21ZSA.2U01A.2RDYA.26C1A	SET U03
* 49	BU03A	* 204FA.2U01A.21ZSA	RESET U03
* 50	BU01A	* 204FA.2U03A.21ZSA	RESET U01
* 51	BF01A	* 204FA.3U02A.3U01A.28GAA	STATE 1 NEXT
* 52	AF03A	* 204FA.3U02A.3U01A.28GAA	

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

* TEST VERIFICATION LOGIC

06262 0 43 00430
06263 0 43 22402BRM SUBJECT
BRM F2E52 PERFORM OBJECT TEST

DISC# TAP=3.0

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06264 00777777
06265 0 20 26551

DATA 777777
NOP F2M75

TEST VERIFICATION LOGIC

06266 0 43 00430
06267 0 43 22402
06270 00400000
06271 0 20 26620

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 400000
NOP F2M76

TEST VERIFICATION LOGIC

06272 0 43 00430
06273 0 43 22402
06274 00200000
06275 0 20 26653

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 200000
NOP F2M77

TEST VERIFICATION LOGIC

06276 0 43 00430
06277 0 43 22402
06300 00100000
06301 0 20 26700

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 100000
NOP F2M78

TEST VERIFICATION LOGIC

06302 0 43 00430
06303 0 43 22402
06304 00040000
06305 0 20 26730

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 40000
NOP F2M79

TEST VERIFICATION LOGIC

06306 0 43 00430
06307 0 43 22402
06310 00020000

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 20000

DISC# TAP=3.0

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06311 0 20 26756

NOP F2M80

TEST VERIFICATION LOGIC

06312 0 43 00430
06313 0 43 22402
06314 00010000
06315 0 20 27015

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 10000
NOP F2M81

TEST VERIFICATION LOGIC

06316 0 43 00430
06317 0 43 22402
06320 00004000
06321 0 20 27040

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 4000
NOP F2M82

TEST VERIFICATION LOGIC

06322 0 43 00430
06323 0 43 22402
06324 00002000
06325 0 20 27063

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 2000
NOP F2M83

TEST VERIFICATION LOGIC

06326 0 43 00430
06327 0 43 22402
06330 00001000
06331 0 20 27111

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 1000
NOP F2M84

TEST VERIFICATION LOGIC

06332 0 43 00430
06333 0 43 22402
06334 00000400
06335 0 20 27135

BRM OBJECT
BRM F2S5 PERFORM OBJECT TEST
DATA 400
NOP F2M85

```

*
*
*   TEST VERIFICATION LOGIC
06336 0 43 00430   BRM   OBJECT
06337 0 43 22402   BRM   F255   PERFORM OBJECT TEST
06340 00000900   DATA  200
06341 0 20 27162   NOP    F2M86
*
*
*   TEST VERIFICATION LOGIC
06342 0 43 00430   BRM   OBJECT
06343 0 43 22402   BRM   F255   PERFORM OBJECT TEST
06344 00000100   DATA  100
06345 0 20 27207   NOP    F2M87
*
*
*   TEST VERIFICATION LOGIC
06346 0 43 00430   BRM   OBJECT
06347 0 43 22402   BRM   F255   PERFORM OBJECT TEST
06350 00000A40   DATA  40
06351 0 20 27233   NOP    F2M88
*
*
*   TEST PAVA LOGIC
06352 0 43 00430   BRM   OBJECT
06353 0 43 22427   BRM   F256   PERFORM OBJECT TEST
06354 00000000   DATA  0
06355 00017400   DATA  17600
06356 0 20 27255   NOP    F2M89
*
*
*   TEST PAVA LOGIC
06357 0 43 00430   BRM   OBJECT
06360 0 43 22427   BRM   F256   PERFORM OBJECT TEST
06361 00777777   DATA  777777
06362 00760000   DATA  760000

```

```

06363 0 20 27255   NOP    F2M89
*
*
*   TEST PAVA LOGIC
06364 0 43 00430   BRM   OBJECT
06365 0 43 22427   BRM   F256   PERFORM OBJECT TEST
06366 00777777   DATA  777777
06367 00377777   DATA  377777
06370 0 20 27274   NOP    F2M90
*
*
*   TEST PAVA LOGIC
06371 0 43 00430   BRM   OBJECT
06372 0 43 22427   BRM   F256   PERFORM OBJECT TEST
06373 00777777   DATA  777777
06374 00577777   DATA  577777
06375 0 20 27301   NOP    F2M91
*
*
*   TEST PAVA LOGIC
06376 0 43 00430   BRM   OBJECT
06377 0 43 22427   BRM   F256   PERFORM OBJECT TEST
06400 00777777   DATA  777777
06401 00677777   DATA  677777
06402 0 20 27306   NOP    F2M92
*
*
*   TEST PAVA LOGIC
06403 0 43 00430   BRM   OBJECT
06404 0 43 22427   BRM   F256   PERFORM OBJECT TEST
06405 00777777   DATA  777777
06406 00737777   DATA  737777
06407 0 20 27313   NOP    F2M93
*
*
*   TEST PAVA LOGIC

```

```

DISCW  TAP=3.C                PAGE 75
06410  0 43 00430             BRM   OBJECT
06411  0 43 22427             BRM   F2S6           PERFORM OBJECT TEST
06412  00777777             DATA 777777
06413  00757777             DATA 757777
06414  0 20 27320             NOP    F2M94

*
*   TEST PAVA LOGIC
*
06415  0 43 00430             BRM   OBJECT
06416  0 43 22427             BRM   F2S6           PERFORM OBJECT TEST
06417  00777777             DATA 777777
06420  00767777             DATA 767777
06421  0 20 27325             NOP    F2M95

*
*   TEST PAVA LOGIC
*
06422  0 43 00430             BRM   OBJECT
06423  0 43 22427             BRM   F2S6           PERFORM OBJECT TEST
06424  00777777             DATA 777777
06425  00773777             DATA 773777
06426  0 20 27332             NOP    F2M96

*
*   TEST PAVA LOGIC
*
06427  0 43 00430             BRM   OBJECT
06430  0 43 22427             BRM   F2S6           PERFORM OBJECT TEST
06431  00777777             DATA 777777
06432  00775777             DATA 775777
06433  0 20 27337             NOP    F2M97

*
*   TEST PAVA LOGIC
*
06434  0 43 00430             BRM   OBJECT
06435  0 43 22427             BRM   F2S6           PERFORM OBJECT TEST
06436  00777777             DATA 777777
06437  00776777             DATA 776777

```

```

DISCW  TAP=3.C                PAGE 76
06440  0 20 27344             NOP    F2M98

*
*   TEST PAVA LOGIC
*
06441  0 43 00430             BRM   OBJECT
06442  0 43 22427             BRM   F2S6           PERFORM OBJECT TEST
06443  00777777             DATA 777777
06444  00777377             DATA 777377
06445  0 20 27351             NOP    F2M99

*
*   TEST PAVA LOGIC
*
06446  0 43 00430             BRM   OBJECT
06447  0 43 22427             BRM   F2S6           PERFORM OBJECT TEST
06450  00777777             DATA 777777
06451  00777577             DATA 777577
06452  0 20 27356             NOP    F2M100

*
*   TEST PAVA LOGIC
*
06453  0 43 00430             BRM   OBJECT
06454  0 43 22427             BRM   F2S6           PERFORM OBJECT TEST
06455  00000000             DATA 0
06456  00400000             DATA 400000
06457  0 20 27363             NOP    F2M101

*
*   TEST PAVA LOGIC
*
06460  0 43 00430             BRM   OBJECT
06461  0 43 22427             BRM   F2S6           PERFORM OBJECT TEST
06462  00000000             DATA 0
06463  00200000             DATA 200000
06464  0 20 27372             NOP    F2M102

*
*   TEST PAVA LOGIC
*

```



```

DISC#  TAP=3.C                PAGE 77
06465  0 43 00430            BRM   OBJECT
06466  0 43 22427            BRM   F256          PERFORM OBJECT TEST
06467  00000000             DATA  0
06470  00100000             DATA  10000
06471  0 20 27401            NOP    F2M103
*
*   TEST PAVA LOGIC
*
06472  0 43 00430            BRM   OBJECT
06473  0 43 22427            BRM   F256          PERFORM OBJECT TEST
06474  00000000             DATA  0
06475  00040000             DATA  40000
06476  0 20 27410            NOP    F2M104
*
*   TEST PAVA LOGIC
*
06477  0 43 00430            BRM   OBJECT
06500  0 43 22427            BRM   F256          PERFORM OBJECT TEST
06501  00000000             DATA  0
06502  00020000             DATA  20000
06503  0 20 27417            NOP    F2M105
*
*   TEST PAVA LOGIC
*
06504  0 43 00430            BRM   OBJECT
06505  0 43 22427            BRM   F256          PERFORM OBJECT TEST
06506  00000000             DATA  0
06507  00010000             DATA  10000
06510  0 20 27426            NOP    F2M106
*
*   TEST PAVA LOGIC
*
06511  0 43 00430            BRM   OBJECT
06512  0 43 22427            BRM   F256          PERFORM OBJECT TEST
06513  00000000             DATA  0
06514  00004000             DATA  4000

```

```

DISC#  TAP=3.C                PAGE 78
06515  0 20 27436            NOP    F2M107
*
*   TEST PAVA LOGIC
*
06516  0 43 00430            BRM   OBJECT
06517  0 43 22427            BRM   F256          PERFORM OBJECT TEST
06520  00000000             DATA  0
06521  00002000             DATA  2000
06522  0 20 27445            NOP    F2M108
*
*   TEST PAVA LOGIC
*
06523  0 43 00430            BRM   OBJECT
06524  0 43 22427            BRM   F256          PERFORM OBJECT TEST
06525  00000000             DATA  0
06526  00001000             DATA  1000
06527  0 20 27454            NOP    F2M109
*
*   TEST PAVA LOGIC
*
06530  0 43 00430            BRM   OBJECT
06531  0 43 22427            BRM   F256          PERFORM OBJECT TEST
06532  00000000             DATA  0
06533  00000400             DATA  400
06534  0 20 27463            NOP    F2M110
*
*   TEST PAVA LOGIC
*
06535  0 43 00430            BRM   OBJECT
06536  0 43 22427            BRM   F256          PERFORM OBJECT TEST
06537  00000000             DATA  0
06540  00000200             DATA  200
06541  0 20 27472            NOP    F2M111
*
*   TEST 6S10A0
*

```

DISC# TAP=3.0

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06542	0 43 00430	BRM	OBJECT	
06543	0 76 33550	LDA	#0	
06544	0 43 22767	BRM	SETUP3	
06545	0 01 06556	BRU	F2E58	DO NOT USE ADDRESSED DISC
06546	0 02 10026	EBM	10026	ALERT DISC FILE
06547	0 13 23352	POT	POTWRD	POSITION ARM
06550	0 71 33572	LDX	**3997D	7 MILLISEC DELAY
06551	0 41 06551	BRX	*	
06552	0 40 10026	SKS	10026	DISC FILE READY TEST
06553	0 01 06555	BRU	**2	CONTROLLER SHOULD NOT BE READY YET
06554	0 43 00460	BRM	ERROR	
06555	0 20 27502	NOP	F2M112	
06556	0 43 00434	F2E58 BRM	END	

*
*
* TEST 6S10A0
*

06557	0 43 00430	BRM	OBJECT	
06560	0 76 33550	LDA	#0	POTWRD
06561	0 43 22767	BRM	SETUP3	
06562	0 01 06572	BRU	F2E49	DO NOT USE ADDRESSED DISC
06563	0 02 10026	EBM	10026	ALERT DISC FILE
06564	0 13 23352	POT	POTWRD	POT TO CONTROLLER
06565	0 40 10026	SKS	12026	TRACK VERIFIED TEST
06566	0 01 06565	BRU	**1	WAIT FOR VERIFICATION
06567	0 40 10026	SKS	10026	DISC FILE READY TEST
06570	0 43 00460	BRM	ERROR	CONTROLLER NOT READY
06571	0 20 27511	NOP	F2M113	
06572	0 43 00434	F2E49 BRM	END	

*
*
* TEST 6S10A0
*

06573	0 43 00430	BRM	OBJECT	
06574	0 76 33550	LDA	#0	POTWRD
06575	0 43 22767	BRM	SETUP3	
06576	0 01 06407	BRU	F2E50	DO NOT USE ADDRESSED DISC
06577	0 02 10026	EBM	10026	ALERT DISC FILE

DISC# TAP=3.0

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06600	0 13 23352	POT	POTWRD	POT TO DISC
06601	0 40 10026	SKS	12026	TRACK VERIFIED TEST
06602	0 01 06401	BRU	**1	WAIT FOR VERIFICATION
06603	0 40 10026	SKS	16026	SHOULD NOT SKIP
06604	0 01 06406	BRU	**2	OK
06605	0 43 00460	BRM	ERROR	
06606	0 20 27516	NOP	F2M114	
06607	0 43 00434	F2E50 BRM	END	

*
*
* TEST 6S10A0
*

06610	0 43 00430	BRM	OBJECT	
06611	0 76 33550	LDA	#0	POTWRD
06612	0 43 22767	BRM	SETUP3	
06613	0 01 06424	BRU	F2E51	DO NOT USE ADDRESSED DISC
06614	0 02 10026	EBM	10026	ALERT DISC FILE
06615	0 13 23352	POT	POTWRD	POT TO DISC
06616	0 40 10026	SKS	12026	TRACK VERIFIED TEST
06617	0 01 06416	BRU	**1	WAIT FOR VERIFICATION
06620	0 40 12226	SKS	12226	SHOULD NOT SKIP
06621	0 01 06423	BRU	**2	OK
06622	0 43 00460	BRM	ERROR	
06623	0 20 27530	NOP	F2M115	
06624	0 43 00434	F2E51 BRM	END	

*
*
* SECTOR VERIFICATION LOGIC CHECK
*

06625	0 43 00430	BRM	OBJECT	
06626	0 43 22465	BRM	F257	PERFORM OBJECT TEST
06627	00777777	DATA	777777	
06630	0 20 27437	NOP	F2M118	

*
*
* SECTOR VERIFICATION LOGIC CHECK
*

06631	0 43 00430	BRM	OBJECT	
06632	0 43 22465	BRM	F257	PERFORM OBJECT TEST

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06633 00000002
06634 C 20 27461

DATA 2
NOP F2M119

SECTOR VERIFICATION LOGIC CHECK

06635 C 43 00430
06636 C 43 22465
06637 00000001
06640 C 20 27710

BRM OBJECT
BRM F2S7 PERFORM OBJECT TEST
DATA 1
NOP F2M120

TEST FOR ERRORS DURING VERIFICATION

06641 C 43 00430
06642 C 76 33550
06643 C 43 22747
06644 C 01 06657
06645 C 02 10026
06646 C 13 23352
06647 C 40 11026
06650 C 01 06647
06651 C 02 10026
06652 C 13 23352
06653 C 43 23315
06654 C 40 11026
06655 C 43 00460
06656 C 20 27736
06657 C 43 00434

F2E56

BRM OBJECT
LDA #0 PASSWORD
BRM SETUP3
BRU F2E56 DISC OUT OF BOUNDS
EPM 10026 ALERT DISC FILE
PBT PBTWRD PBT TO DISC
SKS 12026 TRACK VERIFIED TEST
BRU **1 WAIT FOR VERIFICATION
EPM 10026 ALERT DISC FILE
PBT PBTWRD PBT TO DISC
BRM W500 WAIT 500 MILLISEC
SKS 11026 DISC FILE ERROR TEST
BRM ERROR CONTROLLER ERROR SET
NOP F2M121
BRM END

TEST FOR ERRORS DURING VERIFICATION

06660 C 43 00430
06661 C 76 33550
06662 C 43 22747
06663 C 01 06676
06664 C 02 10026
06665 C 13 15456

BRM OBJECT
LDA #0 PASSWORD
BRM SETUP3
BRU F2E57 DISC OUT OF BOUNDS
EPM 10026 ALERT DISC FILE
PBT BIT16 MOVE ARM TO POSITION 1

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06666 C 43 23143
06667 C 01 06676
06670 C 02 10026
06671 C 13 23352
06672 C 43 23315
06673 C 40 11026
06674 C 43 00460
06675 C 20 27762
06676 C 43 00434
06677 C 43 00456

F2E57
ENDF2

BRM WAIT WAIT FOR CONTROLLER READY
BRU F2E57 ERROR ABORT
EPM 10026 ALERT DISC FILE
PBT PBTWRD MOVE TO POSITION 0
BRM W500 WAIT 500 MILLISEC
SKS 11026 DISC FILE ERROR TEST
BRM ERROR CONTROLLER ERROR SET
NOP F2M122
BRM END
BRM FDSNE EXIT THIS FUNCTION

```

*
*
* FUNCTION PARAMETER TABLES
*
06700 0 20 06706 FPT2 NBP FIMP FUNCTION IDENTIFIER MESSAGE
06701 0 20 06726 NBP FAM2 FUNCTION ABSTRACT MESSAGE
06702 0 20 05476 NBP FVM1 FUNCTION VARIABLES MESSAGE
06703 0 01 05711 9NE FVT1 FUNCTION VARIABLES (NONE)
06704 0 00 07100 PZE FUNC3 POINTER TO NEXT FUNCTION
06705 10000000 DATA 10000000 FUNCTION IDENTIFIER BIT (BIT 2)
*
* FUNCTION MESSAGES
*
06706 52261200 FIM2 BCD ' F 02 - DISC FILE CONTROLLER DIAGNOSTIC WITH NO DATA'
06707 02124212
06710 24316223
06711 12263143
06712 25122346
06713 45635146
06714 43432551
06715 12243121
06716 27454662
06717 63312312
06720 66316330
06721 12454412
06722 24216321
06723 12635121 BCD ' TRANSFER!!'
06724 45622425
06725 51371212
06726 52322431 FAM2 BCD ' DISC FILE CONTROLLER DIAGNOSTIC WITH NO DATA TRANSFER!'
06727 62231226
06730 31432512
06731 23454463
06732 51464343
06733 25511224
06734 31212745
06735 46626331

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06736 23126431
06737 63301245
06740 46122421
06741 63211263
06742 51214562
06743 26255112
06744 52526330 BCD ' THIS FUNCTIONS TESTS THE 9164 DISC FILE CONTROLLER AS!'
06745 31621226
06746 64452363
06747 31464562
06750 12632562
06751 63621263
06752 30251211
06753 01060412
06754 24316223
06755 12263143
06756 25122346
06757 45635146
06760 43432551
06761 12216212
06762 52446423 BCD ' MUCH AS POSSIBLE WITHOUT DATA TRANSFER, THE FOLLOWING!'
06763 30122162
06764 12474662
06765 62312243
06766 25126631
06767 63304664
06770 63122421
06771 63211263
06772 51214562
06773 26255133
06774 12633225
06775 12264643
06776 43466631
06777 45271212
07000 52216226 BCD ' ASSUMPTIONS ARE MADE!'
07001 64444763

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07002	31464562		
07003	12215125		
07004	12442124		
07005	25151212		
07006	52665131	BCD	' WRITE HEADER SWITCH IS OFF'
07007	63251230		
07010	25212425		
07011	51126266		
07012	31632730		
07013	12316212		
07014	46242412		
07015	52454412	BCD	' NO DISCS WRITE PROTECTED'
07016	24316223		
07017	62126651		
07020	31632512		
07021	47514663		
07022	25236725		
07023	24121212		
07024	52255151	BCD	' ERROR STOP SWITCH IS IN CONTINUE'
07025	46511262		
07026	63464712		
07027	62663163		
07030	23301231		
07031	62123145		
07032	12234445		
07033	63314564		
07034	25121212		
07035	52263143	BCD	' FILE IS ON LINE'
07036	25123162		
07037	12464512		
07040	43314525		
07041	52322521	BCD	' HEADERS ARE GOOD'
07042	24255162		
07043	12215125		
07044	12274646		
07045	24121212		

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07046	52462241	BCD	' OBJECT TESTS USING DISCS WHICH ARE DELETED FROM THE'
07047	25236312		
07050	63256263		
07051	62126462		
07052	31452712		
07053	24316223		
07054	62126630		
07055	31233012		
07056	21512512		
07057	24254725		
07060	63252412		
07061	26514644		
07062	12633025		
07063	52644531	BCD	' UNIT VARIABLES D00T17 AND D20T37 WILL BE SKIPPED.11'
07064	63126521		
07065	51312122		
07066	43256212		
07067	24000063		
07070	01071221		
07071	45241224		
07072	02076303		
07073	07126631		
07074	43431222		
07075	25126242		
07076	31474725		
07077	24333712		

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

		FUNC3	BRM	FNCTN	FUNCTION LINK
07100	0 43 00424		NBP	FPT3	
07101	0 20 11514		BRM	OBJECT	SET INTERRUPT LINKAGE
07102	0 43 00430		BRM	RETURN	
07103	0 43 00440		NBP	ENTER	
07104	0 20 23371		DIR		DISABLE INTERRUPTS
07105	0 02 20004		LDA	STATUS	GET SYSTEM STATUS WORD
07106	0 76 00401		SKA	BIT9	IS DISC SOFTWARE WRITE-PROTECTED
07107	0 72 15447		BRU	ENDF3	YES = EXIT FUNCTION
07110	0 01 11513		LDA	FLAGS	CHECK FOR PREVIOUS KEY
07111	0 76 00332		SKA	UPT+4	
07112	0 72 04777		BRU	ENDF3	DISC KEYED
07113	0 01 11513				
* * TEST ABILITY TO CONNECT BUFFER FOR WRITE *					
07114	0 43 00430		BRM	OBJECT	
07115	0 76 33550		LDA	#0	POTWORD
07116	0 43 22778		BRM	SETUP4	SETUP OBJECT TEST
07117	0 01 07130		BRU	F3E1	ABORT
07120	0 43 23006		BRM	CPST1	PBT TO CHANNEL
07121	0 0074000		DATA	484+STADDR	
07122	0 77 36706		EAX	=5700	WAIT 1 MILLISEC
07123	0 41 07123		BRX	*	
07124	0 40 12026		SKS	12026	TRACK VERIFIED TEST
07125	0 01 07127		BRU	**2	CONTROLLER LEFT STATE 1 = OK
07126	0 43 00460		BRM	ERRR2	
07127	0 20 30027		NBP	F3M1	
07130	0 43 00434	F3E1	BRM	END	
* * TEST 2MHAA *					

07131	0 43 00430		BRM	OBJECT	
07132	0 40 12046		SKS	12046	CARD PUNCH BUFFER TEST
07133	0 01 07135		BRU	**2	
07134	0 01 07143		BRU	F3E2	READY = ABORT TEST
07135	0 40 14046		SKS	14046	CARD PUNCH READY TEST
07136	0 01 07140		BRU	**2	
07137	0 01 07143		BRU	F3F2	READY = ABORT TEST
07140	0 43 22510		BRM	F3S1	PERFORM TEST
07141	0 02 03646		ERM	3646	
07142	0 20 30124		NBP	F3M2	
07143	0 43 00434	F3E2	BRM	END	
* * TEST 2MHAA *					
07144	0 43 00430		BRM	OBJECT	
07145	0 40 10216		SKS	10216	MAGPACK TEST (CHECK FOR MAG TAPE 6)
07146	0 01 07150		BRU	**2	NO MAG TAPE 6
07147	0 01 07153		BRU	F3E3	
07150	0 43 22510		BRM	F3S1	PERFORM TEST
07151	0 02 03676		ERM	3676	
07152	0 20 30137		NBP	F3M3	
07153	0 43 00434	F3E3	BRM	END	
* * TEST 2MHAA *					
07154	0 43 00430		BRM	OBJECT	
07155	0 43 22510		BRM	F3S1	PERFORM TEST
07156	0 02 03662		ERM	3662	
07157	0 20 30137		NBP	F3M3	
07160	0 43 00434		BRM	END	
* * TEST 2MHAA *					
07161	0 43 00430		BRM	OBJECT	
07162	0 43 22510		BRM	F3S1	PERFORM TEST
07163	0 02 03664		ERM	3664	

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07164 0 20 30137
07165 0 43 00434

NOP F3M3
BRM END

TEST 2MHAA

07166 0 43 00430
07167 0 43 22510
07170 0 02 03667
07171 0 20 30146
07172 0 43 00434

BRM OBJECT
BRM F3S1 PERFORM TEST
EOM 3667
NOP F3M4
BRM END

VERIFY ECW RECEIVED

07173 0 43 00430
07174 0 76 33550
07175 0 43 22775
07176 0 01 07207
07177 0 02 10000
07200 0 02 14200
07201 0 13 33573
07202 0 02 03066
07203 0 43 23705
07204 0 40 12000
07205 0 43 00460
07206 0 20 30155
07207 0 43 00434

BRM OBJECT
LDA #0 POTWORD
BRM SETUP4 SET UP OBJECT TEST
BRU F3E8 ERROR ABORT
EOM 10000 ALERT CHANNEL
EOM 14200 EXTENDED MODE EOM
PBT #4B4*STADDR WC # 1
EOM 3066 WRITE SECTOR MODE, 1 CHARACTER
BRM #200 WAIT 200 MILLISEC
SKS 12000 CHANNEL ZERO WORD COUNT TEST
BRM ERROR COUNT NOT ZERO * ECW NOT RECEIVED
NOP F3M6
BRM END

TEST ABILITY TO CYCLE TO STATE 0 FROM STATE 7 (WRITE)

07210 0 43 00430
07211 0 76 33550
07212 0 43 22775
07213 0 01 07236
07214 0 02 10000
07215 0 02 14200
07216 0 13 33574

BRM OBJECT
LDA #0 POTWORD
BRM SETUP4 SET UP OBJECT TEST
BRU F3E9 ERROR ABORT
EOM 10000 ALERT CHANNEL
EOM 14200 EXTENDED MODE EOM
PBT #2B5*STADDR WC # 4

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07217 0 02 03066
07220 0 40 12000
07221 0 01 07220
07222 0 77 20754
07223 0 41 07223
07224 0 40 10026
07225 0 01 07227
07226 0 01 07232
07227 0 43 00460
07230 0 20 30230
07231 0 01 07236
07232 0 40 12026
07233 0 01 07236
07234 0 43 00460
07235 0 20 30246
07236 0 43 00434

EOM 3066 1 CHARACTER
SKS 12000 CHANNEL ZERO WORD COUNT TEST
BRU #1 WAIT FOR ECW TO DISCONNECT
EAX #7700D WAIT 4.4 MILLISEC
BRX *
SKS 10026 DISC FILE READY TEST
BRU #+2 CONTROLLER NOT READY
BRU #+4
BRM ERROR
NOP F3M7
BRU F3E9
SKS 12026 TRACK VERIFIED TEST
BRU F3E9 NOT IN STATE 1
BRM ERROR RETURNED TO STATE 1
NOP F3M8
BRM END

LOGIC FLOW FOR PRECEDING OBJECT TEST

ENTRANCE FROM STATE 3 (SEARCH)

* 1	AF01A	# 293EA	STATE 7 NEXT
* 2	6RBHA0	# 2RSTA	RESET B01=04
*	6RBLA0	# 2RSTA	RESET B05=08
*	RBIA0	# 2RSTA+2CKQA	RESET B09
*	6RSLX0	# 257FA+2IUCA+3U01A	RESET L01=06
*	TK01A	# 2RSKA+0K01A	RESET K01
*	TK02A	# 2RSKA+0K02A	RESET K02
*	8ENAA	# 207FA+3CLRA	WRITE ENABLE
* 3	8WDDA	# 207FA+2IUCA+2CKQA	WRITE DATA 0
*	AU01A	# 207FA+2CKQA	SET U01
* 4	2CK5A	# 207FA+2U01A+2CKQA	B REG CLOCK
* 5	AU04A	# 207FA+3U02A+2H07A+2CT1A+2CKQA	SET U04
* 6	6ECYA0	# 207FA+2U06A	ECW

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* 7 BU04A ■ 207FA,3U02A,246BA,2CK0A RESET U04
* BU01A ■ 207FA,3U02A,246BA,2CK0A RESET U01
* AU02A ■ 207FA,246BA,2CK0A SET U02
* 8 6RBHAC ■ 2RSTA RESET B01=04
* 6RBLAC ■ 2RSTA RESET B05=08
* RBIAO ■ 2RSTA,2CK0A RESET B09
* 2SGSX ■ 207FA,2U04A,3U02A,246BA,2CK0A
* AS01A ■ 2SGSX,8R10A SET S REG
* BS01A ■ 2SGSX,9R10A RESET S REG
* 9 84D1A ■ 207FA,2CK0A,2IUAA WRITE DATA 1
* AU01A ■ 207FA,2CK0A SET U01
* 10 2SSRX ■ 207FA,2BUAA,2IGBA,2CK0A SHIFT S REG
* 11 BS04A ■ 207FA,2SSRX RESET S06
* 84D1A ■ 2VFCA,2BUAA,0S01A WRITE DATA 1
* 84D0A ■ 2VFCA,2BUAA,1S01A WRITE DATA 0
*
* AT THIS POINT, THE BUFFER SHOULD DISCONNECT (ZERO WORD COUNT)
*
* 12 BX03A ■ 2MHAA,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
* 7FCHA,1B01A,1B02A,1B03A,1B04A,1B05A,1B06A
* 15 2RSTA ■ 0F03A,3U01A CLEAR B REG
* AU01A ■ 207FA,2CK0A SET U01
*
* 16 IF MORE PACKETS:
*
* 84D1A ■ 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 84D0A ■ 2VFCA,3U01A,3U02A WRITE DATA 0
* 20 AP01A ■ 2SGSX,8RP0A SET/RESET P01
* BP01A ■ 2SGSX,9RP0A
* BP01A ■ 207FA,2U01A,2IGBA,2WD1A TOGGLE P01
* AP01A ■ 207FA,2U01A,2IGBA,2WD1A
* 2IGBA= NOT [ CT5 ]
* TL01A ■ 2TLRX,8R10A TOGGLE L REG
* 2TLRX,207FA,2U04A,3U02A,246BA
* 207FA,3U03A,2U04A,2CT5A,2CK0A
* 21 AS01A ■ 2TLSX,0L01A SET S FROM L
* BS01A ■ 2TLSX,1L01A
* 2TLSX,207FA,3U01A,2U03A,2CK0A
* 22 2SSRX ■ 207FA,2BU0A,2CK0A SHIFT S REG
* 84D1A ■ 2VFCA,2BU0A,306JA,307JA,0S01A WRITE DATA 1
* 84D0A ■ 2VFCA,2BU0A,306JA,307JA,1S01A WRITE DATA 0
*
* 2BU0A=2U01A,2U03A
* 2VFCA=207FA,2CK0A
* 306JA=NOT COUNT SIX
* 307JA=NOT COUNT SEVEN
* 23 AP01A ■ 207FA,2IUFA,2CT5A,2CK0A SET P01
* 24 BP01A ■ 207FA,2U01A,2IGBA,2WD1A TOGGLE P01
* AP01A ■ 207FA,2U01A,2IGBA,2WD1A
* 25 84D1A ■ 2VFCA,2IU0A,206JA,0P01A WRITE DATA 1
* 84D0A ■ 2VFCA,3U02A,206JA,1P01A WRITE DATA 0
* 26 84D1A ■ 2VFCA,2IU0A,207JA,0X02A CHAIN BIT
* X02 SET DURING E0M IN STATE 1
* 27 2B00A ■ 207FA,2IU0A,2H02A,2CT2A,2CK0A
* BU01A ■ 2B0DA RESET U01
* BU03A ■ 2B0DA RESET U03
* RG03A ■ 2B0DA RESET G03
* BF01A ■ 2B0DA,3X03A STATE 0 NEXT
* BF02A ■ 2B0DA,3X03A
* BF03A ■ 2B0DA,3X03A

```


• THE CONTROLLER IS NOW IN STATE ZERO
•

• TEST ECH GENERATION
•

07237	0 43 00430	BRM	OBJECT	
07240	0 76 33550	LDA	#0	
07241	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
07242	0 01 07275	BRU	F3E10	ERROR ABORT
07243	0 76 33550	LDA	#0	CLEAR 4 WORDS OF OUTPUT BUFFER
07244	0 77 37774	EAX	#4	
07245	2 35 34704	STA	STADDR+4,2	
07246	0 41 07245	BRX	**1	
07247	0 02 10000	EBM	10000	ALERT CHANNEL
07250	0 02 14200	EBM	14200	EXTENDED MODE EBM
07251	0 13 33574	PST	#2B5+STADDR	WC # 4
07252	0 02 03766	EBM	3066	1 CHAR/WORD
07253	0 76 33550	LDA	#0	
07254	0 40 10726	SKS	10026	DISC FILE READY TEST
07255	0 01 07257	BRU	**2	CONTROLLER NOT READY
07256	0 01 07272	BRU	F3L2	
07257	0 55 15465	ADD	BIT23	
07260	0 73 33575	SKG	#8000D	112 MILLISEC ELAPSED YET
07261	0 01 07254	BRU	F3L1	NO
07262	0 40 11026	SKS	11026	DISC FILE ERROR TEST
07263	0 01 07267	BRU	**4	CONTROLLER ERROR SET
07264	0 43 00460	BRM	ERRRR	
07265	0 20 30254	NBP	F3M9	
07266	0 01 07275	BRU	F3E10	
07267	0 43 00460	BRM	ERRRR	
07270	0 20 30267	NBP	F3M10	
07271	0 01 07275	BRU	F3E10	
07272	0 40 12000	SKS	12000	CHANNEL ZERO WORD COUNT TEST
07273	0 43 00460	BRM	ERRRR	CHANNEL WORD COUNT NOT ZERO
07274	0 20 30304	NBP	F3M11	
07275	0 43 00434	F3E10 BRM	END	

• TEST PARITY CHECKING DURING WRITE
•

07276	0 43 00430	BRM	OBJECT	
07277	0 76 33550	LDA	#0	POTWORD
07300	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
07301	0 01 07312	BRU	F3E11	ABORT
07302	0 76 33550	LDA	#0	
07303	0 35 34700	STA	STADDR	DATA WORD
07304	0 43 23006	BRM	CPPT1	POT TO CHANNEL
07305	00074000	DATA	4B44STADDR	
07306	0 43 23305	BRM	*200	WAIT 200 MILLISEC
07307	0 40 11026	SKS	11026	DISC FILE ERROR TEST
07310	0 43 00460	BRM	ERRRR	CONTROLLER ERROR SET
07311	0 20 30342	NBP	F3M12	
07312	0 43 00434	F3E11 BRM	END	

• TEST PARITY CHECKING DURING WRITE
•

07313	0 43 00430	BRM	OBJECT	
07314	0 43 22535	BRM	F3S2	PERFORM TEST
07315	40000000	DATA	4B7	
07316	0 20 30434	NBP	F3M13	
07317	0 43 00430	BRM	OBJECT	
07320	0 43 22535	BRM	F3S2	PERFORM TEST
07321	20000000	DATA	2B7	
07322	0 20 30457	NBP	F3M14	
07323	0 43 00430	BRM	OBJECT	
07324	0 43 22535	BRM	F3S2	PERFORM TEST
07325	10000000	DATA	1B7	
07326	0 20 30475	NBP	F3M15	
07327	0 43 00430	BRM	OBJECT	
07330	0 43 22535	BRM	F3S2	PERFORM TEST
07331	04000000	DATA	4B6	

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07332	0 20 30514	NOP	F3M16	
07333	0 43 00430	BRM	OBJECT	
07334	0 43 22535	BRM	F3S2	PERFORM TEST
07335	0 20 00000	DATA	2B6	
07336	0 20 30532	NOP	F3M17	
07337	0 43 00430	BRM	OBJECT	
07340	0 43 22535	BRM	F3S2	PERFORM TEST
07341	0 1000000	DATA	1B6	
07342	0 20 30550	NOP	F3M18	

TEST ABILITY TO DISCONNECT CONTROLLER AT END OF SECTOR

07343	0 43 00430	BRM	OBJECT	
07344	0 76 33550	LDA	=0	POTWORD
07345	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
07346	0 01 07421	BRU	F3E18	ERROR ABORT
07347	0 77 37600	EAX	=128D	CLEAR 128 WORDS OF OUTPUT BUFFER
07350	0 76 33550	LDA	=0	
07351	2 35 34700	STA	STADDR+128D,2	
07352	0 41 07351	BRX	**1	
07353	0 43 23006	BRM	CPBT1	POT TO CHANNEL
07354	0 0034000	DATA	1B7+STADDR	
07355	0 40 14000	SKS	14000	CHANNEL ACTIVE TEST
07356	0 01 07360	BRU	**2	CHANNEL ACTIVE
07357	0 01 07366	BRU	F3L4	
07360	0 55 15465	ADD	BIT23	
07361	0 73 33571	SKG	=35714D	500 MILLISEC ELAPSED YET
07362	0 01 07355	BRU	F3L3	NO
07363	0 43 00460	BRM	ERROR	
07364	0 20 30567	NOP	F3M19	
07365	0 01 07421	BRU	F3E18	
07366	0 02 12000	EBM	12000	ALERT TO PIN CHANNEL ADDRESS
07367	0 33 23330	PIN		PIN CHANNEL ADDRESS
07370	0 76 23330	LDA	TEMP	

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07371	0 75 33551	LDB	**1	MASK
07372	0 70 33576	SKY	=STADDR+128D	CHANNEL ADDRESS CORRECT
07373	0 01 07375	BRU	**2	NO
07374	0 01 07403	BRU	F3L5	YES
07375	0 54 33577	SUB	=STADDR	A = WORD COUNT
07376	0 75 15456	LDB	BIT16	B = CORRECT WORD COUNT
07377	0 71 33577	LDX	=STADDR	X = STARTING CORE ADDRESS
07400	0 43 00460	BRM	ERROR	
07401	2 20 30400	NBP	F3M20,2	
07402	0 01 07421	BRU	F3E18	
07403	0 40 11026	SKS	11026	DISC FILE ERROR TEST
07404	0 01 07406	BRU	**2	CONTROLLER ERROR SET
07405	0 01 07411	BRU	F3L6	
07406	0 43 00460	BRM	ERROR	
07407	0 20 30440	NBP	F3M21	
07410	0 01 07421	BRU	F3E18	
07411	0 43 23073	F3L6 BRM	CHECK	CHECK FOR CHANNEL READY
07412	0 01 07421	BRU	F3E18	ERROR ABORT
07413	0 02 10026	EBM	10026	ALERT DISC FILE
07414	0 13 15465	POT	BIT23	VERIFY SECTOR 1
07415	0 43 23315	BRM	=500	WAIT 500 MILLISEC
07416	0 40 12026	SKS	12026	TRACK VERIFIED TEST
07417	0 43 00460	BRM	ERROR	TRACK NOT VERIFIED
07420	0 20 30455	NBP	F3M22	
07421	0 43 00434	F3E18 BRM	END	

TEST FOR ECA ON READ

07422	0 43 00430	BRM	OBJECT	
07423	0 76 33550	LDA	=0	POTWORD
07424	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
07425	0 01 07436	BRU	F3E19	ERROR ABORT
07426	0 02=10000	EBM	10000	ALERT CHANNEL
07427	0 07 14000	EBM	14000	EXTENDED MODE EBM
07430	0 13 33573	PBT	=484+STADDR	WC = 1
07431	0 02 03026	EBM	3026	1 CHAR/WORD

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DISCW TAP=3.0 PAGE 97
07432 0 43 23305 BRM W200 WAIT 200 MILLISEC
07433 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
07434 0 43 00460 BRM ERRBR ERROR
07435 0 20 30735 NBP F3M23 COUNT NOT ZERO - ECH NOT RECEIVED
07436 0 43 00434 F3E19 BRM END
*
* TEST ABILITY TO RETURN TO STATE 0 FROM STATE 5 (READ)
*
07437 0 43 00430 BRM SUBJECT
07440 0 76 33550 LDA #0 POTWORD
07441 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
07442 0 01 07461 BRU F3E20 ERROR ABORT
07443 0 02 10000 EBM 10000 ALERT CHANNEL
07444 0 02 14000 EBM 14000 EXTENDED MODE EOM
07445 0 13 33573 PBT #4B4+STADDR WC # 1
07446 0 02 03026 EBM 3026 READ 1 CHAR
07447 0 43 23305 BRM W200 WAIT 200 MILLISEC
07450 0 40 10026 SKS 10026 DISC FILE READY TEST
07451 0 01 07457 BRU F3L7 CONTROLLER NOT READY
07452 0 40 12026 SKS 12026 TRACK VERIFIED TEST
07453 0 01 07461 BRU F3E20 IN STATE 0
07454 0 43 00460 BRM ERRBR
07455 0 20 31032 NBP F3M24
07456 0 01 07461 BRU F3E20
07457 0 43 00460 F3L7 BRM ERRBR
07460 0 20 31050 NBP F3M25
07461 0 43 00434 F3E20 BRM END
*
* TEST ABILITY TO WRITE/READ ONES
*
07462 0 43 00430 BRM SUBJECT
07463 0 76 33550 LDA #0 POTWORD
07464 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
07465 0 01 07530 BRU F3E21 ERROR ABORT
07466 0 76 33551 LDA #1 OUTPUT WORD
07467 0 35 34000 STA STADDR

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DISCW TAP=3.0 PAGE 98
07470 0 43 23006 BRM CPBT1 POT TO CHANNEL
07471 0 00 074000 DATA #4B4+STADDR
07472 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
07473 0 01 07530 BRU F3E21 ERROR ABORT
07474 0 43 23173 BRM POTOUT POT TO DISC
07475 0 01 07530 BRU F3E21 ERROR ABORT
07476 0 43 23073 BRM CHECK CHECK FOR CHANNEL READY
07477 0 01 07530 BRU F3E21 ERROR ABORT
07500 0 76 33550 LDA #C CLEAR INPUT LOCATION
07501 0 35 34000 STA STADDR
07502 0 43 23015 BRM CPBT2 POT TO CHANNEL
07503 0 00 074000 DATA #4B4+STADDR
07504 0 43 23305 BRM W200 WAIT 200 MILLISEC
07505 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
07506 0 01 07510 BRU **2 WORD COUNT NOT ZERO
07507 0 01 07516 BRU F3L8
07510 0 76 33550 LDA #0
07511 0 75 15465 LDB B123
07512 0 71 33577 LDX #STADDR
07513 0 43 00460 BRM ERRBR
07514 2 20 31600 NBP F3M20,2
07515 0 01 07530 BRU F3E21
07516 0 76 34000 F3L8 LDA STADDR GET INPUT WORD
07517 0 75 33551 LDB #1 MASK
07520 0 70 33551 SKL #1 INPUT DATA CORRECT
07521 0 01 07523 BRU **2 NO
07522 0 01 07530 BRU F3E21
07523 0 71 33577 LDX #STADDR
07524 0 43 00454 BRM REPORT
07525 2 20 31133 NBP F3M26,2
07526 0 43 00460 BRM ERRBR
07527 0 20 31154 NBP F3M27
07530 0 43 00434 F3E21 BRM END
*
* TEST ABILITY TO WRITE/READ ZEROS
*

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DISC* TAP=3.0

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07531	0 43 00430	BRM	OBJECT	
07532	0 76 33550	LDA	#0	P0T*WORD
07533	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
07534	0 01 07577	BRU	F3E22	ERROR ABORT
07535	0 76 33550	LDA	#0	OUTPUT WORD
07536	0 35 34000	STA	STADDR	
07537	0 43 23006	BRM	CP0T1	P0T TO CHANNEL
07540	00074000	DATA	4B4*STADDR	
07541	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
07542	0 01 07577	BRU	F3E22	ERROR ABORT
07543	0 43 23173	BRM	P0TOUT	P0T TO DISC
07544	0 01 07577	BRU	F3E22	
07545	0 43 23073	BRM	CHECK	CHECK FOR CHANNEL READY
07546	0 01 07577	BRU	F3E22	
07547	0 76 33551	LDA	#*1	ALTER INPUT LOCATION
07550	0 35 34000	STA	STADDR	
07551	0 43 23015	BRM	CP0T2	P0T TO CHANNEL
07552	00074000	DATA	4B4*STADDR	
07553	0 43 23305	BRM	*200	WAIT 200 MILLISEC
07554	0 40 12000	SKS	12000	CHANNEL ZERO WORD COUNT TEST
07555	0 01 07557	BRU	**2	WORD COUNT NOT ZERO
07556	0 01 07565	BRU	F3L9	
07557	0 76 33550	LDA	#0	
07560	0 75 15465	LDB	BIT23	
07561	0 71 33577	LDX	#STADDR	
07562	0 43 00460	BRM	ERR0R	
07563	0 20 31400	NBP	F3M20,2	
07564	0 01 07577	BRU	F3E22	
07565	0 76 34000	LDA	STADDR	GET INPUT WORD
07566	0 72 33551	SKA	#*1	ARE ZEROS READ
07567	0 01 07571	BRU	**2	NO
07570	0 01 07577	BRU	F3E22	
07571	0 75 33550	LDB	#0	
07572	0 71 33577	LDX	#STADDR	
07573	0 43 00454	BRM	REP0RT	
07574	0 20 31133	NBP	F3M26,2	

DISC* TAP=3.0

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07575	0 43 00460	BRM	ERR0R	
07576	0 20 31205	NBP	F3M28	
07577	0 43 00434	F3E22 BRM	END	
		*		
		*	TEST READ/WRITE PARITY	
		*		
07600	0 43 00430	BRM	OBJECT	
07601	0 76 33550	LDA	#0	P0T*WORD
07602	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
07603	0 01 07424	BRU	F3E23	
07604	0 76 33550	LDA	#0	DATA WORD
07605	0 35 34000	STA	STADDR	
07606	0 43 23006	BRM	CP0T1	P0T TO CHANNEL
07607	00074000	DATA	4B4*STADDR	
07610	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
07611	0 01 07424	BRU	F3E23	
07612	0 43 23173	BRM	P0TOUT	P0T TO DISC
07613	0 01 07424	BRU	F3E23	
07614	0 43 23073	BRM	CHECK	CHECK CHANNEL FOR READY
07615	0 01 07424	BRU	F3E23	
07616	0 43 23015	BRM	CP0T2	P0T TO CHANNEL
07617	00074000	DATA	4B4*STADDR	
07620	0 43 23305	BRM	*200	WAIT 200 MILLISEC
07621	0 40 11000	SKS	11000	CHANNEL ERROR TEST
07622	0 43 00460	BRM	ERR0R	CHANNEL ERROR SET
07623	0 20 31213	NBP	F3M29	
07624	0 43 00434	F3E23 BRM	END	
		*		
		*	TEST READ/WRITE PARITY	
		*		
07625	0 43 00430	BRM	OBJECT	
07626	0 76 33550	LDA	#0	P0T*WORD
07627	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
07630	0 01 07451	BRU	F3E24	
07631	0 76 33600	LDA	#77	DATA WORD
07632	0 35 34000	STA	STADDR	

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DISCW TAP=3.0 PAGE 101
07633 0 43 23006 BRM CP0T1 POT TO CHANNEL
07634 0 00074000 DATA 4B4*STADDR
07635 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
07636 0 01 07651 BRU F3E24
07637 0 43 23173 BRM PBTOUT POT TO DISC
07640 0 01 07651 BRU F3E24
07641 0 43 23073 BRM CHECK CHECK FOR CHANNEL READY
07642 0 01 07651 BRU F3E24
07643 0 43 23015 BRM CP0T2 POT TO CHANNEL
07644 0 00074000 DATA 4B4*STADDR
07645 0 43 23005 BRM *200 WAIT 200 MILLISEC
07646 0 40 11000 SKS 11000 CHANNEL ERROR TEST
07647 0 43 00460 BRM ERROR CHANNEL ERROR SET
07650 0 20 31266 NOP F3M30
07651 0 43 00434 F3E24 BRM END

*
* TEST TERMINATION OF STATE 7 TO STATE 3
*
07652 0 43 00430 BRM OBJECT
07653 0 76 33550 LDA *0 P0TWORD
07654 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
07655 0 01 07705 BRU F3E62
07656 0 43 23006 BRM CP0T1 POT TO CHANNEL
07657 0 04134000 DATA *1B5*STADDR
07660 0 76 33601 LDA *STADDR*63D CHECK ADDRESS
07661 0 75 33551 LDB **1 MASK
07662 0 02 12000 E0M 12000 ALERT TO PIN CHANNEL ADDRESS
07663 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
07664 0 70 23330 SKM TEMP 64 WORDS WRITTEN YET
07665 0 01 07662 BRU F3L45 NO
07666 0 77 37343 EAX *255D WAIT 1 MILLISEC
07667 0 41 07667 BRX *
07670 0 40 10026 SKS 10026 DISC FILE READY TEST
07671 0 01 07702 BRU F3L47 NOT READY = 0K
07672 0 40 12026 SKS 12026 TRACK VERIFIED TEST
07673 0 01 07677 BRU F3L46 IN STATE 0

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DISCW TAP=3.0 PAGE 102
07674 0 43 00460 BRM ERROR IN STATE 1
07675 0 20 31571 NOP F3M54
07676 0 01 07705 BRU F3E62
07677 0 43 00460 F3L46 BRM ERROR
07700 0 20 31611 NOP F3M55
07701 0 01 07705 BRU F3E62
07702 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
07703 0 43 00460 BRM ERROR COUNT SHOULD BE ZERO
07704 0 20 31642 NOP F3M56
07705 0 43 00434 F3E62 BRM END

*
* CHECK FOR XMS FROM CONTROLLER
*
07706 0 43 00430 BRM OBJECT
07707 0 76 33550 LDA *0 P0TWORD
07710 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
07711 0 01 07743 BRU F3E25
07712 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
07713 0 20 23353 NOP P12
07714 0 77 37477 EAX *65D CLEAR 65 WORDS OF OUTPUT TABLE
07715 0 76 33550 LDA *0
07716 2 35 34101 STA STADDR*65D*2
07717 0 41 07716 BRX **1
07720 0 43 23006 BRM CP0T1 POT TO CHANNEL
07721 0 04074000 DATA *04B4*STADDR
07722 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
07723 0 01 07743 BRU F3E25
07724 0 43 23073 BRM CHECK WAIT FOR CHANNEL READY
07725 0 01 07743 BRU F3E25
07726 0 43 23173 BRM PBTOUT POT TO DISC
07727 0 01 07743 BRU F3E25
07730 0 02*10000 E0M 10000 ALERT CHANNEL
07731 0 02 16000 E0M 16000 EXTENDED MODE E0M
07732 0 13 33602 PBT *404B*STADDR *C = 65
07733 0 02 07626 E0M 3626 HEAD DISC FILE * SECTOR
07734 0 43 23305 BRM *200 WAIT 200 MILLISEC

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DISCA  TAP=3.0                PAGE 103
07735 0 02 20002             EIR                ENABLE INTERRUPTS
07736 0 67 20060             LCY                DUMMY CYCLES
07737 0 02 20004             DIR                DISABLE INTERRUPTS
07740 0 53 15476             SKN                I2FLAG
07741 0 43 00460             BRM                ERROR
07742 0 20 31723             NBP                F3M31
07743 0 43 00434             BRM                END
*
* TEST TERMINATION OF STATE 7 TO STATE 4
*
07744 0 43 00430             BRM                SUBJECT
07745 0 76 33603             LDA                #177                PBTWORD
07746 0 43 22775             BRM                SETUP4            SET UP OBJECT TEST
07747 0 01 10017             BRU                F3E63
07750 0 43 23006             BRM                CPBT1            PBT TO CHANNEL
07751 0 40 07400             DATA            40484*STADDR
07752 0 76 33604             LDA                *STADDR+64D        COMPARE ADDRESS
07753 0 75 33651             LDB                **1                MASK
07754 0 02 12000             EBM                12000            ALERT TO PIN CHANNEL ADDRESS
07755 0 33 23930             PIN                TEMP            PIN CHANNEL ADDRESS
07756 0 70 23930             SKM                TEMP            DB ADDRESSES COMPARE
07757 0 01 07754             BRU                F3L48            NO
07760 0 76 33650             LDA                #0
07761 0 40 10026             SKS                10026            DISC FILE READY TEST
07762 0 01 07764             BRU                **2            CONTROLLER NOT READY
07763 0 01 07777             BRU                F3L51
07764 0 40 11026             SKS                11026            DISC FILE ERROR TEST
07765 0 01 07774             BRU                F3L50            CONTROLLER ERROR SET
07766 0 55 15465             ADD                BIT23
07767 0 73 33605             SKG                #25974D        TIMED OUT YET
07770 0 01 07761             BRU                F3L49            NO
07771 0 43 00460             BRM                ERROR
07772 0 20 31775             NBP                F3M59
07773 0 01 10017             BRU                F3E63
07774 0 43 00460             BRM                ERROR
07775 0 20 31713             NBP                F3M57

```

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DISC#  TAP=3.0                PAGE 104
07776 0 01 10017             BRU                F3E63
07777 0 40 12000             SKS                12000            CHANNEL ZERO WORD COUNT TEST
10000 0 01 10002             BRU                **2            COUNT NOT ZERO
10001 0 01 10005             BRU                F3L52
10002 0 43 00460             BRM                ERROR
10003 0 20 31755             NBP                F3M58
10004 0 01 10017             BRU                F3E63
10005 0 02 10026             EBM                10026            ALERT DISC FILE
10006 0 13 15456             PBT                BIT16            WILL VERIFY SECTOR 0 IN STATE 3
10007 0 40 12026             SKS                12026            TRACK VERIFIED TEST
10010 0 01 10012             BRU                **2            TRACK NOT VERIFIED
10011 0 01 10017             BRU                F3E63
10012 0 40 11026             SKS                11026            DISC FILE ERROR TEST
10013 0 01 10015             BRU                **2            CONTROLLER ERROR SET
10014 0 01 10007             BRU                F3L53
10015 0 43 00460             BRM                ERROR
10016 0 20 32015             NBP                F3M60
10017 0 43 00434             BRM                END
*
* TEST INCREMENTING OF ADDRESS REGISTER
*
10020 0 43 00430             BRM                SUBJECT
10021 0 43 22457             BRM                F3S3                PERFORM TEST
10022 0 00000000             DATA            0
10023 0 20 31412             NBP                F3M33
*
10024 0 43 00430             BRM                SUBJECT
10025 0 43 22457             BRM                F3S3                PERFORM TEST
10026 0 00000001             DATA            1
10027 0 20 31430             NBP                F3M34
*
10030 0 43 00430             BRM                SUBJECT
10031 0 43 22457             BRM                F3S3                PERFORM TEST
10032 0 00000002             DATA            2
10033 0 20 31436             NBP                F3M35

```

DISC#	TAP#			PAGE	
	3.0			105	
10034	0 43 00430	BRM	OBJECT		
10035	0 43 22557	BRM	F353		PERFORM TEST
10036	00000003	DATA	3		
10037	0 20 31441	NBP	F3M36		
		*			
10040	0 43 00430	BRM	OBJECT		
10041	0 43 22557	BRM	F353		PERFORM TEST
10042	00000007	DATA	7		
10043	0 20 31451	NBP	F3M37		
		*			
10044	0 43 00430	BRM	OBJECT		
10045	0 43 22557	BRM	F353		PERFORM TEST
10046	00000017	DATA	17		
10047	0 20 31451	NBP	F3M37		
		*			
10050	0 43 00430	BRM	OBJECT		
10051	0 43 22557	BRM	F353		PERFORM TEST
10052	00000037	DATA	37		
10053	0 20 31454	NBP	F3M38		
		*			
10054	0 43 00430	BRM	OBJECT		
10055	0 43 22557	BRM	F353		PERFORM TEST
10056	00000077	DATA	77		
10057	0 20 31463	NBP	F3M39		
		*			
10060	0 43 00430	BRM	OBJECT		
10061	0 43 22557	BRM	F353		PERFORM TEST
10062	00000057	DATA	57		
10063	0 20 31474	NBP	F3M40		
		*			
10064	0 43 00430	BRM	OBJECT		
10065	0 43 22557	BRM	F353		PERFORM TEST
10066	00000067	DATA	67		
10067	0 20 31474	NBP	F3M40		
		*			
10070	0 43 00430	BRM	OBJECT		

DISC#	TAP#			PAGE	
	3.0			106	
10071	0 43 22557	BRM	F353		PERFORM TEST
10072	00000073	DATA	73		
10073	0 20 31474	NBP	F3M40		
		*			
10074	0 43 00430	BRM	OBJECT		
10075	0 43 22557	BRM	F353		PERFORM TEST
10076	00000074	DATA	74		
10077	0 20 31477	NBP	F3M41		
		*			
10100	0 43 00430	BRM	OBJECT		
10101	0 43 22557	BRM	F353		PERFORM TEST
10102	00000177	DATA	177		
10103	0 20 31502	NBP	F3M42		
		*			
10104	0 43 00430	BRM	OBJECT		
10105	0 43 22557	BRM	F353		PERFORM TEST
10106	00000377	DATA	377		
10107	0 20 31502	NBP	F3M42		
		*			
10110	0 43 00430	BRM	OBJECT		
10111	0 43 22557	BRM	F353		PERFORM TEST
10112	00000777	DATA	777		
10113	0 20 31505	NBP	F3M43		
		*			
10114	0 43 00430	BRM	OBJECT		
10115	0 43 22557	BRM	F353		PERFORM TEST
10116	00001777	DATA	1777		
10117	0 20 31513	NBP	F3M44		
		*			
10120	0 43 00430	BRM	OBJECT		
10121	0 43 22557	BRM	F353		PERFORM TEST
10122	00001477	DATA	1477		
10123	0 20 31523	NBP	F3M45		
		*			
10124	0 43 00430	BRM	OBJECT		
10125	0 43 22557	BRM	F353		PERFORM TEST

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10126	00001477	DATA	1577	
10127	0 20 31523	NBP	F3M45	
10130	0 43 00430	BRM	OBJECT	
10131	0 43 22557	BRM	F3S3	PERFORM TEST
10132	00001377	DATA	1377	
10133	0 20 31523	NBP	F3M45	
10134	0 43 00430	BRM	OBJECT	
10135	0 43 22557	BRM	F3S3	PERFORM TEST
10136	00001703	DATA	1703	
10137	0 20 31477	NBP	F3M41	
10140	0 43 00430	BRM	OBJECT	
10141	0 43 22557	BRM	F3S3	PERFORM TEST
10142	00001774	DATA	1774	
10143	0 20 31477	NBP	F3M41	
10144	0 43 00430	BRM	OBJECT	
10145	0 43 22557	BRM	F3S3	PERFORM TEST
10146	00003777	DATA	3777	
10147	0 20 31526	NBP	F3M46	
10150	0 43 00430	BRM	OBJECT	
10151	0 43 22557	BRM	F3S3	PERFORM TEST
10152	00007777	DATA	7777	
10153	0 20 31526	NBP	F3M46	
10154	0 43 00430	BRM	OBJECT	
10155	0 43 22557	BRM	F3S3	PERFORM TEST
10156	00017777	DATA	17777	
10157	0 20 31531	NBP	F3M47	
10160	0 43 00430	BRM	OBJECT	
10161	0 43 22557	BRM	F3S3	PERFORM TEST
10162	00037777	DATA	37777	

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10163	0 20 31537	NBP	F3M48	
10164	0 43 00430	BRM	OBJECT	
10165	0 43 22557	BRM	F3S3	PERFORM TEST
10166	00035777	DATA	35777	
10167	0 20 31523	NBP	F3M45	
10170	0 43 00430	BRM	OBJECT	
10171	0 43 22557	BRM	F3S3	PERFORM TEST
10172	00033777	DATA	33777	
10173	0 20 31523	NBP	F3M45	
10174	0 43 00430	BRM	OBJECT	
10175	0 43 22557	BRM	F3S3	PERFORM TEST
10176	00027777	DATA	27777	
10177	0 20 31523	NBP	F3M45	
10200	0 43 00430	BRM	OBJECT	
10201	0 43 22557	BRM	F3S3	PERFORM TEST
10202	00036777	DATA	36077	
10203	0 20 31547	NBP	F3M49	
10204	0 43 00430	BRM	OBJECT	
10205	0 43 22557	BRM	F3S3	PERFORM TEST
10206	00037703	DATA	37703	
10207	0 20 31477	NBP	F3M41	
10210	0 43 00430	BRM	OBJECT	
10211	0 43 22557	BRM	F3S3	PERFORM TEST
10212	00037774	DATA	37774	
10213	0 20 31477	NBP	F3M41	
10214	0 43 00430	BRM	OBJECT	
10215	0 43 22557	BRM	F3S3	PERFORM TEST
10216	00077777	DATA	77777	
10217	0 20 31552	NBP	F3M50	

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10220	0 43 00430	BRM	OBJECT	
10221	0 43 22557	BRM	F3S3	PERFORM TEST
10222	00177777	DATA	177777	
10223	0 20 31552	NBP	F3M50	
* .				
10224	0 43 00430	BRM	OBJECT	
10225	0 43 22557	BRM	F3S3	PERFORM TEST
10226	00377777	DATA	377777	
10227	0 20 31555	NBP	F3M51	
* .				
TEST INCREMENTING OF ADDRESS REGISTER				
* .				
10230	0 43 00430	BRM	OBJECT	
10231	0 76 33550	LDA	#0	POTWORD
10232	0 43 23042	BRM	DISCCK	USE THIS DISC
10233	0 01 10273	BRU	F3E60	NO
10234	0 76 33566	LDA	#777777	POTWORD
10235	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
10236	0 01 10273	BRU	F3E60	
10237	0 43 23006	BRM	CPST1	POT TO CHANNEL
10240	04074000	DATA	40484*STADDR	
10241	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
10242	0 01 10273	BRU	F3E60	
10243	0 40 12000	SKS	12000	CHANNEL ZERO WORD COUNT TEST
10244	0 01 10246	BRU	++2	WORD COUNT NOT ZERO
10245	0 01 10257	BRU	F3L44	
10246	0 02 12000	EBM	12000	ALERT TO PIN CHANNEL ADDRESS
10247	0 33 23330	PIN	TEMP	PIN CHANNEL ADDRESS
10250	0 76 23330	LDA	TEMP	
10251	0 54 33577	SUB	#STADDR	A * WORD COUNT
10252	0 75 33606	LDB	#101	
10253	0 71 33577	LDX	#STADDR	
10254	0 43 00460	BRM	ERRR9	
10255	2 20 30400	NBP	F3M20,2	
10256	0 01 10273	BRU	F3E60	

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10257	0 02 10026	EBM	10026	ALERT DISC FILE
10260	0 33 23330	PIN	TEMP	PIN CONTROLLER ADDRESS
10261	0 76 23330	LDA	TEMP	
10262	0 72 33551	SKA	#*1	ADDRESS CORRECT
10263	0 01 10265	BRU	++2	NO
10264	0 01 10273	BRU	F3E60	
10265	0 75 33550	LDB	#0	
10266	0 71 33566	LDX	#777777	
10267	0 43 00454	BRM	REPRT	
10270	2 20 31360	NBP	F3M32,2	
10271	0 43 00460	BRM	ERRR9	
10272	0 20 31561	NBP	F3M52	
10273	0 43 00434	F3E60 BRM	END	
* .				
VERIFY ADDRESS REGISTER NOT INCREMENTED IF CHANNEL DISCONNECTED				
* .				
10274	0 43 00430	BRM	OBJECT	
10275	0 76 33550	LDA	#0	POTWORD
10276	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
10277	0 01 10312	BRU	F3E61	
10300	0 43 23006	BRM	CPST1	POT TO CHANNEL
10301	04034000	DATA	4B6*STADDR	
10302	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
10303	0 01 10312	BRU	F3E61	
10304	0 02 10026	EBM	10026	ALERT DISC FILE
10305	0 33 23330	PIN	TEMP	PIN CONTROLLER ADDRESS
10306	0 76 23330	LDA	TEMP	
10307	0 72 33551	SKA	#*1	DID ADDRESS INCREMENT
10310	0 43 00460	BRM	ERRR9	YES = ERROR
10311	0 20 31564	NBP	F3M53	
10312	0 43 00434	F3E61 BRM	END	
* .				
TEST ABILITY TO READ CHAIN MODE				
* .				
10313	0 43 00430	BRM	OBJECT	
10314	0 76 33550	LDA	#0	POTWORD

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10315	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
10316	0 01 10361	BRU	F3E64	
10317	0 43 23006	BRM	CP0T1	P0T TO CHANNEL
10320	10034000	DATA	1B7*STADDR	
10321	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
10322	0 01 10361	BRU	F3E64	
10323	0 43 23073	BRM	CHECK	CHECK FOR CHANNEL READY
10324	0 01 10361	BRU	F3E64	
10325	0 43 23173	BRM	P0T0UT	P0T TO DISC
10326	0 01 10361	BRU	F3E64	
10327	0 43 23033	BRM	CP0T4	P0T TO CHANNEL
10330	10034000	DATA	1B7*STADDR	
10331	0 76 33604	LDA	*STADDR+64D	COMPARE ADDRESS
10332	0 75 33551	LDB	**1	
10333	0 02 12000	EBM	12000	ALERT TO PIN CHANNEL ADDRESS
10334	0 33 23330	PIN	TEMP	PIN CHANNEL ADDRESS
10335	0 70 23330	SKM	TEMP	D0 ADDRESSES COMPARE
10336	0 01 10333	BRU	F3L54	NO
10337	0 77 36706	EAX	*570D	WAIT 1 MILLISEC
10340	0 41 10340	BRX	*	
10341	0 40 10026	SKS	10026	DISC FILE READY TEST
10342	0 01 10353	BRU	F3L56	NOT READY = 0K
10343	0 40 10026	SKS	10026	TRACK VERIFIED TEST
10344	0 01 10350	BRU	F3L55	IN STATE 0
10345	0 43 00460	BRM	ERR0R	IN STATE 1
10346	0 20 32032	N0P	F3M61	
10347	0 01 10361	BRU	F3E64	
10350	0 43 00460	BRM	ERR0R	
10351	0 20 32054	N0P	F3M62	
10352	0 01 10361	BRU	F3E64	
10353	0 02 12000	EBM	12000	ALERT TO PIN CHANNEL ADDRESS
10354	0 33 23330	PIN	TEMP	
10355	0 70 23330	SKM	TEMP	IS CHANNEL ADD REG COUNTING AGAIN
10356	0 01 10361	BRU	F3E64	YES
10357	0 43 00460	BRM	ERR0R	
10360	0 20 32112	N0P	F3M63	

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10361	0 43 00434	F3E64 BRM	END	
		*		
		*	TEST 2IGAA	
		*		
10362	0 43 00430	BRM	0BJECT	
10363	0 76 33550	LDA	*0	P0T*0RD
10364	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
10365	0 01 10411	BRU	F3E65	
10366	0 43 23006	BRM	CP0T1	P0T TO CHANNEL
10367	04034000	DATA	4B6*STADDR	
10370	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
10371	0 01 10411	BRU	F3E65	
10372	0 43 23073	BRM	CHECK	CHECK FOR CHANNEL READY
10373	0 01 10411	BRU	F3E65	
10374	0 43 23173	BRM	P0T0UT	P0T TO DISC
10375	0 01 10411	BRU	F3E65	
10376	0 43 23033	BRM	CP0T4	P0T TO CHANNEL
10377	04034000	DATA	4B6*STADDR	
10400	0 40 12000	SKS	12000	CHANNEL ZERO WORD COUNT TEST
10401	0 01 10400	BRU	**1	WAIT FOR ZERO WORD COUNT
10402	0 77 36706	EAX	*570D	
10403	0 41 10403	BRX	*	WAIT 1 MILLISEC
10404	0 40 10026	SKS	10026	DISC FILE READY TEST
10405	0 01 10407	BRU	**2	CONTROLLER NOT READY
10406	0 01 10411	BRU	F3E65	
10407	0 43 00460	BRM	ERR0R	
10410	0 20 32154	N0P	F3M64	
10411	0 43 00434	F3E65 BRM	END	
		*		
		*	TEST 2IGAA	
		*		
10412	0 43 00430	BRM	0BJECT	
10413	0 76 33550	LDA	*0	P0T*0RD
10414	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
10415	0 01 10444	BRU	F3E66	
10416	0 43 23006	BRM	CP0T1	P0T TO CHANNEL

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```
10417 10034000 DATA 1B7*STADDR
10420 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
10421 0 20 10444 NOP F3E66
10422 0 43 23173 BRM PBTOUT POT TO DISC
10423 0 01 10444 BRU F3E66
10424 0 43 23073 BRM CHECK CHECK FOR CHANNEL READY
10425 0 01 10444 BRU F3E66
10426 0 43 23033 BRM CPBT4 POT TO CHANNEL
10427 10034000 DATA 1B7*STADDR
10430 0 76 33604 LDA #64D4STADDR COMPARE ADDRESS
10431 0 75 33551 LDB #*1 MASK
10432 0 02 12000 EQM 12000 ALERT TO PIN CHANNEL ADDRESS
10433 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
10434 0 70 23330 SKM TEMP DO ADDRESSES COMPARE
10435 0 01 10432 BRU F3L57 NO
10436 0 77 36706 EAX #570D WAIT 1 MILLISEC
10437 0 41 10437 BRX *
10440 0 40 10026 SKS 10026 DISC FILE READY TEST
10441 0 01 10444 BRU F3E66 CONTROLLER NOT READY = 0K
10442 0 43 00460 BRM ERRBR
10443 0 20 32163 NOP F3*65
10444 0 43 00434 BRM F3E66 END
```

F3E66

TEST ABILITY TO WRITE/READ IN CHAIN MODE

```
10445 0 43 00430 BRM OBJECT
10446 0 76 33550 LDA #0 PASSWORD
10447 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
10450 0 01 10474 BRU F3E67
10451 0 43 23024 BRM CPBT3 POT TO CHANNEL
10452 04034000 DATA 4B64STADDR
10453 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
10454 0 01 10474 BRU F3E67
10455 0 43 23173 BRM PBTOUT POT TO DISC
10456 0 01 10474 BRU F3E67
10457 0 43 23073 BRM CHECK CHECK FOR CHANNEL READY
```

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```
10460 0 01 10474 BRU F3E67
10461 0 43 23033 BRM CPBT4 POT TO CHANNEL
10462 10034000 DATA 1B7*STADDR
10463 0 76 33604 LDA #STADDR*64D COMPARE ADDRESS
10464 0 75 33551 LDB #*1 MASK
10465 0 02 12000 EQM 12000 ALERT TO PIN CHANNEL ADDRESS
10466 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
10467 0 70 23330 SKM TEMP DO ADDRESSES COMPARE
10470 0 01 10465 BRU F3L58 NO
10471 0 77 36706 EAX #570D WAIT 1 MILLISEC
10472 0 41 10472 BRX *
10473 0 40 10026 SKS 10026 DISC FILE READY TEST
10474 0 43 00460 BRM ERRBR SHOULD BE IN STATE 0
10475 0 20 32170 NOP F3*66
10476 0 43 00434 BRM F3E67 END
```

F3E67

TEST PACKET COUNTER

```
10477 0 43 00430 BRM OBJECT
10500 0 76 33550 LDA #0 PASSWORD
10501 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
10502 0 01 10545 BRU F3E83
10503 0 77 37700 EAX #64C SET UP OUTPUT BUFFER
10504 0 76 33551 LDA #*1
10505 2 35 34100 STA STADDR*64D/2
10506 0 41 10505 BRX #*1
10507 0 43 23006 BRM CPBT1 POT TO CHANNEL
10510 02034000 DATA 2B6*STADDR
10511 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
10512 0 01 10545 BRU F3E83
10513 0 43 23173 BRM PBTOUT POT TO DISC
10514 0 01 10545 BRU F3E83
10515 0 77 37700 EAX #64C CLEAR INPUT BUFFER
10516 0 76 33550 LDA #0
10517 2 35 34100 STA STADDR*64D/2
10520 0 41 10517 BRX #*1
```

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```
10521 0 43 23073 BRM CHECK CHECK FOR CHANNEL READY
10522 0 01 10545 BRU F3E83
10523 0 43 23015 BRM CPBT2 POT TO CHANNEL
10524 0 40 34000 DATA 4B6*STADDR
10525 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
10526 0 01 10545 BRU F3E83
10527 0 75 33551 LDB MASK
10530 0 76 34020 LDA STADDR+160 CHECK WORD 17
10531 0 70 33551 SKM *+1 IS DATA CORRECT
10532 0 01 10534 BRU *+2 NO
10533 0 01 10537 BRU F3L78
10534 0 43 00460 BRM ERROR
10535 0 20 32553 NOP F3M84
10536 0 01 10545 BRU F3E83
10537 0 02 12000 EBM 12000 ALERT TO PIN CHANNEL ADDRESS
10540 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
10541 0 76 33407 LDA *STADDR+320 COMPARE ADDRESS
10542 0 70 23330 SKM TEMP CONTROLLER DISCONNECT AFTER TWO PACKETS
10543 0 43 00460 BRM ERROR NO
10544 0 20 32560 NOP F3M85
10545 0 43 00434 F3E83 BRM END
```

TEST TERMINATION OF STATE 5 TO STATE 4

```
10546 0 43 00430 BRM SUBJECT
10547 0 76 33403 LDA *177 PASSWORD
10550 0 43 22775 BRM SETUP4 SET UP SUBJECT TEST
10551 0 01 10422 BRU F3E68
10552 0 43 23006 BRM CPBT1 POT TO CHANNEL
10553 0 100 34000 DATA 1B7*STADDR
10554 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
10555 0 01 10622 BRU F3E68
10556 0 43 23073 BRM CHECK CHECK FOR CHANNEL READY
10557 0 01 10422 BRU F3E68
10560 0 43 23173 BRM POTOUT POT TO DISC
10561 0 01 10422 BRU F3F68
```

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```
10562 0 43 23033 BRM CPBT4 POT TO CHANNEL
10563 0 100 34000 DATA 1B7*STADDR
10564 0 76 33404 LDA *STADDR+640 COMPARE ADDRESS
10565 0 75 33551 LDB MASK
10566 0 02 12000 EBM 12000 ALERT TO PIN CHANNEL ADDRESS
10567 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
10570 0 70 23330 SKM TEMP DO ADDRESSES COMPARE
10571 0 01 10566 BRU F3L59 NO
10572 0 77 36706 EAX *5700 WAIT 1 MILLISEC
10573 0 41 10573 BRX *
10574 0 70 23330 SKM TEMP IS CONTROLLER STILL READING
10575 0 01 10577 BRU *+2 YES = ERROR
10576 0 01 10402 BRU F3L60
10577 0 43 00460 BRM ERROR
10600 0 20 32215 NOP F3M67
10601 0 01 10622 BRU F3E68
10602 0 40 10026 SKS 10026 DISC FILE READY TEST
10603 0 01 10607 BRU F3L61 CONTROLLER NOT READY = BK
10604 0 43 00460 BRM ERROR
10605 0 20 32225 NOP F3M68
10606 0 01 10422 BRU F3E68
10607 0 76 33550 F3L61 LDA *0 WAIT 140 MILLISEC
10610 0 55 15465 ADD BIT23
10611 0 73 33610 SKG *160000
10612 0 01 10610 BRU *+2
10613 0 40 11026 SKS 11026 DISC FILE ERROR TEST
10614 0 01 10614 BRU *+2 CONTROLLER ERROR SET
10615 0 01 10621 BRU F3L62
10616 0 43 00460 BRM ERROR
10617 0 20 32244 NOP F3M69
10620 0 01 10622 BRU F3E68
10621 0 43 23143 F3L62 BRM WAIT WAIT FOR CONTROLLER TO FINISH
10622 0 43 00434 F3E68 BRM END
```

TEST 6YHTAC

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10623	0 43 00430	BRM	OBJECT	
10624	0 76 33550	LDA	#0	POTWORD
10625	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
10626	0 01 10667	BRU	F3E69	
10627	0 43 00440	BRM	RETURN	SET INTERRUPT LINKAGE
10630	0 20 23353	NOP	P12	
10631	0 76 33550	LDA	#0	CLEAR I2 FLAG
10632	0 35 15476	STA	I2FLAG	
10633	0 43 23006	BRM	CP0T1	POT TO CHANNEL
10634	0 10034000	DATA	1B7*STADDR	
10635	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
10636	0 01 10667	BRU	F3E69	
10637	0 43 23073	BRM	CHECK	CHECK FOR CHANNEL READY
10640	0 01 10667	BRU	F3E69	
10641	0 43 23173	BRM	POTOUT	POT TO DISC
10642	0 01 10667	BRU	F3E69	
10643	0 02 10000	EOM	10000	ALERT CHANNEL
10644	0 02 16000	EOM	16000	EXTENDED MODE EOM
10645	0 13 33611	POT	#1B7*STADDR	#C # 128
10646	0 02 02626	EOM	2626	READ DISC FILE - CHAIN
10647	0 02 20002	EIR		ENABLE INTERRUPTS
10650	0 76 33604	LDA	#STADDR+64D	COMPARE ADDRESS
10651	0 75 33551	LDB	#*1	MASK
10652	0 02 12000	EOM	12000	ALERT TO PIN CHANNEL ADDRESS
10653	0 33 23330	PIN	TEMP	PIN CHANNEL ADDRESS
10654	0 70 23330	SKM	TEMP	DO ADDRESSES COMPARE
10655	0 01 10652	BRU	F3L63	NO
10656	0 77 36706	EAX	+570D	WAIT 1 MILLISEC
10657	0 41 10457	BRX	*	
10660	0 02 20004	DIR		DISABLE INTERRUPTS
10661	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
10662	0 01 10667	BRU	F3E69	
10663	0 53 15476	SKM	I2FLAG	IAS I2 RECEIVED
10664	0 01 10666	BRU	**2	NO # 0K
10665	0 43 00460	BRM	ERRRR	
10666	0 20 32262	NBP	F3M70	

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10667	0 43 23255	F3E69 BRM	CLINT	CLEAR INTERRUPT
10670	0 43 00434	BRM	END	
		*		
		*	TEST ADDRESS INCREMENTING IN STATE 5	
		*		
10671	0 43 00430	BRM	OBJECT	
10672	0 76 33550	LDA	#0	POTWORD
10673	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
10674	0 01 10720	BRU	F3E70	
10675	0 43 23006	BRM	CP0T1	POT TO CHANNEL
10676	0 04074000	DATA	404B4*STADDR	
10677	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
10700	0 01 10720	BRU	F3E70	
10701	0 43 23073	BRM	CHECK	CHECK FOR CHANNEL READY
10702	0 01 10720	BRU	F3E70	
10703	0 43 23173	BRM	POTOUT	POT TO DISC
10704	0 01 10720	BRU	F3E70	
10705	0 43 23033	BRM	CP0T4	POT TO CHANNEL
10706	0 04074000	DATA	404B4*STADDR	
10707	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
10710	0 01 10720	BRU	F3E70	
10711	0 02 10026	EOM	10026	ALERT DISC FILE
10712	0 33 23330	PIN	TEMP	PIN CONTROLLER ADDRESS
10713	0 76 23330	LDA	TEMP	
10714	0 75 33551	LDB	#*1	MASK
10715	0 70 15465	SKM	BIT23	DID ADDRESS REGISTER INCREMENT
10716	0 43 00460	BRM	ERRRR	NO
10717	0 20 32262	NBP	F3M71	
10720	0 43 00434	F3E70 BRM	END	
		*		
		*	TEST 6CKRA0 (STATE 5)	
		*		
10721	0 43 00430	BRM	OBJECT	
10722	0 76 33550	LDA	#0	POTWORD
10723	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
10724	0 01 10747	BRU	F3E71	

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10725 0 43 23024 BRM CP0T3 P0T TO CHANNEL
10726 0 40 34000 DATA 4B6+STADDR
10727 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
10730 0 01 10747 BRU F3E71
10731 0 43 23173 BRM P0T5OUT P0T TO DISC
10732 0 01 10747 BRU F3E71
10733 0 43 23073 BRM CHECK CHECK FOR CHANNEL READY
10734 0 01 10747 BRU F3E71
10735 0 43 23033 BRM CP0T4 P0T TO CHANNEL
10736 0 40 34000 DATA 4B6+STADDR
10737 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
10740 0 01 10747 BRU F3E71
10741 0 02 10026 BRM 10026 ALERT DISC FILE
10742 0 35 23330 PIN TEMP PIN CONTROLLER ADDRESS
10743 0 76 23330 LDA TEMP
10744 0 72 33551 SKA **1 DID ADDRESS REGISTER INCREMENT
10745 0 43 00460 BRM ERR0R YES
10746 0 20 32267 NBP F3M71
10747 0 43 00434 BRM END

*
* TEST READ PARITY GENERATION
*
10750 0 43 00430 BRM 0BJECT P0TWORD
10751 0 76 33550 LDA #0 P0TWORD
10752 0 43 22775 BRM SETUP4 SET UP 0BJECT TEST
10753 0 01 11021 BRU F3F72 ABORT
10754 0 76 33551 LDA **1 DATA WORD
10755 0 35 34000 STA STADDR
10756 0 43 23006 BRM CP0T1 P0T TO CHANNEL
10757 0 40 34000 DATA 4B4+STADDR
10760 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
10761 0 01 11021 BRU F3E72
10762 0 76 33550 LDA #0 CLEAR INPUT BUFFER CELL
10763 0 35 34000 STA STADDR
10764 0 43 23173 BRM P0T5OUT P0T TO DISC
10765 0 01 11021 BRU F3E72

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10766 0 43 23073 BRM CHECK CHECK FOR CHANNEL READY
10767 0 01 11021 BRU F3E72
10770 0 43 23015 BRM CP0T2 P0T TO CHANNEL
10771 0 40 34000 DATA 4B4+STADDR
10772 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
10773 0 01 11021 BRU F3F72
10774 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
10775 0 01 10777 BRU **2 WORD COUNT NOT ZERO
10776 0 01 11005 BRU F3L64
10777 0 76 33550 LDA #0
11000 0 75 15465 LDB BIT23
11001 0 71 33577 LDX #STADDR
11002 0 43 00460 BRM ERR0R
11003 0 20 30600 NBP F3M20+2
11004 0 01 11021 BRU F3E72
11005 0 76 34000 F3L64 LDA STADDR CHECK INPUT WORD
11006 0 75 33551 LDB **1 MASK
11007 0 70 33551 SKM **1 DATA CORRECT
11010 0 01 11012 BRU **2 NO
11011 0 01 11016 BRU F3L65
11012 0 71 33577 LDX #STADDR
11013 0 43 00460 BRM ERR0R
11014 0 20 31133 NBP F3M26+2
11015 0 01 11021 BRU F3E72
11016 0 40 11000 SKS 11000 CHANNEL ERROR TEST
11017 0 43 00460 BRM ERR0R CHANNEL ERROR SET
11020 0 20 32274 NBP F3M72
11021 0 43 00434 F3L72 BRM END

*
* TEST READ PARITY GENERATION
*
11022 0 43 00430 BRM 0BJECT
11023 0 76 33550 LDA #0 P0TWORD
11024 0 43 22775 BRM SETUP4 SET UP 0BJECT TEST
11025 0 01 11073 BRU F3E73 ABORT
11026 0 76 33550 LDA #0 DATA WORD

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DISC#	TAP#	LOC	OP	DATA	OP	DATA	DESC
						PAGE 121	
11027	0	35	34000	STA	STADDR		
11030	0	43	23004	BRM	CP0T1		POT TO CHANNEL
11031	0	00074000		DATA	4B44STADDR		
11032	0	43	23143	BRM	WAIT		WAIT FOR CONTROLLER READY
11033	0	01	11073	BRU	F3E73		
11034	0	76	33551	LDA	#=1		ALTER INPUT LOCATION
11035	0	35	34000	STA	STADDR		
11036	0	43	23173	BRM	P0T9UT		POT TO DISC
11037	0	01	11073	BRU	F3E73		
11040	0	43	23073	BRM	CHECK		CHECK FOR CHANNEL READY
11041	0	01	11073	BRU	F3E73		
11042	0	43	23015	BRM	CP0T2		POT TO CHANNEL
11043	0	00074000		DATA	4B44STADDR		
11044	0	43	23143	BRM	WAIT		WAIT FOR CONTROLLER READY
11045	0	01	11073	BRU	F3E73		
11046	0	40	12000	SKS	12000		CHANNEL ZERO WORD COUNT TEST
11047	0	01	11051	BRU	**2		WORD COUNT NOT ZERO
11050	0	01	11057	BRU	F3L66		
11051	0	76	33550	LDA	#0		
11052	0	75	15465	LDB	BIT23		
11053	0	71	33577	LDX	#STADDR		
11054	0	43	00460	BRM	ERR9R		
11055	2	20	30400	NBP	F3M20,2		
11056	0	01	11073	BRU	F3E73		
11057	0	76	34000	LDA	STADDR		CHECK INPUT WORD
11060	0	72	33551	SKA	#=1		DATA CORRECT
11061	0	01	11063	BRU	**2		NO
11062	0	01	11070	BRU	F3L67		
11063	0	75	33550	LDB	#0		
11064	0	71	33577	LDX	#STADDR		
11065	0	43	00460	BRM	ERR9R		
11066	2	20	31133	NBP	F3M26,2		
11067	0	01	11073	BRU	F3E73		
11070	0	40	11000	SKS	11000		CHANNEL ERROR TEST
11071	0	43	00460	BRM	ERR9R		CHANNEL ERROR SET
11072	0	20	32124	NBP	F3M73		

DISC#	TAP#	LOC	OP	DATA	OP	DATA	DESC
						PAGE 122	
11073	0	43	00434	F3E73	BRM	END	
				*			TEST PARITY GENERATION CIRCUIT
				*			
11074	0	43	00430	BRM	0BJECT		
11075	0	76	33550	LDA	#0		P0TWORD
11076	0	43	22775	BRM	SETUP4		SET UP OBJECT TEST
11077	0	01	11146	BRU	F3E74		AB0RT
11100	0	76	33612	LDA	#25522552		DATA WORD
11101	0	35	34000	STA	STADDR		
11102	0	43	23006	BRM	CP0T1		POT TO CHANNEL
11103	0	00074000		DATA	4B44STADDR		
11104	0	43	23143	BRM	WAIT		WAIT FOR CONTROLLER READY
11105	0	01	11146	BRU	F3E74		
11106	0	76	33550	LDA	#0		CLEAR INPUT LOCATION
11107	0	35	34000	STA	STADDR		
11110	0	43	23173	BRM	P0T9UT		POT TO DISC
11111	0	01	11146	BRU	F3E74		
11112	0	43	23073	BRM	CHECK		CHECK FOR CHANNEL READY
11113	0	01	11146	BRU	F3E74		
11114	0	43	23015	BRM	CP0T2		POT TO CHANNEL
11115	0	00074000		DATA	4B44STADDR		
11116	0	43	23143	BRM	WAIT		WAIT FOR CONTROLLER READY
11117	0	01	11146	BRU	F3E74		
11120	0	40	12000	SKS	12000		CHANNEL ZERO WORD COUNT TEST
11121	0	01	11123	BRU	**2		WORD COUNT NOT ZERO
11122	0	01	11131	BRU	F3L68		
11123	0	76	33550	LDA	#0		
11124	0	75	15465	LDB	BIT23		
11125	0	71	33577	LDX	#STADDR		
11126	0	43	00460	BRM	ERR9R		
11127	2	20	30400	NBP	F3M20,2		
11130	0	01	11146	BRU	F3E74		
11131	0	76	34000	LDA	STADDR		CHECK INPUT WORD
11132	0	75	33551	LDB	#=1		MASK
11133	0	70	33612	SKM	#25522552		IS THE DATA CORRECT

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11134 0 01 11136 BRU **2 NO
11135 0 01 11143 BRU F3L69
11136 0 75 33412 LDB #25522552
11137 0 71 33577 LDX #STADDR
11140 0 43 00460 BRM ERRORR
11141 2 20 31133 NBP F3M26,2
11142 0 01 11146 BRU F3E74
11143 0 40 11000 SKS 11000 CHANNEL ERROR TEST
11144 0 43 00460 BRM ERRORR CHANNEL ERROR SET
11145 0 20 32146 NBP F3M74
11146 0 43 00434 F3E74 BRM END

```

*
* VERIFY ZEROS WRITTEN AFTER CHANNEL DISCONNECTS
*

```

11147 0 43 00430 BRM OBJECT
11150 0 76 33450 LDA #0 PBTWORD
11151 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
11152 0 01 11253 BRU F3E75
11153 0 76 33551 LDA #*1 DATA WORDS
11154 0 77 37700 EAX #64D
11155 2 35 34100 STA STADDR+64D,2
11156 0 41 11155 BRX **1
11157 0 43 23106 BRM CPBT1 PBT TO CHANNEL
11160 0 43 00034000 DATA 4B6*STADDR
11161 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
11162 0 01 11253 BRU F3E75
11163 0 76 33550 LDA #0 CLEAR FIRST WORD
11164 0 35 34100 STA STADDR
11165 0 43 23173 BRM PBTOUT PBT TO DISC
11166 0 01 11253 BRJ F3E75
11167 0 43 23173 BRM CHECK CHECK FOR CHANNEL READY
11170 0 01 11253 BRU F3E75
11171 0 43 23106 BRM CPBT1 PBT TO CHANNEL
11172 0 00074000 DATA 4B4*STADDR
11173 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
11174 0 01 11253 BRU F3E75

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DISCW TAP=3.0 PAGE 124
11175 0 76 33551 LDA #*1
11176 0 35 34100 STA STADDR
11177 0 43 23173 BRM PBTOUT PBT TO DISC
11200 0 01 11253 BRJ F3E75
11201 0 43 23173 BRM CHECK CHECK FOR CHANNEL READY
11202 0 01 11253 BRU F3E75
11203 0 43 23115 BRM CPBT2 PBT TO CHANNEL
11204 0 43 01034000 DATA 1B6*STADDR
11205 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
11206 0 01 11253 BRU F3E75
11207 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
11210 0 01 11212 BRU **2 WORD COUNT NOT ZERO
11211 0 01 11223 BRU F3L70
11212 0 02 12000 EQM 12000 ALERT TO PIN CHANNEL ADDRESS
11213 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS REGISTER
11214 0 76 23330 LDA TEMP
11215 0 54 33577 SUB #STADDR A = WORD COUNT
11216 0 75 15461 LDB BIT19
11217 0 71 33577 LDX #STADDR
11220 0 43 00460 BRM ERRORR
11221 2 20 30400 NBP F3M20,2
11222 0 01 11253 BRU F3E75
11223 0 76 33450 F3L70 LDA #0 CHECK DATA
11224 0 35 23330 STA TEMP
11225 0 77 37700 EAX #64D
11226 0 55 15465 F3L71 ADD BIT23 INCREMENT COUNT
11227 0 46 00014 XAB
11230 2 76 34100 LDA STADDR+64D,2
11231 0 72 33551 SKA #*1 IS DATA CORRECT
11232 0 43 11242 BRM F3L72 NO
11233 0 46 00014 XAB
11234 0 41 11226 BRX F3L71 LOOP
11235 0 53 23330 SKN TEMP HAS AN ERROR OCCURED
11236 0 01 11253 BRU F3E75 NO
11237 0 43 00460 BRM ERRORR
11240 0 20 32125 NBP F3M77

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DISCW TAP=3.0 PAGE 125
11241 0 01 11253 BRU F3E75
11242 0 00 00000 F3L72 PZE 0
11243 0 53 23330 SKV TEMP FIRST ERROR
11244 0 43 00454 BRM REPART YES * OUTPUT HEADING
11245 0 20 32966 NBP F3M75
11246 0 43 00454 BRM REPART OUTPUT DATA
11247 2 20 32424 NBP F3M76,2
11250 0 76 33551 LDA **1
11251 0 35 23330 STA TEMP
11252 0 51 11247 BRM F3L72
11253 0 43 00434 F3E75 BRM END
*
* TEST 3Z6FA
*
11254 0 43 00430 BRM OBJECT
11255 0 76 33550 LDA #0 P0TWORD
11256 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
11257 0 01 11302 BRU F3E76
11260 0 43 23006 BRM CP0T1 P0T TO CHANNEL
11261 0 10034000 DATA 1B7*STADDR
11262 0 76 33413 LDA *STADDR+3 COMPARE ADDRESS
11263 0 75 33551 LDB **1 MASK
11264 0 02 12000 E0M 12000 ALERT TO PIN CHANNEL ADDRESS
11265 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
11266 0 70 23330 SKM TEMP DO ADDRESSES COMPARE
11267 0 01 11264 BRU F3L73 NO * LOOP
11270 0 02 10226 E0M 10226 CLEAR FILE
11271 0 40 10226 SKS 10026 DISC FILE READY TEST
11272 0 01 11707 BRU F3L74 NOT IN STATE 0
11273 0 40 12026 SKS 12026 TRACK VERIFIED TEST
11274 0 01 11302 BRU F3E76 IN STATE 0
11275 0 43 00460 BRM ERROR IN STATE 1
11276 0 20 32802 NBP F3M79
11277 0 01 11302 BRU F3E76
11300 0 43 00460 F3L74 BRM ERROR
11301 0 20 32446 NBP F3M78

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DISCW TAP=3.0 PAGE 126
11302 0 02 00000 E0M 0 DISCONNECT CHANNEL
11303 0 43 00434 BRM END
*
* TEST 2CLMA
*
11304 0 43 00430 BRM OBJECT
11305 0 76 33550 LDA #0 P0TWORD
11306 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
11307 0 01 11325 BRU F3E77
11310 0 43 23006 BRM CP0T1 P0T TO CHANNEL
11311 0 10034000 DATA 1B7*STADDR
11312 0 76 33413 LDA *STADDR+3 COMPARE ADDRESS
11313 0 75 33551 LDB **1 MASK
11314 0 02 12000 E0M 12000 ALERT TO PIN CHANNEL ADDRESS
11315 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
11316 0 70 23330 SKM TEMP DATA BEING TRANSMITTED YET
11317 0 01 11314 BRU F3L75 NO * LOOP
11320 0 02 10227 E0M 10227 ILLEGAL E0M
11321 0 40 10226 SKS 10026 DISC FILE READY TEST
11322 0 01 11324 BRU **2 NOT READY * 0K
11323 0 43 00460 BRM ERROR
11324 0 20 32514 NBP F3M80
11325 0 02 00000 E0M 0 DISCONNECT CHANNEL
11326 0 43 00434 BRM END
*
* TEST 2CLMA
*
11327 0 43 00430 BRM OBJECT
11330 0 76 33550 LDA #0 P0TWORD
11331 0 43 22775 BRM SETUP4 SET UP OBJECT TEST
11332 0 01 11350 BRU F3E78
11333 0 43 23006 BRM CP0T1 P0T TO CHANNEL
11334 0 10034000 DATA 1B7*STADDR
11335 0 76 33413 LDA *STADDR+3 COMPARE ADDRESS
11336 0 75 33551 LDB **1 MASK
11337 0 02 12000 E0M 12000 ALERT TO PIN CHANNEL ADDRESS

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11340	0 33 23330	PIN	TEMP	PIN CHANNEL ADDRESS
11341	0 70 23330	SKM	TEMP	DATA BEING TRANSMITTED YET
11342	0 01 11337	BRU	F3L76	NO
11343	0 02 30226	EBM	30226	ILLEGAL EBM
11344	0 40 10026	SKS	10026	DISC FILE READY TEST
11345	0 01 11347	BRU	**2	CONTROLLER NOT READY - BK
11346	0 43 00460	BRM	ERR9R	
11347	0 20 32521	NBP	F3*81	
11350	0 02 00000	EBM	0	DISCONNECT CHANNEL
11351	0 43 00434	BRM	END	

TEST 2CLMA

11352	0 43 00430	BRM	OBJECT	
11353	0 76 33550	LDA	#0	POTWORD
11354	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
11355	0 01 11374	BRU	F3F79	
11356	0 43 23006	BRM	CP0T1	POT TO CHANNEL
11357	0 00 10034000	DATA	1B7*STADDR	
11360	0 76 33413	LDA	*STADDR+3	COMPARE ADDRESS
11361	0 75 33551	LDB	**1	MASK
11362	0 02 12000	EBM	12000	ALERT TO PIN CHANNEL ADDRESS
11363	0 33 23330	PIN	TEMP	PIN CHANNEL ADDRESS
11364	0 70 23330	SKM	TEMP	DATA BEING TRANSMITTED YET
11365	0 01 11362	BRU	F3L77	NO
11366	0 02 10026	EBM	10026	ALERT DISC FILE
11367	0 33 23330	PIN	TEMP	DUMMY * EBM SHOULD NOT INTERFERE
11370	0 40 10026	SKS	10026	DISC FILE READY TEST
11371	0 01 11373	BRU	**2	CONTROLLER NOT READY - BK
11372	0 43 00460	BRM	ERR9R	
11373	0 20 32514	NBP	F3*80	
11374	0 02 00000	EBM	0	DISCONNECT CHANNEL
11375	0 43 00434	BRM	END	

TEST 0XCPA

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11376	0 43 00430	BRM	OBJECT	
11377	0 76 33550	LDA	#0	POTWORD
11400	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
11401	0 01 11423	BRU	F3E81	
11402	0 43 23006	BRM	CP0T1	POT TO CHANNEL
11403	0 00 10034000	DATA	1B7*STADDR	
11404	0 02 32666	EBM	32666	SYSTEMS EBM * SHOULD HAVE NO EFFECT
11405	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
11406	0 01 11423	BRU	F3E81	
11407	0 43 23173	BRM	P0T0UT	POT TO DISC
11410	0 01 11423	BRU	F3E81	
11411	0 43 23173	BRM	CHECK	CHECK FOR CHANNEL READY
11412	0 01 11423	BRU	F3E81	
11413	0 43 23115	BRM	CP0T2	POT TO CHANNEL
11414	0 00 10034000	DATA	1B7*STADDR	
11415	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
11416	0 01 11423	BRU	F3E81	
11417	0 40 12000	SKS	12000	CHANNEL ZERO WORD COUNT TEST
11420	0 01 11422	BRU	**2	WORD COUNT NOT 0 - BK
11421	0 43 00460	BRM	ERR9R	
11422	0 20 32546	NBP	F3*83	
11423	0 02 00000	EBM	0	DISCONNECT CHANNEL
11424	0 43 00434	BRM	END	

TEST 0X02A

11425	0 43 00430	BRM	OBJECT	
11426	0 76 33550	LDA	#0	POTWORD
11427	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
11430	0 01 11451	BRU	F3E82	
11431	0 43 23024	BRM	CP0T3	POT TO CHANNEL
11432	0 00 10034000	DATA	1B7*STADDR	
11433	0 02 33666	EBM	33666	SYSTEMS EBM * SHOULD HAVE NO EFFECT
11434	0 43 23143	BRM	WAIT	WAIT FOR CONTROLLER READY
11435	0 01 11451	BRU	F3E82	
11436	0 43 23173	BRM	P0T0UT	POT TO DISC

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```
11437 0 01 11451 BRU F3E82
11440 0 43 23273 BRM CHECK CHECK FOR CHANNEL READY
11441 0 01 11451 BRU F3E82
11442 0 43 23233 BRM CPBT4 PBT TO CHANNEL
11443 0 1003*000 DATA 1B7*STADDR
11444 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
11445 0 01 11451 BRU F3E82
11446 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
11447 0 43 00460 BRM ERRORR WORD COUNT NOT ZERO
11450 0 20 32*33 NOP F3M82
11451 0 02 00000 EDM 0 DISCONNECT CHANNEL
11452 0 43 00434 BRM END
```

TEST 9YESA

```
11453 0 43 00430 BRM 9BJECT
11454 0 43 22434 BRM F3S4 GENERATE ERROR
11455 0 01 11462 BRU F3E85 ABRBT
11456 0 40 11000 SKS 11000 CHANNEL ERROR TEST
11457 0 01 11461 BRU **2 CHANNEL ERROR 6K
11460 0 43 00460 BRM ERRORR
11461 0 20 32*65 NOP F3M94
11462 0 43 00434 F3E85 BRM END
```

TEST 9YHSA

```
11463 0 43 00430 BRM 9BJECT
11464 0 43 22434 BRM F3S4 GENERATE ERROR
11465 0 01 11512 BRU F3E86 ABRBT
11466 0 02 10226 EDM 10226 CLEAR FILE
11467 0 02 00000 EDM 0 DISCONNECT CHANNEL
11470 0 76 33*50 LDA #0 CLEAR I2 FLAG
11471 0 35 15476 STA I2FLAG
11472 0 43 00440 BRM RETURN SET SPIT LINKAGE
11473 0 20 23153 NOP P12
11474 0 43 23173 BRM PBTOUT PBT TO DISC
```

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```
11475 0 01 11512 BRU F3E86
11476 0 02*10000 EDM* 10000 ALERT CHANNEL
11477 0 02 16000 EDM 16000 EXTENDED MODE EDM
11500 0 13 33611 PBT *1B7*STADDR
11501 0 02 02426 EDM 2626 READ DISC FILE * CHAIN
11502 0 43 23305 BRM *200 WAIT 200 MILLISEC
11503 0 02 20002 EIR ENABLE INTERRUPTS
11504 0 20 00000 NOP 0 DUMMY * INTERRUPT SHOULD BE PENDING
11505 0 20 00000 NOP 0
11506 0 02 20004 DIR DISABLE INTERRUPTS
11507 0 53 15476 SKN I2FLAG WAS I2 INTERRUPT RECEIVED
11510 0 43 00460 BRM ERRORR NO
11511 0 20 32*75 NOP F3M95
11512 0 43 00434 F3E86 BRM END
11513 0 43 00456 ENDF3 BRM FDBNE EXIT FUNCTION
```

```

*
* FUNCTION PARAMETER TABLES
*
11514 0 20 11522 FPT3 NOP FIM3 FUNCTION IDENTIFIER MESSAGE
11515 0 20 11541 NOP FAM3 FUNCTION ABSTRACT MESSAGE
11516 0 20 05476 NOP FVM1 FUNCTION VARIABLES MESSAGE
11517 0 01 05011 ONE FVT1 FUNCTION VARIABLES (NONE)
11520 0 00 11742 PZE FUNC4 POINTER TO NEXT FUNCTION
11521 04000000 DATA 4000000 FUNCTION IDENTIFIER BIT (BIT 3)
*
* FUNCTION MESSAGES
*
11522 52261200 FIM3 BCD ' F 03 = DISC FILE CONTROLLER DIAGNOSTIC WITH DATA TRANSFER!'
11523 03124012
11524 24316223
11525 12263143
11526 25122346
11527 45635146
11530 43432551
11531 12243121
11532 27454462
11533 63312312
11534 66316330
11535 12242163
11536 21126351
11537 21456226
11540 25513712
11541 52322431 FAM3 BCD ' DISC FILE CONTROLLER DIAGNOSTIC WITH DATA TRANSFER!'
11542 62231226
11543 31432512
11544 23464563
11545 51464343
11546 25511224
11547 31212745
11550 46626331
11551 23126431

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11552 63301224
11553 21632112
11554 63512145
11555 62262551
11556 52526330 BCD ' THIS FUNCTION TESTS THE 9164 DISC FILE CONTROLLER AS'
11557 31621226
11560 64482363
11561 31464512
11562 63256263
11563 62126330
11564 25121101
11565 06041224
11566 31622312
11567 26314325
11570 12234645
11571 63514643
11572 43255112
11573 21621212
11574 52446423 BCD ' MUCH AS POSSIBLE WITH DATA TRANSFER, THE FOLLOWING'
11575 30122162
11576 12474662
11577 62312243
11600 25126631
11601 63301224
11602 21632112
11603 63512145
11604 62262551
11605 33126330
11606 25122646
11607 43434666
11610 31482712
11611 52216262 BCD ' ASSUMPTIONS ARE MADE!'
11612 64444763
11613 31464562
11614 12215125
11615 12442124

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11616	25151212		
11617	52665131	BCD	' WRITE HEADER SWITCH IS OFF'
11620	63251230		
11621	25212425		
11622	51126266		
11623	31632330		
11624	12316212		
11625	46262412		
11626	52454412	BCD	' NO DISCS WRITE PROTECTED'
11627	24316223		
11630	62126651		
11631	31632512		
11632	47514663		
11633	25236325		
11634	24121212		
11635	52255151	BCD	' ERROR STOP SWITCH IS IN CONTINUE'
11636	46511262		
11637	63464712		
11640	62663163		
11641	23301231		
11642	62123145		
11643	12234445		
11644	63314564		
11645	25121212		
11646	52263143	BCD	' FILE IS ON LINE'
11647	25123162		
11650	12464412		
11651	43314525		
11652	52302521	BCD	' HEADERS ARE GOOD'
11653	24255162		
11654	12215125		
11655	12274646		
11656	24121212		
11657	52312612	BCD	' IF THE DISC IS SOFTWARE WRITE PROTECTED OR PREVIOUSLY'
11660	63302512		
11661	24316223		

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11662	12316212		
11663	62442663		
11664	66215125		
11665	12665131		
11666	63251247		
11667	51466325		
11670	23632524		
11671	12465112		
11672	47512565		
11673	31466462		
11674	43701212		
11675	62422570	BCD	' KEYED, THIS FUNCTION WILL BE SKIPPED. OBJECT TESTS USING'
11676	25247312		
11677	63303162		
11700	12266445		
11701	23633146		
11702	45126431		
11703	43431222		
11704	25126242		
11705	31474725		
11706	24331246		
11707	22412523		
11710	63126325		
11711	62636212		
11712	64623145		
11713	27121212		
11714	52243162	BCD	' DISCS WHICH ARE DELETED FROM THE UNIT VARIABLES D00T17'
11715	23621266		
11716	30312330		
11717	12215125		
11720	12242543		
11721	25216325		
11722	24122651		
11723	46441263		
11724	30251264		
11725	45316312		

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11770 0 01 12072 BRU F4E1
11771 0 43 23042 BRM DISCK USE THIS DISC
11772 0 01 11764 BRU F4L1 NO
11773 0 43 00430 BRM OBJECT
11774 0 43 23173 BRM PBTOUT PBT TO DISC
11775 0 01 12034 BRU F4L4 ERROR ABORT
11776 0 43 23073 F4L2 BRM CHECK CHECK FOR CHANNEL READY
11777 0 01 12034 BRU F4L4 ERROR ABORT
12000 0 76 23352 LDA PBTWRD
12001 0 71 33A14 LDX #2048D
12002 2 35 00000 STA STADDR+2048D,2 STORE DATA IN FIRST WORD
12003 0 02 10000 EOM 10000 ALERT CHANNEL
12004 0 02 14202 EOM 14202 EXTENDED MODE EOM
12005 0 13 33577 PBT #STADDR
12006 0 02 03666 EOM 3666 WRITE DISC FILE . SECTOR

```

```

*
*
* BUILD OUTPUT TABLE

```

```

12007 2 35 00000 F4L3 STA STADDR+2048D,2
12010 0 55 15465 ADD BIT23
12011 2 77 00077 EAX 77,2
12012 0 41 12007 BRX F4L3 LOOP
12013 0 43 23143 BRM WAIT WAIT FOR DISC TO FINISH
12014 0 01 12034 BRU F4L4 ERROR ABORT
12015 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
12016 0 01 12034 BRU F4L4 ERROR = COUNT NOT ZERO
12017 0 40 11000 SKS 11000 CHANNEL ERROR TEST
12020 0 01 12034 BRU F4L4 CHANNEL ERROR SET
12021 0 43 07434 BRM END
12022 0 76 23352 F4L5 LDA PBTWRD
12023 0 75 33A16 LDB #760000 MASK
12024 0 55 15460 ADD BIT18 INCREMENT PBTWRD
12025 0 70 23352 SKM PBTWRD NEW ADDRESS ON SAME DISC
12026 0 01 11764 BRU F4L1+2 NO
12027 0 35 23352 STA PBTWRD
12030 0 43 00430 BRM OBJECT

```

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12031 0 02 10026 EOM 10026 ALERT DISC FILE
12032 0 13 23352 PBT PBTWRD PBT TO DISC
12033 0 01 11776 BRU F4L2
*
*
* ERROR ROUTINE
12034 0 02 12000 EOM 12000 ALERT TO PIN CHANNEL ADDRESS
12035 0 33 23330 PIN TEMP COMPUTE WORD COUNT
12036 0 76 23330 LDA TEMP
12037 0 54 33577 SUB #STADDR
12040 0 35 15513 STA ERRBL
12041 0 76 15452 LDA BIT12 CORRECT WORD COUNT
12042 0 35 15514 STA ERRBL+1
12043 0 76 23352 LDA PBTWRD STARTING DISC ADDRESS
12044 0 35 15515 STA ERRBL+2
12045 0 02 10026 EOM 10026 ALERT DISC FILE
12046 0 33 15516 PIN ERRBL+3 PINNED DISC ADDRESS
12047 0 76 33550 LDA #0 CHANNEL ERROR FLAG
12050 0 40 11000 SKS 11000 CHANNEL ERROR TEST
12051 0 76 33551 LDA #1
12052 0 35 15517 STA ERRBL+4
12053 0 76 33550 LDA #0 CONTROLLER ERROR FLAG
12054 0 40 11026 SKS 11026 DISC FILE ERROR TEST
12055 0 76 33551 LDA #1
12056 0 35 15520 STA ERRBL+5
12057 0 76 23351 LDA TIMEOUT TIMEOUT ERROR FLAG
12060 0 35 15521 STA ERRBL+6
12061 0 02 10226 EOM 10226 CLEAR FILE
12062 0 02 00000 EOM 0 DISCONNECT CHANNEL
12063 0 43 00454 BRM REPORT REPORT ERROR
12064 4 20 32602 NOP F4M1,4 MESSAGE
12065 0 07 15513 SEVEN ERRBL DATA
12066 0 43 00460 BRM ERROR GO TO CONTROL
12067 0 20 32627 NOP F4M2
12070 0 43 00434 BRM END
12071 0 01 12022 BRU F4L5

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12072 0 43 00434 F4E1 BRM END
12073 0 01 12074 BRU F4E1
*
* ADDRESSING VERIFICATION
*
12074 0 76 33415 F4E1 LDA #20000 PRESET POT WORD
12075 0 35 23352 STA POTWRD
12076 0 76 23352 F4L6 LDA POTWRD INCREMENT DISC NUMBER
12077 0 55 15450 ADD BIT10
12100 0 73 33566 SKG #777777 FINISHED
12101 0 01 12103 BRU #+2 NO
12102 0 01 12207 BRU F4E2
12103 0 43 23042 BRM DISCCK USE THIS DISC
12104 0 01 12076 BRU F4L6 NO
12105 0 43 00430 BRM 0BJECT
12106 0 43 23173 BRM POTBUT POT TO DISC
12107 0 01 12151 BRU F4L10 ERROR ABORT
12110 0 43 23073 F4L7 BRM CHECK CHECK FOR CHANNEL READY
12111 0 01 12151 BRU F4L10 ERROR ABORT
12112 0 02 10000 EDM 10000 ALERT CHANNEL
12113 0 02 14002 EDM 14002 EXTENDED MODE EDM
12114 0 13 33577 POT #STADDR
12115 0 02 02426 EDM 2626 HEAD DISC FILE = CHAIN
12116 0 43 23143 BRM WAIT WAIT FOR CONTROLLER TO FINISH
12117 0 01 12151 BRU F4L10 ERROR ABORT
12120 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
12121 0 01 12151 BRU F4L10 WORD COUNT NOT ZERO
12122 0 40 11000 SKS 11000 CHANNEL ERROR TEST
12123 0 01 12151 BRU F4L10 CHANNEL ERROR SET
12124 0 76 33550 LDA #0
12125 0 35 12227 STA F4L11A
12126 0 76 23352 LDA POTWRD TEST FIRST WORD OF EACH SECTOR INPUT
12127 0 71 33414 LDX #2048D
12130 0 75 33551 LDB #1 MASK
12131 2 70 00000 F4L8 SKM STADDR+2048D/2 ADDRESS CORRECT
12132 0 43 12211 BRM F4L11 NO

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12133 0 55 15465 ADD BIT23
12134 2 77 00077 EAX 77/2
12135 0 41 12131 BRX F4L8 LOOP
12136 0 43 00434 BRM END
12137 0 76 23352 F4L9 LDA POTWRD
12140 0 75 33616 LDB #760000 MASK
12141 0 55 15460 ADD BIT18 INCREMENT TRACK PAIR
12142 0 70 23352 SKM POTWRD ADDRESS ON SAME DISC
12143 0 01 12100 BRU F4L6+2 NO
12144 0 35 23352 STA POTWRD
12145 0 43 00430 BRM 0BJECT
12146 0 02 10026 EDM 10026 ALERT DISC FILE
12147 0 13 23352 POT POT TO DISC
12150 0 01 12110 BRU F4L7
*
* ERROR ROUTINE
*
12151 0 02 12000 EDM 12000 ALERT TO PIN CHANNEL ADDRESS
12152 0 33 23330 PIN TEMP COMPUTE WORD COUNT
12153 0 76 23330 LDA TEMP
12154 0 54 33577 SUB #STADDR
12155 0 35 15513 STA ERRBL
12156 0 76 15452 LDA BIT12 CORRECT WORD COUNT
12157 0 35 15514 STA ERRBL+1
12160 0 76 23352 LDA POTWRD STARTING DISC ADDRESS
12161 0 35 15515 STA ERRBL+2
12162 0 02 10026 EDM 10026 ALERT DISC FILE
12163 0 33 15516 PIN ERRBL+3 PINNED DISC ADDRESS
12164 0 76 33550 LDA #0 CHANNEL ERROR FLAG
12165 0 40 11000 SKS 11000 CHANNEL ERROR TEST
12166 0 76 33551 LDA #1
12167 0 35 15517 STA ERRBL+4
12170 0 76 33550 LDA #0 CONTROLLER ERROR FLAG
12171 0 40 11026 SKS 11026 DISC FILE ERROR TEST
12172 0 76 33551 LDA #1
12173 0 35 15520 STA ERRBL+5

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12174 0 76 23351 LDA TIMEOUT TIMEOUT ERROR FLAG
12175 0 35 15521 STA ERR7BL*6
12176 0 02 10226 EDM 10226 CLEAR FILE
12177 0 02 00000 EDM 0 DISCONNECT CHANNEL
12200 0 43 00454 BRM REPORT REPORT ERROR
12201 4 20 32630 NOP F4M3,4 MESSAGE
12202 0 07 15513 SEVEN ERR7BL DATA
12203 0 43 00460 BRM ERR7BL GO TO CONTROL
12204 0 20 32627 NOP F4M2
12205 0 43 00434 BRM END
12206 0 01 12137 BRU F4L9
12207 0 43 00434 BRM END
12210 0 43 00456 F4E2 BRM FDBNE EXIT FUNCTION
      *
      * DATA ERROR SUBROUTINE
      *
12211 0 00 00000 F4L11 PZE 0
12212 0 35 15513 STA ERR7BL CORRECT ADDRESS
12213 2 76 00000 LDA STADDR+2048D/2
12214 0 35 15514 STA ERR7BL+1 INCORRECT ADDRESS
12215 0 53 12227 SKN F4L11A PRINT HEADING
12216 0 43 00454 BRM REPORT YES
12217 0 20 32660 NOP F4M4
12220 0 43 00454 BRM REPORT OUTPUT DATA
12221 4 20 32627 NOP F4M2,4 CARRIAGE RETURN
12222 0 02 15513 TWO ERR7BL DATA
12223 0 76 33551 LDA ==1
12224 0 35 12227 STA F4L11A
12225 0 76 15513 LDA ERR7BL RESTORE A
12226 0 51 12211 BRR F4L11
12227 0 00 00000 F4L11A PZE 0 PRINT HEADING FLAG

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      *
      * FUNCTION PARAMETER TABLES
      *
12230 0 20 12236 F4T4 NOP F1M4 FUNCTION IDENTIFIER MESSAGE
12231 0 20 12251 NOP F4M4 FUNCTION ABSTRACT MESSAGE
12232 0 20 05476 NOP F4M1 FUNCTION VARIABLES MESSAGE
12233 0 01 05011 ONE FVT1 FUNCTION VARIABLES (NONE)
12234 0 00 12445 PZE FUNCS POINTER TO NEXT FUNCTION
12235 02000000 DATA 2000000 FUNCTION IDENTIFIER BIT (BIT 4)
      *
      * FUNCTION MESSAGES
      *
12236 52261200 F1M4 BCD 1 F 04 = HEADER AND ADDRESSING VERIFICATION!
12237 04124012
12240 30252124
12241 25511221
12242 45241221
12243 24245125
12244 62623145
12245 27126425
12246 51312631
12247 23216331
12250 46453712
12251 52323025 F4M4 BCD 1 HEADER AND ADDRESSING VERIFICATION!
12252 21242451
12253 12214424
12254 12212424
12255 51256262
12256 31452712
12257 65255131
12260 26312721
12261 63314645
12262 52526330 BCD 1 THIS FUNCTION VERIFIES HEADERS AND ADDRESSING BY!
12263 31621226
12264 64452363
12265 31464512

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12266 65255131
12267 26312542
12270 12302521
12271 24255162
12272 12214424
12273 12212424
12274 51256262
12275 31452712
12276 22701212
12277 52665131
12300 63314527
12301 12633025
12302 12622523
12303 63465112
12304 21242451
12305 25626212
12306 31451263
12307 30251226
12310 31516263
12311 12664651
12312 24124626
12313 12252123
12314 30121212
12315 52622523
12316 63465112
12317 46451263
12320 30251224
12321 31422333
12322 12663025
12323 45126330
12324 25122545
12325 63315125
12326 12243162
12327 23123021
12330 62122225
12331 25451263

BCD ' WRITING THE SECTOR ADDRESS IN THE FIRST WORD OF EACH'

BCD ' SECTOR ON THE DISC. WHEN THE ENTIRE DISC HAS BEEN TAGGED'

DISCW TAP=3.0

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12332 21272725
12333 24121212
12334 52633025
12335 12254463
12336 31512512
12337 24316223
12340 12316212
12341 63302545
12342 12512521
12343 24122145
12344 24126330
12345 25122631
12346 51626312
12347 66465124
12350 12314412
12351 25212330
12352 52622523
12353 63465112
12354 31621223
12355 30252742
12356 25241226
12357 46511263
12360 30251223
12361 46515125
12362 23631221
12363 24245125
12364 62623312
12365 24316223
12366 62126630
12367 31233012
12370 52302165
12371 25122225
12372 25451224
12373 25432563
12374 25241226
12375 51464412

BCD ' THE ENTIRE DISC IS THEN READ AND THE FIRST WORD IN EACH'

BCD ' SECTOR IS CHECKED FOR THE CORRECT ADDRESS. DISCS WHICH'

BCD ' HAVE BEEN DELETED FROM THE UNIT VARIABLES D0017 AND'

DISC# TAP=3.0

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12376 63302512
12377 64453169
12400 12452151
12401 31212249
12402 25621224
12403 00006301
12404 07122145
12405 24121212
12406 52240200
12407 63030712
12410 66314343
12411 12454663
12412 12222512
12413 24513165
12414 25453312
12415 31261263
12416 30251224
12417 31622312
12420 31621262
12421 46266366
12422 21512512
12423 52665131
12424 63251247
12425 51466325
12426 23632524
12427 12465112
12430 47512565
12431 31466462
12432 43701242
12433 25702524
12434 73126330
12435 31621226
12436 64452363
12437 31464512
12440 52663143
12441 43122225

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

BCD ' WRITE PROTECTED OR PREVIOUSLY KEYED, THIS FUNCTION'

BCD ' WILL BE SKIPPED.'

DISC# TAP=3.0

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12442 12624231
12443 47472524
12444 33371212

DISC# TAP=3.0 PAGE 149

12537	0 20 33433	NOP	F5M27
12540	0 20 33036	NOP	F5M28
12541	0 20 33441	NOP	F5M29
12542	0 43 00430	BRM	OBJECT
12543	0 43 22700	BRM	F5S1
12544	0 0061400	DATA	61400
12545	0 0061400	DATA	61600
12546	0 20 33444	NOP	F5M30
12547	0 20 33447	NOP	F5M31
12550	0 20 33452	NOP	F5M32
12551	0 20 33455	NOP	F5M33

PERFORM TEST

CHECK FOR FC0=6121 (CLR FLIP=FL0P IN FILE)

12552	0 43 00430	BRM	OBJECT
12553	0 76 33550	LDA	#0
12554	0 43 23042	BRM	DISCCK
12555	0 01 12607	BRU	F5E9
12556	0 43 00440	BRM	RETURN
12557	0 20 23371	NOP	ENTER
12560	0 02 20004	DIR	
12561	0 71 33417	LDX	#=3
12562	0 43 23143	BRM	F5L49
12563	0 01 12607	BRU	F5E9
12564	0 02 10226	EBM	10026
12565	0 13 33550	PBT	#0
12566	0 43 23143	BRM	F5L49
12567	0 01 12607	BRU	F5E9
12570	0 02 10226	EBM	10026
12571	0 13 15456	PBT	BIT16
12572	0 41 12562	BRX	F5L49
12573	0 43 23143	BRM	F5L49
12574	0 01 12607	BRU	F5E9
12575	0 02 10226	EBM	10026
12576	0 40 10026	SKS	10026

P0TWORD
USE THIS DISC
NO
SET INTERRUPT LINKAGE

LOOP COUNT
WAIT FOR CONTROLLER READY
ERROR ABRT
ALERT DISC FILE
PBT A
WAIT FOR CONTROLLER READY
ERROR ABRT
ALERT DISC FILE
PBT B
LOOP
WAIT FOR CONTROLLER READY
ERROR ABRT
CLEAR FILE
DISC FILE READY TEST

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12577	0 01 12576	BRU	#=1
12600	0 02 10226	EBM	10026
12601	0 13 33550	PBT	#0
12602	0 43 23318	BRM	#500
12603	0 40 10026	SKS	10026
12604	0 43 00460	BRM	ERR0R
12605	0 20 33060	NOP	F5M34
12606	0 02 10226	EBM	10226
12607	0 43 00434	BRM	END

WAIT FOR CONTROLLER READY
ALERT DISC FILE
PBT A
WAIT 500 MILLISEC
DISC FILE READY TEST
CONTROLLER NOT READY
CLEAR FILE

TEST TIMING LOGIC

12610	0 43 00430	BRM	OBJECT
12611	0 76 33550	LDA	#0
12612	0 43 23042	BRM	DISCCK
12613	0 01 12647	BRU	F5E10
12614	0 43 00440	BRM	RETURN
12615	0 20 23371	NOP	ENTER
12616	0 02 20004	DIR	
12617	0 43 23173	BRM	P0TOUT
12620	0 01 12647	BRU	F5E10
12621	0 02 10226	EBM	10226
12622	0 40 10226	SKS	10026
12623	0 01 12622	BRU	#=1
12624	0 76 33550	LDA	#0
12625	0 02 10226	EBM	10026
12626	0 13 23352	PBT	P0TARD
12627	0 71 33A20	LDX	#=5600
12630	0 41 12630	BRX	*
12631	0 55 15465	ADD	BIT23
12632	0 73 33A21	SKG	#5000
12633	0 01 12635	BRU	#=2
12634	0 01 12A44	BRU	F5L51
12635	0 40 12626	SKS	12026
12636	0 01 12627	BRU	F5L50
12637	0 73 33A22	SKG	#1180

P0TWORD
USE THIS DISC
NO
SET INTERRUPT LINKAGE

PBT TO DISC
CLEAR FILE
DISC FILE READY TEST
WAIT FOR CONTROLLER READY
ALERT DISC FILE
PBT TO DISC
TIME UNTIL VERIFICATION (1 MS/LOOP)
TIMED OUT
NO
TRACK VERIFIED TEST
NOT VERIFIED = LOOP
TIME GREATER THAN 118 MILLISEC

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12640  0 01 12642             BRU   **2      NO * BK
12641  0 43 00460             BRM   ERROR   REPORT ERROR
12642  0 20 33117             NOP   FSM35
12643  0 01 12647             BRU   FSE10
12644  0 02 10226             ERM   10226   CLEAR FILE
12645  0 43 00460             BRM   ERROR   REPORT TIMEOUT ERROR
12646  0 20 33206             NOP   FSM36
12647  0 43 00434             FSE10 BRM   END
12650  0 43 00456             ENDF5 BRM   FDBNE   EXIT FUNCTION

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DISCW  TAP-3.C                PAGE 152
*
* FUNCTION PARAMETER TABLES
12651  0 20 12657             FPTS  NOP   FIM5   FUNCTION IDENTIFIER MESSAGE
12652  0 20 12670             NOP   FAM5   FUNCTION ABSTRACT MESSAGE
12653  0 20 05476             NOP   FVM1   FUNCTION VARIABLES MESSAGE
12654  0 01 05011             ONE   FVT1   FUNCTION VARIABLES (NONE)
12655  0 00 12773             PZE   FUNC10  POINTER TO NEXT FUNCTION
12656  01000000             DATA  1000000  FUNCTION IDENTIFIER BIT (BIT 5)
*
* FUNCTION MESSAGES
12657  52261200             FIM5  BCD   ' F 05 = 5045 DISC FILE DIAGNOSTICS'
12660  05124012
12661  05000405
12662  12243162
12663  23122631
12664  43251224
12665  31212745
12666  46626331
12667  23371212
12670  52320500             FAM5  BCD   ' 5045 DISC FILE DIAGNOSTICS'
12671  04051224
12672  31622312
12673  26314325
12674  12243121
12675  27454462
12676  63312362
12677  52526330             BCD   ' THIS FUNCTION CONTAINS OBJECT TESTS WHICH ARE DESIGNED'
12700  31621226
12701  64452363
12702  31464512
12703  23464563
12704  21314562
12705  12462241
12706  25236312

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12707 63256263
 12710 62126430
 12711 31233012
 12712 21512512
 12713 24256231
 12714 27452524
 12715 52624725
 12716 23312631
 12717 23214343
 12720 70126346
 12721 12434423
 12722 21632412
 12723 47514422
 12724 43254462
 12725 12314412
 12726 63302412
 12727 24216721
 12730 12475146
 12731 24642763
 12732 62121212
 12733 52050004
 12734 05122431
 12735 62231224
 12736 31432433
 12737 12462241
 12740 25236712
 12741 63256263
 12742 62126430
 12743 31233012
 12744 64622512
 12745 24316223
 12746 62126430
 12747 31233012
 12750 21512512
 12751 52242543
 12752 25632524

BCD ' SPECIFICALLY TO LOCATE PROBLEMS IN THE DATA PRODUCTS'

BCD ' 5045 DISC FILE. OBJECT TESTS WHICH USE DISCS WHICH ARE'

BCD ' DELETED FROM THE UNIT VARIABLES D00T17 AND D20T37 WILL'

12753 12265146
 12754 44126330
 12755 25126445
 12756 31631265
 12757 21513121
 12760 22432562
 12761 12240000
 12762 63010712
 12763 21452412
 12764 24020063
 12765 03071266
 12766 31434312
 12767 52222512
 12770 62423147
 12771 47252433
 12772 37121212

BCD ' RE SKIPPED!!!

*
 *
 * FUNCTION 10 - DISC EXERCISES
 *
 *

12773	0 76 00401	FUNC10	LDA	STATUS	PRESET RUNMODE
12774	0 72 15447		SKA	BIT9	WRITE PROTECT BIT SET
12775	0 01 13506		BRU	PRE1	YES
12776	0 76 00332		LDA	FLAGS	
12777	0 72 04777		SKA	UPT*4	DISC PREVIOUSLY KEYED
13000	0 01 13113		BRU	PRE2	YES
13001	0 76 15466		LDA	RMODE	SET UP KEY MODE
13002	0 14 33423		ETR	#7B5	
13003	0 16 33624		MRG	#22026610	
13004	0 35 15721		STA	SPMODE	
13005	0 01 13115		BRU	PRE3	
13006	0 76 15466	PRE1	LDA	RMODE	FORCE R-R-C-W-R-C MODE
13007	0 14 33425		ETR	#77770007	
13010	0 16 33426		MRG	#5520	
13011	0 35 15721		STA	SPMODE	
13012	0 01 13015		BRU	PRE3	
13013	0 76 15466	PRE2	LDA	RMODE	RANDOM OPERATION
13014	0 35 15721		STA	SPMODE	
13015	0 76 33577	PRE3	LDA	#STADDR	PRESET VARIABLES
13016	0 35 15722		STA	LOCORE	LOCORE
13017	0 76 00405		LDA	SYSIZE	HICORE
13020	0 71 33617		LDX	##3	
13021	0 67 00001		LSH	1	
13022	0 66 00001		RSH	1	
13023	0 72 15465		SKA	BIT23	
13024	0 41 13122		BRX	##2	
13025	0 37 23330		STX	TEMP	
13026	0 76 33555		LDA	#3	
13027	0 55 23330		ADD	TEMP	
13030	0 67 00016		LSH	140	
13031	0 16 33160		MRG	#37777	

13032	0 35 15723		STA	HICORE	
13033	0 76 33550		LDA	#0	
13034	0 35 15724		STA	L6DISC	L6 DISC
13035	0 76 33566		LDA	#777777	
13036	0 35 15725		STA	H1DISC	H1 DISC
13037	0 76 15721		LDA	SPMODE	SET XFER LENGTH
13040	0 72 15462		SKA	BIT20	KEY MODE
13041	0 01 13146		BRU	PRE4	YES
13042	0 75 33551		LDB	##1	LENGTH RANDOM
13043	0 72 15461		SKA	BIT19	IN COMPARE MODE
13044	0 75 15461		LDB	BIT19	YES = LENGTH = 208 SECTORS
13045	0 01 13052		BRU	PRE5	
13046	0 75 15461	PRE4	LDB	BIT19	LENGTH = 208 SECTORS
13047	0 76 15723		LDA	HICORE	
13050	0 72 15447		SKA	BIT9	SECOND MEMORY DOOR IN
13051	0 75 15456		LDB	BIT16	YES = LENGTH = 208 SECTORS
13052	0 36 15726	PRE5	STB	LENGTH	
13053	0 76 15722		LDA	L6CORE	
13054	0 35 23337		STA	VAR3	POINTER TO CORE ADDRESS FOR SEQ CORE
13055	0 76 15724		LDA	L6DISC	
13056	0 35 23340		STA	VAR4	POINTER TO DISC ADDRESS FOR SEQ DISC


```

*
*
* INITIALIZE STARTING POSITIONS OF SELECTED DISCS TO 630

```

```

13057 0 76 33627 LDA #17777
13060 0 43 23042 INP0S1 BRM DISCKK CHECK FOR OUT OF BOUNDS
13061 0 01 13076 BRU INP0S4 OUT OF BOUNDS
13062 0 46 20005 ABC
13063 0 40 10026 SKS 10026 DISC FILE READY TEST
13064 0 01 13066 BRU #+2
13065 0 01 13071 BRU INP0S3 CONTROLLER READY
13066 0 58 15465 ADD BIT23 ADD 1
13067 0 73 33571 SKG #35714D
13070 0 01 13063 BRU INP0S2 500 MS NOT UP YET
13071 0 02 10226 EOM 10226 CLEAR FILE
13072 0 02 10026 EOM 10026 ALERT DISC FILE
13073 0 13 23352 PBT PBTWRD POT TO DISC
13074 0 46 10012 BAC
13075 0 43 15276 BRM ENDP08 ENTER ENDING POSITION IN TABLE
13076 0 55 15450 INP0S4 ADD BIT10 INCREMENT DISC NO.
13077 0 73 15443 SKG BIT5 FINISHED
13100 0 01 13060 BRU INP0S1 NO

```

```

13101 0 43 00424 FSTART BRM FUNCTN FUNCTION LINK
13102 0 20 15713 NOP FPT10
13103 0 43 00440 BRM RETURN SET SPIT LINKAGE
13104 0 20 23371 NOP ENTER
13105 0 02 20002 EIR ENABLE INTERRUPTS
13106 0 76 15721 LDA #PMODE CHECK #PMODE
13107 0 72 33430 SKA #7B7
13110 0 01 13112 BRU #+2
13111 0 43 13341 BRM PERR1 DISC ADDRESSING NOT SPECIFIED
13112 0 72 33431 SKA #7B6
13113 0 01 13115 BRU #+2
13114 0 43 13341 BRM PERR1 CORE ADDRESSING NOT SPECIFIED
13115 0 72 33423 SKA #7B5
13116 0 01 13120 BRU #+2
13117 0 43 13341 BRM PERR1 DATA NOT SPECIFIED
13120 0 72 15441 SKA BIT3
13121 0 01 13123 BRU #+2
13122 0 01 13125 BRU #+3
13123 0 72 15450 SKA BIT10
13124 0 43 13341 BRM PERR1 FIXED CORE, FAST MODE (ILLEGAL)
13125 0 75 33465 LDB #7B3
13126 0 70 33451 SKM #+1
13127 0 01 13131 BRU #+2
13130 0 43 13341 BRM PERR1 FIXED WRITE AND READ (B=1)
13131 0 75 33632 LDB #700
13132 0 70 33451 SKM #+1
13133 0 01 13135 BRU #+2
13134 0 43 13341 BRM PERR1 FIXED WRITE AND READ (B=2)
13135 0 72 15462 SKA BIT20
13136 0 01 13140 BRU #+2
13137 0 01 13143 BRU CKO
13140 0 75 33433 LDB #70005500
13141 0 70 33434 SKM #20004400
13142 0 43 13341 BRM PERR1
13143 0 72 33435 CKO SKA #3300 KEY, DISC ADD NOT SEQ, B=1 OR #2 READ
13144 0 01 13146 BRU #+2

```

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13145	0	43	13341	BRM	PERR1	NO BUFFER SELECTED
13146	0	72	15461	SKA	BIT19	
13147	0	01	13151	BRU	**2	
13150	0	01	13165	BRU	CK1	
13151	0	72	15452	SKA	BIT12	
13152	0	01	13154	BRU	**2	
13153	0	43	13341	BRM	PERR1	COMPARE MODE, B=7 OPER. NOT FIXED
13154	0	72	15455	SKA	BIT15	
13155	0	01	13157	BRU	**2	
13156	0	43	13341	BRM	PERR1	COMPARE MODE, B=2 OPER. NOT FIXED
13157	0	72	15457	SKA	BIT17	
13160	0	01	13162	BRU	**2	
13161	0	43	13341	BRM	PERR1	COMPARE MODE, B=2 NOT READ
13162	0	53	15726	SKN	LENGTH	
13163	0	01	13165	BRU	CK1	
13164	0	43	13346	BRM	PERR2	COMPARE MODE, LENGTH RANDOM
13165	0	72	33636	SKA	#2200	
13166	0	01	13170	BRU	**2	
13167	0	01	13173	BRU	CK2	
13170	0	76	00401	LDA	STATUS	
13171	0	72	15447	SKA	BIT9	
13172	0	43	13341	BRM	PERR1	
13173	0	53	15726	SKN	LENGTH	CHECK LENGTH
13174	0	01	13176	BRU	**2	YES
13175	0	01	13221	BRU	CK4	
13176	0	76	15723	LDA	HICORE	
13177	0	54	15722	SUB	LOCORE	
13200	0	55	15465	ADD	BIT23	
13201	0	66	00006	RSH	6	
13202	0	73	15726	SKG	LENGTH	
13203	0	43	13346	BRM	PERR2	FIXED LENGTH TOO LARGE
13204	0	76	33637	LDA	#341	
13205	0	73	15726	SKG	LENGTH	
13206	0	43	13346	BRM	PERR2	FIXED LENGTH > 14K (3408 SECTORS)
13207	0	76	15721	LDA	OPMODE	
13210	0	72	15461	SKA	BIT19	

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13211	0	01	13213	BRU	**2	
13212	0	01	13216	BRU	CK3	
13213	0	76	33640	LDA	#161	
13214	0	73	15726	SKG	LENGTH	
13215	0	43	13346	BRM	PERR2	COMPARE MODE, LENGTH > 7K (1608 SECTORS)
13216	0	76	15726	LDA	LENGTH	
13217	0	73	33550	SKG	#0	
13220	0	43	13346	BRM	PERR2	FIXED LENGTH = 0
13221	0	76	15722	LDA	LOCORE	CHECK LOCORE
13222	0	55	15465	ADD	BIT23	ADD 1
13223	0	73	33577	SKG	#STADDR	
13224	0	43	00460	BRM	ERRR	LOCORE < 34000B
13225	4	20	33224	NOP	F10M1,4	
13226	0	20	33235	NOP	F10M3	
13227	0	76	15723	LDA	HICORE	CHECK HICORE
13230	0	73	33557	SKG	#17777	
13231	0	01	13233	BRU	**2	
13232	0	43	00460	BRM	ERRR	HICORE > 17777B
13233	4	20	33224	NOP	F10M1,4	
13234	0	20	33273	NOP	F10M10	
13235	0	53	23350	SKN	VFFL8	
13236	0	73	33560	SKG	#3777	
13237	0	01	13241	BRU	**2	
13240	0	43	00460	BRM	ERRR	HICORE > 37777, NOT 940
13241	4	20	33224	NOP	F10M1,4	
13242	0	20	33273	NOP	F10M10	
13243	0	54	33600	SUB	#63D	
13244	0	73	15722	SKG	LOCORE	HICORE = LOCORE < 64D
13245	0	43	00460	BRM	ERRR	
13246	4	20	33224	NOP	F10M1,4	
13247	0	20	33273	NOP	F10M10	
13250	0	76	15725	LDA	HIDISC	CHECK HIDISC
13251	0	55	15465	ADD	BIT23	ADD 1
13252	0	73	15724	SKG	LODISC	
13253	0	43	00460	BRM	ERRR	HIDISC < LODISC
13254	4	20	33224	NOP	F10M1,4	

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```
13255 0 20 33243 NOP F10M6
13256 0 73 15443 SKG BIT5
13257 0 01 13261 BRU **2
13260 0 43 00460 BRM ERROR MIDISC > 777777
13261 * 20 33224 NOP F10M1,4
13262 0 20 33243 NOP F10M6
13263 0 75 33551 LDB **1 RESET SEQ DISC POINTER IF LODISC CHANGED
13264 0 76 23335 LDA VAR1
13265 0 55 15465 ADD BIT23
13266 0 70 15724 SKN LODISC
13267 0 01 13271 BRU **2
13270 0 01 13273 BRU **3
13271 0 76 15724 LDA LODISC
13272 0 35 23340 STA VAR4
13273 0 76 15721 LDA OPMODE INITIALIZE
13274 0 75 33550 LDB #0 SET FLAGS
13275 0 72 15451 SKA BIT11
13276 0 75 33551 LDB **1
13277 0 36 15474 STB INTRPT
13300 0 75 33550 LDB #0
13301 0 72 15462 SKA BIT20
13302 0 75 33551 LDB **1
13303 0 36 15500 STB KEY SET HEADER FLAGS
13304 0 76 33551 LDA **1
13305 0 35 15472 STA DHEAD
13306 0 35 15473 STA I0HEAD
13307 0 76 15724 LDA LODISC
13310 0 54 15465 SUB BIT23 SET LODISC PRIME
13311 0 35 23335 STA VAR1
13312 0 53 15474 SKN INTRPT SET INTERRUPT RETURN
13313 0 01 13315 BRU **2
13314 0 43 00440 BRM RETURN
13315 0 20 15403 NOP INTER
13316 0 76 15723 LDA MICORE SET MAX BLOCK LENGTH
13317 0 54 15722 SUB LOCORE
13320 0 55 15465 ADD BIT23
```

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```
13321 0 73 33641 SKG #70000
13322 0 01 13324 BRU **2
13323 0 76 33641 LDA #70000
13324 0 66 00007 RSH 7 SET PASS COUNT
13325 0 35 15505 STA BLKMAX
13326 0 76 33642 LDA #1990
13327 0 35 23341 STA VAR5
13330 0 76 15721 LDA SPMODE
13331 0 72 15461 SKA BIT19
13332 0 01 13334 BRU **2
13333 0 01 13353 BRU START
13334 0 76 33643 LDA #160
13335 0 73 15505 SKG BLKMAX
13336 0 01 13353 BRU START
13337 0 35 15505 STA BLKMAX
13340 0 01 13353 BRU START
```

*
*
* PARAMETER ERROR OUTPUT ROUTINES

```
13341 0 00 00000 PERR1 PZE 0
13342 0 43 00460 BRM ERROR
13343 * 20 33224 NOP F10M1,4
13344 0 20 33241 NOP F10M5
13345 0 51 13341 BRM PERR1
13346 0 00 00000 PERR2 PZE 0
13347 0 43 00460 BRM ERROR
13350 * 20 33224 NOP F10M1,4
13351 0 20 33237 NOP F10M4
13352 0 51 13346 BRM PERR2
```

```

*
*
*      START OPERATION
13353 0 76 15721  START  LDA  BPMODE
13354 0 72 15461    SKA  BIT19
13355 0 01 13801    BRU  COMPAR  COMPARE MODE HANDLER
13356 0 72 33644    SKA  #3000
13357 0 01 13361    BRU  **2
13360 0 01 13366    BRU  B2ONLY  HANDLE BUFFER 2 ONLY
13361 0 72 33648    SKA  #300
13362 0 01 13416    BRU  B1AND2  HANDLE BUFFERS 1 AND 2
13363 0 01 13364    BRU  B1ONLY  HANDLE BUFFER 1 ONLY

```

```

*
*      HANDLE BUFFER 1 ONLY
13364 0 77 15563  B1ONLY EAX  TABLE1  SET BUFFER BIAS
13365 0 01 13367    BRU  B2ONLY*1
*
*      HANDLE BUFFER 2 ONLY
13366 0 77 15573  B2ONLY EAX  TABLE2  SET BUFFER BIAS
13367 0 43 13604    BRM  SETDAD  GET STARTING DISC ADDRESS AND LENGTH
13370 2 35 00003    STA  3,2   LENGTH
13371 2 36 00000    STB  0,2   START DISC
13372 0 75 33550    LDB  #0
13373 0 43 13743    BRM  SETCAD  GET STARTING CORE ADDRESS
13374 2 35 00002    STA  2,2   START CORE
13375 0 43 14032    BRM  SETDVR  SET UP CHANNEL DRIVER
13376 0 43 14117    BRM  SPREAD  SPREAD DATA IF WRITE
13377 0 43 00430    BRM  OBJECT
13400 0 02 20002    EIR
13401 0 43 14245    BRM  DRIVER  ENABLE INTERRUPTS
13402 0 43 14543    BRM  *FIO   DRIVE I/O
13403 0 43 14560    BRM  CHNCK  WAIT FOR I/O TO FINISH
13404 0 43 14745    BRM  DATABK  CHECK FOR I/O ERRORS
13405 0 43 00434    FIOEND BRM  CHECK FOR DATA ERRORS IF READ
13406 0 53 15800    SKN  KEY    IN KEY MODE
13407 0 01 13411    BRU  **2   NO
13410 0 01 13860    BRU  CONKEY  CONTINUE OPERATION IF NOT COMPLETED
13411 0 60 23341    SKR  VARS
13412 0 20 00000    NOP
13413 0 53 23341    SKN  VARS  FINISHED
13414 0 01 13353    BRU  START  NO
13415 0 43 00456    ENDFIO BRM  EXIT FUNCTION

```

```

*
*
* HANDLE BUFFERS 1 AND 2
*
13416 0 77 15563 B1AND2 EAX TABLE1 BIAS
13417 0 43 13404 BRM SETDAD GET STARTING DISC AND LENGTH (B=1)
13420 2 35 00003 STA 3,2 LENGTH
13421 2 36 00000 STB 0,2 START DISC
13422 0 77 15573 EAX TABLE2 BIAS
13423 0 43 13404 BRM SETDAD GET STARTING DISC AND LENGTH (B=2)
13424 2 35 00003 STA 3,2 LENGTH
13425 2 36 00000 STB 0,2 START DISC
13426 0 46 20005 ABC
13427 0 77 15563 EAX TABLE1
13430 2 76 00003 LDA 3,2 B=1 LENGTH
13431 0 43 13743 BRM SETCAD GET STARTING CORE ADDRESSES (B=102)
13432 2 35 00002 STA 2,2 START CORE (B=1)
13433 0 77 15573 EAX TABLE2
13434 2 36 00002 STB 2,2 START CORE (B=2)
13435 0 43 14032 BRM SETDVR SET UP CHANNEL DRIVER (B=2)
13436 0 77 15563 EAX TABLE1
13437 0 43 14032 BRM SETDVR SET UP CHANNEL DRIVER (B=1)
13440 0 43 14117 BRM SPREAD SPREAD DATA IF WRITE (B=1)
13441 0 76 00406 LDA SEED SAVE RANDOM SEED
13442 0 35 23334 STA VAR2
13443 0 43 00430 BRM OBJECT
13444 0 07 20002 EIR
13445 0 76 23334 LDA VAR2
13446 0 35 00406 STA SEED
13447 0 77 15563 EAX TABLE1
13450 0 43 14245 BRM DRIVER DRIVE I/O (B=1)
13451 0 76 15721 LDA BPMODE
13452 0 72 15450 SKA BIT10
13453 0 01 13466 BRU B1A2B IN FAST MODE
13454 0 43 14543 BRM WF10 YES
13455 0 43 14560 BRM CHNCK WAIT FOR I/O TO FINISH
13456 0 43 14745 BRM DATAK CHECK FOR I/O ERRORS
CHECK FOR DATA ERRORS IF READ

```

```

13457 0 77 15573 EAX TABLE2
13460 0 43 14117 BRM SPREAD SPREAD DATA IF WRITE (B=2)
13461 0 43 14245 BRM DRIVER DRIVE I/O (B=2)
13462 0 43 14543 B1A2A BRM WF10 WAIT FOR I/O TO FINISH
13463 0 43 14560 BRM CHNCK CHECK FOR I/O ERRORS
13464 0 43 14745 BRM DATAK CHECK FOR DATA ERRORS IF READ
13465 0 01 13405 BRU F10END
13466 0 77 15573 B1A2B EAX TABLE2
13467 0 43 14117 BRM SPREAD SPREAD DATA B=2 IF WRITE
13470 0 77 15563 EAX TABLE1
13471 0 43 14543 BRM WF10 WAIT FOR I/O TO FINISH
13472 0 43 14560 BRM CHNCK CHECK FOR I/O ERRORS
13473 0 77 15573 EAX TABLE2
13474 0 43 14245 BRM DRIVER DRIVE I/O (B=2)
13475 0 77 15563 EAX TABLE1
13476 0 43 14745 BRM DATAK CHECK DATA IF READ (B=1)
13477 0 77 15573 EAX TABLE2
13500 0 01 13462 BRU B1A2A

```

```

*
* COMPARE MODE HANDLER
*
13501 0 76 15721  COMPAR LDA 0PMODE
13502 0 75 33551  LDB 0=1
13503 0 72 15453  SKA BIT13 WRITE B=1
13504 0 75 33550  LDB 00 YES
13505 0 36 15501  STB RRSW SET UP READ/READ SWITCH
13506 0 77 15563  EAX TABLE1 B=1 BIAS
13507 0 43 13604  BRM SETDAD GET STARTING LENGTH AND DISC ADDRESS (B=1)
13510 2 35 00003  STA 3,2 LENGTH
13511 2 36 00000  STB 0,2 DISC ADDRESS
13512 0 77 15573  EAX TABLE2
13513 2 35 00003  STA 3,2 LENGTH (B=2)
13514 2 36 00000  STB 0,2 DISC ADDRESS (B=2)
13515 2 75 00003  LDB 3,2
13516 0 43 13743  BRM SETCAD GET STARTING CORE ADDRESS
13517 2 36 00002  STB 2,2 START CORE (B=2)
13520 0 77 15563  EAX TABLE1
13521 2 35 00002  STA 2,2 START CORE (B=1)
13522 0 43 14232  BRM SETDVR SET UP CHANNEL DRIVER (B=1)
13523 0 77 15573  EAX TABLE2
13524 0 43 14232  BRM SETDVR SET UP CHANNEL DRIVER (B=2)
13525 0 77 15563  EAX TABLE1
13526 0 43 14117  BRM SPREAD SPREAD DATA IF WRITE (B=1)
13527 0 43 00430  BRM OBJECT
13530 0 02 20002  EIR
13531 0 43 14245  COMP1 BRM DRIVER ENABLE INTERRUPTS
13532 0 43 14543  BRM WFI0 DRIVE I/O (B=1)
13533 0 43 14560  BRM CHNCK WAIT FOR I/O TO FINISH
13534 0 77 15573  EAX TABLE2 CHECK FOR CHANNEL ERRORS
13535 0 43 14245  BRM DRIVER DRIVE I/O (B=2)
13536 0 43 14543  BRM WFI0 WAIT FOR I/O TO FINISH
13537 0 43 14560  BRM CHNCK CHECK FOR I/O ERRORS
13540 0 77 15563  EAX TABLE1
13541 0 43 15102  BRM C1AND2 COMPARE BUFFER 1 WITH BUFFER 2

```

```

13542 0 43 00434  BRM END
13543 0 53 15501  RRSW LAST OPERATION A READ/READ
13544 0 01 13406  BRU FIOEND=1 NO
13545 0 76 33550  LDA 00 RESET READ/READ SWITCH
13546 0 35 15501  STA RRSW
13547 0 77 15563  EAX TABLE1
13550 0 76 33555  LDA 03 FORCE WRITE BUFFER 1
13551 2 35 00004  STA 4,2 SET MODE
13552 2 76 00005  LDA 5,2
13553 0 17 15456  EOR BIT16
13554 2 35 00005  STA 5,2 CONVERT XMODE EOM TO IOD
13555 0 76 15470  LDA WRITE
13556 2 35 00006  STA 6,2 CHANGE BUFFER EOM TO WRITE
13557 0 01 13531  BRU COMP1

```

```

*
*
* CONTINUE IF KEYING DISC
CONKEY LDA VAR4
13560 0 76 23340 SKG HIDISC FINISHED
13561 0 73 15725 BRU START NO
13562 0 01 13353 BRU UPT44 SET UP KEYED FLAGS
13563 0 76 04777 LDA UPT44
13564 0 16 00332 MRG FLAGS
13565 0 35 00332 STA FLAGS
13566 0 76 33550 LDA *0 RESET KEY SWITCH
13567 0 35 15500 STA KEY
13570 0 76 15721 LDA *PMODE SET UP OPERATING MODE
13571 0 14 33623 ETR *785
13572 0 35 15721 STA *PMODE
13573 0 76 15466 LDA RMODE
13574 0 14 33646 ETR *7707777
13575 0 16 15721 MRG *PMODE
13576 0 35 15721 STA *PMODE
13577 0 76 33551 LDA *+1 SET LENGTH TO BE RANDOM
13600 0 35 15726 STA LENGTH
13601 0 76 15724 LDA LODISC RESET SEQUENTIAL DISC POINTER
13602 0 35 23340 STA VAR4
13603 0 01 13415 BRU ENDF10 EXIT

```

```

*
*
* CALCULATE STARTING DISC ADDRESS AND TRANSMIT LENGTH
SETDAD PZE 0
13604 0 00 00000 STX TEMPO SAVE X
13605 0 37 23334 LDA *PMODE
13606 0 76 15721 SKA BIT0 IS ADDRESSING FIXED
13607 0 72 15436 BRU FIXD YES
13610 0 01 13652 SKA BIT1 IS ADDRESSING SEQUENTIAL
13611 0 72 15437 BRU SEED YES
13612 0 01 13625 RAND LDA SEED RANDOM ADDRESSING
13613 0 76 00406 BRM RANDOM GENERATE RANDOM ADDRESS
13614 0 43 15372 STA SEED
13615 0 35 00406 ETR *777777
13616 0 14 33566 SKG HIDISC CHECK GENERATED ADDRESS
13617 0 73 15725 SKG VAR1
13620 0 73 23335 BRU RAND NOT WITHIN HIDISC=LODISC LIMITS
13621 0 01 13613 BRM DISCCK
13622 0 43 23042 BRU RAND ADDRESSED DISC OUT OF BOUNDS
13623 0 01 13613 BRU SAVDPW
13624 0 01 13662 SEQD LDA VAR4 GET INCREMENTED DISC ADDRESS
13625 0 76 23340 SKG HIDISC CHECK ADDRESS
13626 0 73 15725 BRU SECD1
13627 0 01 13634 SKN KEY ADDRESS TOO LARGE - IS KEY IN PROCESS
13630 0 53 15500 BRU *+2 NO
13631 0 01 13633 BRU CONKEY
13632 0 01 13560 BRU LODISC START OVER
13633 0 76 15724 SEQD1 STA VAR4
13634 0 35 23340 BRM DISCCK
13635 0 43 23042 BRU *+2 DISC OUT OF BOUNDS
13636 0 01 13640 BRU SAVDPW
13637 0 01 13662 ADD BIT10 INCREMENT DISC ADDRESS
13640 0 55 15450 ETR *1760000
13641 0 14 33647 SKG HIDISC CHECK NEW ADDRESS FOR DONE
13642 0 73 15725 BRU SECD1 ADDRESS OK
13643 0 01 13634 SKN KEY ADDRESS TOO LARGE, IS KEY IN PROCESS
13644 0 53 15500

```

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13645	0 01 13450	BRU	++3	NO
13646	0 35 23340	STA	VAR4	KEY FINISHED
13647	0 01 13560	BRU	CBNKEY	
13650	0 76 15724	LDA	LODISC	RESET SEQUENTIAL DISC POINTER
13651	0 01 13626	BRU	SEGO=1	
13652	0 76 15724	FIXD LDA	LODISC	FIXED DISC ADDRESS
13653	0 43 23042	BRM	DISCCK	
13654	0 01 13656	BRU	++2	DISC OUT OF BOUNDS
13655	0 01 13662	BRU	SAVDPW	
13656	0 43 00460	BRM	ERROR	REPORT PARAMETER ERROR
13657	* 20 33224	NOP	F10M1,4	
13660	0 20 33233	NOP	F10M2	
13661	0 01 13652	BRU	FIXD	LOOP
13662	0 35 23332	SAVDPW STA	TEMPB	SAVE DISC ADDRESS
13663	0 53 15726	SLEN SKN	LENGTH	IS LENGTH FIXED
13664	0 01 13734	BRU	SLEN5	YES
13665	0 76 00406	LDA	SEED	GENERATE RANDOM LENGTH
13666	0 43 15372	BRM	RANDOM	
13667	0 35 00406	STA	SEED	
13670	0 14 33650	ETR	#377	
13671	0 73 15505	SLEN0 SKG	BLKMAX	LEN > BLKMAX
13672	0 01 13675	BRU	SLEN1	NO
13673	0 54 15905	SUB	BLKMAX	LEN = LEN = BLKMAX
13674	0 01 13671	BRU	SLEN0	LOOP
13675	0 72 33551	SLEN1 SKA	==1	DOES LEN = 0
13676	0 01 13700	BRU	++2	NO
13677	0 76 15465	LDA	BIT23	A = 1
13700	0 35 23331	SLEN2 STA	TEMPA	SAVE TRANSMIT LENGTH
13701	0 55 23332	ADD	TEMPB	ADD STARTING DISC ADDRESS
13702	0 54 15465	SUB	BIT23	SUBTRACT 1
13703	0 73 15725	SKG	HIDISC	LEN + ADDR = 1 > HIDISC
13704	0 01 13711	BRU	SLEN3	NO
13705	0 76 15725	LDA	HIDISC	LEN = HIDISC + ADDR + 1
13706	0 54 23332	SUB	TEMPB	
13707	0 55 15465	ADD	BIT23	ADD 1
13710	0 01 13700	BRU	SLEN2	

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13711	0 43 23042	SLEN3 BRM	DISCCK	
13712	0 01 13714	BRU	++2	FINAL DISC ADDRESS OUT OF BOUNDS
13713	0 01 13721	BRU	SLEN4	
13714	0 76 23332	LDA	TEMPB	LEN = REMAINING SECTORS ON THIS DISC
13715	0 16 33627	HRG	#17777	
13716	0 54 23332	SUB	TEMPB	
13717	0 55 15465	ADD	BIT23	ADD 1
13720	0 35 23331	STA	TEMPA	
13721	0 76 15721	SLEN4 LDA	OPMODE	CHECK OPMODE FOR SEQUENTIAL DISC OPERATION
13722	0 72 15437	SKA	BIT1	
13723	0 01 13725	BRU	++2	SEQUENTIAL
13724	0 01 13730	BRU	SLEN6	NOT SEQUENTIAL
13725	0 76 23340	LDA	VAR4	UPDATE DISC INCREMENT
13726	0 55 23331	ADD	TEMPA	
13727	0 35 23340	STA	VAR4	
13730	0 76 23331	SLEN6 LDA	TEMPA	GET REGISTERS
13731	0 75 23332	LDB	TEMPB	
13732	0 71 23334	LDX	TEMPO	
13733	0 51 13604	BRR	SETDAD	RETURN
13734	0 76 15726	SLEN5 LDA	LENGTH	
13735	0 73 15505	SKG	BLKMAX	FIXED LENGTH > BLKMAX
13736	0 01 13700	BRU	SLEN2	NO
13737	0 43 00460	BRM	ERROR	REPORT PARAMETER ERROR
13740	* 20 33224	NOP	F10M1,4	
13741	0 20 33237	NOP	F10M4	
13742	0 01 13663	BRU	SLEN	LOOP


```

*
*
*   CALCULATE STARTING CORE ADDRESS
13743 0 00 00000 SETCAD PZE 0
13744 0 37 23327 STX X          SAVE X
13745 0 67 00006 LSH 6          MULTIPLY LENGTHS BY 640
13746 0 35 23331 STA TEMPA
13747 0 36 23332 STB TEMPB
13750 0 76 15721 LDA OPMODE    FIND CORE ADDRESSING MODE
13751 0 72 15441 SKA BIT3      IS ADDRESSING FIXED
13752 0 01 14725 BRU FIXC      YES
13753 0 72 15442 SKA BIT4      IS ADDRESSING SEQUENTIAL
13754 0 01 14002 BRU SEGC      YES
13755 0 76 15723 LDA HICORE    RANDOM ADDRESSING
13756 0 54 15722 SUB LOCCORE
13757 0 54 23331 SUB TEMPA
13760 0 54 23332 SUB TEMPB
13761 0 35 23333 STA TEMPC      RANGE OF NUMBERS FOR START CORE (B=1)
13762 0 73 33550 SKG #0        DOES RANGE = 0
13763 0 01 13774 BRU RANC2     YES
13764 0 76 00406 LDA SEED       GENERATE RANDOM BIAS
13765 0 43 15372 BRM RANDOM
13766 0 35 00406 STA SEED
13767 0 14 33560 ETR #37777
13770 0 73 23333 RANC1 SKG TEMPC      IS BIAS > RANGE
13771 0 01 13775 BRU RANC3     NO
13772 0 54 23333 SUB TEMPC      BIAS = BIAS - RANGE
13773 0 01 13770 BRU RANC1
13774 0 76 33550 RANC2 LDA #0
13775 0 55 15722 RANC3 ADD LOCCORE BIAS = 0
13776 0 35 23325 STA A          LOCCORE = BIAS + CORE1
13777 0 55 23331 ADD TEMPA     CORE1 + LEN1 = CORE2
14000 0 35 23326 STA B
14001 0 01 14030 BRU SCARET   SET UP RETURN
14002 0 76 15723 SEGC LDA HICORE   CALCULATE RANGE
14003 0 54 23331 SUB TEMPA

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14004 0 54 23332 SUB TEMPB
14005 0 55 15465 ADD BIT23
14006 0 75 23337 LDB VAR3
14007 0 73 23337 SKG VAR3      IS RANGE > VAR3
14010 0 46 00014 XAB          NO
14011 0 46 00014 XAB
14012 0 35 23325 STA A          CORE 1
14013 0 55 23331 ADD TEMPA
14014 0 35 23326 STA B          CORE 2
14015 0 55 23332 ADD TEMPB     UPDATE VAR3
14016 0 35 23337 STA VAR3
14017 0 54 15723 SUB HICORE
14020 0 72 15436 SKA BIT0
14021 0 01 14030 BRU SCARET   IS VAR3 < HICORE
14022 0 76 15722 LDA LOCCORE YES
14023 0 35 23337 STA VAR3     SET VAR3 = LOCCORE
14024 0 01 14030 BRU SCARET   SET UP RETURN
14025 0 76 15722 FIXC LDA LOCCORE FIXED ADDRESSING
14026 0 35 23325 STA A          CORE1
14027 0 35 23326 STA B          CORE2
14030 0 43 15264 SCARET BRM GET   SET REGISTERS
14031 0 51 13743 BRR SETCAD    RETURN

```

```

*
*   SET UP I/O BUFFER
*
14032 0 00 00000  SETDVR PZE 0
14033 2 76 00003  LDA 3,2 BUILD PBT WORD
14034 0 75 33550  LDB 50
14035 0 67 20024  LCY 200
14036 0 35 23330  STA TEMP
14037 2 76 00002  LDA 2,2
14040 0 14 33560  ETR 537777
14041 0 55 23330  ADD TEMP
14042 2 35 00001  STA 1,2
14043 0 36 23330  STB TEMP HI ORDER WORD COUNT
14044 2 76 00002  LDA 2,2 BUILD EXTENDED MODE EGM
14045 0 66 00011  RSH 90
14046 0 14 33651  ETR 5140
14047 0 55 23330  ADD TEMP
14050 0 53 15474  SKN INTRPT
14051 0 01 14053  BRU 2
14052 0 16 33644  MRG 53000
14053 0 55 15471  ADD XMODE
14054 2 35 00005  STA 5,2
14055 2 76 00007  LDA 7,2 BUFFER NUMBER
14056 0 75 15721  LDB 59MODE
14057 0 72 15465  SKA BIT23 BUFFER 1
14060 0 66 00003  RSH 3 YES = CORRECT
14061 0 46 10012  BAC
14062 0 72 15455  SKA BIT15 OPERATION FIXED
14063 0 01 14065  BRU 2
14064 0 01 14113  BRU SDVR3 NO
14065 0 72 15456  SKA BIT16 IS OPERATION A WRITE
14066 0 01 14070  BRU 2
14067 0 01 14077  BRU SDVR2 NO
14070 0 76 15470  LDA WRITE BUFFER EGM
14071 2 35 00004  STA 6,2
14072 2 76 00005  LDA 5,2 XMODE = 10SD

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14073 0 16 15456  MRG BIT16
14074 2 35 00005  STA 5,2
14075 0 75 33555  LDB 53 SET MODE
14076 0 01 14102  BRU SDVR4
14077 0 76 15467  SDVR2 LDA READ BUFFER EGM
14100 2 35 00006  STA 6,2
14101 0 75 15463  LDB BIT21 B = 4
14102 2 76 00007  SDVR4 LDA 7,2 BUFFER NO
14103 0 72 15465  SKA BIT23 BUFFER 1
14104 0 01 14111  BRU SDVR5 YES
14105 0 46 10012  BAC
14106 0 55 15464  ADD BIT22 ADD 2
14107 2 35 00004  SDVR6 STA 4,2 MODE
14110 0 51 14032  SDVR5 BRR SETDVR RETURN
14111 0 46 10012  SDVR5 BAC
14112 0 01 14107  BRU SDVR6
14113 0 76 00406  SDVR3 LDA SEED GEN RANDOM NO. = IF BIT16, WRITE
14114 0 43 15372  BRM RANDOM
14115 0 35 00406  STA SEED
14116 0 01 14065  BRU SDVR0

```

```

*
* GENERATE AND SPREAD DATA
*
14117 0 00 00000 SPREAD PZE 0
14120 0 37 23334 STX TEMPD SAVE X
14121 2 76 00006 LDA 6,2 EDM
14122 0 72 15460 SKA BIT18 IS OPERATION A WRITE
14123 0 01 14125 BRU **2 YES
14124 0 51 14117 BRR SPREAD RETURN
14125 0 53 23350 SKN NFFLG IS MACHINE A 940
14126 0 01 14146 BRU SPR2 NO
14127 2 76 00002 LDA 2,2 START CORE
14130 0 66 00013 RSH 110 SET UP RELABELING
14131 0 35 23330 STA TEMP
14132 0 75 33550 LDB #0
14133 0 71 33452 LDX **7
14134 0 61 23330 SPR1 MIN TEMP
14135 0 67 20406 LCY 6
14136 0 55 23330 ADD TEMP
14137 0 41 14134 BRX SPR1
14140 0 36 00415 STB RL1
14141 0 35 00416 STA RL2
14142 0 02 20400 EDM 20400 SET UP RL1
14143 0 13 00415 PBT RL1
14144 0 02 21000 EDM 21000 SET UP RL2
14145 0 13 00416 PBT RL2
14146 0 71 23334 SPR2 LDX TEMPD
14147 2 76 00003 LDA 3,2 SECTOR COUNT
14150 0 54 15465 SUB BIT23 SUBTRACT 1
14151 0 35 15406 STA COUNT
14152 2 76 00000 LDA 0,2 START DISC
14153 0 35 23344 STA VAR8
14154 2 76 00002 LDA 2,2 START CORE
14155 0 53 23350 SKN NFFLG MACHINE A 940
14156 0 01 14160 BRU **2 NO
14157 0 14 33453 ETR #3777

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14160 0 16 15436 HRG BIT0 USER MAP BIT
14161 0 35 23345 STA VAR9
14162 0 76 15721 LDA OPMODE
14163 0 72 15444 SKA BIT6 IS DATA FIXED
14164 0 01 14226 BRU SPR8 YES
14165 0 72 15445 SKA BIT7 IS DATA SEQUENTIAL
14166 0 01 14210 BRU SPR4 YES
14167 0 71 33654 SPR3 LDX #-63D RANDOM DATA
14170 0 76 00406 LDA SEED GEN RANDOM DATA
14171 0 43 15372 BRM RANDOM
14172 0 35 23345 STA VAR9 STORE DATA
14173 0 61 23345 MIN VAR9 INCREMENT POINTER
14174 0 41 14171 BRX **3 LOOP
14175 0 43 15372 BRM RANDOM GEN DATA FOR LAST WORD
14176 0 35 00406 STA SEED
14177 0 55 23344 ADD VAR8 ADD DISC ADDRESS
14200 0 35 23345 STA VAR9 STORE LAST WORD
14201 0 61 23345 MIN VAR9 INCREMENT POINTER
14202 0 61 23344 MIN VAR8 INCREMENT DISC POINTER
14203 0 60 15506 SKR COUNT DECREMENT COUNT
14204 0 20 00000 NOP 0
14205 0 53 15506 SKN COUNT FINISHED
14206 0 01 14167 BRU SPR3 NO = LOOP
14207 0 01 14243 BRU SPR6 RETURN
14210 0 71 33655 SPR4 LDX #-64D COUNT
14211 0 76 23344 LDA VAR8
14212 0 75 33550 LDB #0
14213 0 67 00006 LSH 6
14214 0 35 23345 STA VAR9 STORE DATA
14215 0 55 15465 ADD BIT23 ADD 1
14216 0 61 23345 MIN VAR9 INCREMENT POINTER
14217 0 41 14214 BRX **3 LOOP
14220 0 61 23344 MIN VAR8 INCREMENT DISC ADDRESS
14221 0 60 15506 SKR COUNT DECREMENT COUNT
14222 0 20 00000 NOP 0
14223 0 53 15506 SKN COUNT FINISHED

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14224 0 01 14210 BRU SPR4 NO = LOOP
14225 0 01 14243 BRU SPR6 RETURN
14226 0 71 33654 SPR5 LDX **83D COUNT
14227 0 76 15727 LDA PATTERN FIXED PATTERN
14230 0 35*23345 STA VAR9 STORE DATA
14231 0 61 23345 MIN VAR9 INCREMENT POINTER
14232 0 41 14230 BRX **2
14233 0 55 23344 ADD VAR8 TAG LAST WORD
14234 0 35*23345 STA VAR9
14235 0 61 23345 MIN VAR9 INCREMENT POINTERS
14236 0 61 23344 MIN VAR8
14237 0 60 15506 SKR COUNT DECREMENT COUNT
14240 0 20 00000 NOP 0
14241 0 53 15506 SKN COUNT FINISHED
14242 0 01 14226 BRU SPR5 NO
14243 0 71 23334 SPR6 LDX TEMPD GET X
14244 0 51 14117 BRR SPREAD RETURN

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DISC# TAP=3.0 PAGE 180
*
* I/O DRIVER
*
14245 0 00 00000 DRIVER PZE 0
14246 0 37 23334 STX TEMPD
14247 0 76 15730 LDA CNTRS GET RETRY COUNT
14250 0 66 00014 RSH 12D
14251 0 14 33552 ETR #7
14252 0 54 15465 SUB BIT23 SUBTRACT 1
14253 0 35 23343 STA VAR7 CHANNEL DRIVER RETRY COUNT
14254 0 76 15721 LDA 6PMODE
14255 0 72 15463 SKA BIT21 DO A DUMMY SEEK
14256 0 01 14260 BRU **2 YES
14257 0 01 14274 BRU DRIVE1
14260 0 76 00406 LDA SEED GENERATE RANDOM SEEK ADDRESS
14261 0 43 15372 BRM RANDOM
14262 0 35 00406 STA SEED
14263 0 14 33627 ETR #17777
14264 0 35 23330 STA TEMP
14265 2 76 00000 LDA 0,2 DISC STARTING POT WORD
14266 0 14 33616 ETR #760000
14267 0 16 23330 MRG TEMP
14270 0 35 15603 STA TABLE3
14271 0 77 15603 EAX TABLE3
14272 0 43 14277 BRM DSCDVR DRIVE DISC
14273 0 71 23334 LDX TEMPD
14274 0 43 14277 DRIVE1 BRM DSCDVR DRIVE DISC
14275 0 43 14452 BRM CHNDVR DRIVE CHANNEL
14276 0 51 14245 BRR DRIVER RETURN

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*
*
* DISC DRIVER
14277 0 00 00000 DSCDVR PZE 0
14300 0 76 15730 LDA CNTRS SET UP RETRY COUNTER FOR DISC DRIVER
14301 0 66 00014 BRM 120
14302 0 14 33852 ETR #7
14303 0 54 15465 SUB BIT23 SUBTRACT 1
14304 0 35 23342 STA VAR6
14305 0 76 33851 LDA #=1 PRESET RETRY COUNTER
14306 0 35 15807 STA RETRY
14307 0 76 15465 DDVRO LDA BIT23 SET PHASE
14310 0 35 15512 STA PHASE
14311 0 40 10226 SKS 10226 FILE ON LINE TEST
14312 0 43 14732 BRM ABORT FILE NOT ON LINE
14313 0 20 15436 NOP BIT0
14314 0 40 14024 SKS 14026 WRITE HEADER TEST
14315 0 43 14732 BRM ABORT WRITE HEADER SWITCH ON
14316 0 20 15443 NOP BIT5
14317 0 76 33850 LDA #0
14320 0 40 10026 SKS 10026 DISC FILE READY TEST
14321 0 01 14323 BRU #+2 CONTROLLER NOT READY
14322 0 01 14330 BRU DDVR2
14323 0 05 15465 ADD BIT23 ADD 1
14324 0 73 33871 SKG #338714D
14325 0 01 14320 BRU DDVR1 LOOP
14326 0 43 14732 BRM ABORT 500 MS TIMEOUT
14327 0 20 15437 NOP BIT1
14330 0 02 10026 EOM 10026 ALERT DISC FILE
14331 2 13 00000 POT 0,2 POT TO DISC
14332 2 76 00000 LDA 0,2 GET POT WORD
14333 0 43 15910 BRM GETCAP GET STARTING ARM POSITION
14334 0 35 23332 STA TEMPB
14335 0 67 00007 LSH 7
14336 0 14 33856 ETR #17600
14337 0 35 23330 STA TEMP

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14340 2 76 00000 LDA 0,2 PASSWORD
14341 0 14 33616 ETR #760000
14342 0 16 23330 MRG TEMP
14343 0 35 23331 STA TEMPA
14344 2 76 00000 LDA 0,2 ENTER ENDING POSITION IN TABLE
14345 0 43 15276 BRM ENDP05
14346 0 76 33850 LDA #0 PRESET MOVTIM AND BADTIM
14347 0 35 15804 STA #MOVTIM
14350 0 35 15503 STA BADTIM
14351 2 76 00006 LDA 6,2 TEST FOR WRITE PROTECT
14352 0 72 15460 SKA BIT18 IS OPERATION A READ
14353 0 01 14355 BRU #+2 NO = TEST FOR WRITE PROTECT
14354 0 01 14357 BRU #+3 YES = DO NOT TEST FOR WRITE PROTECT
14355 0 40 13026 SKS 13026 DISC WRITE PROTECT TEST
14356 0 43 14653 BRM REPERR DISC WRITE PROTECTED
14357 0 20 15442 NOP BIT4
14360 0 76 15721 LDA 0PMODE TEST FOR POSITION TIMING
14361 0 72 15464 SKA BIT22
14362 0 01 14364 BRU #+2 TIME IT
14363 0 51 14277 BRR DSCDVR RETURN
14364 2 76 00000 LDA 0,2
14365 0 66 00007 RSH 7 GET NEW ARM POSITION
14366 0 14 33600 ETR #77
14367 0 75 23332 LDB TEMPB GET STARTING ARM POSITION
14370 0 43 15321 BRM GETIME GET MAXIMUM POSITIONING TIME
14371 0 36 15804 STB #MOVTIM SAVE TIME
14372 2 76 00000 LDA 0,2 DISC POT WORD
14373 0 14 33856 ETR #17600
14374 0 66 00037 RSH 31D END POSITION TO B
14375 0 71 33657 LDX #=375D
14376 0 41 14376 BRX #
14377 0 76 15465 LDA BIT23 WAIT REMAINDER OF 1 MS
14400 0 40 12026 SKS 12026 PRESET A REGISTER
14401 0 01 14403 BRU #+2 TRACK VERIFIED TEST
14402 0 01 14412 BRU DDVR4 TRACK NOT VERIFIED
14403 0 55 15465 ADD BIT23 ADD 1

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14404	0 73 33421	SKG	#500D	
14405	0 01 14407	BRU	**2	
14406	0 01 14412	BRU	DDVR4	500 MS TIMEOUT
14407	0 71 33660	LDX	#=559D	
14410	0 41 14410	BRX	*	
14411	0 01 14400	BRU	DDVR3	
14412	0 71 23334	LDX	TEMPD	GET BUFFER BIAS
14413	0 73 15504	SKG	MOVTIM	IS POSITIONING TIME OK
14414	0 51 14277	BRR	DSCDVR	YES = RETURN
14415	0 35 15503	STA	BADTIM	SAVE TRUE POSITIONING TIME
14416	0 60 23342	SKR	VAR6	DECREMENT RETRY COUNTER
14417	0 20 00000	NOP	0	
14420	0 53 23342	SKN	VAR6	RETRY
14421	0 01 14423	BRU	**2	YES
14422	0 43 14732	BRM	ABORT	
14423	0 20 15445	NBP	BIT7	
14424	0 43 14653	BRM	REPERR	REPORT ERROR
14425	0 20 15445	NBP	BIT7	
14426	0 02 10026	EBM	10026	ALERT DISC FILE
14427	0 13 23331	PBT	TEMPA	MOVE TO ORIGINAL POSITION
14430	0 76 15464	LDA	BIT22	SET PHASE
14431	0 35 15512	STA	PHASE	
14432	0 76 23331	LDA	TEMPA	SET UP END DISC POSITION
14433	0 35 23332	STA	TEMPB	
14434	0 43 15276	BRM	ENDPOS	ENTER ENDING POSITION IN TABLE
14435	2 76 00000	LDA	0+2	SET UP START DISC
14436	0 35 23331	STA	TEMPA	
14437	0 76 33550	LDA	#0	
14440	0 40 12026	SKS	12026	TRACK VERIFIED TEST
14441	0 01 14443	BRU	**2	TRACK NOT VERIFIED
14442	0 01 14307	BRU	DDVRO	TRY AGAIN
14443	0 55 15465	ADD	BIT23	ADD 1
14444	0 73 33571	SKG	#35714D	
14445	0 01 14440	BRU	DDVR5	
14446	0 76 33621	LDA	#500D	
14447	0 35 15503	STA	BADTIM	

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14450	0 43 14732	BRM	ABORT	500 MS TIMEOUT
14451	0 20 15445	NBP	BIT7	

```

*
* CHANNEL DRIVER
*
14452 0 00 00000 CHNDVR PZE 0
14453 0 37 23334 STX TEMPD SAVE X
14454 2 76 00005 LDA 5,2 EXTENDED MODE EOM
14455 0 35 14472 STA CDVR3
14456 2 76 00006 LDA 6,2 BUFFER CONTROL EOM
14457 0 35 14474 STA CDVR4
14460 0 76 33550 LDA #0
14461 0 40 14000 SKS 14000 CHANNEL ACTIVE TEST
14462 0 01 14464 BRU **2 CHANNEL ACTIVE
14463 0 01 14471 BRU CDVR2
14464 0 55 15465 ADD BIT23 ADD 1
14465 0 73 33571 SKG #33571*0
14466 0 01 14461 BRU CDVR1
14467 0 43 14732 BRM ABORT CHANNEL ACTIVE AFTER 500 MB
14470 0 20 15453 NOP BIT13
14471 0 02 10000 EOM 10000 ALERT CHANNEL
14472 0 00 00000 CDVR3 PZE 0 EXTENDED MODE EOM
14473 2 13 00001 PGT 1,2
14474 0 00 00000 CDVR4 PZE 0 BUFFER CONTROL EOM
14475 2 76 00004 LDA 4,2 SET PHASE
14476 0 35 15512 STA PHASE
14477 0 76 33450 LDA #0
14500 0 35 15477 STA STFLAG CLEAR SEARCH TIME FLAG
14501 0 35 15475 STA I1FLAG CLEAR I1 FLAG
14502 0 35 15476 STA I2FLAG CLEAR I2 FLAG
14503 0 76 15721 LDA 8PHODE
14504 0 72 15465 SKA BIT23 TIME SEARCH
14505 0 61 14507 BRU **2 YES
14506 0 51 14452 BRR CHNDVR RETURN
14507 2 76 00002 LDA 2,2 GET COMPARE ADDRESS
14510 0 55 15464 ADD BIT22 ADD 2
14511 0 71 33461 LDX #=3300D COUNT
14512 0 75 33551 LDB #=1 MASK

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14513 0 02 12000 EOM 12000 ALERT TO PIN CHANNEL ADDRESS
14514 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
14515 0 73 23330 SKG TEMP CHANNEL COUNTING YET
14516 0 01 14541 BRU CDVR7 YES
14517 0 41 14513 BRX CDVR5 LOOP
14520 0 36 15477 STB STFLAG SET SEARCH TIME ERROR FLAG
14521 0 71 33462 LDX #=3303D COUNT
14522 0 02 12000 EOM 12000 ALERT TO PIN CHANNEL ADDRESS
14523 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
14524 0 73 23330 SKG TEMP IS INTERLACE COUNTING YET
14525 0 01 14541 BRU CDVR7 YES
14526 0 41 14522 BRX CDVR6 LOOP
14527 0 71 23334 LDX TEMPD GET X
14530 0 60 23343 SKR VAR7 DECREMENT RETRY COUNTER
14531 0 20 00000 NOP 0
14532 0 53 23343 SKN VAR7 RETRY
14533 0 01 14535 BRU **2 YES
14534 0 43 14732 BRM ABORT
14535 0 20 15447 NOP BIT9
14536 0 43 14453 BRM REPERR
14537 0 20 15447 NOP BIT9
14540 0 01 14307 BRU DDVR0 TRY AGAIN
14541 0 71 23334 LDX TEMPD GET X
14542 0 51 14452 BRR CHNDVR RETURN

```

```

*
*
* ROUTINE TO WAIT UP TO 2.8 SECONDS FOR DISC READY
14543 0 00 00000  WFI0  PZE  0
14544 0 35 23325  STA  A          SAVE A
14545 0 76 33663  LDA  #99999D    COUNT = 100,000
14546 0 35 23330  STA  TEMP
14547 0 60 23330  WFI01 SKR  TEMP
14550 0 66 20060  RCY  480
14551 0 53 23330  SKN  TEMP
14552 0 01 14554  BRU  **2
14553 0 01 14556  BRU  WFI02      2.8 SEC UP
14554 0 40 10026  SKS  10026     DISC FILE READY TEST
14555 0 01 14547  BRU  WFI01     FILE NOT READY
14556 0 76 23325  WFI02 LDA  A          GET A REGISTER
14557 0 51 14543  BRR  WFI0      RETURN

```

```

*
*
* CHECK FOR I/O ERRORS
14560 0 00 00000  CHNCK PZE  0
14561 0 02 10026  EOM  10026    ALERT DISC FILE
14562 0 33 23330  PIN  TEMP     UPDATE CURRENT ARM POSITION TABLE
14563 0 76 23330  LDA  TEMP
14564 0 43 15276  BRM  ENDP05   INSERT ENDING ADDRESS
14565 0 75 33616  LDB  #760000  MASK
14566 2 70 00000  SKM  0,2     STARTING AND ENDING ADDRESS ON SAME DISC
14567 0 01 14571  BRU  **2     NO
14570 0 01 14574  BRU  **4
14571 2 76 00000  LDA  0,2     START DISC
14572 0 16 33627  MRO  #17777
14573 0 43 15276  BRM  ENDP05   INSERT POSITION 77 FOR STARTING DISC
14574 0 43 15340  BRM  IOSTAT   GET CURRENT I/O STATUS
14575 0 72 33664  SKA  #71007000 DOES ERROR CONDITION EXIST
14576 0 01 14637  BRU  CHNCK2  YES
14577 0 46 20005  ABC
14600 0 53 15474  SKN  INTRPT   INTERRUPT MODE
14601 0 01 14621  BRU  CHNCK0  NO
14602 2 76 00006  LDA  6,2     BUFFER EOM
14603 0 72 15460  SKA  BIT18   IN WRITE MODE
14604 0 01 14613  BRU  CHNCK4  YES
14605 0 46 10012  BAC
14606 0 72 33665  SKA  #600    INTERRUPT ERROR
14607 0 01 14611  BRU  **2     YES
14610 0 01 14621  BRU  CHNCK0
14611 0 14 33665  ETR  #600
14612 0 01 14640  BRU  CHNCK2+1
14613 0 46 10012  CHNCK4 BAC
14614 0 72 15455  SKA  BIT15   INTERRUPT ERROR IN WRITE MODE
14615 0 01 14617  BRU  **2     YES
14616 0 01 14621  BRU  CHNCK0
14617 0 14 15455  ETR  BIT15
14620 0 01 14640  BRU  CHNCK2+1

```


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14621	0 53 15477	CHNCK0	SKN	STFLAG
14622	0 51 14560		BRR	CHNCK
14623	0 76 33551		LDA	#=1
14624	0 35 15472		STA	DHEAD
14625	0 35 15473		STA	IOHEAD
14626	0 37 23330		STX	TEMP
14627	0 76 23330		LDA	TEMP
14630	0 14 33560		ETR	#37777
14631	0 16 15446		MRG	BITR
14632	0 35 14635		STA	CHNCK1
14633	0 43 00454		BRM	REPORT
14634	4 20 33270		NBP	F10M9.4
14635	0 00 00000	CHNCK1	PZE	0
14636	0 51 14560		BRR	CHNCK
14637	0 14 33664	CHNCK2	ETR	#71007000
14640	0 35 14652		STA	CHNCK3
14641	0 60 23343		SKR	VAR7
14642	0 20 00000		NBP	0
14643	0 53 23343		SKN	VAR7
14644	0 01 14646		BRU	#+2
14645	0 43 14732		BRM	ABORT
14646	0 20 14652		NBP	CHNCK3
14647	0 43 14653		BRM	REPERR
14650	0 20 14652		NBP	CHNCK3
14651	0 01 14307		BRU	DDVRO
14652	0 00 00000	CHNCK3	PZE	0

SEARCH TIME FLAG SET
NO * RETURN
RESET HEADING SWITCHES

SET UP MESSAGE POINTER

POINTER
RETURN
FORMAT

DECREMENT CHANNEL RETRY COUNTER

RETRY
YES

TRY AGAIN

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*
*
* REPORT I/O ERROR

14653	0 00 00000	REPERR	PZE	0
14654	0 37 23334		STX	TEMPD
14655	0 61 14453		MIN	REPERR
14656	0 61 15507		MIN	RETRY
14657	0 77*14653		EAX*	REPERR
14660	2 76*00000		LDA*	0.2
14661	0 35 15513		STA	ERRTBL
14662	0 43 15340		BRM	IOSTAT
14663	0 35 23330		STA	TEMP
14664	0 76 15507		LDA	RETRY
14665	0 67 00003		LSH	3
14666	0 14 33666		ETR	#170
14667	0 55 23330		ADD	TEMP
14670	0 16 15513		MRG	ERRTBL
14671	0 35 15514		STA	ERRTBL+1
14672	0 76 15503		LDA	BADTIM
14673	0 75 33550		LDB	#0
14674	0 67 00014		LSH	120
14675	0 55 15504		ADD	#OVRTIM
14676	0 35 15515		STA	ERRTBL+2
14677	0 71 23334		LDX	TEMPD
14700	2 76 00000		LDA	0.2
14701	0 35 15516		STA	ERRTBL+3
14702	2 76 00002		LDA	2.2
14703	0 35 15520		STA	ERRTBL+5
14704	2 76 00003		LDA	3.2
14705	0 35 15522		STA	ERRTBL+7
14706	0 02 10026		EQM	10026
14707	0 33 15517		PIN	ERRTBL+4
14710	0 02 12000		EQM	12000
14711	0 33 15521		PIN	ERRTBL+6
14712	0 43 14743		BRM	#FIB
14713	0 53 15473		SKN	IOHEAD

SAVE X
INCREMENT RETURN
INCREMENT RETRY COUNTER

ERROR FLAG

GET CURRENT I/O STATUS

MERGE ERROR FLAG

TIMES

BIAS
STARTING DISC ADDRESS

STARTING CORE ADDRESS

BLOCK LENGTH

ALERT DISC FILE
ENDING DISC ADDRESS
ALERT TO PIN CHANNEL ADDRESS
ENDING CHANNEL ADDRESS
WAIT FOR I/O TO FINISH
PRINT HEADING

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15006	0 35 23345	STA	VAR9	
15007	0 75 33551	LDB	==1	MASK
15010	0 76 15781	LDA	SPMODE	
15011	0 72 15444	SKA	BIT6	IS DATA FIXED
15012	0 01 15060	BRU	DATA7	YES
15013	0 72 15445	SKA	BIT7	IS DATA SEQUENTIAL
15014	0 01 15037	BRU	DATAS	YES
15015	0 36 15502	DATA3 STB	NEWSEC	SET NEW SECTOR SWITCH
15016	0 71 33454	LDX	==63D	RANDOM DATA
15017	0 76*23345	LDA*	VAR9	GET FIRST WORD
15020	0 70*23345	DATA4 SKM*	VAR9	IS DATA CORRECT
15021	0 43 15170	BRM	DATERR	NO
15022	0 43 15372	BRM	RANDOM	GENERATE NEXT RANDOM WORD
15023	0 61 23345	MIN	VAR9	INCREMENT POINTER
15024	0 41 15020	BRX	DATA4	
15025	0 55 23344	ADD	VAR8	ADD DISC ADDRESS = LAST WORD
15026	0 70*23345	SKM*	VAR9	IS LAST WORD CORRECT
15027	0 43 15170	BRM	DATERR	NO
15030	0 61 23345	MIN	VAR9	INCREMENT POINTERS
15031	0 61 23344	MIN	VAR8	
15032	0 60 15506	SKR	COUNT	DECREMENT COUNT
15033	0 20 00000	NOP	0	
15034	0 53 15506	SKN	COUNT	FINISHED
15035	0 01 15015	BRU	DATA3	NO
15036	0 01 15100	BRU	DATAS	
15037	0 36 15502	DATA5 STB	NEWSEC	SET NEW SECTOR SWITCH
15040	0 75 33550	LDB	=0	
15041	0 76 23344	LDA	VARA	SET UP FIRST SEQUENTIAL DATA WORD
15042	0 67 00006	LSH	6	
15043	0 75 33551	LDB	==1	MASK
15044	0 71 33655	LDX	==64D	COUNT
15045	0 70*23345	DATA6 SKM*	VAR9	IS DATA CORRECT
15046	0 43 15170	BRM	DATERR	NO
15047	0 55 15465	ADD	BIT23	ADD 1
15050	0 61 23345	MIN	VAR9	INCREMENT POINTER
15051	0 41 15045	BRX	DATA6	LOOP

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15052	0 61 23344	MIN	VAR8	UPDATE DISC ADDRESS
15053	0 60 15506	SKR	COUNT	DECREMENT COUNT
15054	0 20 00000	NOP	0	
15055	0 53 15506	SKN	COUNT	FINISHED
15056	0 01 15037	BRU	DATAS	NO
15057	0 01 15100	BRU	DATAS	
15060	0 36 15502	DATA7 STB	NEWSEC	SET NEW SECTOR SWITCH
15061	0 71 33654	LDX	==63D	COUNT
15062	0 76 15727	LDA	PATERN	FIXED PATTERN
15063	0 70*23345	SKM*	VAR9	IS DATA CORRECT
15064	0 43 15170	BRM	DATERR	NO
15065	0 61 23345	MIN	VAR9	INCREMENT POINTER
15066	0 41 15063	BRX	==3	LOOP
15067	0 55 23344	ADD	VAR8	
15070	0 70*23345	SKM*	VAR9	IS LAST WORD CORRECT
15071	0 43 15170	BRM	DATERR	NO
15072	0 61 23345	MIN	VAR9	INCREMENT POINTERS
15073	0 61 23344	MIN	VAR8	
15074	0 60 15506	SKR	COUNT	DECREMENT COUNT
15075	0 20 00000	NOP	0	
15076	0 53 15506	SKN	COUNT	FINISHED
15077	0 01 15060	BRU	DATA7	NO
15100	0 71 23334	DATA8 LDX	TEMPD	GET X
15101	0 51 14745	BRR	DATACK	RETURN

```

*
*
*   COMPARE BUFFERS 1 AND 2
*
15102 0 00 00000 C1A2D2 PZE 0
15103 0 37 23334 STX TEMPD SAVE X
15104 0 77 15563 EAX TABLE1
15105 2 76 00002 LDA 2;2 START CORE (B=1)
15106 0 53 23350 SKN NFFLG IS MACHINE A 940
15107 0 01 15131 BRU C1A2B NO
15110 0 66 00013 RSH 11D SET UP RELABELING
15111 0 35 23330 STA TEMP
15112 0 75 33550 LDB #0
15113 0 71 33652 LDX #=7
15114 0 61 23330 C1A2A MIN TEMP
15115 0 67 20006 LCY 6
15116 0 55 23330 ADD TEMP
15117 0 41 15114 BRX C1A2A
15120 0 36 00415 STB RL1
15121 0 35 00416 STA RL2
15122 0 02 20400 EOM 20400 SET UP RL1
15123 0 13 00415 PBT RL1
15124 0 02 21000 EOM 21000 SET UP RL2
15125 0 13 00416 PBT RL2
15126 0 77 15563 EAX TABLE1
15127 2 76 00002 LDA 2;2 START CORE (B=1)
15130 0 14 33453 ETR #3777
15131 0 35 23331 C1A2B STA TEMPA BUFFER 1 POINTER
15132 2 76 00003 LDA 3;2 LENGTH
15133 0 75 33550 LDB #0
15134 0 67 00006 LSH 6
15135 0 55 23331 ADD TEMPA
15136 0 16 15436 MRG BITO USER MAP BIT
15137 0 35 23345 STA VARS BUFFER 2 POINTER
15140 0 76 23331 LDA TEMPA
15141 0 16 15436 MRG BITO USER MAP BIT
15142 0 35 23331 STA TEMPA

```

```

15143 2 76 00003 LDA 3;2 LENGTH
15144 0 54 15465 SUB BIT23 SUBTRACT 1
15145 0 35 15506 STA COUNT
15146 2 76 00000 LDA 0;2 START DISC
15147 0 35 23344 STA VARS
15150 0 75 33551 LDB #=1 MASK
15151 0 36 15502 C1A2C STB NEWSEC SET NEW SECTOR SWITCH
15152 0 71 33655 LDX #=640 COUNT
15153 0 76 23331 C1A2D LDA# TEMPA B=1 WORD
15154 0 70 23345 SKM# VARS B=2 WORD
15155 0 43 15170 BRM DATERR MISCMPARE
15156 0 61 23331 MIN TEMPA INCREMENT POINTERS
15157 0 61 23345 MIN VARS
15160 0 41 15153 BRX C1A2D LOOP
15161 0 61 23344 MIN VARS INCREMENT DISC POINTER
15162 0 60 15506 SKR COUNT DECREMENT COUNT
15163 0 20 00000 NBP 0
15164 0 53 15506 SKN COUNT FINISHED
15165 0 01 15151 BRU C1A2C NO
15166 0 71 23334 LDX TEMPD GET X
15167 0 51 15102 BRR C1A2D2 RETURN

```

```

*
* DATA ERROR ROUTINE
*
DATERR PZE      0
15170 0 00 00000  BRM      SAV          SAVE REGISTERS
15171 0 43 15257  STA      ERRRTL+1    GOOD WORD
15172 0 35 15514  LDA+    VAR9          BAD WORD
15173 0 76+23345  STA      ERRRTL      DISC ADDRESS
15174 0 35 15513  LDA      VAR8
15175 0 76 23344  STA      ERRRTL+2
15176 0 35 15515  STX      TEMP
15177 0 37 23330  LDA      BIT17      A = 64D
15200 0 76 15457  ADD      TEMP
15201 0 55 23330  STA      ERRRTL+6    WORD NUMBER
15202 0 35 15521  LDX      TEMPD      GET BUFFER BIAS
15203 0 71 23334  LDA      2,2        START CORE
15204 2 76 00002  ETR      @174000    EXTRACT RELABELING
15205 0 14 33667  STA      TEMP
15206 0 35 23330  LDA      VAR9
15207 0 74 23345  SKN      NFFLG      IS MACHINE A 940
15210 0 53 23350  BRU      **2        NO
15211 0 01 15213  ADD      TEMP
15212 0 55 23330  STA      ERRRTL+3    CORE ADDRESS
15213 0 35 15516  LDA      0,2
15214 2 76 00000  STA      ERRRTL+4    STARTING DISC ADDRESS
15215 0 35 15517  LDA      3,2
15216 2 76 00003  STA      ERRRTL+5    BLOCK SIZE IN SECTORS
15217 0 35 15520  MIN      ERRRTL+7    INCREMENT ERROR COUNT
15220 0 61 15522  BRM      WFI0       WAIT FOR DISC TO FINISH IF BUSY
15221 0 43 14543  SKN      NEWSEC     NEW SECTOR
15222 0 53 15502  BRU      DERR2     NO
15223 0 01 15247  LDA      BIT23      A = 1
15224 0 76 15465  STA      ERRRTL+7    RESET ERROR COUNT
15225 0 35 15522  STA      NEWSEC     RESET NEW SECTOR SWITCH
15226 0 35 15502  BRM      REPORT
15227 0 43 00454  NBP      F10M7
15230 0 20 33245

```

```

15231 0 53 15472  SKN      DHEAD      DATA ERROR HEADER LAST HEADER
15232 0 01 15240  BRU      DERR1     YES
15233 0 35 15472  STA      DHEAD      RESET DATA ERROR HEADER SWITCH
15234 0 76 33551  LDA      **1        SET I/O HEADER SWITCH
15235 0 35 15473  STA      I0HEAD
15236 0 43 00454  BRM      REPORT
15237 0 20 33246  NBP      F10M8     HEADING
15240 0 43 00454  DERR1  BRM      REPORT
15241 4 20 33245  NBP      F10M7,4   (CR)
15242 0 10 15513  EIGHT    ERRRTL    DATA
15243 0 43 15264  BRM      GET        GET REGISTERS
15244 0 43 00460  BRM      ERROR     GO TO CONTROL
15245 0 20 23660  NBP      U21M12
15246 0 51 15170  BRR      DATERR    RETURN
15247 0 76 15730  DERR2  LDA      CNTRS
15250 0 14 33600  ETR      @77       EXTRACT DISPLAY COUNT
15251 0 55 15465  ADD      BIT23     ADD 1
15252 0 73 15522  SKG      ERRRTL+7  REPORT THIS ERROR
15253 0 01 15235  BRU      **2        NO
15254 0 01 15240  BRU      DERR1
15255 0 43 15264  BRM      GET        GET REGISTERS
15256 0 51 15170  BRR      DATERR    RETURN

```

```

*
*
* SAVE REGISTERS
15257 0 00 00000 SAV PZE 0
15260 0 35 23325 STA A
15261 0 36 23326 STB B
15262 0 37 23327 STX X
15263 0 51 15257 BRR SAV
*
* RESTORE REGISTERS
15264 0 00 00000 GET PZE 0
15265 0 76 23325 LDA A
15266 0 75 23326 LDB B
15267 0 71 23327 LDX X
15270 0 51 15264 BRR GET
*
* RESET SEQUENTIAL DISC POINTER
15271 0 43 00430 RESET BRM OBJECT
15272 0 76 15274 LDA LDISC GET STARTING DISC ADDRESS
15273 0 35 23340 STA VAR4 RESET POINTER
15274 0 43 23065 BRM TERM GO TO CONTROL
15275 0 01 13101 BRU FSTART RESTART FUNCTION

```

```

*
* ENTER POSITION INTO TABLE
15276 0 00 00000 ENDPSS PZE 0
15277 0 43 15257 BRM SAV
15300 0 66 00015 RSH 13D GET DISC
15301 0 35 23330 STA TEMP A TO X
15302 0 71 23330 LDX TEMP
15303 0 76 33550 LDA #0
15304 0 67 00006 LSH 6
15305 2 35 15523 STA CAPTBL,2
15306 0 43 15264 BRM GET
15307 0 51 15276 BRR ENDPSS RETURN
*
* GET CURRENT ARM POSITION
15310 0 00 00000 GETCAP PZE 0
15311 0 43 15257 BRM SAV SAVE REGISTERS
15312 0 66 00015 RSH 13D GET DISC
15313 0 35 23330 STA TEMP A TO X
15314 0 71 23330 LDX TEMP
15315 2 76 15523 LDA CAPTBL,2 CURRENT POSITION
15316 0 75 23326 LDB B
15317 0 71 23327 LDX X
15320 0 51 15310 BRR GETCAP RETURN

```

```

*
*   GET MAXIMUM POSITIONING TIME
*
15321 0 00 00000 GETIME PZE 0
15322 0 43 15257 BRM SAV SAVE REGISTERS
15323 0 54 23326 SUB B
15324 0 35 23330 STA TEMP A = END POS - START POS
15325 0 72 15436 SKA BIT0 IS A NEGATIVE
15326 0 01 15330 BRU **2 YES
15327 0 01 15333 BRU **4
15330 0 76 33550 LDA #0
15331 0 54 23330 SUB TEMP .A TO A
15332 0 35 23330 STA TEMP
15333 0 71 23330 LDX TEMP
15334 2 75 15613 LDB TIMTBL,2 MAX TIME
15335 0 76 23325 LDA A
15336 0 71 23327 LDX X
15337 0 51 15321 BRR GETIME RETURN

```

```

*
*   GENERATE STATUS WORD
*
15340 0 00 00000 IOSTAT PZE 0
15341 0 76 33550 LDA #0
15342 0 40 10226 SKS 10226 FILE ON LINE TEST
15343 0 16 15436 MRG BIT0 FILE NOT ON LINE
15344 0 40 10026 SKS 10026 DISC FILE READY TEST
15345 0 16 15437 MRG BIT1 CONTROLLER NOT READY
15346 0 40 11026 SKS 11026 DISC FILE ERROR TEST
15347 0 16 15440 MRG BIT2 CONTROLLER ERROR
15350 0 40 12026 SKS 12026 TRACK VERIFIED TEST
15351 0 16 15441 MRG BIT3 TRACK NOT VERIFIED
15352 0 40 13026 SKS 13026 DISC WRITE PROTECT TEST
15353 0 16 15442 MRG BIT4 DISC WRITE PROTECTED
15354 0 40 14026 SKS 14026 WRITE HEADER TEST
15355 0 16 15443 MRG BIT5 WRITE HEADER SWITCH ON
15356 0 40 11000 SKS 11000 CHANNEL ERROR TEST
15357 0 16 15452 MRG BIT12 CHANNEL ERROR
15360 0 40 14000 SKS 14000 CHANNEL ACTIVE TEST
15361 0 16 15453 MRG BIT13 CHANNEL ACTIVE
15362 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
15363 0 16 15454 MRG BIT14 CHANNEL WORD COUNT NOT ZERO
15364 0 53 15475 SKN I1FLAG
15365 0 16 15455 MRG BIT15 I1 NOT RECEIVED
15366 0 53 15476 SKN I2FLAG
15367 0 16 15456 MRG BIT16 I2 NOT RECEIVED
15370 0 16 15512 MRG PHASE GET PHASE COUNTER
15371 0 51 15340 BRR IOSTAT RETURN

```

```

*
*
*   RANDOM NUMBER GENERATOR
*
15372 0 00 00000  RANDOM PZE      0
15373 0 43 15257  BRM      SAV      SAVE REGISTERS
15374 0 66 00015  RSH      13D
15375 0 14 33670  ETR      #1777
15376 0 55 23325  ADD      A
15377 0 55 33671  ADD      #53577045
15400 0 75 23326  LDB      B
15401 0 71 23327  LDX      X
15402 0 51 15372  BRR      RANDOM    RETURN

```

```

*
*
*   INTERRUPT PROCESSOR
*
15403 0 02 20004  INTER DIR      DISABLE INTERRUPTS
15404 0 35 15510  STA      A1      SAVE REGISTERS
15405 0 36 15511  STB      B1
15406 0 76 00450  LDA      DIVERT  GET INTERRUPT MARK ADDRESS
15407 0 75 33551  LDB      #1      MASK
15410 0 14 33560  ETR      #37777
15411 0 70 33562  SKN      #IX1    WAS INTERRUPT AN I1
15412 0 01 15414  BRU      #2      NO
15413 0 01 15421  BRU      INTER1
15414 0 70 33564  SKN      #IX2    WAS INTERRUPT AN I2
15415 0 43 23377  BRM      SPUR    NO - SPURIOUS
15416 0 20 33672  NOP      #310033  POINTER
15417 0 36 15476  STB      I2FLAG
15420 0 01 15422  BRU      #2
15421 0 36 15475  INTER1 STB      I1FLAG
15422 0 54 15465  SUB      BIT23
15423 0 35 00450  STA      DIVERT
15424 0 76 00450  LDA      DIVERT
15425 0 35 00450  STA      DIVERT
15426 0 76 15510  LDA      A1      RESTORE REGISTERS
15427 0 75 15511  LDB      B1
15430 0 53 23350  SKN      NFFLG   IS MACHINE A 940
15431 0 01 15434  BRU      #3      NO
15432 0 02 20002  EIR      ENABLE INTERRUPTS
15433 0 11 00450  BRI      DIVERT  RETURN
15434 0 02 20002  EIR      RETURN
15435 0 01 00450  BRU      DIVERT  RETURN

```



```

*
*   CONSTANTS
*
15436 40000000 BIT0 DATA 40000000
15437 20000000 BIT1 DATA 20000000
15440 10000000 BIT2 DATA 10000000
15441 04000000 BIT3 DATA 04000000
15442 02000000 BIT4 DATA 02000000
15443 01000000 BIT5 DATA 01000000
15444 00400000 BIT6 DATA 00400000
15445 00200000 BIT7 DATA 00200000
15446 00100000 BIT8 DATA 00100000
15447 00040000 BIT9 DATA 00040000
15450 00020000 BIT10 DATA 00020000
15451 00010000 BIT11 DATA 00010000
15452 00004000 BIT12 DATA 00004000
15453 00002000 BIT13 DATA 00002000
15454 00001000 BIT14 DATA 00001000
15455 00000400 BIT15 DATA 00000400
15456 00000200 BIT16 DATA 00000200
15457 00000100 BIT17 DATA 00000100
15460 00000040 BIT18 DATA 00000040
15461 00000020 BIT19 DATA 00000020
15462 00000010 BIT20 DATA 00000010
15463 00000004 BIT21 DATA 00000004
15464 00000002 BIT22 DATA 00000002
15465 00000001 BIT23 DATA 00000001
15466 11133307 RMODE DATA 11133307
15467 0 02 0242A EOM 2626
15470 0 02 03666 EOM 3666
15471 0 02 14000 EOM 14000

```

```

AUTOMATIC RUNNING MODE
READ DISC FILE = CHAIN
WRITE DISC FILE = SECTOR
EXTENDED MODE EOM

```

```

*
*   FLAGS
*
15472 0 00 00000 DHEAD PZE 0 DATA ERROR HEADING FLAG
15473 0 00 00000 IOHEAD PZE 0 IO ERROR HEADING FLAG
15474 0 00 00000 INTRPT PZE 0 INTERRUPT MODE FLAG
15475 0 00 00000 I1FLAG PZE 0 I1 RECEIVED FLAG
15476 0 00 00000 I2FLAG PZE 0 I2 RECEIVED FLAG
15477 0 00 00000 STFLAG PZE 0 SEARCH TIME ERROR FLAG
15500 0 00 00000 KEY PZE 0 KEY SWITCH (KEY IN PROCESS)
15501 0 00 00000 RRGW PZE 0 READ/READ SWITCH (USED IN COMPARE MODE)
15502 0 00 00000 NEWSEC PZE 0 NEW SECTOR SWITCH
*
*   STORAGE CELLS
*
15503 0 00 00000 RBDTIM PZE 0 SEEK TIME ERROR (INCORRECT TIME)
15504 0 00 00000 MBVTIM PZE 0 SEEK TIME ERROR (MAX CORRECT TIME)
15505 0 00 00000 BLKMAX PZE 0 MAXIMUM TRANSFER BLOCK LENGTH
15506 0 00 00000 COUNT PZE 0 INTERNAL COUNTER
15507 0 00 00000 RETRY PZE 0 CURRENT RETRY COUNT
15510 0 00 00000 A1 PZE 0
15511 0 00 00000 B1 PZE 0
15512 0 00 00000 PHASE PZE 0 CURRENT PHASE

```

		TABLES		
15513	00010	ERRTBL	BSS	8D
15523	00040	CAPTBL	BSS	32D
15563	0 00 00000	TABLE1	PZE	0
15564	0 00 00000		PZE	0
15565	0 00 00000		PZE	0
15566	0 00 00000		PZE	0
15567	0 00 00000		PZE	0
15570	0 00 00000		PZE	0
15571	0 00 00000		PZE	0
15572	00000001		DATA	1
15573	0 00 00000	TABLE2	PZE	0
15574	0 00 00000		PZE	0
15575	0 00 00000		PZE	0
15576	0 00 00000		PZE	0
15577	0 00 00000		PZE	0
15600	0 00 00000		PZE	0
15601	0 00 00000		PZE	0
15602	00000002		DATA	2
15603	0 00 00000	TABLE3	PZE	0
15604	0 00 00000		PZE	0
15605	0 00 00000		PZE	0
15606	0 00 00000		PZE	0
15607	0 00 00000		PZE	0
15610	0 00 00000		PZE	0
15611	0 00 00000		PZE	0
15612	00000003		DATA	3

ERROR OUTPUT TABLE
CURRENT ARM POSITION TABLE
DISC POT WORD (B*1)
CHANNEL POT WORD
CHANNEL STARTING ADDRESS
BLOCK LENGTH IN SECTORS
OPERATING MODE
EXTENDED MODE EOM
BUFFER CONTROL EOM
BUFFER NUMBER (FIXED)
DISC POT WORD (B*2)
CHANNEL POT WORD
CHANNEL STARTING ADDRESS
BLOCK LENGTH IN SECTORS
OPERATING MODE
EXTENDED MODE EOM
BUFFER CONTROL EOM
BUFFER NUMBER (FIXED)
DUMMY SEEK POT WORD
DUMMY TABLE

BUFFER IDENTIFIER

		MAXIMUM POSITIONING TIMES	
15613	00000007	TIMTBL	DATA 1350,2500,2170,2170,2330,2330,2500,2500,2500,2500
15614	00000372		
15615	00000331		
15616	00000331		
15617	00000351		
15620	00000351		
15621	00000372		
15622	00000372		
15623	00000372		
15624	00000372		
15625	00000413	DATA	2670,2670,2670,2670,2830,2830,3000,3000,3000,3000
15626	00000413		
15627	00000413		
15630	00000413		
15631	00000433		
15632	00000433		
15633	00000454		
15634	00000454		
15635	00000454		
15636	00000454		
15637	00000475	DATA	3170,3170,3170,3170,3170,3170,3330,3330,3500,3500
15640	00000475		
15641	00000475		
15642	00000475		
15643	00000475		
15644	00000475		
15645	00000515		
15646	00000515		
15647	00000536		
15650	00000536		
15651	00000536	DATA	3500,3500,3500,3500,3500,3500,3670,3670,3670,3670
15652	00000536		
15653	00000536		

15750	31622312		
15751	12123031		
15752	24316223		
15753	12121243		
15754	25452763		
15755	30121247		
15756	21636325		
15757	51451212		
15760	23466445		
15761	63255162		
15762	52371212		
15763	52322431	FAM10 BCD	' DISC EXERCISER = 3.0'
15764	62231225		
15765	67255123		
15766	31622551		
15767	12401203		
15770	33001212		
15771	52526346	BCD	' TO RESET THE SEQUENTIAL DISC POINTER, TYPE =0 15271T. THIS POINTER'
15772	12512562		
15773	25631263		
15774	30251262		
15775	25506425		
15776	45633121		
15777	*3122431		
16000	62231247		
16001	46314563		
16002	25517312		
16003	63704725		
16004	12404612		
16005	01050207		
16006	01633312		
16007	63303162		
16010	12474631		
16011	45632551		
16012	52316212	BCD	' IS NOT RESET BY A *F 10T*'
16013	45466312		

16014	51256225		
16015	63122370		
16016	12211240		
16017	26120100		
16020	63331212		
16021	52526330	BCD	' THE MODE OF OPERATION OF THE EXERCISER IS CONTROLLED BY ONE BITS IN THE'
16022	25124446		
16023	24251246		
16024	26124447		
16025	25512163		
16026	31464512		
16027	46261263		
16030	30251225		
16031	67255123		
16032	31622551		
16033	12316212		
16034	23464563		
16035	51464343		
16036	25241222		
16037	70124445		
16040	25122231		
16041	63621231		
16042	45126330		
16043	25121212		
16044	52652151	BCD	' VARIABLE *OPMODE* AS FOLLOWS!'
16045	31212243		
16046	25124446		
16047	47444424		
16050	25401221		
16051	62122446		
16052	43434466		
16053	62151212		
16054	52000412	BCD	' 00 = FIXED DISC 01 = SEQUENTIAL DISC 02 = RANDOM DISC'
16055	40122631		
16056	67252412		
16057	24316223		

16060 52000112
 16061 40126225
 16062 50642545
 16063 63312143
 16064 12243162
 16065 23520002
 16066 12401251
 16067 21452446
 16070 44122431
 16071 62211212
 16072 52000712
 16073 40122431
 16074 67252412
 16075 23465125
 16076 52000412
 16077 40126225
 16100 50642545
 16101 63312143
 16102 12234451
 16103 25520005
 16104 12401251
 16105 21452446
 16106 44122346
 16107 51251212
 16110 52000412
 16111 40122431
 16112 67252412
 16113 24216321
 16114 52000712
 16115 40126225
 16116 50642545
 16117 63312143
 16120 12242163
 16121 21520010
 16122 12401251
 16123 21452446

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

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

16124 44122421
 16125 63211212
 16126 52001112
 16127 40124561
 16130 21520100
 16131 12401223
 16132 46444764
 16133 63251266
 16134 30314325
 16135 12635121
 16136 45622625
 16137 51314527
 16140 12242163
 16141 21520101
 16142 12401264
 16143 62251231
 16144 45632551
 16145 51644763
 16146 62121212
 16147 52010212
 16150 40122264
 16151 26262551
 16152 12011226
 16153 31672524
 16154 12464725
 16155 51216331
 16156 46455201
 16157 03124112
 16160 66513163
 16161 25122264
 16162 26262551
 16163 12015201
 16164 04124012
 16165 51252124
 16166 12226426
 16167 26255112

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

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

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16170 01121212
16171 52010512
16172 40122264
16173 26262551
16174 12021226
16175 31672524
16176 12464725
16177 51216331
16200 46455201
16201 06124012
16202 66513163
16203 25122264
16204 26262551
16205 12025201
16206 07124012
16207 51232124
16210 12226426
16211 26255112
16212 02121212
16213 52011012
16214 40124561
16215 21520111
16216 12401223
16217 46444721
16220 51251222
16221 64262625
16222 51621201
16223 12214524
16224 12025202
16225 00124012
16226 42257012
16227 24316223
16230 52020112
16231 40126462
16232 25122464
16233 44447012

BCD 1 15 = BUFFER 2 FIXED OPERATION 16 = WRITE BUFFER 2 17 = READ BUFFER 21

BCD 1 18 = N/A 19 = COMPARE BUFFERS 1 AND 2 20 = KEY DISC1

BCD 1 21 = USE DUMMY SEEK 22 = TIME SEEK 23 = TIME SEARCH1

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16234 62252542
16235 52020212
16236 40126331
16237 44251262
16240 25254252
16241 02031240
16242 12633144
16243 25126225
16244 21512330
16245 52526630
16246 25451231
16247 45120730
16250 25122344
16251 44472151
16252 25124446
16253 24257312
16254 22642626
16255 25511202
16256 12446462
16257 63122225
16260 12622563
16261 12264451
16262 12263167
16263 25241251
16264 25212433
16265 12312612
16266 52226426
16267 26255112
16270 01123162
16271 12622563
16272 12264651
16273 12263167
16274 25241266
16275 51316325
16276 73126330
16277 25124751

BCD 1 WHEN IN THE COMPARE MODE, BUFFER 2 MUST BE SET FOR FIXED READ, IF1

BCD 1 BUFFER 1 IS SET FOR FIXED WRITE, THE PROGRAM WILL EXECUTE A WRITE-READ1

16300 46275121
 16301 44126631
 16302 43431225
 16303 67252364
 16304 63251221
 16305 12665131
 16306 63254051
 16307 25212440
 16310 52234644
 16311 47215125
 16312 33123126
 16313 12226426
 16314 26255112
 16315 01123162
 16316 12622567
 16317 12264451
 16320 12263167
 16321 25241251
 16322 25212473
 16323 12633025
 16324 12475146
 16325 27512144
 16326 12663143
 16327 43122567
 16330 25236463
 16331 25122112
 16332 52512521
 16333 24405125
 16334 21244023
 16335 44444721
 16336 51254066
 16337 51316325
 16340 40512521
 16341 24402346
 16342 44472151
 16343 25127463

BCD 1 COMPARE, IF BUFFER 1 IS SET FOR FIXED READ, THE PROGRAM WILL EXECUTE A1

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

16344 30316212
 16345 66314343
 16346 12454463
 16347 12242562
 16350 63514470
 16351 12633025
 16352 12314563
 16353 25275131
 16354 63701212
 16355 52442612
 16356 63302512
 16357 24316223
 16360 34335252
 16361 66302545
 16362 12314512
 16363 63302512
 16364 42257012
 16365 44462425
 16366 73126330
 16367 25122431
 16370 62231266
 16371 31434312
 16372 22251242
 16373 25702524
 16374 12663163
 16375 30126330
 16376 25121212
 16377 52622543
 16400 25236325
 16401 24122421
 16402 63211221
 16403 45241263
 16404 30251226
 16405 64452363
 16406 31464512
 16407 24316244

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

16410 31626225
 16411 24331212
 16412 52523126
 16413 12633025
 16414 12652151
 16415 31212243
 16416 25124043
 16417 25442763
 16420 30401231
 16421 62124425
 16422 27216331
 16423 65257312
 16424 51214524
 16425 44441222
 16426 43442742
 16427 12432545
 16430 27633062
 16431 12663143
 16432 43122225
 16433 12644225
 16434 24331212
 16435 52312412
 16436 40432545
 16437 27633040
 16440 12316212
 16441 47466231
 16442 63316525
 16443 73123163
 16444 12512547
 16445 51256225
 16446 45636212
 16447 63302512
 16450 26316725
 16451 24122243
 16452 46234212
 16453 43254527

BCD | IF THE VARIABLE «LENGTH» IS NEGATIVE, RANDOM BLOCK LENGTHS WILL BE USED.»

BCD | IF «LENGTH» IS POSITIVE, IT REPRESENTS THE FIXED BLOCK LENGTH TO BE USED.»

16454 63301263
 16455 46122225
 16456 12646225
 16457 24331212
 16460 52526330
 16461 25126521
 16462 51312122
 16463 43251240
 16464 23466445
 16465 63255162
 16466 40122346
 16467 45632131
 16470 45621263
 16471 66461223
 16472 46644563
 16473 25516233
 16474 12223163
 16475 62121140
 16476 01011231
 16477 62126330
 16500 25124454
 16501 44222551
 16502 12462412
 16503 52512563
 16504 51701221
 16505 63632544
 16506 47636212
 16507 63461222
 16510 25124421
 16511 24251231
 16512 26122145
 16513 12316146
 16514 12255151
 16515 46511246
 16516 23236451
 16517 25627312

BCD | THE VARIABLE «COUNTERS» CONTAINS TWO COUNTERS. BITS 9-11 IS THE NUMBER OF

BCD | RETRY ATTEMPTS TO BE MADE IF AN I/O ERROR OCCURES, AND BITS 18-23 THE

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16520 21452412
16521 22316362
16522 12011040
16523 02031263
16524 30251212
16525 52456444
16526 22255112
16527 44261224
16530 21632112
16531 25515146
16532 51621263
16533 46122225
16534 12243162
16535 47432170
16536 25241221
16537 24632551
16540 12633025
16541 12263151
16542 62631225
16543 51514451
16544 12314412
16545 21122731
16546 65254512
16547 52622523
16550 63465133
16551 52523126
16552 12214512
16553 31614612
16554 25515146
16555 51124623
16556 23645125
16557 62731231
16560 45264451
16561 44216331
16562 44451224
16563 31624743

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

BCD SECTOR. IF AN I/O ERROR OCCURS, INFORMATION DISPLAYED INCLUDES THE FOLLOWING:

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16564 21702524
16565 12314523
16566 43642425
16567 62126330
16570 25122646
16571 43434666
16572 31452715
16573 52314662
16574 63216364
16575 62151221
16576 45123145
16577 24312321
16600 63314645
16601 12462612
16602 63302512
16603 62632163
16604 25124626
16605 12633025
16606 12627062
16607 63254412
16610 21631263
16611 30251263
16612 31442512
16613 46261224
16614 21314364
16615 51253312
16616 52000012
16617 40122631
16620 43251245
16621 46631246
16622 45124331
16623 45255200
16624 01124012
16625 23464563
16626 51464343
16627 25511245

BCD IOSTATUS: AN INDICATION OF THE STATE OF THE SYSTEM AT THE TIME OF FAILURE:

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

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16630 46631251
16631 25212470
16632 52000212
16633 40122246
16634 45635146
16635 43432551
16636 12255151
16637 46511212
16640 52000212
16641 40126351
16642 21234212
16643 45466312
16644 65255131
16645 26312424
16646 52000412
16647 40122431
16650 62231266
16651 51316725
16652 12475146
16653 63252463
16654 25245200
16655 05124212
16656 66513163
16657 25123225
16660 21242451
16661 12626431
16662 63233212
16663 46451212
16664 52000612
16665 40124561
16666 21520207
16667 12401262
16670 25254212
16671 63314425
16672 12255151
16673 46515200

BCD ' 03 = TRACK NOT VERIFIED 04 = DISC WRITE PROTECTED 05 = WRITE HEADER SWITCH ON'

BCD ' 06 = N/A 07 = SEEK TIME ERROR 08 = N/A'

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16674 10124212
16675 45612112
16676 52001112
16677 40126225
16700 21512330
16701 12633144
16702 25122451
16703 51465152
16704 01001240
16705 12456121
16706 52010112
16707 40124561
16710 21121212
16711 52010212
16712 40122330
16713 21454525
16714 43122551
16715 51465152
16716 01031240
16717 12233021
16720 45452543
16721 12212363
16722 31652552
16723 01041240
16724 12644651
16725 24122346
16726 64456312
16727 45466312
16730 71255146
16731 52010540
16732 01071240
16733 12456121
16734 52011040
16735 02001240
16736 12236451
16737 51254563

BCD ' 09 = SEARCH TIME ERROR 10 = N/A 11 = N/A'

BCD ' 12 = CHANNEL ERROR 13 = CHANNEL ACTIVE 14 = WORD COUNT NOT ZERO'

BCD ' 15-17 = N/A'

BCD ' 18-20 = CURRENT RETRY NUMBER 21-23 = CURRENT PHASE'

16740 12512563
16741 51701245
16742 64442225
16743 51520201
16744 40020312
16745 40122364
16746 51512445
16747 63124730
16750 21622512
16751 52524025
16752 51511226
16753 43212740
16754 12316212
16755 21124421
16756 62421226
16757 46511231
16760 46626321
16761 63646212
16762 63461231
16763 45243123
16764 21632512
16765 63302512
16766 25515146
16767 51122425
16770 63252363
16771 25241212
16772 52406331
16773 62404063
16774 62224012
16775 63314425
16776 12316212
16777 21452412
17000 63314425
17001 12622212
17002 26465112
17003 62252542

BCD | *ERR FLAG* IS A MASK FOR IOSTATUS TO INDICATE THE ERROR DETECTED;

BCD | *TIS..TSB* TIME IS AND TIME SB FOR SEEK TIME ERROR (IN HALFWORDS);

17004 12633144
17005 25122551
17006 51445112
17007 74314512
17010 30214326
17011 66465124
17012 62343712

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

17013	0 76 00404	FUNC18 LDA	DSCSIZ	PRESET VARIABLES
17014	0 66 00006	RSB	6	
17015	0 14 33673	ETR	*70	
17016	0 54 15465	SUB	BIT23	
17017	0 35 23347	STA	ENDISC	
17020	0 35 23335	STA	VAR1	
17021	0 75 33550	LDB	*0	
17022	0 36 23346	STB	STDISC	
17023	0 43 00424	BRM	FUNCTN	FUNCTION LINK TO CONTROL
17024	0 20 17112	NOP	FPT18	
17025	0 43 00454	BRM	REPORT	OUTPUT FUNCTION ID
17026	0 20 17120	NOP	F1M18	
17027	0 43 23065	BRM	TERM	GO TO CONTROL
17030	0 43 00440	BRM	RETURN	
17031	0 20 23371	NOP	ENTER	
17032	0 43 00430	BRM	OBJECT	
17033	0 76 23347	LDA	ENDISC	CHECK VARIABLES
17034	0 73 23335	SKG	VAR1	HIGH ARM TOO LARGE
17035	0 01 17037	BRU	**2	NO
17036	0 43 00460	BRM	ERR9R	
17037	0 20 33320	NOP	F1M1	
17040	0 55 15465	ADD	BIT23	
17041	0 73 23346	SKG	STDISC	LOW ARM < HIGH ARM
17042	0 43 00460	BRM	ERR9R	NO
17043	0 20 33325	NOP	F1M2	
17044	0 43 00434	BRM	END	
17045	0 76 23346	BEGN18 LDA	STDISC	SET STARTING ARM NUMBER
17046	0 35 23336	STA	VAR2	
17047	0 43 00430	STRT18 BRM	OBJECT	
17050	0 76 23336	LDA	VAR2	FORM DISC PBT WORD
17051	0 67 00015	LSH	130	

17052	0 43 23042	BRM	DISCCK	USE THIS DISC
17053	0 01 17065	BRU	F18E1	NO
17054	0 40 10026	SKS	10026	DISC FILE READY TEST
17055	0 01 17054	BRU	**1	NO
17056	0 02 10026	EOM	10026	ALERT DISC FILE
17057	0 13 23352	PBT	PBTWRD	
17060	0 40 12026	SKS	12026	TRACK VERIFIED TEST
17061	0 01 17060	BRU	**1	NO
17062	0 40 13026	SKS	13026	DISC WRITE PROTECT TEST
17063	0 43 17073	BRM	OUT18	YES = OUTPUT MESSAGE
17064	0 02 10226	EOM	10226	CLEAR FILE
17065	0 43 00434	F18E1 BRM	END	
17066	0 61 23336	MIN	VAR2	
17067	0 76 23336	LDA	VAR2	
17070	0 73 23347	SKG	ENDISC	LAST DISC TESTED
17071	0 01 17047	BRU	STRT18	NO
17072	0 01 17045	BRU	BEGN18	
* * *				
17073	0 00 00000	OUT18 PZE	0	OUTPUT MESSAGE
17074	0 76 23336	LDA	VAR2	FORM ARM NUMBER INTO BCD
17075	0 67 00003	LSH	3	
17076	0 14 33632	ETR	*700	
17077	0 55 23336	ADD	VAR2	
17100	0 14 33674	ETR	*707	
17101	0 67 00014	LSH	120	
17102	0 16 33675	MRG	*3737	
17103	0 35 33342	STA	F18M4	
17104	0 40 20040	SKS	20040	GO TO CONTROL IF BPT4
17105	0 43 23065	BRM	TERM	
17106	0 43 00454	BRM	REPORT	OUTPUT THROUGH CONTROL
17107	0 20 33334	NOP	F18M3	
17110	0 20 33342	NOP	F18M4	
17111	0 51 17073	BRR	OUT18	

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*
* FUNCTION PARAMETER TABLE
*
17112 0 20 17120 FPT18 NOP FIM18
17113 0 20 17136 NOP FAM18
17114 0 20 17131 NOP FVM18
17115 0 02 23346 TWS STDISC
17116 0 00 17247 PZE FUNC19
17117 0 00 00040 DATA 40
*
* FUNCTION MESSAGES
*
17120 52261201 FIM18 BCD ' F 18 = WRITE PROTECT SWITCH TEST !!
17121 10124012
17122 66513163
17123 25124751
17124 46632523
17125 63126266
17126 31632330
17127 12632562
17130 63371212
17131 52121262 FVM18 BCD ' START END !!
17132 63215163
17133 12121212
17134 12234524
17135 52371212
17136 52326451 FAM18 BCD ' WRITE PROTECT SWITCH TEST !
17137 31632512
17140 47514463
17141 25234312
17142 62643163
17143 23301263
17144 25626352
17145 52633031 BCD ' THIS ROUTINE TESTS THE WRITE PROTECT STATUS OF SEQUENTIAL!
17146 62125146
17147 64633145

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17150 25126325
17151 62636212
17152 63302512
17153 66513163
17154 25124751
17155 46632523
17156 63126263
17157 21636462
17160 12462612
17161 62255064
17162 25496331
17163 21431212
17164 52243162 BCD ' DISCS AND PRINTS THE OCTAL NUMBER OF WRITE PROTECTED DISCS!
17165 23621221
17166 45241247
17167 51314563
17170 62126330
17171 25124423
17172 63214312
17173 45644422
17174 25511246
17175 24126651
17176 31632512
17177 47514463
17200 25236325
17201 24122431
17202 62236212
17203 52216212 BCD ' AS IT ENCOUNTERS THEM, THE FUNCTION VARIABLES ARE START AND!
17204 31631225
17205 45234464
17206 45632551
17207 62126330
17210 25443312
17211 63302512
17212 26644523
17213 63314645

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17214 12652151
17215 31212243
17216 25621221
17217 51251262
17220 63215163
17221 12214524
17222 52254524 BCD 1 END, WHICH ARE THE STARTING AND ENDING DISC NUMBERS.1
17223 73126630
17224 31233012
17225 21512512
17226 63302512
17227 62632151
17230 63314527
17231 12214524
17232 12254524
17233 31452712
17234 24316223
17235 12456444
17236 22255162
17237 33121212
17240 52740036 BCD 1 (0<NUMBER<37 = OCTAL)11
17241 45644422
17242 25513603
17243 07121240
17244 12124623
17245 63214334
17246 37121212

```

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*
*
* FUNCTION 19 = SINGLE INCREMENT VS. TIME PLOTTER
*
17247 0 76 00404 FUNC19 LDA DSCS1Z
17250 0 66 00006 RSH 6
17251 0 14 33673 ETR *70
17252 0 54 15465 SUB BIT23
17253 0 35 23347 STA ENDISC
17254 0 35 23335 STA VAR1
17255 0 43 00424 F19115 BRM FUNCTN FUNCTION LINK TO CONTROL
17256 0 20 17656 NOP FRT19
17257 0 43 00434 BRM REPORT OUTPUT FUNCTION ID
17260 0 20 17664 NOP FIM19
17261 0 43 23065 BRM TERY GO TO CONTROL
17262 0 43 00440 BRM RETURN
17263 0 20 23371 NOP ENTER
17264 0 76 23347 LDA ENDISC CHECK VARIABLES
17265 0 73 23347 SKG ENDISC
17266 0 01 17270 BRU *42
17267 0 43 00460 BRM ERROR HIGH ARM TOO LARGE
17270 0 20 33343 NOP F19M1
17271 0 55 15465 ADD BIT23
17272 0 73 23346 SKG STDISC
17273 0 43 00460 BRM ERROR LOW ARM > HIGH ARM
17274 0 20 33350 NOP F19M2
17275 0 76 23346 LDA STDISC SET STARTING ARM
17276 0 35 23336 STA VAR2
17277 0 43 00430 F1911 BRM OBJECT CLEAR CHART
17300 0 71 33676 LDX **562D
17301 0 76 33677 LDA *60606060
17302 2 35 35042 STA TABLE*562D,2
17303 0 41 17302 BRX **1
17304 0 76 33700 LDA *14D GENERATE NEW CHART
17305 0 35 15506 STA CRUNT

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17306	0 71 33577	LDX	#TABLE	
17307	0 76 33701	LDA	#52020500	
17310	0 75 33702	LDB	#52606054	
17311	2 35 00000	F1912 STA	0,2	GENERATE VERTICLE AXIS
17312	2 77 00021	EAX	170,2	
17313	2 36 00000	STB	0,2	
17314	2 77 00021	EAX	170,2	
17315	0 54 15457	SUB	BIT17	
17316	0 72 33703	SKA	#6000	
17317	0 54 33704	SUB	#6600	
17320	0 60 15506	SKR	COUNT	
17321	0 01 17322	BRU	**1	
17322	0 53 15506	SKN	COUNT	FINISHED AXIS
17323	0 01 17311	BRU	F1912	NO
17324	2 35 00000	STA	0,2	
17325	0 76 33705	LDA	#150	
17326	0 35 15506	STA	COUNT	
17327	0 76 33706	LDA	#54545454	GENERATE HORIZONTAL AXIS
17330	2 77 00001	F1913 EAX	1,2	
17331	2 35 00000	STA	0,2	
17332	0 60 15506	SKR	COUNT	
17333	0 01 17334	BRU	**1	
17334	0 53 15506	SKN	COUNT	FINISHED AXIS
17335	0 01 17330	BRU	F1913	
17336	2 77 00001	EAX	1,2	YES
17337	0 76 33707	LDA	#52606060	GENERATE HORIZONTAL SCALE
17340	2 35 00000	STA	0,2	
17341	0 76 33852	LDA	#7	
17342	0 35 15506	STA	COUNT	
17343	0 76 33710	LDA	#00606060	
17344	0 75 33477	LDB	#60606060	
17345	2 77 00001	EAX	1,2	
17346	2 35 00000	F19112 STA	0,2	
17347	2 36 00001	STB	1,2	
17350	0 55 15443	ADD	BITS	
17351	2 77 00002	EAX	2,2	

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17352	0 60 15506	SKR	COUNT	
17353	0 01 17454	BRU	**1	
17354	0 53 15506	SKN	COUNT	
17355	0 01 17446	BRU	F19112	
17356	2 77 37777	EAX	1,2	
17357	0 76 33707	LDA	#52606060	
17360	2 35 00000	STA	0,2	
17361	0 76 33852	LDA	#7	
17362	0 35 15506	STA	COUNT	
17363	2 77 00001	EAX	1,2	
17364	0 76 33711	LDA	#00010203	
17365	0 75 33712	LDB	#04050607	
17366	2 35 00000	F1914 STA	0,2	
17367	2 36 00001	STB	1,2	
17370	2 77 00002	EAX	2,2	
17371	0 60 15506	SKR	COUNT	
17372	0 01 17373	BRU	**1	
17373	0 53 15506	SKN	COUNT	
17374	0 01 17366	BRU	F1914	
17375	0 76 33713	LDA	#37373737	TERMINATING CHARACTER
17376	2 35 00000	STA	0,2	
17377	0 40 10226	SKS	10026	DISC FILE READY TEST
17400	0 01 17377	BRU	**1	NO
17401	0 76 23336	LDA	VAR2	
17402	0 75 33550	LDB	#0	
17403	0 67 00015	LSH	130	FORM PBT WORD
17404	0 35 23152	STA	PBTARD	
17405	0 71 15447	LDX	BITS	
17406	0 43 23742	BRU	DISCK	USE THIS DISC
17407	0 01 17560	BRU	F19113	NO
17410	0 02 10026	EBM	10026	ALERT DISC FILE
17411	0 13 23152	PBT	PBTARD	
17412	0 40 12226	SKS	12026	TRACK VERIFIED TEST
17413	0 01 17415	BRU	**2	
17414	0 01 17422	BRU	**6	
17415	0 67 20060	LCY	480	

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17416	0 67	20060	LCY	48D	
17417	0 67	20060	LCY	48D	
17420	0 41	17412	BRX	F1915	
17421	0 01	17636	BRU	F19114	TIMEOUT ERROR
17422	0 76	23352	LDA	POTWRD	
17423	0 55	33656	ADD	#17600	
17424	0 35	23337	STA	VAR3	
17425	0 76	23352	LDA	POTWRD	
17426	0 55	15456	ADD	BIT16	UPDATE POT WORD BY ONE INCREMENT
17427	0 73	23337	SKG	VAR3	FINISHED FORWARD INCREMENTS
17430	0 01	17432	BRU	**2	NO
17431	0 01	17472	BRU	F1917A	
17432	0 35	23352	STA	POTWRD	
17433	0 02	10226	EOM	10226	CLEAR FILE
17434	0 40	10026	SKS	10026	DISC FILE READY TEST
17435	0 01	17434	BRU	**1	NO
17436	0 02	10026	EOM	10026	ALERT DISC FILE
17437	0 13	23352	POT	POTWRD	
17440	0 76	33650	LDA	#0	
17441	0 67	20060	LCY	48D	
17442	0 71	33714	LDX	**45D	
17443	0 67	20060	LCY	48D	
17444	0 41	17443	BRX	**1	
17445	0 55	15465	ADD	BIT23	
17446	0 73	33715	SKG	#1000D	
17447	0 01	17451	BRU	**2	
17450	0 01	17436	BRU	F19114	
17451	0 40	10026	SKS	12026	TRACK VERIFIED TEST
17452	0 01	17441	BRU	F1917	NO
17453	0 55	33663	ADD	#5	ROUND OFF TO NEAREST 5MILLISEC
17454	0 66	00001	RSR	1	DIVIDE BY 2 = A * NUM OF IMS COUNTS
17455	0 75	33650	LDB	#0	
17456	0 36	15506	STB	COUNT	
17457	0 54	33663	SUB	#5	SIMULATE DIVIDE BY 5
17460	0 72	15436	SKA	BIT0	
17461	0 01	17464	BRU	**3	

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17462	0 61	15506	MIN	COUNT	
17463	0 01	17457	BRU	**4	
17464	0 76	15506	LDA	COUNT	A * NUM/5
17465	0 75	33650	LDB	#0	
17466	0 43	17567	BRM	F19111	ENTER TIME INTO CHART
17467	0 40	20040	SKS	20040	BREAKPOINT & TEST
17470	0 43	23065	BRM	TERM	GO TO CONTROL
17471	0 01	17425	BRU	F1916	
17472	0 76	23336	LDA	VAR2	
17473	0 67	00015	LSH	13D	
17474	0 54	15456	SUB	BIT16	
17475	0 35	23337	STA	VAR3	
17476	0 75	33651	LDB	**1	
17477	0 76	23352	LDA	POTWRD	
17500	0 54	15456	SUB	BIT16	
17501	0 70	23337	SKM	VAR3	FINISHED
17502	0 01	17504	BRU	**2	NO
17503	0 01	17544	BRU	F19110	FINISHED
17504	0 35	23352	STA	POTWRD	
17505	0 02	10226	EOM	10226	CLEAR FILE
17506	0 40	10026	SKS	10026	DISC FILE READY TEST
17507	0 01	17506	BRU	**1	NO
17510	0 02	10026	EOM	10026	ALERT DISC FILE
17511	0 13	23352	POT	POTWRD	
17512	0 76	33650	LDA	#0	
17513	0 67	20060	LCY	48D	
17514	0 71	33714	LDX	**45D	
17515	0 67	20060	LCY	48D	
17516	0 41	17515	BRX	**1	
17517	0 55	15465	ADD	BIT23	
17520	0 73	33715	SKG	#1000D	
17521	0 01	17523	BRU	**2	
17522	0 01	17436	BRU	F19114	TIMEOUT ERROR
17523	0 40	10026	SKS	12026	TRACK VERIFIED TEST
17524	0 01	17513	BRU	F1919	NO
17525	0 55	33663	ADD	#5	ROUND OFF TO NEAREST 5MILLISEC

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17526	0 66 00001	RSH	1	
17527	0 75 33550	LDB	#0	
17530	0 36 15806	STB	COUNT	
17531	0 54 33563	SUB	#5	
17532	0 72 15436	SKA	BITC	
17533	0 01 17536	BRU	**3	
17534	0 61 15806	MIN	COUNT	
17535	0 01 17531	BRU	**4	
17536	0 76 15806	LDA	COUNT	
17537	0 75 33551	LDB	#1	
17540	0 43 17467	BRM	F19111	
17541	0 40 20040	SKS	20040	
17542	0 43 23765	BRM	TERM	
17543	0 01 17476	BRU	F1918	
17544	0 75 33550	F19110	LDB	#0
17545	0 76 23336	LDA	VAR2	
17546	0 67 00003	LSH	3	
17547	0 14 33632	ETR	#700	
17550	0 16 23336	MRG	VAR2	
17551	0 14 33674	ETR	#707	
17552	0 67 00014	LSH	120	
17553	0 16 33675	MRG	#3737	
17554	0 35 33964	STA	F19M4	
17555	0 43 00454	BRM	REPORT	
17556	4 20 33355	NOP	F19M3,4	
17557	0 20 34000	NOP	TABLE	
17560	0 43 00434	F19113	BRM	END
17561	0 61 23336	MIN	VAR2	
17562	0 76 23336	LDA	VAR2	
17563	0 73 23347	SKG	ENDISC	
17564	0 01 17277	BRU	F1911	
17565	0 07 10226	ERM	10226	
17566	0 01 17255	END19	BRU	F19115
17567	0 00 00000	F19111	PZE	0
17570	0 73 33716	SKG	#500	
17571	0 01 17573	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

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17572	0 76 33716	LDA	#500
17573	0 73 33717	SKG	#200
17574	0 76 33717	LDA	#200
17575	0 35 23331	STA	TEMPA
17576	0 76 33716	LDA	#500
17577	0 54 23331	SUB	TEMPA
17600	0 35 23331	STA	TEMPA
17601	0 36 23332	STB	TEMPB
17602	0 75 33550	LDB	#0
17603	0 67 00004	LSH	4
17604	0 55 23331	ADD	TEMPA
17605	0 35 23331	STA	TEMPA
17606	0 76 23352	LDA	POTWRD
17607	0 14 33456	ETR	#17600
17610	0 66 00011	RSH	90
17611	0 55 23331	ADD	TEMPA
17612	0 55 33577	ADD	#TABLE
17613	0 55 15465	ADD	BIT23
17614	0 35 23333	STA	TEMPC
17615	0 76 33550	LDA	#0
17616	0 67 00002	LSH	2
17617	0 35 23331	STA	TEMPA
17620	0 71 23331	LDX	TEMPA
17621	0 74 23333	LDA*	TEMPC
17622	2 72 17446	SKA	*ASK,2
17623	0 01 17430	BRU	**5
17624	2 76 17442	LDA	DELTA,2
17625	0 17 23333	EOR*	TEMPC
17626	0 35 23333	STA*	TEMPC
17627	0 51 17467	BRR	F19111
17630	2 76 17452	LDA	*INUS,2
17631	0 53 23332	SKN	TEMPB
17632	2 76 17446	LDA	*ASK,2
17633	0 17 23333	EOR*	TEMPC
17634	0 35 23333	STA*	TEMPC
17635	0 51 17567	BRR	F19111

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

WORD ALTERED YET
NO

IS DIRECTION REVERSE
NO

DISCH TAP=3.0 PAGE 239

17636	0 43 00460	F19114	BRM	ERROR	
17637	0 20 33365		NOP	F19M5	
17640	0 02 10226		EBM	10226	CLEAR FILE
17641	0 01 17560		BRU	F19113	
17642	77000000	DELTA	DATA	77000000,770000,7700,77	
17643	00770000				
17644	00007700				
17645	00000077				
17646	40000000	MASK	DATA	4B7,4B5,4B3,4B1	
17647	00400000				
17650	00004000				
17651	00000040				
17652	20000000	MINUS	DATA	2B7,2B5,2B3,2B1	
17653	00200000				
17654	00002000				
17655	00000020				

DISCH TAP=3.0 PAGE 240

*
* FUNCTION PARAMETER TABLE
*

17656	0 20 17664	FPT19	NBP	FIM19	
17657	0 20 17677		NBP	FAM19	
17660	0 20 17131		NBP	FVM18	
17661	0 02 23346		TW6	STDISC	
17662	0 00 20136		PZE	FUNC20	
17663	00000020		DATA	20	

*
* FUNCTION MESSAGES
*

17664	52261201	FIM19	BCD	' F 19 = SINGLE INCREMENT VS. TIME PLOTTER!'	
17665	11124012				
17666	62314527				
17667	43251231				
17670	45235125				
17671	44254563				
17672	12656233				
17673	12633144				
17674	25124743				
17675	46636325				
17676	51371212				
17677	52623145	FAM19	BCD	' SINGLE INCREMENT VS. TIME PLOTTER!'	
17700	27432512				
17701	31452351				
17702	25442545				
17703	63126562				
17704	33126331				
17705	44251247				
17706	43466363				
17707	25511212				
17710	52633031	BCD		' THIS ROUTINE MEASURES AND CHARTS THE AMOUNT OF TIME!'	
17711	62125146				
17712	64633145				
17713	25124425				

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17714 21626451
17715 25621221
17716 45241223
17717 30215163
17720 62126330
17721 25122144
17722 46644563
17723 12462612
17724 63314425
17725 52314565
17726 46436525
17727 24123145
17730 12444665
17731 31452712
17732 21451221
17733 51441231
17734 45122143
17735 43122346
17736 44223145
17737 21633146
17740 45621246
17741 26124445
17742 25121212
17743 52314523
17744 51254425
17745 45633312
17746 63302512
17747 30465131
17750 71464563
17751 21431262
17752 23214725
17753 12316212
17754 26314521
17755 43124746
17756 62316331
17757 46457363

BCD | INVOLVED IN MOVING AN ARM IN ALL COMBINATIONS OF ONE|

BCD | INCREMENT, THE HORIZONTAL SCALE IS FINAL POSITION, THE|

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17760 30251212
17761 52652551
17762 63312321
17763 43126223
17764 21432512
17765 31621263
17766 31442512
17767 31451244
17770 31474331
17771 62252373
17772 12264651
17773 25662151
17774 24122431
17775 51252363
17776 31464512
17777 52633144
20000 25621221
20001 51251231
20002 45243123
20003 21632524
20004 12227012
20005 21124743
20006 64627312
20007 31451263
20010 30251251
20011 25652551
20012 62251224
20013 31512523
20014 63314645
20015 52227012
20016 21124431
20017 45646273
20020 12214524
20021 12312412
20022 63302512
20023 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|

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20024 66215124
20025 12214524
20026 12512565
20027 25516225
20030 12243151
20031 25236331
20032 46451212
20033 52633144
20034 25621221
20035 51251263
20036 30251262
20037 21442573
20040 12227112
20041 21122425
20042 43632133
20043 12233125
20044 12233121
20045 51631266
20046 31434312
20047 22251247
20050 51314563
20051 25241212
20052 52464412
20053 63302512
20054 25515146
20055 51122425
20056 65311225
20057 73122145
20060 24126630
20061 25451263
20062 30251247
20063 51314563
20064 25511231
20065 62121462
20066 25247312
20067 63314431

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!

DISCH TAP=3.0

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20070 45271212
20071 52316212
20072 21474751
20073 46673144
20074 21672543
20075 70124445
20076 25124431
20077 45612151
20100 44331226
20101 64452363
20102 31464512
20103 65215131
20104 21224725
20105 62122151
20106 25121212
20107 52626321
20110 51631221
20111 45241225
20112 45247312
20113 66303123
20114 30122151
20115 25126263
20116 21516331
20117 45271221
20120 45241225
20121 45243145
20122 27122431
20123 62236212
20124 52512562
20125 47252363
20126 31652543
20127 70127400
20130 36456444
20131 22255136
20132 03071240
20133 12462363

BCD ' IS APPROXIMATELY ONE MIN/ARM. FUNCTION VARIABLES ARE!

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

BCD ' RESPECTIVELY (0<NUMBER<37 = OCTAL).!!

DISCW TAP-3.0

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20134 21433433
20135 37121212

DISCW TAP-3.0

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00000055	UTIME	EQU	45D
00000012	LTIME	EQU	10D
00000046	LINES	EQU	UTIME=LTIME*3
00001206	WORDS	EQU	LINES*17D
00034000	TABLE	EQU	34000
00035207	RTBLE	EQU	TABLE*WORDS*1
00000004	TENS	EQU	UTIME/10D
00000005	UNITS	EQU	UTIME*TENS*10D
52040000	HILBL	EQU	UNITS*100B*TENS*10000B+52000000B

*
 *
 * FUNCTION 20 - MULTIPLE INCREMENT VS. TIME PLOTTER
 *
 *

20136	0	76	00404	FUNC20	LDA	DSCSIZ	
20137	0	66	00006		RSH	6	
20140	0	14	33673		ETR	*70	
20141	0	54	15465		SUB	BIT23	
20142	0	35	23347		STA	ENDISC	
20143	0	35	23335		STA	VAR1	
20144	0	43	00424	F20L1	BRM	FUNCTN	
20145	0	20	20576		NOP	FPT20	
20146	0	43	00454		BRM	REPORT	OUTPUT FUNCTION ID
20147	0	20	20610		NOP	FIM20	
20150	0	43	23065		BRM	TERM	GO TO CONTROL
20151	0	43	00440		BRM	RETURN	
20152	0	20	23371		NOP	ENTER	
20153	0	76	23347		LDA	ENDISC	
20154	0	73	23335		SKG	VAR1	
20155	0	01	20157		BRU	**2	
20156	0	43	00460		BRM	ERROR	HIGH ARM TOO LARGE
20157	0	20	33372		NOP	F20M1	
20160	0	55	15465		ADD	BIT23	
20161	0	73	23344		SKG	STDISC	
20162	0	43	00460		BRM	ERROR	LOW ARM > HIGH ARM
20163	0	20	33400		NOP	F20M2	
20164	0	76	23346		LDA	STDISC	ARM = FIRST ARM
20165	0	35	23336		STA	VAR2	
20166	0	43	00430	STRIT	BRM	OBJECT	
20167	0	43	20410		BRM	CLCMT	CLEAR CHART
20170	0	43	20445		BRM	CHART	MAKE NEW CHART
20171	0	43	20204		BRM	PLBT	TIME MOVEMENTS, ENTER TIMES INTO CHART
20172	0	43	20563		BRM	FORT	FORM TITLE
20173	0	43	00454		BRM	REPORT	OUTPUT CHART
20174	4	20	33424		NOP	TITLE,4	

20175	0	20	34000		NOP	TABLE	
20176	0	43	00434	ENDIT	BRM	END	
20177	0	61	23336		MIN	VAR2	
20200	0	76	23336		LDA	VAR2	
20201	0	73	23347		SKG	ENDISC	
20202	0	01	20166		BRU	STRIT	
20203	0	01	20144		BRU	F20L1	

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20204	0	00	00000	PL0T	PZE		
20205	0	75	33550		LDB	#0	P0TWRD = CURRENT ARM TO P08 0
20206	0	76	23336		LDA	VAR2	
20207	0	67	00015		LSH	130	
20210	0	43	23442		BRM	DISCCK	USE THIS DISC
20211	0	01	20176		BRU	ENDIT	NO
20212	0	40	10026		SKS	10026	DISC FILE READY TEST
20213	0	01	20212		BRU	**1	
20214	0	02	10026		E0M	10026	ALERT DISC FILE
20215	0	13	23352		P0T	P0TWRD	
20216	0	35	23337		STA	VAR3	VAR3 = P0T WORD FOR P08 0
20217	0	76	33550		LDA	#0	
20220	0	35	23340		STA	VAR4	
20221	0	76	15465		LDA	BIT23	
20222	0	35	23341		STA	VAR5	
20223	0	76	33550	PL0T1	LDA	#0	
20224	0	35	23342		STA	VAR6	
20225	0	35	23340		STA	VAR4	
20226	0	76	33551		LDA	**1	
20227	0	35	23343		STA	VAR7	PRESET VAR7 AND VAR8
20230	0	76	33621		LDA	#500D	
20231	0	35	23344		STA	VAR8	
20232	0	40	10026		SKS	10026	DISC FILE READY TEST
20233	0	01	20232		BRU	**1	
20234	0	75	33550		LDB	#0	
20235	0	76	23342		LDA	VAR6	
20236	0	67	00007		LSH	7	
20237	0	16	23337		MRG	VAR3	
20240	0	35	23352		STA	P0TWRD	
20241	0	02	10026		E0M	10026	ALERT DISC FILE
20242	0	13	23352		P0T	P0TWRD	
20243	0	76	23340	PL0T2	LDA	VAR4	
20244	0	55	23341		ADD	VAR5	
20245	0	73	33600		SKG	#77	ROOM TO MOVE ANOTHER INCREMENT
20246	0	01	20250		BRU	**2	YES
20247	0	01	20330		BRU	PL0T3	

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20250	0	35	23340		STA	VAR4	
20251	0	75	33550		LDB	#0	
20252	0	67	00007		LSH	7	
20253	0	16	23337		MRG	VAR3	
20254	0	35	23352		STA	P0TWRD	
20255	0	71	15447		LDX	BIT9	
20256	0	40	10026		SKS	10026	TRACK VERIFIED TEST
20257	0	01	20261		BRU	**2	
20260	0	01	20266		BRU	PL0T2B	
20261	0	67	20260		LCY	480	
20262	0	67	20260		LCY	480	
20263	0	67	20260		LCY	480	
20264	0	41	20254		BRX	PL0T2A	
20265	0	01	20255		BRU	VERERR	
20266	0	02	10026		E0M	10026	CLEAR FILE
20267	0	40	10026		SKS	10026	DISC FILE READY TEST
20270	0	01	20267		BRU	**1	
20271	0	02	10026		E0M	10026	ALERT DISC FILE
20272	0	13	23352		P0T	P0TWRD	
20273	0	76	33550		LDA	#0	
20274	0	67	20260	TMIT	LCY	480	TIME MOVEMENT
20275	0	71	33714		LDX	**45D	TIMING = 500 US. PER LOOP
20276	0	67	20260		LCY	480	
20277	0	41	20276		BRX	**1	
20300	0	55	15465		ADD	BIT23	
20301	0	73	33715		SKG	#1000D	HAS 500 MS ELAPSED YET
20302	0	01	20304		BRU	**2	NO
20303	0	01	20255		BRU	VERERR	
20304	0	40	10026		SKS	10026	TRACK VERIFIED TEST
20305	0	01	20274		BRU	TMIT	
20306	0	55	33720		ADD	#100	ROUND OFF TO NEAREST 10 MS.
20307	0	66	00002		RSH	?	DIVIDE BY 2
20310	0	75	33551		LDB	**1	INITIALIZE COUNTER
20311	0	36	23330		STB	TEMP	
20312	0	61	23330	TMIT1	YIN	TEMP	SIMULATE DIVIDE BY 2
20313	0	54	33563		SUB	#5	

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20314	0	72	15436	SKA	BIT0
20315	0	01	20317	BRU	**2
20316	0	01	20312	BRU	TMIT1
20317	0	76	23330	LDA	TEMP
20320	0	73	23343	SKG	VAR7
20321	0	01	20323	BRU	**2
20322	0	35	23343	STA	VAR7
20323	0	73	23344	SKG	VAR8
20324	0	35	23344	STA	VAR8
20325	0	*0	20040	SKS	20040
20326	0	43	23065	BRM	TERM
20327	0	01	20243	BRU	PLOT2
20330	0	61	23342	MIN	VAR6
20331	0	76	23342	LDA	VAR6
20332	0	75	33551	LDB	#77777777
20333	0	70	23341	SKM	VAR5
20334	0	01	20336	BRU	**2
20335	0	01	20345	BRU	PLOT4
20336	0	55	23341	ADD	VAR5
20337	0	73	33400	SKG	#77
20340	0	01	20342	BRU	**2
20341	0	01	20345	BRU	PLOT4
20342	0	76	23342	LDA	VAR6
20343	0	35	23340	STA	VAR4
20344	0	01	20232	BRU	PLOT1A
20345	0	43	20373	BRM	ENTIM
20346	0	61	23341	MIN	VAR5
20347	0	76	23341	LDA	VAR5
20350	0	73	33400	SKG	#77
20351	0	01	20223	BRU	PLOT1
20352	0	*0	10026	SKS	10026
20353	0	01	20352	BRU	**1
20354	0	76	23337	LDA	VAR3
20355	0	35	23352	STA	PBTWRD
20356	0	02	10026	EBM	10026
20357	0	43	23352	PBT	PBTWRD

GET QUOTIENT
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

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20360	0	71	33721	LDX	#40000
20361	0	*0	10026	SKS	10026
20362	0	01	20364	BRU	**2
20363	0	01	20371	BRU	PLST4B
20364	0	67	20060	LCY	48D
20365	0	67	20060	LCY	48D
20366	0	67	20060	LCY	48D
20367	0	41	20361	BRX	PLOT4A
20370	0	01	20555	BRU	VERERR
20371	0	02	10226	EBM	10226
20372	0	51	20204	BRR	PLOT

TRACK VERIFIED TEST

CLEAR FILE

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```

20373 0 00 00000 ENTIM PZE
20374 0 76 23343 LDA
20375 0 73 33722 SKG
20376 0 31 20400 BRU
20377 0 76 33722 LDA
20400 0 43 20416 BR#
20401 0 76 23344 LDA
20402 0 73 33720 SKG
20403 0 76 33720 LDA
20404 0 75 33551 LDB
20405 0 70 23343 SKM
20406 0 43 20416 BRM
20407 0 51 20373 BRR

```

```

VAR7
#UTIME
**2
#UTIME
PUT
VAR8
#LTIME
#LTIME
**1
VAR7
PUT
ENTIM

```

VAR7 = 450MS
 YES = ENTER 450MS INTO CHART

VAR8 = 100MS
 YES

VAR7 = VAR8
 NO = ENTER VAR8 INTO CHART

```

20410 0 00 00000 CLCMT PZE
20411 0 71 33723 LDX
20412 0 76 33477 LDA
20413 2 35 35207 STA
20414 0 41 20413 BRX
20415 0 51 20410 BRR

```

```

0
#WORDS#1
#60A06060
ETBLE#2
**1
CLCMT

```

CLEAR CHART

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```

20416 0 00 00000 PUT PZE
20417 0 35 23331 STA
20420 0 76 33722 LDA
20421 0 54 23331 SUB
20422 0 35 23331 STA
20423 0 75 33550 LDB
20424 0 67 00004 LSH
20425 0 55 23331 ADD
20426 0 35 23331 STA
20427 0 76 23341 LDA
20430 0 66 00002 RSH
20431 0 55 23331 ADD
20432 0 55 33577 ADD
20433 0 55 15465 ADD
20434 0 35 23345 STA
20435 0 76 33550 LDA
20436 0 67 00002 LSH
20437 0 35 23331 STA
20440 0 71 23331 LDX
20441 2 76 20604 LDA
20442 0 17 23345 EBR#
20443 0 35 23345 STA#
20444 0 51 20416 BRR PUT

```

```

0
TEMPA
#UTIME
TEMPA
TEMPA
#0
4
TEMPA
TEMPA
VAR5
2
TEMPA
#TABLE
BIT23
VAR9
#0
2
TEMPA
TEMPA
#WORD#2
VAR9
VAR9
PUT

```

A = NO OF SMS COUNTS

TEMPA = NO OF LINES FROM TOP

TEMPA = FIRST WORD OF CORRECT LINE
 = EQUALS LINES * 17D

A = HORIZONTAL DEFLECTION
 ADD VERTICAL COMPONENT
 ADD ADDRESS BIAS
 ADD 1 WORD TO CLEAR Y-AXIS WORD

A = CHARACTER IN WORD TO BE CHANGED

ALTER WORD
 STORE WORD IN TABLE

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20445	0 00 00000	CHART	PZE	
20446	0 71 33550		LDX	#0
20447	0 75 33724		LDB	#1700
20450	0 76 33725		LDA	#LINES-4
20451	0 35 15506		STA	COUNT
20452	0 76 33726		LDA	#HILBL
20453	0 35 23731	CHART1	STA	TEMPA
20454	0 76 33702		LDA	#052606054
20455	2 35 34000		STA	TABLE,2
20456	0 76 23731		LDA	TEMPA
20457	0 70 33550		SKM	#0
20460	0 01 20462		BRU	++2
20461	2 35 34000		STA	TABLE,2
20462	0 70 33727		SKM	#500
20463	0 01 20465		BRU	++2
20464	2 35 34000		STA	TABLE,2
20465	0 54 15457		SUB	BIT17
20466	0 72 33703		SKA	#6000
20467	0 54 33704		SUB	#6600
20470	2 77 00021		EAX	17D,2
20471	0 60 15506		SKR	COUNT
20472	0 01 20473		BRU	++1
20473	0 53 15506		SKN	COUNT
20474	0 01 20453		BRU	CHART1
20475	0 76 33730		LDA	#52010000
20476	2 35 34000		STA	TABLE,2
20477	0 76 33552		LDA	#7
20500	0 35 15506		STA	COUNT
20501	2 77 00001	CHART2	EAX	1,2
20502	0 76 33706		LDA	#84545454
20503	2 35 34000		STA	TABLE,2
20504	2 77 00001		EAX	1,2
20505	2 35 34000		STA	TABLE,2
20506	0 60 15506		SKR	COUNT
20507	0 01 20510		BRU	++1
20510	0 53 15506		SKN	COUNT

MAKE UP VERTICAL AXIS

MAKE UP HORIZONTAL AXIS

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20511	0 01 20501		BRU	CHART2
20512	2 77 00001		EAX	1,2
20513	0 76 33707		LDA	#52606060
20514	2 35 34000		STA	TABLE,2
20515	0 76 33552		LDA	#7
20516	0 35 15506		STA	COUNT
20517	0 76 33710		LDA	#00606060
20520	0 75 33677		LDB	#60606060
20521	2 77 00001	CHART3	EAX	1,2
20522	2 35 34000		STA	TABLE,2
20523	2 77 00001		EAX	1,2
20524	2 36 34000		STB	TABLE,2
20525	0 55 15443		ADD	BIT5
20526	0 60 15506		SKR	COUNT
20527	0 01 20530		BRU	++1
20530	0 53 15506		SKN	COUNT
20531	0 01 20521		BRU	CHART3
20532	2 77 00001		EAX	1,2
20533	0 76 33707		LDA	#52606060
20534	2 35 34000		STA	TABLE,2
20535	0 76 33552		LDA	#7
20536	0 35 15506		STA	COUNT
20537	2 77 00001	CHART4	EAX	1,2
20540	0 76 33711		LDA	#10203
20541	2 35 34000		STA	TABLE,2
20542	2 77 00001		EAX	1,2
20543	0 55 33731		ADD	#04040404
20544	2 35 34000		STA	TABLE,2
20545	0 60 15506		SKR	COUNT
20546	0 01 20547		BRU	++1
20547	0 53 15506		SKN	COUNT
20550	0 01 20537		BRU	CHART4
20551	2 77 00001		EAX	1,2
20552	0 76 33732		LDA	#37121212
20553	2 35 34000		STA	TABLE,2
20554	0 51 20445		BRR	CHART

MAKE UP HORIZONTAL SCALE

ADD TERMINAL CHARACTER

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20555	0 43 20563	VERERR BRM	FORT	
20556	0 43 00460	BRM	ERROR	
20557	4 20 33405	NOP	F20M3,4	
20560	0 20 33431	NOP	TITLE1	
20561	0 02 10226	EQM	10226	CLEAR FILE
20562	0 01 20176	BRU	ENDIT	
20563	0 00 00000	FORT PZE	0	PUT ARM NUMBER INTO BCD
20564	0 75 33450	LOB	#0	
20565	0 76 23336	LDA	VAR2	
20566	0 67 00003	LSH	3	
20567	0 14 33432	ETR	#700	
20570	0 16 23436	MRG	VAR2	
20571	0 14 33674	ETR	#707	
20572	0 67 00014	LSH	120	
20573	0 16 33675	MRG	#3737	
20574	0 35 33431	STA	TITLE1	
20575	0 51 20563	BRR	FART	

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```

*
*   FUNCTION PARAMETER TABLES
*
20576 0 20 20610  FRT20  NOP   FIM20   FUNCTION IDENTIFIER MESSAGE
20577 0 20 20622  FRT20  NOP   FAM20   FUNCTION ABSTRACT MESSAGE
20600 0 20 17131  FRT20  NOP   FVM18   FUNCTION VARIABLES MESSAGE
20601 0 02 23346  FRT20  TWO   STDISC  FUNCTION VARIABLES POINTER
20602 0 00 21122  FRT20  PZE   FUNC21  POINTER TO NEXT FUNCTION
20603 0 00 00000  FRT20  DATA  10      FUNCTION IDENTIFIER BIT (BIT 20)
*
20604 34000000  WORD  DATA  34B6,34B4,34B2,34
20605 00340000
20606 00003400
20607 00000034
*
*   FUNCTION MESSAGES
*
20610 52261202  FIM20  BCD   ' F 20 = ARM MOVEMENT VS. TIME PLOTTER.'
20611 00124012
20612 21514412
20613 44466825
20614 44254463
20615 12656233
20616 12633144
20617 25124743
20620 46636325
20621 51371212
20622 52322151  FAM20  BCD   ' ARM MOVEMENT VS. TIME PLOTTER.'
20623 44124446
20624 65254425
20625 45631265
20626 62331263
20627 31442512
20630 47434463
20631 63255133
20632 52121212

```

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20633 52633031
20634 62125146
20635 64633145
20636 25176331
20637 44256212
20640 21514412
20641 44466525
20642 44254563
20643 62123145
20644 12443143
20645 43316225
20646 23122145
20647 24124743
20650 46636212
20651 52633025
20652 12303127
20653 30122145
20654 24124744
20655 64126731
20656 44256212
20657 65255162
20660 25621231
20661 44735125
20662 44254563
20663 62124446
20664 65257412
20665 46451221
20666 52233021
20667 51633712
20670 63302512
20671 30465131
20672 71464563
20673 21431262
20674 23214725
20675 12462412
20676 63302512

BCD ' THIS ROUTINE TIMES ARM MOVEMENTS IN MILLISEC AND PLOTS'

BCD ' THE HIGH AND LOW TIMES VERSES INCREMENTS MOVED ON A'

BCD ' CHART. THE HORIZONTAL SCALE OF THE CHART IS NUMBER OF'

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20677 23302151
20700 63123162
20701 12456444
20702 22255112
20703 46261212
20704 52314523
20705 51254425
20706 45636212
20707 44466525
20710 24731221
20711 45241263
20712 30251265
20713 25516731
20714 23432512
20715 62232143
20716 25123162
20717 12443143
20720 43316225
20721 23335212
20722 52312612
20723 21126225
20724 25421246
20725 51126225
20726 21512330
20727 12633144
20730 25122551
20731 51465112
20732 46237364
20733 51256212
20734 74050000
20735 12443143
20736 43316225
20737 23121212
20740 52316212
20741 21434346
20742 66252434

BCD ' INCREMENTS MOVED, AND THE VERTICLE SCALE IS MILLISEC. '

BCD ' IF A SEEK OR SEARCH TIME ERROR OCCURES (500 MILLISEC'

BCD ' IS ALLOWED), THE OPERATION IS ABORTED AND AN ERROR MSG'

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20743 73126330
20744 25124447
20745 25512163
20746 31464512
20747 31621221
20750 22465163
20751 25241221
20752 45241221
20753 45122551
20754 51465112
20755 44622712
20756 52316212
20757 47513145
20760 63252433
20761 52121212
20762 52233225
20763 51251221
20764 51251263
20765 66461226
20766 64452363
20767 31464512
20770 65215131
20771 21224325
20772 62731262
20773 63215163
20774 12214524
20775 12254524
20776 33121212
20777 52626321
21000 51631231
21001 62124751
21002 25622563
21003 12634412
21004 00000012
21005 21452412
21006 25452412

BCD I IS PRINTED. I

BCD I THERE ARE TWO FUNCTION VARIABLES, START AND END, I

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

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21007 31621247
21010 51256225
21011 63122270
21012 12633225
21013 52627062
21014 63254412
21015 65215131
21016 21224325
21017 12402462
21020 23623171
21021 40331263
21022 30256225
21023 12652151
21024 31212243
21025 25621244
21026 21701222
21027 25126225
21030 63121212
21031 52634412
21032 62254325
21033 23631221
21034 45701223
21035 46442231
21036 45216331
21037 46451246
21040 26122344
21041 45622523
21042 64633165
21043 25122151
21044 44623312
21045 63302512
21046 52512145
21047 27251226
21050 44511262
21051 63215163
21052 12214524

BCD I SYSTEM VARIABLE =DSCS12= THESE VARIABLES MAY BE SET I

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

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

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21053 12254524
21054 12316212
21055 00364564
21056 44222551
21057 36030733
21060 32121712
21061 52633144
21062 31492712
21063 26465112
21064 25212330
21065 12243162
21066 23123162
21067 12214747
21070 51466731
21071 44216325
21072 43701202
21073 00124431
21074 45646325
21075 62331212
21076 52216312
21077 63302512
21100 23464447
21101 43256331
21102 46451246
21103 26126330
21104 25124321
21105 62631221
21106 51447312
21107 23464563
21110 51464312
21111 66314343
21112 12222512
21113 52512563
21114 64514525
21115 24126346
21116 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.'

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21117 12256725
21120 23646331
21121 65253337

*
*
* FUNCTION 21 - WRITE HEADERS
*

```

21122 0 76 33550 FUNC21 LDA #0 PRESET STDISC AND ENDISC
21123 0 35 23346 STA STDISC
21124 0 76 00404 LDA DSCSI2
21125 0 66 00006 RSH 6
21126 0 14 33673 ETR #70
21127 0 54 15465 SUB BIT23
21130 0 67 00015 LSH 130
21131 0 16 33627 MRG #17777
21132 0 35 23347 STA ENDISC
21133 0 43 00424 F21E2 BRM FUNCTN SET FUNCTION LINKS
21134 0 20 21255 NBP FPT21
21135 0 43 00454 BRM REPORT OUTPUT FUNCTION ID
21136 0 20 21263 NBP FIM21
21137 0 43 23065 BRM TERM GO TO CONTROL
21140 0 43 00440 BRM RETURN SET INTERRUPT AND TRAP LINKAGES
21141 0 20 23371 NBP ENTER
21142 0 76 23346 LDA STDISC
21143 0 14 33733 ETR #777600 START AT HEAD PAIR AND SECTOR ZERO
21144 0 35 23346 STA STDISC
21145 0 76 23347 LDA ENDISC
21146 0 14 33566 ETR #77777
21147 0 35 23347 STA ENDISC
21150 0 73 23346 SKG STDISC ENDISC > STDISC
21151 0 43 00460 BRM ERROR NO
21152 0 20 33432 NBP F21M1
21153 0 76 23346 LDA STDISC
21154 0 35 23332 STA TEMP3 SET STARTING DISC ADDRESS

```

*
* BUILD INTERLACE POT WORD
*

```

21155 0 76 23332 F21E0 LDA TEMPB CHECK FOR LAST TRACK

```

```

21156 0 16 33603 MRG #177
21157 0 55 15465 ADD BIT23
21160 0 73 23347 SKG ENDISC LAST TRACK
21161 0 01 21172 BRU F21E1 NO
21162 0 76 23347 LDA ENDISC YES = PICK UP SECTOR COUNT
21163 0 54 23332 SUB TEMPB
21164 0 55 15465 ADD BIT23 A = SECTOR COUNT
21165 0 75 33550 LDB #0 BUILD INTERLACE POT WORD
21166 0 67 00016 LSH 140
21167 0 16 33577 MRG #STADDR
21170 0 35 23331 STA TEMPB
21171 0 01 21174 BRU F21E1+2
21172 0 76 33611 F21E1 LDA #187*STADDR WC = 128D, ADDR = STADDR
21173 0 35 23331 STA TEMPB

```

*
* BUILD HEADER TABLE
*

```

21174 0 76 23332 LDA TEMPB
21175 0 75 33550 LDB #0
21176 0 67 00006 LSH 6
21177 0 71 33734 LDX ##128D
21200 2 35 34200 STA STADDR+128D,2
21201 0 55 15457 ADD BIT17
21202 0 41 21200 BRX **2

```

*
* DISC DRIVER
*

```

21203 0 43 00430 BRM OBJECT
21204 0 02 20004 DIR
21205 0 40 10226 SKS 10226 DISABLE INTERRUPTS
21206 0 43 00460 BRM ERROR FILE ON LINE TEST
21207 0 20 33437 NBP F21M2 FILE NOT ON LINE
21210 0 40 10026 SKS 10026 DISC FILE READY TEST
21211 0 01 21210 BRU #*1 FILE NOT READY
21212 0 40 14026 SKS 14026 WRITE HEADER TEST
21213 0 01 21215 BRU **2

```

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21214	0 43 00460	BRM	ERROR	HEADER SWITCH NOT UP
21215	0 20 33444	NOP	F21M3	
21216	0 40 14000	SKS	14000	CHANNEL ACTIVE TEST
21217	0 01 21216	BRU	**1	CHANNEL ACTIVE
21220	0 02 10026	EOM	10026	ALERT DISC FILE
21221	0 13 23332	POT	TEMPB	
21222	0 02 10000	EOM	10000	ALERT CHANNEL
21223	0 02 14200	EOM	14200	EXTENDED MODE EOM
21224	0 13 23331	POT	TEMPA	
21225	0 02 02A66	EOM	2666	WRITE DISC FILE - CHAIN
21226	0 40 14000	SKS	14000	CHANNEL ACTIVE TEST
21227	0 01 21226	BRU	**1	WAIT FOR CHANNEL INACTIVE
21230	0 40 12000	SKS	12000	CHANNEL ZERO WORD COUNT TEST
21231	0 43 00460	BRM	ERRR9	WORD COUNT NOT ZERO
21232	0 20 33453	NOP	F21M4	
21233	0 40 13026	SKS	13026	DISC WRITE PROTECT TEST
21234	0 43 00460	BRM	ERRR9	DISC WRITE PROTECTED
21235	0 20 33463	NOP	F21M5	
21236	0 40 11000	SKS	11000	CHANNEL ERROR TEST
21237	0 43 00460	BRM	ERRR9	CHANNEL ERROR SET
21240	0 20 33471	NOP	F21M6	
21241	0 40 11026	SKS	11026	DISC FILE ERROR TEST
21242	0 43 00460	BRM	ERRR9	CONTROLLER ERROR SET
21243	0 20 33475	NOP	F21M7	
21244	0 43 00434	BRM	END	
21245	0 76 23332	LDA	TEMPB	UPDATE DISC ADDRESS
21246	0 55 15456	ADD	BIT16	
21247	0 35 23332	STA	TEMPB	
21250	0 76 23347	LDA	ENDISC	
21251	0 73 23332	SKG	TEMPB	ENDISC -> TEMPB
21252	0 01 21254	BRU	**2	NO -> EXIT
21253	0 01 21155	BRU	F21E0	
21254	0 01 21133	FND21 BRU	F21F2	

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		*			
		*	FUNCTION TABLES		
		*			
21255	0 20 21263	FPT21	NOP	F1M21	FUNCTION IDENTIFIER MESSAGE
21256	0 20 21273		NOP	FAM21	FUNCTION ABSTRACT MESSAGE
21257	0 20 17131		NOP	FVM18	FUNCTION VARIABLE MESSAGE
21260	0 02 23346		TWO	STDISC	FUNCTION VARIABLE TABLE
21261	0 00 21415		PZE	FUNC22	LINK TO FUNCTION 22
21262	00000004		DATA	*	FUNCTION IDENTIFIER - BIT 21
		*			
		*	FUNCTION MESSAGES		
		*			
21263	52261202				
21264	01124012				
21265	66513163				
21266	25123025				
21267	21242551				
21270	12514664				
21271	63314525				
21272	37121212				
21273	52326451	FAM21	BCD	' WRITE HEADER ROUTINE '	
21274	31632512				
21275	30252124				
21276	25511251				
21277	46646931				
21300	45255212				
21301	52633031		BCD	' THIS SPECIAL FUNCTION WILL WRITE THE HEADERS ON'	
21302	62126247				
21303	25233121				
21304	43122664				
21305	45236331				
21306	46451266				
21307	31434312				
21310	66513163				
21311	25126330				
21312	25123025				

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21313	21242551		
21314	62124445		
21315	52622550	BCD	' SEQUENTIAL TRACKS ACCORDING TO THE FUNCTION VARIABLES'
21316	64254563		
21317	31214312		
21320	63512123		
21321	42621221		
21322	23234451		
21323	24314527		
21324	12634412		
21325	63302512		
21326	26644523		
21327	63314445		
21330	12652151		
21331	31212243		
21332	25621212	BCD	' START AND END, THESE VARIABLES ARE IN THE FORM OF THE'
21333	52626321		
21334	51631221		
21335	45241225		
21336	45243312		
21337	63302562		
21340	25126521		
21341	51312122		
21342	43256212		
21343	21512512		
21344	31451263		
21345	30251226		
21346	46514412		
21347	46261263		
21350	30251212	BCD	' DISC PBT WORDS.'
21351	52243162		
21352	23124746		
21353	63126446		
21354	51246233		
21355	52626321	BCD	' START SHOULD HAVE AN ADDRESS WITH SECTOR 0, HEAD'
21356	51631262		

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21357	30466443		
21360	24123021		
21361	65251221		
21362	45122124		
21363	24512562		
21364	62126431		
21365	63301262		
21366	25236346		
21367	51120073		
21370	12302521		
21371	24121212		
21372	52472131	BCD	' PAIR 0, I.E. 777600 WOULD BE DISC 37, POSITION'
21373	51120033		
21374	12313325		
21375	33120707		
21376	07060000		
21377	12664664		
21400	43241222		
21401	25122431		
21402	62231203		
21403	07731247		
21404	46623163		
21405	31464512		
21406	52070773	BCD	' 77, HEAD PAIR 0, SECTOR 0,1'
21407	12302521		
21410	24124721		
21411	31511200		
21412	73126225		
21413	23634451		
21414	12003337		

*
*
* FUNCTION 22 • WRITE HEADER TEST
*
*

21415	0 43 00424	FUNC22 BRM	FUNCTN	
21416	0 20 21313	NOP	FPT22	
21417	0 43 00454	BRM	REPORT	OUTPUT FUNCTION ID
21420	0 20 21321	NOP	FIM22	
21421	0 43 23065	BRM	TERM	GO TO CONTROL
21422	0 43 00440	BRM	RETURN	SET INTERRUPT AND TRAP LINKS
21423	0 20 23371	NOP	ENTER	
21424	0 76 23346	LDA	STDISC	SET STDISC TO START AT SECTOR 0
21425	0 14 33735	ETR	*777740	
21426	0 35 23346	STA	STDISC	
21427	0 76 23347	LDA	ENDISC	
21430	0 73 23346	SKG	STDISC	ENDISC > STDISC
21431	0 43 00460	BRM	ERROR	NO
21432	0 20 33503	NOP	F22M1	
21433	0 54 23346	SUB	STDISC	A = SECTOR COUNT = 1
21434	0 73 33603	SKG	*127D	IS SECTOR COUNT > 128D
21435	0 73 33551	SKG	**1	IS SECTOR COUNT < 1
21436	0 43 00460	BRM	ERROR	YES = SECTOR COUNT ERROR
21437	0 20 33510	NOP	F22M2	
21440	0 55 15465	ADD	BIT23	WORD COUNT
21441	0 75 33550	LDB	*0	BUILD INTERLACE PBT WORD
21442	0 67 00016	LSH	14D	
21443	0 16 33577	MRG	*STADDR	
21444	0 35 23331	STA	TEMPA	
21445	0 76 23346	LDA	STDISC	BUILD HEADER TABLE
21446	0 67 00006	LSH	6	
21447	0 71 33734	LDX	**128D	
21450	2 35 34200	STA	STADDR+128D,2	
21451	0 55 15457	ADD	BIT17	
21452	0 41 21450	BRX	**2	

*
*
* DISC DRIVER
*

21453	0 43 00430	BRM	SUBJECT	
21454	0 02 20004	DIR		DISABLE INTERRUPTS
21455	0 40 10226	SKS	10226	FILE ON LINE TEST
21456	0 43 00460	BRM	ERROR	FILE NOT ON LINE
21457	0 20 33515	NOP	F22M3	
21460	0 40 14026	SKS	14026	WRITE HEADER TEST
21461	0 01 21463	BRU	**2	
21462	0 43 00460	BRM	ERROR	HEADER SWITCH DOWN
21463	0 20 33522	NOP	F22M4	
21464	0 40 14000	SKS	14000	CHANNEL ACTIVE TEST
21465	0 01 21464	BRU	**1	CHANNEL ACTIVE
21466	0 40 10026	SKS	10026	DISC FILE READY TEST
21467	0 01 21466	BRU	**1	CONTROLLER NOT READY
21470	0 02 10026	EDM	10026	ALERT DISC FILE
21471	0 13 23346	PBT	STDISC	
21472	0 02*10000	EDM*	10000	ALERT CHANNEL
21473	0 02 14200	EDM	14200	EXTENDED MODE EDM
21474	0 13 23331	PBT	TEMPA	
21475	0 02 02666	EDM	2666	WRITE DISC FILE = CHAIN
21476	0 40 14000	SKS	14000	CHANNEL ACTIVE TEST
21477	0 01 21476	BRU	**1	WAIT FOR CHANNEL DISCONNECT
21500	0 40 13026	SKS	13026	DISC WRITE PROTECT TEST
21501	0 43 00460	BRM	ERROR	DISC WRITE PROTECTED
21502	0 20 33531	NOP	F22M5	
21503	0 40 11000	SKS	11000	CHANNEL ERROR TEST
21504	0 43 00460	BRM	ERROR	CHANNEL ERROR SET
21505	0 20 33537	NOP	F22M6	
21506	0 40 11026	SKS	11026	DISC FILE ERROR TEST
21507	0 43 00460	BRM	ERROR	CONTROLLER ERROR SET
21510	0 20 33543	NOP	F22M7	
21511	0 43 00434	BRM	END	
21512	0 01 21415	BRU	FUNC22	

```

*
* FUNCTION TABLES
*
21513 0 20 21521 FPY22 NOP FIM22 FUNCTION IDENTIFIER MESSAGE
21514 0 20 21530 NOP FAM22 FUNCTION ABSTRACT MESSAGE
21515 0 20 17131 NOP FVM18 FUNCTION VARIABLE MESSAGE
21516 0 02 23346 TAB STDISC FUNCTION VARIABLE TABLE
21517 0 00 21772 PZE FUNC23 LINK TO NEXT FUNCTION
21520 00000002 DATA 2 FUNCTION IDENTIFIER = BIT 22
*
* FUNCTION MESSAGES
*
21521 52261202 FIM22 BCD ' F 22 = WRITE HEADER TEST!!
21522 02124-12
21523 66513163
21524 25123-25
21525 21242551
21526 12632562
21527 63371212
21530 52326651 FAM22 BCD ' WRITE HEADER TEST !
21531 31632512
21532 30252124
21533 25511263
21534 25626352
21535 52633025 BCD ' THE PURPOSE OF THIS SPECIAL FUNCTION IS TO PROVIDE!
21536 12476451
21537 47466225
21540 12462612
21541 63303162
21542 12624725
21543 23312143
21544 12266445
21545 23633146
21546 45123162
21547 12634612
21550 47514665

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21551 31242512
21552 52633025 BCD ' THE OPERATOR WITH A TOOL FOR USE IN LOCATING PROBL
21553 12464725
21554 51216346
21555 51126631
21556 63301221
21557 12634646
21560 43122646
21561 51126462
21562 25123145
21563 12434623
21564 21633145
21565 27124751
21566 46224012
21567 52432544 BCD ' LEWS ENCOUNTERED DURING HEADER WRITING. NO ATTEMPT!
21570 62122545
21571 23466445
21572 63255125
21573 24122464
21574 51314527
21575 12302521
21576 24255112
21577 66513163
21600 31452733
21601 12454612
21602 21636325
21603 44476312
21604 52316212 BCD ' IS MADE TO DIAGNOSE ERRORS. HOWEVER, THE FOLLOWING!
21605 44212425
21606 12634612
21607 24312127
21610 45466225
21611 12255151
21612 46516233
21613 12304666
21614 25652551

```

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21615	73126330	
21616	25122646	
21617	43434666	
21620	31452712	
21621	52255151	BCD ' ERROR CONDITIONS WILL BE TYPED!'
21622	46511223	
21623	46452431	
21624	63314445	
21625	62124431	
21626	43431222	
21627	25126770	
21630	47252415	
21631	52263143	BCD ' FILE NOT ON LINE'
21632	25124444	
21633	63124445	
21634	12433145	
21635	25121212	
21636	52302521	BCD ' HEADER SWITCH DOWN'
21637	24255112	
21640	62663163	
21641	23301224	
21642	46664512	
21643	52243162	BCD ' DISC WRITE PROTECTED'
21644	23121651	
21645	31632512	
21646	47514663	
21647	25236325	
21650	24121212	
21651	52233021	BCD ' CHANNEL ERROR'
21652	45452543	
21653	12255151	
21654	46511212	
21655	52234645	BCD ' CONTROLLER ERROR.'
21656	63514443	
21657	43255112	
21660	25515146	

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21661	51331212	
21662	52266445	BCD ' FUNCTION VARIABLES ARE START AND END, (STARTING'
21663	23633146	
21664	45124521	
21665	51312122	
21666	43256212	
21667	21512512	
21670	62632151	
21671	63122145	
21672	24122545	
21673	24731274	
21674	62632151	
21675	63314527	
21676	52214524	BCD ' AND ENDING DISC ADDRESSES, RESPECTIVELY), THE SAME'
21677	12254524	
21700	31452712	
21701	24316223	
21702	12212424	
21703	51256262	
21704	25627312	
21705	51256247	
21706	25236331	
21707	65254370	
21710	34331263	
21711	30251262	
21712	21442512	
21713	52652151	BCD ' VARIABLES WILL BE USED UNTIL BREAKPOINT ONE IS RE.'
21714	31212243	
21715	25621266	
21716	31434312	
21717	22231264	
21720	62252412	
21721	64456331	
21722	43122251	
21723	25214247	
21724	46314463	

21725 12464525
21726 12316212
21727 51254012
21730 52622563
21731 73122163
21732 12663031
21733 23301247
21734 46314569
21735 12214512
21736 25452412
21737 44256262
21740 21272512
21741 31621263
21742 70472524
21743 33122664
21744 45234012
21745 52633146
21746 45126521
21747 51312122
21750 43256212
21751 44217012
21752 45466612
21753 22251223
21754 30214527
21755 25241246
21756 51122145
21757 46633025
21760 51122664
21761 45234012
21762 52633146
21763 45124551
21764 12644531
21765 63124421
21766 70122225
21767 12212323
21770 25626225

BCD ' SET, AT WHICH POINT AN END MESSAGE IS TYPED. FUNC=1

BCD ' TION VARIABLES MAY NOW BE CHANGED OR ANOTHER FUNC=1

BCD ' TION OR UNIT MAY BE ACCESSED. '1

21771 24333712

*
 *
 * FUNCTION 23 - SECTOR DUMP
 *
 *
 *

21772	0 43 00424	FUNC23 BRM	FUNC23	FUNCTION LINK
21773	0 20 22061	NOP	FPT23	
21774	0 43 00440	BRM	RETURN	SET INTERRUPT LINKAGE
21775	0 20 23371	NOP	ENTER	
21776	0 02 20004	DIR		DISABLE INTERRUPTS
21777	0 43 00430	BRM	OBJECT	OBJECT LINK
22000	0 43 00454	BRM	REPORT	OUTPUT FUNCTION IDENTIFIER
22001	0 20 22-67	NOP	FIM23	
22002	0 43 23-65	BRM	TERM	GO TO CONTROL

*
 *
 * DRIVE DISC
 *
 *

22003	0 43 00430	BRM	OBJECT	SET INTERRUPT LINKAGE
22004	0 43 00440	BRM	RETURN	
22005	0 20 23371	NOP	ENTER	
22006	0 76 23346	LDA	STDISC	GET DISC ADDRESS
22007	0 35 23352	STA	POTARD	
22010	0 43 23173	BRM	POTOUT	POT TO DISC
22011	0 01 22056	BRU	F23E1	ERROR ABORT
22012	0 02 00000	EDM	0	DISCONNECT CHANNEL
22013	0 02*10000	EDM*	10000	ALERT CHANNEL
22014	0 02 14000	EDM	14000	EXTENDED MODE EDM
22015	0 13 33736	POT	*4864*STADDR	WC # 64
22016	0 02 03426	EDM	3626	HEAD DISC FILE = SECTOR
22017	0 43 23143	BRM	-AIT	WAIT FOR CONTROLLER READY
22020	0 01 22056	BRU	F23E1	ERROR ABORT
22021	0 40 11000	SKS	11000	CHANNEL ERROR TEST
22022	0 01 22024	BRU	**2	CHANNEL ERROR SET
22023	0 01 22027	BRU	**4	
22024	0 43 00460	BRM	ERROR	
22025	0 20 23407	NOP	U21M8	

22026	0 01 22056	BRU	F23E1	
22027	0 40 12000	SKS	12000	CHANNEL ZERO WORD COUNT TEST
22030	0 01 22032	BRU	**2	WORD COUNT NOT ZERO
22031	0 01 22035	BRU	**4	
22032	0 43 00460	BRM	ERROR	
22033	0 20 23661	NOP	U21M13	
22034	0 01 22056	BRU	F23E1	
22035	0 43 23073	BRM	CHECK	CHECK FOR CHANNEL INACTIVE
22036	0 01 22056	BRU	F23E1	ERROR ABORT
22037	0 76 33577	LDA	*STADDR	SET UP POINTER
22040	0 16 15443	MRG	BIT5	
22041	0 35 22045	STA	F23L1	
22042	0 76 15462	LDA	BIT20	
22043	0 43 00454	F23L2 BRM	REPORT	DUMP 8 WORDS
22044	0 20 23674	NOP	U21M14,4	CARRIAGE RETURN
22045	0 10 34000	F23L1 EIGHT	STADDR	DATA
22046	0 46 00014	XAB		
22047	0 76 22045	LDA	F23L1	UPDATE ADDRESS
22050	0 55 15462	ADD	BIT20	
22051	0 35 22045	STA	F23L1	
22052	0 46 00014	XAB		
22053	0 54 15465	SUB	BIT23	
22054	0 72 33551	SKA	*=1	FINISHED
22055	0 01 22043	BRU	F23L2	NO
22056	0 43 00434	F23E1 BRM	END	
22057	0 01 21772	BRU	FUNC23	
22060	0 43 00452	LAST BRM	DBNE	

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*
* FUNCTION PARAMETER TABLE
*
22061 0 20 22067 FPT23 NBP FIM23 FUNCTION IDENTIFIER MESSAGE
22062 0 20 22077 NBP FAM23 FUNCTION ABSTRACT MESSAGE
22063 0 20 22074 NBP FVM23 FUNCTION VARIABLES MESSAGE
22064 0 01 23346 ONE STDISC FUNCTION VARIABLE
22065 0 00 22060 PZE LAST LINK TO CONTROL
22066 00000001 DATA 1 FUNCTION IDENTIFIER = BIT 23
*
* FUNCTION MESSAGES
*
22067 52261202 FIM23 BCD ' F 23 = SECTOR DUMP!!
22070 03124012
22071 62252363
22072 46511724
22073 64444737
22074 52126225 FVM23 BCD ' SECTOR !!
22075 23634451
22076 52371212 FAM23 BCD ' THIS SPECIAL FUNCTION DUMPS THE CONTENTS OF ANY
22077 52326730
22100 31621262
22101 47252731
22102 21431226
22103 64452363
22104 31464412
22105 24644447
22106 62126330
22107 25122346
22110 45632545
22111 63621246
22112 26122145
22113 70121212
22114 52243162 BCD ' DISC SECTOR TO THE ERROR DEVICE. WHEN COMPLETED,
22115 23120225
22116 23634451

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22117 12634612
22120 63302512
22121 25515146
22122 51122425
22123 65312325
22124 33126630
22125 25451223
22126 46444743
22127 25632524
22130 73121212
22131 52234645 BCD ' CONTROL WILL BE RETURNED TO THE KEYBOARD. THE ONLY
22132 63514443
22133 12663143
22134 43122225
22135 12512563
22136 64514525
22137 24126346
22140 12633025
22141 12422570
22142 22462151
22143 24331263
22144 30251246
22145 45437012
22146 52266445 BCD ' FUNCTION VARIABLE IS "SECTOR", WHICH IS THE ADDRESS
22147 23633146
22150 45126521
22151 51312122
22152 43251231
22153 62124062
22154 25236346
22155 51407312
22156 66302123
22157 30123162
22160 12633025
22161 12212424
22162 51256262

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22163 52462612 BCD ' OF THE SECTOR WHICH WILL BE DUMPED. AFTER CHANGING'
22164 63302512
22165 62252763
22166 46511266
22167 30312730
22170 12663443
22171 43122225
22172 12246444
22173 47252433
22174 12212663
22175 25511223
22176 30214527
22177 31452712
22200 52633731 BCD ' THIS VARIABLE, TYPE *T TO CONTINUE.'
22201 62126521
22202 51312122
22203 43257312
22204 63704725
22205 12476312
22206 63461223
22207 46456331
22210 45642533
22211 37121212

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*
*
* SUBROUTINES
*
*
* TEST WORD COUNT REGISTER
*
22212 0 00 00000 FIS1 PZE 0
22213 0 77*22212 EAX* FIS1 BIAS
22214 2 76 00001 LDA 1,2 POT*ORD
22215 0 35 23352 STA POT*ORD
22216 2 76 00002 LDA 2,2 EXTENDED MODE EOM
22217 0 35 22225 STA FIS1A
22220 2 76 00003 LDA 3,2 MESSAGE
22221 0 35 22232 STA FIS1B
22222 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
22223 0 20 23371 NOP ENTER
22224 0 02*10000 EOM* 10000 ALERT CHANNEL
22225 0 00 00000 FIS1A PZE 0 EXTENDED MODE EOM
22226 0 13 23352 POT POT*ORD
22227 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
22230 0 01 22232 BRU **2 *C NOT ZERO * BK
22231 0 43 00460 BRM ERR*OR
22232 0 00 00000 FIS1B PZE 0 MESSAGE POINTER
22233 0 43 00434 BRM END
22234 2 01 00004 BRU 4,2 RETURN
*
*
* TEST ADDRESS REGISTER
*
22235 0 00 00000 FIS2 PZE 0
22236 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
22237 0 20 23371 NOP ENTER
22240 0 77*22235 EAX* FIS2 BIAS
22241 2 76 00001 LDA 1,2 POT*ORD
22242 0 35 23352 STA POT*ORD

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22243	2 76	00003	LDA	3,2	EXTENDED MODE EOM
22244	0 35	22253	STA	F1S2A	
22245	0 35	22267	STA	F1S2C	
22246	2 76	00004	LDA	4,2	MESSAGE 1
22247	0 35	22263	STA	F1S2B	
22250	2 76	00005	LDA	5,2	MESSAGE 2
22251	0 35	22301	STA	F1S2D	
22252	0 02*	10000	EOM*	10000	ALERT CHANNEL
22253	0 00	00000	F1S2A PZE	0	
22254	0 13	23352	PBT	PBT*RD	
22255	0 02	12000	EOM	12000	ALERT TO PIN CHANNEL ADDRESS
22256	0 33	23330	PIN	TEMP	PIN CHANNEL ADDRESS
22257	0 76	23330	LDA	TEMP	
22260	2 72	00002	SKA	2,2	IS ADDRESS CORRECT
22261	0 01	22263	BRU	**2	YES
22262	0 43	00460	BRM	ERROR	
22263	0 00	00000	F1S2B PZE	0	
22264	0 43	00434	BRM	END	
22265	0 43	00430	BRM	OBJECT	
22266	0 02*	10000	EOM*	10000	ALERT CHANNEL
22267	0 00	00000	F1S2C PZE	0	
22270	0 13	23352	PBT	PBT*RD	
22271	0 02*	10000	EOM*	10000	ALERT CHANNEL
22272	0 02	14000	EOM	14000	EXTENDED MODE EOM
22273	0 13	33550	PBT	#0	
22274	0 02	12000	EOM	12000	ALERT TO PIN CHANNEL ADDRESS
22275	0 33	23330	PIN	TEMP	PIN CHANNEL ADDRESS
22276	0 76	23330	LDA	TEMP	
22277	2 72	00002	SKA	2,2	IS ADDRESS CORRECT
22300	0 43	00460	BRM	ERROR	NO
22301	0 00	00000	F1S2D PZE	0	
22302	0 43	00434	BRM	END	
22303	2 01	00006	BRU	6,2	RETURN

*
* TEST SKS FOR NO SKIP
*

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22304	0 00	00000	F2S1 PZE	0	
22305	0 77*	22304	EAX*	**1	
22306	2 76	00001	LDA	1,2	GET SKS
22307	0 35	22315	STA	F2S1A	
22310	2 76	00002	LDA	2,2	GET MESSAGE
22311	0 35	22320	STA	F2S1B	
22312	0 43	00440	BRM	RETURN	SET INTERRUPT LINKAGE
22313	0 20	23371	NOP	ENTER	
22314	0 02	10226	EOM	10226	CLEAR FILE
22315	0 00	00000	F2S1A PZE	0	SHOULD NOT SKIP
22316	0 01	22320	BRU	**2	
22317	0 43	00460	BRM	ERROR	
22320	0 00	00000	F2S1B PZE	0	
22321	0 43	00434	BRM	END	
22322	0 51	22304	BRR	F2S1	RETURN

*
* TEST SKS FOR SKIP
*

22323	0 00	00000	F2S2 PZE	0	
22324	0 77*	22323	EAX*	**1	
22325	2 76	00001	LDA	1,2	GET SKS
22326	0 35	22334	STA	F2S2A	
22327	2 76	00002	LDA	2,2	GET MESSAGE
22330	0 35	22336	STA	F2S2B	
22331	0 43	00440	BRM	RETURN	SET INTERRUPT LINKAGE
22332	0 20	23371	NOP	ENTER	
22333	0 02	10226	EOM	10226	CLEAR FILE
22334	0 00	00000	F2S2A PZE	0	SHOULD SKIP
22335	0 43	00460	BRM	ERROR	
22336	0 00	00000	F2S2B PZE	0	
22337	0 43	00434	BRM	END	
22340	0 51	22323	BRR	F2S2	RETURN

*
* TEST ADDRESS REGISTER IN CONTROLLER
*

22341	0 00	00000	F2S3 PZE	0	
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22342 0 61 22341 MIN F2S3 INCREMENT RETURN
22343 0 77*22341 EAX* F2S3
22344 2 76 00001 LDA 1,2 MESSAGE
22345 0 35 22357 STA F2S3A
22346 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
22347 0 20 23371 NOP ENTER
22350 0 76 33550 LDA #0 POT A
22351 0 43 23263 BRM POTPIN POT B
22352 0 76*22341 LDA* F2S3
22353 0 43 23263 BRM POTPIN
22354 0 72*22341 SKA* F2S3 IS ADDRESS BIT SET
22355 0 01 22357 BRU **2 YES
22356 0 43 00460 BRM ERROR
22357 0 00 00000 F2S3A PZE 0
22360 0 43 00434 BRM END
22361 0 51 22341 BRR F2S3 RETURN

*
* TEST ADDRESS REGISTER IN CONTROLLER
*
22362 0 00 00000 F2S4 PZE 0
22363 0 61 22362 MIN F2S4 INCREMENT RETURN
22364 0 77*22362 EAX* F2S4
22365 2 76 00001 LDA 1,2 MESSAGE
22366 0 35 22377 STA F2S4A
22367 0 43 00440 BRM RETURN SET INTERRUPT LINKAGE
22370 0 20 23371 NOP ENTER
22371 0 76 33566 LDA *777777 POT A
22372 0 43 23263 BRM POTPIN POT B
22373 0 76 33550 LDA #0
22374 0 43 23263 BRM POTPIN
22375 0 72*22362 SKA* F2S4 ADDRESS BIT RESET
22376 0 43 00460 BRM ERROR NO
22377 0 00 00000 F2S4A PZE 0
22400 0 43 00434 BRM END
22401 0 51 22362 BRR F2S4 RETURN

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*
* TEST VERIFICATION LOGIC
*
22402 0 00 00000 F2S5 PZE 0
22403 0 61 22402 MIN F2S5 INCREMENT RETURN
22404 0 77*22402 EAX* F2S5
22405 2 76 00001 LDA 1,2 MESSAGE
22406 0 35 22424 STA F2S5A
22407 2 76 00000 LDA 0,2 POT A
22410 0 43 22767 BRM SETUP3
22411 0 01 22425 BRU F2S5B DO NOT USE ADDRESSED DISC
22412 0 17 15456 EOR BIT16 BUILD POT B
22413 0 35 23330 STA TEMP
22414 0 02 10026 EOR 10026 ALERT DISC FILE
22415 0 13 23330 POT TEMP POT B
22416 0 43 23126 BRM NORMAL NORMALIZE DISC
22417 0 02 10026 EOR 10026 ALERT DISC FILE
22420 0 13 23352 POT POTARD POT A
22421 0 43 23315 BRM *500 WAIT 500 MILLISEC
22422 0 40 12026 SKS 12026 TRACK VERIFIED TEST
22423 0 43 00460 BRM ERROR TRACK NOT VERIFIED
22424 0 00 00000 F2S5A PZE 0
22425 0 43 00434 F2S5B BRM END
22426 0 51 22402 BRR F2S5 RETURN

*
* TEST PAVA LOGIC
*
22427 0 00 00000 F2S6 PZE 0
22430 0 77*22427 EAX* F2S6
22431 2 76 00003 LDA 3,2 MESSAGE
22432 0 35 22457 STA F2S6B
22433 2 76 00002 LDA 2,2 POT B
22434 0 43 23242 BRM DISCOCK USE THIS DISC
22435 0 01 22460 BRU F2S6C NO
22436 2 76 00001 LDA 1,2 POT A
22437 0 43 22767 BRM SETUP3
22440 0 01 22460 BRU F2S6C DO NOT USE ADDRESSED DISC

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22441	0 02 10026	EOM	10026	ALERT DISC FILE
22442	0 13 23352	PBT	PBTWRD	PBT A
22443	0 43 23126	BRM	NORMAL	
22444	0 02 10026	EOM	10026	ALERT DISC FILE
22445	2 13 00007	PBT	212	PBT B
22446	0 43 23315	BRM	*500	WAIT 500 MILLISEC
22447	0 71 33737	LDX	**10000D	
22450	0 02 10026	EOM	10026	ALERT DISC FILE
22451	0 13 23352	PBT	PBTWRD	PBT A
22452	0 41 22454	F2S6A BRX	**2	
22453	0 01 22457	BRU	F2S6B	VERIFICATION TIME > 70 MS. = OK
22454	0 40 12026	SKS	12026	TRACK VERIFIED TEST
22455	0 01 22452	BRU	F2S6A	TRACK NOT VERIFIED = LOOP
22456	0 43 00460	BRM	ERROR	TRACK VERIFIED TOO SOON
22457	0 00 00000	F2S6B PZE	0	
22460	0 43 23126	F2S6C BRM	NORMAL	NORMALIZE DISC
22461	0 43 00434	BRM	END	
22462	0 61 22427	MIN	F2S6	INCREMENT RETURN
22463	0 61 22427	MIN	F2S6	INCREMENT RETURN
22464	0 51 22427	BRR	F2S6	RETURN
* * TEST SECTOR VERIFICATION LOGIC *				
22465	0 00 00000	F2S7 PZE	0	
22466	0 77*22465	EAX*	F2S7	
22467	2 75 00002	LDB	212	MESSAGE
22470	0 36 22504	STR	F2S7B	
22471	2 76 00001	LDA	112	PBTWRD
22472	0 43 22775	BRM	SETUP4	
22473	0 01 22505	BRU	F2S7C	ERROR OR DISC OUT OF BOUNDS
22474	0 02 10026	EOM	10026	ALERT DISC FILE
22475	0 13 23352	PBT	PBTWRD	PBT SAME ADDRESS
22476	0 71 33737	LDX	**10000D	
22477	0 40 12026	SKS	12026	TRACK VERIFIED TEST
22500	0 01 22502	BRU	**2	TRACK NOT VERIFIED
22501	0 01 22505	BRU	F2S7C	

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22502	0 41 22477	BRX	F2S7A	
22503	0 43 00460	BRM	ERROR	TIME > 70 MILLISEC
22504	0 00 00000	F2S7B PZE	0	
22505	0 43 00434	F2S7C BRM	END	
22506	0 61 22465	MIN	F2S7	INCREMENT RETURN
22507	0 51 22465	BRR	F2S7	RETURN
* * TEST 2MHAA *				
22510	0 00 00000	F3S1 PZE	0	
22511	0 61 22510	MIN	F3S1	INCREMENT RETURN
22512	0 76 33550	LDA	#0	PBTWRD
22513	0 43 22775	BRM	SETUP4	SET UP OBJECT TEST
22514	0 01 22534	BRU	F3S1C	ABORT
22515	0 77*22510	EAX*	F3S1	
22516	2 76 00000	LDA	012	EOM
22517	0 35 22525	STA	F3S1A	
22520	2 76 00001	LDA	112	MESSAGE
22521	0 35 22532	STA	F3S1B	
22522	0 02*10000	EOM*	10000	ALERT CHANNEL
22523	0 02 14200	EOM	14200	EXTENDED MODE EOM
22524	0 13 33573	PBT	#484*STADDR	XC = 1
22525	0 00 00000	F3S1A PZE	0	EOM
22526	0 77 36706	EAX	=5700	WAIT 1 MILLISEC
22527	0 41 22527	BRX	*	
22530	0 40 12026	SKS	12026	TRACK VERIFIED TEST
22531	0 43 00460	BRM	ERROR	CONTROLLER EXITED FROM STATE 1
22532	0 00 00000	F3S1B PZE	0	
22533	0 02 00000	EOM	0	DISCONNECT CHANNEL
22534	0 51 22510	F3S1C BRR	F3S1	RETURN
* * TEST WRITE PARITY CHECKING *				
22535	0 00 00000	F3S2 PZE	0	
22536	0 61 22535	MIN	F3S2	INCREMENT RETURN
22537	0 76 33550	LDA	#0	PBTWRD

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22540 0 43 22775 BRM SETUP4
22541 0 01 22555 BRU F3S2B ABORT
22542 0 76*22535 LDA* F3S2 DATA WORD
22543 0 35 34000 STA STADDR
22544 0 61 22535 MIN F3S2 INCREMENT RETURN
22545 0 76*22535 LDA* F3S2 MESSAGE
22546 0 35 22554 STA F3S2A
22547 0 43 23006 BRM CPBT1 PBT TO CHANNEL
22550 00074000 DATA 4B4*STADDR
22551 0 43 23005 BRM #200 WAIT 200 MILLISEC
22552 0 40 11026 SKS 11026 DISC FILE ERROR TEST
22553 0 43 00460 BRM ERROR CONTROLLER ERROR SET
22554 0 00 00000 F3S2A PZE 0
22555 0 43 00434 F3S2B BRM END
22556 0 51 22535 BRR F3S2 RETURN

*
* TEST INCREMENTING OF ADDRESS REGISTER
*
22557 0 00 00000 F3S3 PZE 0
22560 0 61 22557 MIN F3S3 INCREMENT RETURN
22561 0 77*22557 EAX* F3S3
22562 2 76 00000 LDA C/2 PBTWORD
22563 0 55 15445 ADD BIT23
22564 0 43 23042 BRM DISCCK USE THIS ADDRESS
22565 0 01 22432 BRU F3S3C NO
22566 2 76 00000 LDA C/2 PBTWORD
22567 0 43 22775 BRM SETUP4 SET UP
22570 0 01 22432 BRU F3S3C ABORT
22571 2 76 00001 LDA 1/2 MESSAGE
22572 0 35 22431 STA F3S3B
22573 0 43 23006 BRM CPBT1 PBT TO CHANNEL
22574 04074000 DATA 404B4*STADDR
22575 0 43 23143 BRM WAIT WAIT FOR CONTROLLER READY
22576 0 01 22432 BRU F3S3C
22577 0 40 12000 SKS 12000 CHANNEL ZERO WORD COUNT TEST
22600 0 01 22602 BRU **2 WORD COUNT NOT ZERO

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22601 0 01 22613 BRU F3S3A
22602 0 02 12000 EBM 12000 ALERT TO PIN CHANNEL ADDRESS
22603 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
22604 0 76 23330 LDA TEMP
22605 0 54 33577 SUB #STADDR A = WORD COUNT
22606 0 75 33606 LDB #101
22607 0 71 33577 LDX #STADDR
22610 0 43 00460 BRM ERROR
22611 2 20 30600 NOP F3M20#2
22612 0 01 22632 BRU F3S3C
22613 0 02 10026 EBM 10026 ALERT DISC FILE
22614 0 33 23330 PIN TEMP PIN CONTROLLER ADDRESS
22615 0 75 33551 LDB #=1 MASK
22616 0 76*22557 LDA* F3S3 PBTWORD
22617 0 55 15465 ADD BIT23
22620 0 70 23330 SKM TEMP DID REGISTER INCREMENT CORRECTLY
22621 0 01 22623 BRU **2 NO
22622 0 01 22632 BRU F3S3C
22623 0 46 00014 XAB TEMP REPORT ERROR
22624 0 76 23330 LDA TEMP
22625 0 71*22557 LDX* F3S3
22626 0 43 00454 BRM REPRBT
22627 2 20 31360 NOP F3M32#2
22630 0 43 00460 BRM ERROR
22631 0 00 00000 F3S3B PZE 0
22632 0 43 00434 F3S3C BRM END
22633 0 51 22557 BRR F3S3 RETURN

*
* GENERATE CONTROLLER READ ERROR
*
22634 0 00 00000 F3S4 PZE 0
22635 0 76 33550 LDA #0 PBTWORD
22636 0 43 22775 BRM SETUP4 SET UP
22637 0 01 22677 BRU F3S4A ABORT
22640 0 76 33600 LDA #77 DATA WORD 1
22641 0 35 34000 STA STADDR

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22642 0 76 33550 LDA #0 DATA WORDS 2*64
22643 0 77 37701 EAX +63D
22644 2 35 34100 STA STADDR+64D,2
22645 0 41 22644 BRX **1
22646 0 43 23006 BRM CPBT1 PBT TO CHANNEL
22647 0 43 23143 DATA 4B6*STADDR
22650 0 43 23143 BRM #AIT WAIT FOR CONTROLLER READY
22651 0 01 22677 BRU F3S4A
22652 0 35 34100 STA STADDR CLEAR FIRST WORD
22653 0 43 23077 BRM CHECK CHECK FOR CHANNEL READY
22654 0 01 22677 BRU F3S4A
22655 0 43 23173 BRM PBTOUT PBT TO DISC
22656 0 01 22677 BRU F3S4A
22657 0 76 32413 LDA #STADDR+3 COMPARE ADDRESS
22660 0 76 33551 LDB #+1 MASK
22661 0 43 23006 BRM CPBT1 PBT TO CHANNEL
22662 0 43 23006 DATA 4B6*STADDR
22663 0 02 12000 EBM 12000 ALERT TO PIN CHANNEL ADDRESS
22664 0 33 23330 PIN TEMP PIN CHANNEL ADDRESS
22665 0 70 23330 SKM TEMP DB ADDRESSES COMPARE
22666 0 01 22663 BRU **3 NO
22667 0 02 10226 EBM 10226 CLEAR FILE
22670 0 02 00000 EBM 0 DISCONNECT CHANNEL
22671 0 43 23173 BRM PATAUT PBT TO DISC
22672 0 01 22677 BRU F3S4A
22673 0 43 23115 BRM CPBT2 PBT TO CHANNEL
22674 0 43 23006 DATA 4B6*STADDR
22675 0 43 23305 BRM #200 WAIT 200 MILLISEC
22676 0 61 22634 MIN F3S4 INCREMENT RETURN
22677 0 51 22634 F3S4A BRR F3S4 RETURN
*
* TEST PDBA LOGIC IN 5045 FILE (POSITION DECODER)
*
22700 0 00 00000 F5S1 PZE 0
22701 0 77*22700 EAX* F5S1 BIAS
22702 2 76 00001 LDA 1/P PBT A

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22703 0 43 23042 BRM DISCCK USE THIS ADDRESS
22704 0 01 22756 BRU F5S1G NO
22705 0 43 22760 BRM SETUP2 SET UP
22706 0 76 33740 LDA #310 LOOP COUNT = 32
22707 0 35 23330 STA TEMP
22710 0 02 10026 EBM 10026 ALERT DISC FILE
22711 2 13 00001 PBT 1/P PBT A
22712 0 43 23115 BRM #500 WAIT 500 MILLISEC
22713 0 40 11026 SKS 11026 DISC FILE ERROR TEST
22714 0 01 22716 BRU **2 CONTROLLER ERROR
22715 0 01 22720 BRU F5S1B
22716 2 76 00003 LDA 3/P MESSAGE
22717 0 01 22751 BRU F5S1F
22720 0 40 10026 SKS 10026 DISC FILE READY TEST
22721 0 01 22723 BRU **2 CONTROLLER NOT READY
22722 0 01 22725 BRU F5S1C
22723 2 76 00004 LDA 4/P
22724 0 01 22751 BRU F5S1F
22725 0 02 10026 EBM 10026 ALERT DISC FILE
22726 2 13 00002 PBT 2/P PBT B
22727 0 43 23115 BRM #500 WAIT 500 MILLISEC
22730 0 40 11026 SKS 11026 DISC FILE ERROR TEST
22731 0 01 22733 BRU **2 CONTROLLER ERROR SET
22732 0 01 22735 BRU F5S1D
22733 2 76 00005 LDA 5/P MESSAGE
22734 0 01 22751 BRU F5S1F
22735 0 40 10026 SKS 10026 DISC FILE READY TEST
22736 0 01 22740 BRU **2 CONTROLLER NOT READY
22737 0 01 22742 BRU F5S1E
22740 2 76 00006 LDA 6/P MESSAGE
22741 0 01 22751 BRU F5S1F
22742 0 60 23330 F5S1E SKR TEMP DECREMENT TEMP
22743 0 20 00000 NBP 0
22744 0 40 20040 SKS 20040 BREAKPOINT 4 TEST
22745 0 43 23065 BRM TERM GO TO CONTROL
22746 0 53 23330 SKM TEMP FINISHED

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22747	0 01	22710	BRU	F551A	NO = LOOP
22750	0 01	22756	BRU	F551G	YES = EXIT
22751	0 35	22755	F551F	F551H	MESSAGE
22752	0 02	10226	EDM	10226	CLEAR FILE
22753	0 43	00460	BRM	ERRBR	
22754	4 20	32710	NOP	F5M1,4	
22755	0 00	00000	F551H	PZE	0
22756	0 43	00434	F551G	BRM	END
22757	2 01	00407	BRU	7,2	RETURN

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			•		
			•	SETUP ROUTINE NUMBER 2	
			•		
22760	0 00	00000	SETUP2	PZE	0
22761	0 35	23330		STA	TEMP
22762	0 43	00440		BRM	RETURN
22763	0 20	23371		NOP	ENTER
22764	0 76	23330		LDA	TEMP
22765	0 43	23126		BRM	NORMAL
22766	0 51	22760		BRR	SETUP2
			•		
			•	SETUP ROUTINE NUMBER 3	
			•		
22767	0 00	00000	SETUP3	PZE	0
22770	0 43	22760		BRM	SETUP2
22771	0 43	23042		BRM	DISCK
22772	0 51	22767		BRR	SETUP3
22773	0 61	22767		MIN	SETUP3
22774	0 51	22767		BRR	SETUP3
			•		
			•	SETUP ROUTINE NUMBER 4	
			•		
22775	0 00	00000	SETUP4	PZE	0
22776	0 43	22760		BRM	SETUP2
22777	0 43	23042		BRM	DISCK
23000	0 51	22775		BRR	SETUP4
23001	0 43	23173		BRM	POTOUT
23002	0 51	22775		BRR	SETUP4
23003	0 61	22775		MIN	SETUP4
23004	0 71	15447		LDX	BIT9
23005	0 51	22775		BRR	SETUP4

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*
*
* PBT TO CHANNEL
23006 0 00 00000 CPBT1 PZE 0
23007 0 61 23006 CPBT1 MIN CPBT1 INCREMENT RETURN
23010 0 02 10000 ESM* 10000 ALERT CHANNEL
23011 0 02 14200 ESM 14200 EXTENDED MODE ESM
23012 0 13 23006 PBT* CPBT1 PBT TO CHANNEL
23013 0 02 03666 ESM 3666 WRITE DISC FILE - SECTOR
23014 0 51 23006 BRR CPBT1 RETURN
*
*
* PBT TO CHANNEL
23015 0 00 00000 CPBT2 PZE 0
23016 0 61 23015 CPBT2 MIN CPBT2 INCREMENT RETURN
23017 0 02 10000 ESM* 10000 ALERT CHANNEL
23020 0 02 14000 ESM 14000 EXTENDED MODE ESM
23021 0 13 23015 PBT* CPBT2 PBT TO CHANNEL
23022 0 02 03626 ESM 3626 READ DISC FILE - SECTOR
23023 0 51 23015 BRR CPBT2 RETURN
*
*
* PBT TO CHANNEL
23024 0 00 00000 CPBT3 PZE 0
23025 0 61 23024 CPBT3 MIN CPBT3 INCREMENT RETURN
23026 0 02 10000 ESM* 10000 ALERT CHANNEL
23027 0 02 14200 ESM 14200 EXTENDED MODE ESM
23030 0 13 23024 PBT* CPBT3 PBT TO CHANNEL
23031 0 02 02666 ESM 2666 WRITE DISC FILE - CHAIN
23032 0 51 23024 BRR CPBT3 RETURN
*
*
* PBT TO CHANNEL
23033 0 00 00000 CPBT4 PZE 0
23034 0 61 23033 CPBT4 MIN CPBT4 INCREMENT RETURN
23035 0 02 10000 ESM* 10000 ALERT CHANNEL

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23036 0 02 14000 ESM 14000 EXTENDED MODE ESM
23037 0 13 23033 PBT* CPBT4 PBT TO CHANNEL
23040 0 02 02626 ESM 2626 READ DISC FILE - CHAIN
23041 0 51 23033 BRR CPBT4 RETURN
*
* DISCCK - STORES 'A' IN PBTWHD AND CHECKS TO SEE IF ADDRESSED DISC
* IS TO BE USED. IF DISC IS TO BE USED, THE ROUTINE EXITS SKIPPING.
*
23042 0 00 00000 DISCCK PZE 0
23043 0 35 23052 STA PBTWHD SAVE REGISTERS
23044 0 43 15257 BRM SAV
23045 0 66 00015 RSH 130 RIGHT JUSTIFY DISC NUMBER
23046 0 75 33550 LDR #0
23047 0 72 15461 SKA BIT19 IS DISC NUMBER > 17
23050 0 75 15465 LDB BIT23 YES
23051 0 14 33705 ETR #17 CLEAR HIGH ORDER BIT
23052 0 35 23330 STA TEMP A TO X
23053 0 71 23330 LDX TEMP
23054 0 76 15436 LDA BIT0 FORM COMPARE WORD
23055 0 36 23330 STB TEMP SAVE B
23056 0 75 33550 LDB #0
23057 0 66 20000 RCV 0,2
23060 0 71 23330 LDX TEMP
23061 0 72 05001 SKA D00T17,2 IS DISC TO BE USED
23062 0 61 23042 MIN DISCCK NO
23063 0 43 15264 BRM GET GET REGISTERS
23064 0 51 23042 BRR DISCCK RETURN
*
* TERM - EXITS TO CONTROL VIA 'ERROR'. ERROR COUNTER WILL NOT
* BE INCREMENTED
*
23065 0 00 00000 TERM PZE 0
23066 0 60 00414 SKR ERRORS DECREMENT ERROR COUNTER
23067 0 20 00000 NSP 0
23070 0 43 00460 BRM ERROR GO TO CONTROL
23071 0 20 23660 NSP J21Y12 NO MESSAGE

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23072 0 51 23065      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.
*
23073 0 00 00000      CHECK  PZE      0
23074 0 35 23325      STA      A          SAVE A REG
23075 0 76 33550      LDA      #0        CLEAR TIMEOUT FLAG
23076 0 35 23351      STA      TIMEOUT
23077 0 40 14000      SKS      14000     CHANNEL ACTIVE TEST
23100 0 01 23102      BRU      #+2       CHANNEL ACTIVE
23101 0 01 23111      BRU      CHECK1
23102 0 40 11000      SKS      11000     CHANNEL ERROR TEST
23103 0 01 23105      BRU      #+2       CHANNEL ERROR SET
23104 0 01 23114      BRU      CHECK2
23105 0 43 00460      BRM      ERROR
23106 0 20 23607      NOP      U21*8
23107 0 76 23325      LDA      A          RESTORE A REG
23110 0 51 23073      BRR      CHECK
23111 0 61 23073      CHECK1  MIN      CHECK  EXIT SKIPPING
23112 0 76 23325      LDA      A
23113 0 51 23073      BRR      CHECK
23114 0 55 15465      CHECK2  ADD      BIT23
23115 0 73 33741      SKG      #23809D   500 MILLISEC ELAPSED YET
23116 0 01 23077      BRU      CHECK*+   NO
23117 0 02 00000      EOM
23120 0 43 00460      BRM      ERROR    REPORT TIMEOUT ERROR
23121 0 20 23627      NOP      U21*9
23122 0 76 33851      LDA      #+1       SET TIMEOUT FLAG
23123 0 35 23351      STA      TIMEOUT
23124 0 76 23325      LDA      A          RESTORE A REG
23125 0 51 23073      BRR      CHECK      EXIT
*
* NORMALIZE DISC CONTROLLER AND CHANNEL
*

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23126 0 00 00000      NORMAL  PZE      0
23127 0 35 23325      STA      A          SAVE A REGISTER
23130 0 76 33550      LDA      #0
23131 0 40 10026      SKS      10026     DISC FILE READY TEST
23132 0 01 23134      BRU      #+2       CONTROLLER NOT READY
23133 0 01 23137      BRU      NORMAL2
23134 0 55 15465      ADD      BIT23
23135 0 73 33741      SKG      #35714D   500 MILLISEC UP YET
23136 0 01 23131      BRU      NORMAL1  NO
23137 0 02 10226      EOM      10226     CLEAR FILE
23140 0 02 00000      EOM
23141 0 76 23325      LDA      A          DISCONNECT CHANNEL
23142 0 51 23126      BRR      NORMAL   SAVE A REGISTER
*
* 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.
*
23143 0 00 00000      WAIT    PZE      0
23144 0 35 23325      STA      A          SAVE A REG
23145 0 76 33550      LDA      #0        CLEAR TIMEOUT FLAG
23146 0 35 23351      STA      TIMEOUT
23147 0 40 10026      SKS      10026     DISC FILE READY TEST
23150 0 01 23152      BRU      #+2       CONTROLLER NOT READY
23151 0 01 23170      BRU      WAIT*4
23152 0 40 11026      SKS      11026     DISC FILE ERROR TEST
23153 0 01 23165      BRU      WAIT*3   CONTROLLER ERROR SET
23154 0 55 15465      ADD      BIT23
23155 0 73 33742      SKG      #51948D   TIMED OUT YET
23156 0 01 23147      BRU      WAIT*1   NO
23157 0 43 00460      BRM      ERROR
23160 0 20 23640      NOP      U21*10
23161 0 76 33851      LDA      #+1       SET TIMEOUT FLAG
23162 0 35 23351      STA      TIMEOUT
23163 0 76 23325      WAIT*2  LDA      A          RESTORE A REG
23164 0 51 23143      BRR      WAIT      EXIT

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23165 0 43 00460 WAIT3 BRM ERROR REPORT CONTROLLER ERROR
23166 0 20 23452 NBP U21M1
23167 0 01 23163 BRU WAIT2
23170 0 76 23325 WAIT4 LDA A RESTORE A REG
23171 0 61 23143 MIN WAIT
23172 0 51 23143 BRU 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 OCCURS, ROUTINE WILL EXIT
* SKIPPING.
*
23173 0 00 00000 PBTOUT PZE 0
23174 0 35 23225 STA A SAVE A REG
23175 0 40 10226 SKS 10226 FILE ON LINE TEST
23176 0 01 23200 BRU **2 FILE NOT ON LINE
23177 0 01 23203 BRU P01
23200 0 43 00460 BRM ERROR
23201 0 20 23511 NBP U21M1
23202 0 01 23234 BRU P05
23203 0 40 14224 SKS 14026 WRITE HEADER TEST
23204 0 01 23206 BRU **2 WRITE HEADER SWITCH ON
23205 0 01 23211 BRU P02
23206 0 43 00460 BRM ERROR
23207 0 20 23516 NBP U21M2
23210 0 01 23234 BRU P05
23211 0 02 10226 BRM 10226 CLEAR FILE
23212 0 40 10226 SKS 10226 DISC FILE READY TEST
23213 0 01 23212 BRU **1 WAIT FOR CONTROLLER READY
23214 0 02 10226 BRM 10026 ALERT DISC FILE
23215 0 13 23252 PBT PBT-RO PBT TO CONTROLLER
23216 0 76 23250 LDA #0
23217 0 40 10226 SKS 12026 TRACK VERIFIED TEST
23220 0 01 23222 BRU **2 TRACK NOT VERIFIED
23221 0 01 23236 BRU P06
23222 0 58 10465 ADD BIT23

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23223 0 73 23571 SKG #35714D 500 MILLISEC ELAPSED YET
23224 0 01 23217 BRU P03 NO
23225 0 40 11026 SKS 11026 DISC FILE ERROR TEST
23226 0 01 23232 BRU P04 CONTROLLER ERROR NOT SET
23227 0 43 00460 BRM ERROR
23230 0 20 23525 NBP U21M3
23231 0 01 23234 BRU P05
23232 0 43 00460 P04 BRM ERROR
23233 0 20 23537 NBP U21M4
23234 0 76 23325 P05 LDA A RESTORE A REG
23235 0 51 23173 BRU PBTOUT EXIT
23236 0 40 13026 SKS 13026 DISC WRITE PROTECT TEST
23237 0 01 23241 BRU **2 DISC WRITE PROTECTED
23240 0 01 23244 BRU P07
23241 0 43 00460 BRM ERROR
23242 0 20 23550 NBP U21M5
23243 0 01 23234 BRU P05
23244 0 40 11026 SKS 11026 DISC FILE ERROR TEST
23245 0 01 23247 BRU **2 CONTROLLER ERROR SET
23246 0 01 23252 BRU P08
23247 0 43 00460 BRM ERROR
23250 0 20 23556 NBP U21M6
23251 0 01 23234 BRU P05
23252 0 76 23325 P08 LDA A RESTORE A REG
23253 0 61 23173 MIN PBTOUT INCREMENT RETURN
23254 0 51 23173 BRU PBTOUT EXIT SKIPPING (NO ERROR)
*
* CLINT = CLEARS ONE INTERRUPT LEVEL
*
23255 0 00 00000 CLINT PZE 0
23256 0 53 23250 SKN NFFLG IS MACHINE A 940
23257 0 01 23261 BRU **2 NO = USE BRU
23260 0 11 23261 BRU **1 YES = USE BRI
23261 0 20 23262 NBP **1
23262 0 51 23255 BRU CLINT EXIT ROUTINE

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*
* P0TPIN = SUBROUTINE USED IN FUNCTION 2
*
23263 0 00 00000 P0TPIN PZE 0
23264 0 35 23352 STA P0TWRD
23265 0 46 30003 CLR
23266 0 40 10026 SKS 10026 DISC FILE READY TEST
23267 0 01 23271 BRU **P NOT READY
23270 0 01 23274 BRU PTPN2
23271 0 55 15465 ADD BIT23
23272 0 73 33571 SKG #35714D IS 500 MS UP YET
23273 0 01 23266 BRU PTPN1 NO * LOOP
23274 0 02 10226 EQM 10226 CLEAR FILE
23275 0 40 10026 SKS 10026 DISC FILE READY TEST
23276 0 01 23275 BRU **1 WAIT FOR CONTROLLER READY
23277 0 02 10026 EQM 10026 ALERT DISC FILE
23300 0 13 23352 PBT P0TWRD PBT TO CONTROLLER
23301 0 02 10026 EQM 10026 ALERT DISC FILE
23302 0 33 23330 PIN TEMP PIN CONTROLLER ADDRESS REGISTER
23303 0 76 23330 LDA TEMP
23304 0 51 23263 BRR P0TPIN RETURN
*
* ROUTINE TO WAIT 200 MILLISEC
*
23305 0 00 00000 W200 PZE 0
23306 0 35 23325 STA A SAVE A REG
23307 0 76 33550 LDA #0
23310 0 55 15465 ADD BIT23
23311 0 73 33743 SKG #22858D 200 MILLISEC UP YET
23312 0 01 23310 BRU **P NO
23313 0 76 23325 LDA A RESTORE A REG
23314 0 51 23305 BRR W200 RETURN
*
* ROUTINE TO WAIT 500 MILLISEC
*
23315 0 00 00000 W500 PZE 0
23316 0 35 23325 STA A SAVE A REG

```

```

23317 0 76 33550 LDA #0
23320 0 55 15465 ADD BIT23
23321 0 73 33744 SKG #57142D 500 MILLISEC UP YET
23322 0 01 23320 BRU **P NO
23323 0 76 23325 LDA A RESTORE A REG
23324 0 51 23315 BRR W500 RETURN

```

```

*
*
*   CONSTANTS AND TEMPORARY STORAGE CELLS
*
23325 0 00 00000 A   PZE  0   LOCATIONS WHERE REGISTERS SAVED
23326 0 00 00000 B   PZE  0
23327 0 00 00000 X   PZE  0
23330 0 00 00000 TEMP PZE  0   TEMPORARY STORAGE
23331 0 00 00000 TEMP A PZE  0
23332 0 00 00000 TEMP B PZE  0
23333 0 00 00000 TEMP C PZE  0
23334 0 00 00000 TEMP D PZE  0
23335 0 00 00000 VAR1  PZE  0   COMMON VARIABLE STORAGE
23336 0 00 00000 VAR2  PZE  0
23337 0 00 00000 VAR3  PZE  0
23340 0 00 00000 VAR4  PZE  0
23341 0 00 00000 VAR5  PZE  0
23342 0 00 00000 VAR6  PZE  0
23343 0 00 00000 VAR7  PZE  0
23344 0 00 00000 VAR8  PZE  0
23345 0 00 00000 VAR9  PZE  0
23346 0 00 00000 STDISC PZE  0   STARTING DISC ADDRESS (F18=23)
23347 0 00 00000 ENDISC PZE  0   ENDING DISC ADDRESS (F18=23)
23350 0 00 00000 NFFLG PZE  0   940 FLAG
23351 0 00 00000 TIVBUT PZE  0   TIMEOUT ERROR FLAG
23352 0 00 00000 PBTARD PZE  0   COMMON CELL FOR DISC PBT WORD

```

```

*
*
*   INTERRUPT PROCESSORS
*
*
*   PROCESS I2 INTERRUPT
*
23353 0 00 20004 P12 DIR   DISABLE INTERRUPTS
23354 0 43 15257 BRM   SAV   SAVE REGISTERS
23355 0 76 00450 LDA   DIVERT GET INTERRUPT MARK ADDRESS
23356 0 14 33560 ETR   #37777 EXTRACT ADDRESS PORTION
23357 0 75 33551 LDB   #=1   MASK
23360 0 70 33564 SKM   #IX2  WAS INTERRUPT AN I2
23361 0 43 23377 BRM   SPUR  NO
23362 0 20 33745 NOP   #33
23363 0 76 33551 LDA   #=1   SET I2 FLAG
23364 0 35 15476 STA  I2FLAG
23365 0 43 15264 BRM   GET   GET REGISTERS
23366 0 53 23350 SKN   NFFLG IS MACHINE A 940
23367 0 01 01246 BRU*  INTX2 NO * RETURN
23370 0 11 00246 BRI  INTX2 YES * RETURN

*
*
*   ALL INTERRUPTS AND TRAPS SPURIOUS
*
23371 0 02 20004 ENTER DIR  DISABLE INTERRUPTS
23372 0 43 15257 BRM   SAV   SAVE REGISTERS
23373 0 76 00450 LDA   DIVERT GET INTERRUPT MARK ADDRESS
23374 0 14 33560 ETR   #37777 EXTRACT ADDRESS PORTION
23375 0 43 23377 BRM   SPUR  PROCESS SPURIOUS INTERRUPT/TRAP
23376 0 20 33745 NOP   #0

*
*
*   PROCESS SPURIOUS PBP, INTERRUPT, OR TRAP
*
23377 0 00 00000 SPJR PZE  0
23400 0 73 33600 SKG   #77  WAS SPIT LEGAL
23401 0 01 23412 BRU   IEXT NO
23402 0 73 33603 SKG   #177 WAS IT A PBP

```

```

DISCH  TAP=3.C                PAGE 307
23403  0 01 23416             BRU  POP                YES
23404  0 73 33746             SKG  #237              WAS IT LEGAL
23405  0 01 23412             BRU  IEXT              NO
23406  0 73 33747             SKG  #273              WAS IT 130 = T44
23407  0 01 23422             BRU  I30T44            YES
23410  0 73 33750             SKG  #337              WAS IT 156 = 174
23411  0 01 23421             BRU  156174            YES

```

```

*
* PROCESS ILLEGAL OR EXTERNAL INTERRUPT
*

```

```

23412  0 76 33551             IEXT LDA  #=1
23413  0 35 23462             STA  ITABLE+1         RECEIVED
23414  0 76 00450             LDA  DIVERT           MARK
23415  0 01 23430             BRU  COMMON

```

```

*
* PROCESS SPURIOUS POPS
*

```

```

23416  0 35 23462             POP  STA  ITABLE+1         RECEIVED
23417  0 76 00000             LDA  0                MARK
23420  0 01 23430             BRU  COMMON

```

```

*
* PROCESS 156 THROUGH 174
*

```

```

23421  0 55 15461             156174 ADD  BIT19

```

```

*
* PROCESS 130 THROUGH T44
*

```

```

23422  0 54 33440             I30T44 SUB  #161
23423  0 66 00701             RSH  1
23424  0 35 23462             STA  ITABLE+1         RECEIVED
23425  0 77 00450             EAX# DIVERT
23426  2 77 37777             EAX  =1/2
23427  2 76 00000             LDA  0,2

```

```

*
* COMMON INTERRUPT ROUTINE
*

```

```

DISCH  TAP=3.C                PAGE 308
23430  0 35 23463             COMMON STA  ITABLE+2         MARK
23431  0 76 23463             LDA# ITABLE+2
23432  0 35 23464             STA  ITABLE+3         INSTRUCTION
23433  0 61 23377             MIN  SPUR
23434  0 77 23377             EAX# SPUR
23435  2 76 00000             LDA# 0,2
23436  0 35 23461             STA  ITABLE           EXPECTED
23437  0 43 23447             BR#  CLEAR           CLEAR ALL PENDING INTERRUPTS
23440  0 43 15264             BR#  GET             RESTORE REGISTERS
23441  0 43 00454             BR#  REPORT          REPORT ERROR
23442  4 20 23466             NOP  MSG2,4          MESSAGE
23443  0 04 23461             FOUR ITABLE          DATA
23444  0 43 00460             BR#  ERROR           GO TO CONTROL
23445  0 20 23465             NOP  MSG1            (NO MESSAGE)
23446  0 01 00430             BRU# SUBJECT         RETURN TO LAST OBJECT TRANSFER

```

```

*
* CLEAR ALL PENDING INTERRUPTS
*

```

```

23447  0 00 00000             CLEAR PZE  0
23450  0 43 00440             BR#  RETURN          SET INTERRUPT LINKAGE
23451  0 20 23453             NOP  **2
23452  0 02 2000?             EIR                                ENABLE INTERRUPTS
23453  0 53 23350             SKN  NFFLG           CLEAR INTERRUPT
23454  0 01 23456             BRU# **2             925/930
23455  0 11 23456             BRI  **1             940/945
23456  0 20 23456             NOP  *
23457  0 02 20004             DIR                                DISABLE INTERRUPTS
23460  0 51 23447             BRR  CLEAR          RETURN

```

```

*
* MESSAGES
*

```

```

23461  0 00 00000             ITABLE PZE  0        INTERRUPTS EXPECTED
23462  0 00 00000             PZE  0              INTERRUPT RECEIVED
23463  0 00 00000             PZE  0              LOCATION AT TIME OF INTERRUPT/TRAP
23464  0 00 00000             PZE  0              INSTRUCTION BEING EXECUTED
23465  37121212             MSG1  BCD  '111'

```

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23466	52526247	1MSG2 BCD	' SPURIOUS POP, INTERRUPT, OR TRAP'
23467	64513146		
23470	64621247		
23471	46477312		
23472	31456325		
23473	51516447		
23474	03731246		
23475	51126351		
23476	21471212		
23477	52256747	BCD	' EXPECTED RECEIVED LOCATION CONTENTS ''
23500	25236325		
23501	24125125		
23502	23253165		
23503	25241243		
23504	46232163		
23505	31464512		
23506	23464563		
23507	25456362		
23510	52371212		

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*
* UNIT MESSAGES
*

23511	52522431	U21M1 BCD	' FILE NOT ON LINE''
23512	43251245		
23513	46631246		
23514	45124331		
23515	45253712		
23516	52526651	U21M2 BCD	' WRITE HEADER SWITCH ON''
23517	31632512		
23520	30252124		
23521	25511262		
23522	66316323		
23523	30124445		
23524	37121212		
23525	52521500	U21M3 BCD	' 500 MILLISEC TIMEOUT ERROR NOT SET''
23526	00124431		
23527	43433162		
23530	25231263		
23531	31442546		
23532	64635225		
23533	51514451		
23534	12454463		
23535	12622563		
23536	37121212		
23537	52520500	U21M4 BCD	' 500 MILLISEC TIMEOUT ERROR SET''
23540	00124431		
23541	43433162		
23542	25231263		
23543	31442546		
23544	64635225		
23545	51514451		
23546	12622563		
23547	37121212		
23550	52522431	U21M5 BCD	' DISC WRITE PROTECTED''
23551	62231266		

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23552	51316325		
23553	12475146		
23554	63252363		
23555	25243712		
23556	52522746	U21*6 BCD	' CONTROLLER ERROR AFTER TRACK VERIFICATION''
23557	45635146		
23560	43432551		
23561	12255151		
23562	46511221		
23563	26632551		
23564	12635121		
23565	23421265		
23566	25513126		
23567	31232163		
23570	31444537		
23571	52522431	U21*7 BCD	' DISC FILE NOT ON LINE UNIT ABORTED AFTER FUNCTION 1.0''
23572	62231226		
23573	31432512		
23574	45466712		
23575	46451243		
23576	31452552		
23577	64453163		
23600	12212246		
23601	51632524		
23602	12212463		
23603	25511226		
23604	64452763		
23605	31444512		
23606	01333712		
23607	52522330	U21*8 BCD	' CHANNEL ERROR SET AFTER DATA TRANSMISSION OR SECT9''
23610	21454525		
23611	43122551		
23612	51465112		
23613	62256712		
23614	21256725		
23615	51122421		

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23616	63211263		
23617	51214562		
23620	44316262		
23621	31464512		
23622	46511262		
23623	25237746		
23624	51126225	BCD	' R SEARCH''
23625	21512730		
23626	37121212		
23627	52522330	U21*9 BCD	' CHANNEL ACTIVE AFTER 500 MILLISEC''
23630	21454525		
23631	43122123		
23632	63216525		
23633	12212463		
23634	25511205		
23635	00001244		
23636	31434231		
23637	62252737		
23640	52522746	U21*10 BCD	' CONTROLLER NOT READY AFTER 1 SECOND''
23641	45635146		
23642	43432551		
23643	12454463		
23644	12512521		
23645	24701221		
23646	26632551		
23647	12011262		
23650	25234445		
23651	24371212		
23652	52522346	U21*11 BCD	' CONTROLLER ERROR SET''
23653	45635146		
23654	43432551		
23655	12255151		
23656	46511262		
23657	25633712		
23660	37121212	U21*12 BCD	' ''
23661	52522330	U21*13 BCD	' CHANNEL INTERLACE NOT AT ZERO WORD COUNT.0''

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23662	21454525		
23663	43123145		
23664	63255143		
23665	21232512		
23666	45466312		
23667	21631271		
23670	25514412		
23671	66465124		
23672	12274464		
23673	45633337		
23674	52371212	U21M14 BCD	' ''

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*
* MESSAGES - FUNCTION 1
*

23675	52027524	F1M1	BCD	' 25002(44) ''
23676	00027404			
23677	04343712			
23700	52010224	F1M2	BCD	' 12008(44),14010(44),25002(44),03C14(31) ''
23701	00107404			
23702	04347901			
23703	04240100			
23704	74040434			
23705	73020524			
23706	00027404			
23707	04347300			
23710	03230104			
23711	74030134			
23712	37121212			
23713	52020524	F1M3	BCD	' 25027(44) ''
23714	02077404			
23715	04343712			
23716	52020524	F1M4	BCD	' 25027(44) ''
23717	02077404			
23720	04343712			
23721	52020524	F1M5	BCD	' 25034(44),22037(35) ''
23722	02077404			
23723	04347302			
23724	02240307			
23725	74030534			
23726	37121212			
23727	52020224	F1M6	BCD	' 22009(44) ''
23730	00117404			
23731	04343712			
23732	52010223	F1M7	BCD	' 12017(31),10C37(34),18C26(34),j2C31(34) ''
23733	01077403			
23734	01347301			
23735	00230307			

23736	74030434		
23737	73011023		
23740	02067403		
23741	04347301		
23742	02230301		
23743	74030434		
23744	37121212		
23745	52000223	F1M8	BCD ' 02C03(31),25E42(55),16C02(31),12D08(44)''
23746	00037403		
23747	01347302		
23750	05250402		
23751	74050534		
23752	73010423		
23753	00027403		
23754	01347301		
23755	02240010		
23756	74040434		
23757	37121212		
23760	52000223	F1M9	BCD ' 02C28(31),25E27(55),12D08(44)''
23761	02107403		
23762	01347302		
23763	05250207		
23764	74050534		
23765	73010224		
23766	00107404		
23767	04343712		
23770	52000223	F1M10	BCD ' 02C14(31),29E37(55),12D08(44)''
23771	01047403		
23772	01347302		
23773	11250307		
23774	74050534		
23775	73010224		
23776	00107404		
23777	04343712		
24000	52000223	F1M11	BCD ' 03C14(31),29E27(55),12D08(44)''
24001	01047403		

24002	01347302		
24003	11250207		
24004	74050534		
24005	73010224		
24006	00107404		
24007	04343712		
24010	52020524	F1M12	BCD ' 25D15(44),17C35(40)''
24011	01057404		
24012	04347301		
24013	02230305		
24014	74040434		
24015	37121212		
24016	52010723	F1M13	BCD ' 17C02(40),21C12(41),29E04(55)''
24017	00027404		
24020	00347302		
24021	01230102		
24022	74040134		
24023	73021125		
24024	00047405		
24025	05343712		
24026	52010723	F1M14	BCD ' 17C02(40),22C12(41),26E30(55)''
24027	00027404		
24030	00347302		
24031	02230102		
24032	74040134		
24033	73020425		
24034	03077405		
24035	05343712		
24036	52010723	F1M15	BCD ' 17C08(40),22C28(41),26E31(55)''
24037	00107404		
24040	00347302		
24041	02230210		
24042	74040134		
24043	73020425		
24044	03017405		
24045	05343712		

DISCW	TAP=3.C		PAGE 317
24046	52010723	F1M16	BCD ' 17C08(40),22C26(41),26E29(55)''
24047	00107404		
24050	00347302		
24051	02230206		
24052	74040134		
24053	73020625		
24054	02117405		
24055	05343712		
24056	52010723	F1M17	BCD ' 17C36(40),23C12(41),26E23(55)''
24057	03067404		
24060	00347302		
24061	03230102		
24062	74040134		
24063	73020625		
24064	02037405		
24065	05343712		
24066	52010723	F1M18	BCD ' 17C36(40),23C41(41),26E10(55)''
24067	03067404		
24070	00347302		
24071	03230401		
24072	74040134		
24073	73020625		
24074	01007405		
24075	05343712		
24076	52010723	F1M19	BCD ' 17C36(40),23C26(41),26E11(55)''
24077	03067404		
24100	00347302		
24101	03230206		
24102	74040134		
24103	73020625		
24104	01017405		
24105	05343712		
24106	52010723	F1M20	BCD ' 17C36(40),24C12(42),26E07(55)''
24107	03067404		
24110	00347302		
24111	04230102		

DISCW	TAP=3.C		PAGE 318
24112	74040234		
24113	73020625		
24114	00077405		
24115	05343712		
24116	52010723	F1M21	BCD ' 17C36(40),24C41(42),26E08(55)''
24117	03067404		
24120	00347302		
24121	04230401		
24122	74040234		
24123	73020625		
24124	00107405		
24125	05343712		
24126	52010723	F1M22	BCD ' 17C35(40),24C26(42),26E06(55)''
24127	03067404		
24130	00347302		
24131	04230206		
24132	74040234		
24133	73020625		
24134	00067405		
24135	05343712		
24136	52010723	F1M23	BCD ' 17C35(40),17C20(40),18C27(40),25C12(42),25E42(55)''
24137	03067404		
24140	00347301		
24141	07230206		
24142	74040034		
24143	73011023		
24144	00077404		
24145	00347302		
24146	05230102		
24147	74040234		
24150	73020625		
24151	04027405		
24152	05343712		
24153	52010723	F1M24	BCD ' 17C35(40),25C41(42),25E27(55)''
24154	03067404		
24155	00347302		

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24156	05230401		
24157	74040234		
24160	73020525		
24161	02077405		
24162	05343712		
24163	52010723	F1M25	BCD ' 17C35(40),25C26(42),29E37(55) ''
24164	03057404		
24165	00347302		
24166	05230206		
24167	74040234		
24170	73021125		
24171	03077405		
24172	05343712		
24173	52010723	F1M26	BCD ' 17C35(40),26C12(42),29E34(55) ''
24174	03057404		
24175	00347302		
24176	06230102		
24177	74040234		
24200	73021125		
24201	03047405		
24202	05343712		
24203	52010723	F1M27	BCD ' 17C35(40),26C41(42),29E27(55) ''
24204	03057404		
24205	00347302		
24206	06230401		
24207	74040234		
24210	73021125		
24211	02077405		
24212	05343712		
24213	52020123	F1M28	BCD ' 21C28(41),15C12(40),18C37(40),19C03(40),25E43(55) ''
24214	02107404		
24215	01347301		
24216	05230102		
24217	74040034		
24220	73011023		
24221	03077404		

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24222	00347301		
24223	11230003		
24224	74040034		
24225	73020525		
24226	04037405		
24227	05343712		
24230	52020123	F1M29	BCD ' 21C41(41),25E43(55),15C37(40),17C28(40) ''
24231	04017404		
24232	01347302		
24233	05250403		
24234	74050534		
24235	73010523		
24236	03077404		
24237	00347301		
24240	07230210		
24241	74040034		
24242	37121212		
24243	52020123	F1M30	BCD ' 21C14(41),25E10(55) ''
24244	01047404		
24245	01347302		
24246	05250100		
24247	74050534		
24250	37121212		
24251	52020123	F1M31	BCD ' 21C26(41),25E10(55) ''
24252	02067404		
24253	01347302		
24254	05250100		
24255	74050534		
24256	37121212		
24257	52020723	F1M32	BCD ' 27C03(42),29E36(55) ''
24260	00037404		
24261	02347302		
24262	11250306		
24263	74050534		
24264	37121212		
24265	52020223	F1M33	BCD ' 22C12(42),29E36(55) ''

DISCW	TAP-3,0		PAGE 321
24266	01027404		
24267	02347302		
24270	11250306		
24271	74050534		
24272	37121212		
24273	52020723	F1M34 BCD	' 27C28(42),29E35(55) !!
24274	02107404		
24275	02347302		
24276	11250305		
24277	74050534		
24300	37121212		
24301	52020723	F1M35 BCD	' 27C41(42),29E35(55) !!
24302	04017404		
24303	02347302		
24304	11250305		
24305	74050534		
24306	37121212		
24307	52020723	F1M36 BCD	' 27C14(42),29E26(55) !!
24310	01047404		
24311	02347302		
24312	11250206		
24313	74050534		
24314	37121212		
24315	52020723	F1M37 BCD	' 27C26(42),29E26(55) !!
24316	02067404		
24317	02347302		
24320	11250206		
24321	74050534		
24322	37121212		
24323	52021023	F1M38 BCD	' 28C03(43),15C10(40),24E29(55) !!
24324	00037404		
24325	03347301		
24326	05230100		
24327	74040034		
24330	73020425		
24331	02117405		

DISCW	TAP-3,0		PAGE 322
24332	05343712		
24333	52021023	F1M39 BCD	' 25C12(43),24E29(55) !!
24334	01027404		
24335	03347302		
24336	04250211		
24337	74050534		
24340	37121212		
24341	52021023	F1M40 BCD	' 28C28(42),29E20(55) !!
24342	02107404		
24343	02347302		
24344	11250200		
24345	74050534		
24346	37121212		
24347	52021023	F1M41 BCD	' 28C41(42),29E20(55) !!
24350	04017404		
24351	02347302		
24352	11250200		
24353	74050534		
24354	37121212		
24355	52021023	F1M42 BCD	' 28C14(43),29E42(55) !!
24356	01047404		
24357	03347302		
24360	11250402		
24361	74050534		
24362	37121212		
24363	52021023	F1M43 BCD	' 28C26(43),29E42(55) !!
24364	02067404		
24365	03347302		
24366	11250402		
24367	74050534		
24370	37121212		
24371	52021123	F1M44 BCD	' 28C03(43),26E42(55) !!
24372	00037404		
24373	03347302		
24374	04250402		
24375	74050534		

DISCW	TAP=3.0		PAGE 323
24376	37121212		
24377	52021123	F1M45 BCD	' 29C12(43),26E42(55) ''
24400	01027404		
24401	03347302		
24402	06250402		
24403	74050534		
24404	37121212		
24405	52021123	F1M46 BCD	' 29C28(43),26E35(55) ''
24406	02107404		
24407	03347302		
24410	06250305		
24411	74050534		
24412	37121212		
24413	52021123	F1M47 BCD	' 29C41(43),26E35(55) ''
24414	04017404		
24415	03347302		
24416	06250305		
24417	74050534		
24420	37121212		
24421	52021123	F1M48 BCD	' 29C14(43),26E33(55) ''
24422	01047404		
24423	03347302		
24424	06250303		
24425	74050534		
24426	37121212		
24427	52021123	F1M49 BCD	' 29C26(43),26E33(55) ''
24430	02067404		
24431	03347302		
24432	06250303		
24433	74050534		
24434	37121212		
24435	52030023	F1M50 BCD	' 30C03(43),26E34(55) ''
24436	00037404		
24437	03347302		
24440	06250304		
24441	74050534		

DISCW	TAP=3.0		PAGE 324
24442	37121212		
24443	52030023	F1M51 BCD	' 30C12(43),26E34(55) ''
24444	01027404		
24445	03347302		
24446	06250304		
24447	74050534		
24450	37121212		
24451	52030023	F1M52 BCD	' 30C28(43),29E14(44) ''
24452	02107404		
24453	03347302		
24454	11250104		
24455	74040434		
24456	37121212		
24457	52030023	F1M53 BCD	' 30C41(43),29E14(55) ''
24460	04017404		
24461	03347302		
24462	11250104		
24463	74050534		
24464	37121212		
24465	52030023	F1M54 BCD	' 30C14(43),29E08(55) ''
24466	01047404		
24467	03347302		
24470	11250010		
24471	74050534		
24472	37121212		
24473	52030023	F1M55 BCD	' 30C26(43),29E08(55) ''
24474	02067404		
24475	03347302		
24476	11250010		
24477	74050534		
24500	37121212		
24501	52030123	F1M56 BCD	' 31C03(43),18C27(40),17C20(40) ''
24502	00037404		
24503	03347301		
24504	10230207		
24505	74040034		

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24506	73010723		
24507	02007404		
24510	00343712		
24511	52030123	F1M57	BCD ' 31C12(43)''
24512	01027404		
24513	03343712		
24514	52030123	F1M58	BCD ' 31C28(43)''
24515	02107404		
24516	03343712		
24517	52030123	F1M59	BCD ' 31C41(43)''
24520	04017404		
24521	03343712		
24522	52522124	F1M60	BCD ' ADDRESS INCREMENTING ERROR'
24523	24512562		
24524	62123145		
24525	23512544		
24526	25456331		
24527	45271225		
24530	51514451		
24531	52212424	BCD	' ADDR SB ADDR IS NOT SIGNIFICANT ''
24532	51126222		
24533	12122124		
24534	24511231		
24535	62121245		
24536	46631262		
24537	31274531		
24540	26312321		
24541	45635237		
24542	52310112	F1M65	BCD ' I1 INTERRUPT NOT RECEIVED''
24543	31456325		
24544	51516447		
24545	63124546		
24546	63125125		
24547	23253165		
24550	25243712		
24551	52010423	F1M66	BCD ' 16C06(33),20Cxx(41),31HXX(BASIC INT),23D11(33)''

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24552	00067403		
24553	03347302		
24554	00236767		
24555	74040134		
24556	73030130		
24557	67677422		
24560	21623123		
24561	12314563		
24562	34730203		
24563	24010174		
24564	03033437		
24565	52010623	F1M67	BCD ' 16C11(33),09C31(33),10C31(34),12C31(34),24E34(55)''
24566	01017403		
24567	03347300		
24570	11230301		
24571	74030334		
24572	73010023		
24573	03017403		
24574	04347301		
24575	02230301		
24576	74030434		
24577	73020425		
24600	03047405		
24601	05341212		
24602	02032401	BCD	'23D11(33)''
24603	01740303		
24604	34371212		
24605	52310212	F1M70	BCD ' I2 INTERRUPT NOT RECEIVED''
24606	31456325		
24607	51516447		
24610	63124546		
24611	63125125		
24612	23253165		
24613	25243712		
24614	52030230	F1M71	BCD ' 32HXX(BASIC INT),23D04(33),11C25(33),18C43(40)''
24615	67677422		

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24616 21623123
24617 12314463
24620 34730203
24621 24000474
24622 03033473
24623 01012302
24624 05740303
24625 34730110
24626 23040374
24627 04003473
24630 02002301
24631 04740401
24632 34730200
24633 23021074
24634 04013473
24635 01012303
24636 01740304
24637 34730010
24640 23010674
24641 03043437

BCD '120C14(*1),20C28(*1),11C31(34),08C16(34)''

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24642 52522631
24643 43251246
24644 45124331
24645 45251263
24646 25626312
24647 26213143
24650 62121212
24651 52116231
24652 46211302
24653 46436221
24654 33102301
24655 06213302
24656 23212121
24657 33046242
24660 62231212
24661 52121202
24662 23212121
24663 13102301
24664 07653310
24665 23011121
24666 33112302
24667 00213310
24670 23020121
24671 33102302
24672 02213311
24673 23020321
24674 52121202
24675 46436221
24676 13024643
24677 00213305
24700 23010221
24701 33032301
24702 03213303

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•
•
MESSAGES • FUNCTION 2

F2M1 BCD ' FILE ON LINE TEST FAILS'

BCD ' 9S10A#20LSA#8C16A#2CAAA#4SKSC'

BCD ' 2CAAA#8C17V#8C19A#9C20A#8C21A#8C22A#9C23A'

BCD ' 20LSA#20L0A#5C12A#3C13A#3C14A'

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24703	23010421			
24704	52056101	BCD		' 5/13(35),2/17,2/21,2/25,3/18,5/07,5/09,5/12,6/01, '
24705	03740305			
24706	34730261			
24707	01077302			
24710	61020173			
24711	02610205			
24712	73036101			
24713	10730361			
24714	00077305			
24715	61001173			
24716	05610102			
24717	73066100			
24720	01731212			
24721	52066100	BCD		' 6/05,6/06,6/07,6/11,6/22''
24722	05730461			
24723	00067306			
24724	61000773			
24725	06610101			
24726	73066102			
24727	02371212			
24730	52526042	F2M2	BCD	' SKS 10227 SK PS '
24731	62120100			
24732	02020712			
24733	02423147			
24734	62121212			
24735	52022221	BCD		' 2CAAAA'
24736	21211212			
24737	52036101	BCD		' 3/18(45),2/25,5/07,5/12,5/13,6/05,6/22''
24740	10740305			
24741	34730261			
24742	00057305			
24743	61000773			
24744	05610102			
24745	73056101			
24746	03730461			

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24747	00057306			
24750	61020237			
24751	52526042	F2M3	BCD	' SKS 10224 SK PS '
24752	62120100			
24753	02020412			
24754	62423147			
24755	62121212			
24756	52022221	BCD		' 2CAAAA'
24757	21211212			
24760	52020102	BCD		' 2/25,6/05''
24761	05730461			
24762	00053712			
24763	52526042	F2M4	BCD	' SKS 10222 SK PS '
24764	62120100			
24765	02020212			
24766	62423147			
24767	62121212			
24770	52022221	BCD		' 2CAAAA'
24771	21211212			
24772	52026102	BCD		' 2/25,6/05''
24773	05730461			
24774	00053712			
24775	52526042	F2M6	BCD	' SKS 10206 SK PS '
24776	62120100			
24777	02020412			
25000	62423147			
25001	02121212			
25002	52022221	BCD		' 2CAAAA'
25003	21211212			
25004	52026101	BCD		' 2/17,6/05''
25005	07730461			
25006	00053712			
25007	52526042	F2M7	BCD	' SKS 10326 SK PS '
25010	62120100			
25011	73020412			
25012	62423147			

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25013	62121212			
25014	52022321	BCD	' 2CAAA'	
25015	21211212			
25016	52026101	BCD	' 2/17,6/11''	
25017	07730A61			
25020	01013712			
25021	52526242	F2M8 BCD	' SKS 17026 SKIPS'	
25022	62120107			
25023	00020A12			
25024	62423147			
25025	62121212			
25026	52066231	BCD	' 6S18AO=8S10F'	
25027	46210013			
25030	10623144			
25031	26121212			
25032	52056100	BCD	' 5/09(35),5/10,5/13,6/03''	
25033	11740305			
25034	34730561			
25035	01007305			
25036	61010073			
25037	06610003			
25040	37121212			
25041	52526242	F2M9 BCD	' SKS 11226 SKIPS'	
25042	62120101			
25043	02020A12			
25044	62423147			
25045	62121212			
25046	52066231	BCD	' 6S18AO=20LSA+8C16A'	
25047	46210013			
25050	07464362			
25051	21331023			
25052	01062112			
25053	52056101	BCD	' 5/12(35),2/21,5/07,5/08,5/09,5;10,6/01,6/06,6/22''	
25054	02740305			
25055	34730261			
25056	02017305			

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25057	61000773			
25060	05610010			
25061	73056100			
25062	11730561			
25063	01007305			
25064	61000173			
25065	06610006			
25066	73066102			
25067	02371212			
25070	52526242	F2M10 BCD	' SKS 12226 SKIPS'	
25071	62120102			
25072	02020612			
25073	62423147			
25074	62121212			
25075	52064643	BCD	' 6SLSAO'	
25076	62210012			
25077	52056100	BCD	' 5/07,5/08,5/09,5/10,6/22''	
25100	07730561			
25101	00107305			
25102	61001173			
25103	05610100			
25104	73066102			
25105	02371212			
25106	52526242	F2M11 BCD	' SKS 13226 SKIPS'	
25107	62120103			
25110	02020612			
25111	62423147			
25112	62121212			
25113	52064643	BCD	' 6SLSAO'	
25114	62210012			
25115	52056100	BCD	' 5/08,5/09,5/10,6/22''	
25116	10730561			
25117	00117305			
25120	61010073			
25121	06610202			
25122	37121212			

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25123	52526242	F2M12	BCD	' SKS 14226 SKIPS'
25124	62120104			
25125	02020412			
25126	62423147			
25127	62121212			
25130	52064443		BCD	' 68LSAO'
25131	62210012			
25132	52056100		BCD	' 5/03,5/07,5/08,5/10,6/06,6/07,6/22''
25133	00730561			
25134	00077305			
25135	61001073			
25136	05610100			
25137	73066100			
25140	06730561			
25141	00077306			
25142	61020237			
25143	52526242	F2M13	BCD	' SKS 15226 SKIPS'
25144	62120105			
25145	02020412			
25146	62423147			
25147	62121212			
25150	52064443		BCD	' 68LSAO'
25151	62210012			
25152	52056100		BCD	' 5/08,6/22''
25153	10730561			
25154	02020712			
25155	52526242	F2M14	BCD	' SKS 16226 SKIPS'
25156	62120106			
25157	02020412			
25160	62423147			
25161	62121212			
25162	52064443		BCD	' 68LSAO'
25163	62210012			
25164	52056100		BCD	' 5/05,6/22''
25165	10730561			
25166	02020712			

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25167	52526242	F2M15	BCD	' SKS 17226 SKIPS'
25170	62120107			
25171	02020412			
25172	62423147			
25173	62121212			
25174	52064443		BCD	' 68LSAO'
25175	62210012			
25176	52056101		BCD	' 5/10,6/22''
25177	00730561			
25200	02020712			
25201	52526242	F2M16	BCD	' WRITE HEADER SWITCH TEST FAILS'
25202	31630512			
25203	30256124			
25204	25511262			
25205	66316323			
25206	30126325			
25207	62631226			
25210	21314762			
25211	52064431		BCD	' 68LSAO=4SKSC+2CAAA+2C12A+3C13A,3C14A,3C16A,3WHRA'
25212	46210013			
25213	04624262			
25214	23330223			
25215	21212133			
25216	02230102			
25217	21330323			
25220	01030133			
25221	03230104			
25222	01330323			
25223	01060133			
25224	03663051			
25225	21121212			
25226	52056101		BCD	' 5/10(35),5/03,5/07,6/01,6/06''
25227	00730561			
25230	34730561			
25231	00077305			
25232	61000773			

25233	06610001		
25234	73066100		
25235	04371212		
25236	52526242	F2M17	BCD ' 8XS 18026 SKIPS'
25237	62120105		
25240	00020612		
25241	62423147		
25242	62121212		
25243	52066231	BCD	' 6S18A0'
25244	46210012		
25245	52056101	BCD	' 5/10''
25246	00371212		
25247	52526242	F2M18	BCD ' 8XS 16026 SKIPS'
25250	62120106		
25251	00020612		
25252	62423147		
25253	62121212		
25254	52066231	BCD	' 6S18A0'
25255	46210012		
25256	52056101	BCD	' 5/10,6/01,6/06''
25257	00737461		
25260	00017306		
25261	61000637		
25262	52522746	F2M19	BCD ' CONTROLLER READY TEST FAILS'
25263	45635146		
25264	43432551		
25265	12512521		
25266	24701263		
25267	25626312		
25270	26213143		
25271	62121212		
25272	52066231	BCD	' 6S18A0=200FA+1E04A+2IGDA+5C12A.3C13A.3C14A.3C16A'
25273	46210013		
25274	02000026		
25275	21330125		
25276	00042133		

25277	02312724		
25300	21330023		
25301	01022133		
25302	03230103		
25303	21330323		
25304	01042133		
25305	03230106		
25306	21121212		
25307	52026101	BCD	' 2/1+(35),1/15,1/20,1/22,2/15,2/24,2/25,3/15,3/19,'
25310	04740305		
25311	34730161		
25312	01057301		
25313	61020073		
25314	01610202		
25315	73026101		
25316	05730261		
25317	02047302		
25320	61020573		
25321	03610105		
25322	73036101		
25323	11731212		
25324	52046102	BCD	' 4/23,5/09,5/10,5/12,6/13,6/14,6/23''
25325	03730561		
25326	00117305		
25327	61010073		
25330	05610102		
25331	73066101		
25332	03730661		
25333	01047306		
25334	61020337		
25335	52526351	F2M20	BCD ' TRACK VERIFIED TEST ERRONIOUSLY SKIPS'
25336	21234212		
25337	65255131		
25340	26312524		
25341	12632562		
25342	63122551		

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25343	51464531		
25344	46640243		
25345	70126242		
25346	31476212		
25347	52066231	BCD	' 6S10A0=201FA.5C12A.2C13A.3C14A.3C16A'
25350	46210013		
25351	02001126		
25352	21330523		
25353	01020133		
25354	02230103		
25355	21330323		
25356	01042133		
25357	03230106		
25360	21121212		
25361	52050100	BCD	' 5/09(35),1/15,3/15,5/10,6/01''
25362	11740305		
25363	34730161		
25364	01057303		
25365	61010573		
25366	05610100		
25367	73064100		
25370	01371212		
25371	52520146	F2M21 BCD	' CONTROLLER ERROR TEST FAILS'
25372	45630146		
25373	43430551		
25374	12250151		
25375	46511263		
25376	25620312		
25377	26213143		
25400	62121212		
25401	52066231	BCD	' 6S10A0=312EA.1E04.5C12A.3C13A.2C14A.3C16A'
25402	46210013		
25403	03010225		
25404	21330125		
25405	00043305		
25406	23010221		

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25407	33032301		
25410	03213302		
25411	23010421		
25412	33032301		
25413	06211212		
25414	52056101	BCD	' 5/10(35),1/20,2/11,6/22''
25415	00740305		
25416	34730161		
25417	02007302		
25420	61010173		
25421	06610202		
25422	37121212		
25423	52520146	F2M22 BCD	' WRITE PROTECT SWITCH TEST FAILS'
25424	31632512		
25425	47514463		
25426	25236312		
25427	02663163		
25430	23301263		
25431	25620312		
25432	26213143		
25433	62121212		
25434	52066231	BCD	' 6S10A0=9WLKA.5C12A.2C13A.2C14A.3C16A'
25435	46210013		
25436	11664342		
25437	21330523		
25440	01020133		
25441	02230103		
25442	21330223		
25443	01042133		
25444	03230106		
25445	21121212		
25446	52050100	BCD	' 5/09(35),5/10''
25447	11740305		
25450	34730161		
25451	01003712		
25452	52527021	F2M32 BCD	' YA23A=2LARA.8C23A'

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25453	02032113		
25454	02432151		
25455	21331723		
25456	02032112		
25457	52024321	BCD	' 2LARA=2U01A.200FA.0X04A.8PT2A'
25460	51211302		
25461	64000121		
25462	33020000		
25463	26213300		
25464	67000421		
25465	33104763		
25466	02211212		
25467	52046100	BCD	' 4/07(15),2/07,2/11,3/07,3/13,3/18,3/19,4/01,4/02,1
25470	07740105		
25471	34730261		
25472	00077302		
25473	61010173		
25474	03610007		
25475	73036101		
25476	03730361		
25477	01107303		
25500	61011173		
25501	04610001		
25502	73046100		
25503	02731212		
25504	52046100	BCD	' 4/03,4/23,5/02,5/03,5/04,5/06,5/07,6/05,6/08'
25505	03730461		
25506	02037305		
25507	61000273		
25510	05610003		
25511	73056100		
25512	04730561		
25513	00067305		
25514	61000773		
25515	06610005		
25516	73066100		

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25517	10121212		
25520	52112102	BCD	' 9A23A=0X04A.0A23A'
25521	03211300		
25522	67000421		
25523	33002102		
25524	03211212		
25525	52006700	BCD	' 0X04A=8P1A.0X01A.1F01A'
25526	04211310		
25527	47314521		
25530	33006700		
25531	01213301		
25532	26000121		
25533	52056101	BCD	' 5/18(34),4/01,4/02,5/03,5/07,6/07,6/08''
25534	10740304		
25535	34730461		
25536	00017304		
25537	61000273		
25540	05610003		
25541	73056100		
25542	07730461		
25543	00077306		
25544	61001037		
25545	52525121	F2M33 BCD	' RA23A=3RGRA'
25546	02032113		
25547	03512751		
25550	21121212		
25551	52065127	BCD	' 6RGRA0=200FA.2U01A.1X04A'
25552	51210013		
25553	02000026		
25554	21330264		
25555	00012133		
25556	01670004		
25557	21121212		
25560	52046100	BCD	' 4/07(15),3/18,5/02,5/06,6/05,5/18''
25561	07740105		
25562	34730361		

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25563	01107305		
25564	61000273		
25565	05610006		
25566	73066100		
25567	05730561		
25570	01103712		
25571	52527021	F2M34	BCD ' YA22A'
25572	02020112		
25573	52046100	BCD	' 4/08(15),5/02,6/04,5/18''
25574	10740105		
25575	34730561		
25576	00027304		
25577	61000473		
25600	05610110		
25601	37121012		
25602	52525121	F2M35	BCD ' RA22A=3RARA'
25603	02020113		
25604	03510151		
25605	01121012		
25606	52061121	BCD	' 6RARA0=200FA+2U01A+1X04A'
25607	51210113		
25610	02000226		
25611	01330264		
25612	00010133		
25613	01670004		
25614	01121012		
25615	52046100	BCD	' 4/08(15),5/02,5/03,5/04,5/18''
25616	10740105		
25617	34730561		
25620	00027305		
25621	61000373		
25622	05610004		
25623	73050101		
25624	10371012		
25625	52527021	F2M36	BCD ' YA21A'
25626	02010112		

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25627	52046100	BCD	' 4/08(15),5/18,5/02,4/04''
25630	10740105		
25631	34730561		
25632	01107305		
25633	61000273		
25634	04610004		
25635	37121012		
25636	52525121	F2M37	BCD ' RA21A'
25637	02010112		
25640	52046100	BCD	' 4/08(15),5/02,5/18,6/05''
25641	10740105		
25642	34730561		
25643	00027305		
25644	61011073		
25645	06610005		
25646	37121012		
25647	52527021	F2M38	BCD ' YA20A'
25650	02020112		
25651	52046100	BCD	' 4/08(15),5/02,5/18,6/05''
25652	10740105		
25653	34730561		
25654	00027305		
25655	61011073		
25656	06610005		
25657	37121012		
25660	52525121	F2M39	BCD ' RA20A'
25661	02020112		
25662	52046100	BCD	' 4/08(15),5/02,5/18''
25663	10740105		
25664	34730561		
25665	00027305		
25666	61011037		
25667	52527021	F2M40	BCD ' YA19A'
25670	01112012		
25671	52046100	BCD	' 4/08(15),5/02,5/18''
25672	10740105		

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25673	34730561			
25674	00027305			
25675	61011073			
25676	52525121	F2M41	BCD	' RA19A'
25677	01102112			
25700	52046100		BCD	' 4/08(15),5/02,5/18''
25701	10740104			
25702	34730561			
25703	00027305			
25704	61011073			
25705	52527021	F2M42	BCD	' YA18A'
25706	01102112			
25707	52046100		BCD	' 4/09(14),5/02,5/18,6/06''
25710	11740104			
25711	34730561			
25712	00027305			
25713	61011073			
25714	06610006			
25715	37121212			
25716	52525121	F2M43	BCD	' RA18A'
25717	01102112			
25720	52046100		BCD	' 4/09(14),5/02,5/18,6/06''
25721	11740104			
25722	34730561			
25723	00027305			
25724	61011073			
25725	06610006			
25726	37121212			
25727	52527021	F2M44	BCD	' YA17A'
25730	01072112			
25731	52046100		BCD	' 4/09(14),5/02,5/18,6/06''
25732	11740104			
25733	34730561			
25734	00027305			
25735	61011073			
25736	06610006			

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25737	37121212			
25740	52525121	F2M45	BCD	' RA17A'
25741	01072112			
25742	52046100		BCD	' 4/09(14),5/02,5/18,6/06''
25743	11740104			
25744	34730561			
25745	00027305			
25746	61011073			
25747	06610006			
25750	37121212			
25751	52527021	F2M46	BCD	' YA16A'
25752	01062112			
25753	52046100		BCD	' 4/09(14),5/02,5/17''
25754	11740104			
25755	34730561			
25756	00027305			
25757	61010737			
25760	52525121	F2M47	BCD	' RA16A'
25761	01062112			
25762	52046100		BCD	' 4/09(14),5/02,5/17''
25763	11740104			
25764	34730561			
25765	00027305			
25766	61010737			
25767	52527021	F2M48	BCD	' YA15A'
25770	01052112			
25771	52046100		BCD	' 4/08(14),5/02,5/17,6/06''
25772	10740104			
25773	34730561			
25774	00027305			
25775	61010773			
25776	06610006			
25777	37121212			
26000	52525121	F2M49	BCD	' RA15A'
26001	01052112			
26002	52046100		BCD	' 4/09(14),5/02,5/17,6/06''

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26003	11740104			
26004	34730661			
26005	00027305			
26006	61010773			
26007	06610006			
26010	07121212			
26011	02527021	F2M50	BCD	' YA14A'
26012	01042112			
26013	02046101		BCD	' 4/10(14),5/02,5/17''
26014	00740104			
26015	34730661			
26016	00027305			
26017	61010773			
26020	02527021	F2M51	BCD	' RA14A'
26021	01042112			
26022	02046101		BCD	' 4/10(14),5/02,5/17''
26023	00740104			
26024	34730661			
26025	00027305			
26026	61010773			
26027	02527021	F2M52	BCD	' YA13A'
26030	01032112			
26031	02046101		BCD	' 4/10(14),6/01,5/17,5/01,3/20''
26032	00740104			
26033	34730661			
26034	00017305			
26035	61010773			
26036	05610001			
26037	73036102			
26040	00371212			
26041	02527021	F2M53	BCD	' RA13A'
26042	01032112			
26043	02046101		BCD	' 4/10(14),6/01,5/17,5/01,3/20''
26044	00740104			
26045	34730661			
26046	00017305			

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26047	61010773			
26050	05610001			
26051	73036102			
26052	00371212			
26053	02527021	F2M54	BCD	' YA12A'
26054	01022112			
26055	02046101		BCD	' 4/10(14),6/01,5/17,5/01,3/20''
26056	00740104			
26057	34730661			
26060	00017305			
26061	61010773			
26062	05610001			
26063	73036102			
26064	00371212			
26065	02527021	F2M55	BCD	' RA12A'
26066	01022112			
26067	02046101		BCD	' 4/10(14),6/01,5/17,5/01,3/20''
26070	00740104			
26071	34730661			
26072	00017305			
26073	61010773			
26074	05610001			
26075	73036102			
26076	00371212			
26077	02527021	F2M56	BCD	' YA11A'
26100	01012112			
26101	02046101		BCD	' 4/10(14),5/01,4/21,5/17,6/07''
26102	00740104			
26103	34730661			
26104	00017304			
26105	61010773			
26106	05610001			
26107	73036102			
26110	00371212			
26111	02527021	F2M57	BCD	' RA11A'
26112	01012112			

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26113	52046101	BCD	' 4/10(14),5/01,4/21,5/17,6/07''
26114	00740104		
26115	34730661		
26116	00017304		
26117	61020173		
26120	05610107		
26121	73066100		
26122	01371212		
26123	52527021	F2M58 BCD	' YA10A'
26124	01002112		
26125	52046101	BCD	' 4/11(14),6/07,5/17,5/01,4/21''
26126	01740104		
26127	34730661		
26130	00077305		
26131	61010773		
26132	05610001		
26133	73046102		
26134	01371212		
26135	52525121	F2M59 BCD	' RA10A'
26136	01002112		
26137	52046101	BCD	' 4/11(14),6/07,5/17,5/01,4/21''
26140	01740104		
26141	34730661		
26142	00077305		
26143	61010773		
26144	05610001		
26145	73046102		
26146	01371212		
26147	52527021	F2M60 BCD	' YA09A'
26150	00112112		
26151	52046101	BCD	' 4/11(14),6/07,5/16,5/01''
26152	01740104		
26153	34730661		
26154	00077305		
26155	61010673		
26156	05610001		

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26157	37121212		
26160	52525121	F2M61 BCD	' RA09A'
26161	00112112		
26162	52046101	BCD	' 4/11(14),6/07,5/16,5/01''
26163	01740104		
26164	34730661		
26165	00077305		
26166	61010673		
26167	05610001		
26170	37121212		
26171	52527021	F2M62 BCD	' YA08A'
26172	00102112		
26173	52046101	BCD	' 4/11(14),6/07,5/16,5/01''
26174	01740104		
26175	34730661		
26176	00077305		
26177	61010673		
26200	05610001		
26201	37121212		
26202	52525121	F2M63 BCD	' RA08A'
26203	00102112		
26204	52046101	BCD	' 4/11(14),6/07,5/16,5/01''
26205	01740104		
26206	34730661		
26207	00077305		
26210	61010673		
26211	05610001		
26212	37121212		
26213	52527021	F2M64 BCD	' YA07A'
26214	00072112		
26215	52046101	BCD	' 4/11(14),6/07,5/16,5/01''
26216	01740104		
26217	34730661		
26220	00077305		
26221	61010673		
26222	05610001		

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	300		349
26223	37121212		
26224	52522221	F2M65 BCD	' RA07A'
26225	00072112		
26226	52046101	BCD	' 4/11(14),6/07,5/16,5/01''
26227	01740104		
26230	34730461		
26231	00072105		
26232	61010673		
26233	05610001		
26234	37121212		
26235	52522221	F2M66 BCD	' YA06A'
26236	00062112		
26237	52046101	BCD	' 4/12(14),5/01,5/16,6/08''
26240	02740104		
26241	34730461		
26242	00017305		
26243	61010673		
26244	06610010		
26245	37121212		
26246	52522221	F2M67 BCD	' RA06A'
26247	00062112		
26250	52046101	BCD	' 4/12(14),5/01,5/16,6/08''
26251	02740104		
26252	34730461		
26253	00017305		
26254	61010673		
26255	06610010		
26256	37121212		
26257	52522221	F2M68 BCD	' DA05A TESTS SET'
26260	00052112		
26261	63256263		
26262	62126225		
26263	63121212		
26264	52056101	BCD	' 5/16(37),4/12=18 NOT GROUNDED (14)''
26265	06740307		
26266	34730461		

DISC#	TAP#		PAGE
	300		350
26267	01024001		
26270	01124546		
26271	63122751		
26272	46644524		
26273	25241274		
26274	01043437		
26275	52522221	F2M69 BCD	' DA04A TESTS SET'
26276	00042112		
26277	63256263		
26300	62126225		
26301	63121212		
26302	52056101	BCD	' 5/16(37),4/12=33 NOT GROUNDED (14)''
26303	06740307		
26304	34730461		
26305	01024003		
26306	03124546		
26307	63122751		
26310	46644524		
26311	25241274		
26312	01043437		
26313	52522221	F2M70 BCD	' DA03A TESTS SET'
26314	00032112		
26315	63256263		
26316	62126225		
26317	63121212		
26320	52056101	BCD	' 5/16(37),4/12=36 NOT GROUNDED (14)''
26321	06740307		
26322	34730461		
26323	01024003		
26324	01124546		
26325	63122751		
26326	46644524		
26327	25241274		
26330	01043437		
26331	52522221	F2M71 BCD	' CONTROLLER ADDRESS REGISTER AFFECTED BY POT TOI
26332	46635146		

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26333	43432551		
26334	12212424		
26335	51256262		
26336	12512527		
26337	31626325		
26340	51122126		
26341	26252763		
26342	25241222		
26343	70124746		
26344	63126746		
26345	12233021	BCD	' CHANNEL'
26346	45452543		
26347	52056100	BCD	' 5/04(15),5/01,5/02''
26350	04740105		
26351	34730561		
26352	00017305		
26353	61000237		
26354	52522346	F2M72 BCD	' CONTROLLER INTERFERING WITH CHANNEL PIN'
26355	45635146		
26356	43432551		
26357	12314563		
26360	25512625		
26361	01314527		
26362	12663163		
26363	30122330		
26364	21454525		
26365	43124731		
26366	45121212		
26367	52056101	BCD	' 5/16,5/17,5/18''
26370	06730561		
26371	01077305		
26372	61011037		
26373	52522124	F2M73 BCD	' ADDRESS 00=000=00 NOT VERIFIED IN 120 MILLISEC'
26374	24512562		
26375	62120000		
26376	40000000		

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26400	45466712		
26401	65255131		
26402	26312724		
26403	12314512		
26404	01020012		
26405	44314343		
26406	31622523		
26407	52626321	BCD	' STATE SEQUENCING SHOULD BE STATES 0=4.1''
26410	63251262		
26411	25506425		
26412	45233145		
26413	27126230		
26414	46644724		
26415	12222512		
26416	62632163		
26417	25621200		
26420	40044001		
26421	37121212		
26422	52522124	F2M73A BCD	' ADDRESS 00=000=00 VERIFIED WITHIN 70 MILLISEC'
26423	24512562		
26424	62120000		
26425	40000000		
26426	40000012		
26427	65255131		
26430	26312724		
26431	12663163		
26432	30314512		
26433	07001244		
26434	31434331		
26435	62252312		
26436	52633144	BCD	' TIME SHOULD BE 116 MILLISEC'
26437	25126230		
26440	46644724		
26441	12222512		
26442	01010612		

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26443	44314343		
26444	31622523		
26445	52626321	BCD	' STATE SEQUENCING SHOULD BE STATES 0=4=1''
26446	63251262		
26447	25506425		
26450	45233145		
26451	27126230		
26452	46644324		
26453	12222512		
26454	62632163		
26455	25621200		
26456	40044001		
26457	37121212		
26458	52522124	F2M74 BCD	' ADDRESS 00=000=00 NOT VERIFIED IN 500 MILLISEC'
26461	24512562		
26462	62120000		
26463	40000000		
26464	40000012		
26465	45444312		
26466	65255131		
26467	26312524		
26470	12314512		
26471	05000012		
26472	44314343		
26473	31622523		
26474	52626321	BCD	' STATE SEQUENCING SHOULD BE STATES 0=4=2=1''
26475	63251262		
26476	25506425		
26477	45233145		
26500	27126230		
26501	46644324		
26502	12222512		
26503	62632163		
26504	25621200		
26505	40044002		
26506	40010712		

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26507	52522124	F2M74A BCD	' ADDRESS 00=000=00 VERIFIED WITHIN 120 MILLISEC'
26510	24512562		
26511	62120000		
26512	40000000		
26513	40000012		
26514	65255131		
26515	26312524		
26516	12663163		
26517	30314512		
26520	01020012		
26521	44314343		
26522	31622523		
26523	526263144	BCD	' TIME SHOULD BE GREATER THAN 140 MILLISEC'
26524	25126230		
26525	46644324		
26526	12222512		
26527	27512521		
26530	63255112		
26531	63202145		
26532	12010400		
26533	12443143		
26534	43316225		
26535	23121012		
26536	52626321	BCD	' STATE SEQUENCING SHOULD BE STATES 0=4=2=1''
26537	63251262		
26540	25506425		
26541	45233145		
26542	27126230		
26543	46644324		
26544	12222512		
26545	62632163		
26546	25621200		
26547	40044002		
26550	40013712		
26551	52522124	F2M75 BCD	' ADDRESS 37=377=37 NOT VERIFIED IN 500 MILLISEC'
26552	24512562		

26553	62120307		
26554	40030707		
26555	40030712		
26556	45466312		
26557	65255131		
26560	26312524		
26561	12314512		
26562	05000012		
26563	44314343		
26564	31622523		
26565	52506423	BCD	' QUCAO, VUCAO, XUCAO, ZUCAO, BR BAD HEADER'
26566	21007312		
26567	65440721		
26570	00731267		
26571	64232100		
26572	73127164		
26573	23210073		
26574	12465112		
26575	22712412		
26576	31252124		
26577	25511212		
26600	52020100	BCD	' 2/01,2/05,3/01,3/02,3/03,3/04,3/05,3/08,3/09,3/10,1
26601	01730361		
26602	00057303		
26603	61000173		
26604	03610002		
26605	73036100		
26606	03730361		
26607	00047303		
26610	61000573		
26611	03610010		
26612	73036100		
26613	11730361		
26614	01007312		
26615	52036101	BCD	' 3/17,3/18''
26616	07730361		

26617	01103712		
26620	52522124	F2M76 BCD	' ADDRESS 20=000=00 NOT VERIFIED IN 500 MILLISEC'
26621	24512562		
26622	62120200		
26623	40000000		
26624	40000012		
26625	45466312		
26626	65255131		
26627	26312524		
26630	12314512		
26631	05000012		
26632	44314343		
26633	31622523		
26634	52222124	BCD	' BAD HEADER'
26635	12302521		
26636	24255112		
26637	52016100	BCD	' 1/05,1/06,3/04,3/05,3/08,3/09,3/11,3/12(26=28)''
26640	05730161		
26641	00067303		
26642	61000473		
26643	03610005		
26644	73036100		
26645	10730361		
26646	00117303		
26647	61010173		
26650	03610102		
26651	74020440		
26652	02103437		
26653	52522124	F2M77 BCD	' ADDRESS 10=000=00 NOT VERIFIED IN 500 MILLISEC'
26654	24512562		
26655	62120100		
26656	40000000		
26657	40000012		
26660	45466312		
26661	65255131		
26662	26312524		

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26663	12314512		
26664	05000012		
26665	44314343		
26666	31622523		
26667	52222124	BCD	' BAD HEADER'
26670	12302521		
26671	24255112		
26672	52236100	BCD	' 3/04,3/05,3/09(27*28)''
26673	05730361		
26674	00057303		
26675	61001474		
26676	00074002		
26677	10343712		
26700	52522124	F2478 BCD	' ADDRESS 04*000*00 NOT VERIFIED IN 500 MILLISEC'
26701	24512562		
26702	62120004		
26703	40000000		
26704	40000012		
26705	45466312		
26706	65255131		
26707	26312524		
26710	12314512		
26711	05000012		
26712	44314343		
26713	31622523		
26714	52222124	BCD	' BAD HEADER'
26715	12302521		
26716	24255112		
26717	52236100	BCD	' 2/05,3/02,3/04,3/11,3/12(26*28)''
26720	05730361		
26721	00027303		
26722	61000473		
26723	03610101		
26724	73036101		
26725	02740006		
26726	40021034		

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26727	37121212		
26730	52522124	F2479 BCD	' ADDRESS 02*000*00 NOT VERIFIED IN 500 MILLISEC'
26731	24512562		
26732	62120002		
26733	40000000		
26734	40000012		
26735	45466312		
26736	65255131		
26737	26312524		
26740	12314512		
26741	05000012		
26742	44314343		
26743	31622523		
26744	52222124	BCD	' BAD HEADER'
26745	12302521		
26746	24255112		
26747	52236100	BCD	' 2/05,3/02,3/04,3/11(26*28)''
26750	05730361		
26751	00027303		
26752	61000473		
26753	03610101		
26754	73036101		
26755	02740006		
26756	52522124	F2480 BCD	' ADDRESS 01*000*00 NOT VERIFIED IN 500 MILLISEC'
26757	24512562		
26760	62120001		
26761	40000000		
26762	40000012		
26763	45466312		
26764	65255131		
26765	26312524		
26766	12314512		
26767	05000012		
26770	44314343		
26771	31622523		
26772	52222124	BCD	' BAD HEADER'

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26773	12302521		
26774	24255112		
26775	52016100	BCD	' 1/01,1/03,1/04,1/06,2/05,3/02,3/04,3/08,3/11,3/12'
26776	01730161		
26777	00037301		
27000	61000473		
27001	01610006		
27002	73026100		
27003	05730261		
27004	00027303		
27005	61000473		
27006	03610010		
27007	73036101		
27010	01730361		
27011	01021212		
27012	52740206	BCD	' (26=28)''
27013	40021034		
27014	37121212		
27015	52522124	F2M81 BCD	' ADDRESS 00=200=00 NOT VERIFIED IN 500 MILLISEC'
27016	24512562		
27017	62120000		
27020	40020000		
27021	40000012		
27022	45466312		
27023	65255131		
27024	26312524		
27025	12314512		
27026	05000012		
27027	44314343		
27030	31622523		
27031	52222124	BCD	' BAD HEADER'
27032	12302521		
27033	24255112		
27034	52016100	BCD	' 1/04,3/05,3/08''
27035	04730361		
27036	00057303		

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27037	61001037		
27040	52522124	F2M82 BCD	' ADDRESS 00=100=00 NOT VERIFIED IN 500 MILLISEC'
27041	24512562		
27042	62120000		
27043	40010000		
27044	40000012		
27045	45466312		
27046	65255131		
27047	26312524		
27050	12314512		
27051	05000012		
27052	44314343		
27053	31622523		
27054	52222124	BCD	' BAD HEADER'
27055	12302521		
27056	24255112		
27057	52036100	BCD	' 3/08,3/09(27)''
27060	10730361		
27061	00117402		
27062	07343712		
27063	52522124	F2M83 BCD	' ADDRESS 00=040=00 NOT VERIFIED IN 500 MILLISEC'
27064	24512562		
27065	62120000		
27066	40000400		
27067	40000012		
27070	45466312		
27071	65255131		
27072	26312524		
27073	12314512		
27074	05000012		
27075	44314343		
27076	31622523		
27077	52222124	BCD	' BAD HEADER'
27100	12302521		
27101	24255112		
27102	52036100	BCD	' 3/04,3/05,3/09,3/11(26=28)''

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27103	04730361		
27104	00057303		
27105	61001173		
27106	03610101		
27107	74020640		
27110	02103437		
27111	52522124	F2M84	BCD ' ADDRESS 00=020=00 NOT VERIFIED IN 500 MILLISEC'
27112	24512562		
27113	62120000		
27114	40000200		
27115	40000012		
27116	45466312		
27117	65255131		
27120	26312524		
27121	12314512		
27122	05000012		
27123	44314343		
27124	31622523		
27125	52222124	BCD	' BAD HEADER'
27126	12302521		
27127	24255112		
27130	52036100	BCD	' 3/02,3/04,(27*28)''
27131	02730361		
27132	00047402		
27133	07400210		
27134	34371212		
27135	52522124	F2M85	BCD ' ADDRESS 00=010=00 NOT VERIFIED IN 500 MILLISEC'
27136	24512562		
27137	62120000		
27140	40000100		
27141	40000012		
27142	45466312		
27143	65255131		
27144	26312524		
27145	12314512		
27146	05000012		

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27147	44314343		
27150	31622523		
27151	52222124	BCD	' BAD HEADER'
27152	12302521		
27153	24255112		
27154	52036100	BCD	' 3/02,3/04,3/11,(26*28)''
27155	02730361		
27156	00047303		
27157	61010174		
27160	02064702		
27161	10343712		
27162	52522124	F2M86	BCD ' ADDRESS 00=004=00 NOT VERIFIED IN 500 MILLISEC'
27163	24512562		
27164	62120000		
27165	40000004		
27166	40000012		
27167	45466312		
27170	65255131		
27171	26312524		
27172	12314512		
27173	05000012		
27174	44314343		
27175	31622523		
27176	52222124	BCD	' BAD HEADER'
27177	12302521		
27200	24255112		
27201	52036100	BCD	' 2/05,3/02,3/05,(27*28)''
27202	05730361		
27203	00027303		
27204	61000074		
27205	02074002		
27206	11343712		
27207	52522124	F2M87	BCD ' ADDRESS 00=002=00 NOT VERIFIED IN 500 MILLISEC'
27210	24512562		
27211	62120000		
27212	40000002		

27213	40000012		
27214	45466312		
27215	65255131		
27216	26312524		
27217	12314512		
27220	05000012		
27221	44314343		
27222	31622523		
27223	52222124	BCD	' BAD HEADER'
27224	12302521		
27225	24255112		
27226	52036100	BCD	' 3/02,3/05(27+28)''
27227	02730361		
27230	00057402		
27231	07400210		
27232	34371212		
27233	52522124	F2M88 BCD	' ADDRESS 00=001=00 NOT VERIFIED IN 500 MILLISEC'
27234	24512562		
27235	02120000		
27236	40000001		
27237	40000012		
27240	45466312		
27241	65255131		
27242	26312524		
27243	12314512		
27244	05000012		
27245	44314343		
27246	31622523		
27247	52222124	BCD	' BAD HEADER'
27250	12302521		
27251	24255112		
27252	52036100	BCD	' 3/05(28)''
27253	05740210		
27254	34371212		
27255	52524721	F2M89 BCD	' PAVA ERRONIOUSLY LOW'
27256	65211225		

27257	51514445		
27260	31466462		
27261	43701243		
27262	46661212		
27263	52026102	BCD	' 2/21,2/22,2/23,2/24(29),6/21(47)''
27264	01730261		
27265	02617302		
27266	61020373		
27267	02610204		
27270	74021134		
27271	73066102		
27272	01740407		
27273	34371212		
27274	52520747	F2M90 BCD	' 7PAVA0'
27275	21652100		
27276	52026102	BCD	' 2/21(29)''
27277	01740211		
27300	34371212		
27301	52520747	F2M91 BCD	' 7PAVA0'
27302	21652100		
27303	52026102	BCD	' 2/22(29)''
27304	02740211		
27305	34371212		
27306	52520747	F2M92 BCD	' 7PAVA0'
27307	21652100		
27310	52026102	BCD	' 2/22(29)''
27311	02740211		
27312	34371212		
27313	52520747	F2M93 BCD	' 7PAVA0'
27314	21652100		
27315	52026102	BCD	' 2/22(29)''
27316	02740211		
27317	34371212		
27320	52520747	F2M94 BCD	' 7PAVA0'
27321	21652100		
27322	52026102	BCD	' 2/22(29)''

DISC#	TAP#				PAGE
					365
27323	02740211				
27324	34371212				
27325	52520747	F2M95	BCD	' 7PAVA0'	
27326	21652100				
27327	52026102		BCD	' 2/22(29)''	
27330	02740211				
27331	34371212				
27332	52520747	F2M96	BCD	' 7PAVA0'	
27333	21652100				
27334	52026102		BCD	' 2/23(29)''	
27335	03740211				
27336	34371212				
27337	52074721	F2M97	BCD	' 7PAVA0'	
27340	65210012				
27341	52026102		BCD	' 2/23(29)''	
27342	03740211				
27343	34371212				
27344	52520747	F2M98	BCD	' 7PAVA0'	
27345	21652100				
27346	52026102		BCD	' 2/23(29)''	
27347	03740211				
27350	34371212				
27351	52520747	F2M99	BCD	' 7PAVA0'	
27352	21652100				
27353	52026102		BCD	' 2/23(29)''	
27354	03740211				
27355	34371212				
27356	52520747	F2M100	BCD	' 7PAVA0'	
27357	21652100				
27360	52026102		BCD	' 2/23(29)''	
27361	03740211				
27362	34371212				
27363	52520747	F2M101	BCD	' 7PAVA0'	
27364	21652100				
27365	52026102		BCD	' 2/21(29),6/21(47)''	
27366	01740211				

DISC#	TAP#				PAGE
					366
27367	34730661				
27370	02017404				
27371	07343712				
27372	52520747	F2M102	BCD	' 7PAVA0'	
27373	21652100				
27374	52026102		BCD	' 2/22(29),6/21(47)''	
27375	02740211				
27376	34730661				
27377	02017404				
27400	07343712				
27401	52520747	F2M103	BCD	' 7PAVA0'	
27402	21652100				
27403	52026102		BCD	' 2/22(29),6/21(47)''	
27404	02740211				
27405	34730661				
27406	02017404				
27407	07343712				
27410	52520747	F2M104	BCD	' 7PAVA0'	
27411	21652100				
27412	52026102		BCD	' 2/22(29),6/21(47)''	
27413	02740211				
27414	34730661				
27415	02017404				
27416	07343712				
27417	52520747	F2M105	BCD	' 7PAVA0'	
27420	21652100				
27421	52026102		BCD	' 2/22(29),6/21(47)''	
27422	02740211				
27423	34730661				
27424	02017404				
27425	07343712				
27426	52520747	F2M106	BCD	' 7PAVA0'	
27427	21652100				
27430	52026102		BCD	' 2/22,2/24(29),6/21(47)''	
27431	02730261				
27432	02047402				

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27433	11347306		
27434	61020174		
27435	04073437		
27436	52520747	F2M107 BCD	' 7PAVA01
27437	21652100		
27440	52026102	BCD	' 2/23(29),6/21(47)!!
27441	03740211		
27442	34730661		
27443	02017404		
27444	07343712		
27445	52520747	F2M108 BCD	' 7PAVA01
27446	21652100		
27447	52026102	BCD	' 2/23(29),6/21(47)!!
27450	03740211		
27451	34730661		
27452	02017404		
27453	07343712		
27454	52520747	F2M109 BCD	' 7PAVA01
27455	21652100		
27456	52026102	BCD	' 2/23(29),6/21(47)!!
27457	03740211		
27460	34730661		
27461	02017404		
27462	07343712		
27463	52520747	F2M110 BCD	' 7PAVA01
27464	21652100		
27465	52026102	BCD	' 2/23(29),6/21(47)!!
27466	03740211		
27467	34730661		
27470	02017404		
27471	07343712		
27472	52520747	F2M111 BCD	' 7PAVA01
27473	21652100		
27474	52026102	BCD	' 2/23,2/24(29),6/21(47)!!
27475	03730261		
27476	02047402		

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27477	11347306		
27500	61020174		
27501	04073437		
27502	52520662	F2M112 BCD	' 6S18A01
27503	31462100		
27504	52026101	BCD	' 2/14,5/10,5/12(35)!!
27505	04730561		
27506	01007305		
27507	61010274		
27510	03053437		
27511	52520662	F2M113 BCD	' 6S18A01
27512	31462100		
27513	52056101	BCD	' 5/10(35)!!
27514	00740305		
27515	34371212		
27516	52526242	F2M114 BCD	' SKS 14026 SKIPS IN STATE 1'
27517	62120106		
27520	00020612		
27521	62423147		
27522	62123145		
27523	12626321		
27524	63251201		
27525	52056101	BCD	' 5/10(35)!!
27526	00740305		
27527	34371212		
27530	52526242	F2M115 BCD	' SKS 12226 SKIPS IN STATE 1'
27531	62120102		
27532	02020612		
27533	62423147		
27534	62123145		
27535	12626321		
27536	63251201		
27537	52056101	BCD	' 5/10(35)!!
27540	00740305		
27541	34371212		
27542	52522124	F2M116 BCD	' ADDRESS 00=000=00 NOT VERIFIED IN 500 MILLISEC'

27543	24512562		
27544	62120000		
27545	40001000		
27546	40001012		
27547	45466312		
27550	65255131		
27551	26312524		
27552	12314512		
27553	05000012		
27554	44314343		
27555	31622523		
27556	52626321	BCD	' STATE SEQUENCING SHOULD BE STATES 0-3-4-1'
27557	63251262		
27560	25526425		
27561	45233145		
27562	27126230		
27563	46644324		
27564	12222512		
27565	62632163		
27566	25621200		
27567	40034004		
27570	40011212		
27571	52522124	F2M117 BCD	' ADDRESS 00-000-00 NOT VERIFIED WITHIN 70 MILLISEC'
27572	24512562		
27573	62120000		
27574	40000000		
27575	40000012		
27576	45466312		
27577	65255131		
27600	26312524		
27601	12663163		
27602	30314512		
27603	07001244		
27604	31434331		
27605	62252312	BCD	' STATE SEQUENCING SHOULD BE STATES 0-3-4-1'
27606	52626321		

27607	63251262		
27610	25526425		
27611	45233145		
27612	27126230		
27613	46644324		
27614	12222512		
27615	62632163		
27616	25621200		
27617	40034004		
27620	40011212		
27621	52302521	BCD	' HEADER MAY HAVE BEEN MISREAD ONCE'
27622	24255112		
27623	44217012		
27624	30216525		
27625	12222525		
27626	45124431		
27627	62512521		
27630	24124445		
27631	63252712		
27632	52522124	F2M118 BCD	' ADDRESS 37-377-37 NOT VERIFIED WITHIN 70 MILLISEC'
27633	24512562		
27634	62120007		
27635	40030707		
27636	40030712		
27637	45466312		
27640	65255131		
27641	26312524		
27642	12663163		
27643	30314512		
27644	07001244		
27645	31434331		
27646	62252312		
27647	52314512	BCD	' IN STATE 3'
27650	62632163		
27651	25120012		
27652	52222124	BCD	' BAD HEADER'

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27653	12302521		
27654	24255112		
27655	52026100	BCD	' 2/01,3/10(28)''
27656	01730361		
27657	01007402		
27660	10343712		
27661	52522124	F2M119 BCD	' ADDRESS 00=000=02 NOT VERIFIED WITHIN 70 MILLISEC'
27662	24512562		
27663	62120000		
27664	40000000		
27665	40000212		
27666	45466312		
27667	65255131		
27670	26312524		
27671	12663163		
27672	30314512		
27673	07001244		
27674	31434331		
27675	62252312		
27676	52314512	BCD	' IN STATE 3'
27677	62632163		
27700	25120312		
27701	52222124	BCD	' BAD HEADER'
27702	12302521		
27703	24255112		
27704	52026100	BCD	' 2/05,3/05(28)''
27705	05730361		
27706	00057402		
27707	10343712		
27710	52522124	F2M120 BCD	' ADDRESS 00=000=01 NOT VERIFIED WITHIN 70 MILLISEC'
27711	24512562		
27712	62120000		
27713	40000000		
27714	40000112		
27715	45466312		
27716	65255131		

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27717	26312524		
27720	12663163		
27721	30314512		
27722	07001244		
27723	31434331		
27724	62252312		
27725	52314512	BCD	' IN STATE 3'
27726	62632163		
27727	25120312		
27730	52222124	BCD	' BAD HEADER'
27731	12302521		
27732	24255112		
27733	52026100	BCD	' 2/05(28)''
27734	05740210		
27735	34371212		
27736	52522551	F2M121 BCD	' ERROR SET DURING VERIFICATION OF ADDRESS 00=000=00'
27737	51465112		
27740	62256312		
27741	24645131		
27742	45271265		
27743	25513126		
27744	31232163		
27745	31464512		
27746	46261221		
27747	24245125		
27750	62621200		
27751	00400000		
27752	00400000		
27753	52212500	BCD	' AE02A#203FA#2G03A#2IXDA''
27754	02211302		
27755	00032621		
27756	33022700		
27757	03213302		
27760	31672421		
27761	37121212		
27762	52522551	F2M122 BCD	' ERROR SET DURING VERIFICATION OF ADDRESS 00=000=00'

27763	51465112		
27764	62256312		
27765	24645131		
27766	45271265		
27767	25513126		
27770	31232163		
27771	31464512		
27772	46261221		
27773	24245125		
27774	62621200		
27775	00400000		
27776	00400000		
27777	52622524	BCD	' SEDAO=0G01A.202FA.0G02A.2TUGA'
30000	21001300		
30001	27000121		
30002	33020002		
30003	26213300		
30004	27000221		
30005	33026364		
30006	27211212		
30007	52702521	BCD	' YEA00=1G01A.1G02A.1G03A.204FA.2MBNA'
30010	21001301		
30011	27000121		
30012	33012700		
30013	02213301		
30014	27000321		
30015	33020004		
30016	26213302		
30017	44464521		
30020	52121212	BCD	' +202FA.2MBNA.2CKCA'
30021	12122002		
30022	00022621		
30023	33024446		
30024	45213302		
30025	23420021		
30026	37121212		

		*	
		*	MESSAGES = FUNCTION 3
		*	
		F3M1	BCD ' AX03A=3C12A.2MHAA.8BUCA'
30027	52522167		
30030	00032113		
30031	03230102		
30032	21330244		
30033	30212133		
30034	10226423		
30035	21121212		
30036	52121212	BCD	' 7MHAA0=9Y10A*8Y11A*9Y12A*9Y13A*8Y14A'
30037	07443021		
30040	21001311		
30041	70010021		
30042	20107001		
30043	01212011		
30044	70010221		
30045	20117001		
30046	03212010		
30047	70010421		
30050	52216400	BCD	' A002A=201FA.2FKZB.2BNCA.6Q2DA'
30051	02211302		
30052	00012621		
30053	33022651		
30054	71223302		
30055	22452221		
30056	33065002		
30057	00211212		
30060	52121202	BCD	' 2BNCA=8FHAF.2X03A'
30061	27452221		
30062	13102630		
30063	21263302		
30064	67000321		
30065	52212600	BCD	' AF02A=201FA.2IJFA.4Q2DA'
30066	02211302		
30067	00012621		

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30070	33023164			
30071	26213304			
30072	50020021			
30073	52016101	BCD	'	1/12,1/14(2),4/01,4/03(2),5/04,5/05(36),1/16,2/13(39),1'
30074	02730161			
30075	01047402			
30076	34730461			
30077	00017304			
30100	61000374			
30101	02043473			
30102	05610004			
30103	73056100			
30104	05740306			
30105	34730161			
30106	01067302			
30107	61010374			
30110	03113473			
30111	52066100	BCD	'	6/01(41),6/13(42),1/22,2/25(45),6/12(46)''
30112	01740401			
30113	34730461			
30114	01037404			
30115	02347301			
30116	61020273			
30117	02610205			
30120	74040534			
30121	73066101			
30122	02740406			
30123	34371212			
30124	52520244	F3M2 BCD	'	2MHAA'
30125	30212112			
30126	52066101	BCD	'	6/13(42),5/04,5/05(36),4/01(24)''
30127	03740402			
30130	34730561			
30131	00047305			
30132	61000374			
30133	03063473			

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30134	04610001			
30135	74020434			
30136	37121212			
30137	52520244	F3M3 BCD	'	2MHAA'
30140	30212112			
30141	52066101	BCD	'	6/13(42),5/05(36)''
30142	03740402			
30143	34730561			
30144	00057403			
30145	06343712			
30146	52520244	F3M4 BCD	'	2MHAA'
30147	30212112			
30150	52066101	BCD	'	6/12(46),5/05(36)''
30151	02740406			
30152	34730561			
30153	00057403			
30154	06343712			
30155	52522523	F3M6 BCD	'	ECW NOT RECEIVED DURING WRITE ATTEMPT'
30156	66124546			
30157	63125125			
30160	23253165			
30161	25241224			
30162	64513145			
30163	27126651			
30164	31632512			
30165	21636325			
30166	44476312			
30167	52216400	BCD	'	AU01A=207FA,2CK0A'
30170	01211302			
30171	00072621			
30172	33022342			
30173	00211212			
30174	52022342	BCD	'	2CKBA=207FA,2U01A,2CK0A'
30175	22211302			
30176	00072621			
30177	33026400			

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30200	01213302			
30201	23420021			
30202	52216400	BCD	'	' A004A=207FA.3U02A.2H07A.2CT1A.2CK0A'
30203	04211302			
30204	00072621			
30205	33036400			
30206	02213302			
30207	30000721			
30210	33022363			
30211	01213302			
30212	23420021			
30213	52226400	BCD	'	' B104A=207FA.3U02A.246BA.2CK0A'
30214	04211302			
30215	00072621			
30216	33036400			
30217	02213302			
30220	04062221			
30221	33022342			
30222	00211212			
30223	52062523	BCD	'	' 6FCYAO=207FA.2U04A''
30224	70210013			
30225	02000726			
30226	21330264			
30227	00042137			
30230	52522346	F3M7 BCD	'	' CONTROLLER DID NOT SEQUENCE TO STATE 0 FROM STATE 7''
30231	45635146			
30232	43432551			
30233	12243124			
30234	12454663			
30235	12622550			
30236	64254623			
30237	25126344			
30240	12626321			
30241	63251200			
30242	12265146			
30243	44126263			

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30244	21632512			
30245	07371212			
30246	52522226	F3M8 BCD	'	' BF03A'
30247	00032112			
30250	52016101	BCD	'	' 1/10,1/14(11)''
30251	00730161			
30252	01047401			
30253	01343712			
30254	52522346	F3M9 BCD	'	' CONTROLLER NOT READY AFTER 112 MILLISEC''
30255	45635146			
30256	43432551			
30257	12454663			
30260	12512521			
30261	24701221			
30262	26632551			
30263	12010102			
30264	12443143			
30265	43316225			
30266	23371212			
30267	52522451	F3M10 BCD	'	' WRITE MONITOR OR SEARCH ERROR = ADDRESS 00=000=00''
30270	31632512			
30271	44464531			
30272	63465112			
30273	46511262			
30274	25215123			
30275	30122551			
30276	51465112			
30277	47122124			
30300	24512562			
30301	62120000			
30302	40000000			
30303	40000037			
30304	52520625	F3M11 BCD	'	' 6ECYAO=207FA.2U04A''
30305	23702100			
30306	13020007			
30307	26213302			

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30310	64000421		
30311	52216400	BCD	' AU04A*207FA.21UEA.2CT2A.2CKQA'
30312	04211302		
30313	00072621		
30314	33023164		
30315	25213302		
30316	23630221		
30317	33022742		
30320	00211212		
30321	52226400	BCD	' BU04A*2VPCA.2U02A.2CT5A'
30322	04211302		
30323	65262321		
30324	33026400		
30325	02213302		
30326	23630521		
30327	52026100	BCD	' 2/02,2/07,2/13,2/21,2/18,3/05,1/16,3/14'
30330	02730261		
30331	00077302		
30332	61010373		
30333	02610201		
30334	73026101		
30335	10730361		
30336	00057301		
30337	61010673		
30340	03610104		
30341	37121212		
30342	52522147	F3M12 BCD	' AP01A*2SGSX*8RPOA'
30343	00012113		
30344	02622762		
30345	67331051		
30346	47002112		
30347	52226200	BCD	' BS01A*2SSRX.1S02A'
30350	01211302		
30351	62625167		
30352	33016200		
30353	02211212		

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30354	52074723	BCD	' 7PCHA0*0P01A*1S01A*1P01A*0S01A'
30355	30210013		
30356	00470001		
30357	21330162		
30360	00012120		
30361	01470001		
30362	21330062		
30363	00012112		
30364	52212500	BCD	' AE01A*207FA.2U02A.2CT5A.8PCHA.2X03A.2CKQA'
30365	01211302		
30366	00072621		
30367	33026400		
30370	02213302		
30371	23630521		
30372	33104723		
30373	30213302		
30374	67000321		
30375	33022342		
30376	00211212		
30377	52222500	BCD	' BE02A* SAME'
30400	02211312		
30401	62214425		
30402	52212500	BCD	' AE03A* SAME'
30403	03211312		
30404	62214425		
30405	52046102	BCD	' 4/24,3/23,3/22,3/24,6//11,4/15,4/16,4/24,4/25,4/20,4/19'
30406	04730361		
30407	02037303		
30410	61020273		
30411	03610204		
30412	73066161		
30413	01017304		
30414	61010573		
30415	04610106		
30416	73046102		
30417	04730461		

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30420	02057304		
30421	61020073		
30422	04610111		
30423	73121212		
30424	52036102	BCD	' 3/21,5/03,5/04,1/17,6/11,6/12''
30425	01730361		
30426	00037305		
30427	61000473		
30430	01610107		
30431	73066101		
30432	01730661		
30433	01023712		
30434	52526651	F3=13 BCD	' WRITE ERROR = DATA=40000000'
30435	31632512		
30436	25515146		
30437	51124012		
30440	24216321		
30441	13040000		
30442	00000000		
30443	00121212		
30444	52046101	BCD	' 4/15,4/24,4/25,6/23,6/12,3/20,3/18,1/17''
30445	05730461		
30446	02047304		
30447	61020573		
30450	06610203		
30451	73066101		
30452	02730361		
30453	02007303		
30454	61011073		
30455	01610107		
30456	37121212		
30457	52526651	F3=14 BCD	' WRITE ERROR = DATA=20000000'
30460	31632512		
30461	25515146		
30462	51124012		
30463	24216321		

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30464	13020000		
30465	00000000		
30466	00121212		
30467	52046102	BCD	' 4/24,4/25,4/15,6/12''
30470	04730461		
30471	02057304		
30472	61010573		
30473	06610102		
30474	37121212		
30475	52526651	F3=15 BCD	' WRITE ERROR = DATA=10000000'
30476	31632512		
30477	25515146		
30500	51124012		
30501	24216321		
30502	13010000		
30503	00000000		
30504	00121212		
30505	52046101	BCD	' 4/15,4/19,4/20,4/25,6/12''
30506	05730461		
30507	01117304		
30510	61020073		
30511	04610205		
30512	73066101		
30513	02371212		
30514	52526651	F3=16 BCD	' WRITE ERROR = DATA=04000000'
30515	31632512		
30516	25515146		
30517	51124012		
30520	24216321		
30521	13000400		
30522	00000000		
30523	00121212		
30524	52046102	BCD	' 4/20,4/15,4/19,6/12''
30525	00730461		
30526	01057304		
30527	61011173		

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30530	06610102		
30531	37121212		
30532	52526651	F3M17	BCD ' WRITE ERROR = DATA#02000000'
30533	31632512		
30534	25515146		
30535	51124012		
30536	24216321		
30537	13000200		
30540	00000000		
30541	00121212		
30542	52036102	BCD	' 3/23,4/16,4/19,6/12''
30543	03730461		
30544	01067304		
30545	61011173		
30546	06610102		
30547	37121212		
30550	52526651	F3M18	BCD ' WRITE ERROR = DATA#01000000'
30551	31632512		
30552	25515146		
30553	51124012		
30554	24216321		
30555	13000100		
30556	00000000		
30557	00121212		
30560	52036102	BCD	' 3/23,3/21,4/16,6/11,5/03''
30561	03730361		
30562	02017304		
30563	61010673		
30564	06610101		
30565	73056100		
30566	03371212		
30567	52522330	F3M19	BCD ' CHANNEL ACTIVE AFTER 500 MILLISEC''
30570	21454925		
30571	43122123		
30572	63316525		
30573	12212663		

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30574	25511205		
30575	00001244		
30576	31434331		
30577	62252337		
30600	52522330	F3M20	BCD ' CHANNEL ADDRESS OR WORD COUNT INCREMENTING ERROR OR'
30601	21454925		
30602	43122124		
30603	24512962		
30604	62124651		
30605	12664651		
30606	24122346		
30607	64456312		
30610	31452351		
30611	25442545		
30612	63314927		
30613	12255151		
30614	46511246		
30615	51121212		
30616	52475125	BCD	' PREMATURE DISCONNECT'
30617	44216364		
30620	51251224		
30621	31422346		
30622	45452523		
30623	63121212		
30624	52234664	BCD	' COUNT IS COUNT SB CORE ADD OVERFLOW ERRORS ''
30625	45631231		
30626	62122346		
30627	64456312		
30630	62221223		
30631	46512512		
30632	21242412		
30633	46652551		
30634	26434666		
30635	12122551		
30636	51465162		
30637	52371212		

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30640	52522431	F3M21	BCD	' DISC ERROR ON WRITE=DATA = 0, ADDRESS = 00=000=00''
30641	62231225			
30642	51514451			
30643	12464412			
30644	66513163			
30645	25402421			
30646	63211213			
30647	12007312			
30650	21242451			
30651	25626212			
30652	13120000			
30653	40000000			
30654	40000000			
30655	52522124	F3M22	BCD	' ADDRESS 00=000=01 NOT VERIFIED AFTER 500 MILLISEC'
30656	24512563			
30657	62120000			
30660	40000000			
30661	40000112			
30662	45466412			
30663	65255131			
30664	26312524			
30665	12212463			
30666	25511205			
30667	00001244			
30670	31434431			
30671	62252312			
30672	52212463	BCD		' AFTER 200 WORDS WRITTEN STARTING AT SECTOR 0'
30673	25511202			
30674	00001266			
30675	46512462			
30676	12665131			
30677	63632545			
30700	12626321			
30701	51633145			
30702	27122163			
30703	12622523			

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30704	63465112			
30705	00121212			
30706	52221251	BCD		' B REGISTER NOT COUNTING PROPERLY'
30707	25273162			
30710	63255112			
30711	45466312			
30712	23466445			
30713	63314527			
30714	12475146			
30715	47255143			
30716	70121212			
30717	52226400	BCD		' B001A=207FA.2FLBA.2CK0A'
30720	01211302			
30721	00072621			
30722	33022443			
30723	22213302			
30724	23420021			
30725	52016100	BCD		' 1/03,1/05,1/06(26),2/12(13)''
30726	03730141			
30727	00057301			
30730	61000674			
30731	02063473			
30732	02610102			
30733	74010334			
30734	37121212			
30735	52522523	F3M23	BCD	' ECW NOT RECEIVED DURING READ ATTEMPT'
30736	66124546			
30737	63125125			
30740	23253165			
30741	25241224			
30742	64513145			
30743	27125125			
30744	21241221			
30745	63632544			
30746	47631212			
30747	52627045	BCD		' SYNC BIT NOT RECORDED PROPERLY IN STATE 7'

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30750	23122231		
30751	63124446		
30752	63125125		
30753	23465124		
30754	25241247		
30755	51464725		
30756	51437012		
30757	31451262		
30760	63216125		
30761	12071212		
30762	52062523	BCD	' 6FCYAO=205FA.0UO4A'
30763	70210013		
30764	02000526		
30765	21330064		
30766	00042112		
30767	52121221	BCD	' AJ04A.2RDTA.3UO3A'
30770	64000421		
30771	13025124		
30772	63213303		
30773	64000321		
30774	52121222	BCD	' RJ04A=205FA.2CT3A.2RDKA'
30775	64000421		
30776	13020005		
30777	26213302		
31000	23630321		
31001	33025124		
31002	42211212		
31003	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'
31004	02730361		
31005	00037302		
31006	61010273		
31007	02610105		
31010	73026102		
31011	01730361		
31012	00017303		
31013	61000273		

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31014	03610011		
31015	73036101		
31016	06730361		
31017	02057304		
31020	61000473		
31021	52046100	BCD	' 4/06,5/14,2/09,2/13,2/01,3/04,5/05,1'
31022	06730361		
31023	01047302		
31024	61001173		
31025	02610103		
31026	73026100		
31027	01730361		
31030	00047305		
31031	61000537		
31032	52522226	F3M24 BCD	' 6F01A=2B0CA.2IGAA'
31033	00012113		
31034	02222723		
31035	21330231		
31036	27212112		
31037	52222600	BCD	' BF03A=2B0CA.2IGAA'
31040	03211302		
31041	22272321		
31042	33023127		
31043	21211212		
31044	52016101	BCD	' 1/12,1/13(7)'
31045	02730361		
31046	01037407		
31047	34371212		
31050	52522346	F3M25 BCD	' CONTROLLER DID NOT SEQUENCE TO STATE 0 FROM STATE 5'
31051	45635146		
31052	43432551		
31053	12243124		
31054	12454663		
31055	12622550		
31056	64254523		
31057	25126346		

31060	12626321		
31061	63251200		
31062	12265146		
31063	44126263		
31064	21632512		
31065	05121212		
31066	52472123	BCD	' PACKET BIT FOR PACKET 4 NOT RESET DURING PREVIOUS'
31067	42251312		
31070	22316312		
31071	26465112		
31072	47212342		
31073	25631204		
31074	12454463		
31075	12512562		
31076	25631224		
31077	64513145		
31100	27124751		
31101	25653146		
31102	64621212		
31103	52462241	BCD	' OBJECT TEST DURING WRITE PHASE'
31104	25236312		
31105	63256263		
31106	12246451		
31107	31452712		
31110	66513162		
31111	25124730		
31112	21622512		
31113	52014101	BCD	' 1/12,1/13,2/02,2/04,2/08,2/09,2/12,2/13,2/15,2/16,4/04,1'
31114	02731161		
31115	01037302		
31116	61000273		
31117	02610004		
31120	73026100		
31121	10730261		
31122	00117302		
31123	61010273		

31124	02610103		
31125	73026101		
31126	05730261		
31127	01067304		
31130	61000473		
31131	52046102	BCD	' 4/22''
31132	02371212		
31133	52525125	F3M26 BCD	' READ DATA ERROR'
31134	21241224		
31135	21632112		
31136	25515146		
31137	51121212		
31140	52242163	BCD	' DATA IS DATA SB CORE ADD OVERFLOW ERRORS ''
31141	21123162		
31142	12122421		
31143	63211262		
31144	22121223		
31145	46512512		
31146	21242412		
31147	46652551		
31150	26434666		
31151	12255151		
31152	46516452		
31153	37121212		
31154	52016101	F3M27 BCD	' 1/19,1/23,2/18,2/19,2/24,3/18,3/20,3/22,3/23,3/25,3/35,1'
31155	11730161		
31156	02037302		
31157	61011473		
31160	02610111		
31161	73026102		
31162	04730361		
31163	01107303		
31164	61020473		
31165	03610202		
31166	73036102		
31167	03730361		

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31170	02057303		
31171	61030573		
31172	52046101	BCD	' 4/13,4/14,4/22,4/23,5/15,5/21,6/12,6/14''
31173	03730461		
31174	01047304		
31175	61020273		
31176	04610205		
31177	73056101		
31200	05730561		
31201	02017306		
31202	61010273		
31203	06610104		
31204	37121212		
31205	52016101	F3M28 BCD	' 1/19,4/13,4/14,5/15''
31206	11730461		
31207	01037304		
31210	61010473		
31211	05610105		
31212	37121212		
31213	52522330	F3M29 BCD	' CHANNEL ERROR SET AFTER READ'
31214	21454525		
31215	43122551		
31216	51465112		
31217	62256312		
31220	21266325		
31221	51125125		
31222	21241212		
31223	52242163	BCD	' DATA = 00000000'
31224	21121312		
31225	00000000		
31226	00000000		
31227	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'
31230	03730161		
31231	00047301		
31232	61010773		
31233	02610106		

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31234	73026101		
31235	10730261		
31236	01117302		
31237	61020073		
31240	03610110		
31241	73036102		
31242	00730361		
31243	02017303		
31244	61020273		
31245	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'
31246	03730361		
31247	02047304		
31250	61010673		
31251	04610107		
31252	73046101		
31253	10730461		
31254	01117304		
31255	61020073		
31256	04610202		
31257	73046102		
31260	04730461		
31261	02057305		
31262	61000373		
31263	52056100	BCD	' 5/04,5/06''
31264	04730561		
31265	00063712		
31266	52522330	F3M30 BCD	' CHANNEL ERROR SET AFTER READ'
31267	21454525		
31270	43122551		
31271	51465112		
31272	62256312		
31273	21266325		
31274	51125125		
31275	21241212		
31276	52242163	BCD	' DATA = 00000077'
31277	21121312		

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31300	00000000		
31301	00000707		
31302	52036101	BCD	' 3/18,3/21,3/22,3/23,4/16,4/17,4/18,4/19,4/20,4/24,4/25'
31303	10730361		
31304	02017303		
31305	61020273		
31306	03610203		
31307	73046101		
31310	06730461		
31311	01077304		
31312	61011073		
31313	04610111		
31314	73046102		
31315	00770461		
31316	02047304		
31317	61020573		
31320	52036102	BCD	' 3/25,1/23''
31321	05730161		
31322	02033712		
31323	52526630	F3M31 BCD	' PHS NOT RECEIVED FROM CONTROLLER'
31324	62124546		
31325	63125125		
31326	23253165		
31327	25241226		
31330	51464412		
31331	23464563		
31332	51464343		
31333	25511212		
31334	52067030	BCD	' 6YHSAJ=0XJ6A'
31335	62210013		
31336	00670006		
31337	21121212		
31340	52121270	BCD	' YX06A=20GCA,21GAA'
31341	67000421		
31342	13022227		
31343	03210302		

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31344	31272121		
31345	52016102	BCD	' 1/22,1/25,2/12,3/19,4/01,4/02,4/03,5/07''
31346	02730161		
31347	02057302		
31350	61010273		
31351	03610111		
31352	73046100		
31353	01730461		
31354	00027304		
31355	61000373		
31356	05610007		
31357	57121212		
31360	52522346	F3M32 BCD	' CONTROLLER ADDRESS INCREMENTING ERROR DURING STATE 7'
31361	45635146		
31362	43432551		
31363	12212424		
31364	51256262		
31365	12314523		
31366	51254425		
31367	45633145		
31370	27122551		
31371	51465112		
31372	24645131		
31373	45271262		
31374	63216125		
31375	12071212		
31376	52212424	BCD	' ADDR IS ADDR SB ST ADDR OVERFLOW ERRORS ''
31377	51123162		
31400	12122124		
31401	24511262		
31402	22121262		
31403	63122124		
31404	24511212		
31405	44652551		
31406	26434666		
31407	12255151		

31410	46516252			
31411	37121212			
31412	52022342	F3M33	BCD	' 2CKRA#2B8DA,2X03A'
31413	51211302			
31414	22272421			
31415	33026700			
31416	03211212			
31417	52046100		BCD	' 4/07(15),3/15,2/21,5/04,5/06,4/04''
31420	07740105			
31421	34730461			
31422	01057302			
31423	61020173			
31424	05610004			
31425	73056100			
31426	04730461			
31427	00043712			
31430	52046100	F3M34	BCD	' 4/07,4/08(15),5/06(39)''
31431	07730461			
31432	00107401			
31433	05347305			
31434	61000474			
31435	03113437			
31436	52056100	F3M35	BCD	' 5/06(39)''
31437	06740311			
31440	34371212			
31441	52046100	F3M36	BCD	' 4/08,4/04(15),5/04,5/06(30)''
31442	00730461			
31443	00047401			
31444	05347305			
31445	61000473			
31446	05610006			
31447	74030334			
31450	37121212			
31451	52046100	F3M37	BCD	' 4/08(15)''
31452	00740105			
31453	34371212			

31454	52046100	F3M38	BCD	' 4/09(14),4/08(15),5/06(39)''
31455	11740104			
31456	34730461			
31457	00107401			
31460	05347305			
31461	61000474			
31462	03113437			
31463	52046100	F3M39	BCD	' 4/04,4/09,5/02(14),5/04,5/06(39)''
31464	04730461			
31465	00117305			
31466	61000474			
31467	01043473			
31470	05610004			
31471	73056100			
31472	06740311			
31473	34371212			
31474	52056100	F3M40	BCD	' 5/06(39)''
31475	06740311			
31476	34371212			
31477	52046100	F3M41	BCD	' 4/04(14)''
31500	04740104			
31501	34371212			
31502	52046100	F3M42	BCD	' 4/09(14)''
31503	11740104			
31504	34371212			
31505	52046100	F3M43	BCD	' 4/09,4/10(14),5/05(30)''
31506	11730461			
31507	01007401			
31510	04347305			
31511	61000574			
31512	03003437			
31513	52046100	F3M44	BCD	' 4/04,4/10,5/02(14),5/05(30)''
31514	04730461			
31515	01007305			
31516	61000274			
31517	01043473			

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31520	05610005			
31521	74030034			
31522	37121212			
31523	52056100	F3M45	BCD	' 5/05(39)''
31524	05740311			
31525	34371212			
31526	52046101	F3M46	BCD	' 4/10(14)''
31527	00740104			
31530	34371212			
31531	52046101	F3M47	BCD	' 4/10,4/11(14),5/05(30)''
31532	00730461			
31533	01017401			
31534	04347205			
31535	61000574			
31536	03003437			
31537	52046100	F3M48	BCD	' 4/04,4/11,5/02(14),5/05(30)''
31540	04730461			
31541	01017205			
31542	01000274			
31543	01043473			
31544	05610005			
31545	74030034			
31546	37121212			
31547	52056100	F3M49	BCD	' 5/02(14)''
31550	00740104			
31551	34371212			
31552	52046101	F3M50	BCD	' 4/11(14)''
31553	01740104			
31554	34371212			
31555	52046101	F3M51	BCD	' 4/11,4/12(14)''
31556	01730461			
31557	01027401			
31560	04343712			
31561	52046101	F3M52	BCD	' 4/12(14)''
31562	02740104			
31563	34371212			

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31564	52520423	F3M53	BCD	' ACKRA0'
31565	42512100			
31566	52026102		BCD	' 2/21(11)''
31567	01740101			
31570	34371212			
31571	52520026	F3M54	BCD	' 0FO2A ERRONIBUSLY RESET AT TERMINATION OF STATE 7'
31572	00022112			
31573	25515146			
31574	45314464			
31575	62437012			
31576	51256225			
31577	63122163			
31600	12632451			
31601	44314421			
31602	63314445			
31603	12462412			
31604	62632163			
31605	25120712			
31606	52016101		BCD	' 1/10(11)''
31607	00740101			
31610	34371212			
31611	52522446	F3M55	BCD	' CONTROLLER ERRONIBUSLY CYCLED TO STATE 0 FROM STATE 7'
31612	45635146			
31613	43432551			
31614	12250151			
31615	46453146			
31616	64624770			
31617	12237-23			
31620	43252412			
31621	63461262			
31622	63216325			
31623	12001226			
31624	51464412			
31625	62632163			
31626	25120712			
31627	52623046		BCD	' SHOULD BE IN STATE 3'

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31630	64432412		
31631	22251231		
31632	45126263		
31633	21632512		
31634	03121212		
31635	52066102	BCD	' 6/23(47),3/06(18)''
31636	0374C407		
31637	3473C361		
31640	00067401		
31641	10343712		
31642	52522421	F3M56 BCD	' DATA NOT BEING TRANSMITTED WITHIN 1 MILLISEC OF '
31643	63211245		
31644	46631222		
31645	25314527		
31646	12635121		
31647	45624431		
31650	63632524		
31651	12663167		
31652	30314512		
31653	1124431		
31654	43433162		
31655	25231246		
31656	26121212		
31657	52665131	BCD	' WRITING LAST DATA ON PREVIOUS SECTOR'
31660	63314527		
31661	12432162		
31662	63122421		
31663	63211246		
31664	45124751		
31665	25653146		
31666	64621262		
31667	25231246		
31670	51121212		
31671	52302521	BCD	' HEADER NOT VERIFIED ON FIRST ATTEMPT'
31672	24255112		
31673	45466312		

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31674	65255131		
31675	26312524		
31676	12464512		
31677	26315162		
31700	63122163		
31701	63254447		
31702	63121212		
31703	52016101	BCD	' 1/10(11),3/06,5/04,5/06(18)''
31704	00740101		
31705	3473C361		
31706	00067305		
31707	61000473		
31710	05610006		
31711	74011034		
31712	37121212		
31713	52526225	F3M57 BCD	' SEARCH ERROR OCCURED WHILE LOOKING FOR ADDRESS'
31714	21512330		
31715	12255151		
31716	46511246		
31717	23236451		
31720	25241266		
31721	30314325		
31722	12434446		
31723	42314527		
31724	12264451		
31725	12212424		
31726	51256262		
31727	52000040	BCD	' 00=002=00 AFTER INITIATING A WRITE FROM ADDRESS'
31730	00000040		
31731	00001221		
31732	26632551		
31733	12314531		
31734	63312163		
31735	31452712		
31736	21126651		
31737	31632512		

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31740	24514444		
31741	12212124		
31742	51256262		
31743	52001040	BCD	' 00=001=77'
31744	00001140		
31745	07071212		
31746	52032443	BCD	' 3FLSA'
31747	62211212		
31750	52056100	BCD	' 5/04,5/06(18,30)''
31751	04731561		
31752	00067401		
31753	10731200		
31754	34371212		
31755	52522431	F3258 BCD	' DISC ERRONIOUSLY CYCLED TO STATE 0 FROM STATE 7'
31756	52231225		
31757	51514645		
31760	31466462		
31761	43701223		
31762	71234325		
31763	24121346		
31764	12624321		
31765	53251200		
31766	12265146		
31767	44121263		
31770	21632512		
31771	07121212		
31772	52016101	BCD	' 1/11(11)''
31773	01741101		
31774	34371212		
31775	52522431	F3259 BCD	' CONTROLLER HUNG WITH NO ERROR INDICATED'
31776	45635146		
31777	43432551		
32000	12304445		
32001	27124631		
32002	63301245		
32003	46122551		

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32004	51465112		
32005	31462431		
32006	23216325		
32007	24121212		
32010	52016101	BCD	' 1/10(11),3/06(18)''
32011	00740101		
32012	34730361		
32013	00047401		
32014	10343712		
32015	52523125	F3260 BCD	' HEADER FOR ADDRESS 00=002=00 DESTROYED'
32016	21242551		
32017	12264651		
32020	12212424		
32021	51256262		
32022	12000240		
32023	00000240		
32024	00001224		
32025	25626351		
32026	46702524		
32027	52016101	BCD	' 1/10(11)''
32030	00740101		
32031	34371212		
32032	52522431	F3261 BCD	' CONTROLLER ERRONIOUSLY CYCLED TO STATE 0 FROM STATE 5'
32033	45635146		
32034	43432551		
32035	12255151		
32036	46453146		
32037	64624371		
32040	12237123		
32041	43252412		
32042	63461262		
32043	63211225		
32044	12001226		
32045	51464412		
32046	62632163		
32047	25121512		

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32050	52016101	BCD	' 1/12,2/16(7)''
32051	02730261		
32052	01067407		
32053	34371212		
32054	52522246	F3M62 BCD	' CONTROLLER ERRONEOUSLY CYCLED TO STATE 0 FROM STATE 5'
32055	45635146		
32056	43432551		
32057	12255151		
32060	46453146		
32061	64624270		
32062	12237123		
32063	43252412		
32064	63461262		
32065	63210325		
32066	12001226		
32067	51464412		
32070	62632163		
32071	25120512		
32072	52026101	BCD	' 2/12,2/16(7),4/01,4/02,4/03(24),1/03,1/04(26),2/19,'
32073	02730261		
32074	01067407		
32075	34730461		
32076	00017304		
32077	61000273		
32100	04610303		
32101	74020434		
32102	73016100		
32103	03730161		
32104	00047402		
32105	04347202		
32106	61011173		
32107	52026102	BCD	' 2/20(12)''
32110	00740102		
32111	34371212		
32112	52522421	F3M63 BCD	' DATA NOT BEING READ WITHIN 1 MILLISEC OF READING LAST'
32113	63211245		

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32114	46631222		
32115	25314527		
32116	12512521		
32117	24126431		
32120	63303145		
32121	27120112		
32122	44314343		
32123	31622523		
32124	12462612		
32125	51252124		
32126	31452712		
32127	43216263		
32130	52242163	BCD	' DATA ON PREVIOUS SECTOR'
32131	21124445		
32132	12475125		
32133	65314664		
32134	62126225		
32135	23634651		
32136	52322521	BCD	' HEADER NOT VERIFIED ON FIRST ATTEMPT'
32137	24250112		
32140	45466312		
32141	65255131		
32142	26312524		
32143	12464512		
32144	26315162		
32145	63122163		
32146	63254447		
32147	63121212		
32150	52016101	BCD	' 1/10,1/13(7)''
32151	00730161		
32152	01037407		
32153	34371212		
32154	52520231	F3M64 BCD	' 2IGAA'
32155	27212112		
32156	52026101	BCD	' 2/12,2/16,1/12(7)''
32157	02730261		

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32160	01067301		
32161	61010274		
32162	07343712		
32163	52520231	F3M65 BCD	' 2IGAA'
32164	07212112		
32165	52026101	BCD	' 2/12(7)''
32166	02740734		
32167	37121212		
32170	52520230	F3M66 BCD	' CHAIN BIT NOT RECORDED AS 0 OR CHECKED DURING READ'
32171	21314512		
32172	22316312		
32173	45466312		
32174	51252346		
32175	51242524		
32176	12216212		
32177	00124451		
32200	12233025		
32201	23420524		
32202	12246451		
32203	31452712		
32204	51252124		
32205	52026101	BCD	' 2/12(7),2/18(11),2/20(11+12)''
32206	02740734		
32207	73226101		
32210	10740101		
32211	34730961		
32212	02007401		
32213	01730102		
32214	34371212		
32215	52520426	F3M67 BCD	' SFCA0=2BGCA+2FLSA'
32216	23210013		
32217	02220723		
32220	21330226		
32221	43622112		
32222	52016101	BCD	' 1/10(7)''
32223	00740734		

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32224	37121212		
32225	52520426	F3M68 BCD	' RFAA0=2BGCA+3FLSA+2IGAA+2BGCA (BOTH TERMS LOW)'
32226	21210013		
32227	02220723		
32230	21330226		
32231	43622120		
32232	02310721		
32233	21330222		
32234	27232112		
32235	74224463		
32236	30126325		
32237	51444012		
32240	43466634		
32241	52016101	BCD	' 1/13(7)''
32242	03740734		
32243	37121212		
32244	52520226	F3M69 BCD	' SFBA0=2BGCA+3IGAA+3FLSA (SHOULD BE LOW)'
32245	22210013		
32246	02220723		
32247	21330231		
32250	27210133		
32251	03264762		
32252	21127462		
32253	30466443		
32254	24122225		
32255	12434466		
32256	34121212		
32257	52016101	BCD	' 1/12(7)''
32260	02740734		
32261	37121212		
32262	52520470	F3M70 BCD	' 6YHTA0'
32263	30432100		
32264	52056100	BCD	' 5/07(7)''
32265	07740734		
32266	37121212		
32267	52520423	F3M71 BCD	' 6CKRA0'

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32270	42512100		
32271	52026102	BCD	' 2/21(7)!!'
32272	01740734		
32273	37121212		
32274	52522330	F3M72 BCD	' CHANNEL ERROR ON READ'
32275	21454525		
32276	43122551		
32277	51465112		
32300	46451251		
32301	25212412		
32302	52242163	BCD	' DATA = 77777777'
32303	21121312		
32304	07071707		
32305	07071707		
32306	52056101	BCD	' 5/15(34),4/24(7,8),4/20,4/21,3/20(7),5/12,6/21,6/11(8)!!'
32307	05741204		
32310	34730461		
32311	02047407		
32312	73103473		
32313	04611200		
32314	73046102		
32315	01730361		
32316	02077407		
32317	34730561		
32320	01027306		
32321	61020173		
32322	06610101		
32323	74073437		
32324	52522330	F3M73 BCD	' CHANNEL ERROR ON READ'
32325	21454525		
32326	43122551		
32327	51465112		
32330	46451251		
32331	25212412		
32332	52242163	BCD	' DATA = 00000000'
32333	21121312		

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32334	00000000		
32335	00000000		
32336	52036103	BCD	' 3/30,4/22,4/28(8),3/20,4/21(7)!!'
32337	00730461		
32340	02027304		
32341	61021074		
32342	10347303		
32343	61020173		
32344	04610201		
32345	74073437		
32346	52522330	F3M74 BCD	' CHANNEL ERROR ON READ'
32347	21454525		
32350	43122551		
32351	51465112		
32352	46451251		
32353	25212412		
32354	52242163	BCD	' DATA = 25522552'
32355	21121312		
32356	02050502		
32357	02050502		
32360	52046102	BCD	' 4/20,4/24(7),5/15(34)!!'
32361	00730461		
32362	02047407		
32363	34730561		
32364	01057403		
32365	04343712		
32366	52527125	F3M75 BCD	' ZERBS NOT WRITTEN ON ADDRESS 00*000*00 AFTER CHANNEL'
32367	51466212		
32370	45466212		
32371	66513163		
32372	63254512		
32373	46451221		
32374	24245125		
32375	62621200		
32376	00400000		
32377	00400000		

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32400	12212463		
32401	25511223		
32402	30214545		
32403	25431212		
32404	52243162	BCD	' DISCONNECTED'
32405	23445545		
32406	25236725		
32407	24121212		
32410	52664651	BCD	' WORD NO DATA IS IGNORE OVERFLOW ERRORS !!'
32411	24124546		
32412	12122421		
32413	63211231		
32414	62121231		
32415	27454651		
32416	25121212		
32417	46657551		
32420	26434666		
32421	12255151		
32422	46516952		
32423	37121212		
32424	52371212	F3M76 BCD	' !!'
32425	52036102	F3M77 BCD	' 3/20,3/21,3/23,4/19,4/20,4/24,4/25(23),3/22(13),2/23,1'
32426	00730761		
32427	02017323		
32430	61023373		
32431	04610111		
32432	73046102		
32433	00730461		
32434	02047324		
32435	61020574		
32436	02033473		
32437	02610202		
32440	74010234		
32441	73026102		
32442	02731212		
32443	52026102	BCD	' 2/26(11)!!'

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32444	04741101		
32445	34371212		
32446	52522246	F3M78 BCD	' CONTROLLER DID NOT ENTER STATE 0 FROM STATE 7 WHEN'
32447	45635146		
32450	43432551		
32451	12243124		
32452	12454663		
32453	12254663		
32454	25511262		
32455	62216225		
32456	12001226		
32457	51464412		
32460	62632163		
32461	25120712		
32462	66322545		
32463	52254644	BCD	' E9M 10226 ISSUED'
32464	12011002		
32465	02061231		
32466	62626425		
32467	24121212		
32470	52016101	BCD	' 1/15(20),3/19,4/23,5/12(1),6/23(47)!!'
32471	05740200		
32472	34730361		
32473	01117204		
32474	61023373		
32475	05610102		
32476	74013473		
32477	06610202		
32500	74040734		
32501	37121212		
32502	52520226	F3M79 BCD	' 2F03A NOT RESET BY 3ZBFA'
32503	00032112		
32504	45464312		
32505	51256225		
32506	63122272		
32507	12037122		

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32510	22211212				
32511	52016101	BCD	'	1/15(20)''	
32512	0574200				
32513	34371212				
32514	52520623	F3M80	BCD	'	6CLMA0'
32515	43442100				
32516	52056101	BCD	'	5/12(1)''	
32517	02740134				
32520	37121212				
32521	52520623	F3M81	BCD	'	6CLMA0'
32522	43442100				
32523	52056101	BCD	'	5/12(1)''	
32524	02740134				
32525	52103146	BCD	'	810CA'	
32526	23211212				
32527	52066101	BCD	'	6/13,6/14(42)''	
32530	03730661				
32531	01047404				
32532	02343712				
32533	52522267	F3M82	BCD	'	8X03A=2M4AA=81Y0A'
32534	00032113				
32535	02442021				
32536	21331031				
32537	70002112				
32540	52046100	BCD	'	4/01(24),6/13,6/14(42)''	
32541	0174204				
32542	34730661				
32543	01037306				
32544	61010474				
32545	04023437				
32546	52520667	F3M83	BCD	'	0X02A'
32547	00022112				
32550	52046100	BCD	'	4/03(24)''	
32551	03740204				
32552	34371212				
32553	52520661	F3M84	BCD	'	2/08(8),2/18(13)''

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32554	00107410				
32555	34730661				
32556	01107401				
32557	03343712				
32560	52520661	F3M85	BCD	'	2/08(8),2/18(12)''
32561	00107410				
32562	34730661				
32563	01107401				
32564	02343712				
32565	52521170	F3M94	BCD	'	9YESA'
32566	25622112				
32567	52056101	BCD	'	5/14(36),4/04,5/09(7)''	
32570	04740306				
32571	34730661				
32572	00047306				
32573	61001174				
32574	07343712				
32575	52521170	F3M95	BCD	'	9YHSA'
32576	30622112				
32577	52056101	BCD	'	5/14(36)''	
32600	04740306				
32601	34371212				

DISCW TAP=3.0
32707 62523712

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*  
* MESSAGES - FUNCTION 5  
*  
32710 52524724 F5M1 BCD ' POBA RELAY FAILURE - !!  
32711 22211251  
32712 25432170  
32713 12262131  
32714 43645125  
32715 12401237  
32716 42017342 F5M2 BCD 'K1,K3,K4,K8!!  
32717 03734204  
32720 73421137  
32721 42021224 F5M3 BCD 'K2 DR0P0UT!!  
32722 51464746  
32723 64633712  
32724 42017342 F5M4 BCD 'K1,K3,K4,K8!!  
32725 03734204  
32726 73421137  
32727 42061224 F5M5 BCD 'K6 DR0P0UT!!  
32730 51464746  
32731 64633712  
32732 42017342 F5M6 BCD 'K1,K3,K4!!  
32733 03734204  
32734 37121212  
32735 42021224 F5M7 BCD 'K2 DR0P0UT!!  
32736 51464746  
32737 64633712  
32740 42017342 F5M8 BCD 'K1,K2,K4!!  
32741 03734204  
32742 37121212  
32743 42031224 F5M9 BCD 'K3 DR0P0UT!!  
32744 51464746  
32745 64633712  
32746 42027342 F5M10 BCD 'K2,K4,K6!!  
32747 04734206  
32750 37121212
```

DISCK	TAP-3.		PAGE 417
32751	42031224	F5M11	BCD 'K3 DR0P0UT''
32752	51464746		
32753	64633712		
32754	42027342	F5M12	BCD 'K2,K3,K6''
32755	03734206		
32756	37121212		
32757	42041224	F5M13	BCD 'K4 DR0P0UT''
32760	51464746		
32761	74633712		
32762	42037342	F5M14	BCD 'K3,K6,K8''
32763	06734210		
32764	37121212		
32765	42041224	F5M15	BCD 'K4 DR0P0UT''
32766	51464746		
32767	64633712		
32770	42037342	F5M16	BCD 'K3,K4,K8''
32771	04734210		
32772	37121212		
32773	42061224	F5M17	BCD 'K6 DR0P0UT''
32774	51464746		
32775	64633712		
32776	42057342	F5M18	BCD 'K5,K9,K10,K12''
32777	11734201		
33000	01734201		
33001	02771212		
33002	42071224	F5M19	BCD 'K7 DR0P0UT''
33003	51464746		
33004	64633712		
33005	42067342	F5M20	BCD 'K5,K9,K10,K12''
33006	11734201		
33007	02774201		
33010	02371212		
33011	42010112	F5M21	BCD 'K11 DR0P0UT''
33012	24514447		
33013	46644337		
33014	42057342	F5M22	BCD 'K5,K9,K10''

DISCK	TAP-3.		PAGE 418
33015	11734201		
33016	02371212		
33017	42071224	F5M23	BCD 'K7 DR0P0UT''
33020	51464746		
33021	64633712		
33022	42057342	F5M24	BCD 'K5,K7,K10''
33023	17734201		
33024	02371212		
33025	42111224	F5M25	BCD 'K9 DR0P0UT''
33026	51464746		
33027	64633712		
33030	42077342	F5M26	BCD 'K7,K10,K11''
33031	01007342		
33032	01015712		
33033	42111224	F5M27	BCD 'K9 DR0P0UT''
33034	51464746		
33035	64633712		
33036	42077342	F5M28	BCD 'K7,K9,K11''
33037	11734201		
33040	01371212		
33041	42010112	F5M29	BCD 'K10 DR0P0UT''
33042	24514447		
33043	46644337		
33044	42117342	F5M30	BCD 'K9,K11,K12''
33045	01017342		
33046	01023712		
33047	42010112	F5M31	BCD 'K10 DR0P0UT''
33050	24514447		
33051	46644337		
33052	42117342	F5M32	BCD 'K9,K10,K12''
33053	01027342		
33054	01023712		
33055	42010112	F5M33	BCD 'K11 DR0P0UT''
33056	24514447		
33057	46644337		
33060	52524225	F5M34	BCD 'SEEK ERROR AFTER EXECUTING EOM 10226 (CLEAR)'

33061	25421225		
33062	51514451		
33063	12212663		
33064	25511225		
33065	67252364		
33066	63314527		
33067	12254444		
33070	12010002		
33071	02061274		
33072	23432521		
33073	51341212		
33074	52262246	BCD	' FC0=6121 NOT INCORPERATED'
33075	40061102		
33076	01124446		
33077	63123145		
33100	23465147		
33101	25512163		
33102	25241212		
33103	52234251	BCD	' CLR LOGIC = D15,E15 = DP LOGIC PAGES 1 AND 211
33104	12434427		
33105	31231240		
33106	12240105		
33107	73251105		
33110	12401224		
33111	47124346		
33112	27312312		
33113	47212725		
33114	62120112		
33115	21452412		
33116	02371212		
33117	52520331	F5495 BCD	' TIME TO VERIFY POSITION WITH POWER INITIALLY OFF'
33120	44251263		
33121	46126525		
33122	51312670		
33123	12474662		
33124	31633146		

33125	45126431		
33126	63301247		
33127	46662551		
33130	12314531		
33131	63312143		
33132	43701246		
33133	26261212		
33134	52275125	BCD	' GREATER THAN 118 MILLISEC.'
33135	21632551		
33136	12632021		
33137	45120101		
33140	10124431		
33141	43433162		
33142	25233312		
33143	52446443	BCD	' MULTIVIBRATOR IN LOCATION C6 (ACCESS B) = MVBA =1
33144	63316531		
33145	22512163		
33146	46511231		
33147	45124346		
33150	23216331		
33151	46451223		
33152	06127421		
33153	23232562		
33154	62122234		
33155	12401244		
33156	65222112		
33157	40121212		
33160	52623446	BCD	' SHOULD BE SET FOR 2 MILLISEC DURATION'
33161	64432412		
33162	22251262		
33163	25631226		
33164	46511202		
33165	12443443		
33166	43316225		
33167	23122464		
33170	51216331		

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33265	46121225		
33266	51514651		
33267	12454637		
33270	52523125	F10M9 BCD	' HEADER''
33271	21242551		
33272	37121212		
33273	52373123	F10M10 BCD	' HICORE''
33274	46512537		
33275	52255151	F10M11 BCD	' ERR FLAG !0STATUS TIS..TSB SRT DISC END DISC SRT CORE END CORE BLK LGTH''
33276	12264321		
33277	27123146		
33280	62637163		
33281	64621263		
33282	31624240		
33283	63622212		
33284	62516312		
33285	24316223		
33286	12254524		
33287	12243162		
33288	23126251		
33289	63122346		
33290	51251225		
33313	45241223		
33314	46512512		
33315	22434212		
33316	43276330		
33317	37121212		

DISCW TAP=3.0

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•
• MESSAGES = FUNCTION 18

33320	52303127	F18M1 BCD	' HIGH ARM TOO LARGE''
33321	30122151		
33322	44126346		
33323	46124321		
33324	51272537		
33325	52303127	F18M2 BCD	' HIGH ARM LESS THAN LOW ARM''
33326	30122151		
33327	44126325		
33330	62621263		
33331	30214512		
33332	43466412		
33333	21514437		
33334	52665131	F18M3 BCD	' WRITE PROTECTED = DISC ''
33335	63251247		
33336	51466425		
33337	23632524		
33340	12401224		
33341	31622212		
33342	12121237	F18M4 BCD	' ''

```

*
*   MESSAGES - FUNCTION 19
*
33343  52303127 F19M1 BCD   ' HIGH ARM TOO LARGE!!
33344  30122151
33345  44126346
33346  46124321
33347  51272537
33350  52434466 F19M2 BCD   ' LOW ARM > HIGH ARM!!
33351  12215144
33352  12161330
33353  31273112
33354  21514437
33355  52325454 F19M3 BCD   ' *****DISC *
33356  54545454
33357  54545454
33360  54545454
33361  54545424
33362  31622312
33363  40121012
33364  37121012 F19M4 BCD   '
33365  52243162 F19M5 BCD   ' DISC TIMEOUT ERROR!!
33366  23120331
33367  44254664
33370  63122551
33371  51445137

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*
*   MESSAGES - FUNCTION 20
*
33372  52303127 F20M1 BCD   ' HIGH ARM TOO LARGE!!
33373  30122151
33374  44126346
33375  46124321
33376  51272533
33377  37121212
33400  52434466 F20M2 BCD   ' LOW ARM TOO LARGE!!
33401  12215144
33402  12634446
33403  12432151
33404  27253337
33405  52255151 F20M3 BCD   ' ERROR - TRACK NOT VERIFIED WITHIN 500MSEC.'
33406  46511240
33407  12635121
33410  23421245
33411  46631265
33412  25513126
33413  31252412
33414  66316330
33415  31451205
33416  00004462
33417  25233312
33420  52215144 BCD   ' ARM NUMBER *
33421  12456444
33422  22255112
33423  13123712
33424  52325454 TITLE BCD   ' ***** DISC '
33425  54545454
33426  54545454
33427  12243162
33430  23121012
33431  0 00 00000 TITLE1 PZF

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*
* MESSAGES - FUNCTION 21
*

33432	52303124	F2141	BCD	' MIDISC < LADISC''
33433	31622312			
33434	36124746			
33435	24316223			
33436	37121212			
33437	52263143	F2142	BCD	' FILE NOT ON LINE''
33440	25124546			
33441	63124645			
33442	12433145			
33443	25371212			
33444	52233~21	F2143	BCD	' CHANGE WRITE HEADER S..ITCH''
33445	46272512			
33446	66513163			
33447	25123025			
33450	21242551			
33451	12624431			
33452	63233~37			
33453	52475125	F2144	BCD	' PREMATURE CHANNEL DISCONNECT''
33454	44214764			
33455	51251223			
33456	30214545			
33457	2~431224			
33460	31622346			
33461	45452523			
33462	63371212			
33463	52242162	F2145	BCD	' DISC WRITE PROTECTED''
33464	23126451			
33465	31632512			
33466	47514663			
33467	25236225			
33470	24371212			
33471	52233021	F2146	BCD	' CHANNEL ERROR''
33472	45452543			

33473	12255151			
33474	46513712			
33475	52665131	F2147	BCD	' WRITE MONITOR ERROR''
33476	63251244			
33477	46453163			
33500	46511225			
33501	51514651			
33502	37121212			

*
* MESSAGES - FUNCTION 22
*

33503	52254524	F22M1	BCD	' ENDISC < STDISCII'
33504	31622912			
33505	36126263			
33506	24316223			
33507	37121212			
33510	52622623	F22M2	BCD	' SECTOR COUNT ERRORII'
33511	63465112			
33512	23460445			
33513	63122551			
33514	51465137			
33515	52263143	F22M3	BCD	' FILE NOT ON LINEII'
33516	25124546			
33517	63124645			
33520	12433145			
33521	25371212			
33522	52233221	F22M4	BCD	' CHANGE WRITE HEADER SWITCHII'
33523	45272512			
33524	66513163			
33525	25123225			
33526	21242551			
33527	12626631			
33530	63233237			
33531	52243162	F22M5	BCD	' DISC WRITE PROTECTEDII'
33532	23126451			
33533	31632512			
33534	47514663			
33535	25236325			
33536	24371212			
33537	52233221	F22M6	BCD	' CHANNEL ERRORII'
33540	45452543			
33541	12255151			
33542	46513712			
33543	52234445	F22M7	BCD	' CONTROLLER ERRORII'

33544	63514443
33545	43255112
33546	25515146
33547	51371212

END

LITERALS USED:

33550	00000000
33551	77777777
33552	00000007
33553	77600000
33554	00177400
33555	00000003
33556	77740000
33557	00177777
33560	00037777
33561	00077777
33562	00000243
33563	00000005
33564	00000247
33565	00007000
33566	00777777
33567	00020673
33570	00011610
33571	00105602
33572	77770143
33573	00074000
33574	00234000
33575	00017500
33576	00034900
33577	00034000
33600	00000077
33601	00034077
33602	04074000
33603	00000177
33604	00034100
33605	00062566

33606	00000101
33607	00034440
33610	00037200
33611	10034000
33612	25522552
33613	00034003
33614	77774400
33615	77760000
33616	00760000
33617	77777775
33620	77776720
33621	00000764
33622	00000466
33623	00700000
33624	22026410
33625	77770007
33626	00005520
33627	00017777
33630	70000000
33631	07000000
33632	00000700
33633	70000400
33634	20004400
33635	00003000
33636	00002000
33637	00000341
33640	00000161
33641	00070000
33642	07000007
33643	00000160
33644	00003000
33645	00000000
33646	77077777
33647	01760000
33650	00000377
33651	00000140

33652	77777771
33653	00003777
33654	77777701
33655	77777700
33656	00017400
33657	77777211
33660	77777221
33661	77771434
33662	77771431
33663	00303237
33664	71007000
33665	00000600
33666	00000170
33667	00174000
33670	00001777
33671	53577045
33672	00310033
33673	00000070
33674	00000707
33675	00003737
33676	77776716
33677	60600040
33700	00000016
33701	52020000
33702	52600054
33703	00000000
33704	00006000
33705	00000017
33706	54545454
33707	52600060
33710	00600060
33711	00010003
33712	040500407
33713	37373737
33714	77777723
33715	00001750

33716 0000062
 33717 0000064
 33720 0000012
 33721 0004000
 33722 0000055
 33723 77776571
 33724 00001700
 33725 0000042
 33726 82040500
 33727 00000500
 33730 52010000
 33731 04040404
 33732 37120010
 33733 00777600
 33734 77777600
 33735 00777740
 33736 04034000
 33737 77754960
 33740 0000037
 33741 00056401
 33742 00148954
 33743 00054812
 33744 00157466
 33745 0000033
 33746 0000037
 33747 0000073
 33750 0000037

33751 CELLS USED BY PROGRAM

LOCAL SYMBOLS SFD =

A1	15510+	ABORT	14732+	ABORT1	14742+
A	23325+	B1A2A	13462+	B1A2B	13466+
B1AND2	12416+	B10NLY	13364+	B1	15511+
B20NLY	13366+	BADLIN	15503+	BEGN18	17045+
BIT0	15436+	BIT1	15437+	BIT10	15450+
BIT11	15451+	BIT12	15452+	BIT13	15453+
BIT14	15454+	BIT15	15455+	BIT16	15456+
BIT17	15457+	BIT18	15460+	BIT19	15461+
BIT2	15440+	BIT20	15462+	BIT21	15463+
BIT22	15464+	BIT23	15465+	BIT3	15441+
BIT4	15442+	BIT5	15443+	BIT6	15444+
BIT7	15445+	BIT8	15446+	BIT9	15447+
BLKMAX	15505+	B	23326+	C1A2A	15114+
C1A2B	15131+	C1A2C	15151+	C1A2D	15153+
C1AND2	15102+	CAPTBL	15523+	CDVR1	14461+
CDVR2	14471+	CDVR3	14472+	CDVR4	14474+
CDVR5	14513+	CDVR6	14522+	CDVR7	14541+
CHART	20445+	CHART1	20453+	CHART2	20501+
CHART3	20521+	CHART4	20537+	CHECK	23073+
CHECK1	23111+	CHECK2	23114+	CHNCK	14560+
CHNCK0	14621+	CHNCK1	14635+	CHNCK2	14637+
CHNCK3	14652+	CHNCK4	14613+	CHNDVR	14452+
CAC	13143+	CK1	13165+	CK2	13173+
CK3	13216+	CK4	13221+	CLCMT	20410+
CLEAR	23447+	CLINT	23255+	CNTRS	15730+
CMN01	23430+	COMP1	13531+	COMPAR	13501+
CMNKEY	13560+	CBUNT	15506+	CP0T1	23006+
CP0T2	23015+	CP0T3	23024+	CP0T4	23033+
DOOT17	0001+	D20T37	5002+	DATA1	14761+
DATA2	14773+	DATA3	15015+	DATA4	15020+
DATA5	15037+	DATA6	15045+	DATA7	15060+
DATAB	15100+	DATACK	14745+	DATERR	15170+
DDVR0	14307+	DDVR1	14320+	DDVR2	14330+
DDVR3	14400+	DDVR4	14412+	DDVR5	14440+
DELTA	17642+	DERR1	15240+	DERR2	15247+
HEAD	15472+	DISCK	23042+	DIVERT	450

DONE	452	DRIVE1	14274+	DRIVER	14245+
DSCDVR	14277+	DSCS12	404	END	434
END19	N 17566+	END21	21254+	ENDF10	13415+
ENDF2	N 6677+	ENDF3	11513+	ENDF4	12210+
ENDF5	N 12650+	ENDISC	23347+	ENDIT	20176+
ENDP8S	14276+	ENTER	23371+	ENTIM	20373+
ERRR8	460	ERRR8S	414	EKRTBL	15513+
ETBLF	34207	F10E'D	13405+	F10M1	33224+
F10M10	33273+	F10M11	33275+	F10M2	33233+
F10M3	33235+	F10M4	33237+	F10M5	33241+
F10M6	33243+	F10M7	33245+	F10M8	33246+
F10M9	33270+	F18E1	17065+	F18M1	33320+
F18M2	33325+	F18M3	33334+	F18M4	33342+
F1911	17277+	F19110	17544+	F19111	17567+
F19112	17346+	F19113	17860+	F19114	17636+
F19115	17255+	F1912	17311+	F1913	17330+
F1914	17366+	F1915	17412+	F1916	17425+
F1917	17441+	F1917A	17472+	F1918	17476+
F1919	17513+	F19M1	33343+	F19M2	33350+
F19M3	33355+	F19M4	33364+	F19M5	33365+
F1M1	23675+	F1M10	23770+	F1M11	24000+
F1M12	24010+	F1M13	24016+	F1M14	24026+
F1M15	24036+	F1M16	24046+	F1M17	24056+
F1M18	24066+	F1M19	24076+	F1M2	23700+
F1M20	24106+	F1M21	24116+	F1M22	24126+
F1M23	24136+	F1M24	24153+	F1M25	24163+
F1M26	24173+	F1M27	24203+	F1M28	24213+
F1M29	24230+	F1M3	23713+	F1M30	24243+
F1M31	24251+	F1M32	24257+	F1M33	24265+
F1M34	24273+	F1M35	24301+	F1M36	24307+
F1M37	24315+	F1M38	24323+	F1M39	24333+
F1M4	23716+	F1M40	24341+	F1M41	24347+
F1M42	24355+	F1M43	24363+	F1M44	24371+
F1M45	24377+	F1M46	24405+	F1M47	24413+
F1M48	24421+	F1M49	24427+	F1M5	23721+
F1M50	24435+	F1M51	24443+	F1M52	24451+

F1M53	24457+	F1M54	24465+	F1M55	24473+
F1M56	24501+	F1M57	24511+	F1M58	24514+
F1M59	24517+	F1M6	23727+	F1M60	24522+
F1M65	24542+	F1M66	24551+	F1M67	24565+
F1M7	23732+	F1M70	24605+	F1M71	24614+
F1M8	23745+	F1M9	23760+	F18E1	4552+
F1S1	22212+	F1S1A	22225+	F1S1B	22232+
F1S2	22245+	F1S2A	22253+	F1S2B	22263+
F1S2C	22267+	F1S2D	22301+	F20L1	20144+
F20M1	33372+	F20M2	33400+	F20M3	33405+
F21E0	21155+	F21E1	21172+	F21E2	21133+
F21M1	33432+	F21M2	33437+	F21M3	33444+
F21M4	33453+	F21M5	33463+	F21M6	33471+
F21M7	33475+	F22M1	33503+	F22M2	33510+
F22M3	33515+	F22M4	33522+	F22M5	33531+
F22M6	33537+	F22M7	33543+	F23E1	22056+
F23L1	22045+	F23L2	22043+	F2E10	6231+
F2E49	6572+	F2E50	6607+	F2E51	6624+
F2E52	6261+	F2E56	6657+	F2E57	6676+
F2E58	6556+	F2E9	6204+	F2L1	6170+
F2L2	6216+	F2L3	6226+	F2L31	6244+
F2L32	6255+	F2M1	24642+	F2M10	25070+
F2M100	27346+	F2M101	27363+	F2M102	27372+
F2M103	27401+	F2M104	27410+	F2M105	27417+
F2M106	27426+	F2M107	27436+	F2M108	27445+
F2M109	27454+	F2M11	25106+	F2M110	27463+
F2M111	27472+	F2M112	27502+	F2M113	27511+
F2M114	27516+	F2M115	27530+	F2M116	27542+
F2M117	27571+	F2M118	27632+	F2M119	27661+
F2M12	25123+	F2M120	27710+	F2M121	27736+
F2M122	27762+	F2M13	25143+	F2M14	25155+
F2M15	25147+	F2M16	25201+	F2M17	25236+
F2M18	25247+	F2M19	25262+	F2M2	24730+
F2M20	25335+	F2M21	25371+	F2M22	25423+
F2M3	24751+	F2M32	25492+	F2M33	25545+
F2M34	25571+	F2M35	25602+	F2M36	25625+

F2M37	25636+	F2M38	25647+	F2M39	25660+
F2M4	25763+	F2M40	25667+	F2M41	25676+
F2M42	25795+	F2M43	25716+	F2M44	25727+
F2M45	25740+	F2M46	25751+	F2M47	25760+
F2M48	25767+	F2M49	26000+	F2M50	26011+
F2M51	26020+	F2M52	26027+	F2M53	26041+
F2M54	26053+	F2M55	26065+	F2M56	26077+
F2M57	26111+	F2M58	26123+	F2M59	26135+
F2M6	26175+	F2M60	26147+	F2M61	26160+
F2M62	26171+	F2M63	26202+	F2M64	26213+
F2M65	26224+	F2M66	26235+	F2M67	26246+
F2M68	26257+	F2M69	26275+	F2M7	26007+
F2M70	26313+	F2M71	26331+	F2M72	26354+
F2M73	26373+	F2M73A	26422+	F2M74	26460+
F2M74A	26527+	F2M75	26551+	F2M76	26620+
F2M77	26653+	F2M78	26700+	F2M79	26730+
F2M8	26821+	F2M80	26756+	F2M81	27015+
F2M82	27040+	F2M83	27063+	F2M84	27111+
F2M85	27135+	F2M86	27162+	F2M87	27207+
F2M88	27233+	F2M89	27255+	F2M9	25041+
F2M90	27274+	F2M91	27301+	F2M92	27306+
F2M93	27313+	F2M94	27320+	F2M95	27325+
F2M96	27332+	F2M97	27337+	F2M98	27344+
F2M99	27351+	F2S1	22304+	F2S1A	22315+
F2S13	22322+	F2S2	22323+	F2S2A	22334+
F2S25	22336+	F2S3	22341+	F2S3A	22357+
F2S4	22362+	F2S4A	22377+	F2S5	22402+
F2S5A	22424+	F2S5B	22425+	F2S6	22427+
F2S6A	22452+	F2S6B	22457+	F2S6C	22460+
F2S7	22445+	F2S7A	22477+	F2S7B	22504+
F2S7C	22525+	F3E1	7130+	F3E10	7275+
F3E11	7313+	F3E1#	7421+	F3E19	7436+
F3E2	7143+	F3E20	7461+	F3E21	7530+
F3E22	7577+	F3E23	7624+	F3E24	7651+
F3E25	7743+	F3E3	7153+	F3E60	10273+
F3E61	10312+	F3E62	7705+	F3E63	10017+

F3E64	10341+	F3E65	10411+	F3E66	10444+
F3E67	10476+	F3E68	10622+	F3E69	10667+
F3E70	10720+	F3E71	10747+	F3E72	11021+
F3E73	11073+	F3E74	11146+	F3E75	11253+
F3E76	11322+	F3E77	11325+	F3E78	11350+
F3E79	11374+	F3E8	7207+	F3E81	11423+
F3E82	11451+	F3E83	10545+	F3E85	11462+
F3E86	11512+	F3E9	7236+	F3L1	7254+
F3L2	7272+	F3L3	7355+	F3L4	7366+
F3L44	10257+	F3L45	7662+	F3L46	7677+
F3L47	7762+	F3L48	7754+	F3L49	7761+
F3L5	7423+	F3L50	7774+	F3L51	7777+
F3L52	10025+	F3L53	10007+	F3L54	10333+
F3L55	10353+	F3L56	10353+	F3L57	10432+
F3L58	10465+	F3L59	10566+	F3L6	7411+
F3L60	10632+	F3L61	10607+	F3L62	10621+
F3L63	10652+	F3L64	11005+	F3L65	11016+
F3L66	11057+	F3L67	11070+	F3L68	11131+
F3L69	11143+	F3L7	7457+	F3L70	11223+
F3L71	11226+	F3L72	11242+	F3L73	11264+
F3L74	11323+	F3L75	11314+	F3L76	11337+
F3L77	11362+	F3L78	10537+	F3L8	7516+
F3L9	7565+	F3M1	30027+	F3M10	30267+
F3M11	30304+	F3M12	30342+	F3M13	30434+
F3M14	30457+	F3M15	30475+	F3M16	30514+
F3M17	30532+	F3M18	30550+	F3M19	30567+
F3M2	30724+	F3M20	30600+	F3M21	30640+
F3M22	30755+	F3M23	30735+	F3M24	31032+
F3M25	30820+	F3M26	31133+	F3M27	31154+
F3M28	30825+	F3M29	31213+	F3M3	30137+
F3M30	31266+	F3M31	31323+	F3M32	31360+
F3M33	31412+	F3M34	31430+	F3M35	31436+
F3M36	31441+	F3M37	31451+	F3M38	31454+
F3M39	31443+	F3M4	30146+	F3M40	31474+
F3M41	31477+	F3M42	31502+	F3M43	31505+
F3M44	31513+	F3M45	31523+	F3M46	31526+

F3M47	31531+	F3M48	31537+	F3M49	31547+
F3M50	31552+	F3M51	31556+	F3M52	31561+
F3M53	31564+	F3M54	31571+	F3M55	31611+
F3M56	31642+	F3M57	31718+	F3M58	31755+
F3M59	31775+	F3M6	30195+	F3M60	32015+
F3M61	32032+	F3M62	32054+	F3M63	32112+
F3M64	32154+	F3M65	32162+	F3M66	32170+
F3M67	32215+	F3M68	32225+	F3M69	32244+
F3M7	32230+	F3M70	32262+	F3M71	32267+
F3M72	32274+	F3M73	32324+	F3M74	32346+
F3M75	32366+	F3M76	32424+	F3M77	32425+
F3M78	32446+	F3M79	32502+	F3M8	32446+
F3M80	32514+	F3M81	32521+	F3M82	32533+
F3M83	32546+	F3M84	32553+	F3M85	32560+
F3M9	32554+	F3M94	32565+	F3M95	32575+
F3S1	22510+	F3S1A	22525+	F3S18	22532+
F3S1C	22534+	F3S2	22535+	F3S2A	22554+
F3S2B	22555+	F3S3	22557+	F3S3A	22613+
F3S3B	22631+	F3S3C	22632+	F3S4	22634+
F3S4A	22677+	F4E1	12072+	F4E2	12207+
F4L1	11764+	F4L10	12151+	F4L11	12211+
F4L11A	12227+	F4L2	11776+	F4L3	12007+
F4L4	12034+	F4L5	12022+	F4L6	12076+
F4L7	12110+	F4L8	12131+	F4L9	12137+
F4M1	32602+	F4M2	32627+	F4M3	32630+
F4M4	32660+	F4M1	12074+	F5E10	12647+
F5E9	12647+	F5L49	12562+	F5L50	12627+
F5L51	12644+	F5M1	32710+	F5M10	32746+
F5M11	32751+	F5M12	32754+	F5M13	32757+
F5M14	32762+	F5M15	32766+	F5M16	32770+
F5M17	32773+	F5M18	32776+	F5M19	33002+
F5M2	32716+	F5M20	33005+	F5M21	33011+
F5M22	33014+	F5M23	33017+	F5M24	33022+
F5M25	33025+	F5M26	33030+	F5M27	33033+
F5M28	33036+	F5M29	33041+	F5M3	32721+
F5M30	33044+	F5M31	33047+	F5M32	33052+

F5M33	33055+	F5M34	33060+	F5M35	33117+
F5M36	33206+	F5M4	32724+	F5M5	32727+
F5M6	32732+	F5M7	32735+	F5M8	32740+
F5M9	32743+	F5S1	22700+	F5S1A	22710+
F5S1B	22720+	F5S1C	22725+	F5S1D	22735+
F5S1E	22742+	F5S1F	22751+	F5S1G	22756+
F5S1H	22755+	FAM1	5356+	FAM10	15763+
FAM18	17136+	FAM19	17677+	FAM2	6726+
FAM20	22622+	FAM21	21273+	FAM22	21530+
FAM23	22077+	FAM3	11541+	FAM4	12251+
FAM5	12670+	FDONE	456	FIM1	5350+
FIM10	15731+	FIM18	17120+	FIM19	17664+
FIM2	4706+	FIM20	20610+	FIM21	21263+
FIM22	21521+	FIM23	22067+	FIM3	11522+
FIM4	12236+	FIM5	12657+	FIXC	14025+
FIXD	13652+	FLAGS	332	FORT	20563+
FPT1	5003+	FPT10	15713+	FPT18	17112+
FPT19	17656+	FPT2	6700+	FPT20	20576+
FPT21	21255+	FPT22	21513+	FPT23	22061+
FPT3	11514+	FPT4	12230+	FPT5	12651+
FSTART	13101+	FUNCTN	424	FUNC1	4044+
FUNC10	12773+	FUNC18	17013+	FUNC19	17247+
FUNC2	5504+	FUNC20	20136+	FUNC21	21122+
FUNC22	21415+	FUNC23	21772+	FUNC2A	5516+
FUNC3	7100+	FUNC4	11742+	FUNC5	12445+
FVM1	5476+	FVM10	15740+	FVM18	17131+
FVM23	22074+	FVT1	5011+	GET	15264+
GETCAP	15310+	GETIME	15321+	HICORE	15723+
HIDISC	15725+	HILBL	52040500	IIFLAG	15475+
I2FLAG	15476+	I30T44	23422+	I31	243
I33	247	I56174	23421+	IEXT	23412+
IMSG1	23465+	IMSG2	23466+	INP0S1	13060+
INP0S2	13063+	INP0S3	13071+	INP0S4	13076+
INT31	242	INT33	246	INTER	15403+
INTER1	15421+	INTRPT	15474+	INTX1	242
INTX2	246	IOHEAD	15473+	IOSTAT	15340+

ITABLE	13461+	IX1	243	IX2	247
KEY	15500+	LAST	22060+	LENGTH	15726+
LINKS	46	LOCURE	15722+	LDDISC	15724+
LTIME	13	MASK	17646+	MINJS	17652+
MEVTIME	15504+	NEVSEC	15502+	NFFLG	23350+
NORMAL	23126+	NORML1	23131+	NORML2	23137+
BUJFCT	430	OPMODE	15721+	OUT18	17073+
PATERN	15727+	PERR1	13341+	PERR2	13346+
PAGE	11517+	PI2	23353+	PLBT	20204+
PLBT1	20223+	PLBT1A	20232+	PLBT2	20243+
PLBT2A	20256+	PLBT2B	20266+	PLBT3	20330+
PLBT4	20345+	PLBT4A	20361+	PLBT4B	20371+
P01	23203+	P02	23211+	P03	23217+
P04	23230+	P05	23234+	P06	23236+
P07	23242+	P08	23252+	P0P	23416+
POTSCUT	23173+	P0TPIN	23263+	P0TWRD	23352+
PRE1	13006+	PRE2	13013+	PRE3	13015+
PRE4	13046+	PRE5	13052+	PTPN1	23266+
PTN2	13274+	PJT	20416+	RANC1	13770+
RANC2	13774+	RANC3	13775+	RAND	13613+
RANDOM	13772+	READ	15467+	REP1	14723+
REFER	14653+	REPART	454	RESET	15271+
RTRV	14507+	RETURN	440	RL1	415
RUP	416	RMODE	15466+	RKSW	15501+
SAV	13257+	SAVPA	13662+	SCARET	14030+
SDV3	14068+	SDV4	14077+	SDVR3	14113+
SDV4	14102+	SDV5	14111+	SDVR6	14107+
SEED	406	SEGO	14002+	SEGD	13625+
SEED1	13634+	SETCAD	13743+	SETDVR	14032+
SETD1	13644+	SETJPP	22760+	SETUP3	22767+
SETUP	13775+	SLEN	13663+	SLENO	13671+
SLEN1	13675+	SLEN2	13700+	SLEN3	13711+
SLEN4	13721+	SLEN5	13734+	SLEN6	13730+
SPR1	14134+	SPR2	14146+	SPR3	14167+
SPR4	14210+	SPR5	14226+	SPR6	14243+
SPREAD	14117+	SPUR	23377+	STADDR	34000

START	13353+	STATUS	401	STDISC	23346+
STPLAS	15477+	STRT18	17047+	STRT17	20166+
SYSIZE	405	TABLE	34000	TABLE1	15563+
TABLE2	15573+	TABLE3	15603+	TEMP	23330+
TEMPA	23331+	TEMPB	23332+	TEMPC	23333+
TEMPD	23334+	TENS	4	TERM	23065+
TIMEBT	23351+	TIMEBL	15613+	TITLE	33424+
TITLE1	23431+	TMIT	20274+	TMIT1	20312+
U21M1	23511+	U21M10	23640+	U21M11	23652+
U21M12	23660+	U21M13	23661+	U21M14	23674+
U21M2	23516+	U21M3	23525+	U21M4	23537+
U21M5	23550+	U21M4	23556+	U21M7	23571+
U21M8	23607+	U21M9	23627+	JAM	5022+
UNIT	5012+	UNITS	5	UNIT	420
UPF	1773+	UTIME	55	UVM	5341+
UVT	5000+	VAR1	23335+	VAR2	23336+
VAR3	23337+	VAR4	23340+	VAR5	23341+
VAR6	23342+	VAR7	23343+	VAR8	23344+
VAR9	23345+	VERPER	20555+	W200	23305+
W000	23315+	WAIT	23143+	WAIT1	23147+
WAIT2	23143+	WAIT3	23165+	WAIT4	23170+
WF10	14543+	WF11	14547+	WF12	14556+
WRDS	1206	WRD	20604+	WRITE	15470+
XCODE	15471+	XTI2	4737+	XTI3	4755+
X	23327+				

