940 OLDS DIAGOSTIC SYSTEM

UNIT 19 F CHANNEL DISC

SDS 870041-51A May 1969

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* UNIT 19 = F CHANNEL DISC
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* THIS UNIT TESTS THE DISC ON CHANNEL F. THE FUNCTIONS INCLUDED
* IN THIS UNIT ARE:
*
* FUNCTION  1 = DACC DIAGNOSTIC
* FUNCTION  2 = CONTROLLER DIAGNOSTIC WITHOUT DATA TRANSFER
* FUNCTION  3 = CONTROLLER DIAGNOSTIC WITH DATA TRANSFER
* FUNCTION  4 = HEADER VERIFICATION AND ADDRESSING TEST
* FUNCTION  5 = DATA PRODUCTS 5045 DISC FILE DIAGNOSTIC
* FUNCTION 10 = EXERCISER
* FUNCTION 18 = WRITE-PROTECT SWITCH TEST
* FUNCTION 19 = SINGLE INCREMENT VS. TIME PLOTTER
* FUNCTION 20 = MULTIPLE INCREMENT VS. TIME PLOTTER
* FUNCTION 21 = WRITE HEADERS
* FUNCTION 22 = HEADER WRITING TEST
* FUNCTION 23 = SECTOR DUMP
*
* THE THREE UNIT PARAMETERS ARE AS FOLLOWS:
*
* FAW     FUNCTION ACTIVATION WORD. ONE BITS CONTAINED IN THIS
*         WORD CORRESPOND TO FUNCTIONS THAT ARE TO BE ACTIVATED
*         IN THE AUTOMATIC MODE. LEGAL FUNCTIONS ARE FUNCTIONS
*         1, 2, 3, 4, 5, AND 10. FUNCTIONS 18 THROUGH 23 DO NOT
*         NEED TO BE SELECTED, SINCE THEY ARE SPECIAL AND ARE NOT
*         ACTIVATED IN THE AUTOMATIC MODE.
* D00T17  ACTIVATION BITS FOR ARMS 0 THROUGH 17 (OCTAL). BITS IN
*         THE MOST SIGNIFICANT PORTION OF THIS WORD PERMIT THE 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.
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* D20T37  ACTIVATION BITS FOR ARMS 20 THROUGH 37 (OCTAL). THIS VAR-
*         IABLE COMBINES WITH THE VARIABLE D00T17 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 30
*         DISC SYSTEM, D00T17 = 7377740C, D20T37 = 3777400,
*         HIDISC = 777777, AND H0DISC = 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 'DSCSIZ'. THE SIGNIFICANT BITS IN 'DSCSIZ'
*         ARE BITS 3 THROUGH 5.
*
* THERE ARE A FEW CONVENTIONS THAT MUST BE FOLLOWED WHEN USING
* THIS UNIT. THEY ARE AS FOLLOWS:
*
*         CHANGING UNIT VARIABLES = NORMALLY, CHANGING THE UNIT
*         VARIABLES REQUIRES THAT A UNIT TRANSFER (=U 19T) BE EX-
*         ECUTED. HOWEVER, IN MOST CASES, CHANGING 'D00T17' AND
*         'D20T37' DOES NOT REQUIRE RESTARTING THE UNIT, AND A
*         CONTINUE (=T) IS SUFFICIENT. IT SHOULD BE NOTED, HOWEVER,
*         IF THE FILE IS KEYED IN THE EXERCISER WITH A DISC 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 INCORPERATE 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 ONE OF THEM, HE MUST EXECUTE A FUNCTION
*         TRANSFER TO THAT FUNCTION. WHEN THE FUNCTION IS ENTERED,
*         AN IDENTIFICATION MESSAGE IS PRINTED ON THE ERROR DEVICE
*         AND CONTROL RETURNED TO THE KEYBOARD. AT THIS TIME, THE
*         OPERATOR SHOULD SET THE FUNCTION VARIABLES TO HIS RE-
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*         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 EXER-
*         CISER, REGARDLESS OF THE FUNCTION ACTIVATION WORD.
*
*         IF THE DISC IS SOFTWARE WRITE-PROTECTED, FUNCTIONS WHICH
*         DESTROY THE INTEGRITY OF THE DISC WILL BE SKIPPED. THESE
*         ARE FUNCTIONS 3 AND 4. IN ADDITION, THE EXERCISER IS FORCED
*         TO A SPECIAL RUNNING MODE (SEE FUNCTION 10 DESCRIPTION).
*
* FUNCTION 1 - DACC DIAGNOSTIC
* ----------------------------
*
*         THIS FUNCTION TESTS SEVERAL BASIC DACC OPERATIONS WITHOUT
*         THE USE OF AN EXTERNAL DEVISE. TESTED ARE THE INTERLACE
*         REGISTERS, INTERRUPTS, AND SEVERAL SKIPS. IF AN ERROR IS
*         DETECTED, IT IS REPORTED AS SOURCE LOCATION(S) AND LOGIC
*         PAGE(S). AT ERROR HALTS, THE A REGISTER CONTAINS THE INCORRECT
*         DATA, THE B REGISTER THE EXPECTED DATA, AND THE X REGISTER
*         THE ADDRESS OF THE CURRENT OBJECT TEST.
*
*         THERE ARE NO FUNCTION VARIABLES.
*
* FUNCTION 2 - CONTROLLER DIAGNOSTIC WITHOUT DATA TRANSFER
* --------------------------------------------------------
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*         THIS FUNCTION TESTS AS MANY OPERATIONS OF THE DISC FILE
*         CONTROLLER AS POSSIBLE WITHOUT INVOLVING DATA TRANSFER.
*         THE ADDRESS REGISTER, SKIPS (LEGAL AND ILLEGAL), HEADER
*         VERIFICATION, AND POSITION VERIFICATION ARE CHECKED IN
*         THIS FUNCTION.
*
*         BECAUSE OF THE COMPLEXITY OF THE DISC FILE CONTROLLER,
*         AN ATTEMPT IS MADE TO GIVE AS MUCH INFORMATION AS POS-
*         SIBLE WHEN AN ERROR OCCURES. INFORMATION DISPLAYED US-
*         UALLY 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 DELEATED 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 TRANSFERING 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 DELEATED FROM 'D00T17' AND
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*         '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, AND 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 DELEATED 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 5045 DISC FILE DIAGNOSTIC
* ----------------------------------------------------
*
*         THIS FUNCTION CONTAINS OBJECT TESTS WHICH ARE DESIGNED
*         TO LOCATE SOME OF THE PROBLEMS IN THE DATA PRODUCTS
*         5045 DISC FILE. SOME OF THE POSITION DECODER (PDBA)
*         LOGIC IS TESTED, AS WELL AS SOME OF THE TIMING AND
*         THE CLEAR LOGIC.
*
*         OBJECT TESTS USING DISCS DELEATED FROM 'D00T17' AND
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*         '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
*         LOCORE   STARTING CORE ADDRESS. THIS MUST BE GREATER THAN
*                  34000
*         HICORE   ENDING CORE ADDRESS. FOR A 925/930, MAXIMUM CORE
*                  ADDRESS IS 37777. FOR A 940, IT IS 177777.
*         LODISC   STARTING DISC ADDRESS
*         HIDISC   ENDING DISC ADDRESS. MAXIMUM DISC IS 777777 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 'HICORE'
*                  AND 'LOCORE'.
*         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
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*          SIGNIFICANCE:
*
*          0  = FIXED DISC ADDRESSING (USES ADDRESS IN 'LBDISC')
*          1  = SEQUENTIAL DISC ADDRESSING
*          2  = RANDOM DISC ADDRESSING
*          3  = FIXED CORE ADDRESSING (USES ADDRESS IN 'LBCORE')
*          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
*
*          IF BIT 23 IS SET, THE AMOUNT OF TIME TAKEN TO FIND THE SECTOR
*          AFTER THE TRACK HAS BEEN VERIFIED IS MEASURED AND, IF GREATER
*          THAN 52 MILLISEC, AN ERROR MESSAGE WILL BE PRINTED. THE ERROR
*          MESSAGE WILL BE 'HEADER' AND A DISC ADDRESS, INDICATING THE
*          SECTOR WHOSE HEADER WAS MISSED. THERE IS NO ERROR HALT ASSOCI-
*          ATED WITH THIS ERROR. OPERATION WILL CONTINUE WITH BPT 2 RESET.
*
*          IN THE COMPARE MODE, OPERATION IS CONTROLLED BY THE STATUS
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*          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 (340B SECTORS)
*          COMPARE MODE, LENGTH GREATER THAN 7K (160B SECTORS)
*          FIXED LENGTH = 0
*          LBCORE LESS THAN 340000B
*          HICORE GREATER THAN 177777B
*          HICORE GREATER THAN 37777B, NOT 940
*          HICORE MINUS LBCORE LESS THAN 640 (1 SECTOR)
*          HIDISC LESS THAN LBDISC
*          HIDISC GREATER THAN 777777
*          KEY MODE, DISC ADDRESSING NOT SEQUENTIAL, B=1 OR B=2 READ
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*
*         IF AN I/O ERROR IS DETECTED THE INFORMATION DISPLAYED
*         INCLUDES THE FOLLOWING:
*
*         IOSTATUS AN INDICATION OF THE STATE AT THE TIME OF FAILURE
*         ERR FLAG A FLAG USED WITH IOSTATUS TO INDICATE WHICH
*                  ERROR WAS DETECTED
*         TIS--TSB TIME IS AND TIME SHOULD BE FOR POSITIONING TIME
*                  ERRORS
*         SRT DISC STARTING DISC ADDRESS
*         END DISC ENDING (PINNED) DISC ADDRESS
*         SRT CORE STARTING CORE ADDRESS
*         END CORE ENDING (PINNED) CORE ADDRESS
*         BLK LGTH TRANSMIT BLOCK LENGTH
*
*         BITS IN THE WORD IOSTATUS AND ERR FLAG HAVE THE
*         FOLLOWING SIGNIFICANCE:
*
*         0  = FILE NOT ON LINE
*         1  = CONTROLLER NOT READY (500 MS TIMEOUT)
*         2  = CONTROLLER ERROR SET
*         3  = TRACK NOT VERIFIED
*         4  = DISC WRITE PROTECTED (DURING WRITE ATTEMPT)
*         5  = WRITE HEADER SWITCH ON
*         6  = N/A
*         7  = SEEK TIME ERROR
*         8  = N/A
*         9  = SEARCH TIME ERROR
*         10 = N/A
*         11 = N/A
*         12 = CHANNEL ERROR SET
*         13 = CHANNEL ACTIVE (500 MS TIMEOUT)
*         14 = WORD COUNT NOT ZERO
*         15 = I1 NOT RECEIVED
*         16 = I2 NOT RECEIVED
*         17 = N/A
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*         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:
*
*         WRDIS   BAD DATA
*         WRDSB   GOOD DATA
*         DISC ADD DISC ADDRESS OF BAD DATA
*         CORE ADD CORE ADDRESS OF BAD DATA
*         STRTDISC 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, WRDIS IS THE BUFFER 2 WORD
*         AND WRDSB 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 = 11136527).
*
*         IN ORDER TO RESET THE SEQUENTIAL DISC POINTER, TYPE
*         =O 15236T. THIS POINTER IS NOT RESET BY TYPING =F 10T. THE
*         POINTER WILL BE RESET AND CONTROL RETURNED TO THE KEYBOARD.
*         IF =T IS TYPED, A FUNCTION 10 TRANSFER WILL BE EXECUTED.
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*
*         ALL WRITE OPERATIONS ARE DONE IN THE SECTOR MODE, AND ALL
*         READ OPERATIONS ARE IN THE CHAIN MODE.
*
* FUNCTION 18 = WRITE PROTECT SWITCH TEST
* ---------------------------------------
*
*         THIS SPECIAL FUNCTION TESTS THE STATUS OF THE WRITE=
*         PROTECT SWITCHES BY POSITIONING THE ARMS TO POSITION 0
*         AND THEN TESTING THE SWITCHES. IF A DISC IS FOUND TO
*         BE WRITE=PROTECTED, THE MESSAGE 'WRITE PROTECTED = DISC XX'
*         WILL BE PRINTED ON THE ERROR DEVICE.
*
*         THERE ARE TWO FUNCTION VARIABLES, START AND END. THESE
*         ARE THE STARTING AND ENDING ARM NUMBERS RESPECTIVELY,
*         WHERE THE NUMBERS RANGE FROM 0 TO 37 OCTAL. THE
*         FUNCTION WILL CONTINUE TO RUN UNTIL BREAKPOINT 4 IS
*         TOGGLED.
*
*         DISCS DELEATED FROM THE VARIABLES 'D00T17' AND 'D20T37'
*         WILL BE SKIPPED.
*
* FUNCTION 19 = SINGLE INCREMENT VS. TIME PLOTTER
* -----------------------------------------------
*
*         THIS SPECIAL FUNCTION TIMES THE ARM MOVEMENTS FROM POSI=
*         TION 0 TO POSITION 1 TO POSITION 2 ETC. ENDING AT POSI=
*         TION 63. AT THIS POINT, THE MOTION IS REVERSED AND THE
*         TIME IS MEASURED FROM POSITION 63 TO POSITION 62 TO POSI=
*         TION 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
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*         DISCS WILL BE SEQUENTIALLY TESTED STARTING AT 'START'
*         AND ENDING WITH 'END', THE TWO FUNCTION VARIABLES. THESE
*         VARIABLES RANGE FROM 0 TO 37 OCTAL.
*
*         IF A DISC DOES NOT COME READY WITHIN 500 MILLISEC, AN
*         ERROR MESSAGE IS OUTPUT AND THE TEST ABORTED.
*
*         THE GRAPH IS SCALED AS FOLLOWS:
*                 HORIZONTAL SCALE = ENDING ARM POSITION
*                 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 FUNCTION TIMES ALL POSSIBLE COMBINATIONS OF
*         1, 2, 3, ... 64 POSITIONS MOVED AND RECORDS THE MAXI=
*         MUM AND MINIMUM TIMES FOR EACH INCREMENT VALUE ON A GRAPH.
*         DISCS ARE TESTED SEQUENTIALLY FROM 'START' TO 'END', THE
*         TWO FUNCTION VARIABLES. THESE VARIABLES RANGE FROM 0 TO
*         37 OCTAL. TIMING FOR EACH ARM IS APPROXIMATELY 18 MINUTES
*         PER ARM WHEN THE GRAPH IS OUTPUT TO THE LINE PRINTER.
*
*         THE GRAPH IS SCALED AS FOLLOWS:
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```
*                  HORIZONTAL SCALE = NUMBER OF POSITIONS MOVED
*                  VERTICLE SCALE   = MAX AND MIN POSITIONING TIMES
*                                     IN MILLISEC.
*
*
*        TYPICAL POSITIONING TIMES RANGE FROM 140 TO 350 MILLISEC,
*        DEPENDING UPON THE AMOUNT OF POSITIONS MOVED.
*
*        IF THE DISC DOES NOT COME READY WITHIN 500 MILLISEC, AN
*        ERROR MESSAGE IS OUTPUT AND THE DISC IS ABORTED.
*
* FUNCTION 21 = WRITE HEADER
* --------------------------
*
*        THIS SPECIAL FUNCTION WILL WRITE THE HEADERS ON SEQUENTIAL
*        ADDRESSES ACCORDING TO THE VARIABLES 'START' AND 'END'.
*        THESE VARIABLES ARE IN THE FORM OF DISC PAT WORDS. 'START'
*        SHOULD HAVE AND ADDRESS STARTING AT SECTOR 0, HEAD PAIR 0.
*        I.E. 777600 IS DISC 37, TRACK 77, HEAD PAIR 0, SECTOR 0.
*
* FUNCTION 22 = WRITE HEADER TEST
* -------------------------------
*
*        THE PURPOSE OF THIS FUNCTION IS TO PROVIDE THE OPERATOR
*        WITH A TOOL FOR USE IN LOCATING PROBLEMS ENCOUNTERED IN
*        HEADER WRITING. NO ATTEMPT IS MADE TO DIAGNOSE ERRORS,
*        JUST TO PROVIDE A PROGRAM FOR USE WHILE SCOPING.
*
*        THE FUNCTION VARIABLES ARE 'START' AND 'END', WHICH ARE
*        THE STARTING AND ENDING DISC ADDRESSES IN THE FORM OF
*        DISC PAT WORDS. THE SAME VARIABLES WILL BE USED UNTIL
*        BREAKPOINT 1 IS RESET, AT WHICH POINT THE CONTROL WILL
*        REVERT TO THE KEYBOARD. THE SECTOR COUNT MUST RANGE FROM
*        1 TO 128.
*
* FUNCTION 23 = SECTOR DUMP
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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.
*
*        THE ONLY VARIABLE IS 'SECTOR', WHICH IS THE DISC ADDRESS
*        TO BE DUMPED.
*
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DISCF  TAP=3,0     04/25  20:00   PAGE 15

             00010         OCTAL
                   *
                   *       EQU'S
                   *
        0 01 00000 ONE     OPD     01000000,1
        0 02 00000 TWO     OPD     02000000,1
        0 03 00000 THREE   OPD     03000000,1
        0 04 00000 FOUR    OPD     04000000,1
        0 05 00000 FIVE    OPD     05000000,1
        0 06 00000 SIX     OPD     06000000,1
        0 07 00000 SEVEN   OPD     07000000,1
        0 10 00000 EIGHT   OPD     01000000,1
                   *
          00000242 INT31   EQU     242
          00000243 I31     EQU     243
          00000246 INT33   EQU     246
          00000247 I33     EQU     247
          00000310 INT64   EQU     310
          00000311 I64     EQU     311
          00000312 INT65   EQU     312
          00000313 I65     EQU     313
          00000314 INT66   EQU     314
          00000315 I66     EQU     315
          00000316 INT67   EQU     316
          00000317 I67     EQU     317
          00000332 FLAGS   EQU     332
          00000401 STATUS  EQU     401
          00000404 DSCSIZ  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 OBJECT  EQU     430
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DISCF  TAP=3,0     04/25  20:00   PAGE 16

          00000434 END     EQU     434
          00000440 RETURN  EQU     440
          00000450 DIVERT  EQU     450
          00000452 DONE    EQU     452
          00000454 REPORT  EQU     454
          00000456 PDONE   EQU     456
          00000460 ERROR   EQU     460
          00034000 STADDR  EQU     34000
                   DISCF   IDENT
          00000314 INTX1   EQU     INT66
          00000316 INTX2   EQU     INT67
          00000315 IX1     EQU     I66
          00000317 IX2     EQU     I67
                   *
                   *       OPDS FOR 925 COMPATABILITY
                   *
        0 46 10012 BAC     OPD     046100012,2
        0 46 20005 ABC     OPD     046200005,2
        0 46 30003 CLR     OPD     046300003,2
                   *
                   *       UNCONDITIONAL MACRO DEFINITIONS
                   *
                   DSCC    MACRO   D
                           EOD     100             DISCONNECT CHANNEL
                           ENDM
                   ALCC    MACRO   D
                           EOD*    10100           ALERT CHANNEL
                           ENDM
                   ASCC    MACRO   D
                           EOD     12100           ALERT TO PIN CHANNEL ADDRESS
                           ENDM
                   TOPC    MACRO   D
                           EOD     14100           TERMINATE OUTPUT
                           ENDM
                   CATC    MACRO   D
                           SKS*    14100           CHANNEL ACTIVE TEST
```

```
                ENDM
CETC            MACR@   D
                SKS*    11100           CHANNEL ERR@R TEST
                ENDM
CITC            MACR@   D
                SKS*    10500           CHANNEL INTER=REC@RD TEST
                ENDM
CZTC            MACR@   D
                SKS*    12100           CHANNEL ZER@ W@RD C@UNT TEST
                ENDM
D@LT            MACR@   D
                SKS*    10326           FILE @N LINE TEST
                ENDM
DFRT            MACR@   D
                SKS*    10126           DISC FILE READY TEST
                ENDM
DFET            MACR@   D
                SKS*    11126           DISC FILE ERR@R TEST
                ENDM
DFVT            MACR@   D
                SKS*    12126           TRACK VERIFIED TEST
                ENDM
DWPT            MACR@   D
                SKS*    13126           DISC WRITE PR@TECT TEST
                ENDM
DWHT            MACR@   D
                SKS*    14126           WRITE HEADER TEST
                ENDM
ALDF            MACR@   D
                E@D     10126           ALERT DISC FILE
                ENDM
CLDF            MACR@   D
                E@D     10326           CLEAR FILE
                ENDM
WDFC            MACR@   D
                E@D     2766            WRITE DISC FILE = CHAIN
```



```
                ENDM
WDFS            MACR@   D
                E@D     3766            WRITE DISC FILE = SECT@R
                ENDM
RDFC            MACR@   D
                E@D     2726            READ DISC FILE = CHAIN
                ENDM
RDFS            MACR@   D
                E@D     3726            READ DISC FILE = SECT@R
                ENDM
DE@M            MACR@   D
                E@D     2140            DUMMY E@D
                ENDM
XE@M            MACR@   D
                E@D     D(1)            EXTENDED M@DE E@D
                ENDM
```

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



```
04036  0 46 00014           XAB
04037  0 16 33276           MRG     =177400
04040  0 46 00014           XAB
04041  0 36 04770           STB     D20T37
04042  0 43 00420           BRM     UNIT
04043  0 20 04761           NOP     UPT             UNIT PARAMETER TABLES
```

```
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                   *
                   *
                   *      FUNCTION 1 = DACC TEST
                   *
                   *
04044  0 43 00424  FUNC1  BRM     FUNCTN          FUNCTION LINK
04045  0 20 04771         NOP     FPT1            FUNCTION PARAMETER TABLES
                   *
                   *
                   * F10B01 NO BIT 13 EOR OR 14 ZWC
                   * BIT 12 SELECT ARM INTERRUPTS
                   *
                   *
04046  0 43 00430         BRM     OBJECT
04047  0 43 00440         BRM     RETURN          TO INTERRUPT LINK
04050  0 20 04062         NOP     F1001A
04051  0 06 00100         EOD     100             DISCONNECT CHANNEL
04052  0 06*10100         EOD*    10100           ALERT CHANNEL
04053  0 13 33772         POT     *0
04054  0 06 14200         EOD     14200           EXTENDED MODE EOD
04055  0 71 33300         LDX     *077765115      10 MS DELAY TIME FOR POSSIBLE INTERRUPT
04056  0 02 20002         EIR
04057  0 41 04057         BRX     *               COUNT OUT TIMER
04060  0 02 20004         DIR
04061  0 01 04072         BRU     F1001D          OK NO INTERRUPT OCCURED
04062  0 02 20004  F1001A DIR
04063  0 46 00001         CLA
04064  0 76 00450         LDA     DIVERT          CLEAR INTERRUPT LINK
04065  0 75 33301         LDB     *37777
04066  0 70 33302         SKM     *IX1            TEST FOR CORRECT INTERRUPT
04067  0 01 04076         BRU     F1001B
04070  0 43 00460         BRM     ERROR
04071  0 20 23667         NOP     M1001A          INTERRUPT MESSAGE
04072  0 53 23330  F1001D SKN     NFFLG
04073  0 01*04075         BRU*    *+2
04074  0 11 04075         BRI     *+1
```

```
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04075  0 20 04100         NOP     F1001C
04076  0 43 23357  F1001B BRM     SPUR
04077  0 20 33303         NOP     *66
04100  0 06 00100         EOD     100             DISCONNECT CHANNEL
04101  0 43 00434         BRM     END
                   *
                   *
                   * F10B02 BIT 13 EOR AND 14 ZWC
                   * BIT 12 SELECT ARM INTERRUPTS
                   *
                   *
04102  0 43 00430         BRM     OBJECT
04103  0 43 00440         BRM     RETURN
04104  0 20 04116         NOP     F1002A
04105  0 06 00100         EOD     100             DISCONNECT CHANNEL
04106  0 06*10100         EOD*    10100           ALERT CHANNEL
04107  0 13 33772         POT     *0
04110  0 06 17200         EOD     17200           EXTENDED MODE EOD
04111  0 71 33300         LDX     *077765115      10 MS DELAY TIME FOR POSSIBLE INTERRUPT
04112  0 02 20002         EIR
04113  0 41 04113         BRX     *               COUNT OUT TIMER
04114  0 02 20004         DIR
04115  0 01 04126         BRU     F1002D          NO INTERRUPT OCCURED
04116  0 02 20004  F1002A DIR
04117  0 46 00001         CLA
04120  0 76 00450         LDA     DIVERT
04121  0 75 33301         LDB     *37777
04122  0 70 33302         SKM     *IX1
04123  0 01 04132         BRU     F1002B
04124  0 43 00460         BRM     ERROR           INTERRUPT ERROR MESSAGE
04125  0 20 23667         NOP     M1001A
04126  0 53 23330  F1002D SKN     NFFLG
04127  0 01*04131         BRU*    *+2
04130  0 11 04131         BRI     *+1
04131  0 20 04134         NOP     F1002C
04132  0 43 23357  F1002B BRM     SPUR
```

```
04133  0 20 33303          NOP     *66
04134  0 06 00100          EOD     100             DISCONNECT CHANNEL
04135  0 43 00434          BRM     END
                    *
                    *
                    * F10803 CHANNEL SKS ACTIVE TEST
                    *
                    *
04136  0 43 00430          BRM     OBJECT
04137  0 43 00440          BRM     RETURN
04140  0 20 23351          NOP     ENTER           SPURIOUS INTERRUPT CONTROL
04141  0 06 00100          EOD     100             DISCONNECT CHANNEL
04142  0 40*14100          SKS*    14100           CHANNEL ACTIVE TEST
04143  0 01 04147          BRU     F1003A          NOT ACTIVE ERROR
04144  0 06 14100          EOD     14100           TERMINATE OUTPUT
04145  0 40*14100          SKS*    14100           CHANNEL ACTIVE TEST
04146  0 01 04152          BRU     F1003B          ACTIVE TEST OK
04147  0 43 00460 F1003A   BRM     ERROR
04150  0 20 23705          NOP     *1003A          ERROR MESSAGE
04151  0 06 00100          EOD     100             DISCONNECT CHANNEL
04152  0 43 00434 F1003B   BRM     END             EXIT TEST
                    *
                    *
                    * F10804       TEST ZERO COUNT SKS
                    *
                    *
04153  0 43 00430          BRM     OBJECT
04154  0 43 00440          BRM     RETURN          INTERRUPT LINK
04155  0 20 23351          NOP     ENTER
04156  0 06 00100          EOD     100             DISCONNECT CHANNEL
04157  0 06*10100          EOD*    10100           ALERT CHANNEL
04160  0 06 14200          EOD     14200           EXTENDED MODE EOD
04161  0 13 33772          POT     *0
04162  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
04163  0 43 00460          BRM     ERROR
04164  0 20 23715          NOP     *1004A          SKS OR COUNT FLIP-FLOP FAILURE
```



```
04165  0 43 00434          BRM     END             EXIT TEST
                    *
                    *
                    * F10805 TEST ADDRESS BIT ZA14 OR C23
                    *
                    *
04166  0 43 00430          BRM     OBJECT
04167  0 43 22202          BRM     F1S1            PERFORM TEST
04170    00020001          DATA    1
04171    00020001          DATA    1
04172  0 06 14200          EOD     14200           EXTENDED MODE EOD
04173  0 20 23742          NOP     *1005A
                    *
                    *
                    * F10806 TEST ADDRESS BIT ZA13 OR C22
                    *
                    *
04174  0 43 00430          BRM     OBJECT
04175  0 43 22202          BRM     F1S1            PERFORM TEST
04176    00040002          DATA    2
04177    00040002          DATA    2
04200  0 06 14200          EOD     14200           EXTENDED MODE EOD
04201  0 20 23747          NOP     *1006A
                    *
                    *
                    * F10807 TEST ADDRESS BIT ZA12 OR C21
                    *
                    *
04202  0 43 00430          BRM     OBJECT
04203  0 43 22202          BRM     F1S1            PERFORM TEST
04204    00001004          DATA    4
04205    00001004          DATA    4
04206  0 06 14200          EOD     14200           EXTENDED MODE EOD
04207  0 20 23756          NOP     *1007A
                    *
                    *
```

```
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                   * F18B08 TEST ADDRESS BIT ZA11 OR C20
                   *
                   *
04210  0 43 00430         BRM     OBJECT
04211  0 43 22202         BRM     F1S1            PERFORM TEST
04212    00000010         DATA    10
04213    00000010         DATA    10
04214  0 06 14200         EOD     14200           EXTENDED MODE EOD
04215  0 20 23765         NOP     M1008A
                   *
                   *
                   * F18B09 TEST ADDRESS BIT ZA10 OR C19
                   *
                   *
04216  0 43 00430         BRM     OBJECT
04217  0 43 22202         BRM     F1S1            PERFORM TEST
04220    00000020         DATA    20
04221    00000020         DATA    20
04222  0 06 14200         EOD     14200           EXTENDED MODE EOD
04223  0 20 23774         NOP     M1009A
                   *
                   *
                   * F18B10 TEST ADDRESS BIT ZA09 OR C18
                   *
                   *
04224  0 43 00430         BRM     OBJECT
04225  0 43 22202         BRM     F1S1            PERFORM TEST
04226    00000040         DATA    40
04227    00000040         DATA    40
04230  0 06 14200         EOD     14200           EXTENDED MODE EOD
04231  0 20 24003         NOP     M1010A
                   *
                   *
                   * F18B11 TEST ADDRESS BIT ZA08 OR C17
                   *
                   *
```

```
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04232  0 43 00430         BRM     OBJECT
04233  0 43 22202         BRM     F1S1            PERFORM TEST
04234    00000100         DATA    100
04235    00000100         DATA    100
04236  0 06 14200         EOD     14200           EXTENDED MODE EOD
04237  0 20 24012         NOP     M1011A
                   *
                   *
                   * F18B12 TEST ADDRESS BIT ZA07 OR C16
                   *
                   *
04240  0 43 00430         BRM     OBJECT
04241  0 43 22202         BRM     F1S1            PERFORM TEST
04242    00000200         DATA    200
04243    00000200         DATA    200
04244  0 06 14200         EOD     14200           EXTENDED MODE EOD
04245  0 20 24021         NOP     M1012A
                   *
                   *
                   * F18B13 TEST ADDRESS BIT ZA06 OR C15
                   *
                   *
04246  0 43 00430         BRM     OBJECT
04247  0 43 22202         BRM     F1S1            PERFORM TEST
04250    00000400         DATA    400
04251    00000400         DATA    400
04252  0 06 14200         EOD     14200           EXTENDED MODE EOD
04253  0 20 24030         NOP     M1013A
                   *
                   *
                   * F18B14 TEST ADDRESS BIT ZA05 OR C14
                   *
                   *
04254  0 43 00430         BRM     OBJECT
04255  0 43 22202         BRM     F1S1            PERFORM TEST
04256    00001000         DATA    1000
```

```
04257    00001000          DATA    1000
04260  0 06 14200          EOD     14200          EXTENDED MODE EOD
04261  0 20 24037          NOP     *1014A
                    *
                    *
                    * F10B15 TEST ADDRESS BIT ZA04 OR C13
                    *
                    *
04262  0 43 00430          BRM     OBJECT
04263  0 43 22202          BRM     F1S1           PERFORM TEST
04264    00002000          DATA    2000
04265    00002000          DATA    2000
04266  0 06 14200          EOD     14200          EXTENDED MODE EOD
04267  0 20 24046          NOP     *1015A
                    *
                    *
                    * F10B16 TEST ADDRESS BIT ZA03 OR C12
                    *
                    *
04270  0 43 00430          BRM     OBJECT
04271  0 43 22202          BRM     F1S1           PERFORM TEST
04272    00004000          DATA    4000
04273    00004000          DATA    4000
04274  0 06 14200          EOD     14200          EXTENDED MODE EOD
04275  0 20 24055          NOP     *1016A
                    *
                    *
                    * F10B17 TEST ADDRESS BIT ZA02 OR C11
                    *
                    *
04276  0 43 00430          BRM     OBJECT
04277  0 43 22202          BRM     F1S1           PERFORM TEST
04300    00010000          DATA    10000
04301    00010000          DATA    10000
04302  0 06 14200          EOD     14200          EXTENDED MODE EOD
04303  0 20 24065          NOP     *1017A
```



```
                    *
                    *
                    * F10B18 TEST ADDRESS BIT ZA01 OR C10
                    *
                    *
04304  0 43 00430          BRM     OBJECT
04305  0 43 22202          BRM     F1S1           PERFORM TEST
04306    00020000          DATA    20000
04307    00020000          DATA    20000
04310  0 06 14200          EOD     14200          EXTENDED MODE EOD
04311  0 20 24075          NOP     *1018A
                    *
                    *
                    * F10B19 TEST ADDRESS BIT ZA0 OR C18
                    *
                    *
04312  0 43 00430          BRM     OBJECT
04313  0 43 22202          BRM     F1S1           PERFORM TEST
04314    00040000          DATA    40000
04315    00000000          DATA    0
04316  0 06 14240          EOD     14240          EXTENDED MODE EOD
04317  0 20 24105          NOP     *1019A
                    *
                    *
                    * F10B20 TEST ADDRESS BIT ZAC0 OR C17
                    *
                    *
04320  0 43 00430          BRM     OBJECT
04321  0 43 22202          BRM     F1S1           PERFORM TEST
04322    00100000          DATA    100000
04323    00000000          DATA    0
04324  0 06 14300          EOD     14300          EXTENDED MODE EOD
04325  0 20 24116          NOP     *1020A
                    *
                    *
                    * F10B21 TEST WORD COUNT BIT ZC14 OR C09
```

```
                    *
                    *
04326  0 43 00430           BRM     OBJECT
04327  0 43 22243           BRM     F1S2            PERFORM TEST
04330  0 06 14200           EOD     14200           EXTENDED MODE EOD
04331    00040000           DATA    40000
04332  0 20 24130           NOP     M1023A
                    *
                    *
                    * F10822 TEST WORD COUNT BIT ZC13 OR C08
                    *
                    *
04333  0 43 00430           BRM     OBJECT
04334  0 43 22243           BRM     F1S2            PERFORM TEST
04335  0 06 14200           EOD     14200           EXTENDED MODE EOD
04336    00100000           DATA    100000
04337  0 20 24137           NOP     M1024A
                    *
                    *
                    * F10823 TEST WORD COUNT BIT ZC12 OR C07
                    *
                    *
04340  0 43 00430           BRM     OBJECT
04341  0 43 22243           BRM     F1S2            PERFORM TEST
04342  0 06 14200           EOD     14200           EXTENDED MODE EOD
04343    00200000           DATA    200000
04344  0 20 24146           NOP     M1025A
                    *
                    *
                    * F10824 TEST WORD COUNT BIT ZC11 OR C06
                    *
                    *
04345  0 43 00430           BRM     OBJECT
04346  0 43 22243           BRM     F1S2            PERFORM TEST
04347  0 06 14200           EOD     14200           EXTENDED MODE EOD
04350    00400000           DATA    400000
```



```
04351  0 20 24155           NOP     M1026A
                    *
                    *
                    * F10825 TEST WORD COUNT BIT ZC10 OR C05
                    *
                    *
04352  0 43 00430           BRM     OBJECT
04353  0 43 22243           BRM     F1S2            PERFORM TEST
04354  0 06 14200           EOD     14200           EXTENDED MODE EOD
04355    01000000           DATA    1000000
04356  0 20 24164           NOP     M1027A
                    *
                    *
                    * F10826 TEST WORD COUNT BIT ZC09 OR C04
                    *
                    *
04357  0 43 00430           BRM     OBJECT
04360  0 43 22243           BRM     F1S2            PERFORM TEST
04361  0 06 14200           EOD     14200           EXTENDED MODE EOD
04362    02000000           DATA    2000000
04363  0 20 24173           NOP     M1028A
                    *
                    *
                    * F10827 TEST WORD COUNT BIT ZC08 OR C03
                    *
                    *
04364  0 43 00430           BRM     OBJECT
04365  0 43 22243           BRM     F1S2            PERFORM TEST
04366  0 06 14200           EOD     14200           EXTENDED MODE EOD
04367    04000000           DATA    4000000
04370  0 20 24202           NOP     M1029A
                    *
                    *
                    * F10828 TEST WORD COUNT BIT ZC07 OR C02
                    *
                    *
```

```
04371  0 43 00430          BRM     9BJECT
04372  0 43 22243          BRM     F1S2            PERF8RM TEST
04373  0 06 14200          E8D     14200           EXTENDED M8DE E8D
04374    10000000          DATA    10000000
04375  0 20 24211          N8P     M1030A
                    *
                    *
                    * F10829 TEST 9RD C8UNT BIT ZC06 8R C01
                    *
                    *
04376  0 43 00430          BRM     9BJECT
04377  0 43 22243          BRM     F1S2            PERF8RM TEST
04400  0 06 14200          E8D     14200           EXTENDED M8DE E8D
04401    20000000          DATA    20000000
04402  0 20 24220          N8P     M1031A
                    *
                    *
                    * F10830 TEST 4RD C8UNT BIT ZC05 8R C00
                    *
                    *
04403  0 43 00430          BRM     9BJECT
04404  0 43 22243          BRM     F1S2            PERF8RM TEST
04405  0 06 14200          E8D     14200           EXTENDED M8DE E8D
04406    40000000          DATA    40000000
04407  0 20 24227          N8P     M1032A
                    *
                    *
                    * F10833 TEST 8RD C8UNT BIT ZC04 8R C23
                    *
                    *
04410  0 43 00430          BRM     9BJECT
04411  0 43 22243          BRM     F1S2            PERF8RM TEST
04412  0 06 14201          E8D     14201           EXTENDED M8DE E8D
04413    00000000          DATA    0
04414  0 20 24236          N8P     M1033A
                    *
```



```
                    *
                    * F10834 TEST 4RD C8UNT BIT ZC03 8R C22
                    *
                    *
04415  0 43 00430          BRM     9BJECT
04416  0 43 22243          BRM     F1S2            PERF8RM TEST
04417  0 06 14202          E8D     14202           EXTENDED M8DE E8D
04420    00000000          DATA    0
04421  0 20 24246          N8P     M1034A
                    *
                    *
                    * F10835 TEST 2RD C8UNT BIT ZC02 8R C21
                    *
                    *
04422  0 43 00430          BRM     9BJECT
04423  0 43 22243          BRM     F1S2            PERF8RM TEST
04424  0 06 14204          E8D     14204           EXTENDED M8DE E8D
04425    00000000          DATA    0
04426  0 20 24256          N8P     M1035A
                    *
                    *
                    * F10836 TEST 1RD C8UNT BIT ZC01 8R C21
                    *
                    *
04427  0 43 00430          BRM     9BJECT
04430  0 43 22243          BRM     F1S2            PERF8RM TEST
04431  0 06 14210          E8D     14210           EXTENDED M8DE E8D
04432    00000000          DATA    0
04433  0 20 24266          N8P     M1036A
                    *
                    *
                    * F10837 TEST 0RD C8UNT BIT ZC00 8R C19
                    *
                    *
04434  0 43 00430          BRM     9BJECT
04435  0 43 22243          BRM     F1S2            PERF8RM TEST
```

```
04436  0 06 14220          EOD     14220           EXTENDED MODE EOD
04437    00000000          DATA    0
04440  0 20 24276          NOP     M1037A
                    *
                    *
                    * F10B38 INTERLACE CARRY TEST ZA14 TO ZA13
                    *
                    *
04441  0 43 00430          BRM     OBJECT
04442  0 43 00440          BRM     RETURN
04443  0 20 23351          NOP     ENTER
04444  0 76 15432          LDA     BIT23             ZA14
04445  0 43 04622          BRM     INKMNT
04446  0 43 00460          BRM     ERROR
04447  0 20 23740          NOP     M1005A          LOGIC IN ERROR
04450  0 43 00434          BRM     END
                    *
                    *
                    * F10B39 INTERLACE CARRY TEST ZA13 TO ZA12
                    *
                    *
04451  0 43 00430          BRM     OBJECT
04452  0 43 00440          BRM     RETURN
04453  0 20 23351          NOP     ENTER
04454  0 76 33277          LDA     *03             ZA13
04455  0 43 04622          BRM     INKMNT
04456  0 43 00460          BRM     ERROR
04457  0 20 23747          NOP     M1006A          LOGIC IN ERROR
04460  0 43 00434          BRM     END
                    *
                    *
                    * F10B40 INTERLACE CARRY TEST ZA12 TO ZA11
                    *
                    *
04461  0 43 00430          BRM     OBJECT
04462  0 43 00440          BRM     RETURN
```



```
04463  0 20 23351          NOP     ENTER
04464  0 76 33274          LDA     *07             ZA12
04465  0 43 04622          BRM     INKMNT
04466  0 43 00460          BRM     ERROR
04467  0 20 23756          NOP     M1007A          LOGIC IN ERROR
04470  0 43 00434          BRM     END
                    *
                    *
                    * F10B41 INTERLACE CARRY TEST ZA11 TO ZA10
                    *
                    *
04471  0 43 00430          BRM     OBJECT
04472  0 43 00440          BRM     RETURN
04473  0 20 23351          NOP     ENTER
04474  0 76 33304          LDA     *017            ZA11
04475  0 43 04622          BRM     INKMNT
04476  0 43 00460          BRM     ERROR
04477  0 20 23765          NOP     M1008A          LOGIC IN ERROR
04500  0 43 00434          BRM     END
                    *
                    *
                    * F10B42 INTERLACE CARRY TEST ZA10 TO ZA09
                    *
                    *
04501  0 43 00430          BRM     OBJECT
04502  0 43 00440          BRM     RETURN
04503  0 20 23351          NOP     ENTER
04504  0 76 33305          LDA     *037            ZA10
04505  0 43 04622          BRM     INKMNT
04506  0 43 00460          BRM     ERROR
04507  0 20 23774          NOP     M1009A          LOGIC IN ERROR
04510  0 43 00434          BRM     END
                    *
                    *
                    * F10B43 INTERLACE CARRY TEST ZA09 TO ZA08
                    *
```

```
                    *
04511  0 43 00430           BRM     OBJECT
04512  0 43 00440           BRM     RETURN
04513  0 20 23351           NOP     ENTER
04514  0 76 33306           LDA     •077            ZA09
04515  0 43 04422           BRM     INKMNT
04516  0 43 00460           BRM     ERROR
04517  0 20 24003           NOP     M1010A          LOGIC IN ERROR
04520  0 43 00434           BRM     END
                    *
                    *
                    * F19844 INTERLACE CARRY TEST ZA08 TO ZA07
                    *
                    *
04521  0 43 00430           BRM     OBJECT
04522  0 43 00440           BRM     RETURN
04523  0 20 23351           NOP     ENTER
04524  0 76 33307           LDA     •0177           ZA08
04525  0 43 04422           BRM     INKMNT
04526  0 43 00460           BRM     ERROR
04527  0 20 24012           NOP     M1011A          LOGIC IN ERROR
04530  0 43 00434           BRM     END
                    *
                    *
                    * F19845 INTERLACE CARRY TEST ZA07 TO ZA06
                    *
                    *
04531  0 43 00430           BRM     OBJECT
04532  0 43 00440           BRM     RETURN
04533  0 20 23351           NOP     ENTER
04534  0 76 33310           LDA     •0377           ZA07
04535  0 43 04422           BRM     INKMNT
04536  0 43 00460           BRM     ERROR
04537  0 20 24021           NOP     M1012A          LOGIC IN ERROR
04540  0 43 00434           BRM     END
                    *
```



```
                    *
                    * F19846 INTERLACE CARRY TEST ZA06 TO ZA05
                    *
                    *
04541  0 43 00430           BRM     OBJECT
04542  0 43 00440           BRM     RETURN
04543  0 20 23351           NOP     ENTER
04544  0 76 33311           LDA     •0777           ZA06
04545  0 43 04422           BRM     INKMNT
04546  0 43 00460           BRM     ERROR
04547  0 20 24030           NOP     M1013A          LOGIC IN ERROR
04550  0 43 00434           BRM     END
                    *
                    *
                    * F19847 INTERLACE CARRY TEST ZA05 TO ZA04
                    *
                    *
04551  0 43 00430           BRM     OBJECT
04552  0 43 00440           BRM     RETURN
04553  0 20 23351           NOP     ENTER
04554  0 76 33312           LDA     •01777          ZA05
04555  0 43 04422           BRM     INKMNT
04556  0 43 00460           BRM     ERROR
04557  0 20 24037           NOP     M1014A          LOGIC IN ERROR
04560  0 43 00434           BRM     END
                    *
                    *
                    * F19848 INTERLACE CARRY TEST ZA04 TO ZA03
                    *
                    *
04561  0 43 00430           BRM     OBJECT
04562  0 43 00440           BRM     RETURN
04563  0 20 23351           NOP     ENTER
04564  0 76 33313           LDA     •03777          ZA04
04565  0 43 04422           BRM     INKMNT
04566  0 43 00460           BRM     ERROR
```

```
04567  0 20 24046          NOP     M1015A          LOGIC IN ERROR
04570  0 43 00434          BRM     END
                       *
                       *
                       * F10849 INTERLACE CARRY TEST ZA03 TO ZA02
                       *
                       *
04571  0 43 00430          BRM     OBJECT
04572  0 43 00440          BRM     RETURN
04573  0 20 23351          NOP     ENTER
04574  0 76 33314          LDA     #07777          ZA03
04575  0 43 04422          BRM     INKMNT
04576  0 43 00460          BRM     ERROR
04577  0 20 24055          NOP     M1016A          LOGIC IN ERROR
04600  0 43 00434          BRM     END
                       *
                       *
                       * F10850 INTERLACE CARRY TEST ZA02 TO ZA01
                       *
                       *
04601  0 43 00430          BRM     OBJECT
04602  0 43 00440          BRM     RETURN
04603  0 20 23351          NOP     ENTER
04604  0 76 33315          LDA     #17777          ZA02
04605  0 43 04422          BRM     INKMNT
04606  0 43 00460          BRM     ERROR
04607  0 20 24065          NOP     M1017A          LOGIC IN ERROR
04610  0 43 00434          BRM     END
                       *
                       *
                       * F10851 INTERLACE CARRY TEST ZA01 TO ZA0
                       *
                       *
04611  0 43 00430          BRM     OBJECT
04612  0 43 00440          BRM     RETURN
04613  0 20 23351          NOP     ENTER
```



```
04614  0 76 33301          LDA     #37777          ZA01
04615  0 43 04422          BRM     INKMNT
04616  0 43 00460          BRM     ERROR
04617  0 20 24075          NOP     M1018A          LOGIC IN ERROR
04620  0 43 00434          BRM     END
04621  0 01 04446          BRU     END1
                       *
                       *
                       * SUBROUTINE INKMNT
                       *
                       *
04622  0 00 00000  INKMNT  ZRO     0
04623  0 16 15414          MRG     BIT9
04624  0 35 23332          STA     P8T+RD
04625  0 17 15414          EOR     BIT9
04626  0 55 15432          ADD     BIT23
04627  0 06*10100          EOD*    10100           ALERT CHANNEL
04630  0 06 14200          EOD     14200           EXTENDED MODE EOD
04631  0 13 23332          P8T     P8T+RD
04632  0 06 02140          EOD     2140            DUMMY EOD
04633  0 20 00000          NOP     0
04634  0 20 00000          NOP     0               DELAY TO ALLOW PIN
04635  0 20 00000          NOP     0
04636  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
04637  0 33 23332          PIN     P8T+RD
04640  0 06 00100          EOD     100             DISCONNECT CHANNEL
04641  0 17 23332          EOR     P8T+RD
04642  0 72 23332          SKA     P8T+RD
04643  0 51 04422          BRR     INKMNT
04644  0 61 04422          MIN     INKMNT
04645  0 51 04422          BRR     INKMNT
04646  0 20 00000  END1    NOP     0
                       *
                       *
                       * F10853 DATA CHAIN TEST
                       *
```

```
                    *
04647  0 43 00430           BRM     OBJECT
04650  0 43 00440           BRM     RETURN
04651  0 20 23351           NOP     ENTER
04652  0 76 33272           LDA     =0              TEST CLEAR
04653  0 43 04731           BRM     INKMNT
04654  0 43 00460           BRM     ERROR
04655  0 20 24306           NOP     M1038A          LOGIC IN ERROR
04656  0 43 00434           BRM     END
                    *
                    *
                    * F10B54 DATA CHAIN TEST ZMP3
                    *
                    *
04657  0 43 00430           BRM     OBJECT
04660  0 43 00440           BRM     RETURN
04661  0 20 23351           NOP     ENTER
04662  0 76 33316           LDA     =04001          ZMP3
04663  0 43 04731           BRM     INKMNT
04664  0 43 00460           BRM     ERROR
04665  0 20 24317           NOP     M1039A          LOGIC IN ERROR
04666  0 43 00434           BRM     END
                    *
                    *
                    * F10B55 DATA CHAIN TEST ZMP2
                    *
                    *
04667  0 43 00430           BRM     OBJECT
04670  0 43 00440           BRM     RETURN
04671  0 20 23351           NOP     ENTER
04672  0 76 33317           LDA     =010002         ZMP2
04673  0 43 04731           BRM     INKMNT
04674  0 43 00460           BRM     ERROR
04675  0 20 24324           NOP     M1040A          LOGIC IN ERROR
04676  0 43 00434           BRM     END
                    *
```



```
                    *
                    * F10B56 DATA CHAIN TEST ZMP1
                    *
                    *
04677  0 43 00430           BRM     OBJECT
04700  0 43 00440           BRM     RETURN
04701  0 20 23351           NOP     ENTER
04702  0 76 33320           LDA     =020004         ZMP1
04703  0 43 04731           BRM     INKMNT
04704  0 43 00460           BRM     ERROR
04705  0 20 24331           NOP     M1041A          LOGIC IN ERROR
04706  0 43 00434           BRM     END
                    *
                    *
                    * F10B57 DATA CHAIN TEST ZMPO
                    *
                    *
04707  0 43 00430           BRM     OBJECT
04710  0 43 00440           BRM     RETURN
04711  0 20 23351           NOP     ENTER
04712  0 76 33321           LDA     =040010         ZMPO
04713  0 43 04731           BRM     INKMNT
04714  0 43 00460           BRM     ERROR
04715  0 20 24336           NOP     M1042A          LOGIC IN ERROR
04716  0 43 00434           BRM     END
                    *
                    *
                    * F10B58 DATA CHAIN TEST ZMPOO
                    *
                    *
04717  0 43 00430           BRM     OBJECT
04720  0 43 00440           BRM     RETURN
04721  0 20 23351           NOP     ENTER
04722  0 76 33322           LDA     =0100020        ZMPOO
04723  0 43 04731           BRM     INKMNT
04724  0 43 00460           BRM     ERROR
```

```
04725  0 20 24343          NOP     M1043A          LOGIC IN ERROR
04726  0 43 00434          BRM     END
04727  0 43 00456          BRM     FDONE
04730  0 01 05444          BRU     FUNC2
                    *
                    *
                    * SUBROUTINE INKMMT
                    *
                    *
04731  0 00 00000  INKMMT  ZRO     0
04732  0 35 23332          STA     POTWRD
04733  0 06*10100          EOD*    10100           ALERT CHANNEL
04734  0 06 14200          EOD     14200           EXTENDED MODE EOD
04735  0 13 33323          POT     =043777
04736  0 06 11000          EOD     11000           EXTENDED MODE EOD
04737  0 13 23332          POT     POTWRD
04740  0 06 02140          EOD     2140            DUMMY EOD
04741  0 20 00000          NOP     0
04742  0 20 00000          NOP     0               DELAY TO ALLOW PIN
04743  0 20 00000          NOP     0
04744  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
04745  0 33 23332          PIN     POTWRD
04746  0 06 00100          EOD     100             DISCONNECT CHANNEL
04747  0 75 33324          LDB     =174000
04750  0 70 23332          SKM     POTWRD
04751  0 51 04731          BRR     INKMMT
04752  0 61 04731          NIN     INKMMT
04753  0 51 04731          BRR     INKMMT
                    *
                    *
                    * CLEAR CHANNEL
                    *
                    *
04754  0 00 00000  CLRCHN  PZE     0
04755  0 06*10100          EOD*    10100           ALERT CHANNEL
04756  0 06 14200          EOD     14200           EXTENDED MODE EOD
```



```
04757  0 13 33272          POT     =0
04760  0 51 04754          BRR     CLRCHN          RETURN
```

```
                        *
                        *       UNIT, FUNCTION TABLES
                        *
04761  0 20 05000  UPT      NOP     UIM               UNIT IDENTIFIER MESSAGE
04762  0 20 05007           NOP     UAM               UNIT ABSTRACT MESSAGE
04763  0 20 05326           NOP     UVM               UNIT VARIABLE MESSAGE
04764  0 03 04766           THREE   UVT               UNIT VARIABLE TABLE
04765     00000020          DATA    20                UNIT IDENTIFIER - BIT 19
04766     37020000  UVT     DATA    37020000          INITIALIZE FUNCTIONS 1 THROUGH 5 AND 10
04767  0 00 00000  D00T17   PZE     0                 DISCS 0 THROUGH 17 ACTIVATION BITS
04770  0 00 00000  D20T37   PZE     0                 DISCS 20 THROUGH 37 ACTIVATION BITS
04771  0 20 05335  FPT1     NOP     FIM1              FUNCTION IDENTIFIER MESSAGE
04772  0 20 05343           NOP     FAM1              FUNCTION ABSTRACT MESSAGE
04773  0 20 05436           NOP     FVM1              FUNCTION VARIABLE MESSAGE
04774  0 01 04777           ONE     FVT1              FUNCTION VARIABLE TABLE
04775  0 00 05444           PZE     FUNC2             POINTER TO NEXT FUNCTION
04776     20000000          DATA    2B7               FUNCTION IDENTIFIER - BIT 1
04777  0 00 00000  FVT1     PZE     0                 FUNCTION VARIABLE TABLE (NO VARIABLES)
                        *
                        *       UNIT, FUNCTION MESSAGES
                        *
05000     52641201  UIM     BCD     ' U 19 - F CHANNEL DISC 4.0''
05001     11124012
05002     26122330
05003     21454525
05004     43122431
05005     62231204
05006     33003712
05007     52326445  UAM     BCD     '  UNIT 19 - F-CHANNEL DISC DIAGNOSTICS AND EXERCISERS 4.0'
05010     31631201
05011     11124012
05012     26402330
05013     21454525
05014     43122431
05015     62231224
05016     31212745
```



```
05017     46626331
05020     23621221
05021     45241225
05022     67255123
05023     31622551
05024     62122433
05025     60121212
05026     62526330          BCD     '  THIS UNIT CONTAINS DIAGNOSTICS, EXERCISERS, AND SPECIAL FUNCTIONS DEV
05027     31621264
05030     45316312
05031     23464563
05032     21314562
05033     12240121
05034     27454662
05035     63312262
05036     73122567
05037     65512331
05040     62255162
05041     73122145
05042     24126247
05043     25233121
05044     43122664
05045     45236331
05046     46456212
05047     24256546
05050     63252412
05051     52634412          BCD     ' TO THE 9164-01 AND 9165-01 DISC FILE. THERE ARE THREE UNIT VARIABLES!'
05052     63302512
05053     11010604
05054     40000112
05055     21452412
05056     11010605
05057     40000112
05060     24316223
05061     12263143
05062     25331263
```

```
05063    30255125
05064    12215125
05065    12633051
05066    25251264
05067    45316312
05070    65215131
05071    21224325
05072    62151212
05073    52522621          BCD     ' FAW = FUNCTION ACTIVATION WORD. LEGAL FUNCTIONS ARE FUNCTIONS 1-5 (DI
05074    66124012
05075    26644523
05076    63314645
05077    12212363
05100    31652163
05101    31464512
05102    66465124
05103    33124325
05104    27214312
05105    26644523
05106    63314645
05107    62122151
05110    25122664
05111    45236331
05112    46456212
05113    61400512
05114    74243121
05115    27401212
05116    52454662          BCD     ' NOSTICS), FUNCTION 10 (EXERCISER), AND FUNCTIONS 18-23 (SPECIAL FUNCTI
05117    63312362
05120    34731226
05121    64452363
05122    31464512
05123    61001274
05124    25672551
05125    23316225
05126    51347312
```



```
05127    21452412
05130    26644523
05131    63314645
05132    62120110
05133    40020312
05134    74624725
05135    23312143
05136    12266445
05137    23633146
05140    45623433
05141    52240000          BCD     ' D00T17 AND D20T37 = ACTIVATION BITS FOR ARMS 0-37. BITS IN THE MOST SI
05142    63010712
05143    21452412
05144    24020063
05145    63071240
05146    12212363
05147    31652163
05150    31464512
05151    22316362
05152    12264451
05153    12215144
05154    62120240
05155    03073312
05156    22316362
05157    12314512
05160    63302512
05161    44460263
05162    12623127
05163    45312640
05164    52312321          BCD     ' ICANT 16 BITS OF EACH WORD PERMIT THE CORRESPONDING DISC TO BE USED. I
05165    45631201
05166    06122231
05167    63621246
05170    26122521
05171    23301266
05172    46512412
```

```
05173    47255144
05174    31631263
05175    30251223
05176    46515125
05177    62474645
05200    24314527
05201    12243162
05202    23126346
05203    12222512
05204    64622524
05205    33123126
05206    12211212
05207    52001231          BCD     ' O IS IN A BIT, THE CORRESPONDING ARM WILL NOT BE USED.'
05210    62123145
05211    12211222
05212    31637312
05213    63302512
05214    23465151
05215    25624746
05216    45243145
05217    27122151
05220    44126631
05221    43431245
05222    46631222
05223    25126462
05224    25243312
05225    52464512          BCD     ' ON THE FIRST PASS, ALL DIAGNOSTICS WILL BE RUN, AND THE DISC WILL BE K
05226    63302512
05227    26315162
05230    63124721
05231    62627312
05232    21434312
05233    24312127
05234    45466263
05235    31236212
05236    66314343
```



```
05237    12222512
05240    51644573
05241    12214524
05242    12633025
05243    12243162
05244    23126631
05245    43431222
05246    25124225
05247    70252133
05250    52464512          BCD     ' ON SUBSEQUENT PASSES, ONLY THE DIAGNOSTICS WHICH DO NOT DESTROY THE I
05251    62642262
05252    25526425
05253    45631247
05254    21626225
05255    62731246
05256    45437212
05257    63302512
05260    24312127
05261    45466263
05262    31236212
05263    66303123
05264    30122446
05265    12454463
05266    12242562
05267    63514670
05270    12633025
05271    12314563
05272    25275131
05273    63701212
05274    52462412          BCD     ' OF THE DISC WILL RUN, AS WELL AS THE EXERCISER= FUNCTIONS 18=23 WILL N
05275    63302512
05276    24316223
05277    12663143
05300    45125164
05301    45731221
05302    62124625
```

```
05303    43431221
05304    62126330
05305    25122567
05306    25512331
05307    62255133
05310    12266445
05311    23633146
05312    45621201
05313    10400203
05314    12663143
05315    43124546
05316    63121212
05317    52516445          BCD     ' RUN UNLESS TRANSFERED TO.''
05320    12644543
05321    25626212
05322    63512145
05323    62262551
05324    25241263
05325    46333712
05326    52121212  UVM     BCD     '    FAW    D00T17   D20T37 ''
05327    26216612
05330    12121224
05331    00006301
05332    07121212
05333    24020063
05334    03075237
                    *
                    *
                    *
05335    52261200  FIM1    BCD     ' F 01 = DACC DIAGNOSTIC''
05336    31124012
05337    24212323
05340    12243121
05341    27454662
05342    63312337
05343    52322421  FAM1    BCD     '  DACC DIAGNOSTIC '
```



```
05344    23231224
05345    31212745
05346    46626331
05347    23521212
05350    52633231          BCD     ' THIS DIAGNOSTIC TESTS AS MANY DACC FUNCTIONS AS POSSIBLE'
05351    62122431
05352    21274546
05353    62631123
05354    12632562
05355    63621221
05356    62124421
05357    45701224
05360    21232312
05361    26644523
05362    63314645
05363    62122162
05364    12474462
05365    62312343
05366    25121212
05367    52665163          BCD     ' WITHOUT THE USE OF AN EXTERNAL DEVISE, IF AN ERROR OCCURES,'
05370    30464463
05371    12633225
05372    12646225
05373    12462412
05374    21451225
05375    67632551
05376    45214312
05377    24256531
05400    62253312
05401    31261221
05402    45122551
05403    51465112
05404    46232364
05405    51256273
05406    52211213          BCD     ' A = ERROR WORD, B = TEST WORD, AND X = OBJECT TEST.'
05407    12255151
```

```
05410    46511266
05411    46512473
05412    12221313
05413    12632562
05414    63126646
05415    51247312
05416    21452412
05417    67121312
05420    46224125
05421    23631263
05422    25626333
05423    52623127          BCD     ' SIGNAL NAMES AND MODULES WILL BE PRINTED.!!
05424    45214312
05425    45214425
05426    62122145
05427    24124446
05430    24644325
05431    62126631
05432    43431222
05433    25124751
05434    31456325
05435    24333712
05436    52454612  FVM1    BCD     ' NO FUNCTION VARIABLES !!
05437    26644523
05440    63314645
05441    12652151
05442    31212243
05443    25625237
```



```
                         *
                         *
                         *       FUNCTION 2 = 9164 DISC FILE CONTROLLER DIAGNOSTIC (NO DATA XFER)
                         *
                         *
05444  0 43 00430 FUNC2  BRM     SUBJECT
05445  0 76 00404        LDA     DSCSIZ          GET DISC SIZE
05446  0 72 03325        SKA     =786            IS SIZE > 0
05447  0 01 00451        BRU     *+2             YES
05450  0 43 00452        BRM     DONE            NO = EXIT UNIT
05451  0 40*10326        SKS*    10326           FILE ON LINE TEST
05452  0 01 00454        BRU     *+2             FILE NOT ON LINE
05453  0 01 00460        BRU     FUNC2A
05454  0 43 00454        BRM     REPORT          REPORT FILE NOT ON LINE
05455  0 20 23651        NOP     C19M7
05456  0 43 00434        BRM     END
05457  0 43 00452        BRM     DONE            EXIT UNIT
05460  0 43 00424 FUNC2A BRM     FUNCTN          FUNCTION LINK
05461  0 01 00442        NOP     FPT2
05462  0 43 00440        BRM     RETURN          INTERRUPT/TRAP LINK
05463  0 20 23351        NOP     ENTER
05464  0 02 20004        DIR                     DISABLE INTERRUPTS
                         *
                         *       FILE ON-LINE TEST (FILE ON-LINE CONDITION)
                         *
05465  0 43 00430        BRM     SUBJECT
05466  0 43 20303        BRM     F2S2            PERFORM TEST
05467  0 40*10326        SKS*    10326           FILE ON LINE TEST
05470  0 20 24364        NOP     F2M1
                         *
                         *       TEST 2CAAA
                         *
05471  0 43 00430        BRM     SUBJECT
05472  0 43 20264        BRM     F2S1            PERFORM TEST
05473  0 40*10227        SKS*    10227
05474  0 20 24452        NOP     F2M2
```

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



```
                    *       TEST 6S10A0
                    *
05521  0 43 00430          BRM     OBJECT
05522  0 43 22264          BRM     F2S1            PERFORM TEST
05523  0 40*11226          SKS*    11226
05524  0 20 24563          NOP     F2M9
                    *
                    *       TEST 60LSA0
                    *
05525  0 43 00430          BRM     OBJECT
05526  0 43 22264          BRM     F2S1            PERFORM TEST
05527  0 40*12226          SKS*    12226
05530  0 20 24612          NOP     F2M10
                    *
                    *       TEST 60LSA0
                    *
05531  0 43 00430          BRM     OBJECT
05532  0 43 22264          BRM     F2S1            PERFORM TEST
05533  0 40*13226          SKS*    13226
05534  0 20 24630          NOP     F2M11
                    *
                    *       TEST 60LSA0
                    *
05535  0 43 00430          BRM     OBJECT
05536  0 43 22264          BRM     F2S1            PERFORM TEST
05537  0 40*14226          SKS*    14226
05540  0 20 24645          NOP     F2M12
                    *
                    *       TEST 60LSA0
                    *
05541  0 43 00430          BRM     OBJECT
05542  0 43 22264          BRM     F2S1            PERFORM TEST
05543  0 40*15226          SKS*    15226
05544  0 20 24665          NOP     F2M13
                    *
                    *       TEST 60LSA0
```

```
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                    *
05545  0 43 00430          BRM     OBJECT
05546  0 43 22264          BRM     F2S1            PERFORM TEST
05547  0 40*16226          SKS*    16226
05550  0 20 24677          NOP     F2M14
                    *
                    *       TEST 60LSA0
                    *
05551  0 43 00430          BRM     OBJECT
05552  0 43 22264          BRM     F2S1            PERFORM TEST
05553  0 40*17226          SKS*    17226
05554  0 20 24711          NOP     F2M15
                    *
                    *       WRITE-HEADER SWITCH TEST (SWITCH OFF CONDITION)
                    *
05555  0 43 00430          BRM     OBJECT
05556  0 43 22303          BRM     F2S2            PERFORM TEST
05557  0 40*14126          SKS*    14126           WRITE HEADER TEST
05560  0 20 24723          NOP     F2M16
                    *
                    *       TEST 6S10A0
                    *
05561  0 43 00430          BRM     OBJECT
05562  0 43 22264          BRM     F2S1            PERFORM TEST
05563  0 40*15026          SKS*    15026
05564  0 20 24760          NOP     F2M17
                    *
                    *       TEST 6S10A0
                    *
05565  0 43 00430          BRM     OBJECT
05566  0 43 22264          BRM     F2S1            PERFORM TEST
05567  0 40*16026          SKS*    16026
05570  0 20 24771          NOP     F2M18
                    *
                    *       CONTROLLER READY TEST (READY CONDITION)
                    *
```

```
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05571  0 43 00430          BRM     OBJECT
05572  0 43 22303          BRM     F2S2            PERFORM TEST
05573  0 40*12126          SKS*    12126           DISC FILE READY TEST
05574  0 20 25004          NOP     F2M19
                    *
                    *       TRACK VERIFIED AND PHASE ONE TEST (CONTROLLER IN PHASE 0)
                    *
05575  0 43 00430          BRM     OBJECT
05576  0 43 22264          BRM     F2S1            PERFORM TEST
05577  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
05600  0 20 25057          NOP     F2M20
                    *
                    *       CONTROLLER ERROR TEST (NO ERROR CONDITION)
                    *
05601  0 43 00430          BRM     OBJECT
05602  0 43 22303          BRM     F2S2            PERFORM TEST
05603  0 40*11126          SKS*    11126           DISC FILE ERROR TEST
05604  0 20 25113          NOP     F2M21
                    *
                    *       WRITE PROTECT SWITCH TEST (NOT WRITE PROTECTED CASE)
                    *
05605  0 43 00430          BRM     OBJECT
05606  0 43 22303          BRM     F2S2            PERFORM TEST
05607  0 40*13126          SKS*    13126           DISC WRITE PROTECT TEST
05610  0 20 25145          NOP     F2M22
                    *
                    *       TEST DA23A (SET)
                    *
05611  0 43 00430          BRM     OBJECT
05612  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05613  0 00000001          DATA    1
05614  0 20 25174          NOP     F2M32
                    *
                    *       TEST DA23A (RESET)
                    *
05615  0 43 00430          BRM     OBJECT
```

```
05616  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05617    00000001          DATA    1
05620  0 20 25267          NOP     F2M33
                    *
                    *       TEST 0A22A (SET)
                    *
05621  0 43 00430          BRM     OBJECT
05622  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05623    00000002          DATA    2
05624  0 20 25313          NOP     F2M34
                    *
                    *       TEST 0A22A (RESET)
                    *
05625  0 43 00430          BRM     OBJECT
05626  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05627    00000002          DATA    2
05630  0 20 25324          NOP     F2M35
                    *
                    *       TEST 0A21A (SET)
                    *
05631  0 43 00430          BRM     OBJECT
05632  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05633    00000004          DATA    4
05634  0 20 25347          NOP     F2M36
                    *
                    *       TEST 0A21A (RESET)
                    *
05635  0 43 00430          BRM     OBJECT
05636  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05637    00000004          DATA    4
05640  0 20 25360          NOP     F2M37
                    *
                    *       TEST 0A20A (SET)
                    *
05641  0 43 00430          BRM     OBJECT
05642  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
```



```
05643    00000010          DATA    16
05644  0 20 25371          NOP     F2M38
                    *
                    *       TEST 0A20A (RESET)
                    *
05645  0 43 00430          BRM     OBJECT
05646  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05647    00000010          DATA    16
05650  0 20 25402          NOP     F2M39
                    *
                    *       TEST 0A19A (SET)
                    *
05651  0 43 00430          BRM     OBJECT
05652  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05653    00000020          DATA    20
05654  0 20 25411          NOP     F2M40
                    *
                    *       TEST 0A19A (RESET)
                    *
05655  0 43 00430          BRM     OBJECT
05656  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05657    00000020          DATA    20
05660  0 20 25420          NOP     F2M41
                    *
                    *       TEST 0A18A (SET)
                    *
05661  0 43 00430          BRM     OBJECT
05662  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05663    00000040          DATA    40
05664  0 20 25427          NOP     F2M42
                    *
                    *       TEST 0A18A (RESET)
                    *
05665  0 43 00430          BRM     OBJECT
05666  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05667    00000040          DATA    40
```

```
05670  0 20 25440          NOP     F2M43
                     *
                     *      TEST OA17A (SET)
                     *
05671  0 43 00430          BRM     OBJECT
05672  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05673    00000100          DATA    100
05674  0 20 25451          NOP     F2M44
                     *
                     *      TEST OA17A (RESET)
                     *
05675  0 43 00430          BRM     OBJECT
05676  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05677    00000100          DATA    100
05700  0 20 25462          NOP     F2M45
                     *
                     *      TEST OA16A (SET)
                     *
05701  0 43 00430          BRM     OBJECT
05702  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05703    00000200          DATA    200
05704  0 20 25473          NOP     F2M46
                     *
                     *      TEST OA16A (RESET)
                     *
05705  0 43 00430          BRM     OBJECT
05706  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05707    00000200          DATA    200
05710  0 20 25502          NOP     F2M47
                     *
                     *      TEST OA15A (SET)
                     *
05711  0 43 00430          BRM     OBJECT
05712  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05713    00000400          DATA    400
05714  0 20 25511          NOP     F2M48
```



```
                     *
                     *      TEST OA15A (RESET)
                     *
05715  0 43 00430          BRM     OBJECT
05716  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05717    00000400          DATA    400
05720  0 20 25522          NOP     F2M49
                     *
                     *      TEST OA14A (SET)
                     *
05721  0 43 00430          BRM     OBJECT
05722  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05723    00001000          DATA    1000
05724  0 20 25533          NOP     F2M50
                     *
                     *      TEST OA14A (RESET)
                     *
05725  0 43 00430          BRM     OBJECT
05726  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05727    00001000          DATA    1000
05730  0 20 25542          NOP     F2M51
                     *
                     *      TEST OA13A (SET)
                     *
05731  0 43 00430          BRM     OBJECT
05732  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
05733    00002000          DATA    2000
05734  0 20 25551          NOP     F2M52
                     *
                     *      TEST OA13A (RESET)
                     *
05735  0 43 00430          BRM     OBJECT
05736  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
05737    00002000          DATA    2000
05740  0 20 25563          NOP     F2M53
                     *
```

```
                    *       TEST 0A12A (SET)
                    *
05741  0 43 00430          BRM     0BJECT
05742  0 43 22321          BRM     F2S3            PERF0RM 0BJECT TEST
05743    00004000          DATA    4000
05744  0 20 25575          N0P     F2M54
                    *
                    *       TEST 0A12A (RESET)
                    *
05745  0 43 00430          BRM     0BJECT
05746  0 43 22342          BRM     F2S4            PERF0RM 0BJECT TEST
05747    00004000          DATA    4000
05750  0 20 25607          N0P     F2M55
                    *
                    *       TEST 0A11A (SET)
                    *
05751  0 43 00430          BRM     0BJECT
05752  0 43 22321          BRM     F2S3            PERF0RM 0BJECT TEST
05753    00010000          DATA    10000
05754  0 20 25621          N0P     F2M56
                    *
                    *       TEST 0A11A (RESET)
                    *
05755  0 43 00430          BRM     0BJECT
05756  0 43 22342          BRM     F2S4            PERF0RM 0BJECT TEST
05757    00010000          DATA    10000
05760  0 20 25633          N0P     F2M57
                    *
                    *       TEST 0A10A (SET)
                    *
05761  0 43 00430          BRM     0BJECT
05762  0 43 22321          BRM     F2S3            PERF0RM 0BJECT TEST
05763    00020000          DATA    20000
05764  0 20 25645          N0P     F2M58
                    *
                    *       TEST 0A10A (RESET)
```



```
                    *
05765  0 43 00430          BRM     0BJECT
05766  0 43 22342          BRM     F2S4            PERF0RM 0BJECT TEST
05767    00020000          DATA    20000
05770  0 20 25657          N0P     F2M59
                    *
                    *       TEST 0A09A (SET)
                    *
05771  0 43 00430          BRM     0BJECT
05772  0 43 22321          BRM     F2S3            PERF0RM 0BJECT TEST
05773    00040000          DATA    40000
05774  0 20 25671          N0P     F2M60
                    *
                    *       TEST 0A09A (RESET)
                    *
05775  0 43 00430          BRM     0BJECT
05776  0 43 22342          BRM     F2S4            PERF0RM 0BJECT TEST
05777    00040000          DATA    40000
06000  0 20 25702          N0P     F2M61
                    *
                    *       TEST 0A08A (SET)
                    *
06001  0 43 00430          BRM     0BJECT
06002  0 43 22321          BRM     F2S3            PERF0RM 0BJECT TEST
06003    00100000          DATA    100000
06004  0 20 25713          N0P     F2M62
                    *
                    *       TEST 0A08A (RESET)
                    *
06005  0 43 00430          BRM     0BJECT
06006  0 43 22342          BRM     F2S4            PERF0RM 0BJECT TEST
06007    00100000          DATA    100000
06010  0 20 25724          N0P     F2M63
                    *
                    *       TEST 0A07A (SET)
                    *
```

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06011  0 43 00430          BRM     OBJECT
06012  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
06013    00200000          DATA    200000
06014  0 20 25735          NOP     F2M64
                     *
                     *      TEST 0AC7A (RESET)
                     *
06015  0 43 00430          BRM     OBJECT
06016  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
06017    00200000          DATA    200000
06020  0 20 25746          NOP     F2M65
                     *
                     *      TEST 0A06A (SET)
                     *
06021  0 43 00430          BRM     OBJECT
06022  0 43 22321          BRM     F2S3            PERFORM OBJECT TEST
06023    00400000          DATA    400000
06024  0 20 25757          NOP     F2M66
                     *
                     *      TEST 0AC6A (RESET)
                     *
06025  0 43 00430          BRM     OBJECT
06026  0 43 22342          BRM     F2S4            PERFORM OBJECT TEST
06027    00040000          DATA    40000
06030  0 20 25770          NOP     F2M67
                     *
                     *      TEST FOR 0AC8A GROUNDED
                     *
06031  0 43 00430          BRM     OBJECT
06032  0 43 00440          BRM     RETURN          SET INTERRUPT LINKAGE
06033  0 20 23351          NOP     ENTER
06034  0 76 15410          LDA     BIT5            POT&BRD
06035  0 43 23243          BRM     POTPIN
06036  0 72 15410          SKA     BIT5            ADDRESS BIT SET
06037  0 43 00460          BRM     ERROR           YES
06040  0 20 26001          NOP     F2M68
```

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06041  0 43 00434          BRM     END
                     *
                     *      TEST FOR 0AC4A GROUNDED
                     *
06042  0 43 00430          BRM     OBJECT
06043  0 43 00440          BRM     RETURN          SET INTERRUPT LINKAGE
06044  0 20 23351          NOP     ENTER
06045  0 76 15407          LDA     BIT4            POT&BRD
06046  0 43 23243          BRM     POTPIN
06047  0 72 15407          SKA     BIT4            ADDRESS BIT SET
06050  0 43 00460          BRM     ERROR           YES
06051  0 20 26017          NOP     F2M69
06052  0 43 00434          BRM     END
                     *
                     *      TEST FOR 0AC3A GROUNDED
                     *
06053  0 43 00430          BRM     OBJECT
06054  0 43 00440          BRM     RETURN          SET INTERRUPT LINKAGE
06055  0 20 23351          NOP     ENTER
06056  0 76 15406          LDA     BIT3            POT&BRD
06057  0 43 23243          BRM     POTPIN
06060  0 72 15406          SKA     BIT3            ADDRESS BIT SET
06061  0 43 00460          BRM     ERROR           YES
06062  0 20 26036          NOP     F2M70
06063  0 43 00434          BRM     END
                     *
                     *      CHECK FOR INTERFERENCE OF CHANNEL POTS WITH CONTROLLER
                     *
06064  0 43 00430          BRM     OBJECT
06065  0 43 22740          BRM     SETUP2
06066  0 06 10126          EOD     10126           ALERT DISC FILE
06067  0 13 33372          POT     #0              CLEAR ADDRESS REGISTER
06070  0 06 10100          EOD     10100           ALERT CHANNEL
06071  0 13 33726          POT     #777777         POT TO CHANNEL
06072  0 06 10126          EOD     10126           ALERT DISC FILE
06073  0 33 23310          PIN     TEMP            PIN CONTROLLER ADDRESS REGISTER
```

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06074  0 76 23310          LDA     TEMP
06075  0 72 33273          SKA     *=1                ANY ADDRESS REGISTER F=F'S SET
06076  0 43 00460          BRM     ERR0R              YES
06077  0 20 26053          N0P     F2M71
06100  0 43 00434          BRM     END
                     *
                     *      CHECK FOR INTERFERENCE OF CHANNEL PINS WITH CONTROLLER
                     *
06101  0 43 00430          BRM     0BJECT
06102  0 43 22740          BRM     SETUP2
06103  0 06 10126          E0D     10126              ALERT DISC FILE
06104  0 13 33326          P0T     =777777            SET CONTROLLER ADDRESS REGISTER
06105  0 06=10100          E0D=    10100              ALERT CHANNEL
06106  0 06 14000          E0D     14000              EXTENDED M0DE E0D
06107  0 13 33272          P0T     =0
06110  0 06 12100          E0D     12100              ALERT T0 PIN CHANNEL ADDRESS
06111  0 33 23310          PIN     TEMP               PIN CHANNEL ADDRESS REGISTER
06112  0 76 23310          LDA     TEMP
06113  0 72 33273          SKA     *=1                CHANNEL ADDRESS REGISTER TEST ZER0S
06114  0 43 00460          BRM     ERR0R              N0
06115  0 20 26076          N0P     F2M72
06116  0 43 00434          BRM     END
                     *
                     *      TEST ABILITY T0 VERIFY ADDRESS 0 = N0 M0VEMENT, FILE N0T READY
                     *
06117  0 43 23106          BRM     N0RMAL             N0RMALIZE DISC
06120  0 40=10126          SKS=    10126              DISC FILE READY TEST
06121  0 01 06120          BRU     *=1                WAIT F0R C0NTROLLER READY
06122  0 06 10126          E0D     10126              ALERT DISC FILE
06123  0 13 33272          P0T     =0
06124  0 43 00430          BRM     0BJECT
06125  0 76 33272          LDA     =0                 P0TW0RD
06126  0 43 22747          BRM     SETUP3
06127  0 01 06146          BRU     F2E9               D0 N0T USE THIS DISC
06130  0 06 10126          E0D     10126              ALERT DISC FILE
06131  0 13 23332          P0T     P0T+RD             SELECT PRESENT P0SITION
```

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06132  0 40=10126          SKS=    12126              TRACK VERIFIED TEST
06133  0 01 06135          BRU     *=2                ADDRESS N0T VERIFIED
06134  0 01 06143          BRU     F2E9=3             0K
06135  0 55 15432          ADD     BIT23
06136  0 73 33327          SKG     =8571D             120 MILLISEC ELAPSED YET
06137  0 01 06132          BRU     F2L1               N0
06140  0 43 00460          BRM     ERR0R              TIME0UT ERR0R
06141  0 20 26115          N0P     F2M73
06142  0 01 06146          BRU     F2E9
06143  0 73 33330          SKG     =50000             TIME GREATER THAN 70 MILLISEC
06144  0 43 00460          BRM     ERR0R              N0 = TIME T00 SH0RT
06145  0 20 26144          N0P     F2M73A
06146  0 43 00434  F2E9    BRM     END
                     *
                     *      L0GIC FL0W F0R PRECLEDING 0BJECT 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  AU02A   = 200FA=2U01A=4NBSB=3WHRA                  SET U02
                     *   7  BU01A   = 200FA=0X04A=8PT2A                        RESET U01
                     *   8  2RT0A   = 0X04A=3U01A                              P0T RELEASE
                     *   9  AG01A   = 2PTFA=3U01A=3BYPA=8PT2A=0X04A            SET G01
                     *      AG03A   = 2PTFA=3U01A=3BYPA=8PT2A=0X04A            SET G03
                     *                2BYPA=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.2CK0A                        RESET B09
            * 12      AD04A     = 2SC1A                                    D REGISTER -
            *                     2SC1A=SECTOR 1 PULSE                       USED TO
            *         BD04A     = 2SC0A                                      DECODE SEC-
            *                     2SC0A=SECTOR 0 PULSE                       TOR DATA
            *         AD03A     = 0D04A.2SC0A                                PULSES
            *         BD03A     = 1D04A.2SC0A
            *         AD02A     = 0D03A.4SC0A
            *         BD02A     = 1D03A.4SC0A
            *         AD01A     = 4SC0A.(0D02A+0D03A)
            *         BD01A     = 4SC0A
            * 13      AX05A     = 0D01A.0D02A.1D03A.4SC0A                  INNER ZONE
            *         BX05A     = 2SC0A                                    SECTOR
            * 14      2IZSA     = 0X05A
            * 15      SGBA0     = 2G03A.2CKGA                              SET G02
            *         RGCA0     = 2CKGA                                    RESET G03
            *                     2CKGA=3U01A.204FA.2IZSA
            * 16      SGCA0     = 2CKGA                                    SET G03
            * 17      AU01A     = 204FA.207GA.1U04A.9RDYA.2IZSA            SET U01
            *                     207GA= G01A. G02A. G03A
            *                     9RDYA=FILE NOT READY
            * 18      AP01A     = 2U01A.204FA.2CK0A                        SET P01
            *         BP01A     = AF01A                                    RESET P01
            * 19      AU03A     = 204FA.2U01A.2SC1A.2IZSA.2RDYA            SET U03
            * 20      BU03A     = 204FA.2U01A.2IZSA                        RESET U03
            *         BU01A     = 204FA.2U03A.2IZSA                        RESET U01
            * 21      BF01A     = 204FA.3U02A.3U01A.2BGAA                  RESET F01
            *                     2BGAA=2RDYA.2PAVA.2IZSA.207GA            STATE 1 NEXT
            *         AF03A     = 204FA.3U02A.3U01A.2BGAA                  SET F03
            * 22      AU04A     = 201FA.3U03A.8HLTB.6Q20A                  SET U04
            *                     8HLTB=FORCED TRUE IN SINGLE ACCESS
            * 23      8INLA     = 201FA.2U04A.1X03A                        SEND INT
            * 24      AU03A     = 201FA.2U04A.8Q20A                        SET U03
            * 25      BU04A     = 201FA.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
                      *
06147  0 43 00430            BRM    OBJECT
06150  0 76 33272            LDA    =0           POT+ORD
06151  0 43 22747            BRM    SETUP3
06152  0 01 06173            BRU    F2E10        DO NOT USE THIS DISC
06153  0 06 12126            EOD    10126        ALERT DISC FILE
06154  0 13 15423            POT    BIT16        MOVE TO POSITION 1
06155  0 43 23275            BRM    .500         WAIT 500 MILLISEC
06156  0 06 10126            EOD    10126        ALERT DISC FILE
06157  0 13 23332            POT    POT.RD       MOVE TO POSITION 0
06160  0 40*12126            SKS*   12126        TRACK VERIFIED TEST
06161  0 01 06163            BRU    *+2          TRACK NOT VERIFIED
06162  0 01 06170            BRU    F2L3
06163  0 55 15432            ADD    BIT23
06164  0 73 33331            SKG    =357140      500 MILLISEC ELAPSED YET
06165  0 01 06160            BRU    F2L2         NO
06166  0 43 00460            BRM    ERROR        500 MILLISEC TIMEOUT
06167  0 20 26202            NOP    F2M74
06170  0 73 33327     F2L3   SKG    =85710       TIME > 120 MILLISEC
06171  0 43 00460            BRM    ERROR        NO - TIME TOO SHORT
06172  0 20 26231            NOP    F2M74A
06173  0 43 00434     F2E10  BRM    END
                      *
                      *      LOGIC FLOW FOR PRECEDING OBJECT TEST
                      *
                      *  1   AX01A     = 2CAAA.3C12A.8I0CA.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   AU02A   = 200FA*2U01A*4NBBB*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 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*2CK0A                          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*2CK0A                          SET P01
*  17  8SPRA   = 204FA*0P01A                                SEL AND OPER
*  18  AU03A   = 204FA*2U01A*2SC1A*2IZSA*2RDYA              SET U03
*  19  BU03A   = 204FA*2U01A*2IZSA                          RESET U03
*  20  BU01A   = 204FA*2U03A*2IZSA                          RESET U01
*      BF01A   = 204FA*2BUBA*3WHRA*2IZSA                    STATE 2 NEXT
*      AF02A   = 204FA*2BUBA*3WHRA*2IZSA
*                2BUBA=2U01A*2U03A
*  21  AU01A   = 223FA*2SECA                                SET U01
*                2SECA=2IZSA*2IZHA
*  22  2CKBA   = 223FA*2IUBA*2CK0A                          B REG CLOCK
*                7IUBA0=2U02A*3U01A
*                2CK0A=FILE WRITE CLOCK
*  23  SB09A   = 2CKBA*1B09A                                SET B09
```



```
*      RB09A   = 2CKBA*0B09A                                RESET B09
*      SB08A   = 2CKBA*1B08A*0B09A*1B07A                    SET B08
*      RB08A   = 2CKBA*0B08A*0B09A*1B07A                    RESET B08
*      SB07A   = 2CKBA*1B07A*2CT3A                          SET B07
*                2CT3A=0B08A*0B09A
*      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
*  24  265BA   = 0B03A*0B05A*2CT5A                          COUNT = 65
*  25  BU01A   = 223FA*265BA*2CK0A                          RESET U01
*      AU02A   = 223FA*265BA*2CK0A                          SET U02
*  26  CB03A   = 202FA*3U01A*0B03A*2CK0A                    RESET B03
*      3RBLA   = 202FA*3U01A                                RESET B05=08
*      BB09A   = 202FA*3U01A*2CK0A                          RESET B09
*      AU03A   = 223FA*2IUAA*2RDKA                          SET U03
*                2RDKA=2RD0A*2RD1A
*  27  AU01A   = 223FA*2U02A*2RD1A                          SET U01
*  28  2CKBA   = 223FA*2BUAA*2RDKA                          B REG CLOCK
*                2BUAA=2U01A*2U02A
*  29  AU04A   = 223FA*2U02A*2H00A*2CT1A*2RDKA              SET U04
*                2H00A=1B05A*1B06A
*                2CT1A=1B07A*1B08A*0B09A
*  30  UP02A   = 223FA*3U01A                                SET P02
*      AP02A   = 223FA*2BUAA*2RD1A                          SET P02
*      BP02A   = 223FA*2BUAA*2RD1A                          RESET P02
*  31  2CKGA   = 223FA*2IXDA                                RESET G REG
```

```
*                 2IXDA•INDEX PULSE
*
* 32    IF PARITY ERROR OR INEQUALITY;
*
*       BU03A   • 223FA•2U02A•2H03A•2CT2A•0P02A•2RD0A          PARITY ERROR
*                 •223FA•2U02A•2H03A•2CT2A•1P02A•2RD1A
*       BU03A   • QUCAQ•XUCAQ•ZUCAQ•VUCAQ                      INEQUALITY
*       6RBHAQ  • 202FA•2IUEA•2H03A•2CT3A                      RESET B01•04
*                 7IUEAQ•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
*                 7H48AQ•1B01A•1B02A
*       TK01A   • 202FA•2H48A•0K02A•2IZSA                      TOGGLE K01
* 33    RU04A   • 202FA•2U02A•2H02A•2CT2A•2RDKA                RESET U04
*                 2H02A•0B05A•1B06A
*                 2CT2A•0B08A•1B09A
* 34    BU01A   • 223FA•2U02A•2H03A•2CT3A•2RDKA                RESET U01
*       BU02A   • 223FA•2H03A•2CT3A•2RDKA                      RESET U02
* 35    AF03A   • 202FA•2IGCA                                  STATE 1 NEXT
*       BF02A   • 202FA•3BNCA•2IGCA
*                 7IGCAJ•1<01A•1K01A•2SECA•1B01A•1B02A
*                 2BNCA•2X03A•8FHAF                            BUFFER CONN.
*       BU03A   • 202FA•2IGCA                                  RESET U03
*       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 WOULD HAVE BEEN AS FOLLOWS DURING STATE TWO;
*
*       AE03A   • 202FA•0G01A•0G02A•2TUGA                      SET E03
*                 2TUGA•NOT  [1G04A•1G03A]
*       PINLA   • 202FA•0G01A•0G02A•2TUGA                      INTERRUPT
*       9YHSA   • NOT  [0X06A•2MHAA]
*                 YX06A•202FA•0G01A•0G02A•2TUGA                SET X06
*       BF02A   • 202FA•0G01A•0G02A•2TUGA                      STATE 0 NEXT
*
*       NOTE: SEEK ERROR INDICATOR WOULD BE ON (1E01•1E02•0E03)
*
*       TIMING FOR SEQUENCE SHOULD BE APPROXIMATELY 145 TO 220 MILLISEC.
*
*       TEST ABILITY TO VERIFY ADDRESS 0 • NO MOVEMENT, FILE READY
*
06174  0 43 00430          BRM     OBJECT
06175  0 76 33272          LDA     •0                 POTWORD
06176  0 43 22747          BRM     SETUP3
06177  0 01 06223          BRU     F2E52              DO NOT USE THIS DISC
06200  0 06 10126          E0D     10126              ALERT DISC FILE
06201  0 13 23332          POT     POTWRD             POT TO CONTROLLER
06202  0 43 33123          BRM     WAIT               WAIT FOR CONTROLLER READY
06203  0 01 06223          BRU     F2E52              ERROR ABORT
06204  0 06 10126          E0D     10126              ALERT DISC FILE
06205  0 13 23332          POT     POTWRD             POT TO CONTROLLER
06206  0 40•10126          SKS•    12126              TRACK VERIFIED TEST
06207  0 01 06211          BRU     ••2                TRACK NOT VERIFIED
06210  0 01 06217          BRU     F2L32
06211  0 55 15432          ADD     BIT23
06212  0 73 33331          SKG     •357140            500 MILLISEC ELAPSED YET
06213  0 01 06206          BRU     F2L31              NO • LOOP
06214  0 43 00460          BRM     ERRBR              500 MILLISEC TIMEOUT
06215  0 20 27264          NOP     F2M116
06216  0 01 06220          BRU     ••2
06217  0 73 33330  F2L32    SKG     •50000             TIME < 70 MILLISEC
```

```
06220  0 01 06222          BRU     *+2             YES = OK
06221  0 43 00460          BRM     ERROR           TIME TOO LONG
06222  0 20 27913          NOP     F2M117
06223  0 43 00434  F2E52    BRM     END
                    *
                    *       LOGIC FLOW FOR PRECEDING OBJECT TEST
                    *
                    *   1   AX01A   = 2CAAA.3C12A.8I0CA.3C16A                   SET X01
                    *   2   AU01A   = 2PTFA.3X04A.2I6DA.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   AU02A   = 200FA.2U01A.4NBSB.3WHRA                   SET U02
                    *   7   BU01A   = 200FA.0X04A.8PT2A                         RESET U01
                    *   8   2RT0A   = 0X04A.3U01A                               POT RELEASE
                    *   9   AF02A   = 2PTFA.2BYPA                               STATE 3 NEXT
                    *                 2BYPA.2U02A.2PAVA.2RDYA                   ST. 4 BYPASS
                    *       AF03A   = 2PTFA.2BYPA
                    *       BU02A   = 200FA.8PT1A                               RESET U02
                    *       BX01A   = 200FA.8PT1A                               RESET X01
                    *       BX04A   = 200FA.8PT1A                               RESET X04
                    *  10   6RBHA0  = 0F03A.3U01A                               RESET B01.04
                    *       6RBLA0  = 0F03A.3U01A                               RESET B05.08
                    *       RBIA0   = 0F03A.3U01A.2CK0A                         RESET B09
                    *  11   AU01A   = 223FA.2SECA                               SET U01
                    *  12   2CKBA   = 223FA.2IUBA.2CK0A                         B REG CLOCK
                    *  13   265BA   = 0B03A.0B05A.2CT5A                         COUNT = 65
                    *  14   BU01A   = 223FA.265BA.2CK0A                         RESET U01
                    *       AU02A   = 223FA.265BA.2CK0A                         SET U02
                    *  15   6RBHA0  = 0F03A.3U01A                               RESET B01.04
                    *       6RBLA0  = 0F03A.3U01A                               RESET B05.08
                    *       RBIA0   = 0F03A.3U01A.2CK0A                         RESET B09
                    *  16   AU03A   = 223FA.2IUAA.2RDKA                         SET U03
                    *       AU01A   = 223FA.2U02A.2RD1A                         SET U01
```



```
                    *  17   2CKBA   = 223FA.2U01A.2U02A.2RDKA                   B REG CLOCK
                    *  18   AU04A   = 223FA.2U01A.2H00A.2CT1A.2RDKA             SET U04
                    *
                    *       IF PARITY ERROR OR INEQUALITY:
                    *
                    *       BU03A   = 223FA.2U02A.2H03A.2CT2A.0P02A.2RDOA       PARITY ERROR
                    *                 +223FA.2U02A.2H03A.2CT2A.1P02A.2RD1A
                    *                 + GUCA+ XUCA+ YUCA+ ZUCA                  INEQUALITY
                    *  19   RU04A   = 2RDKA.2CT1A.2H03A.2U02A.203FA             RESET U04
                    *  20   BU02A   = 223FA.2RDKA.2CT3A.2H03A                   RESET U02
                    *       BU03A   = 203FA.2IUAA.2RDKA.2CT3A.2H03A             RESET U03
                    *                 2IUAA= U01. U02. U03
                    *       BU01A   = 2U02A.2RDKA.2CT3A.2H03A.223FA             RESET U01
                    *       AG01A   = 203FA.2IUAA.2RDKA.2CT3A.2H03A             SET G REG TO
                    *       BG02A   = 203FA.2IUAA.2RDKA.2CT3A.2H03A               FIVE
                    *       AG03A   = 203FA.2IUAA.2RDKA.2CT3A.2H03A
                    *       AF01A   = 203FA.2IUAA.2RDKA.2CT3A.2H03A             STATE 4 NEXT
                    *       BF02A   = 203FA.2IUAA.2RDKA.2CT3A.2H03A.3Y9CA
                    *       BF03A   = 203FA.2IUAA.2RDKA.2CT3A.2H03A.3BNCA
                    *  21   TK01A   = 0K01A.204FA                               RESET K01
                    *       TK02A   = 0K02A.204FA                               RESET K02
                    *       6RBHA0  = 204FA.3U01A                               RESET B01.04
                    *       6RBLA0  = 204FA.3U01A                               RESET B05.08
                    *       BB09A   = 204FA.3U01A.2CK0A                         RESET B09
                    *  22   2CK3A   = 3U01A.204FA.2IZSA                         G REG CLOCK
                    *  23   AU03A   = 204FA.2IZSA.2U01A.2RDYA.2SC1A             SET U03
                    *  24   BU03A   = 204FA.2U01A.2IZSA                         RESET U03
                    *       BU01A   = 204FA.2U03A.2IZSA                         RESET U01
                    *  25   BF01A   = 204FA.3U02A.3U01A.2BGAA                   STATE 1 NEXT
                    *       AF03A   = 204FA.3U02A.3U01A.2BGAA
                    *
                    *       CONTROLLER IS NOW IN WAIT STATE ONE. TIMING FOR SEQUENCE SHOULD
                    *       BE FROM 16 TO 68 MILLISEC.
                    *
                    *       TEST VERIFICATION LOGIC
                    *
```

```
06224  0 43 00430          BRM     OBJECT
06225  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06226    00777777          DATA    777777
06227  0 20 26273          NOP     F2M75
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06230  0 43 00430          BRM     OBJECT
06231  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06232    00400000          DATA    400000
06233  0 20 26342          NOP     F2M76
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06234  0 43 00430          BRM     OBJECT
06235  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06236    00200000          DATA    200000
06237  0 20 26375          NOP     F2M77
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06240  0 43 00430          BRM     OBJECT
06241  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06242    00100000          DATA    100000
06243  0 20 26422          NOP     F2M78
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06244  0 43 00430          BRM     OBJECT
06245  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06246    00040000          DATA    40000
06247  0 20 26452          NOP     F2M79
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06250  0 43 00430          BRM     OBJECT
```



```
06251  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06252    00020000          DATA    20000
06253  0 20 26500          NOP     F2M80
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06254  0 43 00430          BRM     OBJECT
06255  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06256    00010000          DATA    10000
06257  0 20 26537          NOP     F2M81
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06260  0 43 00430          BRM     OBJECT
06261  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06262    00004000          DATA    4000
06263  0 20 26562          NOP     F2M82
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06264  0 43 00430          BRM     OBJECT
06265  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06266    00002000          DATA    2000
06267  0 20 26605          NOP     F2M83
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06270  0 43 00430          BRM     OBJECT
06271  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06272    00001000          DATA    1000
06273  0 20 26633          NOP     F2M84
                     *
                     *      TEST VERIFICATION LOGIC
                     *
06274  0 43 00430          BRM     OBJECT
06275  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
```

```
06276    00000400          DATA    400
06277  0 20 26657          NOP     F2M85
                    *
                    *       TEST VERIFICATION LOGIC
                    *
06300  0 43 00430          BRM     OBJECT
06301  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06302    00000200          DATA    200
06303  0 20 26704          NOP     F2M86
                    *
                    *       TEST VERIFICATION LOGIC
                    *
06304  0 43 00430          BRM     OBJECT
06305  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06306    00000100          DATA    100
06307  0 20 26731          NOP     F2M87
                    *
                    *       TEST VERIFICATION LOGIC
                    *
06310  0 43 00430          BRM     OBJECT
06311  0 43 22362          BRM     F2S5            PERFORM OBJECT TEST
06312    00000040          DATA    40
06313  0 20 26755          NOP     F2M88
                    *
                    *       TEST PAVA LOGIC
                    *
06314  0 43 00430          BRM     OBJECT
06315  0 43 22407          BRM     F2S6            PERFORM OBJECT TEST
06316    00000000          DATA    0
06317    00017600          DATA    17600
06320  0 20 26777          NOP     F2M89
                    *
                    *       TEST PAVA LOGIC
                    *
06321  0 43 00430          BRM     OBJECT
06322  0 43 22407          BRM     F2S6            PERFORM OBJECT TEST
```



```
06323    00777777          DATA    777777
06324    00760000          DATA    760000
06325  0 20 26777          NOP     F2M89
                    *
                    *       TEST PAVA LOGIC
                    *
06326  0 43 00430          BRM     OBJECT
06327  0 43 22407          BRM     F2S6            PERFORM OBJECT TEST
06330    00777777          DATA    777777
06331    00377777          DATA    377777
06332  0 20 27016          NOP     F2M90
                    *
                    *       TEST PAVA LOGIC
                    *
06333  0 43 00430          BRM     OBJECT
06334  0 43 22407          BRM     F2S6            PERFORM OBJECT TEST
06335    00777777          DATA    777777
06336    00577777          DATA    577777
06337  0 20 27023          NOP     F2M91
                    *
                    *       TEST PAVA LOGIC
                    *
06340  0 43 00430          BRM     OBJECT
06341  0 43 22407          BRM     F2S6            PERFORM OBJECT TEST
06342    00777777          DATA    777777
06343    00677777          DATA    677777
06344  0 20 27030          NOP     F2M92
                    *
                    *       TEST PAVA LOGIC
                    *
06345  0 43 00430          BRM     OBJECT
06346  0 43 22407          BRM     F2S6            PERFORM OBJECT TEST
06347    00777777          DATA    777777
06350    00737777          DATA    737777
06351  0 20 27035          NOP     F2M93
                    *
```

```
                    *       TEST PAVA LOGIC
                    *
06352  0 43 00430           BRM     OBJECT
06353  0 43 22407           BRM     F2S6          PERFORM OBJECT TEST
06354    00777777           DATA    777777
06355    00757777           DATA    757777
06356  0 20 27042           NOP     F2M94
                    *
                    *       TEST PAVA LOGIC
                    *
06357  0 43 00430           BRM     OBJECT
06360  0 43 22407           BRM     F2S6          PERFORM OBJECT TEST
06361    00777777           DATA    777777
06362    00767777           DATA    767777
06363  0 20 27047           NOP     F2M95
                    *
                    *       TEST PAVA LOGIC
                    *
06364  0 43 00430           BRM     OBJECT
06365  0 43 22407           BRM     F2S6          PERFORM OBJECT TEST
06366    00777777           DATA    777777
06367    00773777           DATA    773777
06370  0 20 27054           NOP     F2M96
                    *
                    *       TEST PAVA LOGIC
                    *
06371  0 43 00430           BRM     OBJECT
06372  0 43 22407           BRM     F2S6          PERFORM OBJECT TEST
06373    00777777           DATA    777777
06374    00775777           DATA    775777
06375  0 20 27061           NOP     F2M97
                    *
                    *       TEST PAVA LOGIC
                    *
06376  0 43 00430           BRM     OBJECT
06377  0 43 22407           BRM     F2S6          PERFORM OBJECT TEST
```



```
06400    00777777           DATA    777777
06401    00776777           DATA    776777
06402  0 20 27066           NOP     F2M98
                    *
                    *       TEST PAVA LOGIC
                    *
06403  0 43 00430           BRM     OBJECT
06404  0 43 22407           BRM     F2S6          PERFORM OBJECT TEST
06405    00777777           DATA    777777
06406    00777377           DATA    777377
06407  0 20 27073           NOP     F2M99
                    *
                    *       TEST PAVA LOGIC
                    *
06410  0 43 00430           BRM     OBJECT
06411  0 43 22407           BRM     F2S6          PERFORM OBJECT TEST
06412    00777777           DATA    777777
06413    00775777           DATA    775777
06414  0 20 27100           NOP     F2M100
                    *
                    *       TEST PAVA LOGIC
                    *
06415  0 43 00430           BRM     OBJECT
06416  0 43 22407           BRM     F2S6          PERFORM OBJECT TEST
06417    00000000           DATA    0
06420    00400000           DATA    400000
06421  0 20 27105           NOP     F2M101
                    *
                    *       TEST PAVA LOGIC
                    *
06422  0 43 00430           BRM     OBJECT
06423  0 43 22407           BRM     F2S6          PERFORM OBJECT TEST
06424    00000000           DATA    0
06425    00200000           DATA    200000
06426  0 20 27114           NOP     F2M102
                    *
```

```
                    *       TEST PAVA LOGIC
                    *
06427  0 43 00430           BRM     OBJECT
06430  0 43 22407           BRM     F2S6            PERFORM OBJECT TEST
06431    00000000           DATA    0
06432    00100000           DATA    100000
06433  0 20 27123           NOP     F2M103
                    *
                    *       TEST PAVA LOGIC
                    *
06434  0 43 00430           BRM     OBJECT
06435  0 43 22407           BRM     F2S6            PERFORM OBJECT TEST
06436    00000000           DATA    0
06437    00040000           DATA    40000
06440  0 20 27137           NOP     F2M104
                    *
                    *       TEST PAVA LOGIC
                    *
06441  0 43 00430           BRM     OBJECT
06442  0 43 22407           BRM     F2S6            PERFORM OBJECT TEST
06443    00000000           DATA    0
06444    00020000           DATA    20000
06445  0 20 27141           NOP     F2M105
                    *
                    *       TEST PAVA LOGIC
                    *
06446  0 43 00430           BRM     OBJECT
06447  0 43 22407           BRM     F2S6            PERFORM OBJECT TEST
06450    00000000           DATA    0
06451    00010000           DATA    10000
06452  0 20 27153           NOP     F2M106
                    *
                    *       TEST PAVA LOGIC
                    *
06453  0 43 00430           BRM     OBJECT
06454  0 43 22407           BRM     F2S6            PERFORM OBJECT TEST
```



```
06455    00000000           DATA    0
06456    00004000           DATA    4000
06457  0 20 27160           NOP     F2M107
                    *
                    *       TEST PAVA LOGIC
                    *
06460  0 43 00430           BRM     OBJECT
06461  0 43 22407           BRM     F2S6            PERFORM OBJECT TEST
06462    00000000           DATA    0
06463    00002000           DATA    2000
06464  0 20 27167           NOP     F2M108
                    *
                    *       TEST PAVA LOGIC
                    *
06465  0 43 00430           BRM     OBJECT
06466  0 43 22407           BRM     F2S6            PERFORM OBJECT TEST
06467    00000000           DATA    0
06470    00001000           DATA    1000
06471  0 20 27176           NOP     F2M109
                    *
                    *       TEST PAVA LOGIC
                    *
06472  0 43 00430           BRM     OBJECT
06473  0 43 22407           BRM     F2S6            PERFORM OBJECT TEST
06474    00000000           DATA    0
06475    00000400           DATA    400
06476  0 20 27205           NOP     F2M110
                    *
                    *       TEST PAVA LOGIC
                    *
06477  0 43 00430           BRM     OBJECT
06500  0 43 22407           BRM     F2S6            PERFORM OBJECT TEST
06501    00000000           DATA    0
06502    00000200           DATA    200
06503  0 20 27214           NOP     F2M111
                    *
```

```
                        *       TEST 6S10A0
                        *
06504  0 43 00430              BRM     OBJECT
06505  0 76 33272              LDA     =0
06506  0 43 22747              BRM     SETUP3
06507  0 01 06520              BRU     F2E58           DO NOT USE ADDRESSED DISC
06510  0 06 10126              E0D     10126           ALERT DISC FILE
06511  0 13 23332              POT     POTWRD          POSITION ARM
06512  0 71 33332              LDX     =-39970         7 MILLISEC DELAY
06513  0 41 06513              BRX     *
06514  0 40=10126              SKS=    10126           DISC FILE READY TEST
06515  0 01 06517              BRU     *+2             CONTROLLER SHOULD NOT BE READY YET
06516  0 43 00460              BRM     ERROR
06517  0 20 27224              NOP     F2M112
06520  0 43 00434  F2E58       BRM     END
                        *
                        *       TEST 6S10A0
                        *
06521  0 43 00430              BRM     OBJECT
06522  0 76 33272              LDA     =0              POTWORD
06523  0 43 22747              BRM     SETUP3
06524  0 01 06534              BRU     F2E49           DO NOT USE ADDRESSED DISC
06525  0 06 10126              E0D     10126           ALERT DISC FILE
06526  0 13 23332              POT     POTWRD          POT TO CONTROLLER
06527  0 40=12126              SKS=    12126           TRACK VERIFIED TEST
06530  0 01 06527              BRU     *-1             WAIT FOR VERIFICATION
06531  0 40=10126              SKS=    10126           DISC FILE READY TEST
06532  0 43 00460              BRM     ERROR           CONTROLLER NOT READY
06533  0 20 27233              NOP     F2M113
06534  0 43 00434  F2E49       BRM     END
                        *
                        *       TEST 6S10A0
                        *
06535  0 43 00430              BRM     OBJECT
06536  0 76 33272              LDA     =0              POTWORD
06537  0 43 22747              BRM     SETUP3
```



```
06540  0 01 06551              BRU     F2E50           DO NOT USE ADDRESSED DISC
06541  0 06 10126              E0D     10126           ALERT DISC FILE
06542  0 13 23332              POT     POTWRD          POT TO DISC
06543  0 40=12126              SKS=    12126           TRACK VERIFIED TEST
06544  0 01 06543              BRU     *-1             WAIT FOR VERIFICATION
06545  0 40=16026              SKS=    16026           SHOULD NOT SKIP
06546  0 01 06550              BRU     *+2             OK
06547  0 43 00460              BRM     ERROR
06550  0 20 27240              NOP     F2M114
06551  0 43 00434  F2E50       BRM     END
                        *
                        *       TEST 6S10A0
                        *
06552  0 43 00430              BRM     OBJECT
06553  0 76 33272              LDA     =0              POTWORD
06554  0 43 22747              BRM     SETUP3
06555  0 01 06566              BRU     F2E51           DO NOT USE ADDRESSED DISC
06556  0 06 10126              E0D     10126           ALERT DISC FILE
06557  0 13 23332              POT     POTWRD          POT TO DISC
06560  0 40=12126              SKS=    12126           TRACK VERIFIED TEST
06561  0 01 06560              BRU     *-1             WAIT FOR VERIFICATION
06562  0 40=16226              SKS=    16226           SHOULD NOT SKIP
06563  0 01 06565              BRU     *+2             OK
06564  0 43 00460              BRM     ERROR
06565  0 20 27252              NOP     F2M115
06566  0 43 00434  F2E51       BRM     END
                        *
                        *       SECTOR VERIFICATION LOGIC CHECK
                        *
06567  0 43 00430              BRM     OBJECT
06570  0 43 22445              BRM     F257            PERFORM OBJECT TEST
06571    00777777              DATA    777777
06572  0 20 27354              NOP     F2M118
                        *
                        *       SECTOR VERIFICATION LOGIC CHECK
                        *
```

```
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06573  0 43 00430          BRM     OBJECT
06574  0 43 22445          BRM     F2S7            PERFORM OBJECT TEST
06575    00000002          DATA    2
06576  0 20 27403          NOP     F2M119
                    *
                    *       SECTOR VERIFICATION LOGIC CHECK
                    *
06577  0 43 00430          BRM     OBJECT
06600  0 43 22445          BRM     F2S7            PERFORM OBJECT TEST
06601    00000001          DATA    1
06602  0 20 27432          NOP     F2M120
                    *
                    *       TEST FOR ERRORS DURING VERIFICATION
                    *
06603  0 43 00430          BRM     OBJECT
06604  0 76 33272          LDA     *0              POTWORD
06605  0 43 22747          BRM     SETUP3
06606  0 01 06621          BRU     F2E56           DISC OUT OF BOUNDS
06607  0 06 10126          EOD     10126           ALERT DISC FILE
06610  0 13 23332          POT     POTWRD          POT TO DISC
06611  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
06612  0 01 06611          BRU     **1             WAIT FOR VERIFICATION
06613  0 06 10126          EOD     10126           ALERT DISC FILE
06614  0 13 23332          POT     POTWRD          POT TO DISC
06615  0 43 23275          BRM     X500            WAIT 500 MILLISEC
06616  0 40*11126          SKS*    11126           DISC FILE ERROR TEST
06617  0 43 00460          BRM     ERROR           CONTROLLER ERROR SET
06620  0 20 27460          NOP     F2M121
06621  0 43 00434  F2E56    BRM     END
                    *
                    *       TEST FOR ERRORS DURING VERIFICATION
                    *
06622  0 43 00430          BRM     OBJECT
06623  0 76 33272          LDA     *0              POTWORD
06624  0 43 22747          BRM     SETUP3
06625  0 01 06640          BRU     F2E57           DISC OUT OF BOUNDS
```

```
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06626  0 06 10126          EOD     10126           ALERT DISC FILE
06627  0 13 15423          POT     BIT16           MOVE ARM TO POSITION 1
06630  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
06631  0 01 06640          BRU     F2E57           ERROR ABORT
06632  0 06 10126          EOD     10126           ALERT DISC FILE
06633  0 13 23332          POT     POTWRD          MOVE TO POSITION 0
06634  0 43 23275          BRM     X500            WAIT 500 MILLISEC
06635  0 40*11126          SKS*    11126           DISC FILE ERROR TEST
06636  0 43 00460          BRM     ERROR           CONTROLLER ERROR SET
06637  0 20 27504          NOP     F2M122
06640  0 43 00434  F2E57    BRM     END
06641  0 43 00456  ENDF2    BRM     FDONE           EXIT THIS FUNCTION
```

```
                        *
                        *       FUNCTION PARAMETER TABLES
                        *
06642  0 20 06650  FPT2    NOP     FIM2            FUNCTION IDENTIFIER MESSAGE
06643  0 20 06670          NOP     FAM2            FUNCTION ABSTRACT MESSAGE
06644  0 20 05436          NOP     FVM1            FUNCTION VARIABLES MESSAGE
06645  0 01 04777          ONE     FVT1            FUNCTION VARIABLES (NONE)
06646  0 00 07042          PZE     FUNC3           POINTER TO NEXT FUNCTION
06647    10000000          DATA    10000000        FUNCTION IDENTIFIER BIT (BIT 2)
                        *
                        *       FUNCTION MESSAGES
                        *
06650    52261200  FIM2    BCD     ' F 02 - DISC FILE CONTROLLER DIAGNOSTIC WITH NO DATA'
06651    32124312
06652    24316223
06653    12263143
06654    25122346
06655    45635146
06656    43432551
06657    12243121
06660    27454462
06661    63312312
06662    66316330
06663    12454612
06664    24216321
06665    12635121          BCD     ' TRANSFER!!'
06666    45622625
06667    51371212
06670    52322431  FAM2    BCD     '  DISC FILE CONTROLLER DIAGNOSTIC WITH NO DATA TRANSFER'
06671    62231226
06672    31432512
06673    23464563
06674    51464343
06675    25511224
06676    31212745
06677    46625331
```



```
06700    23126631
06701    63301245
06702    46122421
06703    63211263
06704    51214562
06705    26255112
06706    52526330          BCD     '  THIS FUNCTIONS TESTS THE 9164 DISC FILE CONTROLLER AS'
06707    31621226
06710    64452363
06711    31464562
06712    12632562
06713    63621263
06714    52251211
06715    51063412
06716    24316223
06717    12263143
06720    25122346
06721    45635146
06722    43432551
06723    12216212
06724    52446423          BCD     ' MUCH AS POSSIBLE WITHOUT DATA TRANSFER. THE FOLLOWING'
06725    30122162
06726    12474462
06727    62312243
06730    25126631
06731    63304664
06732    63122421
06733    63211263
06734    51214562
06735    26255133
06736    12633025
06737    12264643
06740    43466631
06741    45271212
06742    52216262          BCD     ' ASSUMPTIONS ARE MADE!!'
06743    64444763
```

```
06744    31464562
06745    12215125
06746    12442124
06747    25151212
06750    52665131          BCD     ' WRITE HEADER SWITCH IS OFF!
06751    63251230
06752    25212425
06753    51126266
06754    31632330
06755    12316212
06756    46262412
06757    52454612          BCD     ' NO DISCS WRITE PROTECTED!
06760    24316223
06761    62126651
06762    31632512
06763    47514663
06764    25236325
06765    24121212
06766    52255151          BCD     ' ERROR STOP SWITCH IS IN CONTINUE!
06767    46511262
06770    63464712
06771    62663163
06772    23301231
06773    62123145
06774    12234445
06775    63314564
06776    25121212
06777    52263143          BCD     ' FILE IS ON LINE!
07000    25123162
07001    12464312
07002    43314525
07003    52302521          BCD     ' HEADERS ARE GOOD!
07004    24255162
07005    12215125
07006    12274646
07007    24121212
```



```
07010    52462241          BCD     ' OBJECT TESTS USING DISCS WHICH ARE DELETED FROM THE'
07011    25236312
07012    63256263
07013    62126462
07014    31452712
07015    24316223
07016    62126630
07017    31233212
07020    21512512
07021    24254325
07022    63252412
07023    26514644
07024    12633025
07025    52644531          BCD     ' UNIT VARIABLES D0QT17 AND D20T37 WILL BE SKIPPED.''
07026    63126521
07027    51312122
07030    43256212
07031    24000263
07032    01071221
07033    45241224
07034    02006303
07035    07126631
07036    43431222
07037    25126242
07040    31474725
07041    24333712
```

```
                        *
                        *
                        *       FUNCTION 3 = 9164 DISC FILE CONTROLLER DIAGNOSTIC (DATA XFER)
                        *
                        *
07042  0 43 00424  FUNC3  BRM     FUNCTN          FUNCTION LINK
07043  0 20 11461         NOP     FPT3
07044  0 43 00430         BRM     OBJECT
07045  0 43 00440         BRM     RETURN          SET INTERRUPT LINKAGE
07046  0 20 23351         NOP     ENTER
07047  0 02 20004         DIR                     DISABLE INTERRUPTS
07050  0 76 00401         LDA     STATUS          GET SYSTEM STATUS WORD
07051  0 72 15414         SKA     BIT9            IS DISC SOFTWARE WRITE-PROTECTED
07052  0 01 11460         BRU     ENDF3           YES = EXIT FUNCTION
07053  0 76 00332         LDA     FLAGS           CHECK FOR PREVIOUS KEY
07054  0 72 04765         SKA     UPT=4
07055  0 01 11460         BRU     ENDF3           DISC KEYED
                        *
                        *       TEST ABILITY TO CONNECT BUFFER FOR WRITE
                        *
07056  0 43 00430         BRM     OBJECT
07057  0 76 33272         LDA     =0              PSTWORD
07060  0 43 22755         BRM     SETUP4          SETUP OBJECT TEST
07061  0 01 07072         BRU     F3E1            ABORT
07062  0 43 22766         BRM     CPST1           PST TO CHANNEL
07063     00074000         DATA    4B4=STADDR
07064  0 77 36706         LAX     =570D           WAIT 1 MILLISEC
07065  0 41 07065         BRX     *
07066  0 40=12126         SKS=    12126           TRACK VERIFIED TEST
07067  0 01 07071         BRU     *+2             CONTROLLER LEFT STATE 1 = OK
07070  0 43 00460         BRM     ERROR
07071  0 20 27551         NOP     F3M1
07072  0 43 00434  F3E1   BRM     END
                        *
                        *       TEST 2MPAA
                        *
```



```
07073  0 43 00430         BRM     OBJECT
07074  0 40=12146         SKS=    12146           CARD PUNCH BUFFER TEST
07075  0 01 07077         BRU     *+2
07076  0 01 07105         BRU     F3E2            READY = ABORT TEST
07077  0 40=14146         SKS=    14146           CARD PUNCH READY TEST
07100  0 01 07102         BRU     *+2
07101  0 01 07105         BRU     F3E2            READY = ABORT TEST
07102  0 43 22470         BRM     F3S1            PERFORM TEST
07103  0 06 03746         EOD     3746
07104  0 20 27446         NOP     F3M2
07105  0 43 00434  F3E2   BRM     END
                        *
                        *       TEST 2MPAA
                        *
07106  0 43 00430         BRM     OBJECT
07107  0 40=10316         SKS=    10316           MAGPACK TEST (CHECK FOR MAG TAPE 6)
07110  0 01 07112         BRU     *+2             NO MAG TAPE 6
07111  0 01 07115         BRU     F3E3
07112  0 43 22470         BRM     F3S1            PERFORM TEST
07113  0 06 03776         EOD     3776
07114  0 20 27461         NOP     F3M3
07115  0 43 00434  F3E3   BRM     END
                        *
                        *       TEST 2MPAA
                        *
07116  0 43 00430         BRM     OBJECT
07117  0 43 22470         BRM     F3S1            PERFORM TEST
07120  0 06 03762         EOD     3762
07121  0 20 27461         NOP     F3M3
07122  0 43 00434         BRM     END
                        *
                        *       TEST 2MPAA
                        *
07123  0 43 00430         BRM     OBJECT
07124  0 43 22470         BRM     F3S1            PERFORM TEST
07125  0 06 03764         EOD     3764
```

```
07126  0 20 27661          NOP     F3M3
07127  0 43 00434          BRM     END
                    *
                    *      TEST 2MHAA
                    *
07130  0 43 00430          BRM     OBJECT
07131  0 43 22470          BRM     F3E1            PERFORM TEST
07132  0 06 03767          E0D     3767
07133  0 20 27670          NOP     F3M4
07134  0 43 00434          BRM     END
                    *
                    *      VERIFY ECW RECEIVED
                    *
07135  0 43 00430          BRM     OBJECT
07136  0 76 33272          LDA     *0              POTWORD
07137  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
07140  0 01 07151          BRU     F3E8            ERROR ABORT
07141  0 06*10100          E0D*    10100           ALERT CHANNEL
07142  0 06 14200          E0D     14200           EXTENDED MODE E0D
07143  0 13 33333          POT     *4B4*STADDR     WC = 1
07144  0 06 03166          E0D     3166            WRITE SECTOR MODE, 1 CHARACTER
07145  0 43 23265          BRM     W200            WAIT 200 MILLISEC
07146  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
07147  0 43 00460          BRM     ERROR           COUNT NOT ZERO = ECW NOT RECEIVED
07150  0 20 27477          NOP     F3M6
07151  0 43 00434  F3E8     BRM     END
                    *
                    *      TEST ABILITY TO CYCLE TO STATE 0 FROM STATE 7 (WRITE)
                    *
07152  0 43 00430          BRM     OBJECT
07153  0 76 33272          LDA     *0              POTWORD
07154  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
07155  0 01 07200          BRU     F3E9            ERROR ABORT
07156  0 06*10100          E0D*    10100           ALERT CHANNEL
07157  0 06 14200          E0D     14200           EXTENDED MODE E0D
07160  0 13 33334          POT     *2B5*STADDR     WC = 4
```



```
07161  0 06 03166          E0D     3166            1 CHARACTER
07162  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
07163  0 01 07162          BRU     *-1             WAIT FOR ECW TO DISCONNECT
07164  0 77 22754          EAX     *7700D          WAIT 4.4 MILLISEC
07165  0 41 07165          BRX     *
07166  0 40*10126          SKS*    10126           DISC FILE READY TEST
07167  0 01 07171          BRU     *+2             CONTROLLER NOT READY
07170  0 01 07174          BRU     *+4
07171  0 43 00460          BRM     ERROR
07172  0 20 27752          NOP     F3M7
07173  0 01 07200          BRU     F3E9
07174  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
07175  0 01 07200          BRU     F3E9            NOT IN STATE 1
07176  0 43 00460          BRM     ERROR           RETURNED TO STATE 1
07177  0 20 27770          NOP     F3M8
07200  0 43 00434  F3E9     BRM     END
                    *
                    *      LOGIC FLOW FOR PRECEEDING OBJECT TEST
                    *
                    *      ENTRANCE FROM STATE 3 (SEARCH)
                    *
                    *  1   AF01A   = 2BGEA                                 STATE 7 NEXT
                    *                2BGEA*2F03A*2IUHA*2H03A*2CT3A*2RDKA
                    *  2   6RBHAO  = 2RSTA                                 RESET B01*04
                    *      6RBLAO  = 2RSTA                                 RESET B05*08
                    *      RBIAO   = 2RSTA*2CKOA                           RESET B09
                    *      6RSLXO  = 257FA*2IUCA*3U01A                     RESET L01*06
                    *      TK01A   = 2RSKA*0K01A                           RESET K01
                    *      TK02A   = 2RSKA*0K02A                           RESET K02
                    *                2RSKA*257FA*2IUCA*3U01A
                    *      8ENBA   = 207FA*3CLRA                           WRITE ENABLE
                    *  3   8WDCA   = 207FA*2IUCA*2CKOA                     WRITE DATA 0
                    *      AU01A   = 207FA*2CKOA                           SET U01
                    *  4   2CKBA   = 207FA*2U01A*2CKOA                     @ REG CLOCK
                    *  5   AU04A   = 207FA*3U02A*2H07A*2CT1A*2CKOA         SET U04
                    *  6   6ECYAO  = 207FA*2U04A                           ECW
```

```
*  7   BU04A   = 207FA*3U02A*246BA*2CK0A                    RESET U04
*      BU01A   = 207FA*3U02A*246BA*2CK0A                    RESET U01
*      AU02A   = 207FA*246BA*2CK0A                          SET U02
*  8   6RBHA0  = 2RSTA                                      RESET B01-04
*      6RBLA0  = 2RSTA                                      RESET B05-08
*      RBIA0   = 2RSTA*2CK0A                                RESET B09
*      2SGSX   = 207FA*2U04A*3U02A*246BA*2CK0A
*      AS01A   = 2SGSX*8R10A                                SET S REG
*      BS01A   = 2SGSX*9R10A                                RESET S REG
*  9   8WD1A   = 207FA*2CK0A*2IUAA                          WRITE DATA 1
*      AU01A   = 207FA*2CK0A                                SET U01
* 10   2SSRX   = 207FA*2BUAA*2IGBA*2CK0A                    SHIFT S REG
* 11   BS06A   = 207FA*2SSRX                                RESET S06
*      8WD1A   = 2VFCA*2BUAA*0S01A                          WRITE DATA 1
*      8WD0A   = 2VFCA*2BUAA*1S01A                          WRITE DATA 0
*
*      AT THIS POINT, THE BUFFER SHOULD DISCONNECT (ZERO WORD COUNT)
*
* 12   BX03A   = 2MHAA*8Y9QA                                RESET X03
* 13   BU03A   = 3X03A*2CK0A*207FA*2U02A                    RESET U03
*
*      NOW, SGSX IS INHIBITED AND ZEROS WILL BE WRITTEN
*
* 14   BU01A   = 207FA*2FLBA*2CK0A                          RESET U01
*                2FLBA*2FCHA*2CT5A                          COUNT = 383
*                7FCHA0*1B01A*1B02A*1B03A*1B04A*1B05A*1B06A
* 15   2RSTA   = 0F03A*3U01A                                CLEAR B REG
*      AU01A   = 207FA*2CK0A                                SET U01
*
* 16   IF MORE PACKETS:
*
*      8WD1A   = 207FA*2IUAA*2CK0A                          WRITE DATA 1
*
*      IF LAST PACKET:
*
* 17   AU03A   = 207FA*2U02A*0K01A*0K02A*2FCHA*2CK0A        SET U03
```



```
* 18   BU02A   = 207FA*2U03A*2FLBA*2CK0A                    RESET U02
*      BU01A   = 207FA*2FLBA*2CK0A                          RESET U01
* 19   8WD0A   = 2VFCA*3U01A*3U02A                          WRITE DATA 0
* 20   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*2BUBA*2CK0A                          SHIFT S REG
*      8WD1A   = 2VFCA*2BUBA*306JA*307JA*0S01A              WRITE DATA 1
*      8WD0A   = 2VFCA*2BUBA*306JA*307JA*1S01A              WRITE DATA 0
*                2BUBA=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   8WD1A   = 2VFCA*2IUDA*206JA*0P01A                    WRITE DATA 1
*      8WD0A   = 2VFCA*3U02A*206JA*1P01A                    WRITE DATA 0
* 26   8WD1A   = 2VFCA*2IUDA*207JA*0X02A                    CHAIN BIT
*                X02 SET DURING E80 IN STATE 1
* 27   2BGDA   = 207FA*2IUDA*2W02A*2CT2A*2CK0A
*      BU01A   = 2BGDA                                      RESET U01
*      BU03A   = 2BGDA                                      RESET U03
*      RG03A   = 2BGDA                                      RESET G03
*      BF01A   = 2BGDA*3X03A                                STATE 0 NEXT
*      BF02A   = 2BGDA*3X03A
*      BF03A   = 2BGDA*3X03A
*
```

```
                    *       THE CONTROLLER IS NOW IN STATE ZERO
                    *
                    *       TEST ECC GENERATION
                    *
07201  0 43 00430            BRM     OBJECT
07202  0 76 33272            LDA     =0
07203  0 43 22755            BRM     SETUP4          SET UP OBJECT TEST
07204  0 01 07237            BRU     F3E10           ERROR ABORT
07205  0 76 33272            LDA     =0              CLEAR 4 WORDS OF OUTPUT BUFFER
07206  0 77 37774            EAX     =4
07207  2 35 34004            STA     STADDR+4,2
07210  0 41 07207            BRX     *=1
07211  0 06*10100            EOD*    10100           ALERT CHANNEL
07212  0 06 14200            EOD     14200           EXTENDED MODE EOD
07213  0 13 33334            POT     =2B5+STADDR     WC = 4
07214  0 06 03166            EOD     3166            1 CHAR/WORD
07215  0 76 33272            LDA     =0
07216  0 40*10126            SKS*    10126           DISC FILE READY TEST
07217  0 01 07221            BRU     *+2             CONTROLLER NOT READY
07220  0 01 07234            BRU     F3L2
07221  0 55 15432            ADD     BIT23
07222  0 73 33335            SKG     =8000D          112 MILLISEC ELAPSED YET
07223  0 01 07216            BRU     F3L1            NO
07224  0 40*11126            SKS*    11126           DISC FILE ERROR TEST
07225  0 01 07231            BRU     *+4             CONTROLLER ERROR SET
07226  0 43 00460            BRM     ERROR
07227  0 20 27776            NOP     F3M9
07230  0 01 07237            BRU     F3E10
07231  0 43 00460            BRM     ERROR
07232  0 20 30011            NOP     F3M10
07233  0 01 07237            BRU     F3E10
07234  0 40*12100            SKS*    12100           CHANNEL ZERO WORD COUNT TEST
07235  0 43 00460            BRM     ERROR           CHANNEL WORD COUNT NOT ZERO
07236  0 20 30026            NOP     F3M11
07237  0 43 00434  F3E10     BRM     END
                    *
```



```
                    *       TEST PARITY CHECKING DURING WRITE
                    *
07240  0 43 00430            BRM     OBJECT
07241  0 76 33272            LDA     =0              POT=ORD
07242  0 43 22755            BRM     SETUP4          SET UP OBJECT TEST
07243  0 01 07254            BRU     F3E11           ABORT
07244  0 76 33272            LDA     =0
07245  0 35 34000            STA     STADDR          DATA WORD
07246  0 43 22766            BRM     CPOT1           POT TO CHANNEL
07247    00074000            DATA    4B4+STADDR
07250  0 43 23065            BRM     =200            WAIT 200 MILLISEC
07251  0 40*11126            SKS*    11126           DISC FILE ERROR TEST
07252  0 43 00460            BRM     ERROR           CONTROLLER ERROR SET
07253  0 20 30064            NOP     F3M12
07254  0 43 00434  F3E11     BRM     END
                    *
                    *       TEST PARITY CHECKING DURING WRITE
                    *
07255  0 43 00430            BRM     OBJECT
07256  0 43 22515            BRM     F3S2            PERFORM TEST
07257    40000000            DATA    4B7
07260  0 20 30156            NOP     F3M13
                    *
07261  0 43 00430            BRM     OBJECT
07262  0 43 22515            BRM     F3S2            PERFORM TEST
07263    20000000            DATA    2B7
07264  0 20 30201            NOP     F3M14
                    *
07265  0 43 00430            BRM     OBJECT
07266  0 43 22515            BRM     F3S2            PERFORM TEST
07267    10000000            DATA    1B7
07270  0 20 30317            NOP     F3M15
                    *
07271  0 43 00430            BRM     OBJECT
07272  0 43 22515            BRM     F3S2            PERFORM TEST
07273    04000000            DATA    4B6
```

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07274  0 20 30236          NOP     F3M16
                   *
07275  0 43 00430          BRM     OBJECT
07276  0 43 22515          BRM     F3S2            PERFORM TEST
07277    02000000          DATA    2B6
07300  0 20 30254          NOP     F3M17
                   *
07301  0 43 00430          BRM     OBJECT
07302  0 43 22515          BRM     F3S2            PERFORM TEST
07303    01000000          DATA    1B6
07304  0 20 30272          NOP     F3M18
                   *
                   *      TEST ABILITY TO DISCONNECT CONTROLLER AT END OF SECTOR
                   *
07305  0 43 00430          BRM     OBJECT
07306  0 76 33272          LDA     *0              POTWORD
07307  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
07310  0 01 07363          BRU     F3E18           ERROR ABORT
07311  0 77 37600          EAX     *128D           CLEAR 128 WORDS OF OUTPUT BUFFER
07312  0 76 33272          LDA     *0
07313  2 35 34200          STA     STADDR+128D,2
07314  0 41 07313          BRX     **1
07315  0 43 22766          BRM .   CPOT1           POT TO CHANNEL
07316    10034000          DATA    1B7*STADDR
07317  0 40*14100          SKS*    14100           CHANNEL ACTIVE TEST
07320  0 01 07322          BRU     **2             CHANNEL ACTIVE
07321  0 01 07330          BRU     F3L4
07322  0 55 15432          ADD     BIT23
07323  0 73 33331          SKG     *35714D         500 MILLISEC ELAPSED YET
07324  0 01 07317          BRU     F3L3            NO
07325  0 43 00460          BRM     ERROR
07326  0 20 30311          NOP     F3M19
07327  0 01 07363          BRU     F3E18
07330  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
07331  0 33 23310          PIN     TEMP            PIN CHANNEL ADDRESS
07332  0 76 23310          LDA     TEMP
```

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07333  0 75 33273          LDB     **1             MASK
07334  2 72 35236          SKM     *STADDR+128D    CHANNEL ADDRESS CORRECT
07335  0 01 07337          BRU     **2             NO
07336  0 01 07345          BRU     F3L5            YES
07337  2 54 33337          SUB     *STADDR         A = WORD COUNT
07340  0 75 15423          LDB     BIT16           B = CORRECT WORD COUNT
07341  0 71 33337          LDX     *STADDR         X = STARTING CORE ADDRESS
07342  0 43 00460          BRM     ERROR
07343  2 20 30322          NOP     F3M20,2
07344  0 01 07363          BRU     F3E18
07345  0 40*11126          SKS*    11126           DISC FILE ERROR TEST
07346  0 01 07350          BRU     **2             CONTROLLER ERROR SET
07347  0 01 07353          BRU     F3L6
07350  0 43 00460          BRM     ERROR
07351  0 20 30362          NOP     F3M21
07352  0 01 07363          BRU     F3E18
07353  0 43 23053  F3L6    BRM     CHECK           CHECK FOR CHANNEL READY
07354  0 01 07363          BRU     F3E18           ERROR ABORT
07355  0 06 10126          EOD     10126           ALERT DISC FILE
07356  0 13 15432          POT     BIT23           VERIFY SECTOR 1
07357  0 43 23075          BRM     .500            WAIT 500 MILLISEC
07360  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
07361  0 43 00460          BRM     ERROR           TRACK NOT VERIFIED
07362  0 20 30377          NOP     F3M22
07363  0 43 00434  F3E18   BRM     END
                   *
                   *      TEST FOR ECW ON READ
                   *
07364  0 43 00430          BRM     OBJECT
07365  0 76 33272          LDA     *0              POTWORD
07366  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
07367  0 01 07400          BRU     F3E19           ERROR ABORT
07370  0 06*10100          EOD*    10100           ALERT CHANNEL
07371  0 06 14000          EOD     14000           EXTENDED MODE EOD
07372  0 13 33333          POT     *4B4*STADDR     WC = 1
07373  0 06 03126          EOD     3126            1 CHAR/WORD
```

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07374  0 43 23265          BRM     W200            WAIT 200 MILLISEC
07375  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
07376  0 43 00460          BRM     ERROR           COUNT NOT ZERO = ECW NOT RECEIVED
07377  0 20 30457          NOP     F3M29
07400  0 43 00434  F3E19   BRM     END
                   *
                   *       TEST ABILITY TO RETURN TO STATE 0 FROM STATE 5 (READ)
                   *
07401  0 43 00430          BRM     OBJECT
07402  0 76 33272          LDA     =0              PUTWORD
07403  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
07404  0 01 07423          BRU     F3E20           ERROR ABORT
07405  0 06*10100          EOD*    10100           ALERT CHANNEL
07406  0 06 14000          EOD     14000           EXTENDED MODE EOD
07407  0 13 33333          PUT     =4B4*STADDR     WC = 1
07410  0 06 03126          EOD     3126            READ 1 CHAR
07411  0 43 23265          BRM     W200            WAIT 200 MILLISEC
07412  0 40*10126          SKS*    10126           DISC FILE READY TEST
07413  0 01 07421          BRU     F3L7            CONTROLLER NOT READY
07414  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
07415  0 01 07423          BRU     F3E20           IN STATE 0
07416  0 43 00460          BRM     ERROR
07417  0 20 30554          NOP     F3M24
07420  0 01 07423          BRU     F3E20
07421  0 43 00460  F3L7    BRM     ERROR
07422  0 20 30572          NOP     F3M25
07423  0 43 00434  F3E20   BRM     END
                   *
                   *       TEST ABILITY TO WRITE/READ ONES
                   *
07424  0 43 00430          BRM     OBJECT
07425  0 76 33272          LDA     =0              PUTWORD
07426  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
07427  0 01 07472          BRU     F3E21           ERROR ABORT
07430  0 76 33273          LDA     ==1             OUTPUT WORD
07431  0 35 34000          STA     STADDR
```

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07432  0 43 22766          BRM     CPUT1           PUT TO CHANNEL
07433    000734000         DATA    4B4*STADDR
07434  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
07435  0 01 07472          BRU     F3E21           ERROR ABORT
07436  0 43 23153          BRM     PUTOUT          PUT TO DISC
07437  0 01 07472          BRU     F3E21           ERROR ABORT
07440  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
07441  0 01 07472          BRU     F3E21           ERROR ABORT
07442  0 76 33272          LDA     =0              CLEAR INPUT LOCATION
07443  0 35 34000          STA     STADDR
07444  0 43 22775          BRM     CPUT2           PUT TO CHANNEL
07445    000734000         DATA    4B4*STADDR
07446  0 43 23265          BRM     W200            WAIT 200 MILLISEC
07447  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
07450  0 01 07452          BRU     *+2             WORD COUNT NOT ZERO
07451  0 01 07460          BRU     F3L8
07452  0 76 33272          LDA     =0
07453  0 75 15432          LDB     BIT23
07454  0 71 33337          LDX     =STADDR
07455  0 43 00460          BRM     ERROR
07456  2 20 30322          NOP     F3M20,2
07457  0 01 07472          BRU     F3E21
07460  0 76 34000  F3L8    LDA     STADDR          GET INPUT WORD
07461  0 75 33273          LDB     ==1             MASK
07462  0 70 33273          SKE     ==1             INPUT DATA CORRECT
07463  0 01 07465          BRU     *+2             NO
07464  0 01 07472          BRU     F3E21
07465  0 71 33337          LDX     =STADDR
07466  0 43 00454          BRM     REPORT
07467  2 20 30455          NOP     F3M26,2
07470  0 43 00460          BRM     ERROR
07471  0 20 30476          NOP     F3M27
07472  0 43 00434  F3E21   BRM     END
                   *
                   *       TEST ABILITY TO WRITE/READ ZEROS
                   *
```

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07473  0 43 00430          BRM     OBJECT
07474  0 76 33272          LDA     =0              POTWORD
07475  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
07476  0 01 07541          BRU     F3E22           ERROR ABORT
07477  0 76 33272          LDA     =0              OUTPUT WORD
07500  0 35 34000          STA     STADDR
07501  0 43 22766          BRM     CPOT1           POT TO CHANNEL
07502    00074000          DATA    4B4+STADDR
07503  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
07504  0 01 07541          BRU     F3E22           ERROR ABORT
07505  0 43 23153          BRM     POTOUT          POT TO DISC
07506  0 01 07541          BRU     F3E22
07507  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
07510  0 01 07541          BRU     F3E22
07511  0 76 33273          LDA     ==1             ALTER INPUT LOCATION
07512  0 35 34000          STA     STADDR
07513  0 43 22775          BRM     CPOT2           POT TO CHANNEL
07514    00074000          DATA    4B4+STADDR
07515  0 43 23065          BRM     =200            WAIT 200 MILLISEC
07516  0 40=12100          SKS=    12100           CHANNEL ZERO WORD COUNT TEST
07517  0 01 07521          BRU     *+2             WORD COUNT NOT ZERO
07520  0 01 07527          BRU     F3L9
07521  0 76 33272          LDA     =0
07522  0 75 15432          LDB     BIT23
07523  0 71 33337          LDX     =STADDR
07524  0 43 00460          BRM     ERROR
07525  2 20 30322          NOP     F3M20,2
07526  0 01 07541          BRU     F3E22
07527  0 76 34000  F3L9    LDA     STADDR          GET INPUT WORD
07530  0 72 33273          SKA     ==1             WERE ZEROS READ
07531  0 01 07533          BRU     *+2             NO
07532  0 01 07541          BRU     F3E22
07533  0 75 33272          LDB     =0
07534  0 71 33337          LDX     =STADDR
07535  0 43 00454          BRM     REPORT
07536  2 20 30455          NOP     F3M26,2
```

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07537  0 43 00460          BRM     ERROR
07540  0 20 30727          NOP     F3M28
07541  0 43 00434  F3E22    BRM     END
                   *
                   *        TEST READ/WRITE PARITY
                   *
07542  0 43 00430          BRM     OBJECT
07543  0 76 33272          LDA     =0              POTWORD
07544  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
07545  0 01 07566          BRU     F3E23
07546  0 76 33272          LDA     =0              DATA WORD
07547  0 35 34000          STA     STADDR
07550  0 43 22766          BRM     CPOT1           POT TO CHANNEL
07551    00074000          DATA    4B4+STADDR
07552  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
07553  0 01 07566          BRU     F3E23
07554  0 43 23153          BRM     POTOUT          POT TO DISC
07555  0 01 07566          BRU     F3E23
07556  0 43 23053          BRM     CHECK           CHECK CHANNEL FOR READY
07557  0 01 07566          BRU     F3E23
07560  0 43 22775          BRM     CPOT2           POT TO CHANNEL
07561    00074000          DATA    4B4+STADDR
07562  0 43 23065          BRM     =200            WAIT 200 MILLISEC
07563  0 40=11100          SKS=    11100           CHANNEL ERROR TEST
07564  0 43 00460          BRM     ERROR           CHANNEL ERROR SET
07565  0 20 30735          NOP     F3M29
07566  0 43 00434  F3E23    BRM     END
                   *
                   *        TEST READ/WRITE PARITY
                   *
07567  0 43 00430          BRM     OBJECT
07570  0 76 33272          LDA     =0              POTWORD
07571  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
07572  0 01 07413          BRU     F3E24
07573  0 76 33306          LDA     =77             DATA WORD
07574  0 35 34000          STA     STADDR
```

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07575   0 43 22766           BRM     CPBT1           PBT TB CHANNEL
07576      00074000          DATA    4B4*STADDR
07577   0 43 23123           BRM     WAIT            WAIT FBR CBNTRBLLER READY
07600   0 01 07613           BRU     F3E24
07601   0 43 23153           BRM     PBTBUT          PBT TB DISC
07602   0 01 07613           BRU     F3E24
07603   0 43 23053           BRM     CHECK           CHECK FBR CHANNEL READY
07604   0 01 07613           BRU     F3E24
07605   0 43 22775           BRM     CPBT2           PBT TB CHANNEL
07606      00074000          DATA    4B4*STADDR
07607   0 43 23265           BRM     W200            WAIT 200 MILLISEC
07610   0 40*11100           SKS*    11100           CHANNEL ERRBR TEST
07611   0 43 00460           BRM     ERRBR           CHANNEL ERRBR SET
07612   0 20 31010           NBP     F3M30
07613   0 43 00434  F3E24     BRM     END
                    *
                    *        TEST TERMINATION BF STATE 7 TB STATE 3
                    *
07614   0 43 00430           BRM     BBJECT
07615   0 76 33272           LDA     *0              PBTWBRD
07616   0 43 22755           BRM     SETUP4          SET UP BBJECT TEST
07617   0 01 07647           BRU     F3E62
07620   0 43 22766           BRM     CPBT1           PBT TB CHANNEL
07621      04134000          DATA    4185*STADDR
07622   0 76 33340           LDA     *STADDR+63D     CHECK ADDRESS
07623   0 75 33273           LDB     *+1             MASK
07624   0 06 12100           EBD     12100           ALERT TB PIN CHANNEL ADDRESS
07625   0 33 23310           PIN     TEMP            PIN CHANNEL ADDRESS
07626   0 70 23310           SKM     TEMP            64 WBRDS WRITTEN YET
07627   0 01 07624           BRU     F3L45           NB
07630   0 77 37343           EAX     -285D           WAIT 1 MILLISEC
07631   0 41 07631           BRX     *
07632   0 40*10126           SKS*    10126           DISC FILE READY TEST
07633   0 01 07644           BRU     F3L47           NBT READY = BK
07634   0 40*12126           SKS*    12126           TRACK VERIFIED TEST
07635   0 01 07641           BRU     F3L46           IN STATE 0
```

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07636   0 43 00460           BRM     ERRBR           IN STATE 1
07637   0 20 31713           NBP     F3M54
07640   0 01 07647           BRU     F3E62
07641   0 43 00460  F3L46     BRM     ERRBR
07642   0 20 31333           NBP     F3M55
07643   0 01 07647           BRU     F3E62
07644   0 40*10100           SKS*    12100           CHANNEL ZERB WBRD CBUNT TEST
07645   0 43 00460           BRM     ERRBR           CBUNT SHBULD BE ZERB
07646   0 20 31364           NBP     F3M56
07647   0 43 00434  F3E62     BRM     END
                    *
                    *        CHECK FBR WBS FRBM CBNTRBLLER
                    *
07650   0 43 00430           BRM     BBJECT
07651   0 76 33272           LDA     *0              PBTWBRD
07652   0 43 22755           BRM     SETUP4          SET UP BBJECT TEST
07653   0 01 07705           BRU     F3E25
07654   0 43 00440           BRM     RETURN          SET INTERRUPT LINKAGE
07655   0 20 23333           NBP     PI2
07656   0 77 37477           EAX     -65D            CLEAR 65 WBRDS BF BUTPUT TABLE
07657   0 76 33272           LDA     *0
07660   2 35 34101           STA     STADDR+65D,2
07661   0 41 07660           BRX     *-1
07662   0 43 22766           BRM     CPBT1           PBT TB CHANNEL
07663      04074000          DATA    4084*STADDR
07664   0 43 23123           BRM     WAIT            WAIT FBR CBNTRBLLER READY
07665   0 01 07705           BRU     F3E25
07666   0 43 23053           BRM     CHECK           WAIT FBR CHANNEL READY
07667   0 01 07705           BRU     F3E25
07670   0 43 23153           BRM     PBTBUT          PBT TB DISC
07671   0 01 07705           BRU     F3E25
07672   0 06*10100           EBD*    10100           ALERT CHANNEL
07673   0 06 16000           EBD     16000           EXTENDED MBDE EBD
07674   0 13 33341           PBT     *4084*STADDR    WC = 65
07675   0 06 03726           EBD     3726            READ DISC FILE = SECTBR
07676   0 43 23265           BRM     W200            WAIT 200 MILLISEC
```

```
07677  0 02 20002          EIR                 ENABLE INTERRUPTS
07700  0 67 20060          LCY     48D         DUMMY CYCLES
07701  0 02 20004          DIR                 DISABLE INTERRUPTS
07702  0 53 15443          SKN     I8FLAG      I8 RECEIVED
07703  0 43 00460          BRM     ERROR       NO
07704  0 20 31045          NOP     F3M31
07705  0 43 00434  F3E25    BRM     END
                    *
                    *       TEST TERMINATION OF STATE 7 TO STATE 4
                    *
07706  0 43 00430          BRM     OBJECT
07707  0 76 33307          LDA     =177        PSTWORD
07710  0 43 22755          BRM     SETUP4      SET UP OBJECT TEST
07711  0 01 07761          BRU     F3E63
07712  0 43 22766          BRM     CPUT1       PUT TO CHANNEL
07713    C4074000          DATA    4048A+STADDR
07714  0 76 33342          LDA     =STADDR+64D COMPARE ADDRESS
07715  0 75 33273          LDB     =-1         MASK
07716  0 06 12100          EOD     12100       ALERT TO PIN CHANNEL ADDRESS
07717  0 33 23310          PIN     TEMP        PIN CHANNEL ADDRESS
07720  0 70 23310          SKM     TEMP        DO ADDRESSES COMPARE
07721  0 01 07716          BRU     F3L48       NO
07722  0 76 33272          LDA     =0
07723  0 40+10126          SKS+    10126       DISC FILE READY TEST
07724  0 01 07726          BRU     *+2         CONTROLLER NOT READY
07725  0 01 07741          BRU     F3L61
07726  0 40+11126          SKS+    11126       DISC FILE ERROR TEST
07727  0 01 07736          BRU     F3L60       CONTROLLER ERROR SET
07730  0 55 15432          ADD     BIT23
07731  0 73 33343          SKG     =-8974D     TIMED OUT YET
07732  0 01 07723          BRU     F3L49       NO
07733  0 43 00460          BRM     ERROR
07734  0 20 31517          NOP     F3M59
07735  0 01 07761          BRU     F3E63
07736  0 43 00460  F3L60    BRM     ERROR
07737  0 20 31435          NOP     F3M57
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07740  0 01 07761          BRU     F3E63
07741  0 40+12100          SKS+    12100       CHANNEL ZERO WORD COUNT TEST
07742  0 01 07744          BRU     *+2         COUNT NOT ZERO
07743  0 01 07747          BRU     F3L62
07744  0 43 00460          BRM     ERROR
07745  0 20 31477          NOP     F3M58
07746  0 01 07761          BRU     F3E63
07747  0 06 10126          EOD     10126       ALERT DISC FILE
07750  0 13 15423          PBT     BIT16       WILL VERIFY SECTOR 0 IN STATE 3
07751  0 40+12126          SKS+    12126       TRACK VERIFIED TEST
07752  0 01 07754          BRU     *+2         TRACK NOT VERIFIED
07753  0 01 07761          BRU     F3E63
07754  0 40+11126          SKS+    11126       DISC FILE ERROR TEST
07755  0 01 07757          BRU     *+2         CONTROLLER ERROR SET
07756  0 01 07751          BRU     F3L63
07757  0 43 00460          BRM     ERROR
07760  0 20 31537          NOP     F3M60
07761  0 43 00434  F3E63    BRM     END
                    *
                    *       TEST INCREMENTING OF ADDRESS REGISTER
                    *
07762  0 43 00430          BRM     OBJECT
07763  0 43 22537          BRM     F3S3        PERFORM TEST
07764    00000000          DATA    0
07765  0 20 31134          NOP     F3M33
                    *
07766  0 43 00430          BRM     OBJECT
07767  0 43 22537          BRM     F3S3        PERFORM TEST
07770    00000001          DATA    1
07771  0 20 31152          NOP     F3M34
                    *
07772  0 43 00430          BRM     OBJECT
07773  0 43 22537          BRM     F3S3        PERFORM TEST
07774    00000002          DATA    2
07775  0 20 31160          NOP     F3M35
                    *
```

```
07776  0 43 00430          BRM     OBJECT
07777  0 43 22537          BRM     F3S3          PERFORM TEST
10000    00000003          DATA    3
10001  0 20 31169          NOP     F3M36
                *
10002  0 43 00430          BRM     OBJECT
10003  0 43 22537          BRM     F3S3          PERFORM TEST
10004    00000007          DATA    7
10005  0 20 31173          NOP     F3M37
                *
10006  0 43 00430          BRM     OBJECT
10007  0 43 22537          BRM     F3S3          PERFORM TEST
10010    00000017          DATA    17
10011  0 20 31173          NOP     F3M37
                *
10012  0 43 00430          BRM     OBJECT
10013  0 43 22537          BRM     F3S3          PERFORM TEST
10014    00000037          DATA    37
10015  0 20 31176          NOP     F3M38
                *
10016  0 43 00430          BRM     OBJECT
10017  0 43 22537          BRM     F3S3          PERFORM TEST
10020    00000077          DATA    77
10021  0 20 31205          NOP     F3M39
                *
10022  0 43 00430          BRM     OBJECT
10023  0 43 22537          BRM     F3S3          PERFORM TEST
10024    00000057          DATA    57
10025  0 20 31216          NOP     F3M40
                *
10026  0 43 00430          BRM     OBJECT
10027  0 43 22537          BRM     F3S3          PERFORM TEST
10030    00000067          DATA    67
10031  0 20 31216          NOP     F3M40
                *
10032  0 43 00430          BRM     OBJECT
```



```
10033  0 43 22537          BRM     F3S3          PERFORM TEST
10034    00000073          DATA    73
10035  0 20 31216          NOP     F3M40
                *
10036  0 43 00430          BRM     OBJECT
10037  0 43 22537          BRM     F3S3          PERFORM TEST
10040    00000074          DATA    74
10041  0 20 31221          NOP     F3M41
                *
10042  0 43 00430          BRM     OBJECT
10043  0 43 22537          BRM     F3S3          PERFORM TEST
10044    00000177          DATA    177
10045  0 20 31224          NOP     F3M42
                *
10046  0 43 00430          BRM     OBJECT
10047  0 43 22537          BRM     F3S3          PERFORM TEST
10050    00000377          DATA    377
10051  0 20 31224          NOP     F3M42
                *
10052  0 43 00430          BRM     OBJECT
10053  0 43 22537          BRM     F3S3          PERFORM TEST
10054    00000777          DATA    777
10055  0 20 31227          NOP     F3M43
                *
10056  0 43 00430          BRM     OBJECT
10057  0 43 22537          BRM     F3S3          PERFORM TEST
10060    00001777          DATA    1777
10061  0 20 31235          NOP     F3M44
                *
10062  0 43 00430          BRM     OBJECT
10063  0 43 22537          BRM     F3S3          PERFORM TEST
10064    00001677          DATA    1677
10065  0 20 31245          NOP     F3M45
                *
10066  0 43 00430          BRM     OBJECT
10067  0 43 22537          BRM     F3S3          PERFORM TEST
```

```
10070    00001577          DATA    1577
10071  0 20 31245          NOP     F3M45
       *
10072  0 43 00430          BRM     OBJECT
10073  0 43 22537          BRM     F383            PERFORM TEST
10074    00001377          DATA    1377
10075  0 20 31245          NOP     F3M45
       *
10076  0 43 00430          BRM     OBJECT
10077  0 43 22537          BRM     F383            PERFORM TEST
10100    00001703          DATA    1703
10101  0 20 31221          NOP     F3M41
       *
10102  0 43 00430          BRM     OBJECT
10103  0 43 22537          BRM     F383            PERFORM TEST
10104    00001774          DATA    1774
10105  0 20 31221          NOP     F3M41
       *
10106  0 43 00430          BRM     OBJECT
10107  0 43 22537          BRM     F383            PERFORM TEST
10110    00003777          DATA    3777
10111  0 20 31250          NOP     F3M46
       *
10112  0 43 00430          BRM     OBJECT
10113  0 43 22537          BRM     F383            PERFORM TEST
10114    00007777          DATA    7777
10115  0 20 31250          NOP     F3M46
       *
10116  0 43 00430          BRM     OBJECT
10117  0 43 22537          BRM     F383            PERFORM TEST
10120    00017777          DATA    17777
10121  0 20 31253          NOP     F3M47
       *
10122  0 43 00430          BRM     OBJECT
10123  0 43 22537          BRM     F383            PERFORM TEST
10124    00037777          DATA    37777
```



```
10125  0 20 31261          NOP     F3M48
       *
10126  0 43 00430          BRM     OBJECT
10127  0 43 22537          BRM     F383            PERFORM TEST
10130    00035777          DATA    35777
10131  0 20 31245          NOP     F3M45
       *
10132  0 43 00430          BRM     OBJECT
10133  0 43 22537          BRM     F383            PERFORM TEST
10134    00033777          DATA    33777
10135  0 20 31245          NOP     F3M45
       *
10136  0 43 00430          BRM     OBJECT
10137  0 43 22537          BRM     F383            PERFORM TEST
10140    00027777          DATA    27777
10141  0 20 31245          NOP     F3M45
       *
10142  0 43 00430          BRM     OBJECT
10143  0 43 22537          BRM     F383            PERFORM TEST
10144    00036077          DATA    36077
10145  0 20 31271          NOP     F3M49
       *
10146  0 43 00430          BRM     OBJECT
10147  0 43 22537          BRM     F383            PERFORM TEST
10150    00037703          DATA    37703
10151  0 20 31221          NOP     F3M41
       *
10152  0 43 00430          BRM     OBJECT
10153  0 43 22537          BRM     F383            PERFORM TEST
10154    00037774          DATA    37774
10155  0 20 31221          NOP     F3M41
       *
10156  0 43 00430          BRM     OBJECT
10157  0 43 22537          BRM     F383            PERFORM TEST
10160    00077777          DATA    77777
10161  0 20 31274          NOP     F3M50
```

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                    *
10162  0 43 00430           BRM     OBJECT
10163  0 43 22537           BRM     F3S3            PERFORM TEST
10164    00177777           DATA    177777
10165  0 20 31274           NOP     F3M50
                    *
10166  0 43 00430           BRM     OBJECT
10167  0 43 22537           BRM     F3S3            PERFORM TEST
10170    00377777           DATA    377777
10171  0 20 31277           NOP     F3M51
                    *
                    *      TEST INCREMENTING OF ADDRESS REGISTER
                    *
10172  0 43 00430           BRM     OBJECT
10173  0 76 33272           LDA     *0              POTWORD
10174  0 43 23022           BRM     DISCCK          USE THIS DISC
10175  0 01 10235           BRU     F3E60           NO
10176  0 76 33326           LDA     *777777         POTWORD
10177  0 43 22755           BRM     SETUP4          SET UP OBJECT TEST
10200  0 01 10235           BRU     F3E60
10201  0 43 22766           BRM     CPOT1           POT TO CHANNEL
10202    04074000           DATA    4084*STADDR
10203  0 43 23123           BRM     WAIT            WAIT FOR CONTROLLER READY
10204  0 01 10235           BRU     F3E60
10205  0 40*12100           SKS*    12100           CHANNEL ZERO WORD COUNT TEST
10206  0 01 10210           BRU     **2             WORD COUNT NOT ZERO
10207  0 01 11221           BRU     F3L44
10210  0 06 12100           EOD     12100           ALERT TO PIN CHANNEL ADDRESS
10211  0 33 23310           PIN     TEMP            PIN CHANNEL ADDRESS
10212  0 76 23310           LDA     TEMP
10213  0 54 33337           SUB     *STADDR         A = WORD COUNT
10214  0 75 33344           LDB     *101
10215  0 71 33337           LDX     *STADDR
10216  0 43 00460           BRM     ERROR
10217  2 20 30322           NOP     F3M20,2
10220  0 01 10235           BRU     F3E60
```

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10221  0 06 10126           EOD     10126           ALERT DISC FILE
10222  0 33 23310           PIN     TEMP            PIN CONTROLLER ADDRESS
10223  0 76 23310           LDA     TEMP
10224  0 72 33273           SKA     **1             ADDRESS CORRECT
10225  0 01 10227           BRU     **2             NO
10226  0 01 10235           BRU     F3E60
10227  0 75 33272           LDB     *0
10230  0 71 33326           LDX     *777777
10231  0 43 00454           BRM     REPORT
10232  2 20 31102           NOP     F3M32,2
10233  0 43 00460           BRM     ERROR
10234  0 20 31303           NOP     F3M52
10235  0 43 00434  F3E60     BRM     END
                    *
                    *      VERIFY ADDRESS REGISTER NOT INCREMENTED IF CHANNEL DISCONNECTED
                    *
10236  0 43 00430           BRM     OBJECT
10237  0 76 33272           LDA     *0              POTWORD
10240  0 43 22755           BRM     SETUP4          SET UP OBJECT TEST
10241  0 01 10254           BRU     F3E61
10242  0 43 22766           BRM     CPOT1           POT TO CHANNEL
10243    04034000           DATA    4036*STADDR
10244  0 43 23123           BRM     WAIT            WAIT FOR CONTROLLER READY
10245  0 01 10254           BRU     F3E61
10246  0 06 10126           EOD     10126           ALERT DISC FILE
10247  0 33 23310           PIN     TEMP            PIN CONTROLLER ADDRESS
10250  0 76 23310           LDA     TEMP
10251  0 72 33273           SKA     **1             DID ADDRESS INCREMENT
10252  0 43 00460           BRM     ERROR           YES = ERROR
10253  0 20 31306           NOP     F3M53
10254  0 43 00434  F3E61     BRM     END
                    *
                    *      TEST ABILITY TO READ CHAIN MODE
                    *
10255  0 43 00430           BRM     OBJECT
10256  0 76 33272           LDA     *0              POTWORD
```

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10257  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
10260  0 01 10323          BRU     F3E64
10261  0 43 22766          BRM     CPOT1           POT TO CHANNEL
10262    10034000          DATA    187+STADDR
10263  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
10264  0 01 10323          BRU     F3E64
10265  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
10266  0 01 10323          BRU     F3E64
10267  0 43 23153          BRM     POTOUT          POT TO DISC
10270  0 01 10323          BRU     F3E64
10271  0 43 23013          BRM     CPOT4           POT TO CHANNEL
10272    10034000          DATA    187+STADDR
10273  0 76 33342          LDA     *STADDR+64D     COMPARE ADDRESS
10274  0 75 33273          LDB     *+1
10275  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
10276  0 33 23310          PIN     TEMP            PIN CHANNEL ADDRESS
10277  0 70 23310          SKM     TEMP            DO ADDRESSES COMPARE
10300  0 01 10275          BRU     F3L54           NO
10301  0 77 36706          EAX     =570D           WAIT 1 MILLISEC
10302  0 41 10302          BRX     *
10303  0 40*10126          SKS*    10126           DISC FILE READY TEST
10304  0 01 10315          BRU     F3L56           NOT READY = OK
10305  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
10306  0 01 10312          BRU     F3L55           IN STATE 0
10307  0 43 00460          BRM     ERROR           IN STATE 1
10310  0 20 31554          NOP     F3M61
10311  0 01 10323          BRU     F3E64
10312  0 43 00460  F3L55   BRM     ERROR
10313  0 20 31576          NOP     F3M62
10314  0 01 10323          BRU     F3E64
10315  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
10316  0 33 23310          PIN     TEMP
10317  0 70 23310          SKM     TEMP            IS CHANNEL ADD REG COUNTING AGAIN
10320  0 01 10323          BRU     F3E64           YES
10321  0 43 00460          BRM     ERROR
10322  0 20 31634          NOP     F3M63
```

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10323  0 43 00434  F3E64   BRM     END
                   *
                   *       TEST 2IGAA
                   *
10324  0 43 00430          BRM     OBJECT
10325  0 76 33272          LDA     =0              POTWORD
10326  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
10327  0 01 10353          BRU     F3E65
10330  0 43 22766          BRM     CPOT1           POT TO CHANNEL
10331    04034000          DATA    486+STADDR
10332  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
10333  0 01 10353          BRU     F3E65
10334  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
10335  0 01 10353          BRU     F3E65
10336  0 43 23153          BRM     POTOUT          POT TO DISC
10337  0 01 10353          BRU     F3E65
10340  0 43 23013          BRM     CPOT4           POT TO CHANNEL
10341    04034000          DATA    486+STADDR
10342  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
10343  0 01 10342          BRU     *-1             WAIT FOR ZERO WORD COUNT
10344  0 77 36706          EAX     =570D
10345  0 41 10345          BRX     *               WAIT 1 MILLISEC
10346  0 40*10126          SKS*    10126           DISC FILE READY TEST
10347  0 01 10351          BRU     *+2             CONTROLLER NOT READY
10350  0 01 10353          BRU     F3E65
10351  0 43 00460          BRM     ERROR
10352  0 20 31476          NOP     F3M64
10353  0 43 00434  F3E65   BRM     END
                   *
                   *       TEST 2IGAA
                   *
10354  0 43 00430          BRM     OBJECT
10355  0 76 33272          LDA     =0              POTWORD
10356  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
10357  0 01 10406          BRU     F3E66
10360  0 43 22766          BRM     CPOT1           POT TO CHANNEL
```

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10361     10034000          DATA    1B7+STADDR
10362  0 43 23123          BRM     WAIT              WAIT FOR CONTROLLER READY
10363  0 20 10406          NOP     F3E66
10364  0 43 23153          BRM     POTOUT            POT TO DISC
10365  0 01 10406          BRU     F3E66
10366  0 43 23053          BRM     CHECK             CHECK FOR CHANNEL READY
10367  0 01 10406          BRU     F3E66
10370  0 43 23013          BRM     CPOT4             POT TO CHANNEL
10371     10034000          DATA    1B7+STADDR
10372  0 76 33342          LDA     +64D+STADDR       COMPARE ADDRESS
10373  0 75 33273          LDB     ++1               MASK
10374  0 06 12100          EOD     12100             ALERT TO PIN CHANNEL ADDRESS
10375  0 33 23310          PIN     TEMP              PIN CHANNEL ADDRESS
10376  0 70 23310          SKM     TEMP              DO ADDRESSES COMPARE
10377  0 01 10374          BRU     F3L57             NO
10400  0 77 36706          EAX     +57CD             WAIT 1 MILLISEC
10401  0 41 10401          BRX     *
10402  0 40*10126          SKS+    10126             DISC FILE READY TEST
10403  0 01 10406          BRU     F3E66             CONTROLLER NOT READY + OK
10404  0 43 00460          BRM     ERROR
10405  0 20 31705          NOP     F3M65
10406  0 43 00434  F3E66   BRM     END
                    *
                    *       TEST ABILITY TO WRITE/READ IN CHAIN MODE
                    *
10407  0 43 00430          BRM     OBJECT
10410  0 76 33272          LDA     +0                POTWORD
10411  0 43 22755          BRM     SETUP4            SET UP OBJECT TEST
10412  0 01 10440          BRU     F3E67
10413  0 43 23004          BRM     CPOT3             POT TO CHANNEL
10414     04034000          DATA    4B6+STADDR
10415  0 43 23123          BRM     WAIT              WAIT FOR CONTROLLER READY
10416  0 01 10440          BRU     F3E67
10417  0 43 23153          BRM     POTOUT            POT TO DISC
10420  0 01 10440          BRU     F3E67
10421  0 43 23053          BRM     CHECK             CHECK FOR CHANNEL READY
```

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10422  0 01 10440          BRU     F3F67
10423  0 43 23013          BRM     CPOT4             POT TO CHANNEL
10424     10034000          DATA    1B7+STADDR
10425  0 76 33342          LDA     +STADDR+64D       COMPARE ADDRESS
10426  0 75 33273          LDB     ++1               MASK
10427  0 06 12100          EOD     12100             ALERT TO PIN CHANNEL ADDRESS
10430  0 33 23310          PIN     TEMP              PIN CHANNEL ADDRESS
10431  0 70 23310          SKM     TEMP              DO ADDRESSES COMPARE
10432  0 01 10427          BRU     F3L58             NO
10433  0 77 36706          EAX     +57CD             WAIT 1 MILLISEC
10434  0 41 10434          BRX     *
10435  0 40*10126          SKS+    10126             DISC FILE READY TEST
10436  0 43 00460          BRM     ERROR             SHOULD BE IN STATE 0
10437  0 20 31712          NOP     F3M66
10440  0 43 00434  F3E67   BRM     END
                    *
                    *       TEST PACKET COUNTER
                    *
10441  0 43 00430          BRM     OBJECT
10442  0 76 33272          LDA     +0                POTWORD
10443  0 43 22755          BRM     SETUP4            SET UP OBJECT TEST
10444  0 01 10507          BRU     F3F83
10445  0 77 37700          EAX     +64D              SET UP OUTPUT BUFFER
10446  0 76 33273          LDA     ++1
10447  2 35 34100          STA     STADDR+64D/2
10450  0 41 10447          BRX     ++1
10451  0 43 22766          BRM     CPOT1             POT TO CHANNEL
10452     02034000          DATA    2B6+STADDR
10453  0 43 23123          BRM     WAIT              WAIT FOR CONTROLLER READY
10454  0 01 10507          BRU     F3E83
10455  0 43 23153          BRM     POTOUT            POT TO DISC
10456  0 01 10507          BRU     F3E83
10457  0 77 37700          EAX     +64D              CLEAR INPUT BUFFER
10460  0 76 33272          LDA     +0
10461  2 35 34100          STA     STADDR+64D/2
10462  0 41 10461          BRX     ++1
```

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10463  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
10464  0 01 10507          BRU     F3E83
10465  0 43 22775          BRM     CPOT2           POT TO CHANNEL
10466    04034000          DATA    4B6+STADDR
10467  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
10470  0 01 10507          BRU     F3E83
10471  0 75 33273          LDB     =1              MASK
10472  0 76 34020          LDA     STADDR+16D      CHECK WORD 17
10473  0 70 33273          SKM     =1              IS DATA CORRECT
10474  0 01 10476          BRU     *+2             NO
10475  0 01 10501          BRU     F3L78
10476  0 43 00460          BRM     ERROR
10477  0 20 32775          NOP     F3M84
10500  0 01 10507          BRU     F3E83
10501  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
10502  0 33 23310          PIN     TEMP            PIN CHANNEL ADDRESS
10503  0 76 33345          LDA     =STADDR+32D     COMPARE ADDRESS
10504  0 70 23310          SKM     TEMP            CONTROLLER DISCONNECT AFTER TWO PACKETS
10505  0 43 00460          BRM     ERROR           NO
10506  0 20 32702          NOP     F3M85
10507  0 43 00434  F3E83    BRM     END
                   *
                   *       TEST TERMINATION OF STATE 5 TO STATE 4
                   *
10510  0 43 00430          BRM     OBJECT
10511  0 76 33307          LDA     =177            PDTWORD
10512  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
10513  0 01 10564          BRU     F3E68
10514  0 43 22764          BRM     CPOT1           POT TO CHANNEL
10515    10034000          DATA    1B7+STADDR
10516  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
10517  0 01 10564          BRU     F3E68
10520  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
10521  0 01 10564          BRU     F3E68
10522  0 43 23153          BRM     PDTOUT          POT TO DISC
10523  0 01 10564          BRU     F3E68
```

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10524  0 43 23013          BRM     CPOT4           POT TO CHANNEL
10525    10034000          DATA    1B7+STADDR
10526  0 76 33342          LDA     =STADDR+64D     COMPARE ADDRESS
10527  0 75 33273          LDB     =1              MASK
10530  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
10531  0 33 23310          PIN     TEMP            PIN CHANNEL ADDRESS
10532  0 70 23310          SKM     TEMP            DO ADDRESSES COMPARE
10533  0 01 10530          BRU     F3L59           NO
10534  0 77 36706          EAX     =5700           WAIT 1 MILLISEC
10535  0 41 10535          BRX     *
10536  0 70 23310          SKM     TEMP            IS CONTROLLER STILL READING
10537  0 01 10541          BRU     *+2             YES = ERROR
10540  0 01 10544          BRU     F3L60
10541  0 43 00460          BRM     ERROR
10542  0 20 31737          NOP     F3M67
10543  0 01 10564          BRU     F3E68
10544  0 40*10126          SKS*    10126           DISC FILE READY TEST
10545  0 01 10551          BRU     F3L61           CONTROLLER NOT READY = OK
10546  0 43 00460          BRM     ERROR
10547  0 20 31747          NOP     F3M68
10550  0 01 10564          BRU     F3E68
10551  0 76 33272  F3L61    LDA     =0              WAIT 140 MILLISEC
10552  0 55 15432          ADD     BIT23
10553  0 73 33346          SKG     =160000
10554  0 01 10552          BRU     *+2
10555  0 40*11126          SKS*    11126           DISC FILE ERROR TEST
10556  0 01 10560          BRU     *+2             CONTROLLER ERROR SET
10557  0 01 10563          BRU     F3L62
10560  0 43 00460          BRM     ERROR
10561  0 20 31766          NOP     F3M69
10562  0 01 10564          BRU     F3E68
10563  0 43 23123  F3L62    BRM     WAIT            WAIT FOR CONTROLLER TO FINISH
10564  0 43 00434  F3E68    BRM     END
                   *
                   *       TEST SYNTAC
                   *
```

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10565   0 43 00430           BRM     OBJECT
10566   0 76 33272           LDA     =0              POTWORD
10567   0 43 22755           BRM     SETUP4          SET UP OBJECT TEST
10570   0 01 10631           BRU     F3E69
10571   0 43 00440           BRM     RETURN          SET INTERRUPT LINKAGE
10572   0 20 23333           NOP     PI2
10573   0 76 33272           LDA     =0              CLEAR I2 FLAG
10574   0 35 15443           STA     I2FLAG
10575   0 43 22766           BRM     CPOT1           POT TO CHANNEL
10576     10034000           DATA    1B7+STADDR
10577   0 43 23123           BRM     WAIT            WAIT FOR CONTROLLER READY
10600   0 01 10631           BRU     F3E69
10601   0 43 23053           BRM     CHECK           CHECK FOR CHANNEL READY
10602   0 01 10631           BRU     F3E69
10603   0 43 23153           BRM     POTOUT          POT TO DISC
10604   0 01 10631           BRU     F3E69
10605   0 06+10100           EOD+    10100           ALERT CHANNEL
10606   0 06 16000           EOD     16000           EXTENDED MODE EOD
10607   0 13 33347           POT     =1B7+STADDR     WC = 128
10610   0 06 02726           EOD     2726            READ DISC FILE + CHAIN
10611   0 02 20002           EIR                     ENABLE INTERRUPTS
10612   0 76 33342           LDA     =STADDR+64D     COMPARE ADDRESS
10613   0 75 33273           LDB     ==1             MASK
10614   0 06 12100           EOD     12100           ALERT TO PIN CHANNEL ADDRESS
10615   0 33 23310           PIN     TEMP            PIN CHANNEL ADDRESS
10616   0 70 23310           SKM     TEMP            DO ADDRESSES COMPARE
10617   0 01 10614           BRU     F3L63           NO
10620   0 77 36706           EAX     =570D           WAIT 1 MILLISEC
10621   0 41 10621           BRX     *
10622   0 02 20004           DIR                     DISABLE INTERRUPTS
10623   0 43 23123           BRM     WAIT            WAIT FOR CONTROLLER READY
10624   0 01 10631           BRU     F3E69
10625   0 53 15443           SKN     I2FLAG          WAS I2 RECEIVED
10626   0 01 10630           BRU     *+2             NO = OK
10627   0 43 00460           BRM     ERROR
10630   0 20 32004           NOP     F3M70
```

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1.631   0 43 23035  F3E69    BRM     CLINT           CLEAR INTERRUPT
1.632   0 43 00434           BRM     END
                     *
                     *       TEST ADDRESS INCREMENTING IN STATE 5
                     *
10633   0 43 00430           BRM     OBJECT
10634   0 76 33272           LDA     =0              POTWORD
10635   0 43 22755           BRM     SETUP4          SET UP OBJECT TEST
10636   0 01 10662           BRU     F3E70
10637   0 43 22766           BRM     CPOT1           POT TO CHANNEL
10640     04074000           DATA    404B4+STADDR
10641   0 43 23123           BRM     WAIT            WAIT FOR CONTROLLER READY
10642   0 01 10662           BRU     F3E70
10643   0 43 23053           BRM     CHECK           CHECK FOR CHANNEL READY
10644   0 01 10662           BRU     F3E70
10645   0 43 23153           BRM     POTOUT          POT TO DISC
10646   0 01 10662           BRU     F3E70
10647   0 43 23013           BRM     CPOT4           POT TO CHANNEL
10650     04074000           DATA    404B4+STADDR
10651   0 43 23123           BRM     WAIT            WAIT FOR CONTROLLER READY
10652   0 01 10662           BRU     F3E70
10653   0 06 10126           EOD     10126           ALERT DISC FILE
10654   0 33 23310           PIN     TEMP            PIN CONTROLLER ADDRESS
10655   0 76 23310           LDA     TEMP
10656   0 75 33273           LDB     ==1             MASK
10657   0 70 15432           SKM     BIT23           DID ADDRESS REGISTER INCREMENT
10660   0 43 00460           BRM     ERROR           NO
10661   0 20 32011           NOP     F3M71
10662   0 43 00434  F3E70    BRM     END
                     *
                     *       TEST GOXRAO (STATE 5)
                     *
10663   0 43 00430           BRM     OBJECT
10664   0 76 33272           LDA     =0              POTWORD
10665   0 43 22755           BRM     SETUP4          SET UP OBJECT TEST
10666   0 01 10711           BRU     F3E71
```

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10667  0 43 23004          BRM     CPBT3           PBT TO CHANNEL
10670    04034000          DATA    4B6+STADDR
10671  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
10672  0 01 10711          BRU     F3E71
10673  0 43 23153          BRM     PBTBUT          PBT TO DISC
10674  0 01 10711          BRU     F3E71
10675  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
10676  0 01 10711          BRU     F3E71
10677  0 43 23013          BRM     CPBT4           PBT TO CHANNEL
10700    04034000          DATA    4B6+STADDR
10701  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
10702  0 01 10711          BRU     F3E71
10703  0 06 10126          EBD     10126           ALERT DISC FILE
10704  0 33 23310          PIN     TEMP            PIN CONTROLLER ADDRESS
10705  0 76 23310          LDA     TEMP
10706  0 72 33273          SKA     *+1             DID ADDRESS REGISTER INCREMENT
10707  0 43 00460          BRM     ERROR           YES
10710  0 20 30011          NBP     F3M71
10711  0 43 00434  F3E71    BRM     END
                   *
                   *       TEST READ PARITY GENERATION
                   *
10712  0 43 00430          BRM     OBJECT
10713  0 76 33272          LDA     *0              PBTWORD
10714  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
10715  0 01 10763          BRU     F3E72           ABORT
10716  0 76 33273          LDA     *+1             DATA WORD
10717  0 35 34000          STA     STADDR
10720  0 43 22766          BRM     CPBT1           PBT TO CHANNEL
10721    00074000          DATA    4B4+STADDR
10722  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
10723  0 01 10763          BRU     F3E72
10724  0 76 33272          LDA     *0              CLEAR INPUT BUFFER CELL
10725  0 35 34000          STA     STADDR
10726  0 43 23153          BRM     PBTBUT          PBT TO DISC
10727  0 01 10763          BRU     F3E72
```



```
10730  0 43 22753          BRM     CHECK           CHECK FOR CHANNEL READY
10731  0 01 10763          BRU     F3E72
10732  0 43 22775          BRM     CPBT2           PBT TO CHANNEL
10733    00074000          DATA    4B4+STADDR
10734  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
10735  0 01 10763          BRU     F3E72
10736  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
10737  0 01 10741          BRU     *+2             WORD COUNT NOT ZERO
10740  0 01 10747          BRU     F3L64
10741  0 76 33272          LDA     *0
10742  0 75 15432          LDB     BIT23
10743  0 71 33337          LDX     *STADDR
10744  0 43 00460          BRM     ERROR
10745  2 20 30322          NBP     F3M20,2
10746  0 01 10763          BRU     F3E72
10747  0 76 34000  F3L64    LDA     STADDR          CHECK INPUT WORD
10750  0 75 33273          LDB     *+1             MASK
10751  0 70 33273          SKM     *+1             DATA CORRECT
10752  0 01 10754          BRU     *+2             NO
10753  0 01 10760          BRU     F3L65
10754  0 71 33337          LDX     *STADDR
10755  0 43 00460          BRM     ERROR
10756  2 20 30455          NBP     F3M26,2
10757  0 01 10763          BRU     F3E72
10760  0 40*11100          SKS*    11100           CHANNEL ERROR TEST
10761  0 43 00460          BRM     ERROR           CHANNEL ERROR SET
10762  0 20 30016          NBP     F3M72
10763  0 43 00434  F3E72    BRM     END
                   *
                   *       TEST READ PARITY GENERATION
                   *
10764  0 43 00430          BRM     OBJECT
10765  0 76 33272          LDA     *0              PBTWORD
10766  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
10767  0 01 11035          BRU     F3E73           ABORT
10770  0 76 33272          LDA     *0              DATA WORD
```

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10771  0 35 34000          STA     STADDR
10772  0 43 22766          BRM     CPBT1           BOT TO CHANNEL
10773    00074000          DATA    4B4+STADDR
10774  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
10775  0 01 11035          BRU     F3E73
10776  0 76 33273          LDA     *+1             ALTER INPUT LOCATION
10777  0 35 34000          STA     STADDR
11000  0 43 23153          BRM     PBTBUT          BOT TO DISC
11001  0 01 11035          BRU     F3E73
11002  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
11003  0 01 11035          BRU     F3E73
11004  0 43 22775          BRM     CPBT2           BOT TO CHANNEL
11005    00074000          DATA    4B4+STADDR
11006  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
11007  0 01 11035          BRU     F3E73
11010  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
11011  0 01 11013          BRU     *+2             WORD COUNT NOT ZERO
11012  0 01 11021          BRU     F3L66
11013  0 76 33272          LDA     *0
11014  0 75 15432          LDB     BIT23
11015  0 71 33337          LDX     *STADDR
11016  0 43 00460          BRM     ERROR
11017  2 20 30322          XBP     F3M20+2
11020  0 01 11035          BRU     F3E73
11021  0 76 34000  F3L66    LDA     STADDR          CHECK INPUT WORD
11022  0 72 33273          SKA     *+1             DATA CORRECT
11023  0 01 11025          BRU     *+2             NO
11024  0 01 11032          BRU     F3L67
11025  0 75 33272          LDB     *0
11026  0 71 33337          LDX     *STADDR
11027  0 43 00460          BRM     ERROR
11030  2 20 30455          XBP     F3M26+2
11031  0 01 11035          BRU     F3E73
11032  0 40*11100          SKS*    11100           CHANNEL ERROR TEST
11033  0 43 00460          BRM     ERROR           CHANNEL ERROR SET
11034  0 40 30446          XBP     F3M73
```

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11035  0 43 00434  F3E73   BRM     END
                   *
                   *       TEST PARITY GENERATION CIRCUIT
                   *
11036  0 43 00430          BRM     SUBJECT
11037  0 76 33272          LDA     *0              PBTWORD
11040  0 43 22755          BRM     SETUP4          SET UP SUBJECT TEST
11041  0 01 11110          BRU     F3E74           ABORT
11042  0 76 33350          LDA     *25522552       DATA WORD
11043  0 35 34000          STA     STADDR
11044  0 43 22766          BRM     CPBT1           BOT TO CHANNEL
11045    00074000          DATA    4B4+STADDR
11046  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
11047  0 01 11110          BRU     F3E74
11050  0 76 33272          LDA     *0              CLEAR INPUT LOCATION
11051  0 35 34000          STA     STADDR
11052  0 43 23153          BRM     PBTBUT          BOT TO DISC
11053  0 01 11110          BRU     F3E74
11054  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
11055  0 01 11110          BRU     F3E74
11056  0 43 22775          BRM     CPBT2           BOT TO CHANNEL
11057    00074000          DATA    4B4+STADDR
11060  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
11061  0 01 11110          BRU     F3E74
11062  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
11063  0 01 11065          BRU     *+2             WORD COUNT NOT ZERO
11064  0 01 11073          BRU     F3L68
11065  0 76 33272          LDA     *0
11066  0 75 15432          LDB     BIT23
11067  0 71 33337          LDX     *STADDR
11070  0 43 00460          BRM     ERROR
11071  2 20 30322          XBP     F3M20+2
11072  0 01 11110          BRU     F3E74
11073  0 76 34000  F3L68    LDA     STADDR          CHECK INPUT WORD
11074  0 75 33273          LDB     *+1             MASK
11075  0 72 33350          SKM     *25522552       IS THE DATA CORRECT
```

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11076  0 01 11100          BRU     *+2                 NO
11077  0 01 11105          BRU     F3L69
11100  0 75 33350          LDB     =25522552
11101  0 71 33337          LDX     =STADDR
11102  0 43 00460          BRM     ERROR
11103  2 20 36455          NOP     F3M26,2
11104  0 01 11110          BRU     F3E74
11105  0 40*11100          SKS*    11100               CHANNEL ERROR TEST
11106  0 43 00460          BRM     ERROR               CHANNEL ERROR SET
11107  0 20 32070          NOP     F3M74
11110  0 43 00434  F3E74   BRM     END
                   *
                   *       VERIFY ZEROS WRITTEN AFTER CHANNEL DISCONNECTS
                   *
11111  0 43 00430          BRM     OBJECT
11112  0 76 33372          LDA     =0                  POTWORD
11113  0 43 22755          BRM     SETUP4              SET UP OBJECT TEST
11114  0 01 11215          BRU     F3E75
11115  0 76 33373          LDA     =-1                 DATA WORDS
11116  0 77 37700          EAX     =64D
11117  2 55 34100          STA     STADDR+64D,2
11120  0 41 11117          ERX     *-1
11121  0 43 22766          BRM     CPOT1               POT TO CHANNEL
11122     04034000         DATA    406+STADDR
11123  0 43 23123          BRM     WAIT                WAIT FOR CONTROLLER READY
11124  0 01 11215          BRU     F3E75
11125  0 76 33372          LDA     =0                  CLEAR FIRST WORD
11126  0 55 34000          STA     STADDR
11127  0 43 23153          BRM     POTOUT              POT TO DISC
11130  0 01 11215          BRU     F3E75
11131  0 43 23053          BRM     CHECK               CHECK FOR CHANNEL READY
11132  0 01 11215          BRU     F3E75
11133  0 43 22766          BRM     CPOT1               POT TO CHANNEL
11134     04074000         DATA    406+STADDR
11135  0 43 23123          BRM     WAIT                WAIT FOR CONTROLLER READY
11136  0 01 11215          BRU     F3E75
```



```
11137  0 76 33373          LDA     =-1
11140  0 55 34000          STA     STADDR
11141  0 43 23153          BRM     POTOUT              POT TO DISC
11142  0 01 11215          BRU     F3E75
11143  0 43 23053          BRM     CHECK               CHECK FOR CHANNEL READY
11144  0 01 11215          BRU     F3E75
11145  0 43 22775          BRM     CPOT2               POT TO CHANNEL
11146     04034000         DATA    106+STADDR
11147  0 43 23123          BRM     WAIT                WAIT FOR CONTROLLER READY
11150  0 01 11215          BRU     F3E75
11151  0 40*12100          SKS*    12100               CHANNEL ZERO WORD COUNT TEST
11152  0 01 11154          BRU     *+2                 WORD COUNT NOT ZERO
11153  0 01 11165          BRU     F3L70
11154  0 56 12100          ESD     12100               ALERT TO PIN CHANNEL ADDRESS
11155  0 55 33310          PIN     TEMP                PIN CHANNEL ADDRESS REGISTER
11156  0 76 33310          LDA     TEMP
11157  0 54 33337          SUB     =STADDR             A = WORD COUNT
11160  0 75 15426          LDB     BIT19
11161  0 71 33337          LDX     =STADDR
11162  0 43 00460          BRM     ERROR
11163  2 20 36323          NOP     F3M20,2
11164  0 01 11215          BRU     F3E75
11165  0 76 33372  F3L70   LDA     =0                  CHECK DATA
11166  0 55 33310          STA     TEMP
11167  0 77 37700          EAX     =64D
11170  0 65 15432  F3L71   ADD     BIT23               INCREMENT COUNT
11171  0 46 00014          XAB
11172  2 76 34100          LDA     STADDR+64D,2
11173  0 72 33373          SKA     =-1                 IS DATA CORRECT
11174  0 43 11204          BRM     F3L72               NO
11175  0 46 00014          XAB
11176  0 41 11170          ERX     F3L71               LOOP
11177  0 53 33310          SKN     TEMP                HAS AN ERROR OCCURED
11200  0 01 11215          BRU     F3E75               NO
11201  0 43 00460          BRM     ERROR
11202  0 20 32147          NOP     F3M77
```

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11203  0 01 11215          BRU     F3E75
11204  0 00 00000  F3L72   PZE     0
11205  0 53 23310          SKN     TEMP            FIRST ERROR
11206  0 43 00454          BRM     REPORT          YES = OUTPUT HEADING
11207  0 20 32110          NOP     F3M75
11210  0 43 00454          BRM     REPORT          OUTPUT DATA
11211  2 20 32146          NOP     F3M76,2
11212  0 76 33373          LDA     =-1
11213  0 35 23310          STA     TEMP
11214  0 51 11204          BRR     F3L72
11215  0 43 00434  F3E75   BRM     END
                    *
                    *       TEST 3ZPFA
                    *
11216  0 43 00430          BRM     OBJECT
11217  0 76 33372          LDA     =0              POTxORD
11220  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
11221  0 01 11244          BRU     F3E76
11222  0 43 22766          BRM     CPOT1           POT TO CHANNEL
11223    10034000          DATA    1B7*STADDR
11224  0 76 33351          LDA     *STADDR+3       COMPARE ADDRESS
11225  0 75 33373          LDB     =-1             MASK
11226  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
11227  0 53 23310          PIN     TEMP            PIN CHANNEL ADDRESS
11230  0 70 33310          SKM     TEMP            DO ADDRESSES COMPARE
11231  0 01 11226          BRU     F3L73           NO = LOOP
11232  0 06 10326          EOD     10326           CLEAR FILE
11233  0 40*12126          SKS*    10126           DISC FILE READY TEST
11234  0 01 11242          BRU     F3L74           NOT IN STATE 0
11235  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
11236  0 01 11244          BRU     F3E76           IN STATE 0
11237  0 43 00460          BRM     ERROR           IN STATE 1
11240  0 20 32224          NOP     F3M79
11241  0 01 11244          BRU     F3E76
11242  0 43 00460  F3L74   BRM     ERROR
11243  0 20 32170          NOP     F3M78
```

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11244  0 06 00100          EOD     100             DISCONNECT CHANNEL
11245  0 43 00434          BRM     END
                    *
                    *       TEST 2CL*A
                    *
11246  0 43 00430          BRM     OBJECT
11247  0 76 33372          LDA     =0              POTxORD
11250  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
11251  0 01 11267          BRU     F3E77
11252  0 43 22766          BRM     CPOT1           POT TO CHANNEL
11253    10034000          DATA    1B7*STADDR
11254  0 76 33351          LDA     *STADDR+3       COMPARE ADDRESS
11255  0 75 33373          LDB     =-1             MASK
11256  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
11257  0 53 23310          PIN     TEMP            PIN CHANNEL ADDRESS
11260  0 70 23310          SKM     TEMP            DATA BEING TRANSMITTED YET
11261  0 01 11256          BRU     F3L75           NO = LOOP
11262  0 06 10327          EOD     10327           ILLEGAL EOD
11263  0 40*1 126          SKS*    10126           DISC FILE READY TEST
11264  0 01 11266          BRU     *+2             NOT READY = OK
11265  0 43 00460          BRM     ERROR
11266  0 20 32236          NOP     F3M80
11267  0 06 00100          EOD     100             DISCONNECT CHANNEL
11270  0 43 00434          BRM     END
                    *
                    *       TEST 2CL*A
                    *
11271  0 43 00430          BRM     OBJECT
11272  0 76 33372          LDA     =0              POTxORD
11273  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
11274  0 01 11312          BRU     F3E78
11275  0 43 22766          BRM     CPOT1           POT TO CHANNEL
11276    10034000          DATA    1B7*STADDR
11277  0 76 33351          LDA     *STADDR+3       COMPARE ADDRESS
11300  0 75 33373          LDB     =-1             MASK
11301  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
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11302  0 43 23310          PIN     TEMP            PIN CHANNEL ADDRESS
11303  0 70 23310          SKM     TEMP            DATA BEING TRANSMITTED YET
11304  0 01 11301          BRU     F3L76           NO
11305  0 06 33726          EOD     30326           ILLEGAL EOD
11306  0 40*1 10126        SKS*    10126           DISC FILE READY TEST
11307  0 01 11311          BRU     *+2             CONTROLLER NOT READY = OK
11310  0 43 23460          BRM     ERROR
11311  0 20 30243          XMP     F3MR1
11312  0 06 00100          EOD     100             DISCONNECT CHANNEL
11313  0 43 00434          BRM     END
                    *
                    *       TEST 2CLRA
                    *
11314  0 43 00430          BRM     OBJECT
11315  0 76 33772          LDA     =0              PBT=BRD
11316  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
11317  0 01 11336          BRU     F3F79
11320  0 43 22766          BRM     CPBT1           PBT TO CHANNEL
11321     10034000          DATA    1B7+STADDR
11322  0 76 33751          LDA     =STADDR+3       COMPARE ADDRESS
11323  0 75 33773          LDB     =-1             MASK
11324  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
11325  0 63 23310          PIN     TEMP            PIN CHANNEL ADDRESS
11326  0 70 23310          SKM     TEMP            DATA BEING TRANSMITTED YET
11327  0 01 11324          BRU     F3L77           NO
11330  0 06 10126          EOD     10126           ALERT DISC FILE
11331  0 63 23310          PIN     TEMP            DUMMY = EOD SHOULD NOT INTERFERE
11332  0 40*1 10126        SKS*    10126           DISC FILE READY TEST
11333  0 01 11335          BRU     *+2             CONTROLLER NOT READY = OK
11334  0 43 23460          BRM     ERROR
11335  0 20 30236          XMP     F3MR0
11336  0 06 00100          EOD     100             DISCONNECT CHANNEL
11337  0 43 00434          BRM     END
                    *
                    *       TEST 3XCRA
                    *
```



```
11340  0 43 00430          BRM     OBJECT
11341  0 76 33772          LDA     =0              PBT=BRD
11342  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
11343  0 01 11370          BRU     F3F81
11344  0 43 22766          BRM     CPBT1           PBT TO CHANNEL
11345     10034000          DATA    1B7+STADDR
11346  0 06 32766          EOD     32766           SYSTEMS EOD - SHOULD HAVE NO EFFECT
11347  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
11350  0 01 11370          BRU     F3F81
11351  0 43 23153          BRM     PBTOUT          PBT TO DISC
11352  0 01 11370          BRU     F3F81
11353  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
11354  0 01 11370          BRU     F3F81
11355  0 43 22775          BRM     CPBT2           PBT TO CHANNEL
11356     10034000          DATA    1B7+STADDR
11357  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
11360  0 01 11370          BRU     F3F81
11361  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
11362  0 63 23310          PIN     TEMP            PIN CHANNEL ADDRESS
11363  0 76 23310          LDA     TEMP            CHECK TO SEE IF DISC DISCONNECTED AFTER
11364  0 75 33773          LDB     =-1                   ONE SECTOR
11365  0 70 33743          SKM     =STADDR+100
11366  0 43 23460          BRM     ERROR            BRD COUNT NOT CORRECT
11367  0 20 30270          XMP     F3MR3
11370  0 06 00100          EOD     100             DISCONNECT CHANNEL
11371  0 43 00434          BRM     END
                    *
                    *       TEST 3XCPA
                    *
11372  0 43 00430          BRM     OBJECT
11373  0 76 33772          LDA     =0              PBT=BRD
11374  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
11375  0 01 11416          BRU     F3F82
11376  0 43 22774          BRM     CPBT3           PBT TO CHANNEL
11377     10034000          DATA    1B7+STADDR
11400  0 06 32766          EOD     32766           SYSTEMS EOD - SHOULD HAVE NO EFFECT
```

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11401  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
11402  0 01 11416          BRU     F3E82
11403  0 43 23153          BRM     P0T0UT          P0T T0 DISC
11404  0 01 11416          BRU     F3E82
11405  0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
11406  0 01 11416          BRU     F3E82
11407  0 43 23013          BRM     CP0T4           P0T T0 CHANNEL
11410    10034000          DATA    1B7*STADDR
11411  0 43 23123          BRM     WAIT            WAIT FOR CONTROLLER READY
11412  0 01 11416          BRU     F3E82
11413  0 40*12100          SKS*    12100           CHANNEL ZER0 W0RD C0UNT TEST
11414  0 43 00460          BRM     ERR0R           W0RD C0UNT N0T ZER0
11415  0 20 32255          N0P     F3M82
11416  0 06 00100          E0D     100             DISC0NNECT CHANNEL
11417  0 43 00434          BRM     END
                    *
                    *      TEST 9YESA
                    *
11420  0 43 00430          BRM     0BJECT
11421  0 43 22614          BRM     F3S4            GENERATE ERR0R
11422  0 01 11427          BRU     F3E85           AB0RT
11423  0 40*11100          SKS*    11100           CHANNEL ERR0R TEST
11424  0 01 11426          BRU     *+2             CHANNEL ERR0R 0K
11425  0 43 00460          BRM     ERR0R
11426  0 20 32307          N0P     F3M94
11427  0 43 00434  F3E85    BRM     END
                    *
                    *      TEST 9YHSA
                    *
11430  0 43 00430          BRM     0BJECT
11431  0 43 22614          BRM     F3S4            GENERATE ERR0R
11432  0 01 11457          BRU     F3E86           AB0RT
11433  0 06 10326          E0D     10326           CLEAR FILE
11434  0 06 00100          E0D     100             DISC0NNECT CHANNEL
11435  0 76 33272          LDA     *0              CLEAR I2 FLAG
11436  0 35 15443          STA     I2FLAG
```

```
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11437  0 43 00443          BRM     RETURN          SET SPIT LINKAGE
11440  0 20 23333          N0P     PI2
11441  0 43 23153          BRM     P0T0UT          P0T T0 DISC
11442  0 01 11457          BRU     F3E86
11443  0 06*10100          E0D*    10100           ALERT CHANNEL
11444  0 06 16000          E0D     16000           EXTENDED M0DE E0D
11445  0 13 33347          P0T     *187*STADDR
11446  0 06 02726          E0D     2726            READ DISC FILE * CHAIN
11447  0 43 23265          BRM     W200            WAIT 200 MILLISEC
11450  0 02 20002          EIR                     ENABLE INTERRUPTS
11451  0 20 00000          N0P     0               DUMMY * INTERRUPT SH0ULD BE PENDING
11452  0 20 00000          N0P     0
11453  0 02 20004          DIR                     DISABLE INTERRUPTS
11454  0 53 15443          SKN     I2FLAG          WAS I2 INTERRUPT RECEIVED
11455  0 43 00460          BRM     ERR0R           N0
11456  0 20 32317          N0P     F3M95
11457  0 43 00434  F3E86    BRM     END
11460  0 43 00456  ENDF3    BRM     F0R*E           EXIT FUNCTI0N
```

```
                    *
                    *       FUNCTION PARAMETER TABLES
                    *
11461  0 20 11467   FPT3    NOP     FIM3            FUNCTION IDENTIFIER MESSAGE
11462  0 20 11506           NOP     FAM3            FUNCTION ABSTRACT MESSAGE
11463  0 20 05436           NOP     FVM1            FUNCTION VARIABLES MESSAGE
11464  0 01 04777           BNE     FVT1            FUNCTION VARIABLES (NONE)
11465  0 00 11707           PZE     FUNC4           POINTER TO NEXT FUNCTION
11466    04000000           DATA    4000000         FUNCTION IDENTIFIER BIT (BIT 3)
                    *
                    *       FUNCTION MESSAGES
                    *
11467    52261200  FIM3    BCD     ' F 03 - DISC FILE CONTROLLER DIAGNOSTIC WITH DATA TRANSFER'
11470    63124012
11471    24316223
11472    12263143
11473    25122346
11474    45635146
11475    43432551
11476    12243121
11477    27454462
11500    63312312
11501    66316330
11502    12242163
11503    21126351
11504    21456226
11505    25513712
11506    52322431  FAM3    BCD     '  DISC FILE CONTROLLER DIAGNOSTIC WITH DATA TRANSFER'
11507    62231226
11510    31432512
11511    63464563
11512    51464343
11513    25511224
11514    31212745
11515    46626331
11516    23126631
```



```
11517    63301224
11520    21632112
11521    63512145
11522    62262551
11523    52526330          BCD     '  THIS FUNCTION TESTS THE 9164 DISC FILE CONTROLLER AS'
11524    31621226
11525    64452363
11526    51464512
11527    63256263
11530    62126330
11531    25121101
11532    24041224
11533    31622312
11534    26314325
11535    12234445
11536    63514443
11537    43255112
11540    21621212
11541    52446423          BCD     ' MUCH AS POSSIBLE WITH DATA TRANSFER. THE FOLLOWING'
11542    30122162
11543    12474462
11544    62312243
11545    25126631
11546    63301224
11547    21632112
11550    63512145
11551    62262551
11552    33126330
11553    25122446
11554    43434464
11555    31452712
11556    52216262          BCD     ' ASSUMPTIONS ARE MADE!'
11557    24444763
11560    31464562
11561    12215125
11562    12442124
```

```
11563    25151212
11564    52665131          BCD     ' WRITE HEADER SWITCH IS OFF'
11565    63251230
11566    65215125
11567    51126266
11570    31632330
11571    12316212
11572    46262412
11573    52454612          BCD     ' NO DISCS WRITE PROTECTED'
11574    24316223
11575    62126651
11576    31632512
11577    47514663
11600    65236325
11601    24121212
11602    52255151          BCD     ' ERROR STOP SWITCH IS IN CONTINUE'
11603    46511262
11604    63464712
11605    62663163
11606    23301231
11607    62123145
11610    12234445
11611    63314564
11612    25121212
11613    52263143          BCD     ' FILE IS ON LINE'
11614    25123162
11615    12464612
11616    43314525
11617    52302521          BCD     ' HEADERS ARE GOOD'
11620    24255162
11621    12215125
11622    12274644
11623    24121212
11624    52312612          BCD     ' IF THE DISC IS SOFTWARE WRITE PROTECTED OR PREVIOUSLY'
11625    63302512
11626    24316223
```



```
11627    12316212
11630    62462663
11631    65215125
11632    12665131
11633    63251247
11634    51466325
11635    23637524
11636    12465112
11637    47512565
11640    31464462
11641    43701212
11642    52422570          BCD     ' KEYED, THIS FUNCTION WILL BE SKIPPED. OBJECT TESTS USING'
11643    65247312
11644    63302162
11645    12266445
11646    23673146
11647    45126631
11650    43431222
11651    25126242
11652    31474725
11653    24331246
11654    22412523
11655    63126325
11656    62636212
11657    64623145
11660    27121212
11661    52243162          BCD     ' DISCS WHICH ARE DELEATED FROM THE UNIT VARIABLES DOCT17'
11662    23621266
11663    30317330
11664    12215125
11665    12242543
11666    65215325
11667    24122451
11670    46441263
11671    30251264
11672    45316312
```

```
11673     65215131
11674     21224325
11675     62122400
11676     00630107
11677     52214524          BCD      ' AND D20T37 WILL BE SKIPPED.''
11700     12240200
11701     63030712
11702     66314343
11703     12222512
11704     62423147
11705     47252433
11706     37121212
```



```
                          *
                          *
                          *      FUNCTION 4 - HEADER AND ADDRESSING VERIFICATION
                          *
                          *
11707  0 43 00424  FUNC4  BRM    FUNCTN              FUNCTION LINK
11710  0 20 12175         NOP    FPT4
11711  0 43 00430         BRM    OBJECT
11712  0  2 20004         DIR
11713  0 43 00440         BRM    RETURN              SET INTERRUPT LINKAGE
11714  0 20 23351         NOP    ENTER
11715  0 76 00401         LDA    STATUS              CHECK FOR SOFTWARE WRITE-PROTECT
11716  0 72 15414         SKA    BIT9
11717  0 01 12155         BRU    ENDF4               WRITE PROTECTED
11720  0 76 00332         LDA    FLAGS               CHECK FOR PREVIOUS KEY
11721  0 72 04765         SKA    OPT+4
11722  0 01 12155         BRU    ENDF4               DISC KEYED
                          *
                          *      CLEAR OUTPUT BUFFER
                          *
11723  0 76 33272         LDA    =0
11724  0 71 33352         LDX    =-2048D
11725  2 35 00000         STA    STADDR+2048D,2
11726  0 41 11725         BRX    *-1
                          *
                          *      PRESET
                          *
11727  0 76 33353         LDA    =-20000             PRESET POTWORD
11730  0 35 23332         STA    POTWRD
                          *
                          *      DISC DRIVER
                          *
11731  0 76 23332  F4L1   LDA    POTWRD
11732  0 55 15415         ADD    BIT10               INCREMENT DISC NUMBER
11733  0 73 33326         SKG    =777777             FINISHED
11734  0 01 11736         BRU    *+2                 NO
```

```
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11735  0 01 12037          BRU     F4E1
11736  0 43 23022          BRM     DISCCK          USE THIS DISC
11737  0 01 11731          BRU     F4L1            NO
11740  0 43 00430          BRM     OBJECT
11741  0 43 23153          BRM     POTOUT          POT TO DISC
11742  0 01 12001          BRU     F4L4            ERROR ABORT
11743  0 43 23153  F4L2    BRM     CHECK           CHECK FOR CHANNEL READY
11744  0 01 12001          BRU     F4L4            ERROR ABORT
11745  0 76 23332          LDA     POTWRD
11746  0 71 33352          LDX     =-2048D
11747  2 35 00000          STA     STADDR+2048D,2  STORE DATA IN FIRST WORD
11750  0 06*10100          EOD*    10100           ALERT CHANNEL
11751  0 06 14202          EOD     14202           EXTENDED MODE EOD
11752  0 13 33337          POT     =STADDR
11753  0 06 03766          EOD     3766            WRITE DISC FILE - SECTOR
                    *
                    *       BUILD OUTPUT TABLE
                    *
11754  2 35 00000  F4L3    STA     STADDR+2048D,2
11755  0 55 15432          ADD     BIT23
11756  2 77 00077          EAX     77,2
11757  0 41 11754          BRX     F4L3            LOOP
11760  0 43 23123          BRM     WAIT            WAIT FOR DISC TO FINISH
11761  0 01 12001          BRU     F4L4            ERROR ABORT
11762  0 40*12100          SKS*    12100           CHANNEL ZERO WORD COUNT TEST
11763  0 01 12001          BRU     F4L4            ERROR - COUNT NOT ZERO
11764  0 40*11100          SKS*    11100           CHANNEL ERROR TEST
11765  0 01 12001          BRU     F4L4            CHANNEL ERROR SET
11766  0 43 00434          BRM     END
11767  0 76 23332  F4L5    LDA     POTWRD
11770  0 75 33354          LDB     =760000         MASK
11771  0 55 15425          ADD     BIT18           INCREMENT POTWORD
11772  0 70 23332          SKM     POTWRD          NEW ADDRESS ON SAME DISC
11773  0 01 11733          BRU     F4L1+2          NO
11774  0 35 23332          STA     POTWRD
11775  0 43 00430          BRM     OBJECT
```

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11776  0 06 10126          EOD     10126           ALERT DISC FILE
11777  0 13 23332          POT     POTWRD          POT TO DISC
12000  0 01 11743          BRU     F4L2
                    *
                    *       ERROR ROUTINE
                    *
12001  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
12002  0 33 23310          PIN     TEMP            COMPUTE WORD COUNT
12003  0 76 23310          LDA     TEMP
12004  0 54 33337          SUB     =STADDR
12005  0 35 15460          STA     ERRTBL
12006  0 76 15417          LDA     BIT12           CORRECT WORD COUNT
12007  0 35 15461          STA     ERRTBL+1
12010  0 76 23332          LDA     POTWRD          STARTING DISC ADDRESS
12011  0 35 15462          STA     ERRTBL+2
12012  0 06 10126          EOD     10126           ALERT DISC FILE
12013  0 33 15463          PIN     ERRTBL+3        PINNED DISC ADDRESS
12014  0 76 33272          LDA     =0              CHANNEL ERROR FLAG
12015  0 40*11100          SKS*    11100           CHANNEL ERROR TEST
12016  0 76 33273          LDA     =-1
12017  0 35 15464          STA     ERRTBL+4
12020  0 76 33272          LDA     =0              CONTROLLER ERROR FLAG
12021  0 40*11126          SKS*    11126           DISC FILE ERROR TEST
12022  0 76 33273          LDA     =-1
12023  0 35 15465          STA     ERRTBL+5
12024  0 76 23331          LDA     TIMOUT          TIMEOUT ERROR FLAG
12025  0 35 15466          STA     ERRTBL+6
12026  0 06 10326          EOD     10326           CLEAR FILE
12027  0 06 00100          EOD     100             DISCONNECT CHANNEL
12030  0 43 00454          BRM     REPORT          REPORT ERROR
12031  4 70 32324          NOP     F4M1,4          MESSAGE
12032  0 07 15460          SEVEN   ERRTBL          DATA
12033  0 43 00460          BRM     ERRAR           GO TO CONTROL
12034  0 20 32351          NOP     F4M2
12035  0 43 00434          BRM     END
12036  0 01 11767          BRU     F4L5
```

```
DISCF  TAP=3,0      04/25  20100   PAGE 143

12037  0 43 00434  F4E1   BRM     END
12040  0 01 12041         BRU     F4B1
                   *
                   *       ADDRESSING VERIFICATION
                   *
12041  0 76 33353  F4B1   LDA     =-20000          PRESET PBT WORD
12042  0 35 23332         STA     PBTWRD
12043  0 76 23332  F4L6   LDA     PBTWRD           INCREMENT DISC NUMBER
12044  0 55 15415         ADD     BIT10
12045  0 73 33326         SKG     =777777          FINISHED
12046  0 01 12050         BRU     *+2              NO
12047  0 01 12154         BRU     F4E2
12050  0 43 23022         BRM     DISCCK           USE THIS DISC
12051  0 01 12043         BRU     F4L6             NO
12052  0 43 00430         BRM     BRJECT
12053  0 43 23153         BRM     PBTOUT           PBT TO DISC
12054  0 01 12116         BRU     F4L10            ERROR ABORT
12055  0 43 23053  F4L7   BRM     CHECK            CHECK FOR CHANNEL READY
12056  0 01 12116         BRU     F4L10            ERROR ABORT
12057  0 06*12100         LBD*    10100            ALERT CHANNEL
12060  0 06 14002         EBD     14002            EXTENDED MODE EBD
12061  0 43 33337         BUT     =STADDR
12062  0 06 02726         EBD     2726             READ DISC FILE + CHAIN
12063  0 43 23123         BRM     WAIT             WAIT FOR CONTROLLER TO FINISH
12064  0 01 12116         BRU     F4L10            ERROR ABORT
12065  0 40*12100         SKS*    12100            CHANNEL ZERO WORD COUNT TEST
12066  0 01 12116         BRU     F4L10            WORD COUNT NOT ZERO
12067  0 40*11100         SKS*    11100            CHANNEL ERROR TEST
12070  0 01 12116         BRU     F4L10            CHANNEL ERROR SET
12071  0 76 33372         LDA     =0
12072  0 35 12174         STA     F4L11A
12073  0 76 23332         LDA     PBTWRD           TEST FIRST WORD OF EACH SECTOR INPUT
12074  0 71 33352         LDX     =-2048D
12075  0 75 33373         LDB     =-1              MASK
12076  0 20 00000  F4L8   SKM     STADDR+2048D,2   ADDRESS CORRECT
12077  0 43 12156         BRM     F4L11            NO
```

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12100  0 55 15432         ADD     BIT13
12101  0 77 00077         EAX     77,2
12102  0 41 12076         BRX     F4L8             LOOP
12103  0 43 00434         BRM     END
12104  0 76 23332  F4L9   LDA     PBTWRD
12105  0 75 33354         LDB     =760000          MASK
12106  0 55 15425         ADD     BIT18            INCREMENT TRACK PAIR
12107  0 73 33332         SKM     PBTWRD           ADDRESS ON SAME DISC
12110  0 01 12045         BRU     F4L6+2           NO
12111  0 35 23332         STA     PBTWRD
12112  0 43 00430         BRM     BRJECT
12113  0 06 12126         EBD     12126            ALERT DISC FILE
12114  0 43 23332         PBT     PBTWRD           PBT TO DISC
12115  0 01 12056         BRU     F4L7
                   *
                   *       ERROR ROUTINE
                   *
12116  0 06 12100         EBD     12100            ALERT TO PIN CHANNEL ADDRESS
12117  0 43 23210         PIN     TEMP             COMPUTE WORD COUNT
12120  0 76 23210         LDA     TEMP
12121  0 54 33337         SUB     =STADDR
12122  0 35 15460         STA     ERRTBL
12123  0 76 15417         LDA     BIT12            CORRECT WORD COUNT
12124  0 35 15461         STA     ERRTBL+1
12125  0 76 23332         LDA     PBTWRD           STARTING DISC ADDRESS
12126  0 35 15462         STA     ERRTBL+2
12127  0 06 12126         EBD     12126            ALERT DISC FILE
12130  0 63 15463         PIN     ERRTBL+3         PINNED DISC ADDRESS
12131  0 76 33372         LDA     =0               CHANNEL ERROR FLAG
12132  0 40*11100         SKS*    11100            CHANNEL ERROR TEST
12133  0 76 33373         LDA     =-1
12134  0 35 15464         STA     ERRTBL+4
12135  0 76 33370         LDA     =0               CONTROLLER ERROR FLAG
12136  0 40*11126         SKS*    11126            DISC FILE ERROR TEST
12137  0 76 33373         LDA     =-1
12140  0 35 15465         STA     ERRTBL+5
```

```
12141  0 76 23331          LDA     TIMOUT          TIMEOUT ERROR FLAG
12142  0 35 15466          STA     ERRTBL+6
12143  0 06 10326          EOD     10326           CLEAR FILE
12144  0 06 00100          EOD     100             DISCONNECT CHANNEL
12145  0 43 00454          BRM     REPORT          REPORT ERROR
12146  4 20 32352          NOP     F4M3,4          MESSAGE
12147  0 07 15460          SEVEN   ERRTBL          DATA
12150  0 43 00460          BRM     ERROR           GO TO CONTROL
12151  0 20 32351          NOP     F4M2
12152  0 43 00434          BRM     END
12153  0 01 12104          BRU     F4L9
12154  0 43 00434  F4E2     BRM     END
12155  0 43 00456  ENDF4    BRM     FDONE           EXIT FUNCTION
                   *
                   *       DATA ERROR SUBROUTINE
                   *
12156  0 00 00000  F4L11    PZE     0
12157  0 35 15460          STA     ERRTBL          CORRECT ADDRESS
12160  2 76 00000          LDA     STADDR+2048D,2
12161  0 35 15461          STA     ERRTBL+1        INCORRECT ADDRESS
12162  0 53 12174          SKN     F4L11A          PRINT HEADING
12163  0 43 00454          BRM     REPORT          YES
12164  0 20 32402          NOP     F4M4
12165  0 43 00454          BRM     REPORT          OUTPUT DATA
12166  4 20 32351          NOP     F4M2,4          CARRIAGE RETURN
12167  0 02 15460          TWO     ERRTBL          DATA
12170  0 76 33773          LDA     *-1
12171  0 35 12174          STA     F4L11A
12172  0 76 15460          LDA     ERRTBL          RESTORE A
12173  0 51 12156          BRR     F4L11
12174  0 00 00000  F4L11A   PZE     0               PRINT HEADING FLAG
```



```
                   *
                   *       FUNCTION PARAMETER TABLES
                   *
12175  0 20 12203  FPT4     NOP     FIM4            FUNCTION IDENTIFIER MESSAGE
12176  0 20 12216          NOP     FAM4            FUNCTION ABSTRACT MESSAGE
12177  0 20 05436          NOP     FVM1            FUNCTION VARIABLES MESSAGE
12200  0 01 04777          ONE     FVT1            FUNCTION VARIABLES (NONE)
12201  0 00 12412          PZE     FUNC5           POINTER TO NEXT FUNCTION
12202    20000000          DATA    20000000        FUNCTION IDENTIFIER BIT (BIT 4)
                   *
                   *       FUNCTION MESSAGES
                   *
12203    52241200  FIM4     BCD     ' F 04 - HEADER AND ADDRESSING VERIFICATION!'
12204    24124212
12205    30252124
12206    25511221
12207    45241221
12210    24245125
12211    02623145
12212    27126525
12213    51312631
12214    23216331
12215    46453712
12216    52323225  FAM4     BCD     '  HEADER AND ADDRESSING VERIFICATION'
12217    21242551
12220    12214524
12221    12212424
12222    51256263
12223    31452712
12224    46255131
12225    26312321
12226    23314445
12227    52526330            BCD     '  THIS FUNCTION VERIFIES HEADERS AND ADDRESSING BY'
12230    31621226
12231    24452363
12232    31464512
```

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12233     65255131
12234     26312562
12235     12302521
12236     24255162
12237     12214524
12240     12212424
12241     51256262
12242     31452712
12243     22701212
12244     52665131              BCD      ' WRITING THE SECTOR ADDRESS IN THE FIRST WORD OF EACH'
12245     63314527
12246     12633025
12247     12622523
12250     63465112
12251     21242451
12252     25626212
12253     31451263
12254     30251226
12255     31516263
12256     12664651
12257     24124626
12260     12252123
12261     30121212
12262     52622523              BCD      ' SECTOR ON THE DISC, WHEN THE ENTIRE DISC HAS BEEN TAGGED'
12263     63465112
12264     46451263
12265     30251224
12266     31622333
12267     12663025
12270     45126330
12271     25122545
12272     63315125
12273     12243162
12274     23123021
12275     62122225
12276     25451263
```

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12277     21272725
12300     24121212
12301     52633025              BCD      ' THE ENTIRE DISC IS THEN READ AND THE FIRST WORD IN EACH'
12302     12254563
12303     31512512
12304     24316223
12305     12316212
12306     63302545
12307     12512521
12310     24122145
12311     24126330
12312     25122631
12313     51626312
12314     66465124
12315     12314512
12316     25212330
12317     52622523              BCD      ' SECTOR IS CHECKED FOR THE CORRECT ADDRESS, DISCS WHICH'
12320     63465112
12321     31621223
12322     30252342
12323     25241226
12324     46511263
12325     30251223
12326     46515125
12327     63631221
12330     24245125
12331     62623312
12332     24316223
12333     67126630
12334     31232012
12335     52302165              BCD      ' HAVE BEEN DELETED FROM THE UNIT VARIABLES DOOT17 AND'
12336     25122225
12337     25451224
12340     25432563
12341     25241226
12342     31464412
```

```
12343    63302512
12344    64453163
12345    12652151
12346    31212243
12347    25621224
12350    00006301
12351    07122145
12352    24121212
12353    52240200          BCD     ' D20T37 WILL NOT BE DRIVEN. IF THE DISC IS SOFTWARE'
12354    63030712
12355    66314343
12356    12454663
12357    12222512
12360    24513165
12361    25453312
12362    31261263
12363    30251224
12364    31622312
12365    31621262
12366    46266366
12367    21512512
12370    52665131          BCD     ' WRITE PROTECTED OR PREVIOUSLY KEYED, THIS FUNCTION'
12371    63251247
12372    51466325
12373    23630524
12374    12465112
12375    47512565
12376    31466462
12377    43701242
12400    25702524
12401    73126330
12402    31621226
12403    64452263
12404    31464512
12405    52663143          BCD     ' WILL BE SKIPPED.''
12406    43120225
```



```
12407    13624231
12410    47472524
12411    33371212
```

```
                    *
                    *
                    *       FUNCTION 5 = DATA PRODUCTS 5045 DISC FILE DIAGNOSTIC
                    *
                    *
12412  0 43 00424   FUNC5   BRM     FUNCTN          FUNCTION LINK
12413  0 40 12416           NOP     FPT5
12414  0 43 00440           BRM     RETURN          SET INTERRUPT LINKAGE
12415  0 20 03951           NOP     ENTER
12416  0 02 20004           DIR                     DISABLE INTERRUPTS
                    *
                    *       TEST PDMA LOGIC IN 5045 FILE (POSITION DECODER)
                    *
12417  0 43 00430           BRM     PROJECT
12420  0 43 22660           BRM     F5S1            PERFORM TEST
12421    0000000            DATA    0
12422    0000600            DATA    600
12423  0 20 32440           NOP     F5M2
12424  0 20 32443           NOP     F5M3
12425  0 20 32446           NOP     F5M4
12426  0 20 32451           NOP     F5M5
                    *
12427  0 43 00430           BRM     PROJECT
12430  0 43 22660           BRM     F5S1            PERFORM TEST
12431    0020000            DATA    20000
12432    0020600            DATA    20600
12433  0 20 32454           NOP     F5M6
12434  0 20 32457           NOP     F5M7
12435  0 20 32462           NOP     F5M8
12436  0 20 32465           NOP     F5M9
                    *
12437  0 43 00430           BRM     PROJECT
12440  0 43 22660           BRM     F5S1            PERFORM TEST
12441    0040000            DATA    40000
12442    0040600            DATA    40600
12443  0 20 32470           NOP     F5M10
```



```
12444  0 20 32473           NOP     F5M11
12445  0 20 32476           NOP     F5M12
12446  0 20 32501           NOP     F5M13
                    *
12447  0 43 00430           BRM     PROJECT
12450  0 43 22660           BRM     F5S1            PERFORM TEST
12451    0060000            DATA    60000
12452    0060600            DATA    60600
12453  0 20 32504           NOP     F5M14
12454  0 20 32507           NOP     F5M15
12455  0 20 32512           NOP     F5M16
12456  0 20 32515           NOP     F5M17
                    *
12457  0 43 00430           BRM     PROJECT
12460  0 43 22660           BRM     F5S1            PERFORM TEST
12461    0080000            DATA    100
12462    0080600            DATA    1600
12463  0 20 32520           NOP     F5M18
12464  0 20 32524           NOP     F5M19
12465  0 20 32527           NOP     F5M20
12466  0 20 32533           NOP     F5M21
                    *
12467  0 43 00430           BRM     PROJECT
12470  0 43 22660           BRM     F5S1            PERFORM TEST
12471    00A0000            DATA    A1000
12472    00A1000            DATA    A1200
12473  0 20 32536           NOP     F5M22
12474  0 20 32541           NOP     F5M23
12475  0 20 32544           NOP     F5M24
12476  0 20 32547           NOP     F5M25
                    *
12477  0 43 00430           BRM     PROJECT
12500  0 43 22660           BRM     F5S1            PERFORM TEST
12501    00C1000            DATA    C1200
12502    00C1400            DATA    C1400
12503  0 20 32552           NOP     F5M26
```

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12504   0 20 32555           NOP     F5M27
12505   0 20 32560           NOP     F5M28
12506   0 20 32563           NOP     F5M29
                *
12507   0 43 00430           BRM     OBJECT
12510   0 43 22660           BRM     F5S1            PERFORM TEST
12511     00061400           DATA    61400
12512     00061600           DATA    61600
12513   0 20 32566           NOP     F5M30
12514   0 20 32571           NOP     F5M31
12515   0 20 32574           NOP     F5M32
12516   0 20 32577           NOP     F5M33
                *
                *       CHECK FOR FC0.6121 (CLR FLIP.FLOP IN FILE)
                *
12517   0 43 00430           BRM     OBJECT
12520   0 76 33372           LDA     .0              POTWORD
12521   0 43 23322           BRM     DISCCK          USE THIS DISC
12522   0 01 12554           BRU     F5E9            NO
12523   0 43 00440           BRM     RETURN          SET INTERRUPT LINKAGE
12524   0 20 23351           NOP     ENTER
12525   0 02 22004           DIR
12526   0 71 33355           LDX     ..3             LOOP COUNT
12527   0 43 23123   F5L49   BRM     WAIT            WAIT FOR CONTROLLER READY
12530   0 01 12554           BRU     F5E9            ERROR ABORT
12531   0 06 10126           EOD     10126           ALERT DISC FILE
12532   0 13 33372           POT     .0              POT A
12533   0 43 23123           BRM     WAIT            WAIT FOR CONTROLLER READY
12534   0 01 12554           BRU     F5E9            ERROR ABORT
12535   0 06 10126           EOD     10126           ALERT DISC FILE
12536   0 13 15423           POT     BIT16           POT B
12537   0 41 12527           BRX     F5L49           LOOP
12540   0 43 23123           BRM     WAIT            WAIT FOR CONTROLLER READY
12541   0 01 12554           BRU     F5E9            ERROR ABORT
12542   0 06 10326           EOD     10326           CLEAR FILE
12543   0 40.10126           SKS.    10126           DISC FILE READY TEST
```

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12544   0 01 12543           BRU     ..1             WAIT FOR CONTROLLER READY
12545   0 06 10126           EOD     10126           ALERT DISC FILE
12546   0 13 33372           POT     .0              POT A
12547   0 43 23275           BRM     .500            WAIT 500 MILLISEC
12550   0 40.1 126           SKS.    10126           DISC FILE READY TEST
12551   0 43 00460           BRM     ERROR           CONTROLLER NOT READY
12552   0 20 32403           NOP     F5M34
12553   0 06 10326           EOD     10326           CLEAR FILE
12554   0 43 00434   F5L9    BRM     END
                *
                *       TEST TIMING LOGIC
                *
12555   0 43 00430           BRM     OBJECT
12556   0 76 33372           LDA     .0              POTWORD
12557   0 43 23322           BRM     DISCCK          USE THIS DISC
12560   0 01 12614           BRU     F5E10           NO
12561   0 43 00440           BRM     RETURN          SET INTERRUPT LINKAGE
12562   0 20 23351           NOP     ENTER
12563   0 02 22004           DIR
12564   0 43 23153           BRM     POTOUT          POT TO DISC
12565   0 01 12614           BRU     F5E10
12566   0 06 10326           EOD     10326           CLEAR FILE
12567   0 40.10126           SKS.    10126           DISC FILE READY TEST
12570   0 01 12567           BRU     ..1             WAIT FOR CONTROLLER READY
12571   0 76 33372           LDA     .0
12572   0 06 10126           EOD     10126           ALERT DISC FILE
12573   0 13 23332           POT     POTWRD          POT TO DISC
12574   0 71 33356   F5L50   LDX     ..560D          TIME UNTIL VERIFICATION (1 MS/LOOP)
12575   0 41 12575           BRX     .
12576   0 55 15432           ADD     BIT23
12577   0 73 33357           SKG     .500D           TIMED OUT
12600   0 01 12602           BRU     ..2             NO
12601   0 01 12611           BRU     F5L51
12602   0 40.12126           SKS.    12126           TRACK VERIFIED TEST
12603   0 01 12574           BRU     F5L50           NOT VERIFIED . LOOP
12604   0 73 33360           SKG     .118D           TIME GREATER THAN 118 MILLISEC
```

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12605  0 01 12607           BRU     *+2                 NØ = ØK
12606  0 43 00460           BRM     ERRØR               REPORT ERRØR
12607  0 20 32641           NØP     F5M35
12610  0 01 12614           BRU     F5E10
12611  0 06 10326           EØD     10326               CLEAR FILE
12612  0 43 00460           BRM     ERRØR               REPORT TIMEØUT ERRØR
12613  0 20 32730           NØP     F5M36
12614  0 43 00434  F5E10    BRM     END
12615  0 43 00456  ENDF5    BRM     FDØNE               EXIT FUNCTIØN
```

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                   *
                   *        FUNCTIØN PARAMETER TABLES
                   *
12616  0 20 12624  FPT5     NØP     FIM5                FUNCTIØN IDENTIFIER MESSAGE
12617  0 20 12635           NØP     FAM5                FUNCTIØN ABSTRACT MESSAGE
12620  0 20 05436           NØP     FVM1                FUNCTIØN VARIABLES MESSAGE
12621  0 01 04777           BNE     FVT1                FUNCTIØN VARIABLES (NØNE)
12622  0 00 12740           PZE     FUNC10              PØINTER TØ NEXT FUNCTIØN
12623     100 000           DATA    1000000             FUNCTIØN IDENTIFIER BIT (BIT 5)
                   *
                   *        FUNCTIØN MESSAGES
                   *
12624    52261200  FIM5     BCD     ' F 05 = 5045 DISC FILE DIAGNØSTIC''
12625    05124012
12626    15002405
12627    12243162
12630    23122431
12631    43251224
12632    31212745
12633    46626331
12634    23371212
12635    52320500  FAM5     BCD     ' 5045 DISC FILE DIAGNØSTICS'
12636    04051224
12637    31622312
12640    26314325
12641    12243121
12642    27454662
12643    63312362
12644    52526330           BCD     ' THIS FUNCTIØN CØNTAINS ØBJECT TESTS WHICH ARE DESIGNED'
12645    31621026
12646    64452363
12647    31464512
12650    23464563
12651    21314562
12652    12462241
12653    25236312
```

```
12654    63256263
12655    62126630
12656    31233012
12657    21512512
12660    24256231
12661    27452524
12662    52624725          BCD     ' SPECIFICALLY TO LOCATE PROBLEMS IN THE DATA PRODUCTS'
12663    23312631
12664    23214343
12665    70126346
12666    12434623
12667    21632512
12670    47514422
12671    43254462
12672    12314512
12673    63302512
12674    24216321
12675    12475146
12676    24642363
12677    62121212
12700    52050004          BCD     ' 5045 DISC FILE, OBJECT TESTS WHICH USE DISCS WHICH ARE'
12701    65126431
12702    62231226
12703    31432533
12704    12462241
12705    25236312
12706    63256263
12707    62126630
12710    31233012
12711    64622512
12712    24316223
12713    62126630
12714    31233012
12715    21512512
12716    52242543          BCD     ' DELETED FROM THE UNIT VARIABLES D00T17 AND D20T37 WILL'
12717    25630524
```



```
12720    12265146
12721    44126330
12722    65126445
12723    61631265
12724    61513121
12725    12436562
12726    12246200
12727    63016712
12730    21452412
12731    24026263
12732    63071266
12733    31434312
12734    52225512          BCD     ' BE SKIPPED.''
12735    62423147
12736    47252433
12737    37121212
```

```
                        *
                        *
                        *       FUNCTION 10 = DISC EXERCISER
                        *
                        *
12740  0 76 00401  FUNC10 LDA     STATUS          PRESET RUNMODE
12741  0 72 15414          SKA     BIT9            WRITE PROTECT BIT SET
12742  0 61 12753          BRU     PRE1            YES
12743  0 76 00332          LDA     FLAGS
12744  0 72 04765          SKA     UPT+4           DISC PREVIOUSLY KEYED
12745  0 61 12760          BRU     PRE2            YES
12746  0 76 15433          LDA     RMODE           SET UP KEY MODE
12747  0 14 33361          ETR     =785
12750  0 16 33362          MRG     =22026610
12751  0 35 15466          STA     APMODE
12752  0 61 12762          BRU     PRE3
12753  0 76 15433  PRE1    LDA     RMODE           FORCE R=R=C=W=R=C MODE
12754  0 14 33363          ETR     =77770007
12755  0 16 33364          MRG     =5520
12756  0 35 15466          STA     APMODE
12757  0 61 12762          BRU     PRE3
12760  0 76 15433  PRE2    LDA     RMODE           RANDOM OPERATION
12761  0 35 15466          STA     APMODE
12762  0 76 33337  PRE3    LDA     =STADDR         PRESET VARIABLES
12763  0 35 15467          STA     LOCORE          LOCORE
12764  0 76 00405          LDA     SYSIZE          HICORE
12765  0 71 33356          LDX     =-3
12766  0 67 00001          LSH     1
12767  0 66 00001          RSH     1
12770  0 72 15432          SKA     BIT23
12771  0 41 12767          BRX     *-2
12772  0 37 33310          STX     TEMP
12773  0 76 33277          LDA     =3
12774  0 55 33310          ADD     TEMP
12775  0 67 00016          LSH     14D
12776  0 16 33301          MRG     =37777
```



```
12777  0 35 15470          STA     HICORE
13000  0 76 33272          LDA     =0
13001  0 35 15471          STA     LODISC          LO DISC
13002  0 76 33326          LDA     =777777
13003  0 35 15472          STA     HIDISC          HI DISC
13004  0 76 15466          LDA     APMODE          SET XFER LENGTH
13005  0 72 15427          SKA     BIT20           KEY MODE
13006  0 61 13013          BRU     PRE4            YES
13007  0 75 33273          LDB     =-1             LENGTH RANDOM
13010  0 72 15426          SKA     BIT19           IN COMPARE MODE
13011  0 75 15426          LDB     BIT19           YES = LENGTH = 208 SECTORS
13012  0 61 13017          BRU     PRE5
13013  0 75 15426  PRE4    LDB     BIT19           LENGTH = 208 SECTORS
13014  0 76 15470          LDA     HICORE
13015  0 72 15414          SKA     BIT9            SECOND MEMORY DOOR IN
13016  0 75 15423          LDB     BIT16           YES = LENGTH = 200B SECTORS
13017  0 36 15473  PRE5    STB     LENGTH
13020  0 76 15467          LDA     LOCORE
13021  0 35 23317          STA     VAR3            POINTER TO CORE ADDRESS FOR SEQ CORE
13022  0 76 15471          LDA     LODISC
13023  0 35 23320          STA     VAR4            POINTER TO DISC ADDRESS FOR SEQ DISC
```

```
                        *
                        *       INITIALIZE STARTING POSITIONS OF SELECTED DISCS TO 630
                        *
13024  0 76 33315               LDA     =17777
13025  0 43 23022  INPOS1 BRM     DISCCK          CHECK FOR OUT OF BOUNDS
13026  0 01 13043               BRU     INPOS4          OUT OF BOUNDS
13027  0 46 20005               ABC
13030  0 40*10126               SKS*    10126           DISC FILE READY TEST
13031  0 01 13033               BRU     *+2
13032  0 01 13036               BRU     INPOS3          CONTROLLER READY
13033  0 55 15432               ADD     BIT23           ADD 1
13034  0 73 33331               SKG     =357140
13035  0 01 13030               BRU     INPOS2          500 MS NOT UP YET
13036  0 06 10326               EOD     10326           CLEAR FILE
13037  0 06 10126               EOD     10126           ALERT DISC FILE
13040  0 13 23332               POT     POT,RD          POT TO DISC
13041  0 46 10012               BAC
13042  0 43 15243               BRM     ENDPOS          ENTER ENDING POSITION IN TABLE
13043  0 55 15415  INPOS4 ADD     BIT10           INCREMENT DISC NO.
13044  0 73 15410               SKG     BIT5            FINISHED
13045  0 01 13025               BRU     INPOS1          NO
```



```
13046  0 43 00424  FSTART BRM     FUNCTN          FUNCTION LINK
13047  0 20 15660               XOP     FPT10
13050  0 43 00440               BRM     RETURN          SET SPIT LINKAGE
13051  0 20 33351               XOP     ENTER
13052  0 12 00000               EIR                     ENABLE INTERRUPTS
13053  0 76 15466               LDA     OPMODE          CHECK OPMODE
13054  0 72 33365               SKA     =787
13055  0 01 13057               BRU     *+2
13056  0 43 13306               BRM     PERR1           DISC ADDRESSING NOT SPECIFIED
13057  0 72 33325               SKA     =786
13060  0 01 13062               BRU     *+2
13061  0 43 13306               BRM     PERR1           CORE ADDRESSING NOT SPECIFIED
13062  0 72 33361               SKA     =785
13063  0 01 13065               BRU     *+2
13064  0 43 13306               BRM     PERR1           DATA NOT SPECIFIED
13065  0 72 15406               SKA     BIT3
13066  0 01 13070               BRU     *+2
13067  0 01 13072               BRU     *+3
13070  0 72 15415               SKA     BIT10
13071  0 43 13306               BRM     PERR1           FIXED CORE, FAST MODE (ILLEGAL)
13072  0 75 33366               LDB     =783
13073  0 70 33373               SKM     *+1
13074  0 01 13076               BRU     *+2
13075  0 43 13306               BRM     PERR1           FIXED WRITE AND READ (B=1)
13076  0 75 33367               LDB     =700
13077  0 70 33373               SKM     *+1
13100  0 01 13102               BRU     *+2
13101  0 43 13306               BRM     PERR1           FIXED WRITE AND READ (B=2)
13102  0 72 15427               SKA     BIT20
13103  0 01 13105               BRU     *+2
13104  0 01 13110               BRU     CKO
13105  0 75 33370               LDB     =70005500
13106  0 70 33371               SKM     =20004400
13107  0 43 13306               BRM     PERR1           KEY, DISC ADD NOT SEQ, B=1 OR =2 READ
13110  0 72 33372  CKO     SKA     =3300
13111  0 01 13113               BRU     *+2
```

```
13112  0 43 13306        BRM     PERR1           NO BUFFER SELECTED
13113  0 72 15426        SKA     BIT19
13114  0 01 13116        BRU     *+2
13115  0 01 13132        BRU     CK1
13116  0 72 15417        SKA     BIT12
13117  0 01 13121        BRU     *+2
13120  0 43 13306        BRM     PERR1           COMPARE MODE, B=1 OPER. NOT FIXED
13121  0 72 15422        SKA     BIT15
13122  0 01 13124        BRU     *+2
13123  0 43 13306        BRM     PERR1           COMPARE MODE, B=2 OPER. NOT FIXED
13124  0 72 15424        SKA     BIT17
13125  0 01 13127        BRU     *+2
13126  0 43 13306        BRM     PERR1           COMPARE MODE, B=2 NOT READ
13127  0 53 15473        SKN     LENGTH
13130  0 01 13132        BRU     CK1
13131  0 43 13313        BRM     PERR2           COMPARE MODE, LENGTH RANDOM
13132  0 72 33373  CK1   SKA     *2200
13133  0 01 13135        BRU     *+2
13134  0 01 13140        BRU     CK2
13135  0 76 00401        LDA     STATUS
13136  0 72 15414        SKA     BIT9
13137  0 43 13306        BRM     PERR1
13140  0 53 15473  CK2   SKN     LENGTH          CHECK LENGTH
13141  0 01 13143        BRU     *+2             YES
13142  0 01 13166        BRU     CK4
13143  0 76 15470        LDA     HICORE
13144  0 54 15467        SUB     LOCORE
13145  0 55 15432        ADD     BIT23
13146  0 66 00006        RSH     6
13147  0 73 15473        SKG     LENGTH
13150  0 43 13313        BRM     PERR2           FIXED LENGTH TOO LARGE
13151  0 76 33374        LDA     *341
13152  0 73 15473        SKG     LENGTH
13153  0 43 13313        BRM     PERR2           FIXED LENGTH > 14K (340B SECTORS)
13154  0 76 15466        LDA     OPMODE
13155  0 72 15426        SKA     BIT19
```



```
13156  0 01 13160        BRU     *+2
13157  0 01 13163        BRU     CK3
13160  0 76 33375        LDA     *161
13161  0 73 15473        SKG     LENGTH
13162  0 43 13313        BRM     PERR2           COMPARE MODE, LENGTH > 7K (160B SECTORS)
13163  0 76 15473  CK3   LDA     LENGTH
13164  0 73 33372        SKG     *0
13165  0 43 13313        BRM     PERR2           FIXED LENGTH = 0
13166  0 76 15467  CK4   LDA     LOCORE          CHECK LOCORE
13167  0 55 15432        ADD     BIT23           ADD 1
13170  0 73 33337        SKG     *STADDR
13171  0 43 00460        BRM     ERROR           LOCORE < 340008
13172  4 20 32746        XOP     F10M1,4
13173  0 20 32757        XOP     F10M3
13174  0 76 15470        LDA     HICORE          CHECK HICORE
13175  0 73 33376        SKG     *177777
13176  0 01 13200        BRU     *+2
13177  0 43 00460        BRM     ERROR           HICORE > 177777B
13200  4 20 32746        XOP     F10M1,4
13201  0 20 33015        XOP     F10M10
13202  0 63 23330        SKN     NFFLG
13203  0 73 33301        SKG     *37777
13204  0 01 13206        BRU     *+2
13205  0 43 00460        BRM     ERROR           HICORE > 37777, NOT 940
13206  4 20 32746        XOP     F10M1,4
13207  0 20 33015        XOP     F10M10
13210  0 54 33306        SUB     *630
13211  0 73 15467        SKG     LOCORE
13212  0 43 00460        BRM     ERROR           HICORE = LOCORE < 640
13213  4 20 32746        XOP     F10M1,4
13214  0 20 33015        XOP     F10M10
13215  0 76 15472        LDA     HIDISC          CHECK HIDISC
13216  0 55 15432        ADD     BIT23           ADD 1
13217  0 73 15471        SKG     LODISC
13220  0 43 00460        BRM     ERROR           HIDISC < LODISC
13221  4 20 32746        XOP     F10M1,4
```

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

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13266  0 73 33277          SKG     *70000
13267  0 01 13271          BRU     *+2
13270  0 76 33277          LDA     *70000
13271  0 66 00007          RSH     7
13272  0 35 15452          STA     BLKMAX
13273  0 76 33400          LDA     *1990           SET PASS COUNT
13274  0 35 23321          STA     VAR5
13275  0 76 15666          LDA     OPMODE
13276  0 72 15426          SKA     BIT19
13277  0 01 13301          BRU     *+2
13300  0 01 13320          BRU     START
13301  0 76 33401          LDA     *160
13302  0 73 15452          SKG     BLKMAX
13303  0 01 13320          BRU     START
13304  0 35 15452          STA     BLKMAX
13305  0 01 13320          BRU     START
                    *
                    *      PARAMETER ERROR OUTPUT ROUTINES
                    *
13306  0 00 00000  PERR1   PZE     0
13307  0 43 00460          BRM     ERROR
13310  4 20 32746          NOP     F10M1,4
13311  0 20 32763          NOP     F10M5
13312  0 51 13306          BRR     PERR1
13313  0 00 00000  PERR2   PZE
13314  0 43 00460          BRM     ERROR
13315  4 20 32746          NOP     F10M1,4
13316  0 20 32761          NOP     F10M4
13317  0 51 13313          BRR     PERR2
```

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



```
                        *
                        *       HANDLE BUFFER 1 ONLY
                        *
13331  0 77 15530  B1ONLY EAX     TABLE1          SET BUFFER BIAS
13332  0 01 13334         BRU     B2ONLY+1
                        *
                        *       HANDLE BUFFER 2 ONLY
                        *
13333  0 77 15540  B2ONLY EAX     TABLE2          SET BUFFER BIAS
13334  0 43 13651         BRM     SETDAD          GET STARTING DISC ADDRESS AND LENGTH
13335  0 35 00003         STA     3,2             LENGTH
13336  0 35 00002         STA     2,2             START DISC
13337  0 76 33772         LDB     =0
13340  0 43 13710         BRM     SETCAD          GET STARTING CORE ADDRESS
13341  0 35 00002         STA     2,2             START CORE
13342  0 43 13777         BRM     SETDVR          SET UP CHANNEL DRIVER
13343  0 43 14064         BRM     SPREAD          SPREAD DATA IF WRITE
13344  0 43 00430         BRM     OBJECT
13345  0 02 00002         EIR                     ENABLE INTERRUPTS
13346  0 43 14012         BRM     DRIVER          DRIVE I/O
13347  0 43 14510         BRM     WFIO            WAIT FOR I/O TO FINISH
13350  0 43 14525         BRM     CHNCK           CHECK FOR I/O ERRORS
13351  0 43 14712         BRM     DATACK          CHECK FOR DATA ERRORS IF READ
13352  0 43 00434  F1OEND  BRM     END
13353  0 53 15445         SKN     KEY             IN KEY MODE
13354  0 01 13356         BRU     *+2             NO
13355  0 01 13525         BRU     CONKEY          CONTINUE OPERATION IF NOT COMPLETED
13356  0 60 33321         SKR     VAR5
13357  0 60 00000         NOP     0
13360  0 58 33321         SKN     VAR5            FINISHED
13361  0 01 13320         BRU     START           NO
13362  0 43 00456  ENDF10 BRM     FDONE           EXIT FUNCTION
```

```
                        *
                        *       HANDLE BUFFERS 1 AND 2
                        *
13363  0 77 15530  B1AND2 EAX     TABLE1          BIAS
13364  0 43 13561        BRM     SETDAD          GET STARTING DISC AND LENGTH (B=1)
13365  2 35 00003        STA     3,2             LENGTH
13366  2 36 00000        STB     0,2             START DISC
13367  0 77 15540        EAX     TABLE2          BIAS
13370  0 43 13561        BRM     SETDAD          GET STARTING DISC AND LENGTH (B=2)
13371  2 35 00003        STA     3,2             LENGTH
13372  2 36 00000        STB     0,2             START DISC
13373  0 46 20005        ABC
13374  0 77 15530        EAX     TABLE1
13375  2 76 00003        LDA     3,2             B=1 LENGTH
13376  0 43 13710        BRM     SETCAD          GET STARTING CORE ADDRESSES (B=102)
13377  2 35 00002        STA     2,2             START CORE (B=1)
13400  0 77 15540        EAX     TABLE2
13401  2 36 00002        STB     2,2             START CORE (B=2)
13402  0 43 13777        BRM     SETDVR          SET UP CHANNEL DRIVER (B=2)
13403  0 77 15530        EAX     TABLE1
13404  0 43 13777        BRM     SETDVR          SET UP CHANNEL DRIVER (B=1)
13405  0 43 14764        BRM     SPREAD          SPREAD DATA IF WRITE (B=1)
13406  0 76 00406        LDA     SEED            SAVE RANDOM SEED
13407  0 35 23316        STA     VAR2
13410  0 43 00430        BRM     OBJECT
13411  0 02 20002        EIR                     ENABLE INTERRUPTS
13412  0 76 23316        LDA     VAR2            GET ORIGINAL SEED (FOR LOOPING ON BP1)
13413  0 36 00406        STA     SEED
13414  0 77 15530        EAX     TABLE1
13415  0 43 14712        BRM     DRIVER          DRIVE I/O (B=1)
13416  0 76 15466        LDA     BPMODE
13417  0 72 15415        SKA     BIT10           IN FAST MODE
13420  0 01 13433        BRU     B1A2B           YES
13421  0 43 14510        BRM     WFIO            WAIT FOR I/O TO FINISH
13422  0 43 14525        BRM     CHNCK           CHECK FOR I/O ERRORS
13423  0 43 14712        BRM     DATACK          CHECK FOR DATA ERRORS IF READ
```



```
13424  0 77 15540        EAX     TABLE2
13425  0 43 14764        BRM     SPREAD          SPREAD DATA IF WRITE (B=2)
13426  0 43 14712        BRM     DRIVER          DRIVE I/O (B=2)
13427  0 43 14510  B1A2A  BRM     WFIO            WAIT FOR I/O TO FINISH
13430  0 43 14525        BRM     CHNCK           CHECK FOR I/O ERRORS
13431  0 43 14712        BRM     DATACK          CHECK FOR DATA ERRORS IF READ
13432  0 01 13352        BRU     F10END
13433  0 77 15540  B1A2B  EAX     TABLE2
13434  0 43 14764        BRM     SPREAD          SPREAD DATA B=2 IF WRITE
13435  0 77 15530        EAX     TABLE1
13436  0 43 14510        BRM     WFIO            WAIT FOR I/O TO FINISH
13437  0 43 14525        BRM     CHNCK           CHECK FOR I/O ERRORS
13440  0 77 15540        EAX     TABLE2
13441  0 43 14712        BRM     DRIVER          DRIVE I/O (B=2)
13442  0 77 15530        EAX     TABLE1
13443  0 43 14712        BRM     DATACK          CHECK DATA IF READ (B=1)
13444  0 77 15540        EAX     TABLE2
13445  0 01 13427        BRU     B1A2A
```

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



```
13507  0 43 00434        BRM     END
13510  0 53 15446        SKA     RRS.            LAST OPERATION A READ/READ
13511  0 01 13353        BRU     F10END+1        NO
13512  0 76 33272        LDA     =0              RESET READ/READ SWITCH
13513  0 35 15446        STA     RRS.
13514  0 77 15530        EAX     TABLE1
13515  0 76 33277        LDA     =3              FORCE WRITE BUFFER 1
13516  2 35 00004        STA     4,2             SET MODE
13517  2 76 00005        LDA     5,2
13520  0 17 15423        EOR     BIT16
13521  2 35 00005        STA     5,2             CONVERT XMODE EOD TO IOSD
13522  0 76 15435        LDA     WRITE
13523  2 35 00006        STA     6,2             CHANGE BUFFER EOD TO WRITE
13524  0 01 13476        BRU     COMP1
```

```
                    *
                    *       CONTINUE IF KEYING DISC
                    *
13525  0 76 23320   CONKEY LDA     VAR4
13526  0 73 15672           SKG     HIDISC          FINISHED
13527  0 01 13320           BRU     START           NO
13530  0 76 04765           LDA     UPT+4           SET UP KEYED FLAGS
13531  0 16 00332           MRG     FLAGS
13532  0 35 00332           STA     FLAGS
13533  0 76 33272           LDA     =0              RESET KEY SWITCH
13534  0 35 15445           STA     KEY
13535  0 76 15666           LDA     OPMODE          SET UP OPERATING MODE
13536  0 14 33361           ETR     =785
13537  0 35 15666           STA     OPMODE
13540  0 76 15433           LDA     RMODE
13541  0 14 33404           ETR     =77077777
13542  0 16 15666           MRG     OPMODE
13543  0 35 15666           STA     OPMODE
13544  0 76 33273           LDA     =•1             SET LENGTH TO BE RANDOM
13545  0 35 15673           STA     LENGTH
13546  0 76 15671           LDA     LODISC          RESET SEQUENTIAL DISC POINTER
13547  0 35 23320           STA     VAR4
13550  0 01 13362           BRU     ENDF10          EXIT
```



```
                    *
                    *       CALCULATE STARTING DISC ADDRESS AND TRANSMIT LENGTH
                    *
13551  0 60 00000   SETDAD RZE     0
13552  0 37 23314           STX     TEMPO           SAVE X
13553  0 76 15666           LDA     OPMODE
13554  0 72 15403           SKA     BIT0            IS ADDRESSING FIXED
13555  0 01 13417           BRU     FIXD            YES
13556  0 72 15404           SKA     BIT1            IS ADDRESSING SEQUENTIAL
13557  0 01 13572           BRU     SEQD            YES
13560  0 76 00406   RAND    LDA     SEED            RANDOM ADDRESSING
13561  0 43 15337           BRM     RANDOM          GENERATE RANDOM ADDRESS
13562  0 35 00406           STA     SEED
13563  0 14 33326           ETR     =777777
13564  0 73 15672           SKG     HIDISC          CHECK GENERATED ADDRESS
13565  0 73 23315           SKG     VAR1
13566  0 01 13560           BRU     RAND            NOT WITHIN HIDISC•LODISC LIMITS
13567  0 43 23322           BRM     DISCCK
13570  0 01 13560           BRU     RAND            ADDRESSED DISC OUT OF BOUNDS
13571  0 01 13627           BRU     SAVOPN
13572  0 76 23320   SEQD    LDA     VAR4            GET INCREMENTED DISC ADDRESS
13573  0 73 15672           SKG     HIDISC          CHECK ADDRESS
13574  0 01 13601           BRU     SEQD1
13575  0 53 15445           SKN     KEY             ADDRESS TOO LARGE • IS KEY IN PROCESS
13576  0 01 13400           BRU     *+2             NO
13577  0 01 13525           BRU     CONKEY
13600  0 76 15671           LDA     LODISC          START OVER
13601  0 35 23320   SEQD1   STA     VAR4
13602  0 43 23322           BRM     DISCCK
13603  0 01 13605           BRU     *+2             DISC OUT OF BOUNDS
13604  0 01 13627           BRU     SAVOPN
13605  0 55 15415           ADD     BIT10           INCREMENT DISC ADDRESS
13606  0 14 33405           ETR     =1760000
13607  0 73 15672           SKG     HIDISC          CHECK NEW ADDRESS FOR DONE
13610  0 01 13601           BRU     SEQD1           ADDRESS OK
13611  0 53 15445           SKN     KEY             ADDRESS TOO LARGE, IS KEY IN PROCESS
```

```
13612  0 01 13415          BRU     *+3             NO
13613  0 35 23320          STA     VAR4            KEY FINISHED
13614  0 01 13525          BRU     CONKEY
13615  0 76 15471          LDA     LODISC          RESET SEQUENTIAL DISC POINTER
13616  0 01 13573          BRU     SEQD+1
13617  0 76 15471  FIXD    LDA     LODISC          FIXED DISC ADDRESS
13620  0 43 23322          BRM     DISCCK
13621  0 01 13623          BRU     *+2             DISC OUT OF BOUNDS
13622  0 01 13627          BRU     SAVDPW
13623  0 43 00460          BRM     ERROR           REPORT PARAMETER ERROR
13624  4 20 32746          NOP     F10M1,4
13625  0 20 32755          NOP     F10M2
13626  0 01 13617          BRU     FIXD            LOOP
13627  0 35 23312  SAVDPW  STA     TEMPB           SAVE DISC ADDRESS
13630  0 53 15473  SLEN    SKN     LENGTH          IS LENGTH FIXED
13631  0 01 13701          BRU     SLEN5           YES
13632  0 76 00406          LDA     SEED            GENERATE RANDOM LENGTH
13633  0 43 15337          BRM     RANDOM
13634  0 35 00406          STA     SEED
13635  0 14 33310          ETR     =377
13636  0 73 15452  SLEN0   SKG     BLKMAX          LEN > BLKMAX
13637  0 01 13642          BRU     SLEN1           NO
13640  0 54 15452          SUB     BLKMAX          LEN = LEN - BLKMAX
13641  0 01 13636          BRU     SLEN0           LOOP
13642  0 72 33273  SLEN1   SKA     *-1             DOES LEN = 0
13643  0 01 13645          BRU     *+2             NO
13644  0 76 15432          LDA     BIT23           A = 1
13645  0 35 23311  SLEN2   STA     TEMPA           SAVE TRANSMIT LENGTH
13646  0 55 23312          ADD     TEMPB           ADD STARTING DISC ADDRESS
13647  0 54 15432          SUB     BIT23           SUBTRACT 1
13650  0 73 15472          SKG     HIDISC          LEN + ADDR - 1 > HIDISC
13651  0 01 13656          BRU     SLEN3           NO
13652  0 76 15472          LDA     HIDISC          LEN = HIDISC - ADDR + 1
13653  0 54 23312          SUB     TEMPB
13654  0 55 15432          ADD     BIT23           ADD 1
13655  0 01 13645          BRU     SLEN2
```



```
13656  0 43 23320  SLEN3   BRM     DISCCK
13657  0 01 13661          BRU     *+2             FINAL DISC ADDRESS OUT OF BOUNDS
13660  0 01 13666          BRU     SLEN4
13661  0 76 23312          LDA     TEMPB           LEN = REMAINING SECTORS ON THIS DISC
13662  0 16 33315          ERG     =17777
13663  0 54 23312          SUB     TEMPB
13664  0 55 15432          ADD     BIT23           ADD 1
13665  0 35 23311          STA     TEMPA
13666  0 76 15466  SLEN4   LDA     SFMODE          CHECK SFMODE FOR SEQUENTIAL DISC OPERATION
13667  0 72 15404          SKA     BIT1
13670  0 01 13672          BRU     *+2             SEQUENTIAL
13671  0 01 13675          BRU     SLEN6           NOT SEQUENTIAL
13672  0 76 23320          LDA     VAR4            UPDATE DISC INCREMENT
13673  0 55 23311          ADD     TEMPA
13674  0 35 23320          STA     VAR4
13675  0 76 23311  SLEN6   LDA     TEMPA           GET REGISTERS
13676  0 75 23312          LDB     TEMPB
13677  0 71 23314          LDX     TEMPD
13700  0 01 13551          BRR     SETDAD          RETURN
13701  0 76 15473  SLEN5   LDA     LENGTH
13702  0 73 15452          SKG     BLKMAX          FIXED LENGTH > BLKMAX
13703  0 01 13645          BRU     SLEN2           NO
13704  0 43 00460          BRM     ERROR           REPORT PARAMETER ERROR
13705  4 20 32746          NOP     F10M1,4
13706  0 20 32761          NOP     F10M4
13707  0 01 13630          BRU     SLEN            LOOP
```

```
                    *
                    *       CALCULATE STARTING CORE ADDRESS
                    *
13710  0 00 00000 SETCAD PZE     0
13711  0 37 23307        STX     X               SAVE X
13712  0 67 00006        LSH     6               MULTIPLY LENGTHS BY 64D
13713  0 35 23311        STA     TEMPA
13714  0 36 23312        STB     TEMPB
13715  0 76 15666        LDA     BPMODE          FIND CORE ADDRESSING MODE
13716  0 72 15406        SKA     BIT3            IS ADDRESSING FIXED
13717  0 01 13772        BRU     FIXC            YES
13720  0 72 15407        SKA     BIT4            IS ADDRESSING SEQUENTIAL
13721  0 01 13747        BRU     SEQC            YES
13722  0 76 15670        LDA     HICORE          RANDOM ADDRESSING
13723  0 54 15667        SUB     LOCORE
13724  0 54 23311        SUB     TEMPA
13725  0 54 23312        SUB     TEMPB
13726  0 35 23313        STA     TEMPC           RANGE OF NUMBERS FOR START CORE (B-1)
13727  0 73 33772        SKG     *0              DOES RANGE = 0
13730  0 01 13741        BRU     RANC2           YES
13731  0 76 00406        LDA     SEED            GENERATE RANDOM BIAS
13732  0 43 15737        BRM     RANDOM
13733  0 35 00406        STA     SEED
13734  0 14 33301        ETR     *37777
13735  0 73 23313 RANC1  SKG     TEMPC           IS BIAS > RANGE
13736  0 01 13742        BRU     RANC3           NO
13737  0 54 23313        SUB     TEMPC           BIAS = BIAS - RANGE
13740  0 01 13735        BRU     RANC1
13741  0 76 33772 RANC2  LDA     *0              BIAS = 0
13742  0 55 15667 RANC3  ADD     LOCORE          LOCORE + BIAS = CORE1
13743  0 35 23305        STA     A
13744  0 55 23311        ADD     TEMPA           CORE1 + LEN1 = CORE2
13745  0 35 23306        STA     B
13746  0 01 13775        BRU     SCARET          SET UP RETURN
13747  0 76 15670 SEQC   LDA     HICORE          CALCULATE RANGE
13750  0 54 23311        SUB     TEMPA
```



```
13751  0 54 23312        SUB     TEMPB
13752  0 55 15432        ADD     BIT23
13753  0 75 23317        LDB     VAR3
13754  0 73 23317        SKG     VAR3            IS RANGE > VAR3
13755  0 46 00014        XAB                     NO
13756  0 46 00014        XAB
13757  0 35 23305        STA     A               CORE 1
13760  0 55 23311        ADD     TEMPA
13761  0 35 23306        STA     B               CORE 2
13762  0 55 23312        ADD     TEMPB           UPDATE VAR3
13763  0 35 23317        STA     VAR3
13764  0 54 15670        SUB     HICORE
13765  0 72 15403        SKA     BIT0            IS VAR3 < HICORE
13766  0 01 13775        BRU     SCARET          YES
13767  0 76 15667        LDA     LOCORE          SET VAR3 = LOCORE
13770  0 35 23317        STA     VAR3
13771  0 01 13775        BRU     SCARET          SET UP RETURN
13772  0 76 15667 FIXC   LDA     LOCORE          FIXED ADDRESSING
13773  0 35 23305        STA     A               CORE1
13774  0 35 23306        STA     B               CORE2
13775  0 43 15231 SCARET BRM     GET             SET REGISTERS
13776  0 61 13710        BRR     SETCAD          RETURN
```

```
                        *
                        *       SET UP I/O BUFFER
                        *
13777  0 00 00000  SETDVR PZE     0
14000  2 76 00003          LDA     3,2             BUILD PBT WORD
14001  0 75 33272          LDB     =0
14002  0 67 20024          LCY     20D
14003  0 35 23310          STA     TEMP
14004  2 76 00002          LDA     2,2
14005  0 14 33301          ETR     =37777
14006  0 55 23310          ADD     TEMP
14007  2 35 00001          STA     1,2
14010  0 36 23310          STB     TEMP            HI ORDER WORD COUNT
14011  2 76 00002          LDA     2,2             BUILD EXTENDED MODE EOM
14012  0 66 00011          RSH     9D
14013  0 14 33406          ETR     =140
14014  0 55 23310          ADD     TEMP
14015  0 53 15441          SKN     INTRPT
14016  0 01 14020          BRU     *+2
14017  0 16 33402          ERG     =3000
14020  0 55 15436          ADD     XMODE
14021  2 35 00005          STA     5,2
14022  2 76 00007          LDA     7,2             BUFFER NUMBER
14023  0 75 15666          LDB     =FMODE
14024  0 72 15432          SKA     BIT23           BUFFER 1
14025  0 66 00003          RSH     3               YES . CORRECT
14026  0 46 10012          BAC
14027  0 72 15422          SKA     BIT15           OPERATION FIXED
14030  0 01 14032          BRU     *+2
14031  0 01 14060          BRU     SDVR3           NO
14032  0 72 15423  SDVR0    SKA     BIT16           IS OPERATION A WRITE
14033  0 01 14035          BRU     *+2
14034  0 01 14044          BRU     SDVR2           NO
14035  0 76 15435          LDA     WRITE           BUFFER EOM
14036  2 35 00006          STA     6,2
14037  2 76 00005          LDA     5,2             XMODE . IOSD
```



```
14040  0 16 15423          ERG     BIT16
14041  2 35 00005          STA     5,2
14042  0 75 33277          LDB     =3              SET MODE
14043  0 01 14047          BRU     SDVR4
14044  2 76 15434  SDVR2    LDA     READ            BUFFER EOM
14045  2 35 00006          STA     6,2
14046  0 75 15430          LDB     BIT21           B . 4
14047  2 76 00007  SDVR4    LDA     7,2             BUFFER NO
14050  0 72 15432          SKA     BIT23           BUFFER 1
14051  0 01 14056          BRU     SDVR5           YES
14052  0 46 10012          BAC
14053  0 55 15431          ADD     BIT22           ADD 2
14054  2 35 00004  SDVR6    STA     4,2             MODE
14055  0 51 13777          JRR     SETDVR          RETURN
14056  0 46 10012  SDVR5    BAC
14057  0 01 14064          BRU     SDVR6
14060  0 76 00406  SDVR3    LDA     SEED            GEN RANDOM NO. . IF BIT16, WRITE
14061  0 43 15437          JRM     RANDOM
14062  0 35 00406          STA     SEED
14063  0 01 14032          BRU     SDVR0
```

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                   *
                   *       GENERATE AND SPREAD DATA
                   *
14064  0 00 00000  SPREAD  BZE     0
14065  0 37 23314          STX     TEMPD           SAVE X
14066  2 76 00006          LDA     6,2             E0M
14067  0 72 15425          SKA     BIT18           IS OPERATION A WRITE
14070  0 01 14072          BRU     *+2             YES
14071  0 51 14064          BRR     SPREAD          RETURN
14072  0 53 23330          SKN     NFFLG           IS MACHINE A 940
14073  0 01 14113          BRU     SPR2            N0
14074  2 76 00002          LDA     2,2             START CORE
14075  0 66 00013          RSH     11D             SET UP RELABELING
14076  0 35 23310          STA     TEMP
14077  0 75 33272          LDB     =0
14100  0 71 33407          LDX     *-7
14101  0 61 23310  SPR1    MIN     TEMP
14102  0 67 20006          LCY     6
14103  0 55 23310          ADD     TEMP
14104  0 41 14101          BRX     SPR1
14105  0 36 00415          STB     RL1
14106  0 35 00416          STA     RL2
14107  0 02 20400          E0M     20400           SET UP RL1
14110  0 13 00415          P0T     RL1
14111  0 02 21000          E0M     21000           SET UP RL2
14112  0 13 00416          P0T     RL2
14113  0 71 23314  SPR2    LDX     TEMPD
14114  2 76 00003          LDA     3,2             SECTOR COUNT
14115  0 54 15432          SUB     BIT23           SUBTRACT 1
14116  0 35 15453          STA     COUNT
14117  2 76 00000          LDA     0,2             START DISC
14120  0 35 23324          STA     VAR8
14121  2 76 00002          LDA     2,2             START CORE
14122  0 53 23330          SKN     NFFLG           MACHINE A 940
14123  0 01 14125          BRU     *+2             N0
14124  0 14 33313          ETR     =3777
```

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14125  0 16 15403          PRG     BIT0            USER MAP BIT
14126  0 35 23325          STA     VAR9
14127  0 76 15466          LDA     SPMODE
14130  0 72 15411          SKA     BIT6            IS DATA FIXED
14131  0 01 14173          BRU     SPR5            YES
14132  0 72 15412          SKA     BIT7            IS DATA SEQUENTIAL
14133  0 01 14155          BRU     SPR4            YES
14134  0 71 33410  SPR3    LDX     *-63D           RANDOM DATA
14135  0 76 00406          LDA     SEED            GEN RANDOM DATA
14136  0 43 15337          BRM     RANDOM
14137  0 35*23325          STA*    VAR9            STORE DATA
14140  0 61 23325          MIN     VAR9            INCREMENT POINTER
14141  0 41 14136          BRX     *-3             LOOP
14142  0 43 15337          BRM     RANDOM          GEN DATA FOR LAST WORD
14143  0 35 00406          STA     SEED
14144  0 55 23324          ADD     VAR8            ADD DISC ADDRESS
14145  0 55*23325          STA*    VAR9            STORE LAST WORD
14146  0 61 23325          MIN     VAR9            INCREMENT POINTER
14147  0 61 23324          MIN     VAR8            INCREMENT DISC POINTER
14150  0 60 15453          SKR     COUNT           DECREMENT COUNT
14151  0 20 00000          N0P     0
14152  0 53 15453          SKN     COUNT           FINISHED
14153  0 01 14134          BRU     SPR3            N0 = LOOP
14154  0 01 14210          BRU     SPR6            RETURN
14155  0 71 33411  SPR4    LDX     *-64D           COUNT
14156  0 76 23324          LDA     VAR8
14157  0 75 33272          LDB     =0
14160  0 67 00006          LSH     6
14161  0 35*23325          STA*    VAR9            STORE DATA
14162  0 55 15432          ADD     BIT23           ADD 1
14163  0 61 23325          MIN     VAR9            INCREMENT POINTER
14164  0 41 14161          BRX     *-3             LOOP
14165  0 61 23324          MIN     VAR8            INCREMENT DISC ADDRESS
14166  0 60 15453          SKR     COUNT           DECREMENT COUNT
14167  0 20 00000          N0P     0
14170  0 53 15453          SKN     COUNT           FINISHED
```

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



```
                    *
                    *       I/O DRIVER
                    *
14212  0 00 00000   DRIVER  BZE     0
14213  0 37 23314          STX     TEMPD
14214  0 76 15475          LDA     CNTRS       GET RETRY COUNT
14215  0 66 00014          RSH     12D
14216  0 14 33774          ETR     =7
14217  0 54 15432          SUB     BIT23       SUBTRACT 1
14220  0 35 23323          STA     VAR7        CHANNEL DRIVER RETRY COUNT
14221  0 76 15466          LDA     SPMODE
14222  0 72 15430          SKA     BIT21       DO A DUMMY SEEK
14223  0 61 14225          BRU     *,2         YES
14224  0 61 14241          BRU     DRIVE1
14225  0 76 00406          LDA     SEED        GENERATE RANDOM SEEK ADDRESS
14226  0 43 15337          BRM     RANDOM
14227  0 35 00406          STA     SEED
14230  0 14 33315          ETR     =17777
14231  0 35 23313          STA     TEMP
14232  0 76 00000          LDA     0,2         DISC STARTING POINTER
14233  0 14 33354          ETR     =760000
14234  0 16 23313          ERG     TEMP
14235  0 35 15550          STA     TABLE3
14236  0 77 15550          EAX     TABLE3
14237  0 43 14244          BRM     DSCDVR      DRIVE DISC
14240  0 71 23314          LDX     TEMPD
14241  0 43 14244  DRIVE1  BRM     DSCDVR      DRIVE DISC
14242  0 43 14417          BRM     CHNDVR      DRIVE CHANNEL
14243  0 51 14213          BRR     DRIVER      RETURN
```

```
                        *
                        *       DISC DRIVER
                        *
14244  0 00 00000 DSCDVR PZE     0
14245  0 76 15675         LDA     CNTRS           SET UP RETRY COUNTER FOR DISC DRIVER
14246  0 66 00014         RSH     12D
14247  0 14 33274         ETR     =7
14250  0 54 15432         SUB     BIT23           SUBTRACT 1
14251  0 35 23322         STA     VARA
14252  0 76 33273         LDA     =-1             PRESET RETRY COUNTER
14253  0 35 15454         STA     RETRY
14254  0 76 15432 DDVR0   LDA     BIT23           SET PHASE
14255  0 35 15457         STA     PHASE
14256  0 40=10326         SKS=    10326           FILE ON LINE TEST
14257  0 43 14677         BRM     ABORT           FILE NOT ON LINE
14260  0 20 15403         NOP     BIT0
14261  0 40=14126         SKS=    14126           WRITE HEADER TEST
14262  0 43 14477         BRM     ABORT           WRITE HEADER SWITCH ON
14263  0 20 15410         NOP     BIT5
14264  0 76 33272         LDA     =0
14265  0 40=10126         SKS=    10126           DISC FILE READY TEST
14266  0 01 14270         BRU     *+2             CONTROLLER NOT READY
14267  0 01 14275         BRU     DDVR2
14270  0 55 15432         ADD     BIT23           ADD 1
14271  0 73 33331         SKG     =357140
14272  0 01 14265         BRU     DDVR1           LOOP
14273  0 43 14477         BRM     ABORT           300 MS TIMEOUT
14274  0 20 15404         NOP     BIT1
14275  0 06 10126         EOD     10126           ALERT DISC FILE
14276  2 13 00000         PBT     0,2             PBT TO DISC
14277  2 76 00000         LDA     0,2             GET PBT WORD
14300  0 43 15255         BRM     GETCAP          GET STARTING ARM POSITION
14301  0 35 23312         STA     TEMPB
14302  0 67 00007         LSH     7
14303  0 14 33412         ETR     =17400
14304  0 35 23310         STA     TEMP
```



```
14305  2 76 00000         LDA     0,2             PBT+WORD
14306  0 14 33364         ETR     =760000
14307  0 16 23310         XRG     TEMP
14310  0 35 23311         STA     TEMPA
14311  2 76 00000         LDA     0,2             ENTER ENDING POSITION IN TABLE
14312  0 43 15243         BRM     ENDPOS
14313  0 76 33272         LDA     =0              PRESET MOVTIM AND BADTIM
14314  0 35 15451         STA     MOVTIM
14315  0 35 15450         STA     BADTIM
14316  2 76 00006         LDA     6,2             TEST FOR WRITE PROTECT
14317  0 72 15425         SKA     BIT18           IS OPERATION A READ
14320  0 01 14322         BRU     *+2             NO = TEST FOR WRITE PROTECT
14321  0 01 14324         BRU     *+3             YES = DO NOT TEST FOR WRITE PROTECT
14322  0 40=13126         SKS=    13126           DISC WRITE PROTECT TEST
14323  0 43 14620         BRM     REPERR          DISC WRITE PROTECTED
14324  0 20 15407         NOP     BIT4
14325  0 76 15466         LDA     SPMODE          TEST FOR POSITION TIMING
14326  0 72 15431         SKA     BIT22
14327  0 01 14331         BRU     *+2             TIME IT
14330  0 51 14244         BRR     DSCDVR          RETURN
14331  2 76 00000         LDA     0,2
14332  0 66 00007         RSH     7               GET NEW ARM POSITION
14333  0 14 33306         ETR     =77
14334  0 75 23312         LDB     TEMPB           GET STARTING ARM POSITION
14335  0 43 15266         BRM     GETIME          GET MAXIMUM POSITIONING TIME
14336  0 36 15451         STB     MOVTIM          SAVE TIME
14337  2 76 00000         LDA     0,2             DISC PBT WORD
14340  0 14 33412         ETR     =17600
14341  0 66 00037         RSH     31D             END POSITION TO B
14342  0 71 33413         LDX     =-375D
14343  0 41 14343         BRX     *               WAIT REMAINDER OF 1 MS
14344  0 76 15432         LDA     BIT23           PRESET A REGISTER
14345  0 40=12126         SKS=    12126           TRACK VERIFIED TEST
14346  0 01 14350         BRU     *+2             TRACK NOT VERIFIED
14347  0 01 14357         BRU     DDVR4
14350  0 55 15432         ADD     BIT23           ADD 1
```

```
14351  0 73 33357          SKG     *5000
14352  0 01 14354          BRU     *+2
14353  0 01 14357          BRU     DDVR4          500 MS TIMEOUT
14354  0 71 33414          LDX     *-559D
14355  0 41 14355          BRX     *
14356  0 01 14345          BRU     DDVR3
14357  0 71 23314 DDVR4    LDX     TEMPD          GET BUFFER BIAS
14360  0 73 15451          SKG     MAXTIM         IS POSITIONING TIME OK
14361  0 61 14344          BRR     DSCDVR         YES - RETURN
14362  0 65 15450          STA     BADTIM         SAVE TRUE POSITIONING TIME
14363  0 60 23322          SKR     VAR6           DECREMENT RETRY COUNTER
14364  0 20 00000          NOP     0
14365  0 63 23322          SKN     VAR6           RETRY
14366  0 01 14370          BRU     *+2            YES
14367  0 43 14477          BRM     ABORT
14370  0 20 15412          NOP     BIT7
14371  0 43 14420          BRM     REPERR         REPORT ERROR
14372  0 20 15412          NOP     BIT7
14373  0 06 10126          EOD     10126          ALERT DISC FILE
14374  0 13 23311          PBT     TEMPA          MOVE TO ORIGINAL POSITION
14375  0 76 15431          LDA     BIT22          SET PHASE
14376  0 65 15457          STA     PHASE
14377  0 76 23311          LDA     TEMPA          SET UP END DISC POSITION
14400  0 65 23312          STA     TEMPB
14401  0 43 15243          BRM     ENDPOS         ENTER ENDING POSITION IN TABLE
14402  0 76 00000          LDA     0,2            SET UP START DISC
14403  0 65 23311          STA     TEMPA
14404  0 76 33372          LDA     =0
14405  0 40*10126          SKS*    10126          TRACK VERIFIED TEST
14406  0 01 14412          BRU     *+2            TRACK NOT VERIFIED
14407  0 01 14354          BRU     DDVR0          TRY AGAIN
14410  0 55 15432          ADD     BIT23          ADD 1
14411  0 73 33331          SKG     *35714D
14412  0 01 14425          BRU     DDVR5
14413  0 76 33357          LDA     *5000
14414  0 65 15450          STA     BADTIM
```



```
14415  0 43 14477          BRM     ABORT          500 MS TIMEOUT
14416  0 20 15412          NOP     BIT7
```

```
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                   *
                   *       CHANNEL DRIVER
                   *
14417  0 00 00000  CHNDVR  PZE     0
14420  0 37 23314          STX     TEMPD           SAVE X
14421  2 76 00005          LDA     5,2             EXTENDED MODE EOM
14422  0 35 14437          STA     CDVR3
14423  2 76 00006          LDA     6,2             BUFFER CONTROLEOM
14424  0 35 14441          STA     CDVR4
14425  0 76 33272          LDA     =0
14426  0 40*14100          SKS*    14100           CHANNEL ACTIVE TEST
14427  0 01 14431          BRU     *+2             CHANNEL ACTIVE
14430  0 01 14436          BRU     CDVR2
14431  0 55 15432          ADD     BIT23           ADD 1
14432  0 73 33331          SKG     =357140
14433  0 01 14426          BRU     CDVR1
14434  0 43 14677          BRM     ABORT           CHANNEL ACTIVE AFTER 500 MS
14435  0 20 15420          XOP     BIT13
14436  0 06*10100          EOD*    10100           ALERT CHANNEL
14437  0 00 00000  CDVR3   PZE     0               EXTENDED MODE EOM
14440  2 13 00001          PBT     1,2
14441  0 00 00000  CDVR4   PZE     0               BUFFER CONTROL EOM
14442  2 76 00004          LDA     4,2             SET PHASE
14443  0 35 15457          STA     PHASE
14444  0 76 33272          LDA     =0
14445  0 35 15444          STA     STFLAG          CLEAR SEARCH TIME FLAG
14446  0 35 15442          STA     I1FLAG          CLEAR I1 FLAG
14447  0 35 15443          STA     I2FLAG          CLEAR I2 FLAG
14450  0 76 15666          LDA     BPMODF
14451  0 72 15432          SKA     BIT23           TIME SEARCH
14452  0 01 14454          BRU     *+2             YES
14453  0 51 14417          BRR     CHNDVR          RETURN
14454  2 76 00002          LDA     2,2             GET COMPARE ADDRESS
14455  0 55 15431          ADD     BIT22           ADD 2
14456  0 71 33415          LDX     **33000         COUNT
14457  0 75 33273          LDB     **1             MASK
```

```
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14460  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
14461  0 33 23310          PIN     TEMP            PIN CHANNEL ADDRESS
14462  0 73 23310          SKG     TEMP            CHANNEL COUNTING YET
14463  0 01 14506          BRU     CDVR7           YES
14464  0 41 14460          BRX     CDVR5           LOOP
14465  0 36 15444          STB     STFLAG          SET SEARCH TIME ERROR FLAG
14466  0 71 33416          LDX     **33030         COUNT
14467  0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
14470  0 33 23310          PIN     TEMP            PIN CHANNEL ADDRESS
14471  0 73 23310          SKG     TEMP            IS INTERLACE COUNTING YET
14472  0 01 14506          BRU     CDVR7           YES
14473  0 41 14467          BRX     CDVR6           LOOP
14474  0 71 23314          LDX     TEMPD           GET X
14475  0 60 23323          SKR     VAR7            DECREMENT RETRY COUNTER
14476  0 20 00000          XOP     0
14477  0 50 23323          SKN     VAR7            RETRY
14500  0 01 14502          BRU     *+2             YES
14501  0 43 14477          BRM     ABORT
14502  0 20 15414          XOP     BIT9
14503  0 43 14620          BRM     REPERR
14504  0 20 15414          XOP     BIT9
14505  0 01 14354          BRU     CDVR0           TRY AGAIN
14506  0 71 23314  CDVR7   LDX     TEMPD           GET X
14507  0 51 14417          BRR     CHNDVR          RETURN
```

```
                    *
                    *       ROUTINE TO WAIT UP TO 2.8 SECONDS FOR DISC READY
                    *
14510  0 00 00000   WFIO    PZE     0
14511  0 35 23305           STA     A               SAVE A
14512  0 76 33417           LDA     =99999D         COUNT = 100,000
14513  0 35 23310           STA     TEMP
14514  0 60 23310   WFIO1   SKR     TEMP
14515  0 66 20060           RCY     48D
14516  0 53 23310           SKN     TEMP
14517  0 01 14521           BRU     *+2
14520  0 01 14523           BRU     WFIO2           2.8 SEC UP
14521  0 40*10126           SKS*    10126           DISC FILE READY TEST
14522  0 01 14514           BRU     WFIO1           FILE NOT READY
14523  0 76 23305   WFIO2   LDA     A               GET A REGISTER
14524  0 51 14510           BRR     WFIO            RETURN
```



```
                    *
                    *       CHECK FOR I/O ERRORS
                    *
14525  0 00 00000   CHECK   PZE     0
14526  0 06 1 126           EOD     10126           ALERT DISC FILE
14527  0 37 23310           PIN     TEMP            UPDATE CURRENT ARM POSITION TABLE
14530  0 76 23310           LDA     TEMP
14531  0 43 15243           BRM     ENDPRS          INSERT ENDING ADDRESS
14532  0 75 33354           LDB     =76000          MASK
14533  0 70 00000           SKM     0,2             STARTING AND ENDING ADDRESS ON SAME DISC
14534  0 01 14536           BRU     *+2             NO
14535  0 01 14541           BRU     *+4
14536  0 76 00000           LDA     0,2             START DISC
14537  0 46 33315           ARG     =17777
14540  0 43 15243           BRM     ENDPRS          INSERT POSITION 77 FOR STARTING DISC
14541  0 43 15205           BRM     IOSTAT          GET CURRENT I/O STATUS
14542  0 72 33420           SKA     =71007000       DOES ERROR CONDITION EXIST
14543  0 01 14604           BRU     CHNCK2          YES
14544  0 46 00005           AOC
14545  0 53 14441           SKN     INTRPT          INTERRUPT MODE
14546  0 01 14566           BRU     CHNCK0          NO
14547  0 76 00006           LDA     6,2             BUFFER EOM
14550  0 72 15425           SKA     BIT18           IN WRITE MODE
14551  0 01 14560           BRU     CHNCK4          YES
14552  0 46 10012           DAC
14553  0 72 33421           SKA     =600            INTERRUPT ERROR
14554  0 01 14556           BRU     *+2             YES
14555  0 01 14566           BRU     CHNCK0
14556  0 14 33421           ETR     =600
14557  0 01 14605           BRU     CHNCK2+1
14560  0 46 10012   CHNCK4  DAC
14561  0 72 15422           SKA     BIT15           INTERRUPT ERROR IN WRITE MODE
14562  0 01 14564           BRU     *+2             YES
14563  0 01 14566           BRU     CHNCK0
14564  0 14 15422           ETR     BIT15
14565  0 01 14605           BRU     CHNCK2+1
```

```
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14566  0 53 15444  CHNCK0 SKN     STFLAG          SEARCH TIME FLAG SET
14567  0 51 14525         BRR     CHNCK           NO = RETURN
14570  0 76 33273         LDA     =,1             RESET HEADING SWITCHES
14571  0 35 15437         STA     DHEAD
14572  0 35 15440         STA     IOHEAD
14573  0 37 23310         STX     TEMP            SET UP MESSAGE POINTER
14574  0 76 23310         LDA     TEMP
14575  0 14 33301         ETR     =37777
14576  0 16 15413         MRG     BITA
14577  0 35 14602         STA     CHNCK1
14600  0 43 00454         BRM     REPORT
14601  4 20 33312         NOP     F10M9,4
14602  0 00 00000  CHNCK1 PZE     0               POINTER
14603  0 51 14525         BRR     CHNCK           RETURN
14604  0 14 33420  CHNCK2 ETR     =71007000       FORMAT
14605  0 35 14617         STA     CHNCK3
14606  0 60 23323         SKR     VAR7            DECREMENT CHANNEL RETRY COUNTER
14607  0 20 00000         NOP     0
14610  0 53 23323         SKN     VAR7            RETRY
14611  0 61 14613         BRU     *+2             YES
14612  0 43 14677         BRM     ABORT
14613  0 20 14617         NOP     CHNCK3
14614  0 43 14620         BRM     REPERR
14615  0 20 14617         NOP     CHNCK3
14616  0 61 14254         BRU     DDVRO           TRY AGAIN
14617  0 00 00000  CHNCK3 PZE     0
```

```
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                   *
                   *       REPORT I/O ERROR
                   *
14620  0 00 00000  REPERR PZE     0
14621  0 37 23314         STX     TEMPD           SAVE X
14622  0 61 14420         MIN     REPERR          INCREMENT RETURN
14623  0 61 15454         MIN     RETRY           INCREMENT RETRY COUNTER
14624  0 77*14620         EAX*    REPERR
14625  2 76*00000         LDA*    0,2             ERROR FLAG
14626  0 35 15460         STA     ERRTBL
14627  0 43 15305         BRM     IOSTAT          GET CURRENT I/O STATUS
14630  0 35 23310         STA     TEMP
14631  0 76 15454         LDA     RETRY
14632  0 67 00003         LSH     3
14633  0 14 33422         ETR     =170
14634  0 55 23310         ADD     TEMP
14635  0 16 15460         MRG     ERRTBL          MERGE ERROR FLAG
14636  0 35 15461         STA     ERRTBL+1
14637  0 76 15450         LDA     BADTIM          TIMES
14640  0 75 33272         LDB     =0
14641  0 67 00014         LSH     12D
14642  0 55 15451         ADD     =BYTIM
14643  0 35 15462         STA     ERRTBL+2
14644  0 71 23314         LDX     TEMPD           BIAS
14645  2 76 00000         LDA     0,2             STARTING DISC ADDRESS
14646  0 35 15463         STA     ERRTBL+3
14647  2 76 00002         LDA     2,2             STARTING CORE ADDRESS
14650  0 35 15465         STA     ERRTBL+5
14651  2 76 00003         LDA     3,2             BLOCK LENGTH
14652  0 35 15467         STA     ERRTBL+7
14653  0 36 10126         EBD     10126           ALERT DISC FILE
14654  0 33 15464         PIN     ERRTBL+4        ENDING DISC ADDRESS
14655  0 36 12100         EBD     12100           ALERT TO PIN CHANNEL ADDRESS
14656  0 33 15466         PIN     ERRTBL+6        ENDING CHANNEL ADDRESS
14657  0 43 14510         BRM     WFIO            WAIT FOR I/O TO FINISH
14660  0 53 15440         SKN     IOHEAD          PRINT HEADING
```

```
14661  0 01 14470          BRU     REP1            NO
14662  0 76 33272          LDA     =0              SET UP HEADING SWITCHES
14663  0 35 15440          STA     IOHEAD
14664  0 76 33273          LDA     =-1
14665  0 35 15437          STA     DHEAD
14666  0 43 00454          BRM     REPORT          OUTPUT HEADING
14667  0 20 33017          NOP     F10M11
14670  0 43 00454  REP1    BRM     REPORT
14671  4 20 32767          NOP     F10M7,4         (CR)
14672  0 10 15460          EIGHT   ERRTBL          DATA
14673  0 43 00460          BRM     ERROR           GO TO CONTROL
14674  0 20 33440          NOP     U19M12
14675  0 06 10326          EOD     10326           CLEAR FILE
14676  0 51 14420          BRR     REPERR          RETURN
                    *
                    *       REPORT I/O ERROR AND ABORT
                    *
14677  0 00 00000  ABORT   PZE     0
14700  0 01 14477          MIN     ABORT           INCREMENT MARK
14701  0 57 23314          STX     TEMPD           SAVE X
14702  0 77*14677          LAX=    ABORT
14703  2 76*00000          LDA=    0,2             GET DATA POINTER
14704  0 71 23314          LDX     TEMPD           GET X
14705  0 35 14707          STA     ABORT1
14706  0 43 14420          BRM     REPERR          REPORT ERROR
14707  0 00 00000  ABORT1  PZE     0
14710  0 43 00434          BRM     EOD             LOOP IF BP1 SET
14711  0 01 10320          BRU     START           RESTART FUNCTION
```



```
                    *
                    *       CHECK DATA
                    *
14712  0 00 00000  DATACK PZE     0
14713  2 57 23314          STX     TEMPD           SAVE X
14714  2 76 00006          LDA     6,2             BUFFER CONTROL ERR
14715  2 72 15425          SKA     BIT14           WAS LAST OPERATION THIS BUFFER A READ
14716  0 51 14712          BRR     DATACK          NO = RETURN
14717  0 03 33330          SKN     NEFLG           IS MACHINE A 940
14720  0 01 14740          BRU     DATAP           NO
14721  2 76 00002          LDA     2,2             STARTING CORE ADDRESS
14722  0 06 00013          RSH     11D             SET UP RELABELING
14723  0 35 23310          STA     TEMP
14724  0 76 33272          LDB     =0
14725  0 71 33407          LDX     =-7
14726  0 61 23310  DATA1   MIN     TEMP
14727  0 57 00006          LCY     6
14730  0 55 23310          ADD     TEMP
14731  0 41 14726          BRX     DATA1
14732  0 36 00415          STB     RL1
14733  0 35 00416          STA     RL2
14734  0 76 20400          EOM     20400           SET UP RL1
14735  0 13 00415          PBT     RL1
14736  0 76 21000          EOM     21000           SET UP RL2
14737  0 13 00416          PBT     RL2
14740  0 71 23314  DATAP   LDX     TEMPD
14741  2 76 00003          LDA     3,2             SECTOR COUNT
14742  0 56 15432          SUB     BIT03           SUBTRACT 1
14743  0 35 15453          STA     COUNT
14744  2 76 00000          LDA     0,2             STARTING DISC ADDRESS
14745  0 35 23324          STA     VARA
14746  2 76 00002          LDA     2,2             STARTING CORE ADDRESS
14747  0 53 23330          SKN     NEFLG           IS MACHINE A 940
14750  0 01 14752          BRU     =2              NO
14751  0 14 33313          ETR     =3777
14752  0 16 15403          XRG     BIT0            USER MAP BIT
```

```
14753  0 35 23325          STA     VAR9
14754  0 75 33273          LDB     =-1             MASK
14755  0 76 15666          LDA     BPMBDF
14756  0 72 15411          SKA     BIT6            IS DATA FIXED
14757  0 01 15025          BRU     DATA7           YES
14760  0 72 15412          SKA     BIT7            IS DATA SEQUENTIAL
14761  0 01 15004          BRU     DATA5           YES
14762  0 36 15447  DATA3   STB     NEWSEC          SET NEW SECTOR SWITCH
14763  0 71 33410          LDX     =-63D           RANDOM DATA
14764  0 76*23325          LDA*    VAR9            GET FIRST WORD
14765  0 70*23325  DATA4   SKM*    VAR9            IS DATA CORRECT
14766  0 43 15135          BRM     DATERR          NO
14767  0 43 15337          BRM     RANDOM          GENERATE NEXT RANDOM WORD
14770  0 61 23325          MIN     VAR9            INCREMENT POINTER
14771  0 41 14765          BRX     DATA4
14772  0 55 23324          ADD     VAR8            ADD DISC ADDRESS = LAST WORD
14773  0 70*23325          SKM*    VAR9            IS LAST WORD CORRECT
14774  0 43 15135          BRM     DATERR          NO
14775  0 61 23325          MIN     VAR9            INCREMENT POINTERS
14776  0 61 23324          MIN     VAR8
14777  0 60 15453          SKR     COUNT           DECREMENT COUNT
15000  0 20 00000          NOP     0
15001  0 53 15453          SKN     COUNT           FINISHED
15002  0 01 14762          BRU     DATA3           NO
15003  0 01 15045          BRU     DATA8
15004  0 36 15447  DATA5   STB     NEWSEC          SET NEW SECTOR SWITCH
15005  0 75 33272          LDB     =0
15006  0 76 23324          LDA     VAR8            SET UP FIRST SEQUENTIAL DATA WORD
15007  0 67 00006          LSH     6
15010  0 75 33273          LDB     =-1             MASK
15011  0 71 33411          LDX     =-64D           COUNT
15012  0 70*23325  DATA6   SKM*    VAR9            IS DATA CORRECT
15013  0 43 15135          BRM     DATERR          NO
15014  0 55 15432          ADD     BIT23           ADD 1
15015  0 61 23325          MIN     VAR9            INCREMENT POINTER
15016  0 41 15012          BRX     DATA6           LOOP
```



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

```
                    *
                    *       COMPARE BUFFERS 1 AND 2
                    *
15047  0 00 00000   C1AND2  PZE     0
15050  0 37 23314           STX     TEMPD           SAVE X
15051  0 77 15530           EAX     TABLE1
15052  2 76 00002           LDA     2,2             START CORE (B=1)
15053  0 53 23330           SKN     XPFLG           IS MACHINE A 940
15054  0 01 15076           BRU     C1A2B           NO
15055  0 66 00013           RSH     11D             SET UP RELABELING
15056  0 35 23310           STA     TEMP
15057  0 75 33772           LDB     =0
15060  0 71 33407           LDX     =-7
15061  0 61 23310   C1A2A    MIN     TEMP
15062  0 67 00006           LCY     6
15063  0 55 23310           ADD     TEMP
15064  0 41 15061           BRX     C1A2A
15065  0 36 00415           STB     RL1
15066  0 35 00416           STA     RL2
15067  0 02 20400           EOM     20400           SET UP RL1
15070  0 13 00415           PBT     RL1
15071  0 02 21000           EOM     21000           SET UP RL2
15072  0 13 00416           PBT     RL2
15073  0 77 15530           EAX     TABLE1
15074  2 76 00002           LDA     2,2             START CORE (B=1)
15075  0 14 33313           ETR     =3777
15076  0 35 23311   C1A2B    STA     TEMPA           BUFFER 1 POINTER
15077  2 76 00003           LDA     3,2             LENGTH
15100  0 75 33772           LDB     =0
15101  0 67 00006           LSH     6
15102  0 55 23311           ADD     TEMPA
15103  0 16 15403           ERG     BITC            USER MAP BIT
15104  0 35 23325           STA     VAR9            BUFFER 2 POINTER
15105  0 76 23311           LDA     TEMPA
15106  0 16 15403           ERG     BITC            USER MAP BIT
15107  0 35 23311           STA     TEMPA
```



```
15110  2 76 00003           LDA     3,2             LENGTH
15111  0 54 15432           SUB     BITB3           SUBTRACT 1
15112  0 35 15452           STA     COUNT
15113  2 76 00000           LDA     0,2             START DISC
15114  0 35 23324           STA     VAR8
15115  0 75 33773           LDB     =-1             MASK
15116  0 36 15447   C1A2C    STB     NEWSEC          SET NEW SECTOR SWITCH
15117  0 71 33411           LDX     =-640           COUNT
15120  0 76*23311   C1A2D    LDA*    TEMPA           B=1 WORD
15121  0 70*23325           SKM*    VAR9            B=2 WORD
15122  0 43 15435           BRM     DATERR          MISCOMPARE
15123  0 61 23311           MIN     TEMPA           INCREMENT POINTERS
15124  0 61 23325           MIN     VAR9
15125  0 41 15120           BRX     C1A2D           LOOP
15126  0 61 23324           MIN     VAR8            INCREMENT DISC POINTER
15127  0 67 15452           SKR     COUNT           DECREMENT COUNT
15130  0 00 00000           LOOP    0
15131  0 53 15452           SKN     COUNT           FINISHED
15132  0 01 15116           BRU     C1A2C           NO
15133  0 71 23314           LDX     TEMPD           GET X
15134  0 61 15047           BRR     C1AND2          RETURN
```

```
                        *
                        *       DATA ERROR ROUTINE
                        *
15135  0 00 00000 DATERR PZE     0
15136  0 43 15224        BRM     SAV             SAVE REGISTERS
15137  0 35 15461        STA     ERRTBL+1        GOOD WORD
15140  0 76*23325        LDA*    VAR9            BAD WORD
15141  0 35 15460        STA     ERRTBL
15142  0 76 23324        LDA     VAR8            DISC ADDRESS
15143  0 35 15462        STA     ERRTBL+2
15144  0 37 23310        STX     TEMP
15145  0 76 15424        LDA     BIT17           A = 64D
15146  0 55 23310        ADD     TEMP
15147  0 35 15466        STA     ERRTBL+6        WORD NUMBER
15150  0 71 23314        LDX     TEMPD           GET BUFFER BIAS
15151  2 76 00002        LDA     2,2             START CORE
15152  0 14 33324        ETR     =174000         EXTRACT RELABELING
15153  0 35 23310        STA     TEMP
15154  0 76 23325        LDA     VAR9
15155  0 53 23330        SKN     MFFLG           IS MACHINE A 940
15156  0 61 15160        BRU     *+2             NO
15157  0 55 23310        ADD     TEMP
15160  0 35 15463        STA     ERRTBL+3        CORE ADDRESS
15161  2 76 00000        LDA     0,2
15162  0 35 15464        STA     ERRTBL+4        STARTING DISC ADDRESS
15163  2 76 00003        LDA     3,2
15164  0 35 15465        STA     ERRTBL+5        BLOCK SIZE IN SECTORS
15165  0 61 15467        MIN     ERRTBL+7        INCREMENT ERROR COUNT
15166  0 43 14510        BRM     XFIO            WAIT FOR DISC TO FINISH IF BUSY
15167  0 53 15447        SKN     NEWSEC          NEW SECTOR
15170  0 61 15214        BRU     DERR2           NO
15171  0 76 15432        LDA     BIT23           A = 1
15172  0 35 15467        STA     ERRTBL+7        RESET ERROR COUNT
15173  0 35 15447        STA     NEWSEC          RESET NEW SECTOR SWITCH
15174  0 43 00454        BRM     REPORT
15175  0 20 32767        NOP     F10M7           (CR)
```



```
15176  0 53 15437        SKN     DHEAD           DATA ERROR HEADER LAST HEADER
15177  0 61 15205        BRU     DERR1           YES
15200  0 35 15437        STA     DHEAD           RESET DATA ERROR HEADER SWITCH
15201  0 76 33373        LDA     =-1             SET I/O HEADER SWITCH
15202  0 35 15440        STA     IOHEAD
15203  0 43 00454        BRM     REPORT
15204  0 20 32770        NOP     F10M8           HEADING
15205  0 43 00454 DERR1  BRM     REPORT
15206  4 20 32767        NOP     F10M7,4         (CR)
15207  0 10 15460        EIGHT   ERRTBL          DATA
15210  0 43 15231        BRM     GET             GET REGISTERS
15211  0 43 00460        BRM     ERROR           GO TO CONTROL
15212  0 20 23440        NOP     C19M12
15213  0 51 15135        BRR     DATERR          RETURN
15214  0 76 15475 DERR2  LDA     CNTRS
15215  0 14 33306        ETR     =77             EXTRACT DISPLAY COUNT
15216  0 55 15432        ADD     BIT23           ADD 1
15217  0 73 15467        SKG     ERRTBL+7        REPORT THIS ERROR
15220  0 61 15222        BRU     *+2             NO
15221  0 61 15205        BRU     DERR1
15222  0 43 15231        BRM     GET             GET REGISTERS
15223  0 51 15135        BRR     DATERR          RETURN
```

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



```
                    *
                    *       ENTER POSITION INTO TABLE
                    *
15243  0 00 00000   ENDPOS  PZE     0
15244  0 43 15224           BRM     SAV
15245  0 66 00015           RSH     13D             GET DISC
15246  0 35 23310           STA     TEMP            A TO X
15247  0 71 23310           LDX     TEMP
15250  0 76 00072           LDA     =D
15251  0 67 00006           LSH     6
15252  0 35 15470           STA     CAPTBL,2
15253  0 43 15231           BRM     GET
15254  0 51 15243           BRR     ENDPOS          RETURN
                    *
                    *       GET CURRENT ARM POSITION
                    *
15255  0 00 00000   GETCAP  PZE     0
15256  0 43 15224           BRM     SAV             SAVE REGISTERS
15257  0 66 00015           RSH     13D             GET DISC
15260  0 35 23310           STA     TEMP            A TO X
15261  0 71 23310           LDX     TEMP
15262  0 76 15470           LDA     CAPTBL,2        CURRENT POSITION
15263  0 75 23306           LDB     B
15264  0 71 23307           LDX     X
15265  0 51 15255           BRR     GETCAP          RETURN
```

```
                    *
                    *       GET MAXIMUM POSITIONING TIME
                    *
15266  0 00 00000 GETIME PZE     0
15267  0 43 15224        BRM     SAV             SAVE REGISTERS
15270  0 54 23306        SUB     B
15271  0 35 23310        STA     TEMP            A = END POS - START POS
15272  0 72 15403        SKA     BIT0            IS A NEGATIVE
15273  0 01 15275        BRU     *+2             YES
15274  0 01 15300        BRU     *+4
15275  0 76 33272        LDA     =0
15276  0 54 23310        SUB     TEMP            =A TO A
15277  0 35 23310        STA     TEMP
15300  0 71 23310        LDX     TEMP
15301  2 75 15560        LDB     TIMTBL,2        MAX TIME
15302  0 76 23305        LDA     A
15303  0 71 23307        LDX     X
15304  0 51 15266        BRR     GETIME          RETURN
```



```
                    *
                    *       GENERATE STATUS WORD
                    *
15305  0 00 00000 IOSTAT PZE     0
15306  0 76 33272        LDA     =0
15307  0 40*10326        SKS*    10326           FILE ON LINE TEST
15310  0 16 15403        MRG     BIT0            FILE NOT ON LINE
15311  0 40*10126        SKS*    10126           DISC FILE READY TEST
15312  0 16 15404        MRG     BIT1            CONTROLLER NOT READY
15313  0 40*11126        SKS*    11126           DISC FILE ERROR TEST
15314  0 16 15405        MRG     BIT2            CONTROLLER ERROR
15315  0 40*12126        SKS*    12126           TRACK VERIFIED TEST
15316  0 16 15406        MRG     BIT3            TRACK NOT VERIFIED
15317  0 40*13126        SKS*    13126           DISC WRITE PROTECT TEST
15320  0 16 15407        MRG     BIT4            DISC WRITE PROTECTED
15321  0 40*14126        SKS*    14126           WRITE HEADER TEST
15322  0 16 15410        MRG     BIT5            WRITE HEADER SWITCH ON
15323  0 40*11100        SKS*    11100           CHANNEL ERROR TEST
15324  0 16 15417        MRG     BIT12           CHANNEL ERROR
15325  0 40*14100        SKS*    14100           CHANNEL ACTIVE TEST
15326  0 16 15420        MRG     BIT13           CHANNEL ACTIVE
15327  0 40*12100        SKS*    12100           CHANNEL ZERO WORD COUNT TEST
15330  0 16 15421        MRG     BIT14           CHANNEL WORD COUNT NOT ZERO
15331  0 53 15442        SKN     I1FLAG
15332  0 16 15422        MRG     BIT15           I1 NOT RECEIVED
15333  0 53 15443        SKN     I2FLAG
15334  0 16 15423        MRG     BIT16           I2 NOT RECEIVED
15335  0 16 15457        MRG     PHASE           GET PHASE COUNTER
15336  0 51 15305        BRR     IOSTAT          RETURN
```

```
                        *
                        *       RANDOM NUMBER GENERATOR
                        *
15337  0 00 00000 RANDOM PZE     0
15340  0 35 23305         STA     A               SAVE A AND B REGISTERS
15341  0 36 23306         STB     B
15342  0 46 20005         ABC
15343  0 67 00017         LSH     15D
15344  0 55 23305         ADD     A
15345  0 55 33423         ADD     =33431031
15346  0 75 23306         LDB     B
15347  0 51 15337         BRR     RANDOM          RETURN
```



```
                        *
                        *       INTERRUPT PROCESSOR
                        *
15350  0 02 20004 INTER  DIR                     DISABLE INTERRUPTS
15351  0 35 15455         STA     A1              SAVE REGISTERS
15352  0 36 15456         STB     B1
15353  0 76 00450         LDA     DIVERT          GET INTERRUPT MARK ADDRESS
15354  0 75 33777         LDB     =-1             MASK
15355  0 14 33301         ETR     =37777
15356  0 70 33302         SKM     =IX1            WAS INTERRUPT ON I1
15357  0 01 15361         BRU     *+2             NO
15360  0 01 15364         BRU     INTER1
15361  0 70 33424         SKM     =IX2            WAS INTERRUPT ON I2
15362  0 40 33357         SKM     SPUR            NO = SPURIOUS
15363  0 60 33426         XOR     =660067         POINTER
15364  0 36 15443         STB     I2FLAG
15365  0 01 15367         BRU     *+2
15366  0 36 15442 INTER1  STB     I1FLAG
15367  0 54 15432         SUB     SIT33
15370  0 35 00450         STA     DIVERT
15371  0 74 00450         LDA*    DIVERT
15372  0 35 00450         STA     DIVERT
15373  0 76 15455         LDA     A1              RESTORE REGISTERS
15374  0 75 15456         LDB     B1
15375  0 53 33330         SKR     =FFLG           IS MACHINE A 940
15376  0 01 15401         BRU     *+3             NO
15377  0 02 20003         EIR                     ENABLE INTERRUPTS
15400  0 11 00450         BRI     DIVERT          RETURN
15401  0 02 20003         EIR
15402  0 01 00450         BRU*    DIVERT          RETURN
```

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



```
                        *
                        *       FLAGS
                        *
15437  0 00 00000 DHEAD  PZE     0               DATA ERROR HEADING FLAG
15440  0 00 00000 I0HEAD PZE     0               I0 ERROR HEADING FLAG
15441  0 00 00000 INTRPT PZE     0               INTERRUPT MODE FLAG
15442  0 00 00000 I1FLAG PZE     0               I1 RECEIVED FLAG
15443  0 00 00000 I2FLAG PZE     0               I2 RECEIVED FLAG
15444  0 00 00000 STFLAG PZE     0               SEARCH TIME ERROR FLAG
15445  0 00 00000 KEY    PZE     0               KEY SWITCH (KEY IN PROCESS)
15446  0 00 00000 RRSW   PZE     0               READ/READ SWITCH (USED IN COMPARE MODE)
15447  0 00 00000 NEWSEC PZE     0               NEW SECTOR SWITCH
                        *
                        *       STORAGE CELLS
                        *
15450  0 00 00000 BADTIM PZE     0               SEEK TIME ERROR (INCORRECT TIME)
15451  0 00 00000 MAXTIM PZE     0               SEEK TIME ERROR (MAX CORRECT TIME)
15452  0 00 00000 BLKMAX PZE     0               MAXIMUM TRANSFER BLOCK LENGTH
15453  0 00 00000 COUNT  PZE     0               INTERNAL COUNTER
15454  0 00 00000 RETRY  PZE     0               CURRENT RETRY COUNT
15455  0 00 00000 A1     PZE     0
15456  0 00 00000 B1     PZE     0
15457  0 00 00000 PHASE  PZE     0               CURRENT PHASE
```

```
                        *
                        *       TABLES
                        *
15460          00010    ERRTBL  BSS     8D              ERROR OUTPUT TABLE
15470          00040    CAPTBL  BSS     32D             CURRENT ARM POSITION TABLE
15530  0 00 00000       TABLE1  PZE     0               DISC POT WORD (B=1)
15531  0 00 00000               PZE     0               CHANNEL POT WORD
15532  0 00 00000               PZE     0               CHANNEL STARTING ADDRESS
15533  0 00 00000               PZE     0               BLOCK LENGTH IN SECTORS
15534  0 00 00000               PZE     0               OPERATING MODE
15535  0 00 00000               PZE     0               EXTENDED MODE EOM
15536  0 00 00000               PZE     0               BUFFER CONTROL EOM
15537     00000001              DATA    1               BUFFER NUMBER (FIXED)
15540  0 00 00000       TABLE2  PZE     0               DISC POT WORD (B=2)
15541  0 00 00000               PZE     0               CHANNEL POT WORD
15542  0 00 00000               PZE     0               CHANNEL STARTING ADDRESS
15543  0 00 00000               PZE     0               BLOCK LENGTH IN SECTORS
15544  0 00 00000               PZE     0               OPERATING MODE
15545  0 00 00000               PZE     0               EXTENDED MODE EOM
15546  0 00 00000               PZE     0               BUFFER CONTROL EOM
15547     00000002              DATA    2               BUFFER NUMBER (FIXED)
15550  0 00 00000       TABLE3  PZE     0               DUMMY SEEK POT WORD
15551  0 00 00000               PZE     0               DUMMY TABLE
15552  0 00 00000               PZE     0
15553  0 00 00000               PZE     0
15554  0 00 00000               PZE     0
15555  0 00 00000               PZE     0
15556  0 00 00000               PZE     0
15557     00000003              DATA    3               BUFFER IDENTIFIER
```



```
                        *
                        *       MAXIMUM POSITIONING TIMES
                        *
15560     00006007      TIMTBL  DATA    1350,2500,2170,2170,2330,2330,2500,2500,2500,2500
15561     00009372
15562     00009331
15563     00009331
15564     00009351
15565     00009351
15566     00009372
15567     00009372
15570     00009372
15571     00009372
15572     00009413              DATA    2670,2670,2670,2670,2830,2830,3000,3000,3000,3000
15573     00009413
15574     00009413
15575     00009413
15576     00009433
15577     00009433
15600     00009454
15601     00009454
15602     00009454
15603     00009454
15604     00009475              DATA    3170,3170,3170,3170,3170,3170,3330,3330,3500,3500
15605     00009475
15606     00009475
15607     00009475
15610     00009475
15611     00009475
15612     00009515
15613     00009515
15614     00009536
15615     00009536
15616     00009536              DATA    3500,3500,3500,3500,3500,3500,3670,3670,3670,3670
15617     00009536
15620     00009536
```

```
15621    00000536
15622    00000536
15623    00000536
15624    00000557
15625    00000557
15626    00000557
15627    00000557
15630    00000557          DATA    367D,367D,367D,367D,383D,383D,383D,383D,383D,383D
15631    00000557
15632    00000557
15633    00000557
15634    00000577
15635    00000577
15636    00000577
15637    00000577
15640    00000577
15641    00000577
15642    00000577          DATA    383D,383D,400D,400D,400D,400D,400D,400D,400D,400D
15643    00000577
15644    00000620
15645    00000620
15646    00000620
15647    00000620
15650    00000620
15651    00000620
15652    00000620
15653    00000620
15654    00000620          DATA    400D,400D,400D,400D
15655    00000620
15656    00000620
15657    00000620
```



```
                           *
                           *
                           *       FUNCTION PARAMETER TABLE
                           *
15660    0 20 15476 FPT10  XBP     FIM10           FUNCTION IDENTIFIER MESSAGE
15661    0 20 15730        XBP     FAM10           FUNCTION ABSTRACT MESSAGE
15662    0 20 15705        XBP     FVM10           FUNCTION VARIABLE MESSAGE
15663    0 10 15466        EIGHT   BPMODE          FUNCTION VARIABLES POINTER
15664    0 00 16771        PZE     FUNC18          POINTER TO NEXT FUNCTION
15665      00020000        DATA    20000           FUNCTION IDENTIFIER BIT (BIT 10)
15666    0 00 00000 BPMODE PZE     0               OPERATING MODE
15667    0 00 00000 LOCORE PZE     0               FIRST CORE ADDRESS
15670    0 00 00000 HICORE PZE     0               LAST CORE ADDRESS
15671    0 00 00000 LODISC PZE     0               FIRST DISC ADDRESS
15672    0 00 00000 HIDISC PZE     0               LAST DISC ADDRESS
15673    0 00 00000 LENGTH PZE     0               FIXED LENGTH OR RANDOM SWITCH
15674    0 00 00000 PATERN PZE     0               FIXED PATTERN
15675      00070077 CNTRS  DATA    70077           RETRY AND DATA ERROR DISPLAY COUNTERS
                           *
                           *       FUNCTION MESSAGES
                           *
15676    52261201 FIM10  BCD     ' F 10 * DISC EXERCISER 4.0''
15677    00124012
15700    24314223
15701    13256725
15702    51233162
15703    05511304
15704    33003713
15705    52124647 FVM10  BCD     ' BPMODE  LOCORE  HICORE  LODISC  HIDISC  LENGTH  PATTERN  COUNTER
15706    44462425
15707    12121243
15710    46234651
15711    05121012
15712    30312346
15713    51251212
15714    12434624
```

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



```
15761    63122270
15762    12211240
15763    26126100
15764    63331212
15765    52526330         BCD      ' THE MODE OF OPERATION OF THE EXERCISER IS CONTROLLED BY ONE BITS IN T
15766    25124446
15767    24251246
15770    26124447
15771    25512163
15772    31464512
15773    46261263
15774    30251225
15775    67255123
15776    31622551
15777    12316212
16000    23464563
16001    51464343
16002    25241022
16003    70124445
16004    25122231
16005    63621231
16006    45126330
16007    25121212
16010    52652151         BCD      ' VARIABLE =OPMODE= AS FOLLOWS:'
16011    31212243
16012    25124246
16013    47444424
16014    25401221
16015    62122646
16016    43434466
16017    62151212
16020    52000312         BCD      ' 00 = FIXED DISC 01 = SEQUENTIAL DISC 02 = RANDOM DISC'
16021    40122631
16022    67252412
16023    24316223
16024    52000112
```

```
16025    40126225
16026    50642545
16027    63312143
16030    12243162
16031    23520002
16032    12401251
16033    21452446
16034    44122431
16035    62231212
16036    52000312          BCD     ' 03 = FIXED CORE 04 = SEQUENTIAL CORE 05 = RANDOM CORE'
16037    40122631
16040    67252412
16041    23465125
16042    52000412
16043    40126225
16044    50642545
16045    63312143
16046    12234451
16047    25520005
16050    12401251
16051    21452446
16052    44122346
16053    51251212
16054    52000612          BCD     ' 06 = FIXED DATA 07 = SEQUENTIAL DATA 08 = RANDOM DATA'
16055    40122631
16056    67252412
16057    64216321
16060    52000712
16061    40126225
16062    50642545
16063    63312143
16064    12242163
16065    21520010
16066    12401251
16067    21452446
16070    44122421
```



```
16071    63211212
16072    52001112          BCD     ' 09 = N/A 10 = COMPUTE WHILE TRANSFERING DATA 11 = USE INTERRUPTS'
16073    40124561
16074    21520100
16075    12401223
16076    46444764
16077    63251266
16100    40314325
16101    12635121
16102    45622625
16103    51314527
16104    12242163
16105    21520101
16106    12401264
16107    62251231
16110    45632551
16111    51644763
16112    62121212
16113    52010212          BCD     ' 12 = BUFFER 1 FIXED OPERATION 13 = WRITE BUFFER 1 14 = READ BUFFER 1'
16114    40122264
16115    26262551
16116    12011226
16117    31672524
16120    12464725
16121    51216231
16122    46455201
16123    63124212
16124    66513163
16125    25122264
16126    26262551
16127    12015201
16130    64124212
16131    51252124
16132    12226426
16133    26255112
16134    61121212
```

```
16135    52010512          BCD     ' 15 = BUFFER 2 FIXED OPERATION 16 = WRITE BUFFER 2 17 = READ BUFFER 2'
16136    40122264
16137    26262551
16140    12021226
16141    31672524
16142    12464725
16143    51216331
16144    46455201
16145    06124012
16146    66513163
16147    25122264
16150    26262551
16151    12025201
16152    07124012
16153    51252124
16154    12226426
16155    26255112
16156    02121212
16157    52011012          BCD     ' 18 = N/A 19 = COMPARE BUFFERS 1 AND 2 20 = KEY DISC'
16160    40124561
16161    21520111
16162    12401223
16163    46444721
16164    51251222
16165    64262625
16166    51621201
16167    12214524
16170    12025202
16171    00124012
16172    42257212
16173    24316223
16174    52020112          BCD     ' 21 = USE DUMMY SEEK 22 = TIME SEEK 23 = TIME SEARCH'
16175    40126462
16176    25122464
16177    44447212
16200    62252542
```



```
16201    52020212
16202    40126331
16203    44251262
16204    25254052
16205    02031240
16206    12633144
16207    25126225
16210    21512330
16211    52526630          BCD     '  WHEN IN THE COMPARE MODE, BUFFER 2 MUST BE SET FOR FIXED READ. IF'
16212    25451231
16213    45126330
16214    25122346
16215    44472151
16216    25124446
16217    24257312
16220    22642626
16221    25511202
16222    12446462
16223    63122225
16224    12622563
16225    12264651
16226    12263167
16227    25241251
16230    25212433
16231    12312617
16232    52226426          BCD     ' BUFFER 1 IS SET FOR FIXED WRITE, THE PROGRAM WILL EXECUTE A WRITE-READ
16233    26255112
16234    01123162
16235    12622563
16236    12264651
16237    12263167
16240    25241266
16241    51316325
16242    73126330
16243    25124751
16244    46275121
```

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16245    44126631
16246    43431225
16247    67252364
16250    63251221
16251    12665131
16252    63254051
16253    25212440
16254    52234644          BCD     ' COMPARE, IF BUFFER 1 IS SET FOR FIXED READ, THE PROGRAM WILL EXECUTE A
16255    47216125
16256    33123126
16257    12226426
16260    26255112
16261    01123162
16262    12622563
16263    12264651
16264    12263167
16265    25241251
16266    25212473
16267    12633025
16270    12475146
16271    27512144
16272    12663143
16273    43122567
16274    25236463
16275    25122112
16276    52512521          BCD     ' READ=READ=COMPARE=WRITE=READ=COMPARE (THIS WILL NOT DESTROY THE INTEGR
16277    24405125
16300    21244023
16301    46444721
16302    51254066
16303    51316325
16304    46512521
16305    24402346
16306    44472151
16307    25127463
16310    30316212
```



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16311    66314443
16312    12454663
16313    12242562
16314    63514470
16315    12633025
16316    12314563
16317    25275131
16320    63701212
16321    52462412          BCD     ' OF THE DISC).  WHEN IN THE KEY MODE, THE DISC WILL BE KEYED WITH THE'
16322    63302512
16323    24316223
16324    34335252
16325    66302545
16326    12314512
16327    63302512
16330    42257212
16331    44462425
16332    73126330
16333    25122431
16334    62231266
16335    31434312
16336    22251242
16337    25702524
16340    12663163
16341    30126330
16342    25121212
16343    52622543          BCD     ' SELECTED DATA AND THE FUNCTION DISMISSED.'
16344    25236325
16345    24122421
16346    63211221
16347    45241263
16350    30251226
16351    64452363
16352    31464512
16353    24316244
16354    31626225
```

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16355    24331212
16356    52523126          BCD     ' IF THE VARIABLE •LENGTH• IS NEGATIVE, RANDOM BLOCK LENGTHS WILL BE US
16357    12633025
16360    12652151
16361    31212243
16362    25124043
16363    25452763
16364    30401231
16365    62124525
16366    27716331
16367    65257312
16370    51214524
16371    46441222
16372    43462342
16373    12432545
16374    27633062
16375    12663143
16376    43122225
16377    12646225
16400    24331212
16401    52312612          BCD     ' IF •LENGTH• IS POSITIVE, IT REPRESENTS THE FIXED BLOCK LENGTH TO BE US
16402    40432545
16403    27633040
16404    12316212
16405    47466231
16406    63316525
16407    73123163
16410    12512547
16411    31256225
16412    45636212
16413    63302512
16414    26316725
16415    24122043
16416    46234212
16417    43254527
16420    63301263
```



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16421    46122225
16422    12646225
16423    24331212
16424    52526330          BCD     ' THE VARIABLE •COUNTERS• CONTAINS TWO COUNTERS• BITS 9-11 IS THE NUMBE
16425    25126521
16426    51312122
16427    43251242
16430    63466445
16431    43256162
16432    42132344
16433    45632131
16434    45621263
16435    66451223
16436    46644563
16437    25512233
16440    12223163
16441    62121140
16442    51011231
16443    62126330
16444    25124564
16445    44222651
16446    12462412
16447    52512563          BCD     ' RETRY ATTEMPTS TO BE MADE IF AN I/O ERROR OCCURES, AND BITS 18-23 THE•
16450    51721221
16451    63632544
16452    47630212
16453    63461222
16454    25124421
16455    24251231
16456    26126145
16457    12316146
16460    12255151
16461    46511246
16462    63236451
16463    25627212
16464    21452412
```

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16465    22316362
16466    12011040
16467    02031263
16470    30251212
16471    52456444          BCD     1 NUMBER OF DATA ERRORS TO BE DISPLAYED AFTER THE FIRST ERROR IN A GIVEN
16472    22255112
16473    46261224
16474    21632112
16475    25515146
16476    51621263
16477    46122225
16500    12243162
16501    47432170
16502    25241221
16503    26632551
16504    12633025
16505    12263151
16506    62631225
16507    51514451
16510    12314512
16511    21122731
16512    65254512
16513    52622523          BCD     1 SECTOR.  IF AN I/O ERROR OCCURES, INFORMATION DISPLAYED INCLUDES THE F
16514    63465133
16515    52523126
16516    12214512
16517    31614412
16520    25515146
16521    51124423
16522    23645125
16523    62731231
16524    45264451
16525    44216331
16526    46451224
16527    31624743
16530    61702524
```



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16531    12314523
16532    43647425
16533    62126330
16534    25122646
16535    43434466
16536    61452715
16537    52314462          BCD     1 ISTATUS: AN INDICATION OF THE STATE OF THE SYSTEM AT THE TIME OF FAIL
16540    63216364
16541    62151221
16542    45123145
16543    24312321
16544    63314445
16545    12462412
16546    63302512
16547    62632163
16550    65124426
16551    12633025
16552    12627762
16553    63254412
16554    61631263
16555    30251263
16556    31442512
16557    46261226
16560    61314364
16561    61253312
16562    52000012          BCD     1 00 = FILE NOT ON LINE 01 = CONTROLLER NOT READY 02 = CONTROLLER ERROR1
16563    40122631
16564    43251245
16565    46631246
16566    45124331
16567    45255200
16570    61124012
16571    23464563
16572    51464343
16573    25511245
16574    46631251
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16575    25212470
16576    52000212
16577    40122346
16600    45635146
16601    43432551
16602    12255151
16603    46511212
16604    52000312          BCD     ' 03 = TRACK NOT VERIFIED 04 = DISC WRITE PROTECTED 05 = WRITE HEADER SW
16605    40126351
16606    21234212
16607    45466312
16610    65255131
16611    26312524
16612    52000412
16613    40122431
16614    62231266
16615    51316325
16616    12475146
16617    63252363
16620    25245200
16621    05124012
16622    66513163
16623    25123025
16624    21242551
16625    12626631
16626    63233212
16627    46451212
16630    52000612          BCD     ' 06 = N/A 07 = SEEK TIME ERROR 08 = N/A'
16631    40124561
16632    21520007
16633    12401262
16634    25254212
16635    63314425
16636    12255151
16637    46515200
16640    10124012
```



```
16641    45612112
16642    52001112          BCD     ' 09 = SEARCH TIME ERROR 10 = N/A 11 = N/A'
16643    40126325
16644    21512330
16645    12633144
16646    25122551
16647    51465152
16650    01001240
16651    12456121
16652    52010112
16653    40124561
16654    21121212
16655    52010212          BCD     ' 12 = CHANNEL ERROR 13 = CHANNEL ACTIVE 14 = WORD COUNT NOT ZERO'
16656    40122330
16657    21454525
16660    43122551
16661    51465152
16662    01031240
16663    12233021
16664    45452543
16665    12212363
16666    31652552
16667    01041240
16670    12664451
16671    24122346
16672    64456112
16673    45466312
16674    71255146
16675    52010512          BCD     ' 15 = I1 NOT RECEIVED 16 = I2 NOT RECEIVED 17 = N/A'
16676    40123101
16677    12454663
16700    12512523
16701    25316525
16702    24520106
16703    12401231
16704    40124546
```

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16705    63125125
16706    23253165
16707    25245201
16710    07124012
16711    45612112
16712    52011040          BCD     ' 18=20 = CURRENT RETRY NUMBER 21=23 = CURRENT PHASE'
16713    02001240
16714    12236451
16715    51254563
16716    12512563
16717    51701245
16720    64442225
16721    61520201
16722    40020312
16723    40122364
16724    51512545
16725    63124730
16726    21622512
16727    52524025          BCD     '  =ERR FLAG= IS A MASK FOR IOSTATUS TO INDICATE THE ERROR DETECTED'
16730    51511226
16731    43212740
16732    12316212
16733    21124421
16734    52421226
16735    44511231
16736    46626321
16737    63646212
16740    63461231
16741    45243123
16742    21632512
16743    63302512
16744    65515146
16745    51122425
16746    63252363
16747    65241212
16750    52406331          BCD     ' =TIS..TSB= TIME IS AND TIME SB FOR SEEK TIME ERROR (IN HALFWORDS)''
```



```
16751    62424063
16752    62224212
16753    63314425
16754    12316212
16755    21452412
16756    63314425
16757    12622212
16760    26465112
16761    62252542
16762    12633144
16763    25122551
16764    51465112
16765    74314512
16766    55714726
16767    66445124
16770    62343712
```

```
                    *
                    *
                    *       FUNCTION 18 = WRITE PROTECT SWITCH TEST
                    *
                    *
16771  0 76 00404   FUNC18  LDA     DSCSIZ          PRESET VARIABLES
16772  0 66 00017           RSH     15D
16773  0 14 33426           ETR     =70
16774  0 54 15432           SUB     BIT23
16775  0 35 23327           STA     ENDISC
16776  0 35 23315           STA     VAR1
16777  0 75 33272           LDB     =0
17000  0 36 23326           STB     STDISC
17001  0 43 00424           BRM     FUNCTN          FUNCTION LINK TO CONTROL
17002  0 20 17070           NOP     FPT18
17003  0 43 00454           BRM     REPORT          OUTPUT FUNCTION ID
17004  0 20 17076           NOP     FIN18
17005  0 43 23045           BRM     TERM            GO TO CONTROL
17006  0 43 00440           BRM     RETURN
17007  0 20 23351           NOP     ENTER
17010  0 43 00430           BRM     OBJECT
17011  0 76 23327           LDA     ENDISC          CHECK VARIABLES
17012  0 73 23315           SKG     VAR1            HIGH ARM TOO LARGE
17013  0 01 17015           BRU     *+2             NO
17014  0 43 00460           BRM     ERROR
17015  0 20 33042           NOP     F18M1
17016  0 55 15432           ADD     BIT23
17017  0 73 23326           SKG     STDISC          LOW ARM < HIGH ARM
17020  0 43 00460           BRM     ERROR           NO
17021  0 20 33047           NOP     F18M2
17022  0 43 00434           BRM     END
17023  0 76 23326   BEGN18  LDA     STDISC          SET STARTING ARM NUMBER
17024  0 35 23316           STA     VAR2
17025  0 43 00430   STRT18  BRM     OBJECT
17026  0 76 23316           LDA     VAR2            FORM DISC POT WORD
17027  0 67 00015           LSH     13D
```



```
17030  0 43 23022           BRM     DISCCK          USE THIS DISC
17031  0 01 17043           BRU     F18E1           NO
17032  0 40*10126           SKS*    10126           DISC FILE READY TEST
17033  0 01 17032           BRU     *-1             NO
17034  0 56 10126           EOD     10126           ALERT DISC FILE
17035  0 13 23332           POT     POT+RD
17036  0 40*12126           SKS*    12126           TRACK VERIFIED TEST
17037  0 01 17036           BRU     *-1             NO
17040  0 40*13126           SKS*    13126           DISC WRITE PROTECT TEST
17041  0 43 17051           BRM     OUT18           YES = OUTPUT MESSAGE
17042  0 56 10326           EOD     10326           CLEAR FILE
17043  0 43 00434   F18E1   BRM     END
17044  0 61 23316           MIN     VAR2
17045  0 76 23316           LDA     VAR2
17046  0 73 23327           SKG     ENDISC          LAST DISC TESTED
17047  0 01 17025           BRU     STRT18          NO
17050  0 01 17023           BRU     BEGN18
                    *
                    *
                    *
17051  0 00 00000   OUT18   PZE     0               OUTPUT MESSAGE
17052  0 76 23316           LDA     VAR2            FORM ARM NUMBER INTO BCD
17053  0 67 00003           LSH     3
17054  0 14 33367           ETR     =700
17055  0 55 23316           ADD     VAR2
17056  0 14 33427           ETR     =707
17057  0 67 00014           LSH     12D
17060  0 16 33430           MRG     =3737
17061  0 35 33064           STA     F18M4
17062  0 40 20040           SKS     20040           GO TO CONTROL IF BPT4
17063  0 43 23045           BRM     TERM
17064  0 43 00454           BRM     REPORT          OUTPUT THROUGH CONTROL
17065  0 20 33056           NOP     F18M3
17066  0 20 33064           NOP     F18M4
17067  0 61 17051           BRR     OUT18
```

```
                        *
                        *       FUNCTION PARAMETER TABLE
                        *
17070  0 20 17076  FPT18  NOP     FIM18
17071  0 20 17114         NOP     FAM18
17072  0 20 17107         NOP     FVM18
17073  0 02 23326         TWO     STDISC
17074  0 00 17225         PZE     FUNC19
17075    00000040         DATA    40
                        *
                        *       FUNCTION MESSAGES
                        *
17076    52261201  FIM18  BCD     ' F 18 = WRITE PROTECT SWITCH TEST''
17077    10124012
17100    66513163
17101    25124751
17102    46632523
17103    63126266
17104    31632330
17105    12632562
17106    63371212
17107    52121262  FVM18  BCD     '   START     END ''
17110    63215163
17111    12121212
17112    12254524
17113    52371212
17114    52326651  FAM18  BCD     ' WRITE PROTECT SWITCH TEST '
17115    31632512
17116    47514663
17117    25236312
17120    62663163
17121    63301263
17122    25626352
17123    52633031          BCD     ' THIS ROUTINE TESTS THE WRITE PROTECT STATUS OF SEQUENTIAL'
17124    62125146
17125    64633145
```



```
17126    25126325
17127    62636212
17130    63302512
17131    66513163
17132    25124751
17133    46632523
17134    63126263
17135    21630462
17136    12462612
17137    62255264
17140    25456331
17141    21431212
17142    52243162          BCD     ' DISCS AND PRINTS THE OCTAL NUMBER OF WRITE PROTECTED DISCS'
17143    23621221
17144    45241247
17145    51314563
17146    62126330
17147    25124623
17150    63214712
17151    45644422
17152    25511246
17153    26126451
17154    31632512
17155    47514663
17156    25236325
17157    24122431
17160    62236212
17161    52214212          BCD     ' AS IT ENCOUNTERS THEM. THE FUNCTION VARIABLES ARE START AND'
17162    51631225
17163    45234664
17164    45632551
17165    62126330
17166    25443312
17167    63302512
17170    26644523
17171    53214445
```

```
17172    12652151
17173    31212243
17174    25621221
17175    51251262
17176    63215163
17177    12214524
17200    52254524          BCD     ' END, WHICH ARE THE STARTING AND ENDING DISC NUMBERS.'
17201    73126630
17202    31233012
17203    21512512
17204    63302512
17205    62632151
17206    63314527
17207    12214524
17210    12254524
17211    31452712
17212    24316223
17213    12456444
17214    22255162
17215    33121212
17216    52740036          BCD     ' (0<NUMBER<37  =  OCTAL)''
17217    45644422
17220    25513603
17221    07121240
17222    12124423
17223    63214334
17224    37121212
```



```
                         *
                         *
                         *       FUNCTION 19 = SINGLE INCREMENT VS. TIME PLOTTER
                         *
                         *
17225  0 76 00404  FUNC19 LDA     DSCSIZ
17226  0 66 00017         RSH     15D
17227  0 14 33426         ETR     =70
17230  0 54 15432         SUB     BIT23
17231  0 35 23327         STA     ENDISC
17232  0 35 23315         STA     VAR1
17233  0 43 00424  F19I15 BRM     FUNCTN          FUNCTION LINK TO CONTROL
17234  0 20 17434         NOP     FPT19
17235  0 43 00454         BRM     REPORT          OUTPUT FUNCTION ID
17236  0 20 17642         NOP     FIM19
17237  0 43 23345         BRM     TERM            GO TO CONTROL
17240  0 43 00440         BRM     RETURN
17241  0 20 23351         NOP     ENTER
17242  0 76 23327         LDA     ENDISC          CHECK VARIABLES
17243  0 73 23327         SKG     ENDISC
17244  0 01 17246         BRU     **2
17245  0 43 00460         BRM     ERROR           HIGH ARM TOO LARGE
17246  0 20 33065         NOP     F19M1
17247  0 55 15432         ADD     BIT23
17250  0 73 23326         SKG     STDISC
17251  0 43 00460         BRM     ERROR           LOW ARM > HIGH ARM
17252  0 20 33072         NOP     F19M2
17253  0 76 23326         LDA     STDISC          SET STARTING ARM
17254  0 35 23316         STA     VAR2
17255  0 43 00430  F19I1  BRM     OBJECT          CLEAR CHART
17256  0 71 33431         LDX     **5620
17257  0 76 33432         LDA     =60606060
17260  2 35 35062         STA     TABLE=5620/2
17261  0 41 17260         BRX     **1
17262  0 76 33433         LDA     =140            GENERATE NEW CHART
17263  0 35 15453         STA     COUNT
```

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DISCF  TAP*3.0      04/25  20100   PAGE 237

17264  0 71 33337          LDX     *TABLE
17265  0 76 33434          LDA     *52020500
17266  0 75 33435          LDB     *52606054
17267  2 35 00000  F1912   STA     0,2          GENERATE VERTICLE AXIS
17270  2 77 00021          EAX     17D,2
17271  2 36 00000          STB     0,2
17272  2 77 00021          EAX     17D,2
17273  0 54 15424          SUB     BIT17
17274  0 72 33436          SKA     *6000
17275  0 54 33437          SUB     *6600
17276  0 60 15453          SKR     COUNT
17277  0 01 17300          BRU     **1
17300  0 53 15453          SKN     COUNT        FINISHED AXIS
17301  0 01 17267          BRU     F1912        NO
17302  2 35 00000          STA     0,2
17303  0 76 33304          LDA     *15D
17304  0 35 15453          STA     COUNT
17305  0 76 33440          LDA     *54545454    GENERATE HORIZONTAL AXIS
17306  2 77 00001  F1913   EAX     1,2
17307  2 35 00000          STA     0,2
17310  0 60 15453          SKR     COUNT
17311  0 01 17312          BRU     **1
17312  0 53 15453          SKN     COUNT        FINISHED AXIS
17313  0 01 17306          BRU     F1913
17314  2 77 00001          EAX     1,2          YES
17315  0 76 33441          LDA     *52606060    GENERATE HORIZONTAL SCALE
17316  2 35 00000          STA     0,2
17317  0 76 33274          LDA     *7
17320  0 35 15453          STA     COUNT
17321  0 76 33442          LDA     *00606060
17322  0 75 33432          LDB     *60606060
17323  2 77 00001          EAX     1,2
17324  2 35 00000  F19112  STA     0,2
17325  2 36 00001          STB     1,2
17326  0 55 15410          ADD     BIT5
17327  2 77 00002          LAX     2,2
```

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17330  0 60 15453          SKR     COUNT
17331  0 01 17332          BRU     **1
17332  0 53 15453          SKN     COUNT
17333  0 01 17324          BRU     F19112
17334  2 77 37777          EAX     *1,2
17335  0 76 33441          LDA     *52606060
17336  2 35 00000          STA     0,2
17337  0 76 33274          LDA     *7
17340  0 35 15453          STA     COUNT
17341  2 77 00001          EAX     1,2
17342  0 76 33443          LDA     *00010203
17343  0 75 33444          LDB     *04050607
17344  2 35 00000  F1914   STA     0,2
17345  2 36 00001          STB     1,2
17346  2 77 00002          EAX     2,2
17347  0 60 15453          SKR     COUNT
17350  0 01 17351          BRU     **1
17351  0 53 15453          SKN     COUNT
17352  0 01 17344          BRU     F1914
17353  0 76 33445          LDA     *37373737    TERMINATING CHARACTER
17354  2 35 00000          STA     0,2
17355  0 40*10126          SKS*    10126        DISC FILE READY TEST
17356  0 01 17355          BRU     **1          NO
17357  0 76 23316          LDA     VAR2
17360  0 75 33272          LDB     *0
17361  0 67 00015          LSH     13D          FORM POT WORD
17362  0 35 23332          STA     POTWRD
17363  0 71 15414          LDX     BIT9
17364  0 43 23322          BRM     DISCCK       USE THIS DISC
17365  0 01 17536          BRU     F19113       NO
17366  0 06 10126          EOD     10126        ALERT DISC FILE
17367  0 13 23332          POT     POTWRD
17370  0 40*12126          SKS*    12126        TRACK VERIFIED TEST
17371  0 01 17373          BRU     **2
17372  0 01 17400          BRU     **6
17373  0 67 20060          LCY     48D
```

```
17374  0 67 20060          LCY     48D
17375  0 67 20060          LCY     48D
17376  0 41 17370          BRX     F1915
17377  0 01 17614          BRU     F19114          TIMEOUT ERROR
17400  0 76 23332          LDA     P0TWRD
17401  0 55 33412          ADD     #17600
17402  0 35 23317          STA     VAR3
17403  0 76 23332  F1916   LDA     P0TWRD
17404  0 55 15423          ADD     BIT16           UPDATE POT WORD BY ONE INCREMENT
17405  0 73 23317          SKG     VAR3            FINISHED FOREWARD INCREMENTS
17406  0 01 17410          BRU     **2             NO
17407  0 01 17450          BRU     F1917A
17410  0 35 23332          STA     P0TWRD
17411  0 06 10326          E0D     10326           CLEAR FILE
17412  0 40*10126          SKS*    10126           DISC FILE READY TEST
17413  0 01 17412          BRU     **1             NO
17414  0 06 10126          E0D     10126           ALERT DISC FILE
17415  0 13 23332          P0T     P0TWRD
17416  0 76 33272          LDA     #0
17417  0 67 20060  F1917   LCY     48D
17420  0 71 33446          LDX     **45D
17421  0 67 20060          LCY     48D
17422  0 41 17421          BRX     **1
17423  0 55 15432          ADD     BIT23
17424  0 73 33447          SKG     #10000D
17425  0 01 17427          BRU     **2
17426  0 01 17414          BRU     F19114
17427  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
17430  0 01 17417          BRU     F1917           NO
17431  0 55 33450          ADD     #5              ROUND OFF TO NEAREST 5MILLISEC
17432  0 66 00001          RSH     1               DIVIDE BY 2 * A = NUM OF 1MS COUNTS
17433  0 75 33272          LDB     #0
17434  0 36 15453          STB     COUNT
17435  0 54 33450          SUB     #5              SIMULATE DIVIDE BY 5
17436  0 72 15403          SKA     BIT0
17437  0 01 17442          BRU     **3
```



```
17440  0 61 15453          MIN     COUNT
17441  0 01 17435          BRU     **4
17442  0 76 15453          LDA     COUNT           A = NUM/5
17443  0 75 33272          LDB     #0
17444  0 43 17545          BRM     F19111          ENTER TIME INTO CHART
17445  0 40 20040          SKS     20040           BREAKPOINT 4 TEST
17446  0 43 23345          BRM     TERM            GO TO CONTROL
17447  0 01 17403          BRU     F1916
17450  0 76 23316  F1917A  LDA     VAR2
17451  0 67 00015          LSH     13D
17452  0 54 15423          SUB     BIT16
17453  0 35 23317          STA     VAR3
17454  0 75 33273  F1918   LDB     **1
17455  0 76 23332          LDA     P0TWRD
17456  0 54 15423          SUB     BIT16
17457  0 73 23317          SKG     VAR3            FINISHED
17460  0 01 17462          BRU     **2             NO
17461  0 01 17522          BRU     F19110          FINISHED
17462  0 35 23332          STA     P0TWRD
17463  0 06 10326          E0D     10326           CLEAR FILE
17464  0 40*10126          SKS*    10126           DISC FILE READY TEST
17465  0 01 17464          BRU     **1             NO
17466  0 06 10126          E0D     10126           ALERT DISC FILE
17467  0 13 23332          P0T     P0TWRD
17470  0 76 33272          LDA     #0
17471  0 67 20060  F1919   LCY     48D
17472  0 71 33446          LDX     **45D
17473  0 67 20060          LCY     48D
17474  0 41 17473          BRX     **1
17475  0 55 15432          ADD     BIT23
17476  0 73 33447          SKG     #10000
17477  0 01 17501          BRU     **2
17500  0 01 17614          BRU     F19114          TIMEOUT ERROR
17501  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
17502  0 01 17471          BRU     F1919           NO
17503  0 55 33450          ADD     #5              ROUND OFF TO NEAREST 5MILLISEC
```

```
17504  0 66 00001          RSH    1              DIVIDE BY 2 # A ; NUM OF 1MS COUNTS
17505  0 75 33272          LDB    #0             SIMULATE DIVIDE BY 5
17506  0 36 15453          STB    COUNT
17507  0 54 33450          SUB    #5
17510  0 72 15403          SKA    BITO           DONE
17511  0 01 17514          BRU    **3            YES
17512  0 61 15453          MIN    COUNT
17513  0 01 17507          BRU    **4
17514  0 76 15453          LDA    COUNT          A # NUM/5
17515  0 75 33273          LDB    #*1
17516  0 43 17545          BRM    F19I11
17517  0 40 20040          SKS    20040          BREAKPOINT 4 TEST
17520  0 43 23045          BRM    TERM           GO TO CONTROL
17521  0 01 17454          BRU    F1918
17522  0 75 33272 F19I10   LDB    #0             PUT ARM NUMBER INTO BCD
17523  0 76 23316          LDA    VAR2
17524  0 67 00003          LSH    3
17525  0 14 33367          ETR    #700
17526  0 16 23316          MRG    VAR2
17527  0 14 33427          ETR    #707
17530  0 67 00014          LSH    12D
17531  0 16 33430          MRG    #3737
17532  0 35 33106          STA    F19M4
17533  0 43 00454          BRM    REPORT         OUTPUT MESSAGE
17534  4 60 33077          XBP    F19M3,4
17535  0 60 34000          XBP    TABLE
17536  0 43 00434 F19I13   BRM    END
17537  0 61 23316          MIN    VAR2           INCREMENT ARM NUMBER
17540  0 76 23316          LDA    VAR2
17541  0 73 23327          SKG    ENDISC         FINISHED
17542  0 01 17555          BRU    F19I1          NO
17543  0 06 10326          LBD    10326          CLEAR FILE
17544  0 01 17233 FND19    BRU    F19I15
17545  0 00 00000 F19I11   PZE    0              ENTER TIMES INTO CHART
17546  0 73 33451          SKG    #500           IS TIME > 250MS
17547  0 01 17551          BRU    **2
```



```
17550  0 76 33451          LDA    #500           YES # ENTER 250MS INTO CHART
17551  0 73 33452          SKG    #200           IS TIME < 100MS
17552  0 76 33452          LDA    #200           YES # ENTER 100MS INTO CHART
17553  0 35 23311          STA    TEMPA
17554  0 76 33451          LDA    #500
17555  0 54 23311          SUB    TEMPA
17556  0 35 23311          STA    TEMPA
17557  0 36 23312          STB    TEMPB
17560  0 75 33272          LDB    #0
17561  0 67 00004          LSH    4
17562  0 55 23311          ADD    TEMPA
17563  0 35 23311          STA    TEMPA
17564  0 76 23332          LDA    POINTRD
17565  0 14 33412          ETR    #17600
17566  0 66 00011          RSH    9D
17567  0 55 23311          ADD    TEMPA
17570  0 55 33337          ADD    #TABLE
17571  0 55 15432          ADD    BIT23
17572  0 35 23313          STA    TEMPC
17573  0 76 33272          LDA    #0
17574  0 67 00002          LSH    2
17575  0 35 23311          STA    TEMPA
17576  0 71 23311          LDX    TEMPA
17577  0 76*23313          LDA*   TEMPC
17600  2 72 17624          SKA    MASK,2         WORD ALTERED YET
17601  0 01 17606          BRU    **5            NO
17602  2 76 17620          LDA    DELTA,2
17603  0 17*23313          EOR*   TEMPC
17604  0 35*23313          STA*   TEMPC
17605  0 51 17545          BRR    F19I11
17606  2 76 17630          LDA    MINUS,2
17607  0 53 23312          SKN    TEMPB          IS DIRECTION REVERSE
17610  2 76 17624          LDA    MASK,2         NO
17611  0 17*23313          EOR*   TEMPC
17612  0 35*23313          STA*   TEMPC
17613  0 51 17545          BRR    F19I11
```

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17614  0 43 00460  F19114 BRM     ERR8R
17615  0 20 33107         NOP     F19M5
17616  0 06 10926         E8D     10326          CLEAR FILE
17617  0 01 17736         BRU     F19113
17620    77000000  DELTA  DATA    77000000,770000,7700,77
17621    00770000
17622    00007700
17623    00000077
17624    40000000  MASK   DATA    487,485,483,481
17625    00400000
17626    00004000
17627    00000040
17630    20000000  MINUS  DATA    287,285,283,281
17631    00200000
17632    00002000
17633    00000020
```

```
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                    *
                    *       FUNCTION PARAMETER TABLE
                    *
17634  0 00 17642  FPT19  NOP     FIM19
17635  0 00 17655         NOP     FAM19
17636  0 00 17107         NOP     FVM18
17637  0 02 23326         TWB     STDISC
17640  0 00 20114         PZE     FUNC20
17641    00000020         DATA    20
                    *
                    *       FUNCTION MESSAGES
                    *
17642    22261301  FIM19  BCD     ' F 19 - SINGLE INCREMENT VS. TIME PLOTTER!!
17643    11124212
17644    62314527
17645    43251231
17646    45235125
17647    44254563
17650    12656233
17651    12633144
17652    65124743
17653    46636325
17654    51371212
17655    52623145  FAM19  BCD     ' SINGLE INCREMENT VS. TIME PLOTTER!
17656    67432512
17657    31452351
17660    65447545
17661    63126563
17662    33124331
17663    44251247
17664    43466363
17665    65511212
17666    52633231          BCD     ' THIS ROUTINE MEASURES AND CHARTS THE AMOUNT OF TIME!
17667    62125146
17670    64633145
17671    65124425
```

```
17672    21626451
17673    25621221
17674    45241223
17675    30215163
17676    62126330
17677    25122144
17700    46644563
17701    12462612
17702    63314425
17703    52314565          BCD     ' INVOLVED IN MOVING AN ARM IN ALL COMBINATIONS OF ONE'
17704    46436525
17705    24123145
17706    12444665
17707    31452712
17710    21451221
17711    51441231
17712    45122143
17713    43122346
17714    44223145
17715    21633146
17716    45621246
17717    26124445
17720    25121212
17721    52314523          BCD     ' INCREMENT, THE HORIZONTAL SCALE IS FINAL POSITION,THE'
17722    51254425
17723    45633312
17724    63302512
17725    30465131
17726    71464563
17727    21431262
17730    23214325
17731    12316212
17732    26314521
17733    43124746
17734    62316331
17735    46457363
```



```
17736    30251212
17737    52652551          BCD     ' VERTICAL SCALE IS TIME IN MILLISEC, FOREWARD DIRECTION'
17740    63312321
17741    43126223
17742    21432512
17743    31621263
17744    31442512
17745    31451244
17746    31434231
17747    62252373
17750    12264451
17751    25662151
17752    24122431
17753    51252263
17754    31464512
17755    52633144          BCD     ' TIMES ARE INDICATED BY A PLUS, IN THE REVERSE DIRECTION'
17756    25621221
17757    51251231
17760    45243123
17761    21632524
17762    12227212
17763    21124743
17764    64627312
17765    31451263
17766    30251251
17767    25652551
17770    62251224
17771    31512523
17772    63314445
17773    52237212          BCD     ' BY A MINUS, AND IF THE FOREWARD AND REVERSE DIRECTION'
17774    21124431
17775    45646273
17776    12214524
17777    12312612
20000    63302512
20001    26465125
```

```
20002     66215124
20003     12214524
20004     12512565
20005     25516225
20006     12243151
20007     25236331
20010     46451212
20011     52633144          BCD     ' TIMES ARE THE SAME, BY A DELTA, THE CHART WILL BE PRINTED'
20012     25621221
20013     51251263
20014     30251262
20015     21442573
20016     12227212
20017     21122425
20020     43632133
20021     12633025
20022     12233021
20023     51631266
20024     31434312
20025     42251247
20026     51314563
20027     45241212
20030     52464512          BCD     ' ON THE ERROR DEVISE, AND WHEN THE PRINTER IS USED, TIMING'
20031     43302512
20032     45515146
20033     51127425
20034     45314225
20035     73122145
20036     44126630
20037     25451263
20040     41251247
20041     51314563
20042     25511231
20043     42126462
20044     45247312
20045     43314431
```



```
20046     45271212
20047     52314312          BCD     ' IS APPROXIMATELY ONE MIN/ARM, FUNCTION VARIABLES ARE'
20050     41474751
20051     46673144
20052     41632543
20053     71134445
20054     45134431
20055     45617151
20056     44331226
20057     44452263
20060     31464512
20061     45215131
20062     41234225
20063     42127451
20064     25121212
20065     52626321          BCD     ' START AND END, WHICH ARE STARTING AND ENDING DISCS'
20066     51631221
20067     45241225
20070     45247312
20071     43303123
20072     30122151
20073     45121263
20074     41516331
20075     45271221
20076     45241225
20077     45243145
20100     47122431
20101     42236212
20102     52512562          BCD     ' RESPECTIVELY (0<NUMBER<37 = OCTAL).!!'
20103     47252263
20104     31656543
20105     72127400
20106     36456444
20107     22255136
20110     53071240
20111     12462263
```

```
20112    21433433
20113    37121212
```



```
00000055  UTIME  EQU     45D
00000012  LTIME  EQU     10D
00000046  LINES  EQU     UTIME+LTIME+3
00001206  WORDS  EQU     LINES*17D
00034000  TABLE  EQU     34000
00035207  ETBLE  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
                        *
                        *
20114  0 76 00404  FUNC20 LDA     DSCSIZ
20115  0 66 00017         RSH     15D
20116  0 14 33426         ETR     =70
20117  0 54 15432         SUB     BIT23
20120  0 35 23327         STA     ENDISC
20121  0 35 23315         STA     VAR1
20122  0 43 00424  F20L1  BRM     FUNCTN
20123  0 20 20554         NOP     FPT20
20124  0 43 00454         BRM     REPORT          OUTPUT FUNCTION ID
20125  0 20 20566         NOP     FIM20
20126  0 43 23045         BRM     TERM            GO TO CONTROL
20127  0 43 00440         BRM     RETURN
20130  0 20 23351         NOP     ENTER
20131  0 76 23327         LDA     ENDISC
20132  0 73 23315         SKG     VAR1
20133  0 61 20135         BRU     *+2
20134  0 43 00460         BRM     ERROR           HIGH ARM TOO LARGE
20135  0 20 33114         NOP     F20M1
20136  0 56 15432         ADD     BIT23
20137  0 73 23326         SKG     STDISC
20140  0 43 00460         BRM     ERROR           LOW ARM > HIGH ARM
20141  0 20 33122         NOP     F20M2
20142  0 76 23326         LDA     STDISC          ARM = FIRST ARM
20143  0 35 23316         STA     VAR2
20144  0 43 00430  STRTIT BRM     OBJECT
20145  0 43 20366         BRM     CLCHT           CLEAR CHART
20146  0 43 20423         BRM     CHART           MAKE NEW CHART
20147  0 43 20162         BRM     PLOT            TIME MOVEMENTS, ENTER TIMES INTO CHART
20150  0 43 20541         BRM     FORT            FORM TITLE
20151  0 43 00454         BRM     REPORT          OUTPUT CHART
20152  4 20 33146         NOP     TITLE,4
```



```
20153  0 20 34000         NOP     TABLE
20154  0 43 00434  ENDIT  BRM     END
20155  0 61 23316         MIN     VAR2
20156  0 76 23316         LDA     VAR2
20157  0 73 23327         SKG     ENDISC
20160  0 61 20144         BRU     STRTIT
20161  0 61 20122         BRU     F20L1
```

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20162   0 00 00000   PLOT   PZE
20163   0 75 33272          LDB     =0              POTWRD = CURRENT ARM TO POS 0
20164   0 76 23316          LDA     VAR2
20165   0 67 00015          LSH     13D
20166   0 43 23022          BRM     DISCCK          USE THIS DISC
20167   0 01 20154          BRU     ENDIT           NO
20170   0 40*10126          SKS*    10126           DISC FILE READY TEST
20171   0 01 20170          BRU     *-1
20172   0 06 10126          EOD     10126           ALERT DISC FILE
20173   0 13 23332          POT     POTWRD
20174   0 35 23317          STA     VAR3            VAR3 = POT WORD FOR POS 0
20175   0 76 33272          LDA     =0
20176   0 35 23320          STA     VAR4
20177   0 76 15432          LDA     BIT23
20200   0 35 23321          STA     VAR5
20201   0 76 33272   PLOT1  LDA     =0
20202   0 35 23322          STA     VAR6
20203   0 35 23320          STA     VAR4
20204   0 76 33273          LDA     =-1
20205   0 35 23323          STA     VAR7            PRESET VAR7 AND VAR8
20206   0 76 33357          LDA     =500D
20207   0 35 23324          STA     VAR8
20210   0 40*10126          SKS*    10126           DISC FILE READY TEST
20211   0 01 20210          BRU     *-1
20212   0 75 33272          LDB     =0
20213   0 76 23322          LDA     VAR6
20214   0 67 00007          LSH     7
20215   0 16 23317          MRG     VAR3
20216   0 35 23332          STA     POTWRD
20217   0 06 10126          EOD     10126           ALERT DISC FILE
20220   0 13 23332          POT     POTWRD
20221   0 76 23320   PLOT2  LDA     VAR4
20222   0 55 23321          ADD     VAR5
20223   0 73 33306          SKG     =77             ROOM TO MOVE ANOTHER INCREMENT
20224   0 01 20226          BRU     *+2             YES
20225   0 01 20306          BRU     PLOT3
```

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20226   0 35 23320          STA     VAR4
20227   0 75 33272          LDB     =0
20230   0 67 00007          LSH     7
20231   0 16 23317          MRG     VAR3
20232   0 35 23332          STA     POTWRD
20233   0 71 15414          LDX     BIT9
20234   0 40*12126          SKS*    12126           TRACK VERIFIED TEST
20235   0 01 20237          BRU     *+2
20236   0 01 20244          BRU     PLOT2B
20237   0 67 20060          LCY     48D
20240   0 67 20060          LCY     48D
20241   0 67 20060          LCY     48D
20242   0 41 20234          BRX     PLOT2A
20243   0 01 20533          BRU     VERERR
20244   0 06 10326          EOD     10326           CLEAR FILE
20245   0 40*10126          SKS*    10126           DISC FILE READY TEST
20246   0 01 20245          BRU     *-1
20247   0 06 10126          EOD     10126           ALERT DISC FILE
20250   0 13 23332          POT     POTWRD
20251   0 76 33272          LDA     =0
20252   0 67 20060   TMIT   LCY     48D             TIME MOVEMENT
20253   0 71 33446          LDX     *-45D           TIMING = 500 US. PER LOOP
20254   0 67 20060          LCY     48D
20255   0 41 20254          BRX     *-1
20256   0 55 15432          ADD     BIT23
20257   0 73 33447          SKG     =1000D          HAS 500 MS ELAPSED YET
20260   0 01 20262          BRU     *+2             NO
20261   0 01 20533          BRU     VERERR
20262   0 40*12126          SKS*    12126           TRACK VERIFIED TEST
20263   0 01 20252          BRU     TMIT
20264   0 55 33453          ADD     =100            ROUND OFF TO NEAREST 10 MS.
20265   0 66 00002          RSH     2               DIVIDE BY 2
20266   0 75 33273          LDB     =-1             INITIALIZE COUNTER
20267   0 36 23310          STB     TEMP
20270   0 61 23310   TMIT1  MIN     TEMP            SIMULATE DIVIDE BY 2
20271   0 54 33450          SUB     =5
```

```
20272  0 72 15403          SKA     BIT0
20273  0 01 20275          BRU     **2
20274  0 01 20270          BRU     TMIT1
20275  0 76 23310          LDA     TEMP          GET QUOTIENT
20276  0 73 23323          SKG     VAR7          CHANGE VAR7 OR VAR8 IF APPROPRIATE
20277  0 01 20301          BRU     **2
20300  0 35 23323          STA     VAR7
20301  0 73 23324          SKG     VAR8
20302  0 35 23324          STA     VAR8
20303  0 40 20040          SKS     20040         BREAKPOINT 4 TEST
20304  0 43 23345          BRM     TERM          GO TO CONTROL
20305  0 01 20221          BRU     PLOT2
20306  0 61 23322  PLOT3   MIN     VAR6
20307  0 76 23322          LDA     VAR6
20310  0 75 33333          LDB     #77777777
20311  0 70 23321          SKM     VAR5          LAST PASS THIS INCREMENT VALUE
20312  0 01 20314          BRU     **2           NO
20313  0 01 20323          BRU     PLOT4
20314  0 55 23321          ADD     VAR5
20315  0 73 33306          SKG     #77
20316  0 01 20320          BRU     **2
20317  0 01 20323          BRU     PLOT4
20320  0 76 23322          LDA     VAR6
20321  0 35 23320          STA     VAR4
20322  0 01 20310          BRU     PLOT1A
20323  0 43 20351  PLOT4   BRM     ENTIM         ENTER VAR7 AND VAR8 INTO CHART
20324  0 61 23321          MIN     VAR5
20325  0 76 23321          LDA     VAR5          LAST INCREMENT VALUE
20326  0 73 33306          SKG     #77           NO
20327  0 01 20331          BRU     PLOT1
20330  0 40*10126          SKS*    10126         DISC FILE READY TEST
20331  0 01 20330          BRU     **1
20332  0 76 23317          LDA     VAR3
20333  0 35 23332          STA     POTARD
20334  0 06 10126          EOD     10126         ALERT DISC FILE
20335  0 13 23332          POT     POTARD
```



```
20336  0 71 33454          LDX     #40000
20337  0 40*12126          SKS*    12126         TRACK VERIFIED TEST
20340  0 01 20342          BRU     **2
20341  0 01 20347          BRU     PLOT4B
20342  0 67 20360          LCY     48D
20343  0 67 20360          LCY     48D
20344  0 67 20360          LCY     48D
20345  0 41 20337          BRX     PLOT4A
20346  0 01 20533          BRU     VERERR
20347  0 06 10326          EOD     10326         CLEAR FILE
20350  0 51 23462          BRR     PLOT
```

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20351   0 00 00000   ENTIM  PZE
20352   0 76 33323          LDA     VAR7
20353   0 73 33455          SKG     =UTIME          VAR7 > 450MS
20354   0 01 20356          BRU     *+2
20355   0 76 33456          LDA     =UTIME          YES = ENTER 450MS INTO CHART
20356   0 43 20374          BRM     PUT
20357   0 76 33324          LDA     VAR8
20360   0 73 33453          SKG     =LTIME          VAR8 < 100MS
20361   0 76 33453          LDA     =LTIME          YES
20362   0 75 33323          LDB     =,1
20363   0 70 20323          SKM     VAR7            VAR7 = VAR8
20364   0 43 20374          BRM     PUT             NO = ENTER VAR8 INTO CHART
20365   0 51 20351          BRR     ENTIM
                    *
                    *
                    *
20366   0 00 00000   CLCHT  PZE     0               CLEAR CHART
20367   0 71 33456          LDX     =-WORDS=1
20370   0 76 33432          LDA     =60606060
20371   2 35 35207          STA     ETBLE,2
20372   0 41 20371          BRX     *-1
20373   0 51 20366          BRR     CLCHT
```

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20374   0 00 00000   PUT    PZE     0               A = NO OF 5MS COUNTS
20375   0 35 23311          STA     TEMPA
20376   0 76 33455          LDA     =UTIME
20377   0 54 23311          SUB     TEMPA
20400   0 35 23311          STA     TEMPA           TEMPA = NO OF LINES FROM TOP
20401   0 75 33373          LDB     =0
20402   0 67 00004          LSH     4
20403   0 55 23311          ADD     TEMPA
20404   0 35 23311          STA     TEMPA           TEMPA = FIRST WORD OF CORRECT LINE
                    *                               = EQUALS LINES = 17D
20405   0 76 23321          LDA     VAR5
20406   0 67 00002          RSH     2               A = HORIZONTAL DEFLECTION
20407   0 55 23311          ADD     TEMPA           ADD VERTICAL COMPONENT
20410   0 55 33337          ADD     =TABLE          ADD ADDRESS BIAS
20411   0 55 10432          ADD     BIT23           ADD 1 WORD TO CLEAR Y-AXIS WORD
20412   0 35 23325          STA     VAR9
20413   0 76 33373          LDA     =0
20414   0 67 00002          LSH     2               A = CHARACTER IN WORD TO BE CHANGED
20415   0 35 23311          STA     TEMPA
20416   0 71 23311          LDX     TEMPA
20417   2 76 23360          LDA     WORD,2
20420   0 17=23325          EOR=    VAR9            ALTER WORD
20421   0 35=23325          STA=    VAR9            STORE WORD IN TABLE
20422   0 51 20374          BRR     PUT
```

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



```
20467  0 01 20457         BRU     CHART2
20470  2 77 00001         EAX     1,2
20471  0 76 33441         LDA     •52606060      MAKE UP HORIZONTAL SCALE
20472  2 35 34000         STA     TABLE,2
20473  0 76 33274         LDA     •7
20474  0 35 15453         STA     COUNT
20475  0 76 33442         LDA     •00606060
20476  0 75 33432         LDB     •60606060
20477  2 77 00001  CHART3 EAX     1,2
20500  2 35 34000         STA     TABLE,2
20501  2 77 00001         EAX     1,2
20502  2 35 34000         STB     TABLE,2
20503  0 55 15410         ADD     BIT5
20504  0 60 15453         SKR     COUNT
20505  0 01 20506         BRU     *+1
20506  0 53 15453         SKN     COUNT
20507  0 01 20477         BRU     CHART3
20510  2 77 00001         EAX     1,2
20511  0 76 33441         LDA     •52606060
20512  2 35 34000         STA     TABLE,2
20513  0 76 33274         LDA     •7
20514  0 35 15453         STA     COUNT
20515  2 77 00001  CHART4 EAX     1,2
20516  0 76 33443         LDA     •10203
20517  2 35 34000         STA     TABLE,2
20520  2 77 00001         EAX     1,2
20521  0 55 33464         ADD     •04040404
20522  2 35 34000         STA     TABLE,2
20523  0 60 15453         SKR     COUNT
20524  0 01 20525         BRU     *+1
20525  0 53 15453         SKN     COUNT
20526  0 01 20515         BRU     CHART4
20527  2 77 00001         EAX     1,2
20530  0 76 33465         LDA     •37121212      ADD TERMINAL CHARACTER
20531  2 35 34000         STA     TABLE,2
20532  0 51 20423         BRR     CHART
```

```
20533  0 43 20541  VERERR BRM     FORT
20534  0 43 00460          BRM     ERROR
20535  4 20 33127          NOP     F20M3,4
20536  0 20 33153          NOP     TITLE1
20537  0 06 10326          EOD     10326           CLEAR FILE
20540  0 01 20154          BRU     ENDIT
20541  0 00 00000  FORT    PZE     0               PUT ARM NUMBER INTO BCD
20542  0 75 33272          LDB     =0
20543  0 76 23316          LDA     VAR2
20544  0 67 00003          LGH     3
20545  0 14 33367          ETR     =700
20546  0 16 23316          MRG     VAR2
20547  0 14 33427          ETR     =707
20550  0 67 00014          LGH     12D
20551  0 16 33430          MRG     =3737
20552  0 35 33153          STA     TITLE1
20553  0 51 20541          BRR     FORT
```



```
                    *
                    *       FUNCTION PARAMETER TABLES
                    *
20554  0 20 20566  FPT20   NOP     FIM20           FUNCTION IDENTIFIER MESSAGE
20555  0 20 20600          NOP     FAM20           FUNCTION ABSTRACT MESSAGE
20556  0 20 17107          NOP     FVM18           FUNCTION VARIABLES MESSAGE
20557  0 02 23326          TWO     STDISC          FUNCTION VARIABLES POINTER
20560  0 00 21100          PZE     FUNC21          POINTER TO NEXT FUNCTION
20561    00000010          DATA    10              FUNCTION IDENTIFIER BIT (BIT 20)
                    *
20562    34000000  NORD    DATA    34B6,34B4,34B2,34
20563    00340000
20564    00003400
20565    00000034
                    *
                    *       FUNCTION MESSAGES
                    *
20566    52261202  FIM20   BCD     ! F 20 - ARM MOVEMENT VS. TIME PLOTTER!!
20567    00124012
20570    41514412
20571    44465425
20572    44254563
20573    12656033
20574    12633144
20575    05134743
20576    46636325
20577    51371212
20600    52332451  FAM20   BCD     !  ARM MOVEMENT VS. TIME PLOTTER, !
20601    44134446
20602    45254425
20603    44631265
20604    52331263
20605    51442512
20606    47434663
20607    63755133
20610    52121212
```

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20611    52633031        BCD     'THIS ROUTINE TIMES ARM MOVEMENTS IN MILLISEC AND PLOTS'
20612    62125146
20613    64633145
20614    25126331
20615    44256212
20616    21514412
20617    44466525
20620    44254563
20621    62123145
20622    12443143
20623    43316225
20624    23122145
20625    24124743
20626    46636212
20627    52633025        BCD     'THE HIGH AND LOW TIMES VERSES INCREMENTS MOVED ON A'
20630    12303127
20631    30122145
20632    24124346
20633    66126331
20634    44256212
20635    65255162
20636    25621231
20637    45235125
20640    44254563
20641    62124446
20642    65252412
20643    46451221
20644    52233021        BCD     'CHART. THE HORIZONTAL SCALE OF THE CHART IS NUMBER OF'
20645    51633312
20646    63302512
20647    30465131
20650    71464563
20651    21431262
20652    23214325
20653    12462612
20654    63302512
```

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20655    23302151
20656    63123162
20657    12456444
20660    22255112
20661    46261212
20662    52314523        BCD     'INCREMENTS MOVED, AND THE VERTICLE SCALE IS MILLISEC.'
20663    51254425
20664    45636212
20665    44466525
20666    24731221
20667    45241263
20670    30251265
20671    25516331
20672    23432512
20673    62232143
20674    25123162
20675    12443143
20676    43316225
20677    23335212
20700    52312612        BCD     'IF A SEEK OR SEARCH TIME ERROR OCCURES (500 MILLISEC'
20701    21126225
20702    25421246
20703    51126225
20704    21512330
20705    12633144
20706    25122551
20707    51465112
20710    46232364
20711    51256212
20712    74050000
20713    12443143
20714    43316225
20715    23121212
20716    52316212        BCD     'IS ALLOWED), THE OPERATION IS ABORTED AND AN ERROR MSG'
20717    21434346
20720    66252434
```

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20721    73126330
20722    25124447
20723    25512163
20724    31464412
20725    31621221
20726    22465163
20727    25241221
20730    45241221
20731    45122551
20732    51465112
20733    44622712
20734    52316212          BCD     ! IS PRINTED. !
20735    47513145
20736    63252433
20737    52121212
20740    52633025          BCD     ! THERE ARE TWO FUNCTION VARIABLES, START AND END.!
20741    51251221
20742    51251263
20743    66461226
20744    64452363
20745    31464512
20746    65215131
20747    21224325
20750    62731262
20751    63215163
20752    12214524
20753    12254524
20754    33121212
20755    52626321          BCD     ! START IS PRESET TO 000 AND END IS PRESET BY THE!
20756    51631231
20757    62124751
20760    25622563
20761    12634612
20762    00000012
20763    21452412
20764    25452412
```



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20765    31621247
20766    51256225
20767    63122270
20770    12633025
20771    52627262          BCD     ! SYSTEM VARIABLE =DSCSIZ=. THESE VARIABLES MAY BE SET!
20772    63254412
20773    65215131
20774    21224325
20775    12402462
20776    23623171
20777    40331263
21000    30256225
21001    12652151
21002    31212243
21003    25621244
21004    21701222
21005    25126225
21006    63121212
21007    52634612          BCD     ! TO SELECT ANY COMBINATION OF CONSECUTIVE ARMS, THE!
21010    62254325
21011    23631221
21012    45701223
21013    46442231
21014    45216331
21015    46451246
21016    26122346
21017    45622523
21020    64633165
21021    25122151
21022    44623312
21023    63302512
21024    52512145          BCD     ! RANGE FOR START AND END IS 0<NUMBER<37. !
21025    27251226
21026    46511262
21027    63215163
21030    12214524
```

```
21031    12254524
21032    12316212
21033    00364564
21034    44222551
21035    36030733
21036    52121212
21037    52633144          BCD     ' TIMING FOR EACH DISC IS APPROXIMATELY 20 MINUTES.'
21040    31452712
21041    26465112
21042    25212330
21043    12243162
21044    63123162
21045    12214747
21046    51466731
21047    44216325
21050    43701202
21051    00124431
21052    45646325
21053    62331212          BCD     ' AT THE COMPLETION OF THE LAST ARM, CONTROL WILL BE'
21054    52216312
21055    63302512
21056    23464447
21057    43256331
21060    46451246
21061    26126330
21062    25124321
21063    62631221
21064    51447312
21065    23464563
21066    51464312
21067    66314343
21070    12222512
21071    52512563          BCD     ' RETURNED TO THE EXECUTIVE.''
21072    64514525
21073    24126246
21074    12633025
```



```
21075    12256725
21076    23646331
21077    65253337
```

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



```
21134  0 16 33307           MRG     =177
21135  0 55 15432           ADD     BIT23
21136  0 73 23327           SKG     ENDISC          LAST TRACK
21137  0 41 21150           BRU     F21E1           NO
21140  0 76 23327           LDA     ENDISC          YES - PICK UP SECTOR COUNT
21141  0 54 23312           SUB     TEMPB
21142  0 55 15432           ADD     BIT23           A = SECTOR COUNT
21143  0 75 33272           LDB     =0              BUILD INTERLACE PAT WORD
21144  0 67 00016           LSH     14D
21145  0 16 33337           MRG     =STADDR
21146  0 35 23311           STA     TEMPA
21147  0 41 21152           BRU     F21E1+2
21150  0 76 33347   F21E1   LDA     =187+STADDR     -C = 128D, ADDR = STADDR
21151  0 35 23311           STA     TEMPA
                    *
                    *       BUILD HEADER TABLE
                    *
21152  0 76 23312           LDA     TEMPB
21153  0 75 33272           LDB     =0
21154  0 67 00006           LSH     6
21155  0 71 33467           LDX     =-128D
21156  0 35 34200           STA     STADDR-128D,2
21157  0 55 15424           ADD     BIT17
21160  0 41 21156           BRX     *-2
                    *
                    *       DISC DRIVER
                    *
21161  0 43 00430           BRM     OBJECT
21162  0 02 20004           DIR                     DISABLE INTERRUPTS
21163  0 40+10326           SKS*    10326           FILE ON LINE TEST
21164  0 43 00460           BRM     ERROR           FILE NOT ON LINE
21165  0 20 33161           NOP     F21M2
21166  0 40+10126           SKS*    10126           DISC FILE READY TEST
21167  0 01 21166           BRU     *-1             FILE NOT READY
21170  0 40+14126           SKS*    14126           WRITE HEADER TEST
21171  0 01 21173           BRU     *+2
```

```
21172  0 43 00460          BRM     ERR0R           HEADER SWITCH N0T UP
21173  0 20 33166          N0P     F21M3
21174  0 40*14100          SKS*    14100           CHANNEL ACTIVE TEST
21175  0 01 21174          BRU     **1             CHANNEL ACTIVE
21176  0 06 10126          E0D     10126           ALERT DISC FILE
21177  0 13 23312          P0T     TEMPB
21200  0 06*10100          E0D*    10100           ALERT CHANNEL
21201  0 06 14200          E0D     14200           EXTENDED M0DE E0D
21202  0 13 23311          P0T     TEMPA
21203  0 06 02766          E0D     2766            WRITE DISC FILE + CHAIN
21204  0 40*14100          SKS*    14100           CHANNEL ACTIVE TEST
21205  0 01 21204          BRU     **1             WAIT F0R CHANNEL INACTIVE
21206  0 40*12100          SKS*    12100           CHANNEL ZER0 W0RD C0UNT TEST
21207  0 43 00460          BRM     ERR0R           W0RD C0UNT N0T ZER0
21210  0 20 33175          N0P     F21M4
21211  0 40*13126          SKS*    13126           DISC WRITE PR0TECT TEST
21212  0 43 00460          BRM     ERR0R           DISC WRITE PR0TECTED
21213  0 20 33205          N0P     F21M5
21214  0 40*11100          SKS*    11100           CHANNEL ERR0R TEST
21215  0 43 00460          BRM     ERR0R           CHANNEL ERR0R SET
21216  0 20 33213          N0P     F21M6
21217  0 40*11126          SKS*    11126           DISC FILE ERR0R TEST
21220  0 43 00460          BRM     ERR0R           C0NTR0LLER ERR0R SET
21221  0 20 33217          N0P     F21M7
21222  0 43 00434          BRM     END
21223  0 76 23312          LDA     TEMPB           UPDATE DISC ADDRESS
21224  0 55 15423          ADD     BIT16
21225  0 35 23312          STA     TEMPB
21226  0 76 23327          LDA     ENDISC
21227  0 73 23312          SKG     TEMPB           ENDISC > TEMPB
21230  0 01 21232          BRU     **2             N0 + EXIT
21231  0 01 21133          BRU     F21E0
21232  0 01 21111  FND21    BRU     F21E2
```



```
                    *
                    *       FUNCTI0N TABLES
                    *
21233  0 20 21241   FPT21   N0P     F1M21           FUNCTI0N IDENTIFIER MESSAGE
21234  0 20 21251           N0P     FAM21           FUNCTI0N ABSTRACT MESSAGE
21235  0 20 17107           N0P     FVM18           FUNCTI0N VARIABLE MESSAGE
21236  0 02 23326           TX0     STDISC          FUNCTI0N VARIABLE TABLE
21237  0 00 21273           PZE     FUNC22          LINK T0 FUNCTION 22
21240  0000 0004            DATA    4               FUNCTION IDENTIFIER + BIT 21
                    *
                    *       FUNCTI0N MESSAGES
                    *
21241    52261202   F1M21   BCD     ' F 21 + WRITE HEADER R0UTINE'
21242    31124212
21243    64513163
21244    65123025
21245    21242551
21246    42514464
21247    63314525
21250    37121212
21251    5232b451   FAM21   BCD     '  WRITE HEADER R0UTINE '
21252    3163b512
21253    3025b124
21254    b5511251
21255    44646331
21256    45255212
21257    52633331           BCD     ' THIS SPECIAL FUNCTION WILL WRITE THE HEADERS 0N'
21260    62126247
21261    25233121
21262    43126464
21263    45236331
21264    46451266
21265    31434312
21266    65513163
21267    25126330
21270    25123025
```

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21271     21242551
21272     62124645
21273     52622550          BCD     1 SEQUENTIAL TRACKS ACCORDING TO THE FUNCTION VARIABLES!
21274     64254563
21275     31214712
21276     63512123
21277     42621221
21300     23234651
21301     24314527
21302     12634612
21303     63302512
21304     26644523
21305     63314645
21306     12652151
21307     31212243
21310     25621212
21311     52626321          BCD     1 START AND END. THESE VARIABLES ARE IN THE FORM OF THE!
21312     51631221
21313     45241225
21314     45243312
21315     63302562
21316     25126521
21317     51312122
21320     43256212
21321     21512512
21322     31451263
21323     30251226
21324     46514412
21325     46261263
21326     30251212
21327     52243162          BCD     1 DISC PRT WORDS.!
21330     23124746
21331     63126646
21332     51246233
21333     52626321          BCD     1 START SHOULD HAVE AN ADDRESS WITH SECTOR 0, HEAD!
21334     51631262
```



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21335     30466443
21336     24123621
21337     65251221
21340     45122124
21341     24512562
21342     62126631
21343     63301262
21344     25236346
21345     51126073
21346     12302521
21347     24121212
21350     52472131          BCD     1 PAIR 0. I.E. 777600 WOULD BE DISC 37, POSITION'
21351     51126033
21352     12313325
21353     63126707
21354     17060000
21355     12664664
21356     43241222
21357     25126431
21360     62231203
21361     47731247
21362     46623163
21363     31464512
21364     52070773          BCD     1 77, HEAD PAIR 0, SECTOR 0.!!
21365     12302521
21366     24124721
21367     51511200
21370     73126225
21371     23634651
21372     12003337
```

```
                    *
                    *
                    *       FUNCTION 22 • WRITE HEADER TEST
                    *
                    *
21373  0 43 00424   FUNC22  BRM     FUNCTN
21374  0 20 21471           NOP     FPT22
21375  0 43 00454           BRM     REPORT          OUTPUT FUNCTION ID
21376  0 20 21477           NOP     FIM22
21377  0 43 23045           BRM     TERM            GO TO CONTROL
21400  0 43 00440           BRM     RETURN          SET INTERRUPT AND TRAP LINKS
21401  0 20 23351           NOP     ENTER
21402  0 76 23326           LDA     STDISC          SET STDISC TO START AT SECTOR 0
21403  0 14 33470           ETR     •777740
21404  0 35 23326           STA     STDISC
21405  0 76 23327           LDA     ENDISC
21406  0 73 23326           SKG     STDISC          ENDISC > STDISC
21407  0 43 00460           BRM     ERROR           NO
21410  0 20 33225           NOP     F22M1
21411  0 54 23326           SUB     STDISC          A • SECTOR COUNT • 1
21412  0 73 33307           SKG     •1270           IS SECTOR COUNT > 128D
21413  0 73 33273           SKG     ••1             IS SECTOR COUNT < 1
21414  0 43 00460           BRM     ERROR           YES • SECTOR COUNT ERROR
21415  0 20 33232           NOP     F22M2
21416  0 55 15432           ADD     BIT23           WORD COUNT
21417  0 75 33272           LDB     •0              BUILD INTERLACE PAT WORD
21420  0 67 00016           LSH     14D
21421  0 16 33337           XRG     •STADDR
21422  0 35 23311           STA     TEMPA
21423  0 76 23326           LDA     STDISC          BUILD HEADER TABLE
21424  0 67 00006           LSH     6
21425  0 71 33467           LDX     ••128D
21426  2 35 34200           STA     STADDR+128D,2
21427  0 55 15424           ADD     BIT17
21430  0 41 21426           BRX     ••2
```



```
                    *
                    *       DISC DRIVER
                    *
21431  0 43 00430           BRM     •OBJECT
21432  0 12 00004           DIR                     DISABLE INTERRUPTS
21433  0 40•10326           SKS•    10326           FILE ON LINE TEST
21434  0 43 00460           BRM     ERROR           FILE NOT ON LINE
21435  0 20 33237           NOP     F22M3
21436  0 40•14126           SKS•    14126           WRITE HEADER TEST
21437  0 01 21441           BRU     ••?
21440  0 43 00460           BRM     ERROR           HEADER SWITCH DOWN
21441  0 20 33244           NOP     F22M4
21442  0 40•14100           SKS•    14100           CHANNEL ACTIVE TEST
21443  0 01 21442           BRU     ••1             CHANNEL ACTIVE
21444  0 40•10126           SKS•    10126           DISC FILE READY TEST
21445  0 01 21444           BRU     ••1             CONTROLLER NOT READY
21446  0 06 10126           EOD     10126           ALERT DISC FILE
21447  0 13 23326           POT     STDISC
21450  0 06•10100           EOD•    10100           ALERT CHANNEL
21451  0 06 14200           EOD     14200           EXTENDED MODE EOD
21452  0 13 23311           POT     TEMPA
21453  0 06 02766           EOD     2766            WRITE DISC FILE • CHAIN
21454  0 40•14100           SKS•    14100           CHANNEL ACTIVE TEST
21455  0 01 21454           BRU     ••1             WAIT FOR CHANNEL DISCONNECT
21456  0 40•13126           SKS•    13126           DISC WRITE PROTECT TEST
21457  0 43 00460           BRM     ERROR           DISC WRITE PROTECTED
21460  0 20 33253           NOP     F22M5
21461  0 40•11100           SKS•    11100           CHANNEL ERROR TEST
21462  0 43 00460           BRM     ERROR           CHANNEL ERROR SET
21463  0 20 33261           NOP     F22M6
21464  0 40•11126           SKS•    11126           DISC FILE ERROR TEST
21465  0 43 00460           BRM     ERROR           CONTROLLER ERROR SET
21466  0 20 33266           NOP     F22M7
21467  0 43 00434           BRM     END
21470  0 01 21373           BRU     FUNC22
```

```
                    *
                    *       FUNCTION TABLES
                    *
21471  0 20 21477   FPT22   NOP     FIM22           FUNCTION IDENTIFIER MESSAGE
21472  0 20 21506           NOP     FAM22           FUNCTION ABSTRACT MESSAGE
21473  0 20 17107           NOP     FVM18           FUNCTION VARIABLE MESSAGE
21474  0 02 23326           TWO     STDISC          FUNCTION VARIABLE TABLE
21475  0 00 21762           PZE     FUNC23          LINK TO NEXT FUNCTION
21476    00000002           DATA    2               FUNCTION IDENTIFIER = BIT 22
                    *
                    *       FUNCTION MESSAGES
                    *
21477    52261202   FIM22   BCD     ' F 22 - WRITE HEADER TEST'
21500    02124012
21501    66513163
21502    25123025
21503    21242551
21504    12632562
21505    63371212
21506    52326651   FAM22   BCD     '  WRITE HEADER TEST '
21507    31632512
21510    30252124
21511    25511263
21512    25626352
21513    52633025           BCD     ' THE PURPOSE OF THIS SPECIAL FUNCTION IS TO PROVIDE'
21514    12476451
21515    47466225
21516    12462612
21517    63303162
21520    12624725
21521    23312143
21522    12266445
21523    23633146
21524    45123162
21525    12634612
21526    47514465
```



```
21527    31242512
21530    52633025           BCD     ' THE OPERATOR WITH A TOOL FOR USE IN LOCATING PROB-'
21531    12464725
21532    51216346
21533    51126631
21534    63301221
21535    12634646
21536    43122646
21537    51126462
21540    25123145
21541    12434423
21542    21633145
21543    27124751
21544    46224612
21545    52432544           BCD     ' LEMS ENCOUNTERED DURING HEADER WRITING. NO ATTEMPT'
21546    62122545
21547    23466445
21550    63255125
21551    24122464
21552    51314527
21553    12302521
21554    24255112
21555    66513163
21556    31452733
21557    12456612
21560    21630325
21561    44476312
21562    52316212           BCD     ' IS MADE TO DIAGNOSE ERRORS. HOWEVER, THE FOLLOWING'
21563    44212425
21564    12634612
21565    24312127
21566    45466225
21567    12255151
21570    46516233
21571    12304664
21572    25652551
```

```
21573    73126330
21574    25122446
21575    43434666
21576    31452712
21577    52255151          BCD     ' ERROR CONDITIONS WILL BE TYPED:'
21600    46511223
21601    46452431
21602    63314445
21603    62126631
21604    43431222
21605    25126370
21606    47252415
21607    52263143          BCD     ' FILE NOT ON LINE'
21610    25124546
21611    63124445
21612    12433145
21613    25121212
21614    52302521          BCD     ' HEADER SWITCH DOWN'
21615    24255112
21616    62663163
21617    63301224
21620    46664512
21621    52243162          BCD     ' DISC WRITE PROTECTED'
21622    63126651
21623    31632512
21624    47514463
21625    25236325
21626    24121212
21627    52233021          BCD     ' CHANNEL ERROR'
21630    45452543
21631    12255151
21632    46511712
21633    52234445          BCD     ' CONTROLLER ERROR.'
21634    63514443
21635    43255112
21636    25515146
```



```
21637    51331212
21640    52261445          BCD     ' FUNCTION VARIABLES ARE START AND END, (STARTING'
21641    23633146
21642    45125521
21643    51316122
21644    43256212
21645    21512512
21646    12633151
21647    63123145
21650    24123545
21651    24731274
21652    12633151
21653    63314527
21654    52214524          BCD     ' AND ENDING DISC ADDRESSES, RESPECTIVELY). THE SAME'
21655    12254524
21656    31452712
21657    24316023
21660    12213424
21661    51256263
21662    25627312
21663    51254247
21664    25236331
21665    65254370
21666    34331263
21667    30251262
21670    21442512
21671    52652151          BCD     ' VARIABLES WILL BE USED UNTIL BREAKPOINT ONE IS RE='
21672    31212243
21673    25621266
21674    31434312
21675    22251264
21676    62252412
21677    64456331
21700    43122251
21701    25214347
21702    46314563
```

```
21703    12464525
21704    12316212
21705    51254012
21706    52622563          BCD     ' SET; AT WHICH POINT AN END MESSAGE IS TYPED. FUNC='
21707    73122163
21710    12663031
21711    23301247
21712    46314563
21713    12214512
21714    25452412
21715    44256262
21716    21272512
21717    31621263
21720    70472524
21721    33122664
21722    45234012
21723    52633146          BCD     ' TION VARIABLES MAY NOW BE CHANGED OR ANOTHER FUNC='
21724    45126521
21725    51312122
21726    43266212
21727    44217212
21730    45466412
21731    22251223
21732    30214527
21733    25241246
21734    51122145
21735    46633025
21736    51122464
21737    45234012
21740    52633146          BCD     ' TION OR UNIT MAY BE ACCESSED. MAXIMUM SECTOR COUNT'
21741    45124651
21742    12644531
21743    63124421
21744    70122225
21745    12212323
21746    25626225
```



```
21747    24331244
21750    21673144
21751    64441262
21752    25236346
21753    51122146
21754    64456312
21755    52316212          BCD     ' IS 177 (OCTAL).''
21756    31070712
21757    74462363
21760    21433433
21761    37121212
```

```
                        *
                        *
                        *       FUNCTION 23 - SECTOR DUMP
                        *
                        *
21762  0 43 00424 FUNC23 BRM     FUNCTN          FUNCTION LINK
21763  0 20 22051        NOP     FPT23
21764  0 43 00440        BRM     RETURN          SET INTERRUPT LINKAGE
21765  0 20 23351        NOP     ENTER
21766  0 02 20004        DIR                     DISABLE INTERRUPTS
21767  0 43 00430        BRM     OBJECT          OBJECT LINK
21770  0 43 00454        BRM     REPORT          OUTPUT FUNCTION IDENTIFIER
21771  0 20 22057        NOP     FIN23
21772  0 43 23045        BRM     TERM            GO TO CONTROL
                        *
                        *       DRIVE DISC
                        *
21773  0 43 00430        BRM     OBJECT
21774  0 43 00440        BRM     RETURN          SET INTERRUPT LINKAGE
21775  0 20 23351        NOP     ENTER
21776  0 76 23326        LDA     STDISC          SET DISC ADDRESS
21777  0 35 23332        STA     PRTARD
22000  0 43 23153        BRM     PUTOUT          PUT TO DISC
22001  0 01 22046        BRU     F23E1           ERROR ABORT
22002  0 06 00100        EBD     100             DISCONNECT CHANNEL
22003  0 06*10100        EBD*    10100           ALERT CHANNEL
22004  0 06 14000        EBD     14000           EXTENDED MODE EBD
22005  0 13 33471        PBT     *486*STADDR     NC = 64
22006  0 06 03726        EBD     3726            READ DISC FILE - SECTOR
22007  0 43 23123        BRM     WAIT            WAIT FOR CONTROLLER READY
22010  0 01 22046        BRU     F23E1           ERROR ABORT
22011  0 40*11100        SKS*    11100           CHANNEL ERROR TEST
22012  0 01 22014        BRU     **2             CHANNEL ERROR SET
22013  0 01 22017        BRU     **4
22014  0 43 00460        BRM     ERROR
22015  0 20 23567        NOP     U19M8
```



```
22016  0 01 22046        BRU     F23E1
22017  0 40*12100        SKS*    12100           CHANNEL ZERO WORD COUNT TEST
22020  0 01 22022        BRU     **2             WORD COUNT NOT ZERO
22021  0 01 22025        BRU     **4
22022  0 43 00460        BRM     ERROR
22023  0 20 23641        NOP     U19M13
22024  0 01 22046        BRU     F23E1
22025  0 43 23053        BRM     CHECK           CHECK FOR CHANNEL INACTIVE
22026  0 01 22046        BRU     F23E1           ERROR ABORT
22027  0 76 33337        LDA     *STADDR         SET UP POINTER
22030  0 16 15410        XRG     BIT5
22031  0 35 22035        STA     F23L1
22032  0 76 15427        LDA     BIT20
22033  0 43 00454 F23L2  BRM     REPORT          DUMP 8 WORDS
22034  4 20 23654        NOP     U19M14,4        CARRIAGE RETURN
22035  0 10 34000 F23L1  EIGHT   STADDR          DATA
22036  0 46 00014        XAB
22037  0 76 22035        LDA     F23L1           UPDATE ADDRESS
22040  0 56 15427        ADD     BIT20
22041  0 35 22035        STA     F23L1
22042  0 46 00014        XAB
22043  0 54 15432        SUB     BIT23
22044  0 72 33373        SKA     *-1             FINISHED
22045  0 01 22033        BRU     F23L2           NO
22046  0 43 00434 F23E1  BRM     END
22047  0 01 21762        BRU     FUNC23
22050  0 43 00452 LAST   BRM     DONE
```

```
                          *
                          *        FUNCTION PARAMETER TABLE
                          *
22051  0 20 22057  FPT23  NOP      FIM23          FUNCTION IDENTIFIER MESSAGE
22052  0 20 22067         NOP      FAM23          FUNCTION ABSTRACT MESSAGE
22053  0 20 22064         NOP      FVM23          FUNCTION VARIABLES MESSAGE
22054  0 01 23326         ONE      STDISC         FUNCTION VARIABLF
22055  0 00 22050         PZE      LAST           LINK TO CONTROL
22056    00000001         DATA     1              FUNCTION IDENTIFIER . BIT 23
                          *
                          *        FUNCTION MESSAGES
                          *
22057    52261202  FIM23  BCD      ' F 23 . SECTOR DUMP''
22060    03124012
22061    62252363
22062    46511224
22063    64444737
22064    52126225  FVM23  BCD      '  SECTOR ''
22065    23634651
22066    52371212
22067    52326330  FAM23  BCD      '  THIS SPECIAL FUNCTION DUMPS THE CONTENTS OF ANY'
22070    31621262
22071    47252331
22072    21431226
22073    64452363
22074    31464512
22075    24644447
22076    62126330
22077    25122346
22100    45632545
22101    63621246
22102    26122145
22103    70121212
22104    52243162         BCD      ' DISC SECTOR TO THE ERROR DEVICE. WHEN COMPLETED,'
22105    23126225
22106    23634651
```



```
22107    12634412
22110    63302512
22111    25515146
22112    51122425
22113    65312325
22114    33126630
22115    25451223
22116    46444743
22117    25632524
22120    73121212
22121    62234645         BCD      ' CONTROL WILL BE RETURNED TO THE KEYBOARD. THE ONLY'
22122    63514643
22123    12663143
22124    43122225
22125    12512563
22126    64514525
22127    24126346
22130    12633025
22131    12422570
22132    62462151
22133    24331263
22134    30251246
22135    45437012
22136    52266445         BCD      ' FUNCTION VARIABLE IS .SECTOR., WHICH IS THE ADDRESS'
22137    23633146
22140    45126521
22141    51312122
22142    43251231
22143    62124062
22144    25236346
22145    51407312
22146    66303123
22147    30123162
22150    12633025
22151    12212424
22152    51256262
```

```
22153    52462612          BCD     ' OF THE SECTOR WHICH WILL BE DUMPED. AFTER CHANGING'
22154    63302512
22155    62252363
22156    46511266
22157    30312330
22160    12663143
22161    43122225
22162    12246444
22163    47252433
22164    12212663
22165    25511223
22166    30214527
22167    31452712
22170    52633031          BCD     ' THIS VARIABLE, TYPE .T TO CONTINUE.''
22171    62126521
22172    51312122
22173    43257312
22174    63704725
22175    12406312
22176    63461223
22177    46456331
22200    45642533
22201    37121212
```



```
                         *
                         *
                         *       SUBROUTINES
                         *
                         *
                         *
                         *       TEST ZA14 = ZA00 AND C23 = C10
                         *
22202  0 00 00000  F1S1   PZE     0
22203  0 77*22202         EAX*    F1S1            GET BIAS
22204  2 76 00003         LDA     3,2             XMODE E8D
22205  0 35 22224         STA     F1S1B
22206  2 76 00004         LDA     4,2             MESSAGE POINTER
22207  0 35 22223         STA     F1S1A
22210  0 16 15403         MRG     BIT0
22211  0 35 22237         STA     F1S1C
22212  0 43 00440         BRM     RETURN          SET SPIT LINKAGE
22213  0 40 23351         JSP     ENTER
22214  0 43 04754         BRM     CLRCHN          CLEAR CHANNEL
22215  0 06 12100         E8D     12100           ALERT TO PIN CHANNEL ADDRESS
22216  0 33 23310         PIN     TEMP            PIN CHANNEL ADDRESS
22217  0 76 23310         LDA     TEMP
22220  2 72 00001         SKA     1,2             SKIP IF BIT RESET
22221  0 43 00460         BRM     ERROR
22222  0 00 00000  F1S1A  PZE     0               MESSAGE POINTER
22223  0 06*10100         E8D*    10100           ALERT CHANNEL
22224  0 00 00000  F1S1B  PZE     0               XMODE E8D
22225  2 13 00002         P8T     2,2             SET ADDRESS BIT
22226  0 06 12100         E8D     12100           ALERT TO PIN CHANNEL ADDRESS
22227  0 33 23310         PIN     TEMP            PIN CHANNEL ADDRESS
22230  2 75 00001         LDB     1,2             CORRECT TEST WORD
22231  0 76 23310         LDA     TEMP
22232  2 70 00001         SKM     1,2             IS TEST FLIP-FLOP SET
22233  0 01 22235         BRU     *+2             NO
22234  0 01 22241         BRU     F1S1D
22235  0 71 00430         LDX     OBJECT          ADDRESS OF OBJECT TEST
```

```
22236  0 43 00460          BRM     ERR0R           REPORT ERROR
22237  0 00 00000  F1S1C    PZE     0               MESSAGE P0INTER
22240  2 20 24350          N0P     M20138,2        HEADING AND REGISTERS
22241  0 43 00434  F1S1D    BRM     END
22242  2 01 00004          BRU     4,2             G0 T0 NEXT 0BJECT TEST
                    *
                    *       TEST ZC14 = ZC0 AND C9 = C0
                    *
22243  0 00 00000  F1S2     PZE     0
22244  0 77*22243          EAX*    F1S2            SET BIAS
22245  2 76 00001          LDA     1,2             XM0DE E0D
22246  0 35 22254          STA     F1S2A
22247  2 76 00003          LDA     3,2             MESSAGE P0INTER
22250  0 35 22261          STA     F1S2B
22251  0 43 00440          BRM     RETURN          SET SPIT LINKAGE
22252  0 20 23351          N0P     ENTER
22253  0 06*10100          E0D*    10100           ALERT CHANNEL
22254  0 00 00000  F1S2A    PZE     0               XM0DE E0D
22255  2 13 00002          P0T     2,2
22256  0 40*12100          SKS*    12100           CHANNEL ZER0 W0RD C0UNT TEST
22257  0 01 22261          BRU     **2             W0RD C0UNT N0T ZER0 = 0K
22260  0 43 00460          BRM     ERR0R
22261  0 00 00000  F1S2B    PZE     0               MESSAGE P0INTER
22262  0 43 00434          BRM     END
22263  2 01 00003          BRU     3,2             G0 T0 NEXT 0BJECT TEST
                    *
                    *       TEST SKS F0R N0 SKIP
                    *
22264  0 00 00000  F2S1     PZE     0
22265  0 77*22264          EAX*    **1
22266  2 76 00001          LDA     1,2             GET SKS
22267  0 35 22275          STA     F2S1A
22270  2 76 00002          LDA     2,2             GET MESSAGE
22271  0 35 22300          STA     F2S1B
22272  0 43 00440          BRM     RETURN          SET INTERRUPT LINKAGE
22273  0 20 23351          N0P     ENTER
```



```
22274  0 06 10326          E0D     10326           CLEAR FILE
22275  0 00 00000  F2S1A    PZE     0               SH0ULD N0T SKIP
22276  0 01 22300          BRU     **2
22277  0 43 00460          BRM     ERR0R
22300  0 00 00000  F2S1B    PZE     0
22301  0 43 00434          BRM     END
22302  0 51 22264          BRR     F2S1            RETURN
                    *
                    *       TEST SKS F0R SKIP
                    *
22303  0 00 00000  F2S2     PZE     0
22304  0 77*22303          EAX*    **1
22305  2 76 00001          LDA     1,2             GET SKS
22306  0 35 22314          STA     F2S2A
22307  2 76 00002          LDA     2,2             GET MESSAGE
22310  0 35 22316          STA     F2S2B
22311  0 43 00440          BRM     RETURN          SET INTERRUPT LINKAGE
22312  0 20 23351          N0P     ENTER
22313  0 06 10326          E0D     10326           CLEAR FILE
22314  0 00 00000  F2S2A    PZE     0               SH0ULD SKIP
22315  0 43 00460          BRM     ERR0R
22316  0 00 00000  F2S2B    PZE     0
22317  0 43 00434          BRM     END
22320  0 51 22303          BRR     F2S2            RETURN
                    *
                    *       TEST ADDRESS REGISTER IN C0NTR0LLER
                    *
22321  0 00 00000  F2S3     PZE     0
22322  0 61 22321          MIN     F2S3            INCREMENT RETURN
22323  0 77*22321          EAX*    F2S3
22324  2 76 00001          LDA     1,2             MESSAGE
22325  0 35 22337          STA     F2S3A
22326  0 43 00440          BRM     RETURN          SET INTERRUPT LINKAGE
22327  0 20 23351          N0P     ENTER
22330  0 76 33273          LDA     =0              P0T A
22331  0 43 23243          BRM     PATPIN
```

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22332  0 76*22321          LDA*    F2S3            POT B
22333  0 43 23243          BRM     POTPIN
22334  0 72*22321          SKA*    F2S3            IS ADDRESS BIT SET
22335  0 01 22337          BRU     *+2             YES
22336  0 43 00460          BRM     ERROR
22337  0 00 00000  F2S3A   PZE     0
22340  0 43 00434          BRM     END
22341  0 51 22321          BRR     F2S3            RETURN
                    *
                    *       TEST ADDRESS REGISTER IN CONTROLLER
                    *
22342  0 00 00000  F2S4    PZE     0
22343  0 61 22342          MIN     F2S4            INCREMENT RETURN
22344  0 77*22342          EAX*    F2S4
22345  2 76 00001          LDA     1,2             MESSAGE
22346  0 35 22357          STA     F2S4A
22347  0 43 00440          BRM     RETURN          SET INTERRUPT LINKAGE
22350  0 20 23351          NOP     ENTER
22351  0 76 33326          LDA     =777777         POT A
22352  0 43 23243          BRM     POTPIN
22353  0 76 33272          LDA     =0              POT B
22354  0 43 23243          BRM     POTPIN
22355  0 72*22342          SKA*    F2S4            ADDRESS BIT RESET
22356  0 43 00460          BRM     ERROR           NO
22357  0 00 00000  F2S4A   PZE     0
22360  0 43 00434          BRM     END
22361  0 51 22342          BRR     F2S4            RETURN
                    *
                    *       TEST VERIFICATION LOGIC
                    *
22362  0 00 00000  F2S5    PZE     0
22363  0 61 22362          MIN     F2S5            INCREMENT RETURN
22364  0 77*22362          EAX*    F2S5
22365  2 76 00001          LDA     1,2             MESSAGE
22366  0 35 22404          STA     F2S5A
22367  2 76 00000          LDA     0,2             POT A
```

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22370  0 43 22747          BRM     SETUP3
22371  0 61 22405          BRU     F2S5B           DO NOT USE ADDRESSED DISC
22372  0 17 15423          EOR     BIT16           BUILD POT B
22373  0 35 23310          STA     TEMP
22374  0 06 10126          EOD     10126           ALERT DISC FILE
22375  0 13 23310          POT     TEMP            POT B
22376  0 43 23106          BRM     NORMAL          NORMALIZE DISC
22377  0 06 10126          EOD     10126           ALERT DISC FILE
22400  0 13 23332          POT     POTARD          POT A
22401  0 43 23275          BRM     =500            WAIT 500 MILLISEC
22402  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
22403  0 43 00460          BRM     ERROR           TRACK NOT VERIFIED
22404  0 00 00000  F2S5A   PZE     0
22405  0 43 00434  F2S5B   BRM     END
22406  0 51 22362          BRR     F2S5            RETURN
                    *
                    *       TEST PARA LOGIC
                    *
22407  0 00 00000  F2S6    PZE     0
22410  0 77*22407          EAX*    F2S6
22411  2 76 00003          LDA     3,2             MESSAGE
22412  0 35 22437          STA     F2S6B
22413  2 76 00002          LDA     2,2             POT B
22414  0 43 23023          BRM     DISCCK          USE THIS DISC
22415  0 01 22440          BRU     F2S6C           NO
22416  2 76 00001          LDA     1,2             POT A
22417  0 43 22747          BRM     SETUP3
22420  0 61 22440          BRU     F2S6C           DO NOT USE ADDRESSED DISC
22421  0 06 10126          EOD     10126           ALERT DISC FILE
22422  0 13 23332          POT     POTARD          POT A
22423  0 43 23106          BRM     NORMAL
22424  0 06 10126          EOD     10126           ALERT DISC FILE
22425  2 13 00002          POT     2,2             POT B
22426  0 43 23275          BRM     =500            WAIT 500 MILLISEC
22427  0 71 33472          LDX     *=100000
22430  0 06 10126          EOD     10126           ALERT DISC FILE
```

```
22431  0 13 23332          PST     PSTWRD          PST A
22432  0 41 22434  F2S6A    BRX     *+2
22433  0 01 22437          BRU     F2S6B           VERIFICATION TIME > 70 MS, = 0K
22434  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
22435  0 01 22432          BRU     F2S6A           TRACK NOT VERIFIED = LOOP
22436  0 43 00460          BRM     ERROR           TRACK VERIFIED TOO SOON
22437  0 00 00000  F2S6B    PZE     0
22440  0 43 23106  F2S6C    BRM     NORMAL          NORMALIZE DISC
22441  0 43 00434          BRM     END
22442  0 61 22407          MIN     F2S6            INCREMENT RETURN
22443  0 61 22407          MIN     F2S6            INCREMENT RETURN
22444  0 51 22407          BRR     F2S6            RETURN
                       *
                       *       TEST SECTOR VERIFICATION LOGIC
                       *
22445  0 00 00000  F2S7     PZE     0
22446  0 77*22445          EAX*    F2S7
22447  2 75 00002          LDB     2,2             MESSAGE
22450  0 36 22464          STB     F2S7B
22451  2 76 00001          LDA     1,2             PSTWORD
22452  0 43 22755          BRM     SETUP4
22453  0 01 22465          BRU     F2S7C
22454  0 06 10126          EOD     10126           ALERT DISC FILE
22455  0 13 23332          PST     PSTWRD          PST SAME ADDRESS
22456  0 71 33472          LDX     =-100000D
22457  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
22460  0 01 22462          BRU     *+2             TRACK NOT VERIFIED
22461  0 01 22465          BRU     F2S7C
22462  0 41 22457          BRX     F2S7A
22463  0 43 00460          BRM     ERROR           TIME > 70 MILLISEC
22464  0 00 00000  F2S7B    PZE     0
22465  0 43 00434  F2S7C    BRM     END
22466  0 61 22445          MIN     F2S7            INCREMENT RETURN
22467  0 51 22445          BRR     F2S7            RETURN
                       *
                       *       TEST 2MHAA
```



```
                       *
22470  0 00 00000  F3S1     PZE     0
22471  0 61 22470          MIN     F3S1            INCREMENT RETURN
22472  0 76 33272          LDA     =0              PSTWORD
22473  0 43 22755          BRM     SETUP4          SET UP OBJECT TEST
22474  0 01 22514          BRU     F3S1C           ABORT
22475  0 77*22470          EAX*    F3S1
22476  2 76 00000          LDA     0,2             EOM
22477  0 35 22505          STA     F3S1A
22500  2 76 00001          LDA     1,2             MESSAGE
22501  0 35 22512          STA     F3S1B
22502  0 06*10100          EOD*    10100           ALERT CHANNEL
22503  0 06 14200          EOD     14200           EXTENDED MODE EOD
22504  0 13 33333          PST     *484+STADDR     MC = 1
22505  0 00 00000  F3S1A    PZE     0               EOM
22506  0 77 36706          EAX     =5700           WAIT 1 MILLISEC
22507  0 41 22507          BRX     *
22510  0 40*12126          SKS*    12126           TRACK VERIFIED TEST
22511  0 43 00460          BRM     ERROR           CONTROLLER EXITED FROM STATE 1
22512  0 00 00000  F3S1B    PZE     0
22513  0 06 00100          EOD     100             DISCONNECT CHANNEL
22514  0 51 22470  F3S1C    BRR     F3S1            RETURN
                       *
                       *       TEST WRITE PARITY CHECKING
                       *
22515  0 00 00000  F3S2     PZE     0
22516  0 61 22515          MIN     F3S2            INCREMENT RETURN
22517  0 76 33272          LDA     =0              PSTWORD
22520  0 43 22755          BRM     SETUP4
22521  0 01 22535          BRU     F3S2B           ABORT
22522  0 76*22515          LDA*    F3S2            DATA WORD
22523  0 35 34000          STA     STADDR
22524  0 61 22515          MIN     F3S2            INCREMENT RETURN
22525  0 76*22515          LDA*    F3S2            MESSAGE
22526  0 35 22534          STA     F3S2A
22527  0 43 22766          BRM     CPST1           PST TO CHANNEL
```

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22530     00074000          DATA    4B4+STADDR
22531   0 43 23765          BRM     W200              WAIT 200 MILLISEC
22532   0 40*11126          SKS*    11126             DISC FILE ERROR TEST
22533   0 43 00460          BRM     ERROR             CONTROLLER ERROR SET
22534   0 00 00000  F3S2A    PZE     0
22535   0 43 00434  F3S2B    BRM     END
22536   0 51 22515          BRR     F3S2              RETURN
                    *
                    *       TEST INCREMENTING OF ADDRESS REGISTER
                    *
22537   0 00 00000  F3S3     PZE     0
22540   0 61 22537          MIN     F3S3              INCREMENT RETURN
22541   0 77*22537          LAX*    F3S3
22542   2 76 00001          LDA     1,2               MESSAGE POINTER
22543   0 35 22611          STA     F3S3B
22544   2 76 00000          LDA     0,2               POTWORD
22545   0 55 15432          ADD     BIT23
22546   0 43 23022          BRM     DISCCK            USE THIS ADDRESS
22547   0 01 22612          BRU     F3S3C             NO
22550   2 76 00000          LDA     0,2               POTWORD
22551   0 43 22755          BRM     SETUP4            SET UP
22552   0 01 22612          BRU     F3S3C             ABORT
22553   0 43 22766          BRM     CPOT1             POT TO CHANNEL
22554     04074000          DATA    404B4+STADDR
22555   0 43 23123          BRM     WAIT              WAIT FOR CONTROLLER READY
22556   0 01 22612          BRU     F3S3C
22557   0 40*12100          SKS*    12100             CHANNEL ZERO WORD COUNT TEST
22560   0 01 22562          BRU     *+2               WORD COUNT NOT ZERO
22561   0 01 22573          BRU     F3S3A
22562   0 06 12100          EOD     12100             ALERT TO PIN CHANNEL ADDRESS
22563   0 33 23310          PIN     TEMP              PIN CHANNEL ADDRESS
22564   0 76 23310          LDA     TEMP
22565   0 54 33337          SUB     =STADDR           A = WORD COUNT
22566   0 75 33344          LDB     =101
22567   0 71 33337          LDX     =STADDR
22570   0 43 00460          BRM     ERROR
```

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22571   2 20 30322          NOP     F3M20,2
22572   0 01 22612          BRU     F3S3C
22573   0 06 10126          EOD     10126             ALERT DISC FILE
22574   0 33 23310          PIN     TEMP              PIN CONTROLLER ADDRESS
22575   0 75 33373          LDB     =*=1              MASK
22576   0 76*22537          LDA*    F3S3              POTWORD
22577   0 55 15432          ADD     BIT23
22600   0 70 23310          SKM     TEMP              DID REGISTER INCREMENT CORRECTLY
22601   0 01 22603          BRU     *+2               NO
22602   0 01 22612          BRU     F3S3C
22603   0 46 00014          XAB
22604   0 76 23310          LDA     TEMP              REPORT ERROR
22605   0 71*22537          LDX*    F3S3
22606   0 43 00454          BRM     REPORT
22607   2 20 31102          NOP     F3M32,2
22610   0 43 00460          BRM     ERROR
22611   0 00 00000  F3S3B    PZE     0
22612   0 43 00434  F3S3C    BRM     END
22613   0 51 22537          BRR     F3S3              RETURN
                    *
                    *       GENERATE CONTROLLER READ ERROR
                    *
22614   0 00 00000  F3S4     PZE     0
22615   0 76 33372          LDA     =0                POTWORD
22616   0 43 22755          BRM     SETUP4            SET UP
22617   0 01 22657          BRU     F3S4A             ABORT
22620   0 76 33306          LDA     =77               DATA WORD 1
22621   0 35 34000          STA     STADDR
22622   0 76 33372          LDA     =0                DATA WORDS 2=64
22623   0 77 37701          LAX     =63D
22624   2 35 34100          STA     STADDR+64D,2
22625   0 41 22624          BRX     *=1
22626   0 43 22766          BRM     CPOT1             POT TO CHANNEL
22627     04034000          DATA    486+STADDR
22630   0 43 23123          BRM     WAIT              WAIT FOR CONTROLLER READY
22631   0 01 22657          BRU     F3S4A
```

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22632   0 35 34000          STA     STADDR          CLEAR FIRST WORD
22633   0 43 23053          BRM     CHECK           CHECK FOR CHANNEL READY
22634   0 01 22657          BRU     F3S4A
22635   0 43 23153          BRM     POTOUT          POT TO DISC
22636   0 01 22657          BRU     F3S4A
22637   0 76 33351          LDA     =STADDR+3       COMPARE ADDRESS
22640   0 75 33273          LDB     =1              MASK
22641   0 43 22766          BRM     CPOT1           POT TO CHANNEL
22642     04034000          DATA    4B6+STADDR
22643   0 06 12100          EOD     12100           ALERT TO PIN CHANNEL ADDRESS
22644   0 33 23310          PIN     TEMP            PIN CHANNEL ADDRESS
22645   0 70 23310          SKM     TEMP            DO ADDRESSES COMPARE
22646   0 01 22643          BRU     *+3             NO
22647   0 06 10326          EOD     10326           CLEAR FILE
22650   0 06 00100          EOD     100             DISCONNECT CHANNEL
22651   0 43 23153          BRM     POTOUT          POT TO DISC
22652   0 01 22657          BRU     F3S4A
22653   0 43 22775          BRM     CPOT2           POT TO CHANNEL
22654     04034000          DATA    4B6+STADDR
22655   0 43 23265          BRM     W200            WAIT 200 MILLISEC
22656   0 61 22614          MIN     F3S4            INCREMENT RETURN
22657   0 51 22614  F3S4A   BRR     F3S4            RETURN
                    *
                    *       TEST PDBA LOGIC IN 5045 FILE (POSITION DECODER)
                    *
22660   0 00 00000  F5S1    PZE     0
22661   0 77+22460          EAX+    F5S1            BIAS
22662   2 76 00001          LDA     1,2             POT A
22663   0 43 23022          BRM     DISCCK          USE THIS ADDRESS
22664   0 01 22736          BRU     F5S1G           NO
22665   0 43 22740          BRM     SETUP2          SET UP
22666   0 76 33305          LDA     =31D            LOOP COUNT = 32
22667   0 35 23310          STA     TEMP
22670   0 06 10126          EOD     10126           ALERT DISC FILE
22671   2 13 00001          POT     1,2             POT A
22672   0 43 23275          BRM     W500            WAIT 500 MILLISEC
```

```
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22673   0 40+11126          SKS+    11126           DISC FILE ERROR TEST
22674   0 01 22676          BRU     *+2             CONTROLLER ERROR
22675   0 01 22700          BRU     F5S1B
22676   2 76 00003          LDA     3,2             MESSAGE
22677   0 01 22731          BRU     F5S1F
22700   0 40+10126          SKS+    10126           DISC FILE READY TEST
22701   0 01 22703          BRU     *+2             CONTROLLER NOT READY
22702   0 01 22705          BRU     F5S1C
22703   2 76 00004          LDA     4,2
22704   0 01 22731          BRU     F5S1F
22705   0 06 10126          EOD     10126           ALERT DISC FILE
22706   2 13 00002          POT     2,2             POT B
22707   0 43 23275          BRM     W500            WAIT 500 MILLISEC
22710   0 40+11126          SKS+    11126           DISC FILE ERROR TEST
22711   0 01 22713          BRU     *+2             CONTROLLER ERROR SET
22712   0 01 22715          BRU     F5S1D
22713   2 76 00005          LDA     5,2             MESSAGE
22714   0 01 22731          BRU     F5S1F
22715   0 40+10126          SKS+    10126           DISC FILE READY TEST
22716   0 01 22720          BRU     *+2             CONTROLLER NOT READY
22717   0 01 22722          BRU     F5S1E
22720   2 76 00006          LDA     6,2             MESSAGE
22721   0 01 22731          BRU     F5S1F
22722   0 60 23310  F5S1E    SKR     TEMP            DECREMENT TEMP
22723   0 20 00000          NOP     0
22724   0 40 20040          SKS     20040           BREAKPOINT 4 TEST
22725   0 43 23045          BRM     TERM            GO TO CONTROL
22726   0 53 23310          SKN     TEMP            FINISHED
22727   0 01 22670          BRU     F5S1A           NO = LOOP
22730   0 01 22736          BRU     F5S1G           YES = EXIT
22731   0 35 22735  F5S1F   STA     F5S1H           MESSAGE
22732   0 06 10326          EOD     10326           CLEAR FILE
22733   0 43 00460          BRM     ERROR
22734   4 20 32432          NOP     F5M1,4
22735   0 00 00000  F5S1H   PZE     0
22736   0 43 00434  F5S1G   BRM     END
```

```
22737  2 01 00007          BRU     7,2             RETURN
```



```
                           *
                           *       SETUP ROUTINE NUMBER 2
                           *
22740  0 00 00000  SETUP2  PZE     0
22741  0 35 23310          STA     TEMP            SAVE A REG
22742  0 43 00440          BRM     RETURN          SET INTERRUPT LINKAGE
22743  0 20 23351          XBP     ENTER
22744  0 76 23310          LDA     TEMP            GET A REG
22745  0 43 23106          BRM     NORMAL          NORMALIZE DISC AND CHANNEL
22746  0 51 22740          BRR     SETUP2          RETURN
                           *
                           *       SETUP ROUTINE NUMBER 3
                           *
22747  0 00 00000  SETUP3  PZE     0
22750  0 43 22740          BRM     SETUP2          SET SPIT LINKAGE, NORMALIZE
22751  0 43 23022          BRM     DISCCK          USE ADDRESSED DISC
22752  0 51 22747          BRR     SETUP3          NO . RETURN
22753  0 61 22747          XIN     SETUP3          INCREMENT RETURN
22754  0 51 22747          BRR     SETUP3          RETURN
                           *
                           *       SETUP ROUTINE NUMBER 4
                           *
22755  0 00 00000  SETUP4  PZE     0
22756  0 43 22740          BRM     SETUP2          SET SPIT LINKAGE, NORMALIZE
22757  0 43 23022          BRM     DISCCK          ADDRESSED DISC TO BE USED
22760  0 51 22755          BRR     SETUP4          NO . RETURN
22761  0 43 23153          BRM     POTOUT          POT TO DISC
22762  0 51 22755          BRR     SETUP4          ERROR
22763  0 61 22755          XIN     SETUP4          INCREMENT RETURN
22764  0 71 15414          LDX     BIT9            SET X NEGATIVE
22765  0 51 22755          BRR     SETUP4          RETURN
```

```
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                     *
                     *       POT TO CHANNEL
                     *
22766   0 00 00000   CPOT1   PZE     0
22767   0 61 22766           MIN     CPOT1           INCREMENT RETURN
22770   0 06*10100           EOD*    10100           ALERT CHANNEL
22771   0 06 14200           EOD     14200           EXTENDED MODE EOD
22772   0 13*22766           POT*    CPOT1           POT TO CHANNEL
22773   0 06 03766           EOD     3766            WRITE DISC FILE * SECTOR
22774   0 51 22766           BRR     CPOT1           RETURN
                     *
                     *       POT TO CHANNEL
                     *
22775   0 00 00000   CPOT2   PZE     0
22776   0 61 22775           MIN     CPOT2           INCREMENT RETURN
22777   0 06*10100           EOD*    10100           ALERT CHANNEL
23000   0 06 14000           EOD     14000           EXTENDED MODE EOD
23001   0 13*22775           POT*    CPOT2           POT TO CHANNEL
23002   0 06 03726           EOD     3726            READ DISC FILE * SECTOR
23003   0 51 22775           BRR     CPOT2           RETURN
                     *
                     *       POT TO CHANNEL
                     *
23004   0 00 00000   CPOT3   PZE     0
23005   0 61 23004           MIN     CPOT3           INCREMENT RETURN
23006   0 06*10100           EOD*    10100           ALERT CHANNEL
23007   0 06 14200           EOD     14200           EXTENDED MODE EOD
23010   0 13*23004           POT*    CPOT3           POT TO CHANNEL
23011   0 06 02766           EOD     2766            WRITE DISC FILE * CHAIN
23012   0 51 23004           BRR     CPOT3           RETURN
                     *
                     *       POT TO CHANNEL
                     *
23013   0 00 00000   CPOT4   PZE     0
23014   0 61 23013           MIN     CPOT4           INCREMENT RETURN
23015   0 06*10100           EOD*    10100           ALERT CHANNEL
```

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23016   0 06 14000           EOD     14000           EXTENDED MODE EOD
23017   0 13*23013           POT*    CPOT4           POT TO CHANNEL
23020   0 06 02726           EOD     2726            READ DISC FILE * CHAIN
23021   0 51 23013           BRR     CPOT4           RETURN
                     *
                     *       DISCCK * STORES IAI IN POTWRD AND CHECKS TO SEE IF ADDRESSED DISC
                     *       IS TO BE USED. IF DISC IS TO BE USED, THE ROUTINE EXITS SKIPPING.
                     *
23022   0 00 00000   DISCCK  PZE     0
23023   0 35 23332           STA     POTWRD          SAVE REGISTERS
23024   0 43 15224           BRM     SAV
23025   0 66 00015           RSH     13D             RIGHT JUSTIFY DISC NUMBER
23026   0 75 33272           LDB     =0              IS DISC NUMBER > 17
23027   0 72 15426           SKA     BIT19           YES
23030   0 75 15432           LDB     BIT23           CLEAR HIGH ORDER BIT
23031   0 14 33304           ETR     =17             A TO X
23032   0 35 23310           STA     TEMP
23033   0 71 23310           LDX     TEMP
23034   0 76 15403           LDA     BITO            FORM COMPARE WORD
23035   0 36 23310           STB     TEMP            SAVE B
23036   0 75 33272           LDB     =0
23037   2 66 20000           RCY     0,2
23040   0 71 23310           LDX     TEMP
23041   2 72 04767           SKA     DOOT17,2        IS DISC TO BE USED
23042   0 61 23022           MIN     DISCCK          NO
23043   0 43 15231           BRM     GET             GET REGISTERS
23044   0 51 23022           BRR     DISCCK          RETURN
                     *
                     *       TERM * EXITS TO CONTROL VIA 'ERROR'. ERROR COUNTER WILL NOT
                     *       BE INCREMENTED
                     *
23045   0 00 00000   TERM    PZE     0
23046   0 60 00414           SKR     ERRORS          DECREMENT ERROR COUNTER
23047   0 20 00000           NOP     0
23050   0 43 00460           BRM     ERROR           GO TO CONTROL
23051   0 20 23640           NOP     D19M12          NO MESSAGE
```

```
23052  0 51 23045          BRR     TERM            RETURN
                    *
                    *       CHECK . CHECKS CHANNEL FOR READY AND NO ERROR. IF CHANNEL ERROR
                    *       OR NOT READY FOR 500 MILLISEC, A MESSAGE WILL BE PRINTED AND THE
                    *       ROUTINE WILL EXIT WITHOUT SKIPPING.
                    *
23053  0 00 00000   CHECK   PZE     0
23054  0 35 23305           STA     A               SAVE A REG
23055  0 76 33272           LDA     =0              CLEAR TIMEOUT FLAG
23056  0 35 23331           STA     TIMOUT
23057  0 40=14100           SKS.    14100           CHANNEL ACTIVE TEST
23060  0 01 23062           BRU     *+2             CHANNEL ACTIVE
23061  0 01 23071           BRU     CHECK1
23062  0 40=11100           SKS.    11100           CHANNEL ERROR TEST
23063  0 01 23065           BRU     *+2             CHANNEL ERROR SET
23064  0 01 23074           BRU     CHECK2
23065  0 43 00460           BRM     ERROR
23066  0 20 23567           NOP     U19M8
23067  0 76 23305           LDA     A               RESTORE A REG
23070  0 51 23053           BRR     CHECK

23071  0 61 23053   CHECK1  MIN     CHECK           EXIT SKIPPING
23072  0 76 23305           LDA     A
23073  0 51 23053           BRR     CHECK
23074  0 55 15432   CHECK2  ADD     BIT23
23075  0 73 33473           SKG     =238090         500 MILLISEC ELAPSED YET
23076  0 01 23057           BRU     CHECK+4         NO
23077  0 06 00100           EOD     100             DISCONNECT CHANNEL
23100  0 43 00460           BRM     ERROR           REPORT TIMEOUT ERROR
23101  0 20 23607           NOP     U19M9
23102  0 76 33273           LDA     =+1             SET TIMEOUT FLAG
23103  0 35 23331           STA     TIMOUT
23104  0 76 23305           LDA     A               RESTORE A REG
23105  0 51 23053           BRR     CHECK           EXIT
                    *
                    *       NORMALIZE DISC CONTROLLER AND CHANNEL
                    *
```



```
23106  0 00 00000   NORMAL  PZE     0
23107  0 35 23305           STA     A               SAVE A REGISTER
23110  0 76 33272           LDA     =0
23111  0 40=10126           SKS.    10126           DISC FILE READY TEST
23112  0 01 23114           BRU     *+2             CONTROLLER NOT READY
23113  0 01 23117           BRU     NORML2
23114  0 55 15432           ADD     BIT23
23115  0 73 33331           SKG     =357140         500 MILLISEC UP YET
23116  0 01 23111           BRU     NORML1          NO
23117  0 06 10326           EOD     10326           CLEAR FILE
23120  0 06 00100           EOD     100             DISCONNECT CHANNEL
23121  0 76 23305           LDA     A               SAVE A REGISTER
23122  0 51 23106           BRR     NORMAL
                    *
                    *       WAIT . WAITS 1 SECOND FOR CONTROLLER TO COME READY. IF CONTROLLER
                    *       ERROR SETS OR NOT READY WITHIN 1 SECOND, A MESSAGE WILL BE GIVEN
                    *       AND THE ROUTINE WILL EXIT NOT SKIPPING.
                    *
23123  0 00 00000   WAIT    PZE     0
23124  0 35 23305           STA     A               SAVE A REG
23125  0 76 33272           LDA     =0              CLEAR TIMEOUT FLAG
23126  0 35 23331           STA     TIMOUT
23127  0 40=10126           SKS.    10126           DISC FILE READY TEST
23130  0 01 23132           BRU     *+2             CONTROLLER NOT READY
23131  0 01 23150           BRU     WAIT4
23132  0 40=11126           SKS.    11126           DISC FILE ERROR TEST
23133  0 01 23145           BRU     WAIT3           CONTROLLER ERROR SET
23134  0 55 15432           ADD     BIT23
23135  0 73 33474           SKG     =519480         TIMED OUT YET
23136  0 01 23127           BRU     WAIT1           NO
23137  0 43 00460           BRM     ERROR
23140  0 20 23620           NOP     U19M10
23141  0 76 33273           LDA     =+1             SET TIMEOUT FLAG
23142  0 35 23331           STA     TIMOUT
23143  0 76 23305   WAIT2   LDA     A               RESTORE A REG
23144  0 51 23123           BRR     WAIT            EXIT
```

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23145  0 43 00460  WAIT3  BRM     ERR0R           REPORT CONTROLLER ERROR
23146  0 20 23632         NOP     U19M11
23147  0 01 23143         BRU     WAIT2
23150  0 76 23305  WAIT4  LDA     A               RESTORE A REG
23151  0 61 23123         MIN     WAIT
23152  0 51 23123         BRR     WAIT            EXIT SKIPPING
                   *
                   *     POTOUT - ROUTINE TO POSITION AN ARM, CHECKS FOR FILE ON-LINE,
                   *     WRITE HEADER SWITCH OFF, TRACK VERIFIED, DISC WRITE PROTECTED,
                   *     AND CONTROLLER ERROR. IF NO ERROR OCCURES, ROUTINE WILL EXIT
                   *     SKIPPING.
                   *
23153  0 00 00000  POTOUT PZE     0
23154  0 35 23305         STA     A               SAVE A REG
23155  0 40*10326         SKS*    10326           FILE ON LINE TEST
23156  0 01 23160         BRU     **2             FILE NOT ON LINE
23157  0 01 23163         BRU     P01
23160  0 43 00460         BRM     ERR0R
23161  0 20 23471         NOP     U19M1
23162  0 01 23214         BRU     P05
23163  0 40*14126         SKS*    14126           WRITE HEADER TEST
23164  0 01 23166         BRU     **2             WRITE HEADER SWITCH ON
23165  0 01 23171         BRU     P02
23166  0 43 00460         BRM     ERR0R
23167  0 20 23476         NOP     U19M2
23170  0 01 23214         BRU     P05
23171  0 06 10326         E0D     10326           CLEAR FILE
23172  0 40*10126         SKS*    10126           DISC FILE READY TEST
23173  0 01 23172         BRU     **1             WAIT FOR CONTROLLER READY
23174  0 06 10126         E0D     10126           ALERT DISC FILE
23175  0 13 23332         POT     POTARD          POT TO CONTROLLER
23176  0 76 33272         LDA     =0
23177  0 40*12126         SKS*    12126           TRACK VERIFIED TEST
23200  0 01 23202         BRU     **2             TRACK NOT VERIFIED
23201  0 01 23216         BRU     P06
23202  0 55 15432         ADD     BIT23
```

```
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23203  0 73 33331         SKG     =357140         500 MILLISEC ELAPSED YET
23204  0 01 23177         BRU     P03             NO
23205  0 40*11126         SKS*    11126           DISC FILE ERROR TEST
23206  0 01 23212         BRU     P04             CONTROLLER ERROR NOT SET
23207  0 43 00460         BRM     ERR0R
23210  0 20 23505         NOP     U19M3
23211  0 01 23214         BRU     P05
23212  0 43 00460  P04    BRM     ERR0R
23213  0 20 23517         NOP     U19M4
23214  0 76 23305  P05    LDA     A               RESTORE A REG
23215  0 51 23153         BRR     POTOUT          EXIT
23216  0 40*13126         SKS*    13126           DISC WRITE PROTECT TEST
23217  0 01 23221         BRU     **2             DISC WRITE PROTECTED
23220  0 01 23224         BRU     P07
23221  0 43 00460         BRM     ERR0R
23222  0 20 23530         NOP     U19M5
23223  0 01 23214         BRU     P05
23224  0 40*11126         SKS*    11126           DISC FILE ERROR TEST
23225  0 01 23227         BRU     **2             CONTROLLER ERROR SET
23226  0 01 23232         BRU     P08
23227  0 43 00460         BRM     ERR0R
23230  0 20 23536         NOP     U19M6
23231  0 01 23214         BRU     P05
23232  0 76 23305  P08    LDA     A               RESTORE A REG
23233  0 61 23153         MIN     POTOUT          INCREMENT RETURN
23234  0 51 23153         BRR     POTOUT          EXIT SKIPPING (NO ERROR)
                   *
                   *     CLINT - CLEARS ONE INTERRUPT LEVEL
                   *
23235  0 00 00000  CLINT  PZE     0
23236  0 53 23330         SKN     MFFLG           IS MACHINE A 940
23237  0 01*23241         BRU*    **2             NO - USE BRU*
23240  0 11 23241         BRI     **1             YES - USE BRI
23241  0 20 23242         NOP     **1
23242  0 51 23235         BRR     CLINT           EXIT ROUTINE
                   *
```

```
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                    *       POTPIN - SUBROUTINE USED IN FUNCTION 2
                    *
23243  0 00 00000   POTPIN  PZE     0
23244  0 35 23332           STA     POTWRD
23245  0 46 30003           CLR
23246  0 40*10126           SKS*    10126           DISC FILE READY TEST
23247  0 01 23251           BRU     *+2             NOT READY
23250  0 01 23254           BRU     PTPN2
23251  0 55 15432           ADD     BIT23
23252  0 73 33331           SKG     *35714D         IS 500 MS UP YET
23253  0 01 23246           BRU     PTPN1           NO - LOOP
23254  0 06 10326           EOD     10326           CLEAR FILE
23255  0 40*10126           SKS*    10126           DISC FILE READY TEST
23256  0 01 23255           BRU     *-1             WAIT FOR CONTROLLER READY
23257  0 06 10126           EOD     10126           ALERT DISC FILE
23260  0 13 23332           POT     POTWRD          POT TO CONTROLLER
23261  0 06 10126           EOD     10126           ALERT DISC FILE
23262  0 33 23310           PIN     TEMP            PIN CONTROLLER ADDRESS REGISTER
23263  0 76 23310           LDA     TEMP
23264  0 51 23243           BRR     POTPIN          RETURN
                    *
                    *       ROUTINE TO WAIT 200 MILLISEC
                    *
23265  0 00 00000   W200    PZE     0
23266  0 35 23305           STA     A               SAVE A REG
23267  0 76 33272           LDA     =0
23270  0 55 15432           ADD     BIT23
23271  0 73 33475           SKG     *22858D         200 MILLISEC UP YET
23272  0 01 23270           BRU     *-2             NO
23273  0 76 23305           LDA     A               RESTORE A REG
23274  0 51 23265           BRR     W200            RETURN
                    *
                    *       ROUTINE TO WAIT 500 MILLISEC
                    *
23275  0 00 00000   W500    PZE     0
23276  0 35 23305           STA     A               SAVE A REG
```

```
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23277  0 76 33272           LDA     =0
23300  0 55 15432           ADD     BIT23
23301  0 73 33476           SKG     *57142D         500 MILLISEC UP YET
23302  0 01 23300           BRU     *-2             NO
23303  0 76 23305           LDA     A               RESTORE A REG
23304  0 51 23275           BRR     W500            RETURN
```

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



```
                        *
                        *       INTERRUPT PROCESSORS
                        *
                        *
                        *       PROCESS I2 INTERRUPT
                        *
23333  0 02 20004  PI2    DIR                     DISABLE INTERRUPTS
23334  0 43 15224        BRM     SAV             SAVE REGISTERS
23335  0 76 00450        LDA     DIVERT          GET INTERRUPT MARK ADDRESS
23336  0 14 33301        ETR     =37777          EXTRACT ADDRESS PORTION
23337  0 75 33273        LDB     =+1             MASK
23340  0 70 33424        SKM     =IX2            WAS INTERRUPT AN I2
23341  0 43 23357        BRM     SPUR            NO
23342  0 20 33477        NOP     =67
23343  0 76 33273        LDA     =+1             SET I2 FLAG
23344  0 35 15443        STA     I2FLAG
23345  0 43 15231        BRM     GET             GET REGISTERS
23346  0 53 23330        SKN     NFFLG           IS MACHINE A 940
23347  0 01+00316        BRU+    INTX2           NO = RETURN
23350  0 11 00316        BRI     INTX2           YES = RETURN
                        *
                        *       ALL INTERRUPTS AND TRAPS SPURIOUS
                        *
23351  0 02 20004  ENTER  DIR                     DISABLE INTERRUPTS
23352  0 43 15224        BRM     SAV             SAVE REGISTERS
23353  0 76 00450        LDA     DIVERT          GET INTERRUPT MARK ADDRESS
23354  0 14 33301        ETR     =37777          EXTRACT ADDRESS PORTION
23355  0 43 23357        BRM     SPUR            PROCESS SPURIOUS INTERRUPT/TRAP
23356  0 20 33272        NOP     =0
                        *
                        *       PROCESS SPURIOUS POP, INTERRUPT, OR TRAP
                        *
23357  0 00 00000  SPUR   PZE     0
23360  0 73 33306        SKG     =77             WAS SPIT LEGAL
23361  0 01 23372        BRU     IEXT            NO
23362  0 73 33307        SKG     =177            WAS IT A POP
```

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23363  0 01 23376          BRU     P0P             YES
23364  0 73 33500          SKG     *237            WAS IT LEGAL
23365  0 01 23372          BRU     IEXT            NO
23366  0 73 33501          SKG     *273            WAS IT I30 - T44
23367  0 01 23402          BRU     I30T44          YES
23370  0 73 33502          SKG     *337            WAS IT I56 - I74
23371  0 01 23401          BRU     I56I74          YES
                    *
                    *       PROCESS ILLEGAL OR EXTERNAL INTERRUPT
                    *
23372  0 76 33273  IEXT    LDA     *-1
23373  0 35 23442          STA     ITABLE+1        RECEIVED
23374  0 76 00450          LDA     DIVERT          MARK
23375  0 01 23410          BRU     COMMON
                    *
                    *       PROCESS SPURIOUS POPS
                    *
23376  0 35 23442  P0P     STA     ITABLE+1        RECEIVED
23377  0 76 00000          LDA     0               MARK
23400  0 01 23410          BRU     COMMON
                    *
                    *       PROCESS I56 THROUGH I74
                    *
23401  0 55 15426  I56I74  ADD     BIT19
                    *
                    *       PROCESS I30 THROUGH T44
                    *
23402  0 54 33375  I30T44  SUB     *161
23403  0 66 00001          RSH     1
23404  0 35 23442          STA     ITABLE+1        RECEIVED
23405  0 77*00450          EAX*    DIVERT
23406  2 77 37777          EAX     *1,2
23407  2 76 00000          LDA     0,2
                    *
                    *       COMMON INTERRUPT ROUTINE
                    *
```

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23410  0 35 23443  COMMON  STA     ITABLE+2        MARK
23411  0 76*23443          LDA*    ITABLE+2
23412  0 35 23444          STA     ITABLE+3        INSTRUCTION
23413  0 61 23357          MIN     SPUR
23414  0 77*23357          EAX*    SPUR
23415  2 76*00000          LDA*    0,2
23416  2 35 23441          STA     ITABLE          EXPECTED
23417  0 43 23427          BRM     CLEAR           CLEAR ALL PENDING INTERRUPTS
23420  0 43 15231          BRM     GET             RESTORE REGISTERS
23421  0 43 00454          BRM     REPORT          REPORT ERROR
23422  4 20 23446          NOP     IMSG2,4         MESSAGE
23423  0 04 23441          FOUR    ITABLE          DATA
23424  0 43 00460          BRM     ERROR           GO TO CONTROL
23425  0 20 23445          NOP     IMSG1           (NO MESSAGE)
23426  0 01*00430          BRU*    PROJECT         RETURN TO LAST OBJECT TRANSFER
                    *
                    *       CLEAR ALL PENDING INTERRUPTS
                    *
23427  0 00 00000  CLEAR   PZE     0
23430  0 43 00440          BRM     RETURN          SET INTERRUPT LINKAGE
23431  0 20 23433          NOP     *+2
23432  0 02 20002          EIR                     ENABLE INTERRUPTS
23433  0 53 23330          SKN     IFFLG           CLEAR INTERRUPT
23434  0 01*23436          BRU*    *+2             925/930
23435  0 11 23436          BRI     *+1             940/945
23436  0 20 23436          NOP     *               
23437  0 02 20004          DIR                     DISABLE INTERRUPTS
23440  0 51 23427          BRR     CLEAR           RETURN
                    *
                    *       MESSAGES
                    *
23441  0 00 00000  ITABLE  PZE     0               INTERRUPTS EXPECTED
23442  0 00 00000          PZE     0               INTERRUPT RECEIVED
23443  0 00 00000          PZE     0               LOCATION AT TIME OF INTERRUPT/TRAP
23444  0 00 00000          PZE     0               INSTRUCTION BEING EXECUTED
23445    37121212  IMSG1   BCD     111
```

```
23446    52526347  IMSG2  BCD      ' SPURIOUS POP, INTERRUPT, OR TRAP'
23447    64513146
23450    64621247
23451    44477312
23452    31456325
23453    51516447
23454    63731246
23455    51126351
23456    21471212
23457    52256747          BCD     ' EXPECTED RECEIVED LOCATION CONTENTS ''
23460    25236325
23461    24125125
23462    23253165
23463    25241243
23464    46232163
23465    31464512
23466    23464563
23467    25456362
23470    52371212
```



```
                  *
                  *       UNIT MESSAGES
                  *
23471    52522631  U19M1  BCD      ' FILE NOT ON LINE''
23472    43251245
23473    46631246
23474    45124731
23475    45253712
23476    52526451  U19M2  BCD      ' WRITE HEADER SWITCH ON''
23477    31632512
23500    30252124
23501    25511262
23502    66316323
23503    30134445
23504    37121212
23505    52525500  U19M3  BCD      ' 500 MILLISEC TIMEOUT ERROR NOT SET''
23506    00124431
23507    43433162
23510    25231263
23511    31442546
23512    64635225
23513    51514451
23514    12454463
23515    12622563
23516    37121212
23517    52525500  U19M4  BCD      ' 500 MILLISEC TIMEOUT ERROR SET''
23520    00124431
23521    43433162
23522    25231263
23523    31442546
23524    64635225
23525    51514451
23526    12622563
23527    37121212
23530    52522431  U19M5  BCD      ' DISC WRITE PROTECTED''
23531    62231266
```

```
23532    51316325
23533    12475146
23534    63252363
23535    25243712
23536    52522346  U19M6  BCD     ' CONTROLLER ERROR AFTER TRACK VERIFICATION''
23537    45635146
23540    43432551
23541    12255151
23542    46511221
23543    26632551
23544    12635121
23545    23421265
23546    25513126
23547    31232163
23550    31464537
23551    52522431  U19M7  BCD     ' DISC FILE NOT ON LINE UNIT ABORTED AFTER FUNCTION 1.''
23552    62231226
23553    31432512
23554    45446312
23555    46451243
23556    31452552
23557    64453163
23560    12212246
23561    51632524
23562    12212663
23563    25511226
23564    64452363
23565    31464512
23566    61333712
23567    52522330  U19M8  BCD     ' CHANNEL ERROR SET AFTER DATA TRANSMISSION OR SECT9''
23570    21454525
23571    43122551
23572    51465112
23573    62256312
23574    21266325
23575    51122421
```



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23576    63211263
23577    51214562
23600    44312262
23601    31464512
23602    46511262
23603    25236346
23604    51126325          BCD     'R SEARCH''
23605    21512330
23606    37121212
23607    52522330  U19M9  BCD     ' CHANNEL ACTIVE AFTER 500 MILLISEC''
23610    21454525
23611    43122123
23612    53316525
23613    12212463
23614    25511225
23615    10021244
23616    31434331
23617    62252337
23620    52522346  U19M10 BCD     ' CONTROLLER NOT READY AFTER 1 SECOND''
23621    45635146
23622    43432551
23623    12454463
23624    12512521
23625    24721221
23626    26631551
23627    12011262
23630    25234445
23631    24371212
23632    52522346  U19M11 BCD     ' CONTROLLER ERROR SET''
23633    45635146
23634    43432551
23635    12255151
23636    46511262
23637    25633712
23640    37121212  U19M12 BCD     '''
23641    52522330  U19M13 BCD     ' CHANNEL INTERLACE NOT AT ZERO WORD COUNT.''
```

```
23642    21454525
23643    43123145
23644    63255143
23645    21232512
23646    45466312
23647    21631271
23650    25514612
23651    66465124
23652    12234664
23653    45633337
23654    52371212  U19M14 BCD      ' ''
```



```
                   *
                   *       MESSAGES - FUNCTION 1
                   *
23655    12002301          BCD      '20C14(41),20C28(41),11C31(34),08C16(34)''
23656    34743401
23657    34730200
23660    23021074
23661    14013473
23662    01012303
23663    01740304
23664    34730110
23665    23014674
23666    03043437
23667    52310171  M1001A BCD      ' I1Z,I2Z=21B,15B,27D IZK=15B IZJ=20B IZC-ST=15B EIE=26D''
23670    73310271
23671    40020122
23672    73010522
23673    73020724
23674    12317142
23675    40010522
23676    12317141
23677    40020022
23700    12317123
23701    20626340
23702    01052712
23703    25312540
23704    02062437
23705    52715125  M1003A BCD      ' ZHEG=25B,22B,24C,18B SKRX=22E''
23706    27402205
23707    22730202
23710    22730204
23711    23730110
23712    22126242
23713    51674202
23714    02253712
23715    52624251  M1004A BCD      ' SKRZ=22E,28F C13=27E IZ=16B IZC-ST=15B IZMC=26C ZCD=28B ZC=9B,10B,11B,
```

```
23716    71400202
23717    25730210
23720    26122301
23721    03400207
23722    25123171
23723    40010422
23724    12317123
23725    20626340
23726    01052212
23727    31714423
23730    40020423
23731    12712324
23732    40021022
23733    12712340
23734    11227301
23735    00227301
23736    01227301
23737    02223712
23740    52230203  M1005A BCD     ' C23=32E ZA14=9B IZP=16B''
23741    40030225
23742    12712101
23743    04401122
23744    12317147
23745    40010422
23746    37121212
23747    52230202  M1006A BCD     ' C22=32E ZA13=9B IZP=16B''
23750    40030225
23751    12712101
23752    03401122
23753    12317147
23754    40010422
23755    37121212
23756    52230201  M1007A BCD     ' C21=32E ZA12=8B IZP=16B''
23757    40030225
23760    12712101
23761    02401122
```



```
23762    12317147
23763    40010422
23764    37121212
23765    52230200  M1008A BCD     ' C20=32E ZA11=8B IZP=16B''
23766    40030225
23767    12712101
23770    01401122
23771    12317147
23772    40010422
23773    37121212
23774    52230111  M1009A BCD     ' C19=32E ZA10=8B IZP=16B''
23775    40030225
23776    12712101
23777    00401122
24000    12317147
24001    40010422
24002    37121212
24003    52230110  M1010A BCD     ' C18=28E ZA09=7B IZP=16B''
24004    40021025
24005    12712100
24006    11400722
24007    12317147
24010    40010422
24011    37121212
24012    52230107  M1011A BCD     ' C17=28E ZA08=7B IZP=16B''
24013    40021025
24014    12712100
24015    10400722
24016    12317147
24017    40010422
24020    37121212
24021    52230106  M1012A BCD     ' C16=28E ZA07=7B IZP=16B''
24022    40021025
24023    12712100
24024    07400722
24025    12317147
```

```
24026    40010622
24027    37121212
24030    52230105  M1013A BCD      ' C15=31E ZA06=6B IZP=16B''
24031    40030125
24032    12712100
24033    06400622
24034    12317147
24035    40010622
24036    37121212
24037    52230104  M1014A BCD      ' C14=31E ZA05=6B IZP=16B''
24040    40030125
24041    12712100
24042    05400622
24043    12317147
24044    40010622
24045    37121212
24046    52230103  M1015A BCD      ' C13=27E ZA04=6B IZP=16B''
24047    40020725
24050    12712100
24051    04400622
24052    12317147
24053    40010622
24054    37121212
24055    52230102  M1016A BCD      ' C12=31I ZA03=5B ZR3=20C,18D''
24056    40030131
24057    12712100
24060    03400622
24061    12715103
24062    40020823
24063    73011024
24064    37121212
24065    52230101  M1017A BCD      ' C11=32E ZA02=5B ZR2=19C,18D''
24066    40030225
24067    12712100
24070    02400622
24071    12715102
```



```
24072    40011123
24073    73011024
24074    37121212
24075    52230100  M1018A BCD      ' C10=32E ZA01=5B ZR1=17C,18D''
24076    40030925
24077    12712100
24100    01400622
24101    12715101
24102    40010723
24103    73011024
24104    37121212
24105    52230110  M1019A BCD      ' C18=28E ZA0=4B ZR0=17C IZE=17B,24B''
24106    40021125
24107    12712100
24110    40042212
24111    71510040
24112    01072212
24113    31712540
24114    01072273
24115    02042237
24116    52230107  M1020A BCD      ' C17=28E ZA00=4B ZR00=18D IZE=17B,24B''
24117    40021525
24120    12712100
24121    00400422
24122    12715146
24123    46400110
24124    24123171
24125    25400107
24126    22730204
24127    22371212
24130    52230011  M1023A BCD      ' C09=32E ZC14=9B IZP=16B''
24131    40030225
24132    12712301
24133    04401122
24134    12317147
24135    40010622
```

```
24136    37121212
24137    52230010  M1024A BCD      ' C08=31E ZC13=10B IZP=16B''
24140    40030125
24141    12712301
24142    03400100
24143    22123171
24144    47400106
24145    22371212
24146    52230007  M1025A BCD      ' C07=31E ZC12=10B IZP=16B''
24147    40030125
24150    12712301
24151    02400100
24152    22123171
24153    47400106
24154    22371212
24155    52230006  M1026A BCD      ' C06=31E ZC11=10B IZP=16B''
24156    40030125
24157    12712301
24160    01400100
24161    22123171
24162    47400106
24163    22371212
24164    52230005  M1027A BCD      ' C05=31E ZC10=11B IZP=16B''
24165    40030125
24166    12712301
24167    00400101
24170    22123171
24171    47400106
24172    22371212
24173    52230004  M1028A BCD      ' C04=31E ZC09=11B IZP=16B''
24174    40030125
24175    12712300
24176    11400101
24177    22123171
24200    47400106
24201    22371212
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24202    52230003  M1029A BCD      ' C03=31E ZC08=11B IZP=16B''
24203    40030125
24204    12712300
24205    10400101
24206    22123171
24207    47400106
24210    22371212
24211    52230002  M1030A BCD      ' C02=31E ZC07=12B IZP=16B''
24212    40030125
24213    12712300
24214    07400102
24215    22123171
24216    47400106
24217    22371212
24220    52230001  M1031A BCD      ' C01=31E ZC06=12B IZP=16B''
24221    40030125
24222    12712300
24223    06400102
24224    22123171
24225    47400106
24226    22371212
24227    52230000  M1032A BCD      ' C00=31E ZC05=12B IZP=16B''
24230    40030125
24231    12712300
24232    05400102
24233    22123171
24234    47400106
24235    22371212
24236    52230203  M1033A BCD      ' C03=32E ZC4=13B IZE=17B,24B''
24237    40030225
24240    12712304
24241    40010322
24242    12317125
24243    40010722
24244    73020422
24245    37121212
```

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24246    52230202  M1034A BCD      ' C22=32E ZC3=13B IZE=17B,24B''
24247    40030225
24250    12712303
24251    40010322
24252    12317125
24253    40010722
24254    73020422
24255    37121212
24256    52230201  M1035A BCD      ' C21=32E ZC2=13B IZE=17B,24B''
24257    40030225
24260    12712302
24261    40010322
24262    12317125
24263    40010722
24264    73020422
24265    37121212
24266    52230200  M1036A BCD      ' C20=32E ZC1=14B IZE=17B,24B''
24267    40030225
24270    12712301
24271    40010422
24272    12317125
24273    40010722
24274    73020422
24275    37121212
24276    52230111  M1037A BCD      ' C19=32E ZC0=14B IZE=17B,24B''
24277    40030225
24300    12712300
24301    40010422
24302    12317125
24303    40010722
24304    73020422
24305    37121212
24306    52712551  M1038A BCD      ' ZERO ERROR ZMP=19E,20E IZM=28D,27D''
24307    46122551
24310    51465112
24311    71444740
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DISCF  TAP=3,0     04/25  20100   PAGE 326

24312    01112573
24313    02002512
24314    31714440
24315    02102473
24316    02072437
24317    52714447  M1039A BCD      ' ZMP3=20E ZMR=27D''
24320    03400200
24321    25127144
24322    51400207
24323    24371212
24324    52714447  M1040A BCD      ' ZMP2=20E ZMR=27D''
24325    02400200
24326    25127144
24327    51400207
24330    24371212
24331    52714447  M1041A BCD      ' ZMP1=20E ZMR=27D''
24332    01400200
24333    25127144
24334    51400207
24335    24371212
24336    52714447  M1042A BCD      ' ZMP0=19E ZMR=27D''
24337    00400111
24340    25127144
24341    51400207
24342    24371212
24343    52714447  M1043A BCD      ' ZMP00=19E ZMR=27D''
24344    00004001
24345    11251271
24346    44514002
24347    07243712
24350    52122221  M2013B BCD      '  BAD WRD    S/B    OBJ TEST OVRFLO   ERRORS ''
24351    24126651
24352    24121212
24353    12626122
24354    12121212
24355    46224112
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24356    63256263
24357    12466551
24360    26434612
24361    12122551
24362    51465162
24363    52371312
```



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                  *
                  *      MESSAGES - FUNCTION 2
                  *
24364    52522431 F2M1   BCD     ' FILE 8K LINE TEST FAILS'
24365    43251246
24366    45124331
24367    45251263
24370    25626312
24371    26213143
24372    62121212
24373    52116231         BCD     ' 9S19A=29LSA,8C16A=2CAAA,4SKSC'
24374    46211302
24375    46436221
24376    33102301
24377    16213302
24400    03212121
24401    33046242
24402    62231212
24403    52121202         BCD     '  2CAAA=8C17V,8C19A,9C20A,8C21A,8C22A,9C23A'
24404    43210121
24405    13102301
24406    07653310
24407    23011121
24410    33112302
24411    00213310
24412    23020121
24413    33102302
24414    02213311
24415    23020221
24416    52121202         BCD     '  29LSA=29LCA,5C12A,3C13A,3C14A'
24417    46436221
24420    13024643
24421    00213305
24422    23010221
24423    33032301
24424    03213303
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24425    23010421
24426    52056101          BCD     ' 5/13(35),2/17,2/21,2/25,3/18,5/07,5/09,5/12,6/01,'
24427    03740305
24430    34730261
24431    01077302
24432    61020173
24433    02610205
24434    73036101
24435    10730561
24436    00077305
24437    61001173
24440    05610102
24441    73066100
24442    01731212
24443    52066100          BCD     ' 6/05,6/06,6/07,6/11,6/22''
24444    05730661
24445    00067306
24446    61000773
24447    06610101
24450    73066102
24451    02371212
24452    52526242  F2M2    BCD     '  SKS 10227 SKIPS'
24453    62120100
24454    02020712
24455    62423147
24456    62121212
24457    52022321          BCD     ' 2CAAA'
24460    21211212
24461    52036101          BCD     ' 3/18(45),2/25,5/07,5/12,5/13,6/05,6/22''
24462    10740405
24463    34730261
24464    02057305
24465    61000773
24466    05610102
24467    73056101
24470    03730661
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24471    00057306
24472    61020237
24473    52526242  F2M3    BCD     '  SKS 10224 SKIPS'
24474    62120100
24475    02020412
24476    62423147
24477    62121212
24500    52022321          BCD     ' 2CAAA'
24501    21211212
24502    52026102          BCD     ' 2/25,6/05''
24503    05730661
24504    00053712
24505    52526242  F2M4    BCD     '  SKS 10222 SKIPS'
24506    62120100
24507    02020212
24510    62423147
24511    62121212
24512    52022321          BCD     ' 2CAAA'
24513    21211212
24514    52026102          BCD     ' 2/25,6/05''
24515    05730661
24516    00053712
24517    52526242  F2M6    BCD     '  SKS 10206 SKIPS'
24520    62120100
24521    02000612
24522    62423147
24523    62121212
24524    52022321          BCD     ' 2CAAA'
24525    21211212
24526    52026101          BCD     ' 2/17,6/05''
24527    07730661
24530    00053712
24531    52526242  F2M7    BCD     '  SKS 10326 SKIPS'
24532    62120100
24533    03020612
24534    62423147
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24535    62121212
24536    52022321          BCD     ' 2CAAA'
24537    21211212
24540    52026101          BCD     ' 2/17,6/11''
24541    07730661
24542    01013712
24543    52526242  F2M8    BCD     '  SKS 17026 SKIPS'
24544    62120107
24545    00020612
24546    62423147
24547    62121212
24550    52066231          BCD     ' 6SI8A0*8SI8F'
24551    46210213
24552    10623146
24553    26121212
24554    52056100          BCD     ' 5/09(35),5/10,5/13,6/03''
24555    11740305
24556    34730561
24557    01007305
24560    61010373
24561    06610003
24562    37121212
24563    52526242  F2M9    BCD     '  SKS 11226 SKIPS'
24564    62120101
24565    02020612
24566    62423147
24567    62121212
24570    52066231          BCD     ' 6SI8A0*20LSA*8C16A'
24571    46210213
24572    02464362
24573    21331023
24574    01062112
24575    52056101          BCD     ' 5/12(35),2/21,5/07,5/08,5/09,5/10,6/01,6/06,6/22''
24576    02740305
24577    34730261
24600    02017305
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24601    61000773
24602    05610010
24603    73056100
24604    11730561
24605    01007306
24606    61000173
24607    06610006
24610    73066102
24611    02371212
24612    52526242  F2M10   BCD     '  SKS 12226 SKIPS'
24613    62120102
24614    02020612
24615    62423147
24616    62121212
24617    52064643          BCD     ' 68LSA0'
24620    62210212
24621    52056100          BCD     ' 5/07,5/08,5/09,5/10,6/22''
24622    07730561
24623    01007305
24624    61001173
24625    05610100
24626    73066102
24627    02371212
24630    52526242  F2M11   BCD     '  SKS 13226 SKIPS'
24631    62120103
24632    02020612
24633    62423147
24634    62121212
24635    52064643          BCD     ' 68LSA0'
24636    62210212
24637    52056100          BCD     ' 5/08,5/09,5/10,6/22''
24640    10730561
24641    01007305
24642    61010373
24643    06610202
24644    37121212
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24645    52526242  F2M12  BCD     ' SKS 14226 SKIPS'
24646    62120104
24647    02020612
24650    62423147
24651    62121212
24652    52064643          BCD     ' 69LSAQ'
24653    62210012
24654    52056100          BCD     ' 5/03,5/07,5/08,5/10,6/06,6/07,6/22''
24655    03730561
24656    00077305
24657    61001073
24660    05610100
24661    73066100
24662    06730661
24663    00077706
24664    61020237
24665    52526242  F2M13  BCD     ' SKS 15226 SKIPS'
24666    62120105
24667    02020612
24670    62423147
24671    62121212
24672    52064643          BCD     ' 69LSAQ'
24673    62210012
24674    52056100          BCD     ' 5/08,6/22''
24675    10730661
24676    02023712
24677    52526242  F2M14  BCD     ' SKS 16226 SKIPS'
24700    62120106
24701    02020612
24702    62423147
24703    62121212
24704    52064643          BCD     ' 69LSAQ'
24705    62210012
24706    52056100          BCD     ' 5/08,6/22''
24707    10730661
24710    02023712
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24711    52526242  F2M15  BCD     ' SKS 17226 SKIPS'
24712    62120107
24713    02020612
24714    62423147
24715    62121212
24716    52064643          BCD     ' 69LSAQ'
24717    62210012
24720    52056101          BCD     ' 5/10,6/22''
24721    00730661
24722    02023712
24723    52526651  F2M16  BCD     ' WRITE HEADER SWITCH TEST FAILS'
24724    31632512
24725    30252124
24726    25511262
24727    66316323
24730    30126325
24731    62631226
24732    21314362
24733    52066231          BCD     ' 6S18AQ**SKSC*2CAAA*2C12A*3C13A,3C14A*3C16A*3WHRA'
24734    46210013
24735    04624262
24736    23330223
24737    21212133
24740    02230102
24741    21330323
24742    01032133
24743    03230104
24744    21330323
24745    01062133
24746    03663051
24747    21121212
24750    52056101          BCD     ' 5/10(35),5/03,5/07,6/01,6/06''
24751    00740305
24752    34730561
24753    00037305
24754    61000773
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24755     06610001
24756     73066100
24757     06371212
24760     52526242  F2M17  BCD      '  SKS 15026 SKIPS'
24761     62120105
24762     00020612
24763     62423147
24764     62121212
24765     52066231         BCD      ' 6SIBAO'
24766     46210012
24767     52056101         BCD      ' 5/10''
24770     00371212
24771     52526242  F2M18  BCD      '  SKS 16026 SKIPS'
24772     62120106
24773     00020612
24774     62423147
24775     62121212
24776     52066231         BCD      ' 6SIBAO'
24777     46210012
25000     52056101         BCD      ' 5/10,6/01,6/06''
25001     00730661
25002     00017306
25003     61000637
25004     52522346  F2M19  BCD      '  CBNTRBLLER READY TEST FAILS'
25005     45635146
25006     43432551
25007     12512521
25010     24701263
25011     25626312
25012     26213143
25013     62121212
25014     52066231         BCD      ' 6SIBAO=200FA.1E04A.2IGDA.5C12A.3C13A.3C14A.3C16A'
25015     46210013
25016     02000026
25017     21330125
25020     00042133
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25021     02310724
25022     21330523
25023     01022133
25024     03230103
25025     21330323
25026     01042133
25027     03230106
25030     21121212
25031     52026101         BCD      ' 2/14(35),1/15,1/20,1/22,2/15,2/24,2/25,3/15,3/19,'
25032     04740305
25033     34730161
25034     01057301
25035     61021073
25036     01610202
25037     73026101
25040     05730261
25041     02047302
25042     61020573
25043     03610105
25044     73036101
25045     11731212
25046     52046102         BCD      ' 4/23,5/09,5/10,5/12,6/13,6/14,6/23''
25047     03730561
25050     00117305
25051     61010073
25052     05610102
25053     73066101
25054     03730661
25055     01047306
25056     61020337
25057     52526351  F2M20  BCD      '  TRACK VERIFIED TEST ERRBNIBUSLY SKIPS'
25060     21234212
25061     65255131
25062     26312524
25063     12632562
25064     63122551
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25065    51464531
25066    46646243
25067    70126242
25070    31476212
25071    52066231          BCD     ' 6S18A0=201FA=5C12A=2C13A=3C14A,3C16A'
25072    46210013
25073    02000126
25074    21330523
25075    01022133
25076    02230103
25077    21330323
25100    01042133
25101    03230106
25102    21121212
25103    52056100          BCD     ' 5/09(35)=1/15,3/15,5/10,6/01''
25104    11740305
25105    34730161
25106    01057303
25107    61010573
25110    05610100
25111    73066100
25112    01371212
25113    52522346  F2M21   BCD     '  CONTROLLER ERROR TEST FAILS'
25114    45635146
25115    43432551
25116    12255151
25117    46511263
25120    25626312
25121    26213143
25122    62121212
25123    52066231          BCD     ' 6S18A0=312EA=1E04=5C12A,3C13A=2C14A=3C16A'
25124    46210013
25125    03010225
25126    21330125
25127    00043305
25130    23010221
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25131    33032301
25132    03213302
25133    23010421
25134    33032301
25135    06211212
25136    52056101          BCD     ' 5/10(35)=1/20,2/11,6/22''
25137    00740305
25140    34730161
25141    02007302
25142    61010173
25143    06610202
25144    37121212
25145    52526451  F2M22   BCD     '  WRITE PROTECT SWITCH TEST FAILS'
25146    31632512
25147    47514663
25150    25236312
25151    62663163
25152    23301263
25153    25626312
25154    26213143
25155    62121212
25156    52066231          BCD     ' 6S18A0=9WLKA=5C12A=2C13A=2C14A,3C16A'
25157    46210013
25160    11664342
25161    21330523
25162    01022133
25163    02230103
25164    21330323
25165    01042133
25166    03230106
25167    21121212
25170    52056100          BCD     ' 5/09(35),5/10''
25171    11740305
25172    34730561
25173    01003712
25174    52527021  F2M32   BCD     '  YA23A=2LARA=3C23A'
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25175    02032113
25176    02432151
25177    21331023
25200    02032112
25201    52024321          BCD     ' 2LARA=2U01A,200FA,0X04A,8PT2A'
25202    51211302
25203    64000121
25204    33020000
25205    26213300
25206    67000421
25207    33104763
25210    02211212
25211    52046100          BCD     ' 4/07(15),2/07,2/11,3/07,3/13,3/18,3/19,4/01,4/02,'
25212    07740105
25213    34730261
25214    00077302
25215    61010173
25216    03610007
25217    73036101
25220    03730361
25221    01107303
25222    61011173
25223    04610001
25224    73046100
25225    02731212
25226    52046100          BCD     ' 4/03,4/23,5/02,5/03,5/04,5/06,5/07,6/05,6/08'
25227    03730461
25230    02037305
25231    61000273
25232    05610003
25233    73056100
25234    03730561
25235    00067305
25236    61000773
25237    06610005
25240    73066100
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25241    20121212
25242    52112102          BCD     ' 9A23A=0X04A,0A23A'
25243    03211300
25244    67000421
25245    33032102
25246    03211212
25247    52006700          BCD     ' 0X04A=8PI.A,0X01A,1F01A'
25250    04211210
25251    47314521
25252    53006700
25253    01213301
25254    26000121
25255    52056101          BCD     ' 5/18(34),4/01,4/02,5/03,5/07,6/07,6/08''
25256    10740304
25257    34730461
25260    00017304
25261    61000273
25262    05610003
25263    73056100
25264    03730461
25265    00077306
25266    61001037
25267    52525121  F2-33   BCD     '  RA23A=3RGRA'
25270    02032113
25271    03512751
25272    21121212
25273    52065127          BCD     ' 6RGRA0=200FA,2U01A,1X04A'
25274    51210313
25275    02000026
25276    21330264
25277    00012433
25300    01670004
25301    21121212
25302    52046100          BCD     ' 4/07(15),3/18,5/02,5/06,6/05,5/18''
25303    07740105
25304    34730361
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25305    01107305
25306    61000273
25307    05610006
25310    73066100
25311    05730561
25312    01103712
25313    52527021  F2M34  BCD     '  YA22A'
25314    02022112
25315    52046100         BCD     ' 4/08(15),5/02,4/04,5/18''
25316    10740105
25317    34730561
25320    00027304
25321    61000473
25322    05610110
25323    37121212
25324    52525121  F2M35  BCD     '  RA22A.3RARA'
25325    02022113
25326    03512151
25327    21121212
25330    52065121         BCD     ' 6RARA0.200FA.2U01A.1X04A'
25331    51210313
25332    02000026
25333    21330264
25334    00012133
25335    01670004
25336    21121212
25337    52046100         BCD     ' 4/08(15),5/02,5/03,5/04,5/18''
25340    10740105
25341    34730561
25342    00027305
25343    61000373
25344    05610004
25345    73056101
25346    10371212
25347    52527021  F2M36  BCD     '  YA21A'
25350    02012112
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DISCF  TAP.3.C     04/25  20100   PAGE 342

25351    52046100         BCD     ' 4/08(15),5/18,5/02,4/04''
25352    10740105
25353    34730561
25354    01107305
25355    61000273
25356    04610004
25357    37121212
25360    52525121  F2M37  BCD     '  RA21A'
25361    02012112
25362    52046100         BCD     ' 4/08(15),5/02,5/18,6/05''
25363    10740105
25364    34730561
25365    00027305
25366    61011173
25367    06610005
25370    37121212
25371    52527021  F2M38  BCD     '  YA20A'
25372    02002112
25373    52046100         BCD     ' 4/08(15),5/02,5/18,6/05''
25374    10740105
25375    34730561
25376    00027305
25377    61011173
25400    06610005
25401    37121212
25402    52525121  F2M39  BCD     '  RA20A'
25403    02002112
25404    52046100         BCD     ' 4/08(15),5/02,5/18''
25405    10740105
25406    34730561
25407    00027305
25410    61011137
25411    52527021  F2M40  BCD     '  YA19A'
25412    01112112
25413    52046100         BCD     ' 4/08(15),5/02,5/18''
25414    10740105
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25415    34730561
25416    00027305
25417    61011037
25420    52525121  F2M41  BCD      '  RA19A'
25421    01112112
25422    52046100         BCD      ' 4/08(15),5/02,5/18''
25423    11740104
25424    34730561
25425    00027305
25426    61011037
25427    52527221  F2M42  BCD      '  YA18A'
25430    01102112
25431    52047100         BCD      ' 4/09(14),5/02,5/18,6/06''
25432    11740104
25433    34730561
25434    00027305
25435    61011073
25436    06610006
25437    37121212
25440    52525121  F2M43  BCD      '  RA18A'
25441    01102112
25442    52046100         BCD      ' 4/09(14),5/02,5/18,6/06''
25443    11740104
25444    34730561
25445    00027305
25446    61011073
25447    06610006
25450    37121212
25451    52527221  F2M44  BCD      '  YA17A'
25452    01072112
25453    52046100         BCD      ' 4/09(14),5/02,5/18,6/06''
25454    11740104
25455    34730561
25456    00027305
25457    61011073
25460    06610006
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25461    37121212
25462    52525121  F2M45  BCD      '  RA17A'
25463    01072112
25464    52046100         BCD      ' 4/09(14),5/02,5/18,6/06''
25465    11740104
25466    34730561
25467    00027305
25470    61011073
25471    06610006
25472    37121212
25473    52527221  F2M46  BCD      '  YA16A'
25474    01062112
25475    52046100         BCD      ' 4/09(14),5/02,5/17''
25476    11740104
25477    34730561
25500    00027305
25501    61011737
25502    52525121  F2M47  BCD      '  RA16A'
25503    01062112
25504    52046100         BCD      ' 4/09(14),5/02,5/17''
25505    11740104
25506    34730561
25507    00027305
25510    61011737
25511    52527221  F2M48  BCD      '  YA15A'
25512    01052112
25513    52046100         BCD      ' 4/08(14),5/02,5/17,6/06''
25514    11740104
25515    34730561
25516    00027305
25517    61011073
25520    06610006
25521    37121212
25522    52525121  F2M49  BCD      '  RA15A'
25523    01052112
25524    52046100         BCD      ' 4/09(14),5/02,5/17,6/06''
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DISCF  TAP=3,0      04/25  2010O   PAGE 345

25525     11740104
25526     34730561
25527     00027305
25530     61010773
25531     06610006
25532     37121212
25533     52527321  F2M50  BCD      '  YA14A'
25534     01042112
25535     52046101         BCD      ' 4/10(14),5/02,5/17''
25536     00740104
25537     34730561
25540     00027305
25541     61010737
25542     52525121  F2M51  BCD      '  RA14A'
25543     01042112
25544     52046101         BCD      ' 4/10(14),5/02,5/17''
25545     00740104
25546     34730561
25547     00027305
25550     61010737
25551     52527321  F2M52  BCD      '  YA13A'
25552     01032112
25553     52046101         BCD      ' 4/10(14),6/01,5/17,5/01,3/20''
25554     00740104
25555     34730661
25556     00017305
25557     6101 773
25560     0561 001
25561     73036102
25562     00371212
25563     52525121  F2M53  BCD      '  RA13A'
25564     01032112
25565     52046101         BCD      ' 4/10(14),6/01,5/17,5/01,3/20''
25566     00740104
25567     34730661
25570     00017305
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DISCF  TAP=3,0      04/25  2010O   PAGE 346

25571     61010773
25572     05610001
25573     73036102
25574     00371212
25575     52527321  F2M54  BCD      '  YA12A'
25576     01032112
25577     52046101         BCD      ' 4/10(14),6/01,5/17,5/01,3/20''
25600     00740104
25601     34730661
25602     00017305
25603     61010773
25604     05610001
25605     73036102
25606     00371212
25607     52525121  F2M55  BCD      '  RA12A'
25610     01032112
25611     52046101         BCD      ' 4/10(14),6/01,5/17,5/01,3/20''
25612     00740104
25613     34730661
25614     00017305
25615     61010773
25616     05610001
25617     73036102
25620     00371212
25621     52527321  F2M56  BCD      '  YA11A'
25622     01012112
25623     52046101         BCD      ' 4/10(14),5/01,4/21,5/17,6/07''
25624     00740104
25625     34730561
25626     00017304
25627     61032173
25630     05610107
25631     73066102
25632     07371212
25633     52525121  F2M57  BCD      '  RA11A'
25634     01012112
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25635    52046101          BCD      ' 4/10(14),5/01,4/21,5/17,6/07''
25636    00740104
25637    34730561
25640    00017304
25641    61020173
25642    05610107
25643    73066100
25644    07371212
25645    52527021  F2M58   BCD      '  YA10A'
25646    01002112
25647    52046101          BCD      ' 4/11(14),6/07,5/17,5/01,4/21''
25650    01740104
25651    34730661
25652    00077305
25653    61010773
25654    05610001
25655    73046102
25656    01371212
25657    52525121  F2M59   BCD      '  RA10A'
25660    01002112
25661    52046101          BCD      ' 4/11(14),6/07,5/17,5/01,4/21''
25662    01740104
25663    34730661
25664    00077305
25665    61010773
25666    05610001
25667    73046102
25670    01371212
25671    52527021  F2M60   BCD      '  YA09A'
25672    00112112
25673    52046101          BCD      ' 4/11(14),6/07,5/16,5/01''
25674    01740104
25675    34730661
25676    00077305
25677    61010473
25700    05610001
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25701    37121212
25702    52525121  F2M61   BCD      '  RA09A'
25703    00112112
25704    52046101          BCD      ' 4/11(14),6/07,5/16,5/01''
25705    01740104
25706    34730661
25707    00077305
25710    61010473
25711    05610001
25712    37121212
25713    52527021  F2M62   BCD      '  YA08A'
25714    00102112
25715    52046101          BCD      ' 4/11(14),6/07,5/16,5/01''
25716    01740104
25717    34730661
25720    00077305
25721    61010473
25722    05610001
25723    37121212
25724    52525121  F2M63   BCD      '  RA08A'
25725    00102112
25726    52046101          BCD      ' 4/11(14),6/07,5/16,5/01''
25727    01740104
25730    34730661
25731    00077305
25732    61010473
25733    05610001
25734    37121212
25735    52527021  F2M64   BCD      '  YA07A'
25736    00072112
25737    52046101          BCD      ' 4/11(14),6/07,5/16,5/01''
25740    01740104
25741    34730661
25742    00077305
25743    61010473
25744    05610001
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25745    37121212
25746    52525121  F2M65  BCD      ' RA07A'
25747    00072112
25750    52046101         BCD      ' 4/11(14),4/07,5/16,5/01''
25751    01740104
25752    34730661
25753    00077305
25754    61010473
25755    05610001
25756    37121212
25757    52527021  F2M66  BCD      ' YA06A'
25760    00062112
25761    52046101         BCD      ' 4/12(14),5/01,5/16,6/08''
25762    02740104
25763    34730561
25764    00017305
25765    61010673
25766    06610010
25767    37121212
25770    52525121  F2M67  BCD      ' RA06A'
25771    00062112
25772    52046101         BCD      ' 4/12(14),5/01,5/16,6/08''
25773    02740104
25774    34730561
25775    00017305
25776    61010673
25777    06610010
26000    37121212
26001    52520021  F2M68  BCD      ' OA05A TESTS SET'
26002    00052112
26003    63256263
26004    62126225
26005    63121212
26006    52056101         BCD      ' 5/16(37),4/12=18 NOT GROUNDED (14)''
26007    06740307
26010    34730461
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26011    01024001
26012    10124546
26013    63122751
26014    46644524
26015    25241274
26016    01043437
26017    52520021  F2M69  BCD      ' OA04A TESTS SET'
26020    00042112
26021    63256263
26022    62126225
26023    63121212
26024    52056101         BCD      ' 5/16(37),4/12=33 NOT GROUNDED (14)''
26025    06740307
26026    34730461
26027    01024003
26030    10124546
26031    63122751
26032    46644524
26033    25241274
26034    01043437
26035    52520021  F2M70  BCD      ' OA03A TESTS SET'
26036    00032112
26037    63256263
26040    62126225
26041    63121212
26042    52056101         BCD      ' 5/16(37),4/12=36 NOT GROUNDED (14)''
26043    06740307
26044    34730461
26045    01024003
26046    10124546
26047    63122751
26050    46644524
26051    25241274
26052    01043437
26053    52522346  F2M71  BCD      ' CONTROLLER ADDRESS REGISTER AFFECTED BY POT T0'
26054    45635146
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26055    43432551
26056    12212424
26057    51256262
26060    12512527
26061    31626325
26062    51122126
26063    26252363
26064    25241222
26065    70124746
26066    63126346
26067    12233021          BCD     ' CHANNEL'
26070    45452543
26071    52056100          BCD     ' 5/04(15),5/01,5/02''
26072    04740105
26073    34730561
26074    00017305
26075    61000237
26076    52522346  F2M72   BCD     '  CONTROLLER INTERFERING WITH CHANNEL PIN'
26077    45635146
26100    43432551
26101    12314563
26102    25512625
26103    51314527
26104    12663163
26105    30122330
26106    21454525
26107    43124731
26110    45121212
26111    52056101          BCD     ' 5/16,5/17,5/18''
26112    06730561
26113    01077305
26114    61011037
26115    52522124  F2M73   BCD     '  ADDRESS 00*000*00 NOT VERIFIED IN 120 MILLISEC'
26116    24512562
26117    62120000
26120    40000000
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26121    40000012
26122    45466312
26123    65255131
26124    26312524
26125    12314512
26126    01020012
26127    44314343
26130    31622523
26131    52624321          BCD     ' STATE SEQUENCING SHOULD BE STATES 0*4*1''
26132    63251262
26133    25506425
26134    45233145
26135    27126330
26136    46644324
26137    12222512
26140    62632163
26141    25621200
26142    40044001
26143    37121212
26144    52522124  F2M73A  BCD     '  ADDRESS 00*000*00 VERIFIED WITHIN 70 MILLISEC'
26145    24512562
26146    62120000
26147    40000000
26150    40000012
26151    65255131
26152    26312524
26153    12663163
26154    30314512
26155    07001344
26156    31434331
26157    62252312
26160    52633144          BCD     ' TIME SHOULD BE 116 MILLISEC'
26161    25126230
26162    46644324
26163    12222512
26164    01010412
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26165    44314343
26166    31622523
26167    52626321          BCD     ' STATE SEQUENCING SHOULD BE STATES 0=4=1!'
26170    63251262
26171    25506425
26172    45233145
26173    27126230
26174    46644324
26175    12222512
26176    62632163
26177    25621200
26200    40044001
26201    37121212
26202    52522124  F2M74   BCD     '  ADDRESS 00=000=00 NOT VERIFIED IN 500 MILLISEC'
26203    24512562
26204    62120000
26205    40000000
26206    40000012
26207    45466312
26210    65255131
26211    26312524
26212    12314512
26213    05000012
26214    44314343
26215    31622523
26216    52626321          BCD     ' STATE SEQUENCING SHOULD BE STATES 0=4=2=1!'
26217    63251262
26220    25506425
26221    45233145
26222    27126230
26223    46644324
26224    12222512
26225    62632163
26226    25621200
26227    40044002
26230    40013712
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26231    52522124  F2M74A  BCD     '  ADDRESS 00=000=00 VERIFIED WITHIN 120 MILLISEC'
26232    24512562
26233    62120000
26234    40000000
26235    40000012
26236    65255131
26237    26312524
26240    12663163
26241    30314512
26242    01020012
26243    44314343
26244    31622523
26245    52633144          BCD     ' TIME SHOULD BE GREATER THAN 140 MILLISEC'
26246    25126230
26247    46644324
26250    12222512
26251    27512521
26252    63255112
26253    63302145
26254    12010400
26255    12443143
26256    43316225
26257    23121212
26260    52626321          BCD     ' STATE SEQUENCING SHOULD BE STATES 0=4=2=1!'
26261    63251262
26262    25506425
26263    45233145
26264    27126230
26265    46644324
26266    12222512
26267    62632163
26270    25621200
26271    40044002
26272    40013712
26273    52522124  F2M75   BCD     '  ADDRESS 37=377=37 NOT VERIFIED IN 500 MILLISEC'
26274    24512562
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26275    02120307
26276    40030707
26277    40030712
26300    45466312
26301    65255131
26302    26312524
26303    12314512
26304    05000012
26305    44314343
26306    31622523
26307    52506423          BCD     ' QUCAO, VUCAO, XUCAO, ZUCAO, OR BAD HEADER'
26310    21007312
26311    65642321
26312    00731267
26313    64232100
26314    73127164
26315    23210073
26316    12465112
26317    22212412
26320    30252124
26321    25511212
26322    52026100          BCD     ' 2/01,2/05,3/01,3/02,3/03,3/04,3/05,3/08,3/09,3/10,'
26323    01730261
26324    00057303
26325    61000173
26326    03610002
26327    73036100
26330    03730361
26331    00047303
26332    61006473
26333    03610010
26334    73036100
26335    11730361
26336    01007312
26337    52036101          BCD     ' 3/17,3/18''
26340    07730361
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26341    01107312
26342    52522124  F2M76   BCD     '  ADDRESS 20=000=00 NOT VERIFIED IN 500 MILLISEC'
26343    24512562
26344    62121200
26345    40000000
26346    40000012
26347    45466312
26350    65255131
26351    26312524
26352    12314512
26353    05000012
26354    44314343
26355    31622523
26356    52232124          BCD     ' BAD HEADER'
26357    12302521
26360    24255112
26361    52016100          BCD     ' 1/05,1/06,3/04,3/05,3/08,3/09,3/11,3/12(26=28)''
26362    05730161
26363    00047303
26364    61006473
26365    03610005
26366    73036100
26367    10730361
26370    00117303
26371    61016173
26372    03610102
26373    74026440
26374    02102437
26375    52522124  F2M77   BCD     '  ADDRESS 10=000=00 NOT VERIFIED IN 500 MILLISEC'
26376    24512562
26377    62121100
26400    40000000
26401    40000012
26402    45466312
26403    65255131
26404    26312524
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26405    12314512
26406    05000012
26407    44314343
26410    31622523
26411    52222124          BCD     ' BAD HEADER'
26412    12302521
26413    24255112
26414    52036100          BCD     ' 3/04,3/05,3/09(27-28)''
26415    04730361
26416    00057303
26417    61001174
26420    02074002
26421    10343712
26422    52522124  F2M78   BCD     '  ADDRESS 04-000-00 NOT VERIFIED IN 500 MILLISEC'
26423    24512562
26424    62120004
26425    40000000
26426    40000012
26427    45466312
26430    65255131
26431    26312524
26432    12314512
26433    05000012
26434    44314343
26435    31622523
26436    52222124          BCD     ' BAD HEADER'
26437    12302521
26440    24255112
26441    52026100          BCD     ' 2/05,3/02,3/04,3/11,3/12(26-28)''
26442    04730361
26443    00057303
26444    61000473
26445    03610101
26446    73036101
26447    02740206
26450    40021034
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26451    37131212
26452    52522124  F2M79   BCD     '  ADDRESS 02-000-00 NOT VERIFIED IN 500 MILLISEC'
26453    24512562
26454    62120002
26455    40000000
26456    40000012
26457    45466312
26460    65255131
26461    26312524
26462    12314512
26463    05000012
26464    44314343
26465    31622523
26466    52222124          BCD     ' BAD HEADER'
26467    12302521
26470    24255112
26471    52026100          BCD     ' 2/05,3/02,3/04,3/11(26-28)''
26472    04730361
26473    00057303
26474    61000473
26475    03410101
26476    74020640
26477    02103437
26500    52522124  F2M80   BCD     '  ADDRESS 01-000-00 NOT VERIFIED IN 500 MILLISEC'
26501    24512562
26502    62120001
26503    40000000
26504    40000012
26505    45466312
26506    65255131
26507    26312524
26510    12314512
26511    05000012
26512    44314343
26513    31622523
26514    52222124          BCD     ' BAD HEADER'
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26515    12302521
26516    24255112
26517    52016100          BCD     ' 1/01,1/03,1/04,1/06,2/05,3/02,3/04,3/08,3/11,3/12'
26520    01730161
26521    00037301
26522    61000473
26523    01610006
26524    73026100
26525    05730361
26526    00027303
26527    61000473
26530    03610010
26531    73036101
26532    01730361
26533    01021212
26534    52740206          BCD     ' (26-28)''
26535    40021034
26536    37121212
26537    52522124  F2M81   BCD     '  ADDRESS 00-200-00 NOT VERIFIED IN 500 MILLISEC'
26540    24512562
26541    62120000
26542    40020000
26543    40000012
26544    45466312
26545    65255131
26546    26312524
26547    12314512
26550    05000012
26551    44314343
26552    31620523
26553    52222124          BCD     ' BAD HEADER'
26554    12302521
26555    24255112
26556    52016100          BCD     ' 1/04,3/05,3/08''
26557    01730361
26560    00037303
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26561    12021237
26562    52522124  F2M82   BCD     '  ADDRESS 00-100-00 NOT VERIFIED IN 500 MILLISEC'
26563    24512562
26564    62120000
26565    40010000
26566    40000012
26567    45466312
26570    65255131
26571    26312524
26572    12314512
26573    05000012
26574    44314343
26575    31620523
26576    52222124          BCD     ' BAD HEADER'
26577    12302521
26600    24255112
26601    52036100          BCD     ' 3/08,3/09(27)''
26602    10730361
26603    00117403
26604    07343712
26605    52522124  F2M83   BCD     '  ADDRESS 00-040-00 NOT VERIFIED IN 500 MILLISEC'
26606    24512562
26607    62120000
26610    40020000
26611    40000012
26612    45466312
26613    65255131
26614    26312524
26615    12314512
26616    05000012
26617    44314343
26620    31620523
26621    52222124          BCD     ' BAD HEADER'
26622    12302521
26623    24255112
26624    52036100          BCD     ' 3/04,3/05,3/09,3/11(26-28)''
```

```
26625    04730361
26626    00057303
26627    61001173
26630    03410101
26631    74020440
26632    02103437
26633    52522124  F2M84  BCD      ' ADDRESS 00=020=00 NOT VERIFIED IN 500 MILLISEC'
26634    24512562
26635    62120000
26636    40000200
26637    40000012
26640    45466312
26641    65255131
26642    26312524
26643    12314512
26644    05000012
26645    44314343
26646    31622523
26647    52222124          BCD      ' BAD HEADER'
26650    12302521
26651    24255112
26652    52036100          BCD      ' 3/02,3/04(27=28)''
26653    02730361
26654    00047402
26655    07400310
26656    34371212
26657    52522124  F2M85  BCD      ' ADDRESS 00=010=00 NOT VERIFIED IN 500 MILLISEC'
26660    24512562
26661    62120000
26662    40000100
26663    40000012
26664    45466312
26665    65255131
26666    26312524
26667    12314512
26670    05000012
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26671    44314343
26672    31622523
26673    52222124          BCD      ' BAD HEADER'
26674    12302521
26675    24255112
26676    52036100          BCD      ' 3/02,3/04,3/11(26=28)''
26677    02730361
26700    00047303
26701    61010174
26702    02064002
26703    10343712
26704    52522124  F2M86  BCD      ' ADDRESS 00=004=00 NOT VERIFIED IN 500 MILLISEC'
26705    24512562
26706    62120000
26707    40000004
26710    40000012
26711    45466312
26712    65255131
26713    26312524
26714    12314512
26715    05000012
26716    44314343
26717    31622523
26720    52222124          BCD      ' BAD HEADER'
26721    12302521
26722    24255112
26723    52026100          BCD      ' 2/05,3/02,3/05(27=28)''
26724    05730361
26725    00027303
26726    61000574
26727    02074002
26730    10343712
26731    52522124  F2M87  BCD      ' ADDRESS 00=002=00 NOT VERIFIED IN 500 MILLISEC'
26732    24512562
26733    62120000
26734    40000002
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26735    40000012
26736    45466312
26737    65255131
26740    26312524
26741    12314512
26742    05000012
26743    44314343
26744    31622523
26745    52222124          BCD     ' BAD HEADER'
26746    12302521
26747    24255112
26750    52036100          BCD     ' 3/02,3/05(27=28)''
26751    02730361
26752    00057402
26753    07400210
26754    34371212
26755    52522124  F2M88   BCD     '  ADDRESS 00=001=00 NOT VERIFIED IN 500 MILLISEC'
26756    24512562
26757    62120000
26760    40000001
26761    40000012
26762    45466312
26763    65255131
26764    26312524
26765    12314512
26766    05000012
26767    44314343
26770    31622523
26771    52222124          BCD     ' BAD HEADER'
26772    12302521
26773    24255112
26774    52036100          BCD     ' 3/05(28)''
26775    05740210
26776    34371212
26777    52534721  F2M89   BCD     '  PAVA ERRONIOUSLY LOW'
27000    65211225
```



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27001    31514445
27002    31466462
27003    43701243
27004    46661212
27005    52026102          BCD     ' 2/21,2/2/,2/23,2/24(29),6/21(47)''
27006    01731361
27007    02617302
27010    61021373
27011    02610304
27012    74021134
27013    73066102
27014    01747407
27015    34371212
27016    52520747  F2M90   BCD     '  7PAVAQ'
27017    21652100
27020    52026102          BCD     ' 2/21(29)''
27021    01740211
27022    34371212
27023    52520747  F2M91   BCD     '  7PAVAQ'
27024    21652100
27025    52026102          BCD     ' 2/22(29)''
27026    01740211
27027    34371212
27030    52520747  F2M92   BCD     '  7PAVAQ'
27031    21652100
27032    52026102          BCD     ' 2/22(29)''
27033    01740211
27034    34371212
27035    52520747  F2M93   BCD     '  7PAVAQ'
27036    21652100
27037    52026102          BCD     ' 2/22(29)''
27040    01740211
27041    34371212
27042    52520747  F2M94   BCD     '  7PAVAQ'
27043    21652100
27044    52026102          BCD     ' 2/22(29)''
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DISCF  TAP=3.0     04/25  20100   PAGE 365

27045    02740211
27046    34371212
27047    52520747  F2M95  BCD      ' 7PAVAO'
27050    21652100
27051    52026102         BCD      ' 2/22(29)''
27052    02740211
27053    34371212
27054    52520747  F2M96  BCD      ' 7PAVAO'
27055    21652100
27056    52026102         BCD      ' 2/23(29)''
27057    03740211
27060    34371212
27061    52074721  F2M97  BCD      ' 7PAVAO'
27062    65210012
27063    52026102         BCD      ' 2/23(29)''
27064    03740211
27065    34371212
27066    52520747  F2M98  BCD      ' 7PAVAO'
27067    21652100
27070    52026102         BCD      ' 2/23(29)''
27071    03740211
27072    34371212
27073    52520747  F2M99  BCD      ' 7PAVAO'
27074    21652100
27075    52026102         BCD      ' 2/23(29)''
27076    03740211
27077    34371212
27100    52520747  F2M100 BCD      ' 7PAVAO'
27101    21652100
27102    52026102         BCD      ' 2/23(29)''
27103    03740211
27104    34371212
27105    52520747  F2M101 BCD      ' 7PAVAO'
27106    21652100
27107    52026102         BCD      ' 2/21(29),6/21(47)''
27110    01740211
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DISCF  TAP=3.0     04/25  20100   PAGE 366

27111    34730661
27112    02017404
27113    07343712
27114    52520747  F2M102 BCD      ' 7PAVAO'
27115    21652100
27116    52026102         BCD      ' 2/22(29),6/21(47)''
27117    02740211
27120    34730661
27121    02017404
27122    07343712
27123    52520747  F2M103 BCD      ' 7PAVAO'
27124    21652100
27125    52026102         BCD      ' 2/22(29),6/21(47)''
27126    02740211
27127    34730661
27130    02017404
27131    07343712
27132    52520747  F2M104 BCD      ' 7PAVAO'
27133    21652100
27134    52026102         BCD      ' 2/22(29),6/21(47)''
27135    02740211
27136    34730661
27137    02017404
27140    07343712
27141    52520747  F2M105 BCD      ' 7PAVAO'
27142    21652100
27143    52026102         BCD      ' 2/22(29),6/21(47)''
27144    02740211
27145    34730661
27146    02017404
27147    07343712
27150    52520747  F2M106 BCD      ' 7PAVAO'
27151    21652100
27152    52026102         BCD      ' 2/22,2/24(29),6/21(47)''
27153    02730261
27154    02047402
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DISCF  TAP.3.C     04/25  20100   PAGE 367

27155    11347306
27156    61020174
27157    04073437
27160    52520747  F2M107 BCD      '  7PAVA0'
27161    21652100
27162    52026102          BCD      ' 2/23(29),6/21(47)''
27163    03740211
27164    34730661
27165    02017404
27166    07343712
27167    52520747  F2M108 BCD      '  7PAVA0'
27170    21652100
27171    52026102          BCD      ' 2/23(29),6/21(47)''
27172    03740211
27173    34730661
27174    02017404
27175    07343712
27176    52520747  F2M109 BCD      '  7PAVA0'
27177    21652100
27200    52026102          BCD      ' 2/23(29),6/21(47)''
27201    03740211
27202    34730661
27203    02017404
27204    07343712
27205    52520747  F2M110 BCD      '  7PAVA0'
27206    21652100
27207    52026102          BCD      ' 2/23(29),6/21(47)''
27210    03740211
27211    34730661
27212    02017404
27213    07343712
27214    52520747  F2M111 BCD      '  7PAVA0'
27215    21652100
27216    52026102          BCD      ' 2/23,2/24(29),6/21(47)''
27217    03740661
27220    02017403
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DISCF  TAP.3.C     04/25  20100   PAGE 368

27221    11347306
27222    61020174
27223    04073437
27224    52520662  F2M112 BCD      '  6SI0A0'
27225    31462100
27226    52026101          BCD      ' 2/14,5/10,5/12(35)''
27227    03740661
27230    11007305
27231    61011074
27232    13053437
27233    52520662  F2M113 BCD      '  6SI0A0'
27234    31462100
27235    52026101          BCD      ' 5/10(35)''
27236    03740305
27237    34371212
27240    52526242  F2M114 BCD      '  SKS 16026 SKIPS IN STATE 1'
27241    62120106
27242    12020412
27243    62423147
27244    62123145
27245    12624321
27246    63651201
27247    52056101          BCD      ' 5/10(35)''
27250    03740305
27251    34371212
27252    52526242  F2M115 BCD      '  SKS 12226 SKIPS IN STATE 1'
27253    62120102
27254    12020412
27255    62423147
27256    62123145
27257    12624321
27260    63651201
27261    52056101          BCD      ' 5/10(35)''
27262    03740305
27263    34371212
27264    52527124  F2M116 BCD      '  ADDRESS 00=000=00 NOT VERIFIED IN 500 MILLISEC'
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```
27265    24512562
27266    62120000
27267    40000000
27270    40000012
27271    45466312
27272    65255131
27273    26312524
27274    12314512
27275    05000012
27276    44314343
27277    31622523
27300    52626321          BCD     ' STATE SEQUENCING SHOULD BE STATES 0-3-4-1'
27301    63251262
27302    25506425
27303    45233145
27304    27126230
27305    46644324
27306    12222512
27307    62632163
27310    25621300
27311    40034004
27312    40013712
27313    52522124  F2M117 BCD     '  ADDRESS 00-000-00 NOT VERIFIED WITHIN 70 MILLISEC'
27314    24512562
27315    62120000
27316    40000000
27317    40000012
27320    45466312
27321    65255131
27322    26312524
27323    12663163
27324    30314512
27325    07001244
27326    31434431
27327    62252312
27330    52624321          BCD     ' STATE SEQUENCING SHOULD BE STATES 0-3-4-1'
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27331    63251262
27332    25506425
27333    45233145
27334    27126230
27335    46644324
27336    12222512
27337    62632163
27340    25621300
27341    40034004
27342    40011212
27343    52302521          BCD     ' HEADER MAY HAVE BEEN MISREAD ONCE'
27344    34255112
27345    44217212
27346    30216525
27347    12220525
27350    45134431
27351    62512521
27352    24124645
27353    63253712
27354    52527124  F2M118 BCD     '  ADDRESS 37-377-37 NOT VERIFIED WITHIN 70 MILLISEC'
27355    24512562
27356    62120307
27357    40030707
27360    40030712
27361    45466312
27362    65255131
27363    26312524
27364    12663163
27365    30314512
27366    07001244
27367    31434431
27370    62252312
27371    52314512          BCD     ' IN STATE 3'
27372    62632163
27373    25120312
27374    52222124          BCD     ' BAD HEADER'
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27375    12302521
27376    24255112
27377    52026100          BCD     ' 2/01,3/10(28)''
27400    01730361
27401    01007402
27402    10343712
27403    52522124  F2M119  BCD     '  ADDRESS 00=000=02 NOT VERIFIED WITHIN 70 MILLISEC'
27404    24512562
27405    62120000
27406    40000000
27407    40000212
27410    45466312
27411    65255131
27412    26312524
27413    12663163
27414    30314512
27415    07001244
27416    31434331
27417    62252312
27420    52314512          BCD     ' IN STATE 3'
27421    62632163
27422    25120312
27423    52222124          BCD     ' BAD HEADER'
27424    12302521
27425    24255112
27426    52026100          BCD     ' 2/05,3/05(28)''
27427    05730361
27430    00057402
27431    10343712
27432    52522124  F2M120  BCD     '  ADDRESS 00=000=01 NOT VERIFIED WITHIN 70 MILLISEC'
27433    24512562
27434    62120000
27435    40000000
27436    40000112
27437    45466312
27440    65255131
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27441    26312524
27442    12663163
27443    30314512
27444    07001244
27445    31434331
27446    62252312
27447    52314512          BCD     ' IN STATE 3'
27450    62632163
27451    25120312
27452    52222124          BCD     ' BAD HEADER'
27453    12302521
27454    24255112
27455    52026100          BCD     ' 2/05(28)''
27456    05740210
27457    34371212
27460    52522551  F2M121  BCD     '  ERROR SET DURING VERIFICATION OF ADDRESS 00=000=00'
27461    51465112
27462    62256312
27463    64645131
27464    45271265
27465    25513126
27466    31232163
27467    31464512
27470    46261221
27471    24245125
27472    62621200
27473    00400000
27474    00400000
27475    52212500          BCD     ' AE02A=203FA=2G03A=2IXDA''
27476    02211302
27477    00032421
27500    33022700
27501    03213302
27502    31672421
27503    37121212
27504    52522551  F2M122  BCD     '  ERROR SET DURING VERIFICATION OF ADDRESS 00=000=00'
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27505    51465112
27506    62256312
27507    24645131
27510    45271265
27511    25513126
27512    31232163
27513    31464512
27514    46261221
27515    24245125
27516    02621200
27517    00400000
27520    00400000
27521    52622524          BCD     ' SEDAO=0G01A.202FA.0G02A.2TUGA'
27522    21001300
27523    27000121
27524    33020002
27525    26213300
27526    27000221
27527    33020364
27530    27211212
27531    52702521          BCD     ' YEAAO=1G01A.1G02A.1G03A.204FA.2MBNA'
27532    21001201
27533    27000121
27534    33012700
27535    02213301
27536    27000321
27537    33021004
27540    26213302
27541    44464521
27542    52121212          BCD     '      +202FA.2MBNA.2CKOA''
27543    12122002
27544    00022621
27545    33024446
27546    45213302
27547    23420021
27550    37121212
```



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                            *
                            *      MESSAGES = FUNCTION 3
                            *
27551    52522167   F3M1   BCD     '  AX03A=3C12A.2MHAA.8BUCA'
27552    00032113
27553    03231102
27554    21330244
27555    30212133
27556    10226423
27557    21121212
27560    52121212          BCD     '     7MHAAO=9Y10A+8Y11A+9Y12A+9Y13A+8Y14A'
27561    07443021
27562    21001311
27563    70010021
27564    20107001
27565    01212011
27566    70010221
27567    20117001
27570    03213010
27571    70010421
27572    52216400          BCD     ' AU02A=201FA.2FHZB.2BNCA.6Q20A'
27573    02211302
27574    00012621
27575    33022451
27576    71223302
27577    22452321
27600    33065002
27601    00211212
27602    02121202          BCD     '   2BNCA=8FHAF.2X03A'
27603    22452221
27604    13102430
27605    21263302
27606    67000321
27607    52216600          BCD     ' AF02A=201FA.2IJFA.4Q20A'
27610    02211302
27611    00012421
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27612    33023164
27613    26212304
27614    50020021
27615    52016101          BCD    ' 1/12,1/14(2),4/01,4/03(24),5/04,5/05(36),1/16,2/13(39),'
27616    02730161
27617    01047402
27620    34730461
27621    00017304
27622    61000374
27623    02043473
27624    05610004
27625    23056100
27626    05740306
27627    34730161
27630    01067302
27631    61010374
27632    03113473
27633    02060100          BCD    ' 6/01(41),6/13(42),1/22,2/25(45),6/12(46)''
27634    01740401
27635    34730661
27636    01037404
27637    03347301
27640    61020273
27641    02610205
27642    74040534
27643    73060101
27644    02740406
27645    04371012
27646    02520044   F3-2   BCD    '  2MHAA'
27647    30210112
27650    02060101          BCD    ' 6/13(42),5/04,5/05(36),4/01(24)''
27651    03740402
27652    34730161
27653    00047305
27654    61000474
27655    02060473
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27656    04610101
27657    74020534
27660    07121012
27661    02520244   F3-3   BCD    '  2MHAA'
27662    30210112
27663    02060101          BCD    ' 6/13(42),5/05(36)''
27664    03740402
27665    34730361
27666    01067403
27667    01340712
27670    02520244   F3-4   BCD    '  2MHAA'
27671    30210112
27672    02060101          BCD    ' 6/12(46),5/05(36)''
27673    02740406
27674    34730161
27675    01057403
27676    01340712
27677    02520523   F3-6   BCD    '  EOW NOT RECEIVED DURING WRITE ATTEMPT'
27700    66124546
27701    63125125
27702    23253165
27703    45241224
27704    64513145
27705    27120451
27706    31632512
27707    21636325
27710    44474312
27711    52210100          BCD    ' AU01A=207FA.2CK0A'
27712    01211302
27713    00072621
27714    33022242
27715    00211212
27716    52022242          BCD    ' 2CKBA=207FA.2U01A.2CK0A'
27717    22211302
27720    00072621
27721    33024100
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27722    01213302
27723    23420021
27724    52216400          BCD     ' AU04A=207FA,3U02A,2H07A,2CT1A,2CK0A'
27725    04211302
27726    00072621
27727    33036400
27730    02213302
27731    30000721
27732    33022363
27733    01213302
27734    23420021
27735    52226400          BCD     ' BU04A=207FA,3U02A,246BA,2CK0A'
27736    04211302
27737    00072621
27740    33036400
27741    02213302
27742    04062221
27743    33022342
27744    00211212
27745    52062523          BCD     ' 6ECYA0=207FA,2U04A''
27746    70210013
27747    02000726
27750    21330264
27751    00042137
27752    52522346  F3M7    BCD     '  CONTROLLER DID NOT SEQUENCE TO STATE 0 FROM STATE 7''
27753    45635146
27754    43432551
27755    12243124
27756    12454463
27757    12622550
27760    64254523
27761    25126346
27762    12626321
27763    63251900
27764    12265146
27765    44126263
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DISCF  TAP=3,C     04/25  20:00   PAGE 378

27766    61632512
27767    37371212
27770    52532226  F3M8    BCD     '  BF03A'
27771    00032112
27772    52016101          BCD     ' 1/10,1/14(11)''
27773    00730161
27774    31047401
27775    01343712
27776    52522346  F3M9    BCD     '  CONTROLLER NOT READY AFTER 112 MILLISEC''
27777    45635146
30000    43432551
30001    12454463
30002    12512521
30003    24731221
30004    26632551
30005    12011102
30006    12443143
30007    43316225
30010    23371212
30011    52526451  F3M10   BCD     '  WRITE MONITOR OR SEARCH ERROR = ADDRESS 00=000=00''
30012    61632512
30013    44464531
30014    63465112
30015    46511263
30016    25215123
30017    30122551
30020    51465112
30021    40122124
30022    24512562
30023    62120000
30024    40000000
30025    40001037
30026    52520625  F3M11   BCD     '  6ECYA0=207FA,2U04A'
30027    23702100
30030    13020007
30031    26213302
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DISCF   TAP.3.C         04/25   20100    PAGE 379

30032     64000421
30033     52216400              BCD      ' AU04A=207FA.2IUEA.2CT2A.2CKOA'
30034     04211302
30035     00072621
30036     33023164
30037     25213302
30040     23630221
30041     33022342
30042     00211212
30043     52226400              BCD      ' BU04A=2VFCA.2U02A.2CT5A'
30044     04211302
30045     65262321
30046     33026400
30047     02213302
30050     23630521
30051     52026100              BCD      ' 2/02,2/07,2/13,2/21,2/18/3/05,1/16,3/14''
30052     02730261
30053     00077302
30054     61010373
30055     02610201
30056     73026101
30057     10730361
30060     00057301
30061     61010673
30062     03610104
30063     37121212
30064     52522147  F3M12 BCD      '  AP01A=2SGSX.8KPOA'
30065     00012113
30066     02622762
30067     67331051
30070     47002112
30071     52226200              BCD      ' BS01A=2SSRX.1S02A'
30072     01211302
30073     62625167
30074     33016200
30075     02211212
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DISCF   TAP.3.C         04/25   20100    PAGE 380

30076     62074723              BCD      ' 7PCHAO=CP01A.1S01A+1P01A.0S01A'
30077     30210013
30100     00470001
30101     21330162
30102     00012120
30103     01470001
30104     21330062
30105     00012112
30106     52212500              BCD      ' AE01A=207FA.2U02A.2CT5A.8PCHA.2X03A.2CKOA'
30107     01211302
30110     00072621
30111     33026400
30112     02213302
30113     23630521
30114     33104723
30115     30213302
30116     67000321
30117     33022342
30120     00211212
30121     52222500              BCD      ' BE02A= SAME'
30122     02211312
30123     62214425
30124     52212500              BCD      ' AE03A= SAME'
30125     03211312
30126     62214425
30127     52046102              BCD      ' 4/24,3/23,3/22,3/24,6//11,4/15,4/16,4/24,4/25,4/20,4/19,'
30130     04730361
30131     02037303
30132     61020273
30133     03610204
30134     73066161
30135     01017304
30136     61010573
30137     04610106
30140     73046102
30141     04730461
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30142    02057304
30143    61020073
30144    04610111
30145    73121212
30146    52036102          BCD     ' 3/21,5/03,5/04,1/17,6/11,6/12''
30147    01730461
30150    00037305
30151    61000473
30152    01610107
30153    73066101
30154    01730661
30155    01023712
30156    52526451  F3M13   BCD     '  WRITE ERROR * DATA=40000000'
30157    31632512
30160    25515146
30161    51124012
30162    24216321
30163    13040000
30164    00000000
30165    00121212
30166    52046101          BCD     ' 4/15,4/24,4/25,6/23,6/12,3/20,3/18,1/17''
30167    05730461
30170    02047304
30171    61020573
30172    06610203
30173    73066101
30174    02730361
30175    02007303
30176    61011073
30177    01610107
30200    07121212
30201    52526451  F3M14   BCD     '  WRITE ERROR * DATA=20000000'
30202    31632512
30203    25515146
30204    51124012
30205    24216321
```



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30206    13020000
30207    00000000
30210    00121212
30211    52046102          BCD     ' 4/24,4/25,4/15,6/12''
30212    04730461
30213    02057304
30214    61010573
30215    06610102
30216    07121212
30217    52526451  F3M15   BCD     '  WRITE ERROR * DATA=10000000'
30220    31632512
30221    25515146
30222    51124012
30223    24216321
30224    13010000
30225    00000000
30226    00121212
30227    52046101          BCD     ' 4/15,4/19,4/20,4/25,6/12''
30230    05730461
30231    01117304
30232    61020073
30233    04610305
30234    73066101
30235    02371212
30236    52526451  F3M16   BCD     '  WRITE ERROR * DATA=04000000'
30237    31632512
30240    25515146
30241    51124012
30242    24216321
30243    13002400
30244    00000000
30245    00121212
30246    52046102          BCD     ' 4/20,4/15,4/19,6/12''
30247    00730461
30250    01057304
30251    61011173
```

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30252    06610102
30253    37121212
30254    52526A51  F3M17  BCD      '  WRITE ERROR = DATA=02000000'
30255    31632512
30256    25515146
30257    51124012
30260    24216321
30261    13000200
30262    00000000
30263    00121212
30264    52036102          BCD      ' 3/23,4/16,4/19,6/12''
30265    03733461
30266    01067304
30267    61011173
30270    06610102
30271    37121212
30272    52526A51  F3M18  BCD      '  WRITE ERROR = DATA=01000000'
30273    31632512
30274    25515146
30275    51124012
30276    24216321
30277    13000100
30300    00000000
30301    00121212
30302    52036102          BCD      ' 3/23,3/21,4/16,6/11,5/03''
30303    03733461
30304    01017304
30305    61011473
30306    06610101
30307    72056100
30310    03371212
30311    52520330  F3M19  BCD      '  CHANNEL ACTIVE AFTER 500 MILLISEC''
30312    21454525
30313    43122123
30314    63314525
30315    12212663
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30316    25511205
30317    00001244
30320    31434231
30321    62252337
30322    52522330  F3M20  BCD      '  CHANNEL ADDRESS OR WORD COUNT INCREMENTING ERROR OR'
30323    21454525
30324    43122124
30325    24512563
30326    62124451
30327    12464451
30330    24122246
30331    64456212
30332    31452251
30333    25442545
30334    63314527
30335    12255151
30336    46511246
30337    51121212
30340    52475125          BCD      ' PREMATURE DISCONNECT'
30341    44216364
30342    51251224
30343    31622346
30344    45452523
30345    63121212
30346    52234464          BCD      ' COUNT IS COUNT SB CORE ADD OVERFLOW  ERRORS ''
30347    45631231
30350    52122346
30351    64456212
30352    62221223
30353    46512512
30354    21242412
30355    46652551
30356    26434666
30357    12122551
30360    51465162
30361    52771212
```

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30362    52522431  F3M21  BCD     ' DISC ERROR ON WRITE-DATA = 0, ADDRESS = 00-000-00''
30363    62231225
30364    51514451
30365    12464512
30366    66513163
30367    25402421
30370    63211213
30371    12007312
30372    21242451
30373    25626212
30374    13120000
30375    40000000
30376    40000037
30377    52522124  F3M22  BCD     ' ADDRESS 00-000-01 NOT VERIFIED AFTER 500 MILLISEC'
30400    24512562
30401    62120000
30402    40000000
30403    40000112
30404    45466312
30405    65255131
30406    26312524
30407    12212463
30410    25511205
30411    00001244
30412    31434331
30413    62252312
30414    52212463           BCD     ' AFTER 200 WORDS WRITTEN STARTING AT SECTOR 0'
30415    25511202
30416    00001266
30417    46512462
30420    12665131
30421    63630545
30422    12626321
30423    51633145
30424    27122163
30425    12626523
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30426    63465112
30427    00121212
30430    52221251           BCD     ' B REGISTER NOT COUNTING PROPERLY'
30431    25273162
30432    63255112
30433    45466312
30434    23466445
30435    63314527
30436    12475146
30437    47255143
30440    70121212
30441    52226400           BCD     ' BJ01A=2C7FA=2FLBA=2CKCA'
30442    01211302
30443    00077621
30444    33022443
30445    22213202
30446    23420021
30447    52016100           BCD     ' 1/03,1/05,1/06(26),2/12(13)''
30450    03730161
30451    00057301
30452    61000474
30453    02063473
30454    02610102
30455    74017334
30456    37121212
30457    52522523  F3M23  BCD     '  ECW NOT RECEIVED DURING READ ATTEMPT'
30460    66124546
30461    63125125
30462    23253165
30463    25241224
30464    64513145
30465    27125125
30466    21241221
30467    63632544
30470    47631212
30471    52627245           BCD     ' SYNC BIT NOT RECORDED PROPERLY IN STATE 7'
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30472    23122231
30473    63124546
30474    63125125
30475    23465124
30476    25241247
30477    51464725
30500    51437212
30501    31451262
30502    63216325
30503    12071212
30504    52062523          BCD     ' 6ECYA0=205FA,0U04A'
30505    70210013
30506    62006526
30507    21330064
30510    00042112
30511    52121221          BCD     '  AU04A=2RDTA,3U03A'
30512    64000421
30513    13025124
30514    63213303
30515    64000321
30516    52121222          BCD     '  BU04A=205FA,2CT3A,2RDKA'
30517    64000421
30520    13020205
30521    26213302
30522    23630321
30523    33025124
30524    42211212
30525    52026100          BCD     ' 2/02,2/03,2/12,2/15,2/21,3/01,3/02,3/09,3/16,3/25,4/04,'
30526    62730261
30527    00037302
30530    61011273
30531    52610103
30532    73026102
30533    61730361
30534    00017303
30535    61000273
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30536    23611211
30537    73036101
30540    06730361
30541    12057304
30542    61000473
30543    52046100          BCD     ' 4/06,5/14,2/09,2/13,2/01,3/04,5/05''
30544    06730561
30545    01047302
30546    61001173
30547    52610103
30550    73026100
30551    61730361
30552    00047305
30553    61000537
30554    52520226  F3M24   BCD     '  BFO1A=2BGCA,2IGAA'
30555    00012113
30556    02222723
30557    21330231
30560    27212112
30561    52220600          BCD     ' BFO3A=2BGCA,2IGAA'
30562    03211302
30563    22272321
30564    33023127
30565    21211212
30566    52016101          BCD     ' 1/12,1/13(7)''
30567    02730161
30570    01037407
30571    34371212
30572    52520246  F3M25   BCD     '  CONTROLLER DID NOT SEQUENCE TO STATE 0 FROM STATE 5'
30573    45635146
30574    43432551
30575    12243124
30576    12454463
30577    12622550
30600    64254523
30601    25126246
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30602    12626321
30603    63251200
30604    12265146
30605    44126263
30606    21632512
30607    05121212
30610    52472123          BCD     ' PACKET BIT FOR PACKET 4 NOT RESET DURING PREVIOUS'
30611    42256312
30612    22316712
30613    26465112
30614    47212342
30615    25631204
30616    12454663
30617    12512562
30620    25631224
30621    64513145
30622    07124751
30623    25653146
30624    64621212
30625    52462241          BCD     ' OBJECT TEST DURING WRITE PHASE'
30626    25236312
30627    63256263
30630    12246451
30631    31452712
30632    66513163
30633    25124730
30634    21622512
30635    52016101          BCD     ' 1/12,1/13,2/02,2/04,2/08,2/09,2/12,2/13,2/15,2/16,4/04,'
30636    02730161
30637    01037302
30640    61000273
30641    02610004
30642    73026100
30643    10730261
30644    00117302
30645    61010273
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30646    02610103
30647    73026101
30650    05730261
30651    01067304
30652    61000473
30653    52046102          BCD     ' 4/22''
30654    12371212
30655    52525125  F3V26   BCD     '  READ DATA ERROR'
30656    21241224
30657    21632112
30660    25515146
30661    51121212
30662    52242163          BCD     ' DATA IS  DATA SB  CORE ADD OVERFLOW ERRORS ''
30663    21123162
30664    12122421
30665    63211262
30666    22121223
30667    46512512
30670    61242412
30671    46652551
30672    26434466
30673    12255151
30674    46516252
30675    37121212
30676    52016101  F3V27   BCD     ' 1/19,1/23,2/18,2/19,2/24,3/18,3/20,3/22,3/23,3/25,3/35,'
30677    11730161
30700    02037302
30701    61011073
30702    02610111
30703    73026102
30704    04730261
30705    01107303
30706    61020073
30707    03610202
30710    73036102
30711    03730261
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30712    02057303
30713    61030573
30714    52046101          BCD     ' 4/13,4/14,4/22,4/25,5/15,5/21,6/12,6/14''
30715    03730461
30716    01047304
30717    61020273
30720    04610305
30721    73056101
30722    05730561
30723    02017306
30724    61010273
30725    06610104
30726    37121212
30727    52016101  F3M28   BCD     ' 1/19,4/13,4/14,5/15''
30730    11730461
30731    01037304
30732    61010473
30733    05610105
30734    37121212
30735    52522330  F3M29   BCD     '  CHANNEL ERROR SET AFTER READ'
30736    21454525
30737    43122551
30740    51465112
30741    62256312
30742    21266325
30743    51125125
30744    21241212
30745    52242163          BCD     ' DATA = 00000000'
30746    21121312
30747    00000000
30750    00000000
30751    52016100          BCD     ' 1/03,1/04,1/17,2/16,2/18,2/19,2/20,3/18,3/20,3/21,3/22,'
30752    03730161
30753    00047301
30754    61010773
30755    02610106
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30756    73026101
30757    10730461
30760    01117302
30761    61020273
30762    03610110
30763    73030102
30764    05730561
30765    02017303
30766    61020273
30767    52036102          BCD     ' 3/23,3/24,4/16,4/17,4/18,4/19,4/20,4/22,4/24,4/25,5/03,'
30770    03730461
30771    01047304
30772    61010473
30773    04610107
30774    73046101
30775    10730461
30776    01117304
30777    61020273
31000    04610302
31001    73046102
31002    04730461
31003    02057305
31004    61020273
31005    52056100          BCD     ' 5/04,5/06''
31006    04730561
31007    00063712
31010    52522330  F3M30   BCD     '  CHANNEL ERROR SET AFTER READ'
31011    21454525
31012    43122551
31013    51465112
31014    62256312
31015    21266325
31016    51125125
31017    21241212
31020    52242163          BCD     ' DATA = 00000077'
31021    21121312
```

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31022    00000000
31023    00000707
31024    52036101          BCD     ' 3/18,3/21,3/22,3/23,4/16,4/17,4/18,4/19,4/20,4/24,4/25,'
31025    10730361
31026    02017303
31027    61020273
31030    03610303
31031    73046101
31032    06730461
31033    01077304
31034    61011073
31035    04610111
31036    73046102
31037    00730461
31040    02047304
31041    61020573
31042    52036102          BCD     ' 3/25,1/23''
31043    05730161
31044    02033712
31045    52526630  F3M31   BCD     '  WHS NOT RECEIVED FROM CONTROLLER'
31046    62124546
31047    63125125
31050    23253165
31051    25241224
31052    51464412
31053    23464563
31054    51464343
31055    25511212
31056    52067030          BCD     ' 6YHSA0=0X06A'
31057    62210213
31060    00670006
31061    21121212
31062    52121270          BCD     '   YX06A=2BGCA,?1GAA'
31063    67000621
31064    13022227
31065    23213303
```



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31066    31272121
31067    52016102          BCD     ' 1/22,1/25,2/12,3/19,4/01,4/02,4/03,5/07''
31070    02736161
31071    02057302
31072    61010273
31073    03617111
31074    73046100
31075    01730461
31076    00027304
31077    61000373
31100    05610007
31101    37121212
31102    52522346  F3M32   BCD     '  CONTROLLER ADDRESS INCREMENTING ERROR DURING STATE 7'
31103    45635146
31104    43432551
31105    12212424
31106    51256262
31107    12314523
31110    51254425
31111    45633145
31112    67122551
31113    51465112
31114    24645131
31115    45271262
31116    63216325
31117    12071212
31120    52212424          BCD     ' ADDR IS  ADDR SB  ST ADDR  OVERFLOW ERRORS ''
31121    51123162
31122    12122124
31123    24511262
31124    22121262
31125    63122124
31126    24511212
31127    46652551
31130    26434666
31131    12255151
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31132    46516252
31133    37121212
31134    52022342  F3M33  BCD     ' 2CKRA=2BGDA,2X03A'
31135    51211302
31136    22272421
31137    33026700
31140    03211212
31141    52046100         BCD     ' 4/07(15),3/15,2/21,5/04,5/06,4/04''
31142    07740105
31143    34730361
31144    01057302
31145    61020173
31146    05610004
31147    73056100
31150    06730461
31151    00043712
31152    52046100  F3M34  BCD     ' 4/07,4/08(15),5/06(39)''
31153    07730461
31154    00107401
31155    05347305
31156    61000474
31157    03113437
31160    52056100  F3M35  BCD     ' 5/06(39)''
31161    06740311
31162    34371212
31163    52046100  F3M36  BCD     ' 4/08,4/04(15),5/04,5/06(30)''
31164    10730461
31165    00047401
31166    05347305
31167    61000473
31170    05610006
31171    74030034
31172    37121212
31173    52046100  F3M37  BCD     ' 4/08(15)''
31174    10740105
31175    34371212
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31176    52046100  F3M38  BCD     ' 4/09(14),4/08(15),5/06(39)''
31177    11740104
31200    34730461
31201    00107401
31202    05347305
31203    61000474
31204    03113437
31205    52046100  F3M39  BCD     ' 4/04,4/09,5/02(14),5/04,5/06(39)''
31206    04730461
31207    00117305
31210    61000274
31211    01043473
31212    05610004
31213    73056100
31214    06740311
31215    34371212
31216    52056100  F3M40  BCD     ' 5/06(39)''
31217    06740311
31220    34371212
31221    52046100  F3M41  BCD     ' 4/04(14)''
31222    04740104
31223    34371212
31224    52046100  F3M42  BCD     ' 4/09(14)''
31225    11740104
31226    34371212
31227    52046100  F3M43  BCD     ' 4/09,4/10(14),5/05(30)''
31230    11730461
31231    01007401
31232    04347305
31233    61000574
31234    03003437
31235    52046100  F3M44  BCD     ' 4/04,4/10,5/02(14),5/05(30)''
31236    04730461
31237    01007305
31240    61000274
31241    01043473
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31242    05610005
31243    74030034
31244    37121212
31245    52056100  F3M45  BCD     ' 5/05(39)''
31246    05740311
31247    34371212
31250    52046101  F3M46  BCD     ' 4/10(14)''
31251    00740104
31252    34371212
31253    52046101  F3M47  BCD     ' 4/10,4/11(14),5/05(30)''
31254    00730461
31255    01017401
31256    04347305
31257    61000574
31260    03003437
31261    52046100  F3M48  BCD     ' 4/04,4/11,5/02(14),5/05(30)''
31262    04730461
31263    01017305
31264    61000274
31265    01043473
31266    05610005
31267    74030034
31270    37121212
31271    52056100  F3M49  BCD     ' 5/02(14)''
31272    02740104
31273    34371212
31274    52046101  F3M50  BCD     ' 4/11(14)''
31275    01740104
31276    34371212
31277    52046101  F3M51  BCD     ' 4/11,4/12(14)''
31300    01730461
31301    01027401
31302    04343712
31303    52046101  F3M52  BCD     ' 4/12(14)''
31304    02740104
31305    34371212
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31306    52521623  F3M53  BCD     '  ACKRAD'
31307    42512100
31310    52026102         BCD     ' P/21(11)''
31311    01740101
31312    34371212
31313    52521226  F3M54  BCD     '  CF02A ERRONIOUSLY RESET AT TERMINATION OF STATE 7'
31314    00022112
31315    25515146
31316    45314464
31317    62437212
31320    51256225
31321    63122163
31322    12432551
31323    44314521
31324    63314445
31325    12462412
31326    62632163
31327    25120712
31330    52016101         BCD     ' 1/10(11)''
31331    00740101
31332    34371212
31333    52522346  F3M55  BCD     '  CONTROLLER ERRONIOUSLY CYCLED TO STATE 0 FROM STATE 7'
31334    45635146
31335    43432551
31336    12255151
31337    46453146
31340    64624370
31341    12237023
31342    43252412
31343    63461262
31344    63216325
31345    12001226
31346    51464412
31347    62632163
31350    25120712
31351    52623046         BCD     ' SHOULD BE IN STATE 3'
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31352    64432412
31353    22251231
31354    45126263
31355    21632512
31356    03121212
31357    52066102          BCD     ' 6/23(47),3/06(18)''
31360    03740407
31361    34730361
31362    00067401
31363    10343712
31364    52522421  F3M56   BCD     '  DATA NOT BEING TRANSMITTED WITHIN 1 MILLISEC OF '
31365    63211245
31366    46631222
31367    25314527
31370    12635121
31371    45624431
31372    63632524
31373    12663163
31374    30314512
31375    01124431
31376    43433162
31377    25231246
31400    26121212
31401    52665131          BCD     ' WRITING LAST DATA ON PREVIOUS SECTOR'
31402    63314527
31403    12432162
31404    63122421
31405    63211246
31406    45124751
31407    25653146
31410    64621262
31411    25236346
31412    51121212
31413    52302521          BCD     ' HEADER NOT VERIFIED ON FIRST ATTEMPT'
31414    24255112
31415    45466312
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31416    65255131
31417    26312524
31420    12464512
31421    26315162
31422    63122163
31423    63254447
31424    63121212
31425    52016101          BCD     ' 1/10(11),3/06,5/04,5/06(18)''
31426    00740101
31427    34730361
31430    00067305
31431    61000473
31432    05611006
31433    74011034
31434    37121212
31435    52526225  F3M57   BCD     '  SEARCH ERROR OCCURED WHILE LOOKING FOR ADDRESS'
31436    21512330
31437    12255151
31440    46511246
31441    26236451
31442    25241266
31443    30314325
31444    12434446
31445    46314527
31446    12264451
31447    12212424
31450    51256262
31451    52000240          BCD     ' 00=002=00 AFTER INITIATING A WRITE FROM ADDRESS'
31452    00000240
31453    00001221
31454    26632551
31455    12314531
31456    63312163
31457    31452712
31460    21126451
31461    31632512
```

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31462    26514444
31463    12212424
31464    51256262
31465    52000040          BCD     ' 00=001=77'
31466    00000140
31467    07071212
31470    52032443          BCD     ' 3FLSA'
31471    62211212
31472    52056100          BCD     ' 5/04,5/06(18,30)''
31473    04730561
31474    00067401
31475    10730300
31476    34371212
31477    52522431  F3M58   BCD     '  DISC ERRONIOUSLY CYCLED TO STATE 0 FROM STATE 7'
31500    62231225
31501    51514445
31502    31466462
31503    43701223
31504    70234325
31505    24126346
31506    12626321
31507    63251200
31510    12265146
31511    44126263
31512    21632512
31513    07121212
31514    52016101          BCD     ' 1/11(11)''
31515    01740101
31516    34371212
31517    52522346  F3M59   BCD     '  CONTROLLER HUNG WITH NO ERROR INDICATED'
31520    45635146
31521    43432551
31522    12306445
31523    27126631
31524    63301245
31525    46126551
```



```
31526    51465112
31527    31452431
31530    23216325
31531    24121212
31532    52016101          BCD     ' 1/10(11),3/06(18)''
31533    00740101
31534    34732361
31535    00067401
31536    10343712
31537    52523025  F3M60   BCD     '  HEADER FOR ADDRESS 00=002=00 DESTROYED'
31540    61242551
31541    12264451
31542    12212424
31543    51256262
31544    52000040
31545    00000240
31546    00001224
31547    25626351
31550    46702524
31551    52016101          BCD     ' 1/10(11)''
31552    00740101
31553    34371212
31554    52522346  F3M61   BCD     '  CONTROLLER ERRONIOUSLY CYCLED TO STATE 0 FROM STATE 5'
31555    45635146
31556    43432551
31557    12255151
31560    44453146
31561    24624370
31562    12237223
31563    43252412
31564    63461262
31565    63216325
31566    12031226
31567    51464412
31570    62632163
31571    25130512
```

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31572    52016101          BCD     ' 1/12,2/16(7)''
31573    02730261
31574    01067407
31575    34371212
31576    52522346  F3M62   BCD     '  CONTROLLER ERRONIOUSLY CYCLED TO STATE 0 FROM STATE 5'
31577    45635146
31600    43432551
31601    12255151
31602    46453146
31603    64624370
31604    12237023
31605    43232412
31606    63461262
31607    63216225
31610    12001226
31611    51464412
31612    62632163
31613    2512.512
31614    52026101          BCD     ' 2/12,2/16(7),4/01,4/02,4/03(24),1/03,1/04(26),2/19,'
31615    02730261
31616    .1067407
31617    34730461
31620    00017304
31621    61000273
31622    04610003
31623    74020434
31624    73016100
31625    03730161
31626    00047402
31627    .6347302
31630    61011173
31631    52026102          BCD     ' 2/20(12)''
31632    .0740102
31633    34371212
31634    52522421  F3M63   BCD     '  DATA NOT BEING READ WITHING 1 MILLISEC OF READING LAST'
31635    62211245
```



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31636    46631222
31637    65314527
31640    12512521
31641    24126431
31642    63302145
31643    62132112
31644    44314343
31645    31622523
31646    12462612
31647    51252124
31650    31452712
31651    43216263
31652    52242163          BCD     ' DATA ON PREVIOUS SECTOR'
31653    21124445
31654    12475125
31655    65314464
31656    62126225
31657    62634451
31660    52302521          BCD     ' HEADER NOT VERIFIED ON FIRST ATTEMPT'
31661    64255112
31662    45460312
31663    65251131
31664    66312624
31665    12464512
31666    66315162
31667    63122163
31670    63254447
31671    63121212
31672    52016101          BCD     ' 1/10,1/13(7)''
31673    .273.161
31674    .1037407
31675    34371212
31676    52522231  F3M64   BCD     '  2IGAA'
31677    27212112
31700    52026101          BCD     ' 2/12,2/16,1/12(7)''
31701    .2730261
```

```
31702    01067301
31703    61010274
31704    07343712
31705    52520231  F3M65  BCD     ' 2IGAA'
31706    27212112
31707    52026101         BCD     ' 2/12(7)''
31710    02740734
31711    37121212
31712    52522330  F3M66  BCD     '  CHAIN BIT NOT RECORDED AS 0 OR CHECKED DURING READ'
31713    21314512
31714    22316312
31715    45466312
31716    51252346
31717    51242524
31720    12216212
31721    00124651
31722    12233025
31723    23422524
31724    12246451
31725    31452712
31726    51252124
31727    52026101         BCD     ' 2/12(7),2/18(11),2/20(11,12)''
31730    02740734
31731    73026101
31732    10740101
31733    34730261
31734    02007401
31735    01730102
31736    34371212
31737    52525126  F3M67  BCD     '  RFCA0*2BGCA*2FLSA'
31740    23210213
31741    02222723
31742    21330226
31743    43622112
31744    52016101         BCD     ' 1/10(7)''
31745    02740734
```



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31746    37121212
31747    52525126  F3M68  BCD     '  RFAA0*2BGCA*3FLSA*2IGAA*2BGCA (BOTH TERMS LOW)''
31750    21210213
31751    02222723
31752    21330226
31753    43622120
31754    12312721
31755    21330222
31756    27230112
31757    74224663
31760    30126325
31761    51446212
31762    43466634
31763    52016101         BCD     ' 1/13(7)''
31764    02740734
31765    37121212
31766    52526226  F3M69  BCD     '  SFBA0*2BGCA*3IGAA*3FLSA (SHOULD BE LOW)''
31767    22210213
31770    02222723
31771    21330331
31772    27210133
31773    03264362
31774    21127462
31775    30466443
31776    24122225
31777    12434666
32000    34121212
32001    52016101         BCD     ' 1/12(7)''
32002    02740734
32003    37121212
32004    52520670  F3M70  BCD     '  6YHTA0'
32005    30632100
32006    52056100         BCD     ' 5/07(7)''
32007    02740734
32010    37121212
32011    52520623  F3M71  BCD     '  6CKRA0'
```

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32012    42512100
32013    52026102          BCD     ' 2/21(7)''
32014    01740734
32015    37121312
32016    52522330  F3M72   BCD     '  CHANNEL ERROR ON READ'
32017    21454525
32020    43122551
32021    51465112
32022    46451251
32023    25212412
32024    52242163          BCD     ' DATA = 77777777'
32025    21121312
32026    07077707
32027    07077707
32030    52056101          BCD     ' 5/15(34),4/24(7,8),4/20,4/21,3/20(7),5/12,6/21,6/11(8)''
32031    05740304
32032    34730461
32033    02047407
32034    73103473
32035    04612200
32036    73046102
32037    01730361
32040    02037407
32041    34730561
32042    01027306
32043    61026173
32044    06612101
32045    74103437
32046    52522330  F3M73   BCD     '  CHANNEL ERROR ON READ'
32047    21454525
32050    43122551
32051    51465112
32052    46451251
32053    25212412
32054    52242163          BCD     ' DATA = 00000000'
32055    21121312
```



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32056    [illegible]
32057    [illegible]
32060    52236103          BCD     ' 3/30,4/22,4/28(8),3/20,4/21(7)''
32061    34730461
32062    02037304
32063    01221074
32064    10347303
32065    61026073
32066    06412201
32067    74073437
32070    52522330  F3M74   BCD     '  CHANNEL ERROR ON READ'
32071    21454525
32072    43122551
32073    51465112
32074    46451251
32075    25212412
32076    52242163          BCD     ' DATA = 25522552'
32077    21121312
32100    [illegible]
32101    [illegible]
32102    52046102          BCD     ' 4/20,4/24(7),5/15(34)''
32103    [illegible]
32104    02047407
32105    34730561
32106    01057403
32107    04343712
32110    52527125  F3M75   BCD     '  ZEROS NOT WRITTEN ON ADDRESS 00=000=00 AFTER CHANNEL'
32111    51466212
32112    45466212
32113    46513163
32114    63254512
32115    46451221
32116    24245125
32117    62621200
32120    [illegible]
32121    [illegible]
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32122    12212663
32123    25511223
32124    30214545
32125    25431212
32126    52243162          BCD     ' DISCONNECTED'
32127    23464545
32130    25236325
32131    24121212
32132    52664651          BCD     ' WORD NO  DATA IS  IGNORE   OVERFLOW ERRORS ''
32133    24124546
32134    12122421
32135    63211231
32136    62121231
32137    27454651
32140    25121212
32141    46652551
32142    26434466
32143    12255151
32144    46516252
32145    37121212
32146    52371212  F3M76   BCD     ' ''
32147    52036102  F3M77   BCD     ' 3/20,3/21,3/23,4/19,4/20,4/24,4/25(23),3/22(13),2/03,'
32150    00730361
32151    02017303
32152    61020373
32153    04610111
32154    73046102
32155    00730461
32156    02047304
32157    61020574
32160    02033473
32161    03610202
32162    74010334
32163    73026100
32164    03731212
32165    52026100          BCD     ' 2/06(11)''
```



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32166    06747101
32167    34371212
32170    52522346  F3M78   BCD     '  CONTROLLER DID NOT ENTER STATE 0 FROM STATE 7 WHEN'
32171    45635146
32172    43432551
32173    12243124
32174    12454463
32175    12254563
32176    25511262
32177    63216325
32200    12001226
32201    51464412
32202    52632163
32203    35120712
32204    66302545
32205    52254444          BCD     ' E9M 10226 ISSUED'
32206    12010002
32207    02061231
32210    62626425
32211    24121212
32212    52016101          BCD     ' 1/15(20),3/19,4/23,5/12(1),6/23(47)''
32213    05740200
32214    34730361
32215    01117304
32216    61020373
32217    05610102
32220    74013473
32221    06610203
32222    74040734
32223    37121212
32224    52526226  F3M79   BCD     '  OF03A NOT RESET BY 32BFA'
32225    10032112
32226    45466212
32227    51256225
32230    63122270
32231    12037122
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32232    26211212
32233    52016101          BCD     ' 1/15(20)''
32234    05740200
32235    34371212
32236    52520623  F3M80   BCD     '  6CLMA0'
32237    43442100
32240    52056101          BCD     ' 5/12(1)''
32241    02740134
32242    37121212
32243    52520623  F3M81   BCD     '  6CLMA0'
32244    43442100
32245    52056101          BCD     ' 5/12(1)'
32246    02740134
32247    52103146          BCD     ' 8I8CA'
32250    23211212
32251    52066101          BCD     ' 6/13,6/14(42)''
32252    03730661
32253    21047404
32254    02343712
32255    52522067  F3M82   BCD     '  BX03A=2MHAA=8IYOA'
32256    00038113
32257    02443021
32260    21331031
32261    70002112
32262    52046100          BCD     ' 4/01(24),6/13,6/14(42)''
32263    01740204
32264    34730461
32265    01037306
32266    61011474
32267    04023437
32270    52520067  F3M83   BCD     '  0X02A'
32271    00038112
32272    52046100          BCD     ' 4/03(24)''
32273    03740204
32274    34371212
32275    52520261  F3M84   BCD     '  2/08(8),2/18(13)''
```



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32276    00107410
32277    34730261
32300    01107401
32301    02343712
32302    52520261  F3M85   BCD     '  2/08(8),2/18(12)''
32303    00107410
32304    34730261
32305    01107401
32306    02343712
32307    52521170  F3M94   BCD     '  9YESA'
32310    25622112
32311    52056101          BCD     ' 5/14(36),4/04,5/09(7)''
32312    04740306
32313    34730461
32314    00047305
32315    61001174
32316    07343712
32317    52521170  F3M95   BCD     '  9YHSA'
32320    30622112
32321    52056101          BCD     ' 5/14(36)''
32322    04740306
32323    34371212
```

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                    *
                    *       MESSAGES - FUNCTION 4
                    *
32324    52522431   F4M1    BCD     ' DISC KEYING ERROR'
32325    62231242
32326    25703145
32327    27122551
32330    51465112
32331    52662412           BCD     ' WD CT IS WD CT SB POT ADDR PIN ADDR CHN ERR  CON ER'
32332    23631231
32333    62126624
32334    12236312
32335    62221247
32336    46631221
32337    24245112
32340    47314512
32341    21242451
32342    12233345
32343    12255151
32344    12122346
32345    45122551
32346    51121263           BCD     'R  TIMEOUT ''
32347    31442546
32350    64635237
32351    52371212   F4M2    BCD     ' ''
32352    52522431   F4M3    BCD     ' DISC ERROR DURING READ ATTEMPT'
32353    62231225
32354    51514451
32355    12246451
32356    31452712
32357    51252124
32360    12216363
32361    25444763
32362    52662412           BCD     ' WD CT IS WD CT SB POT ADDR PIN ADDR CHN ERR  CON ER'
32363    23631231
32364    62126624
```



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32365    12236312
32366    62221247
32367    46631221
32370    24245112
32371    47314512
32372    21242451
32373    12233345
32374    12255151
32375    12122346
32376    45122551
32377    51121263           BCD     'R  TIMEOUT ''
32400    31442546
32401    64635237
32402    52522421   F4M4    BCD     ' DATA ERROR OR DISC ADDRESSING ERROR.'
32403    62211225
32404    51514451
32405    12465112
32406    24316223
32407    12212424
32410    51256262
32411    31452712
32412    25515146
32413    51331212
32414    52242163           BCD     ' DATA CORRESPONDS TO DISC ADDRESS.'
32415    21122346
32416    51512562
32417    47464524
32420    62126346
32421    12243162
32422    23122124
32423    24512562
32424    62331212
32425    52242163           BCD     ' DATA SB  DATA IS ''
32426    21126222
32427    12122421
32430    62211231
```

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32431    62523712
```



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                         *
                         *       MESSAGES - FUNCTION 5
                         *
32432    52534724  F5M1   BCD     '  PDBA RELAY FAILURE - '
32433    22211251
32434    65432172
32435    12262131
32436    43645125
32437    12401237
32440    42017342  F5M2   BCD     'K1,K3,K4,K8'
32441    03734204
32442    73421237
32443    42021224  F5M3   BCD     'K2 DRBPBUT'
32444    51464746
32445    64633712
32446    42017342  F5M4   BCD     'K1,K3,K4,K8'
32447    03734204
32450    73421237
32451    42061224  F5M5   BCD     'K6 DRBPBUT'
32452    51464746
32453    64633712
32454    42017342  F5M6   BCD     'K1,K3,K4'
32455    03734204
32456    37121212
32457    42021224  F5M7   BCD     'K2 DRBPBUT'
32460    51464746
32461    64633712
32462    42017342  F5M8   BCD     'K1,K2,K4'
32463    02734204
32464    37121212
32465    42021224  F5M9   BCD     'K3 DRBPBUT'
32466    51464746
32467    64633712
32470    42027342  F5M10  BCD     'K2,K4,K6'
32471    04734206
32472    37121212
```

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DISCF  TAP=3.0     04/25  20100   PAGE 417

32473    42031224  F5M11  BCD     '1K3 DR0P0UT''
32474    51464746
32475    64633712
32476    42027342  F5M12  BCD     '1K2,K3,K6''
32477    03734206
32500    37121212
32501    42041224  F5M13  BCD     '1K4 DR0P0UT''
32502    51464746
32503    64633712
32504    42037342  F5M14  BCD     '1K3,K6,K8''
32505    06734210
32506    37121212
32507    42041224  F5M15  BCD     '1K4 DR0P0UT''
32510    51464746
32511    64633712
32512    42037342  F5M16  BCD     '1K3,K4,K8''
32513    04734210
32514    37121212
32515    42061224  F5M17  BCD     '1K6 DR0P0UT''
32516    51464746
32517    64633712
32520    42057342  F5M18  BCD     '1K5,K9,K10,K12''
32521    11734201
32522    00734201
32523    02371212
32524    42071224  F5M19  BCD     '1K7 DR0P0UT''
32525    51464746
32526    64633712
32527    42057342  F5M20  BCD     '1K5,K9,K10,K12''
32530    11734201
32531    00734201
32532    02371212
32533    42010112  F5M21  BCD     '1K11 DR0P0UT''
32534    24514447
32535    46646337
32536    42057342  F5M22  BCD     '1K5,K9,K10''
```

```
DISCF  TAP=3.0     04/25  20100   PAGE 418

32537    11734201
32540    02371212
32541    42071224  F5M23  BCD     '1K7 DR0P0UT''
32542    51464746
32543    64633712
32544    42057342  F5M24  BCD     '1K5,K7,K10''
32545    07734201
32546    02371212
32547    42111224  F5M25  BCD     '1K9 DR0P0UT''
32550    51464746
32551    64633712
32552    42077342  F5M26  BCD     '1K7,K10,K11''
32553    01007342
32554    01013712
32555    42111224  F5M27  BCD     '1K9 DR0P0UT''
32556    51464746
32557    64633712
32560    42077342  F5M28  BCD     '1K7,K9,K11''
32561    11734201
32562    01371212
32563    42010112  F5M29  BCD     '1K10 DR0P0UT''
32564    24514447
32565    46646337
32566    42117342  F5M30  BCD     '1K9,K11,K12''
32567    01017342
32570    01033712
32571    42010112  F5M31  BCD     '1K10 DR0P0UT''
32572    24514447
32573    46646337
32574    42117342  F5M32  BCD     '1K9,K10,K12''
32575    01007342
32576    01033712
32577    42010112  F5M33  BCD     '1K11 DR0P0UT''
32600    24514447
32601    46646337
32602    02526225  F5M34  BCD     '  SEEK ERROR AFTER EXECUTING E0P 10326 (CLEAR)''
```

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32603    25421225
32604    51514451
32605    12217663
32606    25511225
32607    67252364
32610    63314527
32611    12254424
32612    12010003
32613    12061274
32614    23432521
32615    51341212
32616    52262246          BCD     ' FCB=6121 NOT INCORPERATED'
32617    40060102
32620    01124546
32621    63123145
32622    23465147
32623    25512163
32624    25241212
32625    52234251          BCD     ' CLR LOGIC = D15/E15 = DP LOGIC PAGES 1 AND 2'
32626    12434627
32627    31231240
32630    12240105
32631    73250105
32632    12401224
32633    47124346
32634    27312312
32635    47212725
32636    62120112
32637    21452412
32640    02371212
32641    52526231  F5=35   BCD     '  TIME TO VERIFY POSITION WITH POWER INITIALLY OFF'
32642    44251263
32643    46126525
32644    51312472
32645    12474662
32646    31633146
```



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32647    45124631
32650    63301947
32651    44662551
32652    12314531
32653    63312143
32654    43701246
32655    26261212
32656    52274125          BCD     ' GREATER THAN 118 MILLISEC.'
32657    61635551
32660    12633221
32661    45120101
32662    10124431
32663    43433162
32664    25233212
32665    52449443          BCD     ' MULTIVIBRATOR IN LOCATION C6 (ACCESS B) = MVBA ='
32666    63316531
32667    22512163
32670    44511231
32671    45124346
32672    23216331
32673    44451023
32674    26127421
32675    63235562
32676    62122234
32677    12401244
32700    65222112
32701    40131212
32702    52623246          BCD     ' SHOULD BE SET FOR 2 MILLISEC DURATION'
32703    64436412
32704    62251262
32705    25631226
32706    44511202
32707    12443143
32710    43316225
32711    23122464
32712    51216331
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32713    46451212
32714    52512526          BCD     ' REF: TIMING CHART = FIG 4-10, DP MANUAL P.4-36''
32715    15126331
32716    44314527
32717    12233021
32720    51631240
32721    12263127
32722    12044001
32723    00731224
32724    47124421
32725    45642143
32726    12473304
32727    40030437
32730    52522124  FSM36   BCD     '  ADDRESS 00-000-00 NOT VERIFIED WITHIN 500 MILLISEC''
32731    24512562
32732    62120000
32733    40000000
32734    40000012
32735    45466312
32736    05255131
32737    26312524
32740    12663163
32741    30314512
32742    15000012
32743    44314343
32744    31620523
32745    37121212
```



```
                          *
                          *       MESSAGES - FUNCTION 10
                          *
32746    52522464  F10M1   BCD     '  FUNCTION PARAMETER ERROR''
32747    45236331
32750    44451247
32751    21512144
32752    25632551
32753    12255151
32754    46513712
32755    52434624  F10M2   BCD     ' LODISC''
32756    31620737
32757    52434623  F10M3   BCD     ' LOCORE''
32760    46512537
32761    52432545  F10M4   BCD     ' LENGTH''
32762    27633037
32763    52464744  F10M5   BCD     ' OPMODE''
32764    46242537
32765    52303124  F10M6   BCD     ' HIDISC''
32766    31620737
32767    52371212  F10M7   BCD     ' ''
32770    12664451  F10M8   BCD     ' WORDIS   WORDSK  DISC ADD CORE ADD STRTDISC  LENGTH  WORD NO  ERROR NO
32771    24316212
32772    12126446
32773    51246222
32774    12122431
32775    62231221
32776    24241223
32777    46512512
33000    21242412
33001    02635163
33002    24316223
33003    12124325
33004    45276330
33005    12126446
33006    51241245
```

```
33007    46121325
33010    51514451
33011    12454437
33012    52523325  F10M9  BCD     ' HEADER !!
33013    21242551
33014    52371212
33015    52303123  F10M10 BCD     ' HICORE!!
33016    46512537
33017    52255151  F10M11 BCD     ' ERR FLAG !0STATUS T!S--TSB SRT DISC END DISC SRT CORE END CORE BLK LG!
33020    12264321
33021    27123146
33022    62637163
33023    64621363
33024    31634040
33025    63622212
33026    62516312
33027    24316323
33030    12254524
33031    12243162
33032    23126251
33033    63122346
33034    51251225
33035    45241223
33036    46512512
33037    22434212
33040    43276330
33041    37121212
```



```
                  *
                  *      MESSAGES - FUNCTION 18
                  *
33042    52303127  F18M1  BCD     ' HIGH ARM TOO LARGE!!
33043    30122151
33044    44126346
33045    46124321
33046    51272537
33047    52303127  F18M2  BCD     ' HIGH ARM LESS THAN L0, ARM!!
33050    30122151
33051    44124325
33052    62621363
33053    32214512
33054    43466412
33055    21514437
33056    52665431  F18M3  BCD     ' WRITE PROTECTED - DISC !
33057    62251247
33060    51461325
33061    43632524
33062    12401324
33063    31622312
33064    12121237  F18M4  BCD     '  !!
```

```
                    *
                    *       MESSAGES - FUNCTION 19
                    *
33065    52303127   F19M1   BCD     ' HIGH ARM TOO LARGE!!'
33066    30122151
33067    44126346
33070    46124321
33071    51272537
33072    52434666   F19M2   BCD     ' LOW ARM > HIGH ARM!!'
33073    12215144
33074    12161230
33075    51273212
33076    21514437
33077    52325454   F19M3   BCD     '  ****************DISC - '
33100    54545454
33101    54545454
33102    54545454
33103    54545424
33104    31622312
33105    46121212
33106    37121212   F19M4   BCD     '!!'
33107    52243162   F19M5   BCD     ' DISC TIMEOUT ERROR!!'
33110    23126331
33111    44254444
33112    63122551
33113    51465137
```



```
                    *
                    *       MESSAGES - FUNCTION 20
                    *
33114    52303127   F20M1   BCD     ' HIGH ARM TOO LARGE.!!'
33115    30122151
33116    44126346
33117    46124321
33120    51272537
33121    37121212
33122    52434666   F20M2   BCD     ' LOW ARM TOO LARGE.!!'
33123    12215144
33124    12434646
33125    12432151
33126    47252337
33127    52255151   F20M3   BCD     ' ERROR - TRACK NOT VERIFIED WITHIN 500MSEC.!'
33130    46511246
33131    12635121
33132    63421245
33133    46631265
33134    25513126
33135    51252412
33136    66316332
33137    31451305
33140    10004462
33141    25633312
33142    52215144           BCD     ' ARM NUMBER - !!'
33143    12456444
33144    42255112
33145    13123712
33146    52325454   TITLE   BCD     '  ********** DISC '
33147    54545454
33150    54545454
33151    12243462
33152    23121212
33153    00000000   TITLE1  PZE
```

```
                    *
                    *       MESSAGES - FUNCTION 21
                    *
33154    52303124   F21M1   BCD     ' HIDISC = LODISC!!
33155    31622312
33156    36124346
33157    24316223
33160    37121212
33161    52263143   F21M2   BCD     ' FILE NOT ON LINE!!
33162    25124546
33163    63124445
33164    12433145
33165    25371212
33166    52233021   F21M3   BCD     ' CHANGE WRITE HEADER SWITCH!!
33167    45272512
33170    66513163
33171    25123025
33172    61242551
33173    12626431
33174    63233037
33175    52475125   F21M4   BCD     ' PREMATURE CHANNEL DISCONNECT!!
33176    44216364
33177    51251223
33200    30214545
33201    25431224
33202    31622346
33203    45452523
33204    63371212
33205    52243162   F21M5   BCD     ' DISC WRITE PROTECTED!!
33206    23124651
33207    31632512
33210    47514463
33211    25236325
33212    24371212
33213    52233021   F21M6   BCD     ' CHANNEL ERROR!!
33214    45452543
```



```
33215    12251151
33216    46513712
33217    52651131   F21M7   BCD     ' WRITE MONITOR ERROR!!
33220    63251244
33221    46453163
33222    46511225
33223    51514451
33224    37121212
```

```
                        *
                        *       MESSAGES . FUNCTION 22
                        *
33225     52254524  F22M1  BCD     ' ENDISC < STDISC''
33226     31622312
33227     36126263
33230     24316223
33231     37121212
33232     52622523  F22M2  BCD     ' SECTOR COUNT ERROR''
33233     63465112
33234     23466445
33235     63122551
33236     51465137
33237     52263143  F22M3  BCD     ' FILE NOT ON LINE''
33240     25124546
33241     63124645
33242     12433145
33243     25371212
33244     52233021  F22M4  BCD     ' CHANGE WRITE HEADER SWITCH''
33245     45272512
33246     66513163
33247     25123025
33250     21242551
33251     12626631
33252     63233037
33253     52243162  F22M5  BCD     ' DISC WRITE PROTECTED''
33254     23126651
33255     31632512
33256     47514663
33257     25230325
33260     24371212
33261     52233021  F22M6  BCD     ' CHANNEL ERROR''
33262     45452543
33263     12255151
33264     46513712
33265     52234645  F22M7  BCD     ' CONTROLLER ERROR''
```



```
33266     63514643
33267     43255112
33270     25515146
33271     51371212
                                END
LITERALS USED:
33272     00000000
33273     77777777
33274     00000007
33275     77600000
33276     00177400
33277     00000003
33300     77765115
33301     00037777
33302     00000315
33303     00000066
33304     00000017
33305     00000037
33306     00000077
33307     00000177
33310     00000377
33311     00000777
33312     00001777
33313     00003777
33314     00007777
33315     00017777
33316     00004001
33317     00010002
33320     00020004
33321     00040010
33322     00100020
33323     00043777
33324     00174000
33325     07000000
33326     00777777
33327     00020573
```

```
33330    00011410
33331    00105602
33332    77770143
33333    00074000
33334    00234000
33335    00017500
33336    00034000
33337    00034000
33340    00034077
33341    04074000
33342    00034100
33343    00062566
33344    00000101
33345    00034040
33346    00037000
33347    10034000
33350    25522552
33351    00034003
33352    77774000
33353    77760000
33354    00760000
33355    77777775
33356    77776720
33357    00000764
33360    00000166
33361    00700000
33362    22026610
33363    77770007
33364    00005520
33365    77000000
33366    00007000
33367    00000700
33370    70005500
33371    20004400
33372    00003300
33373    00002200
```



```
33374    00000241
33375    00000161
33376    00177777
33377    00070000
33400    00000307
33401    00000160
33402    00033000
33403    00003300
33404    77077777
33405    00760000
33406    00007140
33407    77777771
33410    77777701
33411    77777700
33412    00017600
33413    77777711
33414    77776721
33415    77771434
33416    77771431
33417    00398837
33420    71007000
33421    00000600
33422    00001170
33423    33441031
33424    00003317
33425    00660067
33426    00000070
33427    00007707
33430    00003737
33431    77776716
33432    00000060
33433    00000016
33434    58880500
33435    02606054
33436    00006000
33437    00006600
```

```
33440    54545454
33441    52606060
33442    00606060
33443    00010203
33444    04050607
33445    37373737
33446    77777723
33447    00001750
33450    00000005
33451    00000063
33452    00000024
33453    00000012
33454    00040000
33455    00000055
33456    77776571
33457    00001700
33460    00000042
33461    52040500
33462    00001500
33463    52010000
33464    04040404
33465    37121212
33466    00777600
33467    77777400
33470    00777740
33471    04034000
33472    77754360
33473    00056401
33474    00145354
33475    00054512
33476    00157466
33477    00000067
33500    00001237
33501    00000273
33502    00001337
```


33503 CELLS USED BY PROGRAM

LOCAL SYMBOLS USED =

A1	15455+	ABORT	14677+	ABORT1	14707+
A	23305+	B1A2A	13427+	B1A2B	13433+
B1AND2	13363+	B1ONLY	13331+	B1	15456+
B2ONLY	13333+	BADTIM	15450+	BEGN1P	17023+
BIT0	15403+	BIT1	15404+	BIT10	15415+
BIT11	15416+	BIT12	15417+	BIT13	15420+
BIT14	15421+	BIT15	15422+	BIT16	15423+
BIT17	15424+	BIT1P	15425+	BIT19	15426+
BIT2	15405+	BIT20	15427+	BIT21	15430+
BIT22	15431+	BIT23	15432+	BIT3	15406+
BIT4	15407+	BIT5	15410+	BIT6	15411+
BIT7	15412+	BIT8	15413+	BIT9	15414+
BLKMAX	15452+	B	23306+	C1A2A	15061+
C1A2B	15076+	C1A2C	15116+	C1A2D	15120+
C1AND2	15047+	CAPTBL	15470+	CDVR1	14426+
CDVR2	14436+	CDVR3	14437+	CDVR4	14441+
CDVR5	14460+	CDVR6	14467+	CDVR7	14506+
CHART	20423+	CHART1	20431+	CHART2	20457+
CHART3	20477+	CHART4	20515+	CHECK	23053+
CHECK1	23071+	CHECK2	23074+	CHICK	14525+
CHNCK0	14566+	CHNCK1	14602+	CHNCK2	14604+
CHNCK3	14617+	CHNCK4	14560+	CHNDVR	14417+
CK0	13117+	CK1	13132+	CK2	13140+
CK3	13163+	CK4	13166+	CLCNT	20366+
CLEAR	23427+	CLINT	23235+	CLRCNT	4754+
CNTRS	15675+	COMPEN	23410+	COMP1	13476+
COMPAR	13446+	CONKEY	13525+	COUNT	15453+
CP9T1	20766+	CP9T2	22775+	CP9T3	23004+
CP9T4	20013+	D00T17	4767+	D20T37	4770+
DATA1	14726+	DATA2	14740+	DATA3	14762+
DATA4	14765+	DATA5	15004+	DATA6	15012+

DATA7		15025+	DATAR		15045+	DATACK	14712+
DATERR		15135+	DDVR0		14254+	DDVR1	14265+
DDVR2		14275+	DDVR3		14345+	DDVR4	14357+
DDVR5		14405+	DELTA		17620+	DERR1	15205+
DERR2		15214+	DHEAD		15437+	DISCCK	23022+
DIVERT		450	DONE		452	DRIVE1	14241+
DRIVER		14212+	DSCDVR		14244+	DSCSIZ	404
END		434	END1		4646+	END19	N 17544+
ENDF1		21232+	ENDF10		13362+	ENDF2	N 6641+
ENDF3		11460+	ENDF4		12155+	ENDF5	N 12615+
ENDISC		23327+	ENDIT		20154+	ENDP0S	15243+
ENTER		23351+	ENTIM		20351+	ERR0R	460
ERR9RS		414	ERRTBL		15460+	ETBLE	35207
F1001A		4062+	F1001B		4076+	F1001C	4100+
F1001D		4072+	F1002A		4116+	F1002B	4132+
F1002C		4134+	F1002D		4126+	F1003A	4147+
F1003B		4152+	F10END		13352+	F10M1	32746+
F10M10		32715+	F10M11		33017+	F10M2	32755+
F10M3		32757+	F10M4		32761+	F10M5	32763+
F10M6		32765+	F10M7		32767+	F10M8	32770+
F10M9		33012+	F18E1		17043+	F18M1	33042+
F18M2		33047+	F18M3		33056+	F18M4	33064+
F19I1		17255+	F19I10		17522+	F19I11	17545+
F19I12		17304+	F19I13		17536+	F19I14	17614+
F19I15		17233+	F19I2		17267+	F19I3	17306+
F19I4		17344+	F19I5		17370+	F19I6	17403+
F19I7		17417+	F19I7A		17450+	F19I8	17454+
F19I9		17471+	F19M1		33065+	F19M2	33072+
F19M3		33077+	F19M4		33106+	F19M5	33107+
F1S1		22202+	F1S1A		22222+	F1S1B	22224+
F1S1C		22237+	F1S1D		22241+	F1S2	22243+
F1S2A		22254+	F1S2B		22261+	F20L1	20122+
F20M1		33114+	F20M2		33122+	F20M3	33127+
F21E0		21133+	F21F1		21150+	F21E2	21111+
F21M1		33154+	F21M2		33161+	F21M3	33166+
F21M4		33170+	F21M5		33205+	F21M6	33213+

F21M7		33217+	F22M1		33225+	F22M2	33232+
F22M3		33237+	F22M4		33244+	F22M5	33253+
F22M6		33261+	F22M7		33265+	F23E1	22246+
F23L1		22235+	F23L2		22233+	F2E10	6173+
F2E49		6534+	F2E50		6551+	F2E51	6566+
F2E52		6223+	F2E56		6621+	F2E57	6640+
F2E58		6500+	F2E9		6146+	F2L1	6132+
F2L2		6162+	F2L3		6170+	F2L31	6206+
F2L32		6217+	F2M1		24364+	F2M10	24612+
F2M100		27100+	F2M101		27109+	F2M102	27114+
F2M103		27123+	F2M104		27132+	F2M105	27141+
F2M106		27150+	F2M107		27160+	F2M108	27167+
F2M109		27176+	F2M11		24630+	F2M110	27205+
F2M111		27214+	F2M112		27224+	F2M113	27233+
F2M114		27242+	F2M115		27252+	F2M116	27264+
F2M117		27313+	F2M118		27354+	F2M119	27403+
F2M12		24645+	F2M120		27432+	F2M121	27460+
F2M122		27504+	F2M13		24665+	F2M14	24677+
F2M15		24711+	F2M16		24723+	F2M17	24760+
F2M18		24771+	F2M19		25004+	F2M2	24452+
F2M20		25057+	F2M21		25113+	F2M22	25145+
F2M3		24479+	F2M32		25174+	F2M33	25267+
F2M34		25313+	F2M35		25324+	F2M36	25347+
F2M37		25360+	F2M38		25371+	F2M39	25402+
F2M4		24505+	F2M40		25411+	F2M41	25420+
F2M42		25427+	F2M43		25440+	F2M44	25451+
F2M45		25462+	F2M46		25473+	F2M47	25502+
F2M48		25511+	F2M49		25522+	F2M50	25533+
F2M51		25542+	F2M52		25551+	F2M53	25563+
F2M54		25575+	F2M55		25607+	F2M56	25621+
F2M57		25633+	F2M58		25645+	F2M59	25657+
F2M6		24517+	F2M60		25671+	F2M61	25702+
F2M62		25713+	F2M63		25724+	F2M64	25735+
F2M65		25746+	F2M66		25757+	F2M67	25770+
F2M68		24001+	F2M69		26017+	F2M7	24531+
F2M70		26035+	F2M71		26053+	F2M72	26076+

F2M73	26119+	F2M73A	26144+	F2M74	26202+
F2M74A	26231+	F2M75	26273+	F2M76	26342+
F2M77	26375+	F2M78	26422+	F2M79	26452+
F2M8	24543+	F2M80	26500+	F2M81	26537+
F2M82	26562+	F2M83	26605+	F2M84	26633+
F2M85	26657+	F2M86	26704+	F2M87	26731+
F2M88	26755+	F2M89	26777+	F2M9	24563+
F2M90	27016+	F2M91	27023+	F2M92	27030+
F2M93	27035+	F2M94	27042+	F2M95	27047+
F2M96	27054+	F2M97	27061+	F2M98	27066+
F2M99	27073+	F2S1	22264+	F2S1A	22275+
F2S1B	22300+	F2S2	22303+	F2S2A	22314+
F2S2B	22316+	F2S3	22321+	F2S3A	22337+
F2S4	22342+	F2S4A	22357+	F2S5	22362+
F2S5A	22404+	F2S5B	22405+	F2S6	22407+
F2S6A	22432+	F2S6B	22437+	F2S6C	22440+
F2S7	22445+	F2S7A	22457+	F2S7B	22464+
F2S7C	22465+	F3E1	7072+	F3E10	7237+
F3E11	7254+	F3E18	7363+	F3E19	7400+
F3E2	7105+	F3E20	7423+	F3E21	7472+
F3E22	7541+	F3E23	7566+	F3E24	7613+
F3E25	7705+	F3E3	7115+	F3E60	10235+
F3E61	10254+	F3E62	7647+	F3E63	7761+
F3E64	10323+	F3E65	10353+	F3E66	10406+
F3E67	10440+	F3E68	10564+	F3E69	10631+
F3E70	10662+	F3E71	10711+	F3E72	10763+
F3F73	11035+	F3E74	11110+	F3E75	11215+
F3E76	11244+	F3E77	11267+	F3E78	11312+
F3E79	11336+	F3E8	7151+	F3E81	11370+
F3E82	11414+	F3E83	10507+	F3E85	11427+
F3E86	11457+	F3E9	7200+	F3L1	7216+
F3L2	7234+	F3L3	7317+	F3L4	7330+
F3L44	10221+	F3L45	7624+	F3L46	7641+
F3L47	7644+	F3L48	7716+	F3L49	7723+
F3L5	7345+	F3L50	7736+	F3L51	7741+
F3L52	7747+	F3L53	7751+	F3L54	10275+

F3L55	10310+	F3L56	10315+	F3L57	10374+
F3L58	10427+	F3L59	10430+	F3L6	7353+
F3L60	10544+	F3L61	10551+	F3L62	10563+
F3L63	10614+	F3L64	10747+	F3L65	10760+
F3L66	11021+	F3L67	11032+	F3L68	11073+
F3L69	11105+	F3L7	7421+	F3L70	11165+
F3L71	11170+	F3L72	11204+	F3L73	11226+
F3L74	11242+	F3L75	11256+	F3L76	11301+
F3L77	11324+	F3L78	10901+	F3L8	7460+
F3L9	7527+	F3M1	27651+	F3M10	30011+
F3M11	30026+	F3M12	30064+	F3M13	30156+
F3M14	30201+	F3M15	30217+	F3M16	30236+
F3M17	30254+	F3M18	30272+	F3M19	30311+
F3M2	27646+	F3M20	30322+	F3M21	30362+
F3M22	30377+	F3M23	30457+	F3M24	30554+
F3M25	30572+	F3M26	30655+	F3M27	30676+
F3M28	30727+	F3M29	30735+	F3M3	27661+
F3M30	31010+	F3M31	31045+	F3M32	31102+
F3M33	31134+	F3M34	31152+	F3M35	31160+
F3M36	31163+	F3M37	31173+	F3M38	31176+
F3M39	31205+	F3M4	27670+	F3M40	31216+
F3M41	31221+	F3M42	31224+	F3M43	31227+
F3M44	31236+	F3M45	31245+	F3M46	31250+
F3M47	31253+	F3M48	31261+	F3M49	31271+
F3M50	31274+	F3M51	31277+	F3M52	31303+
F3M53	31306+	F3M54	31313+	F3M55	31333+
F3M56	31364+	F3M57	31435+	F3M58	31477+
F3M59	31517+	F3M6	27677+	F3M60	31537+
F3M61	31554+	F3M62	31576+	F3M63	31634+
F3M64	31676+	F3M65	31705+	F3M66	31712+
F3M67	31737+	F3M68	31747+	F3M69	31766+
F3M7	27752+	F3M70	32004+	F3M71	32011+
F3M72	32016+	F3M73	32046+	F3M74	32070+
F3M75	32110+	F3M76	32146+	F3M77	32147+
F3M78	32170+	F3M79	32224+	F3M8	27770+
F3M80	32236+	F3M81	32243+	F3M82	32255+

F3M83	32270•	F3M84	32275•	F3M85	32302•
F3M9	27776•	F3M94	32307•	F3M95	32317•
F3S1	22470•	F3S1A	22505•	F3S1B	22512•
F3S1C	22514•	F3S2	22515•	F3S2A	22534•
F3S2B	22535•	F3S3	22537•	F3S3A	22573•
F3S3B	22611•	F3S3C	22612•	F3S4	22614•
F3S4A	22657•	F4E1	12037•	F4E2	12154•
F4L1	11731•	F4L10	12116•	F4L11	12156•
F4L11A	12174•	F4L2	11743•	F4L3	11754•
F4L4	12001•	F4L5	11767•	F4L6	12043•
F4L7	12055•	F4L8	12076•	F4L9	12104•
F4M1	32324•	F4M2	32351•	F4M3	32352•
F4M4	32402•	F4S1	12041•	F5E10	12614•
F5E9	12564•	F5L49	12527•	F5L50	12574•
F5L51	12611•	F5M1	32432•	F5M10	32470•
F5M11	32473•	F5M12	32476•	F5M13	32501•
F5M14	32504•	F5M15	32507•	F5M16	32512•
F5M17	32515•	F5M18	32520•	F5M19	32524•
F5M2	32440•	F5M20	32527•	F5M21	32533•
F5M22	32536•	F5M23	32541•	F5M24	32544•
F5M25	32547•	F5M26	32552•	F5M27	32555•
F5M28	32560•	F5M29	32563•	F5M3	32443•
F5M30	32566•	F5M31	32571•	F5M32	32574•
F5M33	32577•	F5M34	32602•	F5M35	32641•
F5M36	32730•	F5M4	32446•	F5M5	32451•
F5M6	32454•	F5M7	32457•	F5M8	32462•
F5M9	32465•	F5S1	22660•	F5S1A	22670•
F5S1B	22700•	F5S1C	22705•	F5S1D	22715•
F5S1E	22722•	F5S1F	22731•	F5S1G	22736•
F5S1H	22735•	FAM1	5343•	FAM10	15730•
FAM18	17114•	FAM19	17655•	FAM2	6670•
FAM20	20600•	FAM21	21251•	FAM22	21506•
FAM23	22047•	FAM3	11506•	FAM4	12216•
FAM5	12635•	FDBNF	456	FIM1	5335•
FIM10	15674•	FIM18	17076•	FIM19	17642•
FIM2	6650•	FIM20	20566•	FIM21	21241•

FIM22	21477•	FIM23	22057•	FIM3	11467•
FIM4	12203•	FIM5	12624•	FIXC	13772•
FIXD	13617•	FLAGS	332	FORT	20541•
FPT1	4771•	FPT10	15660•	FPT18	17070•
FPT19	17634•	FPT2	6642•	FPT20	20554•
FPT21	21233•	FPT22	21471•	FPT23	22051•
FPT3	11461•	FPT4	12175•	FPT5	12616•
FSTART	13046•	FUNCTN	424	FUNC1	4044•
FUNC10	15740•	FUNC18	16771•	FUNC19	17225•
FUNC2	5444•	FUNC20	20114•	FUNC21	21100•
FUNC22	21373•	FUNC23	21762•	FUNC2A	5460•
FUNC3	7042•	FUNC4	11707•	FUNC5	12412•
FVM1	5436•	FVM10	15705•	FVM18	17107•
FVM23	22044•	FVT1	4777•	GET	15231•
GETCAP	15255•	GETIME	15266•	HICORE	15670•
HIDISC	15672•	HILBL	52340500	I1FLAG	15442•
I1FLAG	15443•	I30T44	23402•	I31	243
I43	247	I56174	23401•	I64	311
I65	313	I66	315	I67	317
ILXT	23372•	IMSG1	23445•	IMSG2	23446•
INCMNT	4731•	INCNT1	4636•	INCMNT	4622•
INPBS1	13025•	INPBS2	13030•	INPBS3	13036•
INPBS4	13043•	INT31	242	INT33	246
INT64	310	INT65	312	INT66	314
INT67	316	INTER	15350•	INTER1	15366•
INTRPT	15441•	INTX1	314	INTX2	316
IOHEAD	15440•	IOSTAT	15305•	ITABLE	23441•
IX1	315	IX2	317	KEY	15445•
LAST	20050•	LENGTH	15673•	LINES	46
LOCBRL	15667•	LODISC	15671•	LTIME	12
M1001A	23667•	M1003A	23705•	M1004A	23715•
M1005A	23740•	M1006A	23747•	M1007A	23756•
M1008A	23765•	M1009A	23774•	M1010A	24003•
M1011A	24012•	M1012A	24021•	M1013A	24030•
M1014A	24037•	M1015A	24046•	M1016A	24055•
M1017A	24065•	M1018A	24075•	M1019A	24105•

M1020A	24116+	M1023A	24130+	M1024A	24137+
M1025A	24146+	M1026A	24155+	M1027A	24164+
M1028A	24173+	M1029A	24202+	M1030A	24211+
M1031A	24220+	M1032A	24227+	M1033A	24236+
M1034A	24246+	M1035A	24256+	M1036A	24266+
M1037A	24276+	M1038A	24306+	M1039A	24317+
M1040A	24324+	M1041A	24331+	M1042A	24336+
M1043A	24343+	M2013B	24350+	MASK	17624+
MINUS	17630+	MBVTIM	15451+	NEWSEC	15447+
NFFLG	23330+	NORMAL	23106+	NORML1	23111+
NORML2	23117+	OBJECT	430	OPMODE	15666+
PLT1B	17051+	PATERN	15674+	PERR1	13306+
PERR2	13313+	PHASE	15457+	PI2	23333+
PL0T	20162+	PL0T1	20201+	PL0T1A	20210+
PL0T2	20221+	PL0T2A	20234+	PL0T2B	20244+
PL0T3	20306+	PL0T4	20323+	PL0T4A	20337+
PL0T4B	20347+	P01	23163+	P02	23171+
P03	23177+	P04	23212+	P05	23214+
P06	23216+	P07	23224+	P08	23232+
P0P	23374+	P0TOUT	23153+	P0TPIP	23243+
P0TARD	23332+	PRE1	12753+	PRE2	12760+
PRE3	12762+	PRE4	13013+	PRE5	13017+
PTPN1	23246+	PTPN2	23254+	PUT	20374+
RANC1	13736+	RANC2	13741+	RANC3	13742+
RAND	13560+	RANDBM	15337+	READ	15434+
REP1	14670+	REPERR	14620+	REPORT	454
RESET	15236+	RETRY	15454+	RETURN	440
RL1	415	RL2	416	RMODE	15433+
RRSW	15446+	SAV	15224+	SAVDP.	13627+
SCARET	13775+	SDVR0	14032+	SDVR2	14044+
SDVR3	14062+	SDVR4	14047+	SDVR5	14056+
SDVR6	14054+	SEE	406	SEQC	13747+
SEND	13572+	SEQ01	13601+	SETCAD	13710+
SETDVS	13777+	SETCAS	13551+	SETUP2	22740+
SETUP3	22747+	SETUP4	22755+	SLEN	13630+
SLEN0	13634+	SLEN1	13642+	SLEN2	13645+

SLEN3	13656+	SLEN4	13666+	SLEN5	13701+
SLEN6	13675+	SPR1	14101+	SPR2	14113+
SPR3	14134+	SPR4	14155+	SPR5	14173+
SPR6	14210+	SPREAD	14264+	SPUR	23357+
STACOR	34000	START	13320+	STATUS	401
STDISC	23326+	STFLAG	15444+	STRT1A	17025+
STRTIT	17144+	SYSIZE	405	TABLE	34000
TABLE1	15530+	TABLE2	15540+	TABLE3	15550+
TEMP	23310+	TEMPA	23311+	TEMPB	23312+
TEMPC	23313+	TEMPD	23314+	TENS	4
TERM	23045+	TIMOUT	23331+	TIMTBL	15560+
TITLE	23146+	TITLE1	23163+	TMIT	20252+
TMIT1	20270+	U19M1	23471+	U19M10	23620+
U19M11	23638+	U19M12	23640+	U19M13	23641+
U19M14	23654+	U19M2	23476+	U19M3	23505+
U19M4	23517+	U19M5	23530+	U19M6	23536+
U19M7	23551+	U19M8	23567+	U19M9	23607+
UAR	5007+	UIM	5006+	UNITS	5
UNIT	420	UPT	4761+	UTIME	55
UVT	4326+	UVT	4766+	VAR1	23315+
VAR2	23316+	VAR3	23317+	VAR4	23320+
VAR5	23321+	VAR6	23322+	VAR7	23323+
VAR8	23324+	VAR9	23325+	VERERR	23533+
W200	23265+	W500	23275+	WAIT	23123+
WAIT1	23127+	WAIT2	23143+	WAIT3	23145+
WAIT4	23150+	WFIP	14510+	WFIP1	14514+
WFIP2	14528+	WORDS	1406	WORD	23562+
WRITE	15435+	XMODE	15436+	X	23307+