RK611 RK611 DSKLS PRT 2 AH-9102D-MC MAR 1982
RK06,RK07 CZR6BDO FICHE 1 OF 1
MADE IN USA

```
                        .REM %
                                IDENTIFICATION

                        PRODUCT CODE:   AC-9100D-MC

                        PRODUCT NAME:   CZR6BD0 RK611 DKSLS PRT2

                        DATE:           AUGUST 10 1981

                        MAINTAINER:     DIAGNOSTIC GROUP

                        AUTHOR:         BRIAN LE BLANC


                        THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT
                        NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL
                        EQUIPMENT CORPORATION.  DIGITAL EQUIPMENT CORPORATION ASSUMES
                        NO RESPONSIBILITY FOR ANY ERROR THAT MAY APPEAR IN THIS DOCUMENT.

                        THE SOFTWARE DESCRIBED IN THIS DOCUMENT IS FURNISHED UNDER A
                        LICENCE AND MAY ONLY BE USED OR COPIED IN ACCORDANCE WITH THE
                        TERMS OF SUCH LICENSE.

                        DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR
                        THE USE OF RELIABILITY OF ITS SOFTWARE ON EQUIPMENT THAT IS
                        NOT SUPLIED BY DIGITAL.

                             COPYRIGHT (C) 1976,1981 BY DIGITAL EQUIPMENT CORPORATION
```

TABLE OF CONTENTS

1.0 ABSTRACT

THE RK611 DISKLESS CONTROLLER DIAGNOSTIC. PART 2 TEST THE LOADING OF THE DRIVE BUS MESSAGES BY EXECUTING CLASS A COMMANDS. SOME TESTS EXECUTE COMMANDS PARTIALLY MAINTENANCE MODE AND PARTIALLY AT NORMAL SPEED TO FOOL THE CONTROLLER AND FORCE ERRORS. THIS PROGRAM DOES NOT REQUIRE THE PRESENCE OF AN RK06 DRIVE.

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP-11 SYSTEM (16K CORE MEMORY)
CONSOLE TERMINAL
DECTAPE, PAPER TAPE READER, OR DECDISK
RK611 CONTROLLER

2.2 PRELIMINARY PROGRAMS

RK611 DISKLESS CONTROLLER DIAGNOSTIC: PART 1
CZR6AXX

3.0 OPERATING PROCEDURES

3.1 LOADING PROCEDURE

THE PROGRAM CAN BE LOADED FROM PAPER TAPE USING ABSOLUTE LOADER OR FROM ANY MEDIA SUPPORTED BY XXDP.

3.2 STARTING PROCEDURE

```
                        LOCATION 200    - START PROGRAM

                        LOCATION 204    - RESTART PROGRAM

                        LOCATION 214    - REQUEST BUS ADDRESS, VECTOR ADDRESS, AND
                                          PRIORITY MODIFICATION

                3.3 OPTIONAL SWITCH SETTINGS

                        SW15 -  HALT PROGRAM
                        SW14 -  LOOP ON TEST
                        SW13 -  INHIBIT ERROR TYPE OUT
                        SW12 -  ABORT AFTER 20 ERRORS
                        SW11 -  INHIBIT ITERATION COUNT
                        SW10 -  BELL ON ERROR
                        SW9  -  LOOP ON ERROR
                        SW8  -  LOOP ON TEST IN SWITCHES 0-7


                3.5 RUN TIME

                        FIRST PASS              7 SECONDS
                        SUBSEQUENT PASSES       2 MINUTES


                4.0     OPERATING PROCEDURES

                THE PROGRAM IS EXECUTED BY STARTING AT THE APPROPIATE ADDRESS.


                5.0 PROGRAM DESCRIPTION

                        **DRIVE MESSAGE LOADING

                                TEST 1  FIRST COMMAND IN MAINT MODE

                                        INITIALIZE RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER I
                                        MODE. ISSUE SELECT DRIVE. WAIT AND MAKE SURE CS1 REMAINS
                                        THE SAME. CLOCK IN MESSAGES A AND B. MAKE SURE
                                        CORRECT MSG ARE LOADED. CHECKING IS DONE A FIELD AT A
                                        TIME.


                                TEST 2  DRIVE SELECT BITS LOADING FOR DRIVE MESS.

                                        INITIALIZE RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER
                                        DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 2 WIT
                                        ZERO.  LOAD COMMAND AND STATUS REGISTER WITH A SELECT
                                        COMMAND.  CLOCK IN MESSAGES A AND B INTO SHIFT REGISTER.
                                        MAKE SURE CORRECT MESSAGES ARE LOADED.  REPEAT FOR DRIVE
                                        SELECT = 1-17.


                                TEST 3  FORMAT BIT LOADING TO FOR DRIVE MESS.

                                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                        DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WIT
```

```
                        A SELECT COMMAND AND 24 SECTOR MODE FORMAT.  MAKE SURE
                        CORRECT MESSAGE IS LOADED.


                TEST 4  HEAD SELECT BITS LOADING FOR DRIVE MESS.

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD TRACK ADDRESS WITH ZERO.  LOAD
                        COMMAND AND STATUS REGISTER 2 WITH ZERO.  LOAD COMMAND
                        AND STATUS REGISTER WITH SELECT COMMAND.  CLOCK IN
                        MESSAGE A AND B INTO SHIFT REGISTER.  MAKE SURE CORRECT
                        MESSAGE IS LOADED.  REPEAT FOR TRACK ADDRESS = 1-7.


                TEST 5  MESSAGE SELECT BITS LOADING FOR DRIVE MESS.

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE AND ZERO IN MESSAGE SELECT BITS.  LOAD
                        COMMAND AND STATUS REGISTER 1 WITH A SELECT COMMAND.  CL
                        IN MESSAGE A AND B INTO SHIFT REGISTER.  MAKE SURE
                        CORRECT MESSAGE IS LOADED.  REPEAT FOR MESSAGE SELECT =


                TEST 6  CLEAR DRIVE COMMAND LOADING FOR DRIVE MESS

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WIT
                        A DRIVE CLEAR.  CLOCK MESSAGE A AND B INTO SHIFT REGISTE
                        MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.  REPEAT
                        FOR 24 SECTOR FORMAT.


                TEST 7  UNLOAD COMMAND LOADING FOR DRIVE MESS.

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WIT
                        AN UNLOAD COMMAND.  CLOCK IN MESSAGES A AND B INTO SHIFT
                        REGISTERS.  MAKE SURE SHIFT REGISTERS ARE LOADED CORRECT
                        REPEAT FOR 24 SECTOR FORMAT.


                TEST 10 PACK ACKNOWLEDGE COMMAND LOADING FOR DRIVE MESS.

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WIT
                        A PACK ACKNOWLEDGE.  CLOCK MESSAGES A AND B INTO SHIFT
                        REGISTERS.  MAKE SURE SHIFT REGISTERS ARE LOADED CORRECT
                        REPEAT FOR 24 SECTOR FORMAT.


                TEST 11 RECALIBRATE COMMAND LOADING FOR DRIVE MESS.

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WIT
                        A RECALIBRATE.  CLOCK MESSAGES A AND B INTO SHIFT REGIST
                        MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.
```

```
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
```

TEST 12 START SPINDLE COMMAND LOADING FOR DRIVE MESS.

CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD COMMAND AND STATUS REGISTER 1 WIT A START SPINDLE. CLOCK MESSAGES A AND B INTO SHIFT REGI MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.

TEST 13 SEEK AND CYLINDER ADD 0-777 LOADING FOR DRIVE MESS

CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD ZERO IN CYLINDER ADDRESS. LOAD COMMAND AND STATUS REGISTER 1 WITH A SEEK COMMAND. CLOCK IN MESSAGE A AND B INTO SHIFT REGISTER. MAKE SURE CORRECT MESSAGE IS LOADED. REPEAT FOR CYLINDER = 1-777.

TEST 14 SEEK AND CYLINDER BIT 9 AND RK06 FOR DRIVE MESS.

CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD 1000 IN CYLINDER ADDRESS. LOAD COMMAND AND STATUS REGISTER 1 WITH A SEEK COMMAND. CLOCK IN MESSAGE A AND B INTO SHIFT REGISTERS. MAKE SURE CYLINDER BIT 9 IN MESSAGE IN RESET. REPEAT FOR CYLINDER = 1400.

TEST 15 SEEK AND CYLINDER ADD 0,777-1777 LOADING FOR DRIVE MESS

CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD 0 IN CYLINDER ADDRESS. LOAD COMMAND AND STATUS REGISTER 1 WITH SEEK COMMAND AND CDT SET. CLOCK IN MESSAGE A AND B INTO SHIFT REGISTER. MAKE SURE CYLINDER CORRECT. REPEAT FOR CYLINDER = 777-1

TEST 16 OFFSET COMMAND LOADING FOR DRIVE MESS.

CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD OFFSET REGISTER WITH 0. LOAD COMMAND AND STATUS REGISTER 1 WITH AN OFFSET. CLOCK MESSAGES A AND B INTO SHIFT REGISTERS. MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY. REPEAT FOR OFFSET REGISTER = 1-377.

TEST 17 CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 1)

CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD CYLINDER ADDRESS REGISTER WITH 777. LOAD THE OFFSET REG TO 52. LOAD COMMAND AND STATUS REGISTER 1 WITH A SELECT. CLOCK MESSAGES A AND B INTO SHIFT REGISTERS. MAKE SURE

```
                        SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
                        ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.


TEST 20 CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 2)

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
                        WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
                        AND STATUS REGISTER 1 WITH A PACK ACKNOWLEDGE.  CLOCK
                        MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
                        SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
                        ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.


TEST 21 CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 3)

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
                        WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
                        AND STATUS REGISTER 1 WITH A CLEAR DRIVE.  CLOCK
                        MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
                        SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
                        ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.


TEST 22 CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 4)

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
                        WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
                        AND STATUS REGISTER 1 WITH AN UNLOAD.  CLOCK
                        MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
                        SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
                        ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.


TEST 23 CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 5)

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
                        WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
                        AND STATUS REGISTER 1 WITH A START SPINDLE.  CLOCK
                        MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
                        SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
                        ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.


TEST 24 CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 6)

                        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
                        WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
                        AND STATUS REGISTER 1 WITH A RECALIBRATE.  CLOCK
                        MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
                        SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
```

```
                        ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.


TEST 25 MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 1)

        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
        DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
        COMMAND AND STATUS REGISTER 1 WITH A PACK ACKNOWLEDGE.
        CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
        MESSAGE SELECT BITS ARE CLEARED.


TEST 26 MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 2)

        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
        DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
        COMMAND AND STATUS REGISTER 1 WITH A DRIVE CLEAR.
        CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
        MESSAGE SELECT BITS ARE CLEARED.


TEST 27 MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 3)

        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
        DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
        COMMAND AND STATUS REGISTER 1 WITH AN UNLOAD.
        CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
        MESSAGE SELECT BITS ARE CLEARED.


TEST 30 MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 4)

        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
        DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
        COMMAND AND STATUS REGISTER 1 WITH A START SPINDLE.
        CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
        MESSAGE SELECT BITS ARE CLEARED.


TEST 31 MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 5)

        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
        DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
        COMMAND AND STATUS REGISTER 1 WITH A RECALIBRATE.
        CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
        MESSAGE SELECT BITS ARE CLEARED.


TEST 32 MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 6)

        CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
        DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
        COMMAND AND STATUS REGISTER 1 WITH A OFFSET.
        CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
        MESSAGE SELECT BITS ARE CLEARED.
```

```
                        TEST 33 MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 7)

                                CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
                                COMMAND AND STATUS REGISTER 1 WITH A SEEK.
                                CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
                                MESSAGE SELECT BITS ARE CLEARED.


                    **DRIVE MESSAGE LOOPBACK AND PARITY GENERATION TESTS

                        TEST 34 DRIVE MESSAGE LOOPBACK

                                CLEAR THE RK611 WITH A CONTROLLER CLEAR. PUT CONTROLLER
                                IN DIAGNOSTIC MODE INDICATING MESSAGE 3. LOAD COMMAND
                                STATUS REGISTER FOR DRIVE 5. LOAD COMMAND AND STATUS
                                REGISTER 1 WITH A SELECT COMMAND.  CLOCK 4 BITS
                                THROUGH THE DRIVE MESSAGE LOOPBACK. VERIFY THAT BITS
                                ARE INDEED LOOPED BACK.


                        TEST 35 DRIVE MESSAGE SHIFT

                                CLEAR THE RK611 WITH A CONTROLLER CLEAR. PUT CONTROLLER
                                IN DIAGNOSTIC MODE. LOAD CYLINDER ADDRESS WITH 441.
                                LOAD HEAD ADDRESS WITH 1. LOAD COMMAND AND STATUS
                                REGISTER 1 WITH A SEEK IN 24 SECTOR MODE. CLOCK 8 BITS
                                THROUGH THE DRIVE MESSAGE LOOPBACK. VERIFY THAT BITS ARE
                                SHIFTED PROPERLY.


                    TEST 36 DRIVE MESSAGE PARITY PRECONDITIONING

                            CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER
                            IN DIAGNOSTIC MODE. LOAD COMMAND AND STATUS REGISTER 1 W
                            A SELECT COMMAND. CLOCK ALL 16 BITS THROUGH THE
                            DRIVE MESSAGE LOOPBACK. VERIFY PARITY HAS BEEN PRECONDIT
                            PROPERLY. REPEAT FOR BAD PARITY GENERATION.


                    TEST 37 ODD DRIVE MESSAGE PARITY GENERATION

                            CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER
                            IN DIAGNOSTIC MODE AND MESSAGE SELECT = 1.
                            LOAD COMMAND AND STATUS REGISTER 2 WITH DRIVE
                            SELECT = 1. LOAD COMMAND AND STATUS REGISTER 1 WITH
                            A SELECT COMMAND. VERIFY THAT PARITY HAS BEEN
                            GENERATED CORRECTLY. REPEAT FOR MESSAGE SELECT =
                            DRIVE SELECT = 2-17.


                    TEST 40 DRIVE MESSAGE PARITY INTERACTION

                            CLEAR THE RK611 WITH A CONTROLLER CLEAR. PUT CONTROLLER
                            IN DIAGNOSTIC MODE. LOAD COMMAND AND STATUS REGISTER 2
```

```
                        WITH DRIVE SELECT = 1. LOAD COMMAND AND STATUS REGISTER
                        WITH A SELECT COMMAND. VERIFY THAT THE CORRECT PARITY
                        IS GENERATED FOR BOTH MESSAGES. REPEAT FOR MESSAGE
                        SELECT = 1 AND DRIVE SELECT = 0.


                TEST 41 EVEN DRIVE MESSAGE PARITY GENERATION

                        CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER
                        IN DIAGNOSTIC MODE AND MESSAGE SELECT = 1
                        AND BAD PARITY SET. LOAD COMMAND AND STATUS
                        REGISTER 2 WITH DRIVE SELECT = 1. LOAD COMMAND
                        AND STATUS REGISTER SELECT COMMAND. VERIFY THAT
                        EVEN PARITY IS GENERATED.  REPEAT FOR MESSAGE SELECT =
                        DRIVE SELECT = 2-17.


        **CLASS A COMMAND EXECUTION

                TEST 42 RELEASE COMMAND IN DIAGNOSTIC MODE

                        CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD COMMAND AND
                        STATUS REGISTER 2 WITH DRIVE SELECT = 10. LOAD
                        COMMAND AND STATUS REGISTER 1 WITH A SELECT.
                        CLOCK COMMAND TO COMPLETION. MAKE SURE UNIT
                        FIELD ERROR DOES NOT SET (SACK HIGH). REPEAT FOR
                        DRIVE SELECT = 11-17.


                TEST 43 SELECT COMMAND IN DIAGNOSTIC MODE

                        CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD COMMAND AND
                        STATUS REGISTER 2 WITH DRIVE SELECT = 0. LOAD
                        COMMAND AND STATUS REGISTER 1 WITH A SELECT.
                        CLOCK COMMAND TO COMPLETION. MAKE SURE MESSAGE SHIFT IS
                        NOT DONE DURING THE RECEIVE CYCLE OF DRIVE MESSAGE.
                        MAKE SURE NO ERRORS SET. REPEAT FOR DRIVE SELECT = 1-7.


                TEST 44 RELEASE COMMAND IN NORMAL MODE

                        CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        LOAD COMMAND AND STATUS REGISTER 2 WITH DRIVE SELECT = 1
                        LOAD COMMAND AND STATUS REGISTER 1 WITH A SELECT.
                        MAKE SURE NO ERRORS OCCUR. REPEAT FOR DRIVE
                        SELECT = 11-17


                TEST 45 INTERRUPT AT COMMAND COMPLETION

                        CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        LOWER PROCESSOR PRIORITY TO ZERO. ISSUE A RELEASE
                        COMMAND WITH INTERRUPT ENABLE SET. MAKE SURE
                        INTERRUPT OCCURS. LOWER PRIORITY AFTER INTERRUPT
```

```
                        AND MAKE SURE INTERRUPT HAS CLEARED.

                        LOWER PROCESSOR PRIORITY TO ZERO.  REISSUE RELEASE
                        WITH INTERRUPT ENABLE RESET.  MAKE SURE NO INTERRUPT
                        OCCURS.  SET INTERRUPT ENABLE AND MAKE SURE NO
                        INTERRUPT OCCURS.


                TEST 46 GO CLEAR OF SILO

                        CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        WRITE ONE WORD INTO THE SILO.  ISSUE A RELEASE COMMAND
                        WITH INTERRUPT ENABLE RESET.  WAIT FOR READY.
                        READ THE DATA BUFFER TO MAKE SURE THE SILO HAS BEEN
                        CLEARED. (DATA LATE SET AFTER READ OF DATA BUFFER)


                TEST 47 SEEK COMMAND IN DIAGNOSTIC MODE

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK WITH CDT
                        24 SECTOR FORMAT TO CYLINDER 1714, HEAD 7, DRIVE 0.
                        MAKE SURE NO STATUS BITS ARE SET AND NO ERROR
                        BITS ARE SET.


        **ERROR AND STATUS BIT FORCING WITH DRIVE MESSAGES

                TEST 50 DRIVE STATUS FROM SHIFT REGISTER

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                        RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                        TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 757, HEAD 1,
                        DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS
                        6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE SPEED LOSS,
                        DRIVE AVAILABLE, VOLUME VALID, OFFSET, DRIVE READY,
                        AND WRITE LOCK ARE SET.


                TEST 51 DRIVE AVAILABLE SETTING

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO A RK0
                        26 SECTOR FORMAT TO CYLINDER 2, HEAD 0, DRIVE 0.
                        CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
                        TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE
                        AVAILIABLE SETS.


                TEST 52 DRIVE BUS PARITY ERROR

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
                        TO A RK06, 26 SECTOR FORMAT TO CYLINDER 3, HEAD 0,
                        DRIVE 0. CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
                        TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE BUS
```

```
                        PARITY, DRIVE AVAILIABLE, AND CONTROLLER ERROR ARE SET.


TEST 53 DRIVE AVAILABLE RESET ERROR

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SELECT
                        TO A RK06, 26 SECTOR FORMAT, AND DRIVE 0.
                        CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
                        TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE
                        IS RESET AND CONTROLLER ERROR IS SET.


TEST 54 CDT SET DRIVE TYPE

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
                        WITH CDT SET, 26 SECTOR FORMAT, TO CYLINDER 23,
                        HEAD 0, DRIVE 0. CLOCK IN DIAGNOSTIC MODE
                        UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE
                        AND MAKE SURE ONLY DRIVE AVAILIABLE SETS.


TEST 55 CDT SET AND DRIVE TYPE ERROR

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
                        WITH CDT SET, 26 SECTOR FORMAT, TO CYLINDER 2,
                        HEAD 0, DRIVE 0. CLOCK IN DIAGNOSTIC MODE
                        UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE
                        AND MAKE SURE DRIVE AVAILIABLE, DRIVE TYPE ERROR,
                        AND CONTROLLER ERROR SET.


TEST 56 RK06 AND DRIVE TYPE ERROR

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR
                        PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
                        TO A RK06, 26 SECTOR FORMAT, TO CYLINDER 23,
                        HEAD 0, DRIVE 0. CLOCK IN DIAGNOSTIC MODE
                        UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC
                        MODE AND MAKE SURE DRIVE AVAILIABLE, DRIVE TYPE ERROR,
                        AND CONTROLLER ERROR SETS.


TEST 57 SPEED LOSS FROM SHIFT REG.

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO A RK0
                        26 SECTOR FORMAT, TO CYLINDER 3, HEAD 1, DRIVE 0.
                        CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6. TURN
                        OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE AND
                        SPEED LOSS ARE SET.


TEST 60 DRIVE OFF TRACK FROM SHIFT REG.
```

```
592
593                                     CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
594                                     PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO A RK0
595                                     26 SECTOR FORMAT, TO CYLINDER 3, HEAD 2, DRIVE 0.
596                                     CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
597                                     TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE
598                                     AND DRIVE OFF TRACK ARE SET.
599
600
601                             TEST 61 WRITE LOCK ERROR FROM SHIFT REG.
602
603                                     CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
604                                     PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A PACK ACKNOWLE
605                                     TO A RK06, 26 SECTOR FORMAT, WITH CYLINDER 0,
606                                     HEAD 1, DRIVE 0. CLOCK IN DIAGNOSTIC MODE UNTIL
607                                     PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE AND MAKE
608                                     SURE SPEED LOSS, WRITE LOCK ERROR AND CONTROLLER ERROR
609                                     ARE SET WITH DRIVE AVAILIABLE RESET.
610
611
612                             TEST 62 SEEK INCOMPLETE
613
614                                     CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
615                                     PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE AN UNLOAD
616                                     TO A RK06, 26 SECTOR FORMAT, WITH CYLINDER 0,
617                                     HEAD 1, DRIVE 0, CLOCK IN DIAGNOSTIC MODE UNTIL
618                                     PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE AND MAKE
619                                     SURE SPEED LOSS, SEEK INCOMPLETE, AND CONTROLLER ERROR
620                                     ARE SET WITH DRIVE AVAILIABLE RESET.
621
622
623                             TEST 63 NON-EXECUTABLE DRIVE FUNCTION FROM SHIFT REG.
624
625                                     CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR
626                                     PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE
627                                     A DRIVE CLEAR TO A RK06, 26 SECTOR FORMAT,
628                                     WITH CYLINDER 0, HEAD 1, DRIVE 0. CLOCK IN DIAGNOSTIC
629                                     MODE UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC
630                                     MODE AND MAKE SURE SPEED LOSS, NON-EXECUTABLE DRIVE FUNC
631                                     CONTROLLER ERROR ARE SET WITH DRIVE AVAILIABLE RESET.
632
633
634                             TEST 64 AC LOW AND C-D PARITY FROM SHIFT REG.
635
636                                     CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR, PUT RK611
637                                     CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A START SPINDLE
638                                     TO AN RK06, IN 24 SECTOR FORMAT, CYLINDER 0, HEAD 0,
639                                     DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6
640                                     TURN OFF DIAGNOSTIC MODE AND MAKE SURE AC LOW, DRIVE
641
642                                     DETECTED SERCOM PARITY, AND CONTROLLER ERROR SET WITH
643                                     DRIVE AVAILABLE RESET.
644
645
646                             TEST 65 ILLEGAL DISK ADDRESS ERROR FROM SHIFT REG.
647
```

```
                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                        RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A RECALIBRAT
                        TO AN RK06, IN 26 SECTOR FORMAT, CYLINDER 0, HEAD 1,
                        DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE
                        ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
                        SPEED LOSS, ILLEGAL DISK ADDRESS ERROR, AND CONTROLLER
                        ERROR ARE SET WITH DRIVE AVAILABLE RESET.


TEST 66 IDAE DETECTION IN RK611 CONTROLLER (PART 1)

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                        RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A
                        SEEK TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 1003,
                        HEAD 0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
                        PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE
                        SURE DRIVE AVAILABLE, ILLEGAL DISK ADDRESS ERROR,
                        AND CONTROLLER ERROR ARE SET.


TEST 67 IDAE DETECTION IN RK611 CONTROLLER (PART 2)

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT
                        RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                        WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 1022, HEAD
                        0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE
                        ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
                        DRIVE AVAILABLE AND POSITIONING IN PROGRESS ARE SET
                        WITH ILLEGAL DISK ADDRESS ERROR RESET.


TEST 70 IDAE DETECTION IN RK611 CONTROLLER (PART 3)

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT
                        RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                        TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 2,
                        HEAD 3, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
                        PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE
                        SURE DRIVE AVAILABLE, DRIVE OFF TRACK, SPEED LOSS,
                        ILLEGAL DISK ADDRESS ERROR, AND CONTROLLER ERROR ARE
                        SET.


TEST 71 IDAE DETECTION IN RK611 CONTROLLER (PART4)

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                        RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                        TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 3, HEAD
                        4, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE
                        ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
                        DRIVE AVAILABLE, UNSAFE, ILLEGAL DISK ADDRESS ERROR
                        AND CONTROLLER ERROR ARE SET.


TEST 72 IDAE DETECTION IN RK611 CONTROLLER (PART 5)
```

```
                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                        RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                        WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 23, HEAD 5,
                        DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS
                        6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE
                        AVAILABLE, UNSAFE, SPEED LOSS, ILLEGAL DISK ADDRESS
                        ERROR, AND CONTROLLER ERROR ARE SET.


TEST 73 IDAE DETECTION IN RK611 CONTROLLER (PART 6)

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                        RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                        WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 23, HEAD 6,
                        DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS
                        6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE
                        AVAILABLE, UNSAFE, DRIVE OFF TRACK, ILLEGAL
                        DISK ADDRESS ERROR, AND CONTROLLER CLEAR ARE SET.


TEST 74 NON-STANDARD MESSAGE RECEIVING

                        CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                        RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                        WITH CDT SET IN 24 SECTOR FORMAT, CYLINDER 1757, HEAD 7,
                        DRIVE 1.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6
                        TURN OFF DIAGNOSTIC MODE AND MAKE SURE NO ERRORS SET
                        AND DRIVE STATUS IS NOT REPORTED.  REPEAT FOR DRIVES
                        2 AND 4.


TEST 75 DRIVE BUS PARITY ON NON-STANDARD MESSAGE

                        CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT THE RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE
                        A SEEK TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 2,
                        HEAD 0, DRIVE 1.  CLOCK IN DIAGNOSTIC MODE UNTIL
                        PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE
                        SURE DRIVE BUS PARITY ERROR AND CONTROLLER ERROR SETS.


TEST 76 NON-EXISTENT DRIVE (DRIVE MESSAGE TIME OUT)

                        CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                        PUT THE RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE
                        A SELECT TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 0,
                        HEAD 0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
                        PHASE ADDRESS 5.  TURN OFF DIAGNOSTIC MODE
                        AND MAKE SURE NON-EXISTENT DRIVE AND CONTROLLER
                        ERROR ARE SET.  THIS TEST CHECKS NON-EXISTENT DRIVE
                        DUE TO DRIVE MESSAGE TIME OUT.


TEST 77 NON-EXISTENT DRIVE AND NO SACK
```

```
                                        CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                                        THE RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A
                                        SELECT TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 0,
                                        HEAD 0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
                                        PHASE ADDRESS 4.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
                                        NON-EXISTENT DRIVE AND CONTROLLER ERROR ARE SET.

                                        THIS TEST EXERCISES THE NON-EXISTENT DRIVE LOGIC
                                        DUE TO RELEASE BIT RESET AND SACK RESET BUT THE PASSING

                                        OF THIS TEST DOES GUARENTEE THAT THIS SITUATION DID
                                        INDEED CAUSE A NON-EXISTENT DRIVE.


                                **ILLEGAL FUNCTION CODE TEST

                                        TEST 100        ILLEGAL FUNCTION CODE

                                        CLEAR RK611 WITH A CONTROLLER CLEAR.  ISSUE AN ILLEGAL
                                        COMMAND IN NORMAL MODE AND MAKE SURE COMMAND FINISHES
                                        SETTING CONTROLLER READY WITH PROPER ERROR CONDITIONS.


                        6.0 ERROR REPORTING

                        THE GENERAL FORMAT OF ERROR REPORTS IS:

                        OPERATION DESCRIPTION AND ERROR DESCRIPTION
                        TEST    ERROR
                        NUM     PC
                        XXXXXX  YYYYYY
                          EXPECT  ACTUAL  OTHER PERTENANT
                          REG     REG     INFORMATION
                          ZZZZZZ  WWWWWW  AAAAAA

                        NOTE:   MOVE THAN ONE SET OF EXPECT/ACTUAL REGISTERS MAY BE
                                PRINTED OUT. OTHER PERTENANT INFORMATION MAY CONSIST
                                OF MORE THAN ONE WORD.
                        %
```

```
                        ; *** REV 003 ***
                        .TITLE  CZR6BD0 RK611 DSKLS CTRL PRT2
                        ;*COPYRIGHT (C) 1976,1981
                        ;*DIGITAL EQUIPMENT CORP.
                        ;*MAYNARD, MASS. 01754
                        ;*
                        ;*PROGRAM BY ROY SPITZER
                        ;*
                        ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
                        ;*PACKAGE (MAINDEC-11-DZQAC-C5), JAN, 1981.
                        ;*
                        .SBTTL  OPERATIONAL SWITCH SETTINGS
                        ;*
                        ;*      SWITCH                  USE
                        ;*      ------          --------------------
                        ;*        15            HALT ON ERROR
                        ;*        14            LOOP ON TEST
                        ;*        13            INHIBIT ERROR TYPEOUTS
                        ;*        12            ABORT PROGRAM AFTER 20 ERRORS
                        ;*        11            INHIBIT ITERATIONS
                        ;*        10            BELL ON ERROR
                        ;*         9            LOOP ON ERROR
                        ;*         8            LOOP ON TEST IN SWR<7:0>
                        .SBTTL  BASIC DEFINITIONS

                        ;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***
001100                  STACK=  1100
                        .EQUIV  EMT,ERROR       ;;BASIC DEFINITION OF ERROR CALL
                        .EQUIV  IOT,SCOPE       ;;BASIC DEFINITION OF SCOPE CALL

                        ;*MISCELLANEOUS DEFINITIONS
000011                  HT=     11              ;;CODE FOR HORIZONTAL TAB
000012                  LF=     12              ;;CODE FOR LINE FEED
000015                  CR=     15              ;;CODE FOR CARRIAGE RETURN
000200                  CRLF=   200             ;;CODE FOR CARRIAGE RETURN-LINE FEED
177776                  PS=     177776          ;;PROCESSOR STATUS WORD
                        .EQUIV  PS,PSW
177774                  STKLMT= 177774          ;;STACK LIMIT REGISTER
177772                  PIRQ=   177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
177570                  DSWR=   177570          ;;HARDWARE SWITCH REGISTER
177570                  DDISP=  177570          ;;HARDWARE DISPLAY REGISTER

                        ;*GENERAL PURPOSE REGISTER DEFINITIONS
000000                  R0=     %0              ;;GENERAL REGISTER
000001                  R1=     %1              ;;GENERAL REGISTER
000002                  R2=     %2              ;;GENERAL REGISTER
000003                  R3=     %3              ;;GENERAL REGISTER
000004                  R4=     %4              ;;GENERAL REGISTER
000005                  R5=     %5              ;;GENERAL REGISTER
000006                  R6=     %6              ;;GENERAL REGISTER
000007                  R7=     %7              ;;GENERAL REGISTER
000006                  SP=     %6              ;;STACK POINTER
000007                  PC=     %7              ;;PROGRAM COUNTER

                        ;*PRIORITY LEVEL DEFINITIONS
000000                  PR0=    0               ;;PRIORITY LEVEL 0
```

```
                        PR1=    40              ;;PRIORITY LEVEL 1
                        PR2=    100             ;;PRIORITY LEVEL 2
                        PR3=    140             ;;PRIORITY LEVEL 3
                        PR4=    200             ;;PRIORITY LEVEL 4
                        PR5=    240             ;;PRIORITY LEVEL 5
                        PR6=    300             ;;PRIORITY LEVEL 6
                        PR7=    340             ;;PRIORITY LEVEL 7

                        ;*''SWITCH REGISTER'' SWITCH DEFINITIONS
100000                  SW15=   100000
040000                  SW14=   40000
020000                  SW13=   20000
010000                  SW12=   10000
004000                  SW11=   4000
002000                  SW10=   2000
001000                  SW09=   1000
000400                  SW08=   400
000200                  SW07=   200
000100                  SW06=   100
000040                  SW05=   40
000020                  SW04=   20
000010                  SW03=   10
000004                  SW02=   4
000002                  SW01=   2
000001                  SW00=   1
                        .EQUIV  SW09,SW9
                        .EQUIV  SW08,SW8
                        .EQUIV  SW07,SW7
                        .EQUIV  SW06,SW6
                        .EQUIV  SW05,SW5
                        .EQUIV  SW04,SW4
                        .EQUIV  SW03,SW3
                        .EQUIV  SW02,SW2
                        .EQUIV  SW01,SW1
                        .EQUIV  SW00,SW0

                        ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
100000                  BIT15=  100000
040000                  BIT14=  40000
020000                  BIT13=  20000
010000                  BIT12=  10000
004000                  BIT11=  4000
002000                  BIT10=  2000
001000                  BIT09=  1000
000400                  BIT08=  400
000200                  BIT07=  200
000100                  BIT06=  100
000040                  BIT05=  40
000020                  BIT04=  20
000010                  BIT03=  10
000004                  BIT02=  4
000002                  BIT01=  2
000001                  BIT00=  1
                        .EQUIV  BIT09,BIT9
                        .EQUIV  BIT08,BIT8
                        .EQUIV  BIT07,BIT7
```

```
                        .EQUIV  BIT06,BIT6
                        .EQUIV  BIT05,BIT5
                        .EQUIV  BIT04,BIT4
                        .EQUIV  BIT03,BIT3
                        .EQUIV  BIT02,BIT2
                        .EQUIV  BIT01,BIT1
                        .EQUIV  BIT00,BIT0

                        ;*BASIC "CPU" TRAP VECTOR ADDRESSES
000004                  ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
000010                  RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
000014                  TBITVEC=14              ;;"T" BIT
000014                  TRTVEC= 14              ;;TRACE TRAP
000014                  BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
000020                  IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
000024                  PWRVEC= 24              ;;POWER FAIL
000030                  EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
000034                  TRAPVEC=34              ;;"TRAP" TRAP
000060                  TKVEC=  60              ;;TTY KEYBOARD VECTOR
000064                  TPVEC=  64              ;;TTY PRINTER VECTOR
000240                  PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR
000114                  MEMVEC= 114                     ;VECTOR FOR MEMORY CHECK ENABLE
172100                  MEMBAS= 172100                  ;BUS ADDRESS FOR MEMORY CHECK ENABLE
000001                  PAR.EN= 1                       ;MEMORY ENABLE PARITY CHECKING
120210                  AVECT1= 120210                  ;DEFINE RK611 VECTOR ADDRESS
000005                  APRIOR= 5                       ;DEFINE RK611 PRIORITY
177440                  ABASE=  177440                  ;DEFINE BASE OF RK611 REGISTERS

                        .SBTTL  RK611 CONTROLLER REGISTER DEFINITION

000000                  RKCS1=  0                       ;CONTROL AND STATUS REGISTER 1
000002                  RKWC=   2                       ;WORD COUNT REGISTER
000004                  RKBA=   4                       ;BUS ADDRESS REGISTER
000006                  RKDA=   6                       ;DESIRED TRACK SECTOR REGISTER
000010                  RKCS2=  10                      ;CONTROL AND STATUS REGISTER 2
000012                  RKDS=   12                      ;DRIVE STATUS REGISTER
000014                  RKER=   14                      ;ERROR REGISTER
000016                  RKASOF= 16                      ;ATTENTION SUMMARY AND OFFSET REGISTER
000020                  RKDCYL= 20                      ;DESIRED CYLINDER REGISTER
000024                  RKDB=   24                      ;DATA BUFFER
000026                  RKMR1=  26                      ;MAINTENANCE REGISTER 1
000034                  RKMR2=  34                      ;MAINTENANCE REGISTER 2
000036                  RKMR3=  36                      ;MAINTENANCE REGISTER 3
000030                  RKECPS= 30                      ;ECC POSITION INFORMATION
000032                  RKECPT= 32                      ;ECC PATTERN INFORMATION
000022                  RKSPAR= 22                      ;SPARE REGISTER

                        .SBTTL  DRIVE COMMANDS

000001                  SELDRV= 01                      ;SELECT DRIVE
000003                  PACK=   03                      ;PACK ACKNOWLEDGE
000005                  CLEAR=  05                      ;DRIVE CLEAR
000007                  UNLOAD= 07                      ;UNLOAD
000011                  SRTSPL= 11                      ;START SPINDLE
000013                  RECAL=  13                      ;RECALIBRATE
000015                  OFFSET= 15                      ;OFFSET
```

```
                        SEEK=   17                      ;SEEK
                        RDDATA= 21                      ;READ DATA
                        WRDATA= 23                      ;WRITE DATA
                        RDHEAD= 25                      ;READ HEADER
                        WRHEAD= 27                      ;WRITE HEADER AND DATA
                        WRTCHK= 31                      ;WRITE CHECK
                        INTR=   300                     ;GENERATE INTERRUPT TO CPU

                        .SBTTL  CONTROL AND STATUS REGISTER 1 BITS

                        GO=     BIT0                    ;GO BIT
                        IE=     BIT6                    ;INTERRUPT ENABLE
                        RDY=    BIT7                    ;CONTROLLER READY
                        BA16=   BIT8                    ;BUS ADDRESS BIT 16
                        BA17=   BIT9                    ;BUS ADDRESS BIT 17
                        CDT=    BIT10                   ;CONTROLLER DRIVE TYPE (0=RK06)
                        CTO=    BIT11                   ;CONTROLLER TIMED OUT WAITING FOR
                                                        ;  DRIVE RESPONSE
                        CFMT=   BIT12                   ;CONTROLLER DRIVE FORMAT (0=26 SECTOR, 1=24 SECTOR)
                        SPAR=   BIT13                   ;DRIVE BUS PARITY ERROR DETECTED BY CONTROLLER
                        DI=     BIT14                   ;DRIVE INTERRUPT
                        CERR=   BIT15                   ;CONTROLLER ERROR
                        CCLR=   BIT15                   ;CONTROLLER CLEAR

                        .SBTTL  CONTROL AND STATUS REGISTER 2 BITS

                        DRVMSK= 7                       ;MASK FOR DRIVE SELECTION CODE
                        RLS=    BIT3                    ;DESELECT OR RELEASE DRIVE IN BITS 0-2
                        BAI=    BIT4                    ;BUS ADDRESS INCREMENT INHIBIT
                        SCLR=   BIT5                    ;CLEAR CONTROLLER AND ALL DRIVES
                        IR=     BIT6                    ;INPUT READY
                        OR=     BIT7                    ;OUTPUT READY
                        UFE=    BIT8                    ;UNIT FIELD ERROR
                        MDS=    BIT9                    ;MULTIPLE DRIVE SELECT
                        PGE=    BIT10                   ;PROGRAMMING ERROR
                        NEM=    BIT11                   ;NON-EXISTENT MEMORY
                        NED=    BIT12                   ;NON-EXISTENT DRIVE
                        UPE=    BIT13                   ;UNIBUS PARITY ERROR
                        WCE=    BIT14                   ;WRITE CHECK ERROR
                        DLT=    BIT15                   ;DATA LATE ERROR

                        .SBTTL  ERROR REGISTER BIT DEFINITION

                        ILF=    BIT0                    ;ILLEGAL FUNCTION CODE
                        SKI=    BIT1                    ;SEEK INCOMPLETE
                        NXF=    BIT2                    ;NON-EXECUTABLE DRIVE FUNCTION
                        DRPAR=  BIT3                    ;DRIVE DETECTED DRIVE BUS PARITY ERROR
                        FMTE=   BIT4                    ;FORMAT ERROR
                        DTYE=   BIT5                    ;DRIVE TYPE ERROR
                        ECH=    BIT6                    ;ECC HARD
                        BSE=    BIT7                    ;BAD SECTOR ERROR
                        HVRC=   BIT8                    ;HEADER VRC ERRROR
                        COE=    BIT9                    ;CYLINDER ADDRESS OVERFLOW ERROR
                        IDAE=   BIT10                   ;INVALID DISK ADDRESS ERROR
                        WLE=    BIT11                   ;WRITE LOCK ERROR
                        DTE=    BIT12                   ;DRIVE TIMING ERROR
```

```
                        ERROR REGISTER BIT DEFINITION                                                    SEQ 0020

  1023          020000                  OPI=    BIT13                   ;OPERATION (SEARCH) INCOMPLETE
  1024          040000                  UNS=    BIT14                   ;DRIVE UNSAFE
  1025          100000                  DCK=    BIT15                   ;DATA CHECK
  1026
  1027                                  .SBTTL  STATUS REGISTER BIT DEFINITION
  1028
  1029          000001                  DRA=    BIT0                    ;DRIVE AVAILABLE (CONTROLLER IS SET IF
  1030                                                                  ;  THIS BIT IS RESET)
  1031          000004                  OFST=   BIT2                    ;DRIVE OFFSET
  1032          000010                  ACLO=   BIT3                    ;AC LOW
  1033          000020                  SPDLSS= BIT4                    ;SPEED LOSS
  1034          000040                  DROT=   BIT5                    ;DRIVE OFF TRACK
  1035          000100                  VV=     BIT6                    ;VOLUME VALID
  1036          000200                  DRDY=   BIT7                    ;DRIVE READY
  1037          000400                  DDT=    BIT8                    ;DRIVE TYPE (0=RK06)
  1038          004000                  WRL=    BIT11                   ;WRITE LOCK
  1039          020000                  PIP=    BIT13                   ;POSITIONING IN PROGRESS
  1040          040000                  DSC=    BIT14                   ;DRIVE STATUS CHANGE
  1041          100000                  SVAL=   BIT15                   ;STATUS VALID
  1042
  1043                                  .SBTTL  MAINTENANCE REGISTER 1 BIT DEFINITION
  1044
  1045          000017                  MESMSK= 17                      ;MESSAGE MASK
  1046
  1047          000020                  PAT=    BIT4                    ;FORCE EVEN PARITY ON DRIVE MESSAGE LINES
  1048          000040                  DMD=    BIT5                    ;DIAGNOSTIC MODE
  1049          000100                  MSP=    BIT6                    ;MAINTENANCE SECTOR PULSE
  1050          000200                  MIND=   BIT7                    ;MAINTENANCE INDEX
  1051          000400                  MCLK=   BIT8                    ;MAINTENANCE CLOCK
  1052          001000                  MERD=   BIT9                    ;MAINTENANCE ENCODED READ DATA
  1053          002000                  MEWD=   BIT10                   ;MAINTENACNE ENCODED WRITE DATA
  1054          004000                  PCA=    BIT11                   ;PRECOMPENSATION ADVANCE
  1055          010000                  PCD=    BIT12                   ;PRECOMPENSATION DELAY
  1056          020000                  ECCW=   BIT13                   ;ECC WORD IS BEING READ OR WRITTEN
  1057          040000                  WRTGAT= BIT14                   ;WRITE GATE
  1058          100000                  RDGATE= BIT15                   ;READ GATE
  1059
  1060                                  .SBTTL  TRANSMITTED MESSAGE A
  1061
  1062          000020                  S.SEEK= BIT4                    ;SEEK COMMAND
  1063          000040                  S.RECL= BIT5                    ;RECALIBRATE COMMAND
  1064          000100                  S.STSP= BIT6                    ;START SPINDLE COMMAND
  1065          000200                  S.RTC=  BIT7                    ;DRIVE RETURN TO CENTERLINE COMMAND
  1066          000400                  S.CLR=  BIT8                    ;CLEAR ERROR AND DSC
  1067          001000                  S.FMT=  BIT9                    ;FORMAT
  1068          002000                  S.UNLD= BIT10                   ;UNLOAD
  1069          004000                  S.PACK= BIT11                   ;SET VOLUME VALID (PACK ACKNOWNLEDGE)
  1070                                  .SBTTL  TRAP CATCHER
  1071
  1072          000000                          .=0
  1073                                ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
  1074                                ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
  1075                                ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
  1076          000174                        .=174
  1077  000174  000000               DISPREG: .WORD  0                ;;SOFTWARE DISPLAY REGISTER
  1078  000176  000000               SWREG:   .WORD  0                ;;SOFTWARE SWITCH REGISTER
```

```
1079
1080  000200  000137  004316          .SBTTL  STARTING ADDRESS(ES)
                                              JMP     @#START ;;JUMP TO STARTING ADDRESS OF PROGRAM
1081  000204  000137  004306                  JMP     RESTRT          ;JUMP TO RESTART ROUTINE
1082          000214                          .=214
1083  000214  000137  004276                  JMP     PARM            ;JUMP TO OPERATOR ASSIGNED PARMETERS
1084                                        .SBTTL  ACT11 HOOKS
1085
1086                                        ;;**************************************************************
1087                                        ;HOOKS REQUIRED BY ACT11
1088          000220                          $SVPC=.                 ;SAVE PC
1089          000046                          .=46
1090  000046  042340                          $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
1091          000052                          .=52
1092  000052  000000                          .WORD   0               ;;2)SET LOC.52 TO ZERO
1093          000220                          .=$SVPC                 ;; RESTORE PC
1094          001000                          .=1000
1095                                        .SBTTL  APT PARAMETER BLOCK
1096
1097                                        ;;**************************************************************
1098                                        ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
1099                                        ;;**************************************************************
1100          001000                          .$X=.   ;;SAVE CURRENT LOCATION
1101          000024                          .=24    ;;SET POWER FAIL TO POINT TO START OF PROGRAM
1102  000024  000200                          200     ;;FOR APT START UP
1103          000044                          .=44    ;;POINT TO APT INDIRECT ADDRESS PNTR.
1104  000044  001000                          $APTHDR ;;POINT TO APT HEADER BLOCK
1105          001000                          .=.$X   ;;RESET LOCATION COUNTER
1106                                        ;;**************************************************************
1107                                        ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
1108                                        ;INTERFACE SPEC.
1109
1110  001000                                $APTHD:
1111  001000  000000                       $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
1112  001002  001214                       $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
1113  001004  000001                       $TSTM:  .WORD   1       ;;RUN TIM OF LONGEST TEST
1114  001006  000007                       $PASTM: .WORD   7       ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
1115  001010  000007                       $UNITM: .WORD   7       ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
1116  001012  000032                               .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
```

```
                        .SBTTL  COMMON TAGS

                        ;;*****************************************************************
                        ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
                        ;*USED IN THE PROGRAM.

                001100          .=1100
001100                  $CMTAG:                         ;;START OF COMMON TAGS
001100  000000          .WORD   0
001102  000            $TSTNM: .BYTE   0               ;;CONTAINS THE TEST NUMBER
001103  000            $ERFLG: .BYTE   0               ;;CONTAINS ERROR FLAG
001104  000000         $ICNT:  .WORD   0               ;;CONTAINS SUBTEST ITERATION COUNT
001106  000000         $LPADR: .WORD   0               ;;CONTAINS SCOPE LOOP ADDRESS
001110  000000         $LPERR: .WORD   0               ;;CONTAINS SCOPE RETURN FOR ERRORS
001112  000000         $ERTTL: .WORD   0               ;;CONTAINS TOTAL ERRORS DETECTED
001114  000            $ITEMB: .BYTE   0               ;;CONTAINS ITEM CONTROL BYTE
001115  001            $ERMAX: .BYTE   1               ;;CONTAINS MAX. ERRORS PER TEST
001116  000000         $ERRPC: .WORD   0               ;;CONTAINS PC OF LAST ERROR INSTRUCTION
001120  000000         $GDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'GOOD' DATA
001122  000000         $BDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'BAD' DATA
001124  000000         $GDDAT: .WORD   0               ;;CONTAINS 'GOOD' DATA
001126  000000         $BDDAT: .WORD   0               ;;CONTAINS 'BAD' DATA
001130  000000                 .WORD   0               ;;RESERVED--NOT TO BE USED
001132  000000                 .WORD   0
001134  000            $AUTOB: .BYTE   0               ;;AUTOMATIC MODE INDICATOR
001135  000            $INTAG: .BYTE   0               ;;INTERRUPT MODE INDICATOR
001136  000000                 .WORD   0
001140  177570         SWR:    .WORD   DSWR            ;;ADDRESS OF SWITCH REGISTER
001142  177570         DISPLAY: .WORD  DDISP           ;;ADDRESS OF DISPLAY REGISTER
001144  177560         $TKS:   177560                  ;;TTY KBD STATUS
001146  177562         $TKB:   177562                  ;;TTY KBD BUFFER
001150  177564         $TPS:   177564                  ;;TTY PRINTER STATUS REG. ADDRESS
001152  177566         $TPB:   177566                  ;;TTY PRINTER BUFFER REG. ADDRESS
001154  000            $NULL:  .BYTE   0               ;;CONTAINS NULL CHARACTER FOR FILLS
001155  002            $FILLS: .BYTE   2               ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
001156  012            $FILLC: .BYTE   12              ;;INSERT FILL CHARS. AFTER A ''LINE FEED''
001157  000            $TPFLG: .BYTE   0               ;;''TERMINAL AVAILABLE'' FLAG (BIT<07>=0=YES)
001160  000000         $TMP0:  .WORD   0               ;;USER DEFINED
001162  000000         $TMP1:  .WORD   0               ;;USER DEFINED
001164  000000         $TMP2:  .WORD   0               ;;USER DEFINED
001166  000000         $TMP3:  .WORD   0               ;;USER DEFINED
001170  000000         $TMP4:  .WORD   0               ;;USER DEFINED
001172  000000         $TMP5:  .WORD   0               ;;USER DEFINED
001174  000000         $TMP6:  .WORD   0               ;;USER DEFINED
001176  000000         $TMP7:  .WORD   0               ;;USER DEFINED
001200  000000         $TIMES: 0                       ;;MAX. NUMBER OF ITERATIONS
001202  000000         $ESCAPE:0                       ;;ESCAPE ON ERROR ADDRESS
001204  177607  000377 $BELL:  .ASCIZ  <207><377><377> ;;CODE FOR BELL
001210  077            $QUES:  .ASCII  /?/             ;;QUESTION MARK
001211  015            $CRLF:  .ASCII  <15>            ;;CARRIAGE RETURN
001212  000012         $LF:    .ASCIZ  <12>            ;;LINE FEED
                        ;;*****************************************************************
                        .SBTTL  APT MAILBOX-ETABLE

                        ;;*****************************************************************
                        .EVEN
```

```
1173  001214                          $MAIL:                          ;;APT MAILBOX
1174  001214  000000                  $MSGTY: .WORD   AMSGTY  ;;MESSAGE TYPE CODE
1175  001216  000000                  $FATAL: .WORD   AFATAL  ;;FATAL ERROR NUMBER
1176  001220  000000                  $TESTN: .WORD   ATESTN  ;;TEST NUMBER
1177  001222  000000                  $PASS:  .WORD   APASS   ;;PASS COUNT
1178  001224  000000                  $DEVCT: .WORD   ADEVCT  ;;DEVICE COUNT
1179  001226  000000                  $UNIT:  .WORD   AUNIT   ;;I/O UNIT NUMBER
1180  001230  000000                  $MSGAD: .WORD   AMSGAD  ;;MESSAGE ADDRESS
1181  001232  000000                  $MSGLG: .WORD   AMSGLG  ;;MESSAGE LENGTH
1182  001234                          $ETABLE:                        ;;APT ENVIRONMENT TABLE
1183  001234      000                 $ENV:   .BYTE   AENV    ;;ENVIRONMENT BYTE
1184  001235      000                 $ENVM:  .BYTE   AENVM   ;;ENVIRONMENT MODE BITS
1185  001236  000000                  $SWREG: .WORD   ASWREG  ;;APT SWITCH REGISTER
1186  001240  000000                  $USWR:  .WORD   AUSWR   ;;USER SWITCHES
1187  001242  000000                  $CPUOP: .WORD   ACPUOP  ;;CPU TYPE,OPTIONS
1188                                  ;*                      BITS 15-11=CPU TYPE
1189                                  ;*                              11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
1190                                  ;*                              11/70=06,PDQ=07,Q=10
1191                                  ;*                      BIT 10=REAL TIME CLOCK
1192                                  ;*                      BIT  9=FLOATING POINT PROCESSOR
1193                                  ;*                      BIT  8=MEMORY MANAGEMENT
1194  001244      000                 $MAMS1: .BYTE   AMAMS1  ;;HIGH ADDRESS,M.S. BYTE
1195  001245      000                 $MTYP1: .BYTE   AMTYP1  ;;MEM. TYPE,BLK#1
1196                                  ;*                      MEM.TYPE BYTE   --  (HIGH BYTE)
1197                                  ;*                              900 NSEC CORE=001
1198                                  ;*                              300 NSEC BIPOLAR=002
1199                                  ;*                              500 NSEC MOS=003
1200  001246  000000                  $MADR1: .WORD   AMADR1  ;;HIGH ADDRESS,BLK#1
1201                                  ;*                        MEM.LAST ADDR.=3 BYTES,THIS WORD AND LOW OF ''TYPE'' ABOVE
1202  001250      000                 $MAMS2: .BYTE   AMAMS2  ;;HIGH ADDRESS,M.S. BYTE
1203  001251      000                 $MTYP2: .BYTE   AMTYP2  ;;MEM.TYPE,BLK#2
1204  001252  000000                  $MADR2: .WORD   AMADR2  ;;MEM.LAST ADDRESS,BLK#2
1205  001254      000                 $MAMS3: .BYTE   AMAMS3  ;;HIGH ADDRESS,M.S.BYTE
1206  001255      000                 $MTYP3: .BYTE   AMTYP3  ;;MEM.TYPE,BLK#3
1207  001256  000000                  $MADR3: .WORD   AMADR3  ;;MEM.LAST ADDRESS,BLK#3
1208  001260      000                 $MAMS4: .BYTE   AMAMS4  ;;HIGH ADDRESS,M.S.BYTE
1209  001261      000                 $MTYP4: .BYTE   AMTYP4  ;;MEM.TYPE,BLK#4
1210  001262  000000                  $MADR4: .WORD   AMADR4  ;;MEM.LAST ADDRESS,BLK#4
1211  001264  120210                  $VECT1: .WORD   AVECT1  ;;INTERRUPT VECTOR#1,BUS PRIORITY#1
1212  001266  000000                  $VECT2: .WORD   AVECT2  ;;INTERRUPT VECTOR#2BUS PRIORITY#2
1213  001270  177440                  $BASE:  .WORD   ABASE   ;;BASE ADDRESS OF EQUIPMENT UNDER TEST
1214  001272  000000                  $DEVM:  .WORD   ADEVM   ;;DEVICE MAP
1215  001274  000000                  $CDW1:  .WORD   ACDW1   ;;CONTROLLER DESCRIPTION WORD#1
1216  001276  000000                  $CDW2:  .WORD   ACDW2   ;;CONTROLLER DESCRIPTION WORD#2
1217  001300                          $ETEND:
1218                                  .MEXIT
```

```
                                .SBTTL  ERROR POINTER TABLE

                                ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
                                ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
                                ;*LOCATION $ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
                                ;*NOTE1:        IF $ITEMB IS 0 THE ONLY PERTINENT DATA IS ($ERRPC).
                                ;*NOTE2:        EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

                                ;*      EM              ;;POINTS TO THE ERROR MESSAGE
                                ;*      DH              ;;POINTS TO THE DATA HEADER
                                ;*      DT              ;;POINTS TO THE DATA
                                ;*      DF              ;;POINTS TO THE DATA FORMAT


001300                          $ERRTB:
                                ;       ERROR 1: ATTEMPTING TO SET CMD BIT DRIVE MESS A
001300  000000                  EM1N:   0
001302  000000                          0
001304  046602                          DT001
001306  047236                          DF001
                                ;       ERROR 2: ATTEMPTING A SELECT OF DRIVE NUM - CS1 INCORRECT
001310  052472                          EM106
001312  057223                          EM2003
001314  046622                          DT002
001316  047272                          DF002
                                ;       ERROR 3: ATTEMPTING A SELECT  OF DRIVE NUM - DRIVE NUM INCORRECT
001320  052472                          EM106
001322  057266                          EM2004
001324  046622                          DT002
001326  047272                          DF002
                                ;       ERROR 4: ATTEMPTING A SELECT OF DRIVE NUM - MESSAGE A INCORRECT
001330  052472                          EM106
001332  057145                          EM2001
001334  046622                          DT002
001336  047272                          DF002
                                ;       ERROR 5: ATTEMPTING A SELECT OF DRIVE NUM - MESSAGE B INCORRECT
001340  052472                          EM106
001342  057174                          EM2002
001344  046622                          DT002
001346  047272                          DF002
                                ;       ERROR 6: ATTEMPTING A SELECT WITH HEAD ADD - CS1 INCORRECT
001350  052576                          EM107
001352  057223                          EM2003
001354  046644                          DT006
001356  047326                          DF006
                                ;       ERROR 7: ATTEMPTING A SELECT WITH HEAD ADD - HEAD INCORRECT
001360  052576                          EM107
001362  057337                          EM2005
001364  046644                          DT006
001366  047326                          DF006
                                ;       ERROR 10: ATTEMPTING A SELECT WITH HEAD ADD - MESSAGE A INCORRECT
001370  052576                          EM107
001372  057145                          EM2001
001374  046644                          DT006
001376  047326                          DF006
                                ;       ERROR 11: ATTEMPTING A SELECT WITH HEAD ADD - MESSAGE B INCORRECT
```

```
1275  001400  052576                        EM107
1276  001402  057174                        EM2002
1277  001404  046644                        DT006
1278  001406  047326                        DF006
1279                          ;             ERROR 12: ATTEMPTING A SELECT WITH MESS SELECT BITS - CS1 INCORRECT
1280  001410  052673                        EM108
1281  001412  057223                        EM2003
1282  001414  046666                        DT012
1283  001416  047362                        DF012
1284                          ;             ERROR 13: ATTEMPTING A SELECT WITH MESS SELECT BITS - MR1 INCORRECT
1285  001420  052673                        EM108
1286  001422  057404                        EM2006
1287  001424  046666                        DT012
1288  001426  047362                        DF012
1289                          ;             ERROR 14: ATTEMPTING A SELECT WITH MESS SELECT BITS - MESS SELECT CODE INCORRECT
1290  001430  052673                        EM108
1291  001432  057433                        EM2007
1292  001434  046666                        DT012
1293  001436  047362                        DF012
1294                          ;             ERROR 15: ATTEMPTING A SELECT WITH MESS SELECT BITS - MESS A INCORRECT
1295  001440  052673                        EM108
1296  001442  057145                        EM2001
1297  001444  046666                        DT012
1298  001446  047362                        DF012
1299                          ;             ERROR 16: ATTEMPTING A SELECT WITH MESS SELECT BITS - MESS B INCORRECT
1300  001450  052673                        EM108
1301  001452  057174                        EM2002
1302  001454  046666                        DT012
1303  001456  047362                        DF012
1304                          ;             ERROR 17: ATTEMPTING A SEEK TO AN RK06 - CS1 INCORRECT
1305  001460  052773                        EM109
1306  001462  057223                        EM2003
1307  001464  046714                        DT017
1308  001466  047416                        DF017
1309                          ;             ERROR 20: ATTEMPTING A SEEK TO AN RK06 - SEEK BIT IN MESS A NOT SET
1310  001470  052773                        EM109
1311  001472  057067                        EM2000
1312  001474  046714                        DT017
1313  001476  047416                        DF017
1314                          ;             ERROR 21: ATTEMPTING A SEEK TO AN RK06 - CYLINDER ADD INCORRECT IN MESS B
1315  001500  052773                        EM109
1316  001502  057503                        EM2008
1317  001504  046714                        DT017
1318  001506  047416                        DF017
1319                          ;             ERROR 22: ATTEMPTING A SEEK TO AN RK06 - MESSAGE A INCORRECT
1320  001510  052773                        EM109
1321  001512  057145                        EM2001
1322  001514  046714                        DT017
1323  001516  047416                        DF017
1324                          ;             ERROR 23: ATTEMPTING A SEEK TO AN RK06 - MESSAGE B INCORRECT
1325  001520  052773                        EM109
1326  001522  057174                        EM2002
1327  001524  046714                        DT017
1328  001526  046714                        DT017
1329                          ;             ERROR 24: ATTEMPTING A SEEK WITH CDT SET - CS1 INCORRECT
1330  001530  053046                        EM110
```

```
1331  001532  057223                  EM2003
1332  001534  046714                  DT017
1333  001536  047416                  DF017
1334                          ;       ERROR 25: ATTEMPTING A SEEK TO AN RK607 - SEEK BIT IN MESS A NOT SET
1335  001540  053046                  EM110
1336  001542  057067                  EM2000
1337  001544  046714                  DT017
1338  001546  047416                  DF017
1339                          ;       ERROR 26: ATTEMPTING A SEEK WITH CDT SET
1340                          ;       CYLINDER ADD INCORRECT IN MESS B
1341  001550  053046                  EM110
1342  001552  057503                  EM2008
1343  001554  046714                  DT017
1344  001556  047416                  DF017
1345                          ;       ERROR 27: ATTEMPTING A SEEK WITH CDT SET - MESSAGE A INCORRECT
1346  001560  053046                  EM110
1347  001562  057145                  EM2001
1348  001564  046714                  DT017
1349  001566  047416                  DF017
1350                          ;       ERROR 30: ATTEMPTING A SEEK WITH CDT SET - MESSAGE B INCORRECT
1351  001570  053046                  EM110
1352  001572  057174                  EM2002
1353  001574  046714                  DT017
1354  001576  047416                  DF017
1355                          ;       ERROR 31: ATTEMPTING OFFSET - CS1 INCORRECT
1356  001600  053123                  EM111
1357  001602  057223                  EM2003
1358  001604  046736                  DT031
1359  001606  047452                  DF031
1360                          ;       ERROR 32: ATTEMPTING OFFSET - OFFSET BITS INCORRECT
1361  001610  053123                  EM111
1362  001612  057554                  EM2009
1363  001614  046736                  DT031
1364  001616  047452                  DF031
1365                          ;       ERROR 33: ATTEMPTING OFFSET - MESS A INCORRECT
1366  001620  053123                  EM111
1367  001622  057145                  EM2001
1368  001624  046736                  DT031
1369  001626  047452                  DF031
1370                          ;       ERROR 34: ATTEMPTING OFFSET - MESS B INCORRECT
1371  001630  053123                  EM111
1372  001632  057145                  EM2001
1373  001634  046736                  DT031
1374  001636  047452                  DF031
1375                          ;       ERROR 35: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
1376                          ;                 CS1 INCORRECT
1377  001640  053166                  EM112
1378  001642  057223                  EM2003
1379  001644  046760                  DT035
1380  001646  047506                  DF035
1381                          ;       ERROR 36: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
1382                          ;                 DRIVE COMMAND BIT NOT SET IN MESS A
1383  001650  053166                  EM112
1384  001652  057067                  EM2000
1385  001654  046760                  DT035
1386  001656  047506                  DF035
```

```
1387                                    ;       ERROR 37: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
1388                                    ;                 CYLINDER ADDRESS BITS INCORRECT IN MESS B
1389  001660  053166                            EM112
1390  001662  057503                            EM2008
1391  001664  046760                            DT035
1392  001666  047506                            DF035
1393                                    ;       ERROR 40: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
1394                                    ;                 MESS A INCORRRECT
1395  001670  053166                            EM112
1396  001672  057145                            EM2001
1397  001674  046760                            DT035
1398  001676  047506                            DF035
1399                                    ;       ERROR 41: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
1400                                    ;                 MESS B INCORRECT
1401  001700  053166                            EM112
1402  001702  057174                            EM2002
1403  001704  046760                            DT035
1404  001706  047506                            DF035
1405                                    ;       ERROR 42: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
1406                                    ;                 CS1 INCORRECT
1407  001710  053321                            EM113
1408  001712  057223                            EM2003
1409  001714  046666                            DT012
1410  001716  047362                            DF012
1411                                    ;       ERROR 43: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
1412                                    ;                 MAINT REG 1 INCORRECT
1413  001720  053321                            EM113
1414  001722  057404                            EM2006
1415  001724  046666                            DT012
1416  001726  047362                            DF012
1417                                    ;       ERROR 44: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
1418                                    ;                 DRIVE COMMAND BIT INCORRECT
1419  001730  053321                            EM113
1420  001732  057067                            EM2000
1421  001734  046666                            DT012
1422  001736  046666                            DT012
1423                                    ;       ERROR 45: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
1424                                    ;                 MESSAGE SELECT SELECT CODE IN MESSAGE B INCORRECT
1425  001740  053321                            EM113
1426  001742  057433                            EM2007
1427  001744  046666                            DT012
1428  001746  047362                            DF012
1429                                    ;       ERROR 46: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
1430                                    ;                 MESS A INCORRECT
1431  001750  053321                            EM113
1432  001752  057145                            EM2001
1433  001754  046666                            DT012
1434  001756  047362                            DF012
1435                                    ;       ERROR 47: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
1436                                    ;                 MESS B INCORRECT
1437  001760  053321                            EM113
1438  001762  057174                            EM2002
1439  001764  046666                            DT012
1440  001766  047362                            DF012
1441                                    ;       ERROR 50:       ATTEMPTING TO SHIFT DRIVE MESSAGE
1442                                    ;                       SHIFT REG A INCORRECT
```

```
1443  001770  053433                    EM114
1444  001772  057145                    EM2001
1445  001774  047004                    DT050
1446  001776  047542                    DF050
1447                          ;         ERROR 51:       ATTEMPTING TO SHIFT DRIVE MESSAGE
1448                          ;                         SHIFT REG B INCORRECT
1449  002000  053433                    EM114
1450  002002  057174                    EM2002
1451  002004  047004                    DT050
1452  002006  047542                    DF050
1453                          ;         ERROR 52:       ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE
1454                          ;                         PARITY ON MESSAGE A INCORRECT
1455  002010  053476                    EM115
1456  002012  057625                    EM2010
1457  002014  047026                    DT052
1458  002016  047576                    DF052
1459                          ;         ERROR 53:       ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE
1460                          ;                         PARITY ON MESSAGE B INCORRECT
1461  002020  053476                    EM115
1462  002022  057667                    EM2011
1463  002024  047026                    DT052
1464  002026  047576                    DF052
1465                          ;         ERROR 54:       ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE
1466                          ;                         MESSAGE A INCORRECT
1467  002030  053476                    EM115
1468  002032  057145                    EM2001
1469  002034  047026                    DT052
1470  002036  047576                    DF052
1471                          ;         ERROR 55:       ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE
1472                          ;                         MESSAGE B INCORRECT
1473  002040  053476                    EM115
1474  002042  057174                    EM2002
1475  002044  047026                    DT052
1476  002046  047576                    DF052
1477                          ;         ERROR 56:       ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE
1478                          ;                         PARITY ON MESSAGE A INCORRECT
1479  002050  053570                    EM116
1480  002052  057625                    EM2010
1481  002054  047026                    DT052
1482  002056  047576                    DF052
1483                          ;         ERROR 57:       ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE
1484                          ;                         PARITY ON MESSAGE IS INCORRECT
1485  002060  053570                    EM116
1486  002062  057667                    EM2011
1487  002064  047026                    DT052
1488  002066  047576                    DF052
1489                          ;         ERROR 60:       ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE
1490                          ;                         MESSAGE A INCORRECT
1491  002070  053570                    EM116
1492  002072  057145                    EM2001
1493  002074  047026                    DT052
1494  002076  047576                    DF052
1495                          ;         ERROR 61:       ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE
1496                          ;                         MESSAGE B INCORRECT
1497  002100  053570                    EM116
1498  002102  057174                    EM2002
```

```
1499  002104  047026                    DT052
1500  002106  047576                    DF052
1501                              ;       ERROR 62:       ATTEMPTING COMPLETE EXECUTION OF DESELECT DRIVE IN
1502                              ;                       MAINT MODE - COMMAND AND STATUS REG 1 INCORRECT.
1503  002110  053663                    EM117
1504  002112  057223                    EM2003
1505  002114  047042                    DT062
1506  002116  047622                    DF062
1507                              ;       ERROR 63:       ATTEMPTING COMPLETE EXECUTION OF DESELECT DRIVE IN
1508                              ;                       MAINT MODE - COMMAND AND STATUS REG 2 INCORRECT.
1509  002120  053663                    EM117
1510  002122  057731                    EM2012
1511  002124  047042                    DT062
1512  002126  047622                    DF062
1513                              ;       ERROR 64:       ATTEMPTING COMPELTE EXECUTION OF DESELECT DRIVE IN
1514                              ;                       MAINT MODE - ERROR REG. INCORRECT.
1515  002130  053663                    EM117
1516  002132  057774                    EM2013
1517  002134  047042                    DT062
1518  002136  047622                    DF062
1519                              ;       ERROR 65:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
1520                              ;                       MAINT MODE - COMMAND AND STATUS REGISTER 1 INCORRECT AT
1521                              ;                       PHASE ADDRESS 4
1522  002140  054000                    EM118
1523  002142  060020                    EM2014
1524  002144  047066                    DT065
1525  002146  047646                    DF065
1526                              ;       ERROR 66:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
1527                              ;                       MAINT MODE - COMMAND AND STATUS REG 1 INVALID DURING
1528                              ;                       COMMAND EXECUTION.
1529  002150  054000                    EM118
1530  002152  060106                    EM2015
1531  002154  047066                    DT065
1532  002156  047646                    DF065
1533                              ;       ERROR 67:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
1534                              ;                       MAINT MODE - MAINTENANCE REG 2 UNEXPECTEDLY CHANGED
1535                              ;                       DURING COMMAND EXECUTION.
1536  002160  054000                    EM118
1537  002162  060200                    EM2016
1538  002164  047076                    DT067
1539  002166  047672                    DF067
1540                              ;       ERROR 70:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
1541                              ;                       MAINT MODE - MAINTENANCE REG 3 UNEXPECTEDLY CHANGED
1542                              ;                       DURING COMMAND EXECUTION.
1543  002170  054000                    EM118
1544  002172  060300                    EM2017
1545  002174  047076                    DT067
1546  002176  047672                    DF067
1547                              ;       ERROR 71:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
1548                              ;                       MAINT MODE - COMMAND AND STATUS REG 1 INCORRECT.
1549  002200  054000                    EM118
1550  002202  057223                    EM2003
1551  002204  047042                    DT062
1552  002206  047622                    DF062
1553                              ;       ERROR 72:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
1554                              ;                       MAINT MODE - COMMAND AND STATUS REG. 2 INCORRECT.
```

```
1555  002210  054000                    EM118
1556  002212  057731                    EM2012
1557  002214  047042                    DT062
1558  002216  047622                    DF062
1559                          ;         ERROR 73:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
1560                          ;                         MAINT MODE - ERROR REGISTER INCORRECT.
1561  002220  054000                    EM118
1562  002222  057774                    EM2013
1563  002224  047042                    DT062
1564  002226  047622                    DF062
1565                          ;         ERROR 74:       ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL
1566                          ;                         SPEED - COMMAND AND STATUS REG. 1 INCORRECT.
1567  002230  054113                    EM119
1568  002232  057145                    EM2001
1569  002234  047042                    DT062
1570  002236  047622                    DF062
1571                          ;         ERROR 75:       ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL
1572                          ;                         SPEED - COMMAND AND STATUS REG. 2 INCORRECT.
1573  002240  054113                    EM119
1574  002242  057731                    EM2012
1575  002244  047042                    DT062
1576  002246  047622                    DF062
1577                          ;         ERROR 76:       ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL
1578                          ;                         SPEED - ERROR REG INCORRECT.
1579  002250  054113                    EM119
1580  002252  057774                    EM2013
1581  002254  047042                    DT062
1582  002256  047622                    DF062
1583                          ;         ERROR 77:       ATTEMPTING TO WRITE CS1 IN MAINT MODE - CS1 INCORRECT
1584  002260  054202                    EM120
1585  002262  057223                    EM2003
1586  002264  047066                    DT065
1587  002266  047646                    DF065
1588                          ;         ERROR 100:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
1589                          ;                         INTERRUPT DID NOT OCCUR.
1590  002270  054276                    EM121
1591  002272  060400                    EM2018
1592  002274  047112                    DT100
1593  002276  047716                    DF100
1594                          ;         ERROR 101:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
1595                          ;                         CS1 INCORRECT AFTER INTERRUPT.
1596  002300  054276                    EM121
1597  002302  060430                    EM2019
1598  002304  047042                    DT062
1599  002306  047622                    DF062
1600                          ;         ERROR 102:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
1601                          ;                         CS2 INCORRECT AFTER INTERRUPT.
1602  002310  054276                    EM121
1603  002312  060513                    EM2020
1604  002314  047042                    DT062
1605  002316  047622                    DF062
1606                          ;         ERROR 103:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
1607                          ;                         ERROR REGISTER IN CORRECT AFTER INTERRUPT
1608  002320  054276                    EM121
1609  002322  060576                    EM2021
1610  002324  047042                    DT062
```

```
1611  002326  047622                          DF062
1612                                ;         ERROR 104:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
1613                                ;                         INTERRUPT DID NOT CLEAR IN RK611
1614  002330  054276                          EM121
1615  002332  060647                          EM2022
1616  002334  047112                          DT100
1617  002336  047716                          DF100
1618                                ;         ERROR 105:      ATTEMPTING DESELECT COMMAND AFTER WRITING SILO
1619                                ;                         TO CHECK GO CLEAR-CS2 INCORRECT
1620
1621  002340  054377                          EM122
1622  002342  057731                          EM2012
1623  002344  047042                          DT062
1624  002346  047622                          DF062
1625                                ;         ERROR 106:      ATTEMPTING DESELECT COMMAND AFTER WRITING SILO
1626                                ;                         TO CHECK GO CLEAR-DATA LATE DID NOT OCCUR WHEN
1627                                ;                         READING SILO
1628  002350  054377                          EM122
1629  002352  060710                          EM2023
1630  002354  047042                          DT062
1631  002356  047622                          DF062
1632                                ;         ERROR 107:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
1633                                ;                         COMMAND AND STATUS REG 1 INCORRECT AT PHASE ADDRESS 4
1634  002360  054500                          EM123
1635  002362  060020                          EM2014
1636  002364  047066                          DT065
1637  002366  047646                          DF065
1638                                ;         ERROR 110:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
1639                                ;                         COMMAND AND STATUS REG 1 INVALID DURING COMMAND EXECUTION
1640  002370  054500                          EM123
1641  002372  060106                          EM2015
1642  002374  047066                          DT065
1643  002376  047646                          DF065
1644
1645                                ;         ERROR 111:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
1646                                ;                         MAINTENANCE REG 2 UNEXPECTEDLY CHANGED DURING COMMAND EXECUTION
1647  002400  054500                          EM123
1648  002402  060200                          EM2016
1649  002404  047076                          DT067
1650  002406  047672                          DF067
1651                                ;         ERROR 112:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
1652                                ;                         MAINTENANCE REG 3 UNEXPECTEDLY CHANGED DURING COMMAND EXECUTION
1653  002410  054500                          EM123
1654  002412  060300                          EM2017
1655  002414  047076                          DT067
1656  002416  047672                          DF067
1657                                ;         ERROR 113:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
1658                                ;                         COMMAND AND STATUS REG. 1 INCORRECT
1659  002420  054500                          EM123
1660  002422  057223                          EM2003
1661  002424  047042                          DT062
1662  002426  047622                          DF062
1663                                ;         ERROR 114:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
1664                                ;                         COMMAND AND STATUS REG. 2 INCORRECT
1665  002430  054500                          EM123
1666  002432  057731                          EM2012
```

```
1667  002434  047042                        DT062
1668  002436  047622                        DF062
1669                              ;         ERROR 115:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
1670                              ;                         ERROR REGISTER INCORRECT
1671  002440  054500                        EM123
1672  002442  057774                        EM2013
1673  002444  047042                        DT062
1674  002446  047622                        DF062
1675                              ;         ERROR 116:      ATTEMPTING SELECT DRIVE IN MAINT MODE
1676                              ;                         COMMAND AND STATUS REG. 1 INCORRECT
1677  002450  054564                        EM124
1678  002452  057223                        EM2003
1679  002454  046602                        DT001
1680  002456  047236                        DF001
1681                              ;         ERROR 117:      ATTEMPTING SELECT DRIVE IN MAINT MODE
1682                              ;                         DRIVE SELECT CODE IN MESSAGE INCORRECT
1683  002460  054564                        EM124
1684  002462  057266                        EM2004
1685  002464  046602                        DT001
1686  002466  047236                        DF001
1687                              ;         ERROR 120:      ATTEMPTING SELECT DRIVE IN MAINT MODE
1688                              ;                         DRIVE COMMAND BITS IN MESSAGE INCORRECT
1689  002470  054564                        EM124
1690  002472  060762                        EM2024
1691  002474  046602                        DT001
1692  002476  047236                        DF001
1693                              ;         ERROR 121:      ATTEMPTING SELECT DRIVE IN MAINT MODE
1694                              ;                         HEAD ADD CODE IN MESSAGE A INCORRECT
1695  002500  054564                        EM124
1696  002502  057337                        EM2005
1697  002504  046602                        DT001
1698  002506  047236                        DF001
1699                              ;         ERROR 122:      ATTEMPTING SELECT DRIVE IN MAINT MODE
1700                              ;                         PARITY BIT IN MESSAGE INCORRECT
1701  002510  054564                        EM124
1702  002512  057625                        EM2010
1703  002514  046602                        DT001
1704  002516  047236                        DF001
1705                              ;         ERROR 123:      ATTEMPTING SELECT DRIVE IN MAINT MODE
1706                              ;                         MESS SELECT CODE IN MESSAGE IN CORRECT
1707  002520  054564                        EM124
1708  002522  057433                        EM2007
1709  002524  046602                        DT001
1710  002526  047236                        DF001
1711                              ;         ERROR 124:      ATTEMPTING SELECT DRIVE IN MAINT MODE
1712                              ;                         CYLINDER AND BITS IN MESSAGE IS INCORRECT
1713  002530  054564                        EM124
1714  002532  057503                        EM2008
1715  002534  046602                        DT001
1716  002536  047236                        DF001
1717                              ;         ERROR 125:      ATTEMPTING SELECT DRIVE IN MAINT MODE
1718                              ;                         PARITY BIT IN MESSAGE IS INCORRECT
1719  002540  054564                        EM124
1720  002542  057667                        EM2011
1721  002544  046602                        DT001
1722  002546  047236                        DF001
```

```
1723                                    ;       ERROR 126:      ATTEMPTING COMPLETE EXECUTION OF DESELECT DRIVE IN
1724                                    ;                       MAINT MODE - DRIVE STATUS REG INCORRECT
1725  002550  053663                            EM117
1726  002552  061032                            EM2025
1727  002554  047042                            DT062
1728  002556  047622                            DF062
1729                                    ;       ERROR 127:      ATTEMPTING EXECUTION OF SELECT DRIVE IN
1730                                    ;                       MAINT MODE - DRIVE STATUS REG INCORRECT
1731  002560  054000                            EM118
1732  002562  061032                            EM2025
1733  002564  047042                            DT062
1734  002566  047622                            DF062
1735                                    ;       ERROR 130:      ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL
1736                                    ;                       SPEED - DRIVE STATUS REG INCORRECT
1737  002570  054113                            EM119
1738  002572  061032                            EM2025
1739  002574  047042                            DT062
1740  002576  047622                            DF062
1741                                    ;       ERROR 131:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
1742                                    ;                       DRIVE STATUS REG INCORRECT
1743  002600  054500                            EM123
1744  002602  061032                            EM2025
1745  002604  047042                            DT062
1746  002606  047622                            DF062
1747                                    ;       ERROR 132:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WRL
1748                                    ;                   CONTROLLER READY DID NOT SET
1749  002610  054632                            EM125
1750  002612  061072                            EM2026
1751  002614  047112                            DT100
1752  002616  047716                            DF100
1753                                    ;       ERROR 133:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WRL
1754                                    ;                   LOAD STATUS DID NOT LOAD DRIVE STATUS REF
1755  002620  054632                            EM125
1756  002622  061127                            EM2027
1757  002624  047042                            DT062
1758  002626  047622                            DF062
1759                                    ;       ERROR 134:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WRL
1760                                    ;                   CS1 INCORRECT
1761  002630  054632                            EM125
1762  002632  057223                            EM2003
1763  002634  047042                            DT062
1764  002636  047622                            DF062
1765                                    ;       ERROR 135:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WRL
1766                                    ;                   CS2 INCORRECT
1767  002640  054632                            EM125
1768  002642  057731                            EM2012
1769  002644  047042                            DT062
1770  002646  047622                            DF062
1771                                    ;       ERROR 136:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WL
1772                                    ;                   ERROR REG. INCORRECT
1773  002650  054632                            EM125
1774  002652  057774                            EM2013
1775  002654  047042                            DT062
1776  002656  047622                            DF062
1777                                    ;       ERROR 137:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WL
1778                                    ;                   DRIVE STATUS REG. INCORRECT
```

```
 1779  002660  054632                    EM125
 1780  002662  061032                    EM2025
 1781  002664  047042                    DT062
 1782  002666  047622                    DF062
 1783                          ;         ERROR 140:  ATTEMPTING TO FORCE DRIVE AVAILIABLE
```

```
1784                                    ;                       CS1 INCORRECT
1785  002670  055051                                   EM126
1786  002672  057223                                   EM2003
1787  002674  047042                                   DT062
1788  002676  047622                                   DF062
1789                                    ;       ERROR 141:  ATTEMPTING TO FORCE DRIVE AVAILABLE
1790                                    ;                   CS2 INCORRECT
1791  002700  055051                                   EM126
1792  002702  057731                                   EM2012
1793  002704  047042                                   DT062
1794  002706  047622                                   DF062
1795                                    ;       ERROR 142:  ATTEMPTING TO FORCE DRIVE AVAILIABLE
1796                                    ;                   DRIVE STATUS REC INCORRECT
1797  002710  055051                                   EM126
1798  002712  061032                                   EM2025
1799  002714  047042                                   DT062
1800  002716  047622                                   DF062
1801                                    ;       ERROR 143:  ATTEMPTING TO FORCE DRIVE AVAIVIABLE
1802                                    ;                   ERROR REGISTER INCORRECT
1803  002720  055051                                   EM126
1804  002722  057774                                   EM2013
1805  002724  047042                                   DT062
1806  002726  047622                                   DF062
1807                                    ;       ERROR 144:  ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR DETECTED BY RK611
1808                                    ;                   CS1 INCORRECT
1809  002730  055116                                   EM127
1810  002732  057223                                   EM2003
1811  002734  047042                                   DT062
1812  002736  047622                                   DF062
1813                                    ;       ERROR 145:  ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR DETECTED BY RK611
1814                                    ;                   CS2 INCORRECT
1815  002740  055116                                   EM127
1816  002742  057731                                   EM2012
1817  002744  047042                                   DT062
1818  002746  047622                                   DF062
1819                                    ;       ERROR 146:  ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR DETECTED BY RK611
1820                                    ;                   DRIVE STATUS REG INCORRECT
1821  002750  055116                                   EM127
1822  002752  061032                                   EM2025
1823  002754  047042                                   DT062
1824  002756  047622                                   DF062
1825                                    ;       ERROR 147:  ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR DETECTED BY RK611
1826                                    ;                   ERROR REC INCORRRECT
1827  002760  055116                                   EM127
1828  002762  057774                                   EM2013
1829  002764  047042                                   DT062
1830  002766  047622                                   DF062
1831                                    ;       ERROR 150:  ATTEMPTING TO FORCE DRIVE AVAILIABLE RESET ERROR
1832                                    ;                   CS1 INCORRECT
1833  002770  055214                                   EM128
1834  002772  057223                                   EM2003
1835  002774  047042                                   DT062
1836  002776  047622                                   DF062
1837                                    ;       ERROR 151:  ATTEMPTING TO FORCE DRIVE AVAILABLE RESET ERROR
1838                                    ;                   CS2 INCORRECT
1839  003000  055214                                   EM128
```

```
1840  003002  057731                        EM2012
1841  003004  047042                        DT062
1842  003006  047622                        DF062
1843                              ;         ERROR 152:  ATTEMPTING TO FORCE DRIVE AVAILABLE RESET ERROR
1844                              ;                     DRIVE STATUS REG. INCORRECT
1845  003010  055214                        EM128
1846  003012  061032                        EM2025
1847  003014  047042                        DT062
1848  003016  047622                        DF062
1849                              ;         ERROR 153:  ATTEMPTING TO FORCE DRIVE AVAILABLE RESET ERROR
1850                              ;                     ERROR REG. INCORRECT
1851  003020  055214                        EM128
1852  003022  057774                        EM2013
1853  003024  047042                        DT062
1854  003026  047622                        DF062
1855                              ;         ERROR 154:  TESTING CDT SET DRIVE TYPE DETECTION
1856                              ;                     CS1 INCORRECT
1857  003030  055275                        EM129
1858  003032  057223                        EM2003
1859  003034  047042                        DT062
1860  003036  047622                        DF062
1861                              ;         ERROR 155:  TESTING CDT SET DRIVE TYPE DETECTION
1862                              ;                     CS2 INCORRECT
1863  003040  055275                        EM129
1864  003042  057731                        EM2012
1865  003044  047042                        DT062
1866  003046  047622                        DF062
1867                              ;         ERROR 156:  TESTING CDT SET DRIVE TYPE DETECTION
1868                              ;                     DRIVE STATUS REG INCORRECT
1869  003050  055275                        EM129
1870  003052  061032                        EM2025
1871  003054  047042                        DT062
1872  003056  047622                        DF062
1873                              ;         ERROR 157:  TESTING CDT SET DRIVE TYPE DETECTION
1874                              ;                     ERROR REG INCORRECT
1875  003060  055275                        EM129
1876  003062  057774                        EM2013
1877  003064  047042                        DT062
1878  003066  047622                        DF062
1879                              ;         ERROR 160:  ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06
1880                              ;                     CS1 INCORRECT
1881  003070  055342                        EM130
1882  003072  057223                        EM2003
1883  003074  047042                        DT062
1884  003076  047622                        DF062
1885                              ;         ERROR 161:  ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06
1886                              ;                     CS2 INCORRECT
1887  003100  055342                        EM130
1888  003102  057731                        EM2012
1889  003104  047042                        DT062
1890  003106  047622                        DF062
1891                              ;         ERROR 162:  ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06
1892                              ;                     DRIVE STATUS REG INCORRECT
1893  003110  055342                        EM130
1894  003112  061032                        EM2025
1895  003114  047042                        DT062
```

```
1896  003116  047622                          DF062
1897                                ;         ERROR 163:  ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06
1898                                ;                     ERROR REG INCORRECT
1899  003120  055342                          EM130
1900  003122  057774                          EM2013
1901  003124  047042                          DT062
1902  003126  047622                          DF062
1903                                ;         ERROR 164:  ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CTD SET
1904                                ;                     CS1 INCORRECT
1905  003130  055424                          EM131
1906  003132  057223                          EM2003
1907  003134  047042                          DT062
1908  003136  047622                          DF062
1909                                ;         ERROR 165:  ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CDT SET
1910                                ;                     CS2 INCORRECT
1911  003140  055424                          EM131
1912  003142  057731                          EM2012
1913  003144  047042                          DT062
1914  003146  047622                          DF062
1915                                ;         ERROR 166:  ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CDT SET
1916                                ;                     DRIVE STATUS REG INCORRECT
1917  003150  055424                          EM131
1918  003152  061032                          EM2025
1919  003154  047042                          DT062
1920  003156  047622                          DF062
1921                                ;         ERROR 167:  ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CDT SET
1922                                ;                     ERROR REG INCORRECT
1923  003160  055424                          EM131
1924  003162  057774                          EM2013
1925  003164  047042                          DT062
1926  003166  047622                          DF062
1927                                ;         ERROR 170:  ATTEMPTING TO FORCE SPEED LOSS
1928                                ;                     CS1 INCORRECT
1929  003170  055511                          EM132
1930  003172  057223                          EM2003
1931  003174  047042                          DT062
1932  003176  047622                          DF062
1933                                ;         ERROR 171:  ATTEMPTING TO FORCE SPEED LOSS
1934                                ;                     CS2 INCORRECT
1935  003200  055511                          EM132
1936  003202  057731                          EM2012
1937  003204  047042                          DT062
1938  003206  047622                          DF062
1939                                ;         ERROR 172:  ATTEMPTING TO FORCE SPEED LOSS
1940                                ;                     DRIVE STATUS REG INCORRECT
1941  003210  055511                          EM132
1942  003212  061032                          EM2025
1943  003214  047042                          DT062
1944  003216  047622                          DF062
1945                                ;         ERROR 173:  ATTEMPTING TO FORCE SPEED LOSS
1946                                ;                     ERROR REG. INCORRECT
1947  003220  055511                          EM132
1948  003222  057774                          EM2013
1949  003224  047042                          DT062
1950  003226  047622                          DF062
1951                                ;         ERROR 174:  ATTEMPTING TO FORCE DRIVE OFF TRACK
```

```
1952                                    ;                       CS1 INCORRECT
1953  003230  055550                            EM133
1954  003232  057223                            EM2003
1955  003234  047042                            DT062
1956  003236  047622                            DF062
1957                                    ;       ERROR 175:  ATTEMPTING TO FORCE DRIVE OFF TRACK
1958                                    ;                   CS2 INCORRECT
1959  003240  055550                            EM133
1960  003242  057731                            EM2012
1961  003244  047042                            DT062
1962  003246  047622                            DF062
1963                                    ;       ERROR 176:  ATTEMPTING TO FORCE DRIVE OFF TRACK
1964                                    ;                   DRIVE STATUS REG INCORRECT
1965  003250  055550                            EM133
1966  003252  061032                            EM2025
1967  003254  047042                            DT062
1968  003256  047622                            DF062
1969                                    ;       ERROR 177:  ATTEMPTING TO FORCE DRIVE OFF TRACK
1970                                    ;                   ERROR REG INCORRECT
1971  003260  055550                            EM133
1972  003262  057774                            EM2013
1973  003264  047042                            DT062
1974  003266  047622                            DF062
1975                                    ;       ERROR 200:  ATTEMPTING TO FORCE WRITE LOCK ERROR
1976                                    ;                   CS1 INCORRECT
1977  003270  055614                            EM134
1978  003272  057223                            EM2003
1979  003274  047042                            DT062
1980  003276  047622                            DF062
1981                                    ;       ERROR 201:  ATTEMPTING TO FORCE WRITE LOCK ERROR
1982                                    ;                   CS2 INCORRECT
1983  003300  055614                            EM134
1984  003302  057731                            EM2012
1985  003304  047042                            DT062
1986  003306  047622                            DF062
1987                                    ;       ERROR 202:  ATTEMPTING TO FORCE WRITE LOCK ERROR
1988                                    ;                   DRIVE STATUS REG INCORRECT
1989  003310  055614                            EM134
1990  003312  061032                            EM2025
1991  003314  047042                            DT062
1992  003316  047622                            DF062
1993                                    ;       ERROR 203:  ATTEMPTING TO FORCE WRITE LOCK ERROR
1994                                    ;                   ERROR REG INCORRECT
1995  003320  055614                            EM134
1996  003322  057774                            EM2013
1997  003324  047042                            DT062
1998  003326  047622                            DF062
1999                                    ;       ERROR 204:  ATTEMPTING TO FORCE SEEK INCOMPLETE
2000                                    ;                   CS1 INCORRECT
2001  003330  055661                            EM135
2002  003332  057223                            EM2003
2003  003334  047042                            DT062
2004  003336  047622                            DF062
2005                                    ;       ERROR 205:  ATTEMPTING TO FORCE SEEK INCOMPLETE
2006                                    ;                   CS2 INCORRECT
2007  003340  055661                            EM135
```

```
 2008  003342  057731                        EM2012
 2009  003344  047042                        DT062
 2010  003346  047622                        DF062
 2011                          ;       ERROR 206:  ATTEMPTING TO FORCE SEEK INCOMPLETE
 2012                          ;                   DRIVE STATUS REG INCORRECT
 2013  003350  055661                        EM135
 2014  003352  061032                        EM2025
 2015  003354  047042                        DT062
 2016  003356  047622                        DF062
 2017                          ;       ERROR 207:  ATTEMPTING TO FORCE SEEK INCOMPLETE
 2018                          ;                   ERROR REG INCORRECT
 2019  003360  055661                        EM135
 2020  003362  057774                        EM2013
 2021  003364  047042                        DT062
 2022  003366  047622                        DF062
 2023                          ;       ERROR 210:  ATTEMPTING TO FORCE NON-EXECUTABLE FUNCTION
 2024                          ;                   CS1 INCORRECT
 2025  003370  055725                        EM136
 2026  003372  057223                        EM2003
 2027  003374  047042                        DT062
 2028  003376  047622                        DF062
 2029                          ;       ERROR 211:  ATTEMPTING TO FORCE NON-EXECUTABLE FUNCTION
 2030                          ;                   CS2 INCORRECT
 2031  003400  055725                        EM136
 2032  003402  057731                        EM2012
 2033  003404  047042                        DT062
 2034  003406  047622                        DF062
 2035                          ;       ERROR 212:  ATTEMPTING TO FORCE NON-EXECUTABLE FUNCTION
 2036                          ;                   DRIVE STATUS REG INCORRECT
 2037  003410  055725                        EM136
 2038  003412  061032                        EM2025
 2039  003414  047042                        DT062
 2040  003416  047622                        DF062
 2041                          ;       ERROR 213:  ATTEMPTING TO FROCE NON-EXECUTABLE FUNCTION
 2042                          ;                   ERROR REG INCORRECT
 2043  003420  055725                        EM136
 2044  003422  057774                        EM2013
 2045  003424  047042                        DT062
 2046  003426  047622                        DF062
 2047                          ;       ERROR 214:  ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR
 2048                          ;                   CS1 INCORRECT
 2049  003430  056001                        EM137
 2050  003432  057223                        EM2003
 2051  003434  047042                        DT062
 2052  003436  047622                        DF062
 2053                          ;       ERROR 215:  ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR
 2054                          ;                   CS2 INCORRECT
 2055  003440  056001                        EM137
 2056  003442  057731                        EM2012
 2057  003444  047042                        DT062
 2058  003446  047622                        DF062
 2059                          ;       ERROR 216:  ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR
 2060                          ;                   DRIVE STATUS REG INCORRECT
 2061  003450  056001                        EM137
 2062  003452  061032                        EM2025
 2063  003454  047042                        DT062
```

```
2064  003456  047622                          DF062
2065                                ;         ERROR 217:  ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR
2066                                ;                     ERROR REG INCORRECT
2067  003460  056001                          EM137
2068  003462  057774                          EM2013
2069  003464  047042                          DT062
2070  003466  047622                          DF062
2071                                ;         ERROR 220:  ATTEMPTING TO FORCE ILLEGAL DISK ADDRESS ERROR (DRIVE)
2072                                ;                     CS1 INCORRECT
2073  003470  056061                          EM138
2074  003472  057223                          EM2003
2075  003474  047042                          DT062
2076  003476  047622                          DF062
2077                                ;         ERROR 221:  ATTEMPTING TO FORCE ILLEGAL DISK ADDRESS ERROR (DRIVE)
2078                                ;                     CS2 INCORRECT
2079  003500  056061                          EM138
2080  003502  057731                          EM2012
2081  003504  047042                          DT062
2082  003506  047622                          DF062
2083                                ;         ERROR 222:  ATTEMPTING TO FORCE ILLEGAL DISK ADDRRESS ERROR (DRIVE)
2084                                ;                     DRIVE STATUS REG INCORRECT
2085  003510  056061                          EM138
2086  003512  061032                          EM2025
2087  003514  047042                          DT062
2088  003516  047622                          DF062
2089                                ;         ERROR 223:  ATTEMPTING TO FORCE ILLEGAL DISK ADDRESS ERROR (DRIVE)
2090                                ;                     ERROR REG INCORRECT
2091  003520  056061                          EM138
2092  003522  057774                          EM2013
2093  003524  047042                          DT062
2094  003526  047622                          DF062
2095                                ;         ERROR 224:  ATTERMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR
2096                                ;                     CS1 INCORRECT
2097  003530  056171                          EM139
2098  003532  057223                          EM2003
2099  003534  047126                          DT224
2100  003536  047756                          DF224
2101                                ;         ERROR 225:  ATTERMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR
2102                                ;                     CS2 INCORRECT
2103  003540  056171                          EM139
2104  003542  057731                          EM2012
2105  003544  047126                          DT224
2106  003546  047756                          DF224
2107                                ;         ERROR 226:  ATTERMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR
2108                                ;                     DRIVE STATUS REG INCORRECT
2109  003550  056171                          EM139
2110  003552  061032                          EM2025
2111  003554  047126                          DT224
2112  003556  047756                          DF224
2113                                ;         ERROR 227:  ATTERMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR
2114                                ;                     ERROR REG INCORRECT
2115  003560  056171                          EM139
2116  003562  057774                          EM2013
2117  003564  047126                          DT224
2118  003566  047756                          DF224
2119                                ;         ERROR 230: TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611
```

```
2120                                    ;               CSI INCORRECT
2121  003570  056253                            EM140
2122  003572  057223                            EM2003
2123  003574  047162                            DT230
2124  003576  050012                            DF230
2125                                    ;       ERROR 231: TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611
2126                                    ;               CS2 INCORRECT
2127  003600  056253                            EM140
2128  003602  057731                            EM2012
2129  003604  047162                            DT230
2130  003606  050012                            DF230
2131                                    ;       ERROR 232: TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611
2132                                    ;               DRIVE STATUS REG INCORRECT
2133  003610  056253                            EM140
2134  003612  061032                            EM2025
2135  003614  047162                            DT230
2136  003616  050012                            DF230
2137                                    ;       ERROR 233: TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611
2138                                    ;               ERROR REGISTER
2139  003620  056253                            EM140
2140  003622  057774                            EM2013
2141  003624  047162                            DT230
2142  003626  050012                            DF230
2143                                    ;       ERROR 234: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES
2144                                    ;               CS1 INCORRECT
2145  003630  056335                            EM141
2146  003632  057223                            EM2003
2147  003634  047042                            DT062
2148  003636  047622                            DF062
2149                                    ;       ERROR 235: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES
2150                                    ;               CS2 INCORRECT
2151  003640  056335                            EM141
2152  003642  057731                            EM2012
2153  003644  047042                            DT062
2154  003646  047622                            DF062
2155                                    ;       ERROR 236: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES
2156                                    ;               DRIVE STATUS REG. INCORRECT
2157  003650  056335                            EM141
2158  003652  061032                            EM2025
2159  003654  047042                            DT062
2160  003656  047622                            DF062
2161                                    ;       ERROR 237: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES
2162                                    ;               ERROR REG. INCORRECT
2163  003660  056335                            EM141
2164  003662  057774                            EM2013
2165  003664  047042                            DT062
2166  003666  047622                            DF062
2167                                    ;       ERROR 240: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES WITH
2168                                    ;               BAD PARITY - CS1 INCORRECT
2169  003670  056411                            EM142
2170  003672  057223                            EM2003
2171  003674  047042                            DT062
2172  003676  047622                            DF062
2173                                    ;       ERROR 241: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES WITH
2174                                    ;               BAD PARITY - CS2 INCORRECT
2175  003700  056411                            EM142
```

```
2176  003702  057731                    EM2012
2177  003704  047042                    DT062
2178  003706  047622                    DF062
2179                          ;         ERROR 242: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES WITH
2180                          ;                    BAD PARITY - DRIVE STATUS REG. INCORRECT
2181  003710  056411                    EM142
2182  003712  061032                    EM2025
2183  003714  047042                    DT062
2184  003716  047622                    DF062
2185                          ;         ERROR 243: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES WITH
2186                          ;                    BAD PARITY - ERROR ERROR INCOMPLETE
2187  003720  056411                    EM142
2188  003722  057774                    EM2013
2189  003724  047042                    DT062
2190  003726  047622                    DF062
2191                          ;         ERROR 244: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)
2192                          ;                    CS1 INCORRECT
2193  003730  056507                    EM143
2194  003732  057223                    EM2003
2195  003734  047042                    DT062
2196  003736  047622                    DF062
2197                          ;         ERROR 245: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)
2198                          ;                    CS2 INCORRECT
2199  003740  056507                    EM143
2200  003742  057731                    EM2012
2201  003744  047042                    DT062
2202  003746  047622                    DF062
2203                          ;         ERROR 246: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)
2204                          ;                    DRIVE STATUS REG INCORRECT
2205  003750  056507                    EM143
2206  003752  061032                    EM2025
2207  003754  047042                    DT062
2208  003756  047622                    DF062
2209                          ;         ERROR 247: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)
2210                          ;                    ERROR REG INCORRECT
2211  003760  056507                    EM143
2212  003762  057774                    EM2013
2213  003764  047042                    DT062
2214  003766  047622                    DF062
2215                          ;         ERROR 250: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)
2216                          ;                    CS1 INCORRECT
2217  003770  056602                    EM144
2218  003772  057223                    EM2003
2219  003774  047042                    DT062
2220  003776  047622                    DF062
2221                          ;         ERROR 251: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)
2222                          ;                    CS2 INCORRECT
2223  004000  056602                    EM144
2224  004002  057731                    EM2012
2225  004004  047042                    DT062
2226  004006  047622                    DF062
2227                          ;         ERROR 252: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)
2228                          ;                    DRIVE STATUS REG INCORRECT
2229  004010  056602                    EM144
2230  004012  061032                    EM2025
2231  004014  047042                    DT062
```

```
2232  004016  047622                          DF062
2233                                ;         ERROR 253: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)
2234                                ;                    ERROR REG INCORRECT
2235  004020  056602                          EM144
2236  004022  057774                          EM2013
2237  004024  047042                          DT062
2238  004026  047622                          DF062
2239                                ;         ERROR 254: ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE RESET
2240                                ;                    UNEXPECTED INTERRUPT OCCURRED
2241  004030  056663                          EM145
2242  004032  061202                          EM2028
2243  004034  047112                          DT100
2244  004036  047716                          DF100
2245                                ;         ERROR 255: ATTEMPTING EXECUTION FO DESELECT DRIVE WITH IE RESET
2246                                ;                    INTERRUPT OCCURRED WHEN INTERRUPT ENABLE SET
2247  004040  056663                          EM145
2248  004042  061240                          EM2029
2249  004044  047112                          DT100
2250  004046  047716                          DF100
2251                                ;         ERROR 256:      ATTEMPTING TO EXECUTE AN ILLEGAL FUNCTION
2252                                ;                         CS1 INCORRECT
2253  004050  056750                          EM146
2254  004052  057223                          EM2003
2255  004054  047214                          DT256
2256  004056  050046                          DF256
2257                                ;         ERROR 257:      ATTEMPTING TO EXECUTE AN ILLEGAL FUNCTION
2258                                ;                         ERROR REG INCORRECT
2259  004060  056750                          EM146
2260  004062  057774                          EM2013
2261  004064  047214                          DT256
2262  004066  050046                          DF256
2263                                ;         ERROR 260:      ATTEMPTING TO CLEAR ILLEGAL FUNCTION - CS1 INCORRECT
2264  004070  057022                          EM147
2265  004072  057223                          EM2003
2266  004074  047214                          DT256
2267  004076  050046                          DF256
2268                                ;         ERROR 261:      ATTEMPTING TO CLEAR ILLEGAL FUNCTION - ERROR REG INCORRECT
2269  004100  057022                          EM147
2270  004102  057774                          EM2013
2271  004104  047214                          DT256
2272  004106  050046                          DF256
2273                                ;         ERROR 262:  UNEXPECTED MEMORY PARITY ERROR TRAP
2274  004110  052050                          EM000
2275  004112  050322                          DH000C
2276  004114  046576                          DT000
2277  004116  047232                          DF000
```

```
                        .SBTTL  TEMPORARY STORAGE FOR RK611 CONTROLLER REGISTER

004120  000000          T.CS1:  .WORD   0               ;CONTROL AND STATUS REGISTER 1
004122  000000          T.WC:   .WORD   0               ;WORD COUNT REGISTER
004124  000000          T.BA:   .WORD   0               ;BUS ADDRESS REGISTER
004126  000000          T.DA:   .WORD   0               ;DESIRED TRACK SECTOR REGISTER
004130  000000          T.CS2:  .WORD   0               ;CONTROL AND STATUS REGISTER 2
004132  000000          T.DS:   .WORD   0               ;DRIVE STATUS REGISTER
004134  000000          T.ER:   .WORD   0               ;ERROR REGISTER
004136  000000          T.ASOF: .WORD   0               ;ATTENTION SUMMARY AND OFFSET REGISTER
004140  000000          T.DCYL: .WORD   0               ;DESIRED CYLINDER REGISTER
004142  000000          T.DB:   .WORD   0               ;DATA BUFFER
004144  000000          T.MR1:  .WORD   0               ;MAINTENANCE REGISTER 1
004146  000000          T.MR2:  .WORD   0               ;MAINTENANCE REGISTER 2
004150  000000          T.MR3:  .WORD   0               ;MAINTENANCE REGISTER 3
004152  000000          T.ECPS: .WORD   0               ;ECC POSITION INFORMATION
004154  000000          T.ECPT: .WORD   0               ;ECC PATTERN INFORMATION
004156  000000          T.SPAR: .WORD   0               ;SPARE REGISTER

                        .SBTTL  EXPECTED RK611 CONTROLLER REGISTERS

004160  000000          E.CS1:  .WORD   0               ;CONTROL AND STATUS REGISTER 1
004162  000000          E.WC:   .WORD   0               ;WORD COUNT REGISTER
004164  000000          E.BA:   .WORD   0               ;BUS ADDRESS REGISTER
004166  000000          E.DA:   .WORD   0               ;DESIRED TRACK SECTOR REGISTER
004170  000000          E.CS2:  .WORD   0               ;CONTROL AND STATUS REGISTER 2
004172  000000          E.DS:   .WORD   0               ;DRIVE STATUS REGISTER
004174  000000          E.ER:   .WORD   0               ;ERROR REGISTER
004176  000000          E.ASOF: .WORD   0               ;ATTENTION SUMMARY AND OFFSET REGISTER
004200  000000          E.DCYL: .WORD   0               ;DESIRED CYLINDER REGISTER
004202  000000          E.DB:   .WORD   0               ;DATA BUFFER
004204  000000          E.MR1:  .WORD   0               ;MAINTENANCE REGISTER 1
004206  000000          E.MR2:  .WORD   0               ;MAINTENANCE REGISTER 2
004210  000000          E.MR3:  .WORD   0               ;MAINTENANCE REGISTER 3
004212  000000          E.ECPS: .WORD   0               ;ECC POSITION INFORMATION
004214  000000          E.ECPT: .WORD   0               ;ECC PATTERN INFORMATION
004216  000000          E.SPAR: .WORD   0               ;SPARE REGISTER

                        .SBTTL  PREVIOUS RK611 CONTROLLER REGISTERS

004220  000000          P.CS1:  .WORD   0               ;PREVIOUS COMMAND AND STATUS REG 1
004222  000000          P.CS2:  .WORD   0               ;PREVIOUS COMMAND AND STATUS REG 2
004224  000000          P.DS:   .WORD   0               ;PREVIOUS DRIVE STATUS REG
004226  000000          P.ER:   .WORD   0               ;PREVIOUS ERROR REG
004230  000000          U.MR2:  .WORD   0               ;UNSHIFTED MAINTENANCE REG 2
004232  000000          U.MR3:  .WORD   0               ;UNSHIFTED MAINTENANCE REG 3
```

```
2324                                    .SBTTL  PROGRAM DEFINED VARIABLES
2325
2326  004234  000210                    RKVEC:  .WORD   210             ;RK611 VECTOR
2327  004236  000240                    RKPRI:  .WORD   PR5             ;RK611 PRIORITY
2328  004240  000000                    SRTFLG: .WORD   0               ;START FLAG
2329                                                                    ;  0 = 200
2330                                                                    ;  1 = 214
2331                                                                    ; -1 = 204
2332  004242  000000                    ERRCNT: .WORD   0               ;ERROR COUNT FOR SWITCH 12 ABORT
2333  004244  000000                    DRVCOD: .WORD   0               ;DRIVE SELECT CODE
2334  004246  000000                    MSGCOD: .WORD   0               ;MESSAGE SELECT CODE
2335  004250  000000                    HDCODE: .WORD   0               ;HEAD SELECT CODE
2336  004252  000000                    CYLIN:  .WORD   0               ;CYLINDER ADD VALUE
2337  004254  000000                    OFFVAL: .WORD   0               ;OFFSET VALUE
2338  004256  000000                    SFTCNT: .WORD   0               ;SHIFT COUNT FOR DRIVE MESSAGE SHIFTING
2339  004260  000000                    PARBIT: .WORD   0               ;PARITY BIT FOR SHIFT
2340  004262  000015                    WAITIM: .WORD   15              ;WAITING FOR DESELECT COMMAND
2341  004264  000144                    STALL:  .WORD   100.            ;STALL TIME FOR MESSAGE TIME OUT (NED)
2342  004266  000000                    DRVTYP: .WORD   0               ;DRIVE TYPE INDICATOR
2343  004270  000000                    ILLFUN: .WORD   0               ;ILLEGAL FUNCTION CODE
2344  004272  000000                    TRAPPC: .WORD   0               ;ADDRESS OF TRAP FROM MEMORY CHECK
2345  004274  000000                    SAVSWR: .WORD   0               ;SAVED SWITCH REG FOR POWER FAIL
```

```
                                        .SBTTL  PROGRAM SETUP
                                        
004276  012737  000001  004240  PARM:   MOV     #1,SRTFLG       ;LOAD START FLAG FOR PARMETER START
004304  000406                          BR      START1
                                        
004306  012737  177777  004240  RESTRT: MOV     #-1,SRTFLG      ;LOAD START FLAG FOR RESTART
004314  000402                          BR      START1
                                        
004316  005037  004240          START:  CLR     SRTFLG          ;CLEAR START FLAG
004322  000005                  START1: RESET                   ;RESET THE WHOLE SYSTEM
004324  012706  001100                  MOV     #STACK,SP       ;INITIALIZE STACK POINTER
004330  012746  000340                  MOV     #PR7,-(SP)      ;LOAD STACK TO LOCK OUT ALL INTERRUPTS
004334  012746  004342                  MOV     #1$,-(SP)       ;LOAD START OF PROGRAM
004340  000002                          RTI                     ;LOAD PSW
                                        
004342                          1$:
                                        .SBTTL  INITIALIZE THE COMMON TAGS
                                        ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
004342  012706  001100                  MOV     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
004346  005026                          CLR     (R6)+           ;;CLEAR MEMORY LOCATION
004350  022706  001140                  CMP     #SWR,R6 ;;DONE?
004354  001374                          BNE     .-6             ;;LOOP BACK IF NO
004356  012706  001100                  MOV     #STACK,SP       ;;SETUP THE STACK POINTER
                                        ;;INITIALIZE A FEW VECTORS
004362  012737  042512  000020          MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
004370  012737  000340  000022          MOV     #340,@#IOTVEC+2 ;;LEVEL 7
004376  012737  043516  000030          MOV     #$ERROR,@#EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
004404  012737  000340  000032          MOV     #340,@#EMTVEC+2 ;;LEVEL 7
004412  012737  046506  000034          MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
004420  012737  000340  000036          MOV     #340,@#TRAPVEC+2;LEVEL 7
004426  012737  046354  000024          MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
004434  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;LEVEL 7
004442  013737  042204  042176          MOV     $ENDCT,$EOPCT   ;;SETUP END-OF-PROGRAM COUNTER
004450  005037  001200                  CLR     $TIMES          ;;INITIALIZE NUMBER OF ITERATIONS
004454  005037  001202                  CLR     $ESCAPE         ;;CLEAR THE ESCAPE ON ERROR ADDRESS
004460  112737  000001  001115          MOVB    #1,$ERMAX       ;;ALLOW ONE ERROR PER TEST
004466  012737  004466  001106          MOV     #.,$LPADR       ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
004474  012737  004474  001110          MOV     #.,$LPERR       ;;SETUP THE ERROR LOOP ADDRESS
                                ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
                                ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
004502  013746  000004                  MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
004506  012737  004542  000004          MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
004514  012737  177570  001140          MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
004522  012737  177570  001142          MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
004530  022777  177777  174402          CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
004536  001012                          BNE     66$             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
                                                                ;;AND  THE HARDWARE SWR IS NOT = -1
004540  000403                          BR      65$             ;;BRANCH IF NO TIMEOUT
004542  012716  004550          64$:    MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
004546  000002                          RTI
004550  012737  000176  001140  65$:    MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
004556  012737  000174  001142          MOV     #DISPREG,DISPLAY
004564  012637  000004          66$:    MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR
                                        
004570  005037  001222                  CLR     $PASS           ;;CLEAR PASS COUNT
004574  132737  000200  001235          BITB    #APTSIZE,$ENVM  ;;TEST USER SIZE UNDER APT
```

```
2402  004602  001403                        BEQ     67$                 ;;YES,USE NON-APT SWITCH
2403  004604  012737  001236  001140        MOV     #$SWREG,SWR         ;;NO,USE APT SWITCH REGISTER
2404  004612                        67$:
2405  004612  005037  004242                CLR     ERRCNT              ;CLEAR ERROR COUNT FOR SWITCH 12 ABORT
2406                                .SBTTL  TYPE PROGRAM NAME
2407                                ;;TYPE THE NAME OF THE PROGRAM IF FIRST PASS
2408  004616  005227  177777                INC     #-1                 ;;FIRST TIME?
2409  004622  001055                        BNE     68$                 ;;BRANCH IF NO
2410  004624  022737  042340  000042        CMP     #$ENDAD,@#42        ;;ACT-11?
2411  004632  001451                        BEQ     68$                 ;;BRANCH IF YES
2412  004634  104401  004702                TYPE    ,69$                ;;TYPE ASCIZ STRING
2413                                .SBTTL  GET VALUE FOR SOFTWARE SWITCH REGISTER
2414  004640  005737  000042                TST     @#42                ;;ARE WE RUNNING UNDER XXDP/ACT?
2415  004644  001012                        BNE     70$                 ;;BRANCH IF YES
2416  004646  123727  001234  000001        CMPB    $ENV,#1             ;;ARE WE RUNNING UNDER APT?
2417  004654  001406                        BEQ     70$                 ;;BRANCH IF YES
2418  004656  023727  001140  000176        CMP     SWR,#SWREG          ;;SOFTWARE SWITCH REG SELECTED?
2419  004664  001005                        BNE     71$                 ;;BRANCH IF NO
2420  004666  104406                        GTSWR                       ;;GET SOFT-SWR SETTINGS
2421  004670  000403                        BR      71$
2422  004672  112737  000001  001134  70$:   MOVB    #1,$AUTOB           ;;SET AUTO-MODE INDICATOR
2423  004700                        71$:
2424  004700  000426                        BR      68$                 ;;GET OVER THE ASCIZ
2425                                ;;69$:  .ASCIZ  <CRLF>/RK611 DISKLESS DIAGNOSTIC: PART 2 CZR6BD0/<CRLF>
2426  004756                        68$:
2427  004756  022737  000001  004240        CMP     #1,SRTFLG           ;CHECK IF PARAMETER START
2428  004764  001122                        BNE     15$                 ;NO, CONTINUE SETUP
2429  004766  104401  050072        5$:     TYPE    ,OPR001             ;TYPE "RK611 BUS ADDRESS (  ) ="
2430  004772  013746  001270                MOV     $BASE,-(SP)         ;;SAVE $BASE FOR TYPEOUT
2431  004776  104402                        TYPOC                       ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
2432  005000  104401  050121                TYPE    ,OPR002
2433  005004  104412                        RDOCT                       ;GET VALUE
2434  005006  012637  001160                MOV     (SP)+,$TMP0
2435  005012  001407                        BEQ     7$                  ;CHECK IF <CR>
2436  005014  022737  160000  001160        CMP     #160000,$TMP0       ;CHECK IF IN I/O PAGE
2437  005022  101361                        BHI     5$
2438  005024  013737  001160  001270        MOV     $TMP0,$BASE         ;LOAD NEW BUS ADDRESS
2439  005032  104401  050127        7$:     TYPE    ,OPR003             ;TYPE "RK611 VECTOR ADDRESS (  ) ="
2440  005036  013746  001264                MOV     $VECT1,-(SP)
2441  005042  042716  160000                BIC     #160000,(SP)
2442  005046  104402                        TYPOC
2443  005050  104401  050121                TYPE    ,OPR002
2444  005054  104412                        RDOCT                       ;GET VALUE
2445  005056  012637  001160                MOV     (SP)+,$TMP0
2446  005062  001412                        BEQ     10$                 ;CHECK IF <CR>
2447  005064  022737  001000  001160        CMP     #1000,$TMP0         ;CHECK IF LEGAL
2448  005072  101757                        BLOS    7$
2449  005074  042737  017777  001264        BIC     #17777,$VECT1       ;LOAD NEW VECTOR ADDRESS
2450  005102  053737  001160  001264        BIS     $TMP0,$VECT1
2451  005110  104401  050157        10$:    TYPE    ,OPR004             ;TYPE "RK611 PRIORITY (  ) ="
2452  005114  005046                        CLR     -(SP)               ;MAKE ROOM ON THE STACK
2453  005116  113716  001265                MOVB    $VECT1+1,(SP)
2454  005122  006216                        ASR     (SP)                ;SHIFT 5 BITS RIGHT
2455  005124  006216                        ASR     (SP)
2456  005126  006216                        ASR     (SP)
2457  005130  006216                        ASR     (SP)
```

```
2458  005132  006216                        ASR     (SP)
2459  005134  104402                        TYPOC
2460  005136  104401  050121                TYPE    ,OPR002
2461  005142  104412                        RDOCT                   ;GET VALUE
2462  005144  012637  001160                MOV     (SP)+,$TMP0
2463  005150  001430                        BEQ     15$             ;CHECK FOR DEFAULT
2464  005152  022737  000007  001160        CMP     #7,$TMP0        ;CHECK IF LEGAL
2465  005160  103753                        BLO     10$
2466  005162  022737  000004  001160        CMP     #4,$TMP0
2467  005170  101347                        BHI     10$
2468  005172  006337  001160                ASL     $TMP0           ;SHIFT 5 BITS LEFT
2469  005176  006337  001160                ASL     $TMP0
2470  005202  006337  001160                ASL     $TMP0
2471  005206  006337  001160                ASL     $TMP0
2472  005212  006337  001160                ASL     $TMP0
2473  005216  042737  160000  001264        BIC     #160000,$VECT1  ;STORE NEW PRIORITY
2474  005224  153737  001160  001265        BISB    $TMP0,$VECT1+1
2475  005232  013737  001264  004234  15$:  MOV     $VECT1,RKVEC    ;STORE RK611 VECTOR
2476  005240  042737  160000  004234        BIC     #160000,RKVEC
2477  005246  113737  001265  004236        MOVB    $VECT1+1,RKPRI  ;STORE RK611 PRIORITY
2478
2479  005254  004737  042360        NEWPAS: JSR     PC,CHKPAR       ;CHECK FOR MEMORY CHECK ENABLE
2480  005260  012746  000340                MOV     #PR7,-(SP)      ;LOCK OUT INTERRUPTS
2481  005264  012746  005272                MOV     #TST1,-(SP)
2482  005270  000002                        RTI
```

```
                                .SBTTL  **DRIVE MESSAGE LOADING

                                ;;*****************************************************************
                                ;*TEST 1         FIRST COMMAND IN MAINT MODE
                                ;*
                                ;*      INITIALIZE RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER IN
                                ;*      MODE. ISSUE SELECT DRIVE. WAIT AND MAKE SURE CS1 REMAINS
                                ;*      THE SAME. CLOCK IN MESSAGES A AND B. MAKE SURE
                                ;*      CORRECT MSG ARE LOADED. CHECKING IS DONE A FIELD AT A
                                ;*      TIME.
                                ;*
                                ;;*****************************************************************
005272  000004                TST1:   SCOPE
005274  012737  000144  001200        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
005302  013702  001270        MOV     $BASE,R2        ;LOAD RK611 BASE
005306  012762  100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
005314  012762  000040  000026        MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
005322  012762  000001  000000        MOV     #SELDRV,RKCS1(R2)       ;LOAD CS1 WITH SELECT DRIVE
005330  012700  000015        MOV     #15,R0          ;WAIT FOR READY TO SET
005334  005300                1$:     DEC     R0
005336  001376                BNE     1$
005340  016237  000000  004120        MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
005346  012737  000001  004160        MOV     #SELDRV,E.CS1   ;LOAD EXPECT CS1
005354  023737  004160  004120        CMP     E.CS1,T.CS1     ;CHECK IF CS1 CHANGED
005362  001402                BEQ     2$              ;NO, CONTINUE
005364  104077                ERROR   77              ;CS1 INCORRECT
005366  000503                BR      TST2            ;;GO ON TO NEXT TEST

005370  012700  000016        2$:     MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
005374  012762  000440  000026  3$:     MOV     #DMD!MCLK,RKMR1(R2)
005402  012762  000040  000026        MOV     #DMD,RKMR1(R2)
005410  005300                DEC     R0
005412  001370                BNE     3$
005414  016237  000000  004120        MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
005422  016237  000034  004146        MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
005430  016237  000036  004150        MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
005436  012737  000001  004160        MOV     #SELDRV,E.CS1   ;LOAD EXPECTED CS1
005444  005037  004206                CLR     E.MR2           ;LOAD EXPECTED MAINT REG. 2
005450  005037  004210                CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
005454  023737  004160  004120        CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG. 1 CORRECT
005462  001402                BEQ     4$              ;YES, CHECK MESSAGES A & B
005464  104116                ERROR   116             ;CS1 INCORRECT
005466  000443                BR      TST2            ;;GO ON TO NEXT TEST

005470  032737  000017  004146  4$:     BIT     #17,T.MR2       ;CHECK IF DRIVE SELECT BITS ZERO
005476  001401                BEQ     5$              ;YES, CONTINUE
005500  104117                ERROR   117             ;MESSAGE SELECT BITS NOT ZERO
005502  032737  007760  004146  5$:     BIT     #7760,T.MR2     ;CHECK IF COMMAND BITS ZERO
005510  001401                BEQ     6$              ;YES, CONTINUE

005512  104120                ERROR   120             ;COMMAND BITS NOT ZERO
005514  032737  070000  004146  6$:     BIT     #70000,T.MR2    ;CHECK IF HEAD SELECT BITS ZERO
005522  001401                BEQ     7$              ;YES, CONTINUE
005524  104121                ERROR   121             ;HEAD SELECT NOT ZERO
005526  032737  100000  004146  7$:     BIT     #BIT15,T.MR2    ;CHECK PARITY BIT ON MESS A ZERO
005534  001401                BEQ     8$              ;YES, CONTINUE
```

```
2539  005536  104122                          ERROR   122             ;PARITY ON MESS A NOT ZERO
2540  005540  032737  000017  004150  8$:     BIT     #17,T.MR3       ;CHECK MESS SELECT BITS ZERO
2541  005546  001401                          BEQ     9$              ;YES, CONTINUE
2542  005550  104123                          ERROR   123             ;MESSAGE SELECT BITS NOT ZERO
2543  005552  032737  077760  004150  9$:     BIT     #77760,T.MR3    ;CHECK CYLINDER ADDRESS BUFFER
2544  005560  001401                          BEQ     10$             ;YES, CONTINUE
2545  005562  104124                          ERROR   124             ;CYLINDER ADD BITS NOT ZERO
2546  005564  032737  100000  004150  10$:    BIT     #BIT15,T.MR3    ;CHECK PARITY BIT ON MESSAGE B
2547  005572  001401                          BEQ     TST2            ;;YES, GO ON TO NEXT TEST
2548  005574  104125                          ERROR   125             ;PARITY ON MESS. B NOT ZERO
2549
2550                                  ;;*****************************************************************
2551                                  ;*TEST 2        DRIVE SELECT BITS LOADING FOR DRIVE MESS.
2552                                  ;*
2553                                  ;*      INITIALIZE RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2554                                  ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 2 WITH
2555                                  ;*      ZERO.  LOAD COMMAND AND STATUS REGISTER WITH A SELECT
2556                                  ;*      COMMAND.  CLOCK IN MESSAGES A AND B INTO SHIFT REGISTER.
2557                                  ;*      MAKE SURE CORRECT MESSAGES ARE LOADED.  REPEAT FOR DRIVE
2558                                  ;*      SELECT = 1-17.
2559                                  ;*
2560                                  ;;*****************************************************************
2561  005576  000004                  TST2:   SCOPE
2562  005600  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2563  005606  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
2564  005612  005037  004244                  CLR     DRVCOD          ;INITIALIZE DRIVE SELECT CODE
2565  005616  012737  000001  004160          MOV     #SELDRV,E.CS1   ;LOAD EXPECTED CS1
2566  005624  012737  005632  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
2567                                                                  ;  SUBTEST LOOP
2568
2569  005632                          1$:
2570  005632  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2571  005640  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
2572  005646  013762  004244  000010          MOV     DRVCOD,RKCS2(R2) ;LOAD DRIVE NUMBER
2573  005654  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;LOAD SELECT COMMAND
2574  005662  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2575  005666  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
2576  005674  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2577  005702  005300                          DEC     R0
2578  005704  001370                          BNE     2$
2579  005706  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2580  005714  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2581  005722  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
2582  005730  013737  004244  004206          MOV     DRVCOD,E.MR2    ;LOAD EXPECTED MAINT REG. 2
2583  005736  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
2584  005742  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2585  005750  001405                          BEQ     3$              ;YES, CHECK MESSAGE A&B
2586  005752  104002                          ERROR   2
2587  005754  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
2588  005762  000426                          BR      25$             ;CHECK IF LOOP ON ERROR
2589
2590  005764  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
2591  005772  042737  177760  001160          BIC     #177760,$TMP0
2592  006000  023737  004244  001160          CMP     DRVCOD,$TMP0    ;CHECK IF DRIVE SELECT BITS CORRECT
2593  006006  001402                          BEQ     4$              ;YES, CHECK MESSAGES A&B
2594  006010  104003                          ERROR   3               ;DRIVE SELECT BITS INCORRECT
```

```
                                BR      25$             ;CHECK IF LOOP ON ERROR
                                
004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
                BEQ     5$              ;YES, CHECK MESSAGE B
                ERROR   4               ;MESSAGE A INCORRECT
004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
                BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
                ERROR   5               ;MESSAGE B INCORRECT
        25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
004244          INC     DRVCOD          ;INCREMENT DRIVE SELECT CODE
004244          CMP     #17,DRVCOD      ;CHECK IF FINISHED
                BHIS    1$              ;NO, TRY NEXT CONFIGURATION

                ;;*******************************************************************
                ;*TEST 3         FORMAT BIT LOADING TO FOR DRIVE MESS.
                ;*
                ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
                ;*      A SELECT COMMAND AND 24 SECTOR MODE FORMAT.  MAKE SURE
                ;*      CORRECT MESSAGE IS LOADED.
                ;*
                ;;*******************************************************************
        TST3:   SCOPE
001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
001270          MOV     $BASE,R2        ;LOAD RK611 BASE
001300          MOV     #EM100,EM1N     ;LOAD ERROR MESSAGE
000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
000000          MOV     #CFMT!SELDRV,RKCS1(R2)  ;LOAD CFMT!SELDRV INTO COMMAND AND STATUS REG.
004160          MOV     #CFMT!SELDRV,E.CS1      ;LOAD EXPECT CS1
                MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGES
000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
000026          MOV     #DMD,RKMR1(R2)
                DEC     R0
                BNE     1$
004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
004206          MOV     #S.FMT,E.MR2    ;LOAD EXPECTED MAINT REG. 2
004210          CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
                BEQ     2$              ;YES, CHECK MESSAGE A&B
001302          MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
                ERROR   1
000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT TEST
                BR      TST4            ;;GO ON TO NEXT TEST

004146  2$:     BIT     #S.FMT,T.MR2    ;CHECK IF S.FMT SET IN MESSAGE A
                BNE     3$              ;YES, CHECK MESSAGES A&B
001302          MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
                ERROR   1
                BR      TST4            ;;GO ON TO NEXT TEST

004140  3$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
                BEQ     4$              ;YES, CHECK MESSAGE B
001302          MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
```

```
                                                ERROR   1
006300  104001
006302  023737  004210  004150  4$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
006310  001404                          BEQ     TST4            ;;YES, GO ON TO NEXT TEST
006312  012737  057174  001302          MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
006320  104001                          ERROR   1

                                        ;;*****************************************************************
                                        ;*TEST 4        HEAD SELECT BITS LOADING FOR DRIVE MESS.
                                        ;*
                                        ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                        ;*      DIAGNOSTIC MODE.  LOAD TRACK ADDRESS WITH ZERO.  LOAD
                                        ;*      COMMAND AND STATUS REGISTER 2 WITH ZERO.  LOAD COMMAND
                                        ;*      AND STATUS REGISTER WITH SELECT COMMAND.  CLOCK IN
                                        ;*      MESSAGE A AND B INTO SHIFT REGISTER.  MAKE SURE CORRECT
                                        ;*      MESSAGE IS LOADED.  REPEAT FOR TRACK ADDRESS = 1-7.
                                        ;*
                                        ;;*****************************************************************
006322  000004                  TST4:   SCOPE
006324  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
006332  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
006336  005037  004250                  CLR     HDCODE          ;CLEAR HEAD SELECT CODE
006342  012737  000001  004160          MOV     #SELDRV,E.CS1   ;LOAD EXPECTED CS1
006350  012737  006356  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                                ;  SUBTEST LOOP

006356                          1$:
006356  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
006364  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
006372  005046                          CLR     -(SP)           ;MAKE ROOM ON STACK
006374  113766  004250  000001          MOVB    HDCODE,1(SP)    ;LOAD HEAD ADDRESS
006402  012662  000006                  MOV     (SP)+,RKDA(R2)
006406  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;LOAD SELECT COMMAND
006414  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
006420  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
006426  012762  000040  000026          MOV     #DMD,RKMR1(R2)
006434  005300                          DEC     R0
006436  001370                          BNE     2$
006440  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMMAND AND STATUS REG. 1
006446  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
006454  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
006462  005037  004206                  CLR     E.MR2
006466  113737  004250  004207          MOVB    HDCODE,E.MR2+1  ;GENERATE EXPECTED MAINT REG. 2
006474  006337  004206                  ASL     E.MR2
006500  006337  004206                  ASL     E.MR2
006504  006337  004206                  ASL     E.MR2
006510  006337  004206                  ASL     E.MR2
006514  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
006520  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
006526  001405                          BEQ     3$              ;YES, CHECK MESSAGE A&B
006530  104006                          ERROR   6
006532  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
006540  000426                          BR      25$             ;CHECK IF LOOP ON ERROR

006542  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
006550  042737  103777  001160          BIC     #103777,$TMP0
006556  023737  004206  001160          CMP     E.MR2,$TMP0     ;CHECK IF HEAD SELECT BITS CORRECT
```

```
                                                BEQ     4$              ;YES, CHECK MESSAGES A&B
                                                ERROR   7               ;HEAD SELECT BITS INCORRECT
                                                BR      25$             ;CHECK IF LOOP ON ERROR

006572  023737  004206  004146  4$:           CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
                                                BEQ     5$              ;YES, CHECK MESSAGE B
                                                ERROR   10              ;MESSAGE A INCORRECT
006604  023737  004210  004150  5$:           CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
                                                BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
                                                ERROR   11              ;MESSAGE B INCORRECT
                                        25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
                                                INC     HDCODE          ;INCREMENT HEAD SELECT CODE F
                                                CMP     #7,HDCODE       ;CHECK IF FINISHED
                                                BHIS    1$              ;NO, TRY NEXT CONFIGURATION

                                        ;;*****************************************************************
                                        ;*TEST 5        MESSAGE SELECT BITS LOADING FOR DRIVE MESS.
                                        ;*
                                        ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                        ;*      DIAGNOSTIC MODE AND ZERO IN MESSAGE SELECT BITS.  LOAD
                                        ;*      COMMAND AND STATUS REGISTER 1 WITH A SELECT COMMAND.  CLOCK
                                        ;*      IN MESSAGE A AND B INTO SHIFT REGISTER.   MAKE SURE
                                        ;*      CORRECT MESSAGE IS LOADED.  REPEAT FOR MESSAGE SELECT = 1-17.
                                        ;*
                                        ;;*****************************************************************
006634  000004                  TST5:   SCOPE
006636  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
006644  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
006650  005037  004246                  CLR     MSGCOD          ;INITIALIZE MESSAGE SELECT
006654  012737  000001  004160          MOV     #SELDRV,E.CS1   ;LOAD EXPECTED CS1
006662  012737  006670  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                                ;  SUBTEST LOOP

006670                          1$:
006670  012762  100000  000000              MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
006676  013762  004246  000026              MOV     MSGCOD,RKMR1(R2) ;LOAD MESSAGE SELECT BITS
006704  052762  000040  000026              BIS     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
006712  012762  000001  000000              MOV     #SELDRV,RKCS1(R2) ;LOAD SELECT COMMAND
006720  012700  000016                      MOV     #3*4+2,R0       ;CLOCK IF DRIVE MESSAGE
006724  052762  000400  000026  2$:         BIS     #MCLK,RKMR1(R2)
006732  042762  000400  000026              BIC     #MCLK,RKMR1(R2)
006740  005300                              DEC     R0
006742  001370                              BNE     2$
006744  016237  000000  004120              MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
006752  016237  000026  004144              MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
006760  016237  000034  004146              MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG. 2
006766  016237  000036  004150              MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
006774  013737  004246  004204              MOV     MSGCOD,E.MR1    ;LOAD EXPECTED MAINT REG. 1
007002  052737  002040  004204              BIS     #MEWD!DMD,E.MR1
007010  032737  020000  004144              BIT     #ECCW,T.MR1
007016  001403                              BEQ     10$
007020  052737  020000  004204              BIS     #ECCW,E.MR1
007026  005037  004206          10$:        CLR     E.MR2           ;LOAD EXPECTED MAINT REG. 2
007032  013737  004246  004210              MOV     MSGCOD,E.MR3    ;LOAD EXPECTED MAINT REG. 3
007040  023737  004160  004120              CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
007046  001405                              BEQ     3$              ;YES, CHECK MAINT REG. 1.
```

```
                                        ERROR   12                      ;CS1 INCORRECT
007052  012762  100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
007060  000437                        BR      25$             ;CHECK IF LOOP ON ERROR

007062  023737  004204  004144  3$:   CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
007070  001405                        BEQ     4$              ;YES, CHECK MESSAGE A&B
007072  104013                        ERROR   13              ;MR1 INCORRECT
007074  012762  100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
007102  000426                        BR      25$             ;CHECK IF LOOP ON ERROR

007104  013737  004150  001160  4$:   MOV     T.MR3,$TMP0     ;MASK BITS NOT UNDER TEST
007112  042737  177760  001160        BIC     #177760,$TMP0
007120  023737  004246  001160        CMP     MSGCOD,$TMP0    ;CHECK IF MESSAGE SELECT CODE CORRECT
007126  001402                        BEQ     5$              ;YES, CHECK MESSAGES A&B
007130  104014                        ERROR   14              ;MESSAGE SELECT CODE INCORRECT
007132  000412                        BR      25$

007134  023737  004206  004146  5$:   CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
007142  001401                        BEQ     6$              ;YES, CHECK MESSAGE B
007144  104015                        ERROR   15              ;MESSAGE A INCORRECT
007146  023737  004210  004150  6$:   CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
007154  001401                        BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
007156  104016                        ERROR   16              ;MESSAGE B INCORRECT
007160  104415                  25$:  SCOP1                   ;CHECK IF LOOP ON ERROR
007162  005237  004246                INC     MSGCOD          ;INCREMENT MESSAGE SELECT CODE
007166  022737  000017  004246        CMP     #17,MSGCOD      ;CHECK IF FINISHED
007174  103235                        BHIS    1$              ;NO, TRY NEXT CONFIGURATION

                        ;;**********************************************************************
                        ;*TEST 6        CLEAR DRIVE COMMAND LOADING FOR DRIVE MESS
                        ;*
                        ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
                        ;*      A DRIVE CLEAR.  CLOCK MESSAGE A AND B INTO SHIFT REGISTERS.
                        ;*      MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.  REPEAT
                        ;*      FOR 24 SECTOR FORMAT.
                        ;*
                        ;;**********************************************************************
007176  000004         TST6:  SCOPE
007200  012737  000144  001200        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
007206  013702  001270                MOV     $BASE,R2        ;LOAD RK611 BASE
007212  012737  052203  001300        MOV     #EM101,EM1N     ;LOAD ERROR MESSAGE
007220  012737  000005  004160        MOV     #CLEAR,E.CS1    ;LOAD EXPECTED COMMAND AND STATUS REG. 1
007226  012737  000400  004206        MOV     #S.CLR,E.MR2    ;LOAD EXPECTED MAINT. REG. 2
007234  012737  007242  001110        MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                              ;  SUBTEST LOOP

007242                           1$:
007242  012762  100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
007250  012762  000040  000026        MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
007256  013762  004160  000000        MOV     E.CS1,RKCS1(R2) ;LOAD CLEAR INTO COMMAND AND STATUS REG. 1
007264  012700  000016                MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
007270  012762  000440  000026  2$:   MOV     #DMD!MCLK,RKMR1(R2)
007276  012762  000040  000026        MOV     #DMD,RKMR1(R2)
007304  005300                        DEC     R0
007306  001370                        BNE     2$
```

```
2819  007310  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2820  007316  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG. 2
2821  007324  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
2822  007332  005037  004210                  CLR     E.MR3           ;STORE EXPECTED MAINT REG. 3
2823  007336  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2824  007344  001410                          BEQ     3$              ;YES, CHECK MESSAGE A&B
2825  007346  012737  057223  001302          MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
2826  007354  104001                          ERROR   1
2827  007356  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
2828  007364  000437                          BR      25$             ;CHECK IF LOOP ON ERROR
2829
2830  007366  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
2831  007374  042737  176377  001160          BIC     #^C<S.FMT!S.CLR>,$TMP0
2832  007402  023737  004206  001160          CMP     E.MR2,$TMP0     ;CHECK IF S.CLR AND FORMAT
2833                                                                  ;  BITS IN MESSAGE CORRECT
2834  007410  001405                          BEQ     4$              ;YES, CHECK MESSAGE A&B
2835  007412  012737  057067  001302          MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
2836  007420  104001                          ERROR   1
2837  007422  000420                          BR      25$             ;CHECK IF LOOP ON ERROR
2838
2839  007424  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
2840  007432  001404                          BEQ     5$              ;YES, CHECK MESSAGE B
2841  007434  012737  057145  001302          MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
2842  007442  104001                          ERROR   1
2843  007444  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
2844  007452  001404                          BEQ     25$             ;YES, CHECK IF LOOP ON EROR
2845  007454  012737  057174  001302          MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
2846  007462  104001                          ERROR   1
2847  007464  104415          25$:            SCOP1                   ;CHECK IF LOOP ON ERROR
2848  007466  032737  010000  004160          BIT     #CFMT,E.CS1     ;CHECK IF ISSUED IN 24 SECTOR FORMAT
2849  007474  001007                          BNE     TST7            ;;YES, GO ON TO NEXT TEST
2850  007476  052737  010000  004160          BIS     #CFMT,E.CS1     ;INDICATE COMMAND IN 24 SECTOR FORMAT
2851  007504  052737  001000  004206          BIS     #S.FMT,E.MR2
2852  007512  000653                          BR      1$              ;REISSUE IN 24 SECTOR FORMAT
2853
2854                                  ;;*****************************************************************
2855                                  ;*TEST 7        UNLOAD COMMAND LOADING FOR DRIVE MESS.
2856                                  ;*
2857                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2858                                  ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
2859                                  ;*      AN UNLOAD COMMAND.  CLOCK IN MESSAGES A AND B INTO SHIFT
2860                                  ;*      REGISTERS.  MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.
2861                                  ;*      REPEAT FOR 24 SECTOR FORMAT.
2862                                  ;*
2863                                  ;;*****************************************************************
2864  007514  000004          TST7:   SCOPE
2865  007516  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2866  007524  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
2867  007530  012737  052252  001300          MOV     #EM102,EM1N     ;LOAD ERROR MESSAGE
2868  007536  012737  000007  004160          MOV     #UNLOAD,E.CS1   ;LOAD EXPECTED COMMAND AND STATUS REG. 1
2869  007544  012737  002000  004206          MOV     #S.UNLD,E.MR2   ;LOAD EXPECTED MAINT. REG. 2
2870  007552  012737  007560  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
2871                                                                  ;  SUBTEST LOOP
2872
2873  007560                          1$:
2874  007560  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
```

```
 2875  007566  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 2876  007574  013762  004160  000000          MOV     E.CS1,RKCS1(R2) ;LOAD UNLOAD INTO COMMAND AND STATUS REG. 1
 2877  007602  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
 2878  007606  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
 2879  007614  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 2880  007622  005300                          DEC     R0
 2881  007624  001370                          BNE     2$
 2882  007626  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
 2883  007634  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG. 2
 2884  007642  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
 2885  007650  005037  004210                  CLR     E.MR3           ;STORE EXPECTED MAINT REG. 3
 2886  007654  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
 2887  007662  001410                          BEQ     3$              ;YES, CHECK MESSAGE A&B
 2888  007664  012737  057223  001302          MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
 2889  007672  104001                          ERROR   1
 2890  007674  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
 2891  007702  000437                          BR      25$             ;CHECK IF LOOP ON ERROR
 2892
 2893  007704  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
 2894  007712  042737  174777  001160          BIC     #^C<S.FMT!S.UNLD>,$TMP0
 2895  007720  023737  004206  001160          CMP     E.MR2,$TMP0     ;CHECK IF S.UNLD AND FORMAT
 2896                                                                  ;  BITS IN MESSAGE CORRECT
 2897  007726  001405                          BEQ     4$              ;YES, CHECK MESSAGE A&B
 2898  007730  012737  057067  001302          MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
 2899  007736  104001                          ERROR   1
 2900  007740  000420                          BR      25$             ;CHECK IF LOOP ON ERROR
 2901
 2902  007742  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
 2903  007750  001404                          BEQ     5$              ;YES, CHECK MESSAGE B
 2904  007752  012737  057145  001302          MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
 2905  007760  104001                          ERROR   1
 2906  007762  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
 2907  007770  001404                          BEQ     25$             ;YES, CHECK IF LOOP ON EROR
 2908  007772  012737  057174  001302          MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
 2909  010000  104001                          ERROR   1
 2910  010002  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
 2911  010004  032737  010000  004160          BIT     #CFMT,E.CS1     ;CHECK IF ISSUED IN 24 SECTOR FORMAT
 2912  010012  001007                          BNE     TST10           ;;YES, GO ON TO NEXT TEST
 2913  010014  052737  010000  004160          BIS     #CFMT,E.CS1     ;INDICATE COMMAND IN 24 SECTOR FORMAT
 2914  010022  052737  001000  004206          BIS     #S.FMT,E.MR2
 2915  010030  000653                          BR      1$              ;REISSUE IN 24 SECTOR FORMAT
 2916
 2917                                  ;;*****************************************************************
 2918                                  ;*TEST 10       PACK ACKNOWLEDGE COMMAND LOADING FOR DRIVE MESS.
 2919                                  ;*
 2920                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
 2921                                  ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
 2922                                  ;*      A PACK ACKNOWLEDGE.  CLOCK MESSAGES A AND B INTO SHIFT
 2923                                  ;*      REGISTERS.  MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.
 2924                                  ;*      REPEAT FOR 24 SECTOR FORMAT.
 2925                                  ;*
 2926                                  ;;*****************************************************************
 2927  010032  000004                  TST10:  SCOPE
 2928  010034  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 2929  010042  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 2930  010046  012737  052314  001300          MOV     #EM103,EM1N     ;LOAD ERROR MESSAGE
```

```
2931  010054  012737  000003  004160          MOV     #PACK,E.CS1     ;LOAD EXPECTED COMMAND AND STATUS REG. 1
2932  010062  012737  004000  004206          MOV     #S.PACK,E.MR2   ;LOAD EXPECTED MAINT. REG. 2
2933  010070  012737  010076  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
2934                                                                  ;  SUBTEST LOOP
2935
2936  010076                          1$:
2937  010076  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2938  010104  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
2939  010112  013762  004160  000000          MOV     E.CS1,RKCS1(R2) ;LOAD PACK INTO COMMAND AND STATUS REG. 1
2940  010120  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2941  010124  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
2942  010132  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2943  010140  005300                          DEC     R0
2944  010142  001370                          BNE     2$
2945  010144  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2946  010152  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG. 2
2947  010160  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
2948  010166  005037  004210                  CLR     E.MR3           ;STORE EXPECTED MAINT REG. 3
2949  010172  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2950  010200  001410                          BEQ     3$              ;YES, CHECK MESSAGE A&B
2951  010202  012737  057223  001302          MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
2952  010210  104001                          ERROR   1
2953  010212  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
2954  010220  000437                          BR      25$             ;CHECK IF LOOP ON ERROR
2955
2956  010222  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
2957  010230  042737  172777  001160          BIC     #^C<S.FMT!S.PACK>,$TMP0
2958  010236  023737  004206  001160          CMP     E.MR2,$TMP0     ;CHECK IF S.PACK AND FORMAT
2959                                                                  ;  BITS IN MESSAGE CORRECT
2960  010244  001405                          BEQ     4$              ;YES, CHECK MESSAGE A&B
2961  010246  012737  057067  001302          MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
2962  010254  104001                          ERROR   1
2963  010256  000420                          BR      25$             ;CHECK IF LOOP ON ERROR
2964
2965  010260  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
2966  010266  001404                          BEQ     5$              ;YES, CHECK MESSAGE B
2967  010270  012737  057145  001302          MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
2968  010276  104001                          ERROR   1
2969  010300  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
2970  010306  001404                          BEQ     25$             ;YES, CHECK IF LOOP ON EROR
2971  010310  012737  057174  001302          MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
2972  010316  104001                          ERROR   1
2973  010320  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
2974  010322  032737  010000  004160          BIT     #CFMT,E.CS1     ;CHECK IF ISSUED IN 24 SECTOR FORMAT
2975  010330  001007                          BNE     TST11           ;;YES, GO ON TO NEXT TEST
2976  010332  052737  010000  004160          BIS     #CFMT,E.CS1     ;INDICATE COMMAND IN 24 SECTOR FORMAT
2977  010340  052737  001000  004206          BIS     #S.FMT,E.MR2
2978  010346  000653                          BR      1$              ;REISSUE IN 24 SECTOR FORMAT
2979
2980                                  ;;*****************************************************************
2981                                  ;*TEST 11       RECALIBRATE COMMAND LOADING FOR DRIVE MESS.
2982                                  ;*
2983                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2984                                  ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
2985                                  ;*      A RECALIBRATE.  CLOCK MESSAGES A AND B INTO SHIFT REGISTERS.
2986                                  ;*      MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.
```

```
2987                                        ;*
2988                                        ;;*****************************************************************
2989  010350  000004                       TST11:  SCOPE
2990  010352  012737  000144  001200               MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2991  010360  013702  001270                       MOV     $BASE,R2        ;LOAD RK611 BASE
2992  010364  012737  052370  001300               MOV     #EM104,EM1N     ;LOAD ERROR MESSAGE
2993  010372  012762  100000  000000               MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2994  010400  012762  000040  000026               MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
2995  010406  012762  000013  000000               MOV     #RECAL,RKCS1(R2)        ;LOAD RECAL INTO COMMAND AND STATUS REG.  1
2996  010414  012737  000013  004160               MOV     #RECAL,E.CS1    ;LOAD EXPECT CS1
2997  010422  012700  000016                       MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGES
2998  010426  012762  000440  000026  1$:          MOV     #DMD!MCLK,RKMR1(R2)
2999  010434  012762  000040  000026               MOV     #DMD,RKMR1(R2)
3000  010442  005300                               DEC     R0
3001  010444  001370                               BNE     1$
3002  010446  016237  000000  004120               MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3003  010454  016237  000034  004146               MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
3004  010462  016237  000036  004150               MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
3005  010470  012737  000040  004206               MOV     #S.RECL,E.MR2   ;LOAD EXPECTED MAINT REG. 2
3006  010476  005037  004210                       CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
3007  010502  023737  004160  004120               CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3008  010510  001410                               BEQ     2$              ;YES, CHECK MESSAGE A&B
3009  010512  012737  057223  001302               MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
3010  010520  104001                               ERROR   1
3011  010522  012762  100000  000000               MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT TEST
3012  010530  000431                               BR      TST12           ;;GO ON TO NEXT TEST
3013
3014  010532  032737  000040  004146  2$:          BIT     #S.RECL,T.MR2   ;CHECK IF S.RECL SET IN MESSAGE A
3015  010540  001005                               BNE     3$              ;YES, CHECK MESSAGES A&B
3016  010542  012737  057067  001302               MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
3017  010550  104001                               ERROR   1
3018  010552  000420                               BR      TST12           ;;GO ON TO NEXT TEST
3019
3020  010554  023737  004206  004146  3$:          CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
3021  010562  001404                               BEQ     4$              ;YES, CHECK MESSAGE B
3022  010564  012737  057145  001302               MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
3023  010572  104001                               ERROR   1
3024  010574  023737  004210  004150  4$:          CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
3025  010602  001404                               BEQ     TST12           ;;YES, GO ON TO NEXT TEST
3026  010604  012737  057174  001302               MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
3027  010612  104001                               ERROR   1
3028
3029                                        ;;*****************************************************************
3030                                        ;*TEST 12       START SPINDLE COMMAND LOADING FOR DRIVE MESS.
3031                                        ;*
3032                                        ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3033                                        ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
3034                                        ;*      A START SPINDLE.  CLOCK MESSAGES A AND B INTO SHIFT REGISTERS.
3035                                        ;*      MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.
3036                                        ;*
3037                                        ;;*****************************************************************
3038  010614  000004                       TST12:  SCOPE
3039  010616  012737  000144  001200               MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3040  010624  013702  001270                       MOV     $BASE,R2        ;LOAD RK611 BASE
3041  010630  012737  052437  001300               MOV     #EM105,EM1N     ;LOAD ERROR MESSAGE
3042  010636  012762  100000  000000               MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
```

```
3043  010644  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
3044  010652  012762  000011  000000          MOV     #SRTSPL,RKCS1(R2)       ;LOAD SRTSPL INTO COMMAND AND STATUS REG.  1
3045  010660  012737  000011  004160          MOV     #SRTSPL,E.CS1   ;LOAD EXPECT CS1
3046  010666  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGES
3047  010672  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
3048  010700  012762  000040  000026          MOV     #DMD,RKMR1(R2)
3049  010706  005300                          DEC     R0
3050  010710  001370                          BNE     1$
3051  010712  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3052  010720  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
3053  010726  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
3054  010734  012737  000100  004206          MOV     #S.STSP,E.MR2   ;LOAD EXPECTED MAINT REG. 2
3055  010742  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
3056  010746  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3057  010754  001410                          BEQ     2$              ;YES, CHECK MESSAGE A&B
3058  010756  012737  057223  001302          MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
3059  010764  104001                          ERROR   1
3060  010766  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT TEST
3061  010774  000431                          BR      TST13           ;;GO ON TO NEXT TEST
3062
3063  010776  032737  000100  004146  2$:     BIT     #S.STSP,T.MR2   ;CHECK IF S.STSP SET IN MESSAGE A
3064  011004  001005                          BNE     3$              ;YES, CHECK MESSAGES A&B
3065  011006  012737  057067  001302          MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
3066  011014  104001                          ERROR   1
3067  011016  000420                          BR      TST13           ;;GO ON TO NEXT TEST
3068
3069  011020  023737  004206  004146  3$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
3070  011026  001404                          BEQ     4$              ;YES, CHECK MESSAGE B
3071  011030  012737  057145  001302          MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
3072  011036  104001                          ERROR   1
3073  011040  023737  004210  004150  4$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
3074  011046  001404                          BEQ     TST13           ;;YES, GO ON TO NEXT TEST
3075  011050  012737  057174  001302          MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
3076  011056  104001                          ERROR   1
3077
3078                                  ;;*****************************************************************
3079                                  ;*TEST 13       SEEK AND CYLINDER ADD 0-777 LOADING FOR DRIVE MESS
3080                                  ;*
3081                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3082                                  ;*      DIAGNOSTIC MODE.  LOAD ZERO IN CYLINDER ADDRESS.  LOAD
3083                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A SEEK COMMAND.
3084                                  ;*      CLOCK IN MESSAGE A AND B INTO SHIFT REGISTER.  MAKE SURE
3085                                  ;*      CORRECT MESSAGE IS LOADED.  REPEAT FOR CYLINDER = 1-777.
3086                                  ;*
3087                                  ;;*****************************************************************
3088  011060  000004                  TST13:  SCOPE
3089  011062  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3090  011070  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3091  011074  005037  004252                  CLR     CYLIN           ;INITIALIZE CYLINDER
3092  011100  012737  000017  004160          MOV     #SEEK,E.CS1     ;LOAD EXPECTED CS1
3093  011106  012737  011114  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
3094                                                                  ;  SUBTEST LOOP
3095
3096  011114                          1$:
3097  011114  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3098  011122  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
```

```
3099  011130  013762  004252  000020          MOV     CYLIN,RKDCYL(R2) ;LOAD CYLINDER ADDRESS
3100  011136  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
3101  011144  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
3102  011150  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
3103  011156  012762  000040  000026          MOV     #DMD,RKMR1(R2)
3104  011164  005300                          DEC     R0
3105  011166  001370                          BNE     2$
3106  011170  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3107  011176  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
3108  011204  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
3109  011212  012737  000020  004206          MOV     #S.SEEK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
3110  011220  013737  004252  004210          MOV     CYLIN,E.MR3     ;GENERATE EXPECTED MAINT REG. 3
3111  011226  006337  004210                  ASL     E.MR3
3112  011232  006337  004210                  ASL     E.MR3
3113  011236  006337  004210                  ASL     E.MR3
3114  011242  006337  004210                  ASL     E.MR3
3115  011246  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3116  011254  001405                          BEQ     3$              ;YES, CHECK MESSAGE A&B
3117  011256  104017                          ERROR   17
3118  011260  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
3119  011266  000434                          BR      25$             ;CHECK IF LOOP ON ERROR
3120
3121  011270  032737  000020  004146  3$:     BIT     #S.SEEK,T.MR2   ;CHECK IF SEEK COMMAND BIT SET
3122  011276  001002                          BNE     4$              ;YES, CHECK CYLINDER ADDRESS BITS
3123  011300  104020                          ERROR   20              ;SEEK BIT NOT SET
3124  011302  000426                          BR      25$             ;CHECK IF LOOP ON ERROR
3125
3126  011304  013737  004150  001160  4$:     MOV     T.MR3,$TMP0     ;MASK BITS NOT UNDER TEST
3127  011312  042737  140017  001160          BIC     #140017,$TMP0
3128  011320  023737  004210  001160          CMP     E.MR3,$TMP0     ;CHECK IF CYLINDER ADDRESS BITS CORRECT
3129  011326  001402                          BEQ     5$              ;YES, CHECK MESSAGES A&B
3130  011330  104021                          ERROR   21              ;CYLINDER ADDRESS BITS INCORRECT
3131  011332  000412                          BR      25$             ;CHECK IF LOOP ON ERROR
3132
3133  011334  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSSAGE A CORRECT
3134  011342  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
3135  011344  104022                          ERROR   22              ;MESSAGE A INCORRECT
3136  011346  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
```

```
                                        BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
                                        ERROR   23              ;MESSAGE B INCORRECT
                                25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
                                        INC     CYLIN           ;INCREMENT CYLINDER NUMBER
                                        CMP     #777,CYLIN      ;CHECK IF FINISHED
                                        BHIS    1$              ;NO, TRY NEXT CONFIGURATION

                                ;;*******************************************************************
                                ;*TEST 14        SEEK AND CYLINDER BIT 9 AND RK06 FOR DRIVE MESS.
                                ;*
                                ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                ;*      DIAGNOSTIC MODE.  LOAD 1000 IN CYLINDER ADDRESS.  LOAD
                                ;*      COMMAND AND STATUS REGISTER 1 WITH A SEEK COMMAND.
                                ;*      CLOCK IN MESSAGE A AND B INTO SHIFT REGISTERS.  MAKE
                                ;*      SURE CYLINDER BIT 9 IN MESSAGE IN RESET.  REPEAT FOR
                                ;*      CYLINDER = 1400.
                                ;*
                                ;;*******************************************************************
                                TST14:  SCOPE
                                        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
                                        MOV     $BASE,R2        ;LOAD RK611 BASE
                                        MOV     #1000,CYLIN     ;INITIALIZE CYLINDER
                                        CLR     E.MR3           ;LOAD EXPECTED
                                        MOV     #SEEK,E.CS1     ;LOAD EXPECTED CS1
                                        MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                                ;  SUBTEST LOOP

                                1$:
                                        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
                                        MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
                                        MOV     CYLIN,RKDCYL(R2) ;LOAD CYLINDER ADDRESS
                                        MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
                                        MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
                                2$:     MOV     #DMD!MCLK,RKMR1(R2)
                                        MOV     #DMD,RKMR1(R2)
                                        DEC     R0
                                        BNE     2$
                                        MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
                                        MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG.2
                                        MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG.3
                                        MOV     #S.SEEK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
                                        CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
                                        BEQ     3$                      ;YES, CHECK MESSAGE A&B
                                        ERROR   17
                                        MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
                                        BR      25$             ;CHECK IF LOOP ON ERROR

                                3$:     BIT     #S.SEEK,T.MR2   ;CHECK IF SEEK COMMAND BIT SEEK
                                        BNE     4$              ;YES, CHECK CYLINDER ADDRESS BITS
                                        ERROR   20              ;SEEK BIT NOT SET
                                        BR      25$             ;CHECK IF LOOP ON ERROR

                                4$:     MOV     T.MR3,$TMP0     ;MASK BITS NOT UNDER TEST
                                        BIC     #140017,$TMP0
                                        CMP     E.MR3,$TMP0     ;CHECK IF CYLINDER ADDRESS BITS CORRECT
                                        BEQ     5$              ;YES, CHECK MESSAGES A&B
```

```
                                        ERROR   21              ;CYLINDER ADDRESS BITS INCORRECT
                                        BR      25$             ;CHECK IF LOOP ON ERROR

                                5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
                                        BEQ     6$              ;YES, CHECK MESSAGE B
                                        ERROR   22              ;MESSAGE B INCOPRECT
                                6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE IS CORRECT
                                        BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
                                        ERROR   23              ;MESSAGE INCORRECT
                                25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
                                        CMP     #1400,CYLIN     ;CHECK IF CYLINDER 1400
                                        BEQ     TST15           ;;YES, GO ON TO NEXT TEST
                                        MOV     #1400,CYLIN     ;SET CYLINDER=1400
                                        MOV     #10000,E.MR3    ;LOAD EXPECTED CONFIGUR
                                        BR      1$              ;TRY NEXT CONFIGURATION

                        ;;*****************************************************************
                        ;*TEST 15       SEEK AND CYLINDER ADD 0,777-1777 LOADING FOR DRIVE MESS
                        ;*
                        ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        ;*      DIAGNOSTIC MODE.  LOAD 0 IN CYLINDER ADDRESS.  LOAD
                        ;*      COMMAND AND STATUS REGISTER 1 WITH SEEK COMMAND AND
                        ;*      CDT SET.  CLOCK IN MESSAGE A AND B INTO SHIFT REGISTER.
                        ;*      MAKE SURE CYLINDER CORRECT.  REPEAT FOR CYLINDER = 777-1777.
                        ;*
                        ;;*****************************************************************
                        TST15:  SCOPE
                                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
                                MOV     $BASE,R2        ;LOAD RK611 BASE
                                CLR     CYLIN           ;INITIALIZE CYLINDER
                                MOV     #CDT!SEEK,E.CS1 ;LOAD EXPECTED CS1
                                MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                        ;  SUBTEST LOOP

                        1$:
                                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
                                MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
                                MOV     CYLIN,RKDCYL(R2) ;LOAD CYLINDER ADDRESS
                                MOV     #CDT!SEEK,RKCS1(R2) ;ISSUE SEEK WITH CDT SET
                                MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
                        2$:     MOV     #DMD!MCLK,RKMR1(R2)
                                MOV     #DMD,RKMR1(R2)
                                DEC     R0
                                BNE     2$
                                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
                                MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
                                MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
                                MOV     #S.SEEK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
                                MOV     CYLIN,E.MR3     ;GENERATE EXPECTED MAINT REG. 3
                                ASL     E.MR3
                                ASL     E.MR3
                                ASL     E.MR3
                                ASL     E.MR3
                                CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
                                BEQ     3$              ;YES, CHECK MESSAGE A&B
                                ERROR   24
```

```
3249  012106  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGRURATION
3250  012114  000434                          BR      25$             ;CHECK IF LOOP ON ERROR
3251
3252  012116  032737  000020  004146  3$:     BIT     #S.SEEK,T.MR2   ;CHECK IF SEEK COMMAND BIT SET
3253  012124  001002                          BNE     4$              ;YES, CHECK CYLINDER ADDRESS BITS
3254  012126  104025                          ERROR   25              ;SEEK BIT NOT SEEK
3255  012130  000426                          BR      25$             ;CHECK IF LOOP ON ERROR
3256
3257  012132  013737  004150  001160  4$:     MOV     T.MR3,$TMP0     ;MASK BITS NOT UNDER TEST
3258  012140  042737  140017  001160          BIC     #140017,$TMP0
3259  012146  023737  004210  001160          CMP     E.MR3,$TMP0     ;CHECK IF CYLINDER ADDRESS BITS CORRECT
3260  012154  001402                          BEQ     5$              ;YES, CHECK MESSAGES A&B
3261  012156  104026                          ERROR   26              ;CYLINDER ADDRESS BIT INCORRECT
3262  012160  000412                          BR      25$             ;CHECK IF LOOP ON ERROR
3263
3264  012162  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3265  012170  001401                          BEQ     6$              ;YES, CHECK M MESSAGE B
3266  012172  104027                          ERROR   27
3267  012174  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B
3268  012202  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
3269  012204  104030                          ERROR   30              ;MESSAGE B INCORRECT
3270  012206  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
3271  012210  005737  004252                  TST     CYLIN           ;CHECK IF ZERO
3272  012214  001003                          BNE     26$             ;NO, INCREMENT CYLINDER
3273  012216  012737  000776  004252          MOV     #776,CYLIN      ;NEXT CYLINDER=777
3274  012224  005237  004252          26$:    INC     CYLIN           ;INCREMENT CYLINDER NUMBER
3275  012230  022737  001777  004252          CMP     #1777,CYLIN     ;CHECK IF FINISHED
3276  012236  103241                          BHIS    1$              ;NO, TRY NEXT CONFIGURATION
3277
3278                                  ;;*****************************************************************
3279                                  ;*TEST 16       OFFSET COMMAND LOADING FOR DRIVE MESS.
3280                                  ;*
3281                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3282                                  ;*      DIAGNOSTIC MODE.  LOAD OFFSET REGISTER WITH 0.  LOAD
3283                                  ;*      COMMAND AND STATUS REGISTER 1 WITH AN OFFSET.  CLOCK
3284                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE SHIFT
3285                                  ;*      REGISTERS ARE LOADED CORRECTLY.  REPEAT FOR OFFSET
3286                                  ;*      REGISTER = 1-377.
3287                                  ;*
3288                                  ;;*****************************************************************
3289  012240  000004                  TST16:  SCOPE
3290  012242  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3291  012250  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3292  012254  005037  004254                  CLR     OFFVAL          ;INITIALIZE OFFSET VALUE
3293  012260  012737  000015  004160          MOV     #OFFSET,E.CS1   ;LOAD EXPECTED CS1
3294  012266  005037  004206                  CLR     E.MR2           ;LOAD EXPECT MAINT REG 2
3295  012272  012737  012300  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
3296                                                                  ;  SUBTEST LOOP
3297
3298  012300                          1$:
3299  012300  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3300  012306  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
3301  012314  013762  004254  000016          MOV     OFFVAL,RKASOF(R2);LOAD OFFSET VALUE
3302  012322  012762  000015  000000          MOV     #OFFSET,RKCS1(R2);ISSUE OFFSET
3303  012330  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
3304  012334  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
```

```
3305  012342  012762  000040  000026          MOV     #DMD,RKMR1(R2)
3306  012350  005300                          DEC     R0
3307  012352  001370                          BNE     2$
3308  012354  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3309  012362  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
3310  012370  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
3311  012376  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 2
3312  012402  013737  004254  004210          MOV     OFFVAL,E.MR3    ;GENERATE EXPECTED MR3
3313  012410  005137  004210                  COM     E.MR3
3314  012414  042737  177700  004210          BIC     #177700,E.MR3
3315  012422  006337  004210                  ASL     E.MR3
3316  012426  006337  004210                  ASL     E.MR3
3317  012432  006337  004210                  ASL     E.MR3
3318  012436  006337  004210                  ASL     E.MR3
3319  012442  052737  014000  004210          BIS     #14000,E.MR3
3320  012450  032737  000200  004254          BIT     #BIT7,OFFVAL    ;DETERMINE SIGN
3321  012456  001003                          BNE     10$
3322  012460  052737  002000  004210          BIS     #BIT10,E.MR3
3323  012466  023737  004160  004120  10$:    CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3324  012474  001405                          BEQ     4$              ;YES, CHECK MESSAGE A&B
3325  012476  104031                          ERROR   31
3326  012500  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
3327  012506  000426                          BR      25$             ;CHECK IF LOOP ON ERROR
3328
3329  012510  013737  004150  001160  4$:     MOV     T.MR3,$TMP0     ;MASK BITS NOT UNDER TEST
3330  012516  042737  140017  001160          BIC     #140017,$TMP0
3331  012524  023737  004210  001160          CMP     E.MR3,$TMP0     ;CHECK IF OFFSET VALUE CORRECT
3332  012532  001402                          BEQ     5$              ;YES, CHECK MESSAGES A&B
3333  012534  104032                          ERROR   32              ;OFFSET VALUE INCORRECT
3334  012536  000412                          BR      25$             ;CHECK IF LOOP ON ERROR
3335
3336  012540  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3337  012546  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
3338  012550  104033                          ERROR   33              ;MESSAGE A INCORRECT
3339  012552  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
3340  012560  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
3341  012562  104034                          ERROR   34              ;MESSAGE B INCORRECT
3342  012564  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
3343  012566  005237  004254                  INC     OFFVAL          ;INCREMENT OFFSET VALUE
3344  012572  022737  000377  004254          CMP     #377,OFFVAL     ;CHECK IF FINISHED
3345  012600  103237                          BHIS    1$              ;NO, TRY NEXT CONFIGURATION
3346
3347                                  ;;*****************************************************************
3348                                  ;*TEST 17       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 1)
3349                                  ;*
3350                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3351                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
3352                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
3353                                  ;*      AND STATUS REGISTER 1 WITH A SELECT.  CLOCK
3354                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
3355                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
3356                                  ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
3357                                  ;*
3358                                  ;;*****************************************************************
3359  012602  000004                  TST17:  SCOPE
3360  012604  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
```

```
3361  012612  013702  001270                    MOV     $BASE,R2          ;LOAD RK611 BASE
3362  012616  012737  001777  004252            MOV     #1777,CYLIN       ;LOAD CYLINDER VALUE
3363  012624  012737  000052  004254            MOV     #52,OFFVAL        ;LOAD OFFSET VALUE
3364  012632  012737  000001  004160            MOV     #SELDRV,E.CS1     ;LOAD EXPECTED CS1
3365  012640  012762  100000  000000            MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3366  012646  012762  000040  000026            MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
3367  012654  012762  001777  000020            MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
3368  012662  012762  000052  000016            MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
3369  012670  012762  000001  000000            MOV     #SELDRV,RKCS1(R2) ;ISSUE SELDRV
3370  012676  012700  000016                    MOV     #3*4+2,R0         ;CLOCK IN DRIVE MESSAGE
3371  012702  012762  000440  000026  1$:       MOV     #DMD!MCLK,RKMR1(R2)
3372  012710  012762  000040  000026            MOV     #DMD,RKMR1(R2)
3373  012716  005300                            DEC     R0
3374  012720  001370                            BNE     1$
3375  012722  016237  000000  004120            MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3376  012730  016237  000034  004146            MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
3377  012736  016237  000036  004150            MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
3378  012744  012737  000000  004206            MOV     #0,E.MR2          ;LOAD EXPECTED MAINT REG. 2
3379  012752  005037  004210                    CLR     E.MR3             ;LOAD EXPECTED MAINTENANCE REG. 3
3380  012756  023737  004160  004120            CMP     E.CS1,T.CS1       ;CHECK IF CS1 CORRECT
3381  012764  001405                            BEQ     2$                ;YES, CHECK MESSAGES A&B
3382  012766  104035                            ERROR   35
3383  012770  012762  100000  000000            MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
3384  012776  000423                            BR      TST20             ;;GO ON TO NEXT TEST
3385
3386  013000                          2$:
3387  013000  013737  004150  001160            MOV     T.MR3,$TMP0       ;MASK OUT BITS NOT UNDER TEST
3388  013006  042737  140017  001160            BIC     #140017,$TMP0
3389  013014  001402                            BEQ     4$                ;CHECK IF CYLINDER ADDRESS ZERO
3390  013016  104037                            ERROR   37                ;CYLINDER ADDRESS BITS INCORRECT
3391  013020  000412                            BR      TST20             ;;GO ON TO NEXT TEST
3392
3393  013022  023737  004206  004146  4$:       CMP     E.MR2,T.MR2       ;CHECK IF MESSAGE A CORRECT
3394  013030  001401                            BEQ     5$                ;YES, CHECK MESSAGE B
3395  013032  104040                            ERROR   40                ;MESS A INCORRECT
3396  013034  023737  004210  004150  5$:       CMP     E.MR3,T.MR3       ;CHECK IF MESSAGE B CORRECT
3397  013042  001401                            BEQ     TST20             ;;YES, GO ON TO NEXT TEST
3398  013044  104041                            ERROR   41                ;MESS B INCORRECT
3399
3400                                  ;;*****************************************************************
3401                                  ;*TEST 20       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 2)
3402                                  ;*
3403                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3404                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
3405                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
3406                                  ;*      AND STATUS REGISTER 1 WITH A PACK ACKNOWLEDGE.  CLOCK
3407                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
3408                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
3409                                  ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
3410                                  ;*
3411                                  ;;*****************************************************************
3412  013046  000004                  TST20:  SCOPE
3413  013050  012737  000144  001200            MOV     #100.,$TIMES      ;;DO 100. ITERATIONS
3414  013056  013702  001270                    MOV     $BASE,R2          ;LOAD RK611 BASE
3415  013062  012737  001777  004252            MOV     #1777,CYLIN       ;LOAD CYLINDER VALUE
3416  013070  012737  000052  004254            MOV     #52,OFFVAL        ;LOAD OFFSET VALUE
```

```
3417  013076  012737  000003  004160          MOV     #PACK,E.CS1      ;LOAD EXPECTED CS1
3418  013104  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3419  013112  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
3420  013120  012762  001777  000020          MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
3421  013126  012762  000052  000016          MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
3422  013134  012762  000003  000000          MOV     #PACK,RKCS1(R2) ;ISSUE PACK
3423  013142  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
3424  013146  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
3425  013154  012762  000040  000026          MOV     #DMD,RKMR1(R2)
3426  013162  005300                          DEC     R0
3427  013164  001370                          BNE     1$
3428  013166  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3429  013174  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
3430  013202  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
3431  013210  012737  004000  004206          MOV     #S.PACK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
3432  013216  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINTENANCE REG. 3
3433  013222  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3434  013230  001405                          BEQ     2$              ;YES, CHECK MESSAGES A&B
3435  013232  104035                          ERROR   35
3436  013234  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
3437  013242  000431                          BR      TST21           ;;GO ON TO NEXT TEST
3438
3439  013244                          2$:
3440  013244  032737  004000  004146          BIT     #S.PACK,T.MR2   ;CHECK IF PACK COMMAND
3441                                                                  ;  BIT SET
3442  013252  001002                          BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
3443  013254  104036                          ERROR   36               ;S.PACK BIT NOT SET
3444  013256  000423                          BR      TST21           ;;GO ON TO NEXT TEST
3445
3446  013260                          3$:
3447  013260  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
3448  013266  042737  140017  001160          BIC     #140017,$TMP0
3449  013274  001402                          BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
3450  013276  104037                          ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
3451  013300  000412                          BR      TST21           ;;GO ON TO NEXT TEST
3452
3453  013302  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3454  013310  001401                          BEQ     5$              ;YES, CHECK MESSAGE B
3455  013312  104040                          ERROR   40              ;MESS A INCORRECT
3456  013314  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
3457  013322  001401                          BEQ     TST21           ;;YES, GO ON TO NEXT TEST
3458  013324  104041                          ERROR   41              ;MESS B INCORRECT
3459
3460                                  ;;*****************************************************************
3461                                  ;*TEST 21       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 3)
3462                                  ;*
3463                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3464                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
3465                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
3466                                  ;*      AND STATUS REGISTER 1 WITH A CLEAR DRIVE.  CLOCK
3467                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
3468                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
3469                                  ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
3470                                  ;*
3471                                  ;;*****************************************************************
3472  013326  000004                  TST21:  SCOPE
```

```
3473  013330  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3474  013336  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3475  013342  012737  001777  004252          MOV     #1777,CYLIN     ;LOAD CYLINDER VALUE
3476  013350  012737  000052  004254          MOV     #52,OFFVAL      ;LOAD OFFSET VALUE
3477  013356  012737  000005  004160          MOV     #CLEAR,E.CS1    ;LOAD EXPECTED CS1
3478  013364  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3479  013372  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
3480  013400  012762  001777  000020          MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
3481  013406  012762  000052  000016          MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
3482  013414  012762  000005  000000          MOV     #CLEAR,RKCS1(R2) ;ISSUE CLEAR
3483  013422  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
3484  013426  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
3485  013434  012762  000040  000026          MOV     #DMD,RKMR1(R2)
3486  013442  005300                          DEC     R0
3487  013444  001370                          BNE     1$
3488  013446  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3489  013454  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
3490  013462  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
3491  013470  012737  000400  004206          MOV     #S.CLR,E.MR2    ;LOAD EXPECTED MAINT REG. 2
3492  013476  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINTENANCE REG. 3
3493  013502  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3494  013510  001405                          BEQ     2$              ;YES, CHECK MESSAGES A&B
3495  013512  104035                          ERROR   35
3496  013514  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
3497  013522  000431                          BR      TST22           ;;GO ON TO NEXT TEST
3498
3499  013524                          2$:
3500  013524  032737  000400  004146          BIT     #S.CLR,T.MR2    ;CHECK IF CLEAR COMMAND
3501                                                                  ;  BIT SET
3502  013532  001002                          BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
3503  013534  104036                          ERROR   36               ;S.CLR BIT NOT SET
3504  013536  000423                          BR      TST22           ;;GO ON TO NEXT TEST
3505
3506  013540                          3$:
3507  013540  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
3508  013546  042737  140017  001160          BIC     #140017,$TMP0
3509  013554  001402                          BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
3510  013556  104037                          ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
3511  013560  000412                          BR      TST22           ;;GO ON TO NEXT TEST
3512
3513  013562  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3514  013570  001401                          BEQ     5$              ;YES, CHECK MESSAGE B
3515  013572  104040                          ERROR   40              ;MESS A INCORRECT
3516  013574  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
3517  013602  001401                          BEQ     TST22           ;;YES, GO ON TO NEXT TEST
3518  013604  104041                          ERROR   41              ;MESS B INCORRECT
3519
3520                                  ;;*****************************************************************
3521                                  ;*TEST 22        CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 4)
3522                                  ;*
3523                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3524                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
3525                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
3526                                  ;*      AND STATUS REGISTER 1 WITH AN UNLOAD.  CLOCK
3527                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
3528                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
```

```
                                        ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
                                        ;*
                                        ;;*****************************************************************
013606  000004                        TST22:  SCOPE
013610  012737  000144  001200                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
013616  013702  001270                        MOV     $BASE,R2        ;LOAD RK611 BASE
013622  012737  001777  004252                MOV     #1777,CYLIN     ;LOAD CYLINDER VALUE
013630  012737  000052  004254                MOV     #52,OFFVAL      ;LOAD OFFSET VALUE
013636  012737  000007  004160                MOV     #UNLOAD,E.CS1   ;LOAD EXPECTED CS1
013644  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
013652  012762  000040  000026                MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
013660  012762  001777  000020                MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
013666  012762  000052  000016                MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
013674  012762  000007  000000                MOV     #UNLOAD,RKCS1(R2) ;ISSUE UNLOAD
013702  012700  000016                        MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
013706  012762  000440  000026  1$:           MOV     #DMD!MCLK,RKMR1(R2)
013714  012762  000040  000026                MOV     #DMD,RKMR1(R2)
013722  005300                                DEC     R0
013724  001370                                BNE     1$
013726  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
013734  016237  000034  004146                MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
013742  016237  000036  004150                MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
013750  012737  002000  004206                MOV     #S.UNLD,E.MR2   ;LOAD EXPECTED MAINT REG. 2
013756  005037  004210                        CLR     E.MR3           ;LOAD EXPECTED MAINTENANCE REG. 3
013762  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
013770  001405                                BEQ     2$              ;YES, CHECK MESSAGES A&B
013772  104035                                ERROR   35
013774  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
014002  000431                                BR      TST23           ;;GO ON TO NEXT TEST
                                        
014004                                  2$:
014004  032737  002000  004146                BIT     #S.UNLD,T.MR2   ;CHECK IF UNLOAD COMMAND
                                                                        ;  BIT SET
014012  001002                                BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
014014  104036                                ERROR   36               ;S.UNLD BIT NOT SET
014016  000423                                BR      TST23           ;;GO ON TO NEXT TEST
                                        
014020                                  3$:
014020  013737  004150  001160                MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
014026  042737  140017  001160                BIC     #140017,$TMP0
014034  001402                                BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
014036  104037                                ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
014040  000412                                BR      TST23           ;;GO ON TO NEXT TEST
                                        
014042  023737  004206  004146  4$:           CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
014050  001401                                BEQ     5$              ;YES, CHECK MESSAGE B
014052  104040                                ERROR   40              ;MESS A INCORRECT
014054  023737  004210  004150  5$:           CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
014062  001401                                BEQ     TST23           ;;YES, GO ON TO NEXT TEST
014064  104041                                ERROR   41              ;MESS B INCORRECT
                                        
                                        ;;*****************************************************************
                                        ;*TEST 23       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 5)
                                        ;*
                                        ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                        ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
```

```
                                        ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
                                        ;*      AND STATUS REGISTER 1 WITH A START SPINDLE.  CLOCK
                                        ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
                                        ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
                                        ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
                                        ;*
                                        ;;*****************************************************************
014066  000004                        TST23:  SCOPE
014070  012737  000144  001200                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
014076  013702  001270                        MOV     $BASE,R2        ;LOAD RK611 BASE
014102  012737  001777  004252                MOV     #1777,CYLIN     ;LOAD CYLINDER VALUE
014110  012737  000052  004254                MOV     #52,OFFVAL      ;LOAD OFFSET VALUE
014116  012737  000011  004160                MOV     #SRTSPL,E.CS1   ;LOAD EXPECTED CS1
014124  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
014132  012762  000040  000026                MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
014140  012762  001777  000020                MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
014146  012762  000052  000016                MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
014154  012762  000011  000000                MOV     #SRTSPL,RKCS1(R2) ;ISSUE SRTSPL
014162  012700  000016                        MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
014166  012762  000440  000026  1$:           MOV     #DMD!MCLK,RKMR1(R2)
014174  012762  000040  000026                MOV     #DMD,RKMR1(R2)
014202  005300                                DEC     R0
014204  001370                                BNE     1$
014206  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
014214  016237  000034  004146                MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
014222  016237  000036  004150                MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
014230  012737  000100  004206                MOV     #S.STSP,E.MR2   ;LOAD EXPECTED MAINT REG. 2
014236  005037  004210                        CLR     E.MR3           ;LOAD EXPECTED MAINTENANCE REG. 3
014242  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
014250  001405                                BEQ     2$              ;YES, CHECK MESSAGES A&B
014252  104035                                ERROR   35
014254  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
014262  000431                                BR      TST24           ;;GO ON TO NEXT TEST

014264                                  2$:
014264  032737  000100  004146                BIT     #S.STSP,T.MR2   ;CHECK IF SRTSPL COMMAND
                                                                        ;  BIT SET
014272  001002                                BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
014274  104036                                ERROR   36               ;S.STSP BIT NOT SET
014276  000423                                BR      TST24           ;;GO ON TO NEXT TEST

014300                                  3$:
014300  013737  004150  001160                MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
014306  042737  140017  001160                BIC     #140017,$TMP0
014314  001402                                BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
014316  104037                                ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
014320  000412                                BR      TST24           ;;GO ON TO NEXT TEST

014322  023737  004206  004146  4$:           CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
014330  001401                                BEQ     5$              ;YES, CHECK MESSAGE B
014332  104040                                ERROR   40              ;MESS A INCORRECT
014334  023737  004210  004150  5$:           CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
014342  001401                                BEQ     TST24           ;;YES, GO ON TO NEXT TEST
014344  104041                                ERROR   41              ;MESS B INCORRECT

                                        ;;*****************************************************************
```

```
                                        ;*TEST 24       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 6)
                                        ;*
                                        ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                        ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
                                        ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
                                        ;*      AND STATUS REGISTER 1 WITH A RECALIBRATE.  CLOCK
                                        ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
                                        ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
                                        ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
                                        ;*
                                        ;;*****************************************************************
014346  000004                        TST24:  SCOPE
014350  012737  000144  001200                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
014356  013702  001270                        MOV     $BASE,R2        ;LOAD RK611 BASE
014362  012737  001777  004252                MOV     #1777,CYLIN     ;LOAD CYLINDER VALUE
014370  012737  000052  004254                MOV     #52,OFFVAL      ;LOAD OFFSET VALUE
014376  012737  000013  004160                MOV     #RECAL,E.CS1    ;LOAD EXPECTED CS1
014404  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
014412  012762  000040  000026                MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
014420  012762  001777  000020                MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
014426  012762  000052  000016                MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
014434  012762  000013  000000                MOV     #RECAL,RKCS1(R2) ;ISSUE RECAL
014442  012700  000016                        MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
014446  012762  000440  000026        1$:     MOV     #DMD!MCLK,RKMR1(R2)
014454  012762  000040  000026                MOV     #DMD,RKMR1(R2)
014462  005300                        1$:     DEC     R0
014464  001370                                BNE     1$
014466  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
014474  016237  000034  004146                MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
014502  016237  000036  004150                MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
014510  012737  000040  004206                MOV     #S.RECL,E.MR2   ;LOAD EXPECTED MAINT REG. 2
014516  005037  004210                        CLR     E.MR3           ;LOAD EXPECTED MAINTENANCE REG. 3
014522  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
014530  001405                                BEQ     2$              ;YES, CHECK MESSAGES A&B
014532  104035                                ERROR   35
014534  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
014542  000431                                BR      TST25           ;;GO ON TO NEXT TEST
                                        
014544                                  2$:
014544  032737  000040  004146                BIT     #S.RECL,T.MR2   ;CHECK IF RECAL COMMAND
                                                                        ;  BIT SET
014552  001002                                BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
014554  104036                                ERROR   36               ;S.RECL BIT NOT SET
014556  000423                                BR      TST25           ;;GO ON TO NEXT TEST
                                        
014560                                  3$:
014560  013737  004150  001160                MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
014566  042737  140017  001160                BIC     #140017,$TMP0
014574  001402                                BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
014576  104037                                ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
014600  000412                                BR      TST25           ;;GO ON TO NEXT TEST
                                        
014602  023737  004206  004146        4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
014610  001401                                BEQ     5$              ;YES, CHECK MESSAGE B
014612  104040                                ERROR   40              ;MESS A INCORRECT
014614  023737  004210  004150        5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
```

```
3697  014622  001401                          BEQ     TST25           ;;YES, GO ON TO NEXT TEST
3698  014624  104041                          ERROR   41              ;MESS B INCORRECT
3699
3700                                  ;;*****************************************************************
3701                                  ;*TEST 25       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 1)
3702                                  ;*
3703                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3704                                  ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
3705                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A PACK ACKNOWLEDGE.
3706                                  ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
3707                                  ;*      MESSAGE SELECT BITS ARE CLEARED.
3708                                  ;*
3709                                  ;;*****************************************************************
3710  014626  000004                  TST25:  SCOPE
3711  014630  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3712  014636  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3713  014642  012737  000017  004246          MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
3714  014650  012737  000003  004160          MOV     #PACK,E.CS1     ;LOAD EXPECTED CS1
3715  014656  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3716  014664  012762  000057  000026          MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
3717                                                                  ;  SELECT MESSAGE 17
3718  014672  012762  000003  000000          MOV     #PACK,RKCS1(R2) ;ISSUE PACK
3719  014700  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
3720  014704  052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
3721  014712  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
3722  014720  005300                          DEC     R0
3723  014722  001370                          BNE     1$
3724  014724  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3725  014732  016237  000026  004144          MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
3726  014740  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
3727  014746  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
3728  014754  012737  002040  004204          MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
3729  014762  032737  020000  004144          BIT     #ECCW,T.MR1
3730  014770  001403                          BEQ     10$
3731  014772  052737  020000  004204          BIS     #ECCW,E.MR1
3732  015000  012737  004000  004206  10$:     MOV     #S.PACK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
3733  015006  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
3734  015012  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3735  015020  001405                          BEQ     2$              ;YES, CHECK MAINT REG. 1
3736  015022  104042                          ERROR   42
3737  015024  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3738  015032  000442                          BR      TST26           ;;GO ON TO NEXT TEST
3739
3740  015034  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
3741  015042  001405                          BEQ     3$              ;YES, CHECK MESSAGES A&B
3742  015044  104043                          ERROR   43              ;MAINT REG. 1 INCORRECT
3743  015046  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3744  015054  000431                          BR      TST26           ;;GO ON TO NEXT TEST
3745
3746  015056                          3$:
3747  015056  032737  004000  004146          BIT     #S.PACK,T.MR2   ;CHECK IF PACK COMMAND
3748                                                                  ;  BIT SET
3749  015064  001002                          BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
3750  015066  104044                          ERROR   44              ;S.PACK BIT NOT SET
3751  015070  000423                          BR      TST26           ;;GO ON TO NEXT TEST
3752
```

```
                                4$:
015072  013737  004150  001160        MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
015072  042737  177760  001160        BIC     #177760,$TMP0
015106  001402                        BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
015110  104045                        ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
015112  000412                        BR      TST26           ;;GO ON TO NEXT TEST

015114  023737  004206  004146  5$:   CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
015122  001401                        BEQ     6$              ;YES, CHECK MESSAGE B
015124  104046                        ERROR   46              ;MESSAGE A INCORRECT
015126  023737  004210  004150  6$:   CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
015134  001401                        BEQ     TST26           ;;YES, GO ON TO NEXT TEST
015136  104047                        ERROR   47              ;MESS B INCORRECT

                                ;;*****************************************************************
                                ;*TEST 26       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 2)
                                ;*
                                ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
                                ;*      COMMAND AND STATUS REGISTER 1 WITH A DRIVE CLEAR.
                                ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
                                ;*      MESSAGE SELECT BITS ARE CLEARED.
                                ;*
                                ;;*****************************************************************
015140  000004                TST26:  SCOPE
015142  012737  000144  001200        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
015150  013702  001270                MOV     $BASE,R2        ;LOAD RK611 BASE
015154  012737  000017  004246        MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
015162  012737  000005  004160        MOV     #CLEAR,E.CS1    ;LOAD EXPECTED CS1
015170  012762  100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
015176  012762  000057  000026        MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
                                                                ;  SELECT MESSAGE 17
015204  012762  000005  000000        MOV     #CLEAR,RKCS1(R2)        ;ISSUE CLEAR
015212  012700  000016                MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
015216  052762  000400  000026  1$:   BIS     #MCLK,RKMR1(R2)
015224  042762  000400  000026        BIC     #MCLK,RKMR1(R2)
015232  005300                        DEC     R0
015234  001370                        BNE     1$
015236  016237  000000  004120        MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
015244  016237  000026  004144        MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
015252  016237  000034  004146        MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
015260  016237  000036  004150        MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
015266  012737  002040  004204        MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
015274  032737  020000  004144        BIT     #ECCW,T.MR1
015302  001403                        BEQ     10$
015304  052737  020000  004204        BIS     #ECCW,E.MR1
015312  012737  000400  004206  10$:  MOV     #S.CLR,E.MR2    ;LOAD EXPECTED MAINT REG. 2
015320  005037  004210                CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
015324  023737  004160  004120        CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
015332  001405                        BEQ     2$              ;YES, CHECK MAINT REG. 1
015334  104042                        ERROR   42
015336  012762  100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
015344  000442                        BR      TST27           ;;GO ON TO NEXT TEST

015346  023737  004204  004144  2$:   CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
015354  001405                        BEQ     3$              ;YES, CHECK MESSAGES A&B
```

```
                                        ERROR   43              ;MAINT REG. 1 INCORRECT
                                        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
                                        BR      TST27           ;;GO ON TO NEXT TEST

                                3$:
                                        BIT     #S.CLR,T.MR2    ;CHECK IF CLEAR COMMAND
                                                                ;  BIT SET
                                        BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
                                        ERROR   44              ;S.CLR BIT NOT SET
                                        BR      TST27           ;;GO ON TO NEXT TEST

                                4$:
                                        MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
                                        BIC     #177760,$TMP0
                                        BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
                                        ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
                                        BR      TST27           ;;GO ON TO NEXT TEST

                                5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
                                        BEQ     6$              ;YES, CHECK MESSAGE B
                                        ERROR   46              ;MESSAGE A INCORRECT
                                6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
                                        BEQ     TST27           ;;YES, GO ON TO NEXT TEST
                                        ERROR   47              ;MESS B INCORRECT

                        ;;**************************************************************
                        ;*TEST 27       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 3)
                        ;*
                        ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                        ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
                        ;*      COMMAND AND STATUS REGISTER 1 WITH AN UNLOAD.
                        ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
                        ;*      MESSAGE SELECT BITS ARE CLEARED.
                        ;*
                        ;;**************************************************************
TST27:  SCOPE
                                        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
                                        MOV     $BASE,R2        ;LOAD RK611 BASE
                                        MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
                                        MOV     #UNLOAD,E.CS1   ;LOAD EXPECTED CS1
                                        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
                                        MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
                                                                ;  SELECT MESSAGE 17
                                        MOV     #UNLOAD,RKCS1(R2)       ;ISSUE UNLOAD
                                        MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
                                1$:     BIS     #MCLK,RKMR1(R2)
                                        BIC     #MCLK,RKMR1(R2)
                                        DEC     R0
                                        BNE     1$
                                        MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
                                        MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
                                        MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
                                        MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
                                        MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
                                        BIT     #ECCW,T.MR1
                                        BEQ     10$
```

```
3865  015616  052737  020000  004204          BIS     #ECCW,E.MR1
3866  015624  012737  002000  004206  10$:    MOV     #S.UNLD,E.MR2   ;LOAD EXPECTED MAINT REG. 2
3867  015632  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
3868  015636  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3869  015644  001405                          BEQ     2$              ;YES, CHECK MAINT REG. 1
3870  015646  104042                          ERROR   42
3871  015650  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3872  015656  000442                          BR      TST30           ;;GO ON TO NEXT TEST
3873
3874  015660  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
3875  015666  001405                          BEQ     3$              ;YES, CHECK MESSAGES A&B
3876  015670  104043                          ERROR   43              ;MAINT REG. 1 INCORRECT
3877  015672  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3878  015700  000431                          BR      TST30           ;;GO ON TO NEXT TEST
3879
3880  015702                          3$:
3881  015702  032737  002000  004146          BIT     #S.UNLD,T.MR2   ;CHECK IF UNLOAD COMMAND
3882                                                                  ;  BIT SET
3883  015710  001002                          BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
3884  015712  104044                          ERROR   44              ;S.UNLD BIT NOT SET
3885  015714  000423                          BR      TST30           ;;GO ON TO NEXT TEST
3886
3887  015716                          4$:
3888  015716  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
3889  015724  042737  177760  001160          BIC     #177760,$TMP0
3890  015732  001402                          BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
3891  015734  104045                          ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
3892  015736  000412                          BR      TST30           ;;GO ON TO NEXT TEST
3893
3894  015740  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3895  015746  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
3896  015750  104046                          ERROR   46              ;MESSAGE A INCORRECT
3897  015752  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
3898  015760  001401                          BEQ     TST30           ;;YES, GO ON TO NEXT TEST
3899  015762  104047                          ERROR   47              ;MESS B INCORRECT
3900
3901                                  ;;*****************************************************************
3902                                  ;*TEST 30       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 4)
3903                                  ;*
3904                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3905                                  ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
3906                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A START SPINDLE.
3907                                  ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
3908                                  ;*      MESSAGE SELECT BITS ARE CLEARED.
3909                                  ;*
3910                                  ;;*****************************************************************
3911  015764  000004                  TST30:  SCOPE
3912  015766  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3913  015774  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3914  016000  012737  000017  004246          MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
3915  016006  012737  000011  004160          MOV     #SRTSPL,E.CS1   ;LOAD EXPECTED CS1
3916  016014  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3917  016022  012762  000057  000026          MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
3918                                                                  ;  SELECT MESSAGE 17
3919  016030  012762  000011  000000          MOV     #SRTSPL,RKCS1(R2)       ;ISSUE SRTSPL
3920  016036  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
```

```
3921  016042  052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
3922  016050  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
3923  016056  005300                          DEC     R0
3924  016060  001370                          BNE     1$
3925  016062  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3926  016070  016237  000026  004144          MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
3927  016076  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
3928  016104  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
3929  016112  012737  002040  004204          MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
3930  016120  032737  020000  004144          BIT     #ECCW,T.MR1
3931  016126  001403                          BEQ     10$
3932  016130  052737  020000  004204          BIS     #ECCW,E.MR1
3933  016136  012737  000100  004206  10$:    MOV     #S.STSP,E.MR2   ;LOAD EXPECTED MAINT REG. 2
3934  016144  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
3935  016150  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3936  016156  001405                          BEQ     2$              ;YES, CHECK MAINT REG. 1
3937  016160  104042                          ERROR   42
3938  016162  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3939  016170  000442                          BR      TST31           ;;GO ON TO NEXT TEST
3940
3941  016172  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
3942  016200  001405                          BEQ     3$              ;YES, CHECK MESSAGES A&B
3943  016202  104043                          ERROR   43              ;MAINT REG. 1 INCORRECT
3944  016204  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3945  016212  000431                          BR      TST31           ;;GO ON TO NEXT TEST
3946
3947  016214                          3$:
3948  016214  032737  000100  004146          BIT     #S.STSP,T.MR2   ;CHECK IF SRTSPL COMMAND
3949                                                                  ;  BIT SET
3950  016222  001002                          BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
3951  016224  104044                          ERROR   44              ;S.STSP BIT NOT SET
3952  016226  000423                          BR      TST31           ;;GO ON TO NEXT TEST
3953
3954  016230                          4$:
3955  016230  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
3956  016236  042737  177760  001160          BIC     #177760,$TMP0
3957  016244  001402                          BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
3958  016246  104045                          ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
3959  016250  000412                          BR      TST31           ;;GO ON TO NEXT TEST
3960
3961  016252  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3962  016260  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
3963  016262  104046                          ERROR   46              ;MESSAGE A INCORRECT
3964  016264  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
3965  016272  001401                          BEQ     TST31           ;;YES, GO ON TO NEXT TEST
3966  016274  104047                          ERROR   47              ;MESS B INCORRECT
3967
3968                                  ;;*****************************************************************
3969                                  ;*TEST 31       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 5)
3970                                  ;*
3971                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3972                                  ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
3973                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A RECALIBRATE.
3974                                  ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
3975                                  ;*      MESSAGE SELECT BITS ARE CLEARED.
3976                                  ;*
```

```
3977                                        ;;*****************************************************************
3978  016276  000004                        TST31:  SCOPE
3979  016300  012737  000144  001200                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3980  016306  013702  001270                        MOV     $BASE,R2        ;LOAD RK611 BASE
3981  016312  012737  000017  004246                MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
3982  016320  012737  000013  004160                MOV     #RECAL,E.CS1    ;LOAD EXPECTED CS1
3983  016326  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3984  016334  012762  000057  000026                MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
3985                                                                        ;  SELECT MESSAGE 17
3986  016342  012762  000013  000000                MOV     #RECAL,RKCS1(R2)        ;ISSUE RECAL
3987  016350  012700  000016                        MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
3988  016354  052762  000400  000026  1$:           BIS     #MCLK,RKMR1(R2)
3989  016362  042762  000400  000026                BIC     #MCLK,RKMR1(R2)
3990  016370  005300                                DEC     R0
3991  016372  001370                                BNE     1$
3992  016374  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3993  016402  016237  000026  004144                MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
3994  016410  016237  000034  004146                MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
3995  016416  016237  000036  004150                MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
3996  016424  012737  002040  004204                MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
3997  016432  032737  020000  004144                BIT     #ECCW,T.MR1
3998  016440  001403                                BEQ     10$
3999  016442  052737  020000  004204                BIS     #ECCW,E.MR1
4000  016450  012737  000040  004206  10$:          MOV     #S.RECL,E.MR2   ;LOAD EXPECTED MAINT REG. 2
4001  016456  005037  004210                        CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
4002  016462  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
4003  016470  001405                                BEQ     2$              ;YES, CHECK MAINT REG. 1
4004  016472  104042                                ERROR   42
4005  016474  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
4006  016502  000442                                BR      TST32           ;;GO ON TO NEXT TEST
4007
4008  016504  023737  004204  004144  2$:           CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
4009  016512  001405                                BEQ     3$              ;YES, CHECK MESSAGES A&B
4010  016514  104043                                ERROR   43              ;MAINT REG. 1 INCORRECT
4011  016516  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
4012  016524  000431                                BR      TST32           ;;GO ON TO NEXT TEST
4013
4014  016526                          3$:
4015  016526  032737  000040  004146                BIT     #S.RECL,T.MR2   ;CHECK IF RECAL COMMAND
4016                                                                        ;  BIT SET
4017  016534  001002                                BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
4018  016536  104044                                ERROR   44              ;S.RECL BIT NOT SET
4019  016540  000423                                BR      TST32           ;;GO ON TO NEXT TEST
4020
4021  016542                          4$:
4022  016542  013737  004150  001160                MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
4023  016550  042737  177760  001160                BIC     #177760,$TMP0
4024  016556  001402                                BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
4025  016560  104045                                ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
4026  016562  000412                                BR      TST32           ;;GO ON TO NEXT TEST
4027
4028  016564  023737  004206  004146  5$:           CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
4029  016572  001401                                BEQ     6$              ;YES, CHECK MESSAGE B
4030  016574  104046                                ERROR   46              ;MESSAGE A INCORRECT
4031  016576  023737  004210  004150  6$:           CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
4032  016604  001401                                BEQ     TST32           ;;YES, GO ON TO NEXT TEST
```

```
 4033  016606  104047                          ERROR   47              ;MESS B INCORRECT
 4034
 4035                                  ;;*****************************************************************
 4036                                  ;*TEST 32       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 6)
 4037                                  ;*
 4038                                  ;*       CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
 4039                                  ;*       DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
 4040                                  ;*       COMMAND AND STATUS REGISTER 1 WITH A OFFSET.
 4041                                  ;*       CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
 4042                                  ;*       MESSAGE SELECT BITS ARE CLEARED.
 4043                                  ;*
 4044                                  ;;*****************************************************************
 4045  016610  000004                  TST32:  SCOPE
 4046  016612  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4047  016620  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4048  016624  012737  000017  004246          MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
 4049  016632  012737  000015  004160          MOV     #OFFSET,E.CS1   ;LOAD EXPECTED CS1
 4050  016640  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 4051  016646  012762  000057  000026          MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
 4052                                                                  ;  SELECT MESSAGE 17
 4053  016654  012762  000015  000000          MOV     #OFFSET,RKCS1(R2)       ;ISSUE OFFSET
 4054  016662  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
 4055  016666  052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
 4056  016674  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
 4057  016702  005300                          DEC     R0
 4058  016704  001370                          BNE     1$
 4059  016706  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
 4060  016714  016237  000026  004144          MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
 4061  016722  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
 4062  016730  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
 4063  016736  012737  002040  004204          MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
 4064  016744  032737  020000  004144          BIT     #ECCW,T.MR1
 4065  016752  001403                          BEQ     10$
 4066  016754  052737  020000  004204          BIS     #ECCW,E.MR1
 4067  016762  005037  004206          10$:    CLR     E.MR2           ;LOAD EXPECTED MAINT REG 2
 4068  016766  012737  017760  004210          MOV     #17760,E.MR3    ;LOAD EXPECTED MAINT REG 3
 4069  016774  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
 4070  017002  001405                          BEQ     2$              ;YES, CHECK MAINT REG. 1
 4071  017004  104042                          ERROR   42
 4072  017006  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
 4073  017014  000434                          BR      TST33           ;;GO ON TO NEXT TEST
 4074
 4075  017016  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
 4076  017024  001405                          BEQ     3$              ;YES, CHECK MESSAGES A&B
 4077  017026  104043                          ERROR   43              ;MAINT REG. 1 INCORRECT
 4078  017030  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
 4079  017036  000423                          BR      TST33           ;;GO ON TO NEXT TEST
 4080
 4081  017040                          3$:
 4082  017040  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
 4083  017046  042737  177760  001160          BIC     #177760,$TMP0
 4084  017054  001402                          BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
 4085  017056  104045                          ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
 4086  017060  000412                          BR      TST33           ;;GO ON TO NEXT TEST
 4087
 4088  017062  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
```

```
                        BEQ     6$              ;YES, CHECK MESSAGE B
                        ERROR   46              ;MESSAGE A INCORRECT
004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
                        BEQ     TST33           ;;YES, GO ON TO NEXT TEST
                        ERROR   47              ;MESS B INCORRECT

                ;;*************************************************************
                ;*TEST 33       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 7)
                ;*
                ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
                ;*      COMMAND AND STATUS REGISTER 1 WITH A SEEK.
                ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
                ;*      MESSAGE SELECT BITS ARE CLEARED.
                ;*
                ;*************************************************************
000004  TST33:  SCOPE
000144  001200        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
001270          MOV     $BASE,R2        ;LOAD RK611 BASE
000017  004246        MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
000017  004160        MOV     #SEEK,E.CS1     ;LOAD EXPECTED CS1
100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
000057  000026        MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
                                                ;  SELECT MESSAGE 17
000017  000000        MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
000016          MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
000400  000026        BIC     #MCLK,RKMR1(R2)
                        DEC     R0
                        BNE     1$
000000  004120        MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
000026  004144        MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
000034  004146        MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
000036  004150        MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
002040  004204        MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
020000  004144        BIT     #ECCW,T.MR1
                        BEQ     10$
020000  004204        BIS     #ECCW,E.MR1
000020  004206  10$:   MOV     #S.SEEK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
004210          CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
004160  004120        CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
                        BEQ     2$              ;YES, CHECK MAINT REG. 1
                        ERROR   42
100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
000442          BR      TST34           ;;GO ON TO NEXT TEST

004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
                        BEQ     3$              ;YES, CHECK MESSAGES A&B
                        ERROR   43              ;MAINT REG. 1 INCORRECT
100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
000431          BR      TST34           ;;GO ON TO NEXT TEST

                3$:
000020  004146        BIT     #S.SEEK,T.MR2   ;CHECK IF SEEK COMMAND
                                                ;  BIT SET
001002                  BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
```

```
                                        ERROR   44              ;S.SEEK BIT NOT SET
                                        BR      TST34           ;;GO ON TO NEXT TEST

                                4$:
                                        MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
                                        BIC     #177760,$TMP0
                                        BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
                                        ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
                                        BR      TST34           ;;GO ON TO NEXT TEST

                                5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
                                        BEQ     6$              ;YES, CHECK MESSAGE B
                                        ERROR   46              ;MESSAGE A INCORRECT
                                6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
                                        BEQ     TST34           ;;YES, GO ON TO NEXT TEST
                                        ERROR   47              ;MESS B INCORRECT


                                .SBTTL  **DRIVE MESSAGE LOOPBACK AND PARITY GENERATION TESTS

                                ;;**********************************************************************
                                ;*TEST 34        DRIVE MESSAGE LOOPBACK
                                ;*
                                ;*      CLEAR THE RK611 WITH A CONTROLLER CLEAR. PUT CONTROLLER
                                ;*      IN DIAGNOSTIC MODE INDICATING MESSAGE 3. LOAD COMMAND
                                ;*      STATUS REGISTER FOR DRIVE 5. LOAD COMMAND AND STATUS
                                ;*      REGISTER 1 WITH A SELECT COMMAND.  CLOCK 4 BITS
                                ;*      THROUGH THE DRIVE MESSAGE LOOPBACK. VERIFY THAT BITS
                                ;*      ARE INDEED LOOPED BACK.
                                ;*
                                ;;**********************************************************************
                                TST34:  SCOPE
                                        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
                                        MOV     $BASE,R2        ;LOAD RK611 BASE
                                        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
                                        CLR     SFTCNT          ;INITIALIZE SHIFT COUNT
                                        MOV     #5,E.MR2        ;LOAD EXPECTED SHIFT REG. A
                                        MOV     #5,U.MR2        ;LOAD UNSHIFTED SHIFT REG. A
                                        MOV     #3,E.MR3        ;LOAD EXPECTED SHIFT REG.B
                                        MOV     #3,U.MR3        ;LOAD UNSHIFTED SHIFT REG.B
                                        MOV     #DMD!3,RKMR1(R2)        ;PUT RK611 IN MAINT. MODE
                                                                ;  MESSAGE SELECT = 3
                                        MOV     #5,RKCS2(R2)    ;LOAD DRIVE NUMBER = 5
                                        MOV     #SELDRV,RKCS1(R2)       ;ISSUE SELECT DRIVE
                                        MOV     #3*4+2,R0       ;CLOCK IN MESSAGE
                                1$:     BIS     #MCLK,RKMR1(R2) ;ISSUE CLOCKS
                                        BIC     #MCLK,RKMR1(R2)
                                        DEC     R0
                                        BNE     1$
                                        MOV     RKMR2(R2),T.MR2 ;STORE SHIFT REG. A
                                        MOV     RKMR3(R2),T.MR3 ;STORE SHIFT REG. B
                                        CMP     E.MR2,T.MR2     ;CHECK SHIFT REG A CORRECT
                                        BEQ     2$              ;YES, CHECK SHIFT REG. B
                                        ERROR   50              ;SHIFT REG A INCORRECT
                                        BR      TST35           ;;GO ON TO NEXT TEST
```

```
 4201  017574  023737  004210  004150  2$:     CMP     E.MR3,T.MR3     ;CHECK SHIFT REG B CORRECT
 4202  017602  001402                          BEQ     3$              ;YES, SHIFT A BIT
 4203  017604  104051                          ERROR   51              ;SHIFT REG B INCORRECT
 4204  017606  000423                          BR      TST35           ;;GO ON TO NEXT TEST
 4205
 4206  017610  032737  000001  004210  3$:     BIT     #BIT0,E.MR3     ;CHECK IF SHIFT BIT = 1
 4207  017616  001402                          BEQ     4$              ;NO, CLEAR SHIFT BIT
 4208  017620  000261                          SEC                     ;SET SHIFT BIT
 4209  017622  000401                          BR      5$              ;GENERATE EXPECTED SHIFT
 4210                                                                  ;  REGISTERS A & B
 4211
 4212  017624  000241                  4$:     CLC                     ;CLEAR SHIFT BIT
 4213  017626  006037  004206          5$:     ROR     E.MR2           ;GENERATE EXPECTED SHIFT REG A
 4214  017632  006037  004210                  ROR     E.MR3           ;GENERATE EXPECTED SHIFT REG B
 4215  017636  012700  000004                  MOV     #4,R0           ;LOAD COUNT FOR 1 BIT SHIFT
 4216  017642  005237  004256                  INC     SFTCNT          ;INCREMENT SHIFT BIT COUNT
 4217  017646  022737  000004  004256          CMP     #4,SFTCNT       ;CHECK IF FINISHED
 4218  017654  103323                          BHIS    1$              ;NO, SHIFT IN NEXT BIT
 4219
 4220                                  ;;*****************************************************************
 4221                                  ;*TEST 35       DRIVE MESSAGE SHIFT
 4222                                  ;*
 4223                                  ;*      CLEAR THE RK611 WITH A CONTROLLER CLEAR. PUT CONTROLLER
 4224                                  ;*      IN DIAGNOSTIC MODE. LOAD CYLINDER ADDRESS WITH 441.
 4225                                  ;*      LOAD HEAD ADDRESS WITH 1. LOAD COMMAND AND STATUS
 4226                                  ;*      REGISTER 1 WITH A SEEK IN 24 SECTOR MODE. CLOCK 8 BITS
 4227                                  ;*      THROUGH THE DRIVE MESSAGE LOOPBACK. VERIFY THAT BITS ARE
 4228                                  ;*      SHIFTED PROPERLY.
 4229                                  ;*
 4230                                  ;;*****************************************************************
 4231  017656  000004                  TST35:  SCOPE
 4232  017660  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4233  017666  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4234  017672  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 4235  017700  005037  004256                  CLR     SFTCNT          ;INITIALIZE SHIFT COUNT
 4236  017704  012737  011020  004206          MOV     #S.FMT!S.SEEK!BIT12,E.MR2       ;LOAD EXPECTED SHIFT REG. A
 4237  017712  012737  011020  004230          MOV     #S.FMT!S.SEEK!BIT12,U.MR2       ;LOAD UNSHIFTED SHIFT REG. A
 4238  017720  012737  011020  004210          MOV     #11020,E.MR3    ;LOAD EXPECTED SHIFT REG. B
 4239  017726  012737  011020  004232          MOV     #11020,U.MR3    ;LOAD UNSHIFTED SHIFT REG. B
 4240  017734  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT. MODE
 4241  017742  012762  000441  000020          MOV     #441,RKDCYL(R2) ;LOAD CYLINDER ADD. REG.
 4242  017750  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD DISK ADDRESS REG.
 4243  017756  012762  010017  000000          MOV     #SEEK!CFMT,RKCS1(R2)    ;ISSUE SEEK
 4244
 4245  017764  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN MESSAGE
 4246  017770  052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2) ;ISSUE CLOCKS
 4247  017776  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
 4248  020004  005300                          DEC     R0
 4249  020006  001370                          BNE     1$
 4250  020010  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE SHIFT REG. A
 4251  020016  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE SHIFT REG. B
 4252  020024  023737  004206  004146          CMP     E.MR2,T.MR2     ;CHECK SHIFT REG A CORRECT
 4253  020032  001402                          BEQ     2$              ;YES, CHECK SHIFT REG. B
 4254  020034  104050                          ERROR   50              ;SHIFT REG A INCORRECT
 4255  020036  000431                          BR      TST36           ;;GO ON TO NEXT TEST
 4256
```

```
                                                                                
 4257  020040  023737  004210  004150  2$:     CMP     E.MR3,T.MR3     ;CHECK SHIFT REG B CORRECT
 4258  020046  001402                          BEQ     3$              ;YES, SHIFT A BIT
 4259  020050  104051                          ERROR   51              ;SHIFT REG B INCORRECT
 4260  020052  000423                          BR      TST36           ;;GO ON TO NEXT TEST
 4261
 4262  020054  032737  000001  004210  3$:     BIT     #BIT0,E.MR3     ;CHECK IF SHIFT BIT = 1
 4263  020062  001402                          BEQ     4$              ;NO, CLEAR SHIFT BIT
 4264  020064  000261                          SEC                     ;SET SHIFT BIT
 4265  020066  000401                          BR      5$              ;GENERATE EXPECTED SHIFT
 4266                                                                  ;  REGISTERS A & B
 4267
 4268  020070  000241                  4$:     CLC                     ;CLEAR SHIFT BIT
 4269  020072  006037  004206          5$:     ROR     E.MR2           ;GENERATE EXPECTED SHIFT REG A
 4270  020076  006037  004210                  ROR     E.MR3           ;GENERATE EXPECTED SHIFT REG B
 4271  020102  012700  000004                  MOV     #4,R0           ;LOAD COUNT FOR 1 BIT SHIFT
 4272  020106  005237  004256                  INC     SFTCNT          ;INCREMENT SHIFT BIT COUNT
 4273  020112  022737  000010  004256          CMP     #8.,SFTCNT      ;CHECK IF FINISHED
 4274  020120  103323                          BHIS    1$              ;NO, SHIFT IN NEXT BIT
 4275
 4276                                  ;;*****************************************************************
 4277                                  ;*TEST 36       DRIVE MESSAGE PARITY PRECONDITIONING
 4278                                  ;*
 4279                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER
 4280                                  ;*      IN DIAGNOSTIC MODE. LOAD COMMAND AND STATUS REGISTER 1 WITH
 4281                                  ;*      A SELECT COMMAND. CLOCK ALL 16 BITS THROUGH THE
 4282                                  ;*      DRIVE MESSAGE LOOPBACK. VERIFY PARITY HAS BEEN PRECONDITIONED
 4283                                  ;*      PROPERLY. REPEAT FOR BAD PARITY GENERATION.
 4284                                  ;*
 4285                                  ;;*****************************************************************
 4286  020122  000004                  TST36:  SCOPE
 4287  020124  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4288  020132  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4289  020136  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 4290  020144  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 4291  020152  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;ISSUE SELECT DRIVE
 4292  020160  012700  000116                  MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
 4293  020164  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2) ;  ALL 16 BITS
 4294  020172  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 4295  020200  005300                          DEC     R0
 4296  020202  001370                          BNE     1$
 4297  020204  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
 4298  020212  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
 4299  020220  012737  100000  004206          MOV     #100000,E.MR2   ;LOAD EXPECTED MESSAGE B
 4300  020226  012737  100000  004210          MOV     #100000,E.MR3   ;LOAD EXPECTED MESSAGE A
 4301  020234  032737  100000  004150          BIT     #BIT15,T.MR3    ;CHECK IF PARITY ON MESSAGE A CORRECT
 4302
 4303  020242  001002                          BNE     2$              ;YES, CHECK PARITY ON MESSAGE B
 4304  020244  104052                          ERROR   52              ;PARITY ON MESSAGE A INCORRECT
 4305  020246  000420                          BR      5$              ;TRY EVEN PARITY
 4306
 4307  020250  032737  100000  004146  2$:     BIT     #BIT15,T.MR2    ;CHECK IF PARITY ON MESS B CORRECT
 4308  020256  001002                          BNE     3$              ;YES, CHECK MESSAGE A AND B
 4309  020260  104053                          ERROR   53              ;PARITY ON MESSAGE B INCORRECT
 4310  020262  000412                          BR      5$              ;TRY EVEN PARITY
 4311
 4312  020264  023737  004210  004150  3$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
```

```
 4313  020272  001401                          BEQ     4$              ;YES, CHECK MESSAGE B
 4314  020274  104054                          ERROR   54              ;MESSAGE A INCORRECT
 4315  020276  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
 4316  020304  001401                          BEQ     5$              ;YES, TRY EVEN PARITY
 4317  020306  104055                          ERROR   55              ;MESSAGE B INCORRECT
 4318  020310  012762  100000  000000  5$:     MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 4319  020316  012762  000060  000026          MOV     #DMD!PAT,RKMR1(R2) ;PUT RK611 MAINTENANCE MODE
 4320                                                                  ;  AND EVEN PARITY
 4321  020324  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;ISSUE SELECT DRIVE
 4322  020332  012700  000116                  MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
 4323  020336  012762  000460  000026  6$:     MOV     #DMD!PAT!MCLK,RKMR1(R2) ;  ALL 16 BITS
 4324  020344  012762  000060  000026          MOV     #DMD!PAT,RKMR1(R2)
 4325  020352  005300                          DEC     R0
 4326
 4327  020354  001370                          BNE     6$
 4328  020356  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
 4329  020364  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
 4330  020372  005037  004206                  CLR     E.MR2           ;LOAD EXPECTED MESSAGE B
 4331  020376  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MESSAGE A
 4332  020402  032737  100000  004150          BIT     #BIT15,T.MR3    ;CHECK IF PARITY ON MESSAGE A CORRECT
 4333  020410  001402                          BEQ     7$              ;YES, CHECK PARITY ON MESSAGE B
 4334  020412  104056                          ERROR   56              ;PARITY ON MESSAGE A INCORRECT
 4335  020414  000420                          BR      TST37           ;;GO ON TO NEXT TEST
 4336
 4337  020416  032737  100000  004146  7$:     BIT     #BIT15,T.MR2    ;CHECK IF PARITY ON MESS B CORRECT
 4338  020424  001402                          BEQ     8$              ;YES, CHECK MESSAGE A AND B
 4339  020426  104057                          ERROR   57              ;PARITY ON MESSAGE B INCORRECT
 4340  020430  000412                          BR      TST37           ;;GO ON TO NEXT TEST
 4341
 4342  020432  023737  004210  004150  8$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
 4343  020440  001401                          BEQ     9$              ;YES, CHECK MESSAGE B
 4344  020442  104060                          ERROR   60              ;MESSAGE A INCORRECT
 4345  020444  023737  004206  004146  9$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
 4346  020452  001401                          BEQ     TST37           ;;YES, GO ON TO NEXT TEST
 4347  020454  104061                          ERROR   61              ;MESSAGE B INCORRECT
 4348
 4349                                  ;;*****************************************************************
 4350                                  ;*TEST 37       ODD DRIVE MESSAGE PARITY GENERATION
 4351                                  ;*
 4352                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER
 4353                                  ;*      IN DIAGNOSTIC MODE AND MESSAGE SELECT = 1.
 4354                                  ;*      LOAD COMMAND AND STATUS REGISTER 2 WITH DRIVE
 4355                                  ;*      SELECT = 1. LOAD COMMAND AND STATUS REGISTER 1 WITH
 4356                                  ;*      A SELECT COMMAND. VERIFY THAT PARITY HAS BEEN
 4357                                  ;*      GENERATED CORRECTLY. REPEAT FOR MESSAGE SELECT =
 4358                                  ;*      DRIVE SELECT = 2-17.
 4359                                  ;*
 4360                                  ;;*****************************************************************
 4361  020456  000004                  TST37:  SCOPE
 4362  020460  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4363  020466  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4364  020472  012737  000001  004244          MOV     #1,DRVCOD       ;LOAD DRIVE CODE
 4365  020500  012737  020506  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
 4366                                                                  ;  SUBTEST LOOP
 4367
 4368  020506                          1$:
```

```
4369  020506  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
4370  020514  013762  004244  000026          MOV     DRVCOD,RKMR1(R2)        ;LOAD MESSAGE SELECT CODE
4371  020522  052762  000040  000026          BIS     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
4372  020530  013762  004244  000010          MOV     DRVCOD,RKCS2(R2)        ;LOAD DRIVE SELECT CODE
4373  020536  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE SELECT DRIVE
4374  020544  012700  000116                  MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
4375  020550  052762  000400  000026  2$:     BIS     #MCLK,RKMR1(R2) ;  ALL 16 BITS
4376  020556  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
4377  020564  005300                          DEC     R0
4378  020566  001370                          BNE     2$
4379  020570  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
4380  020576  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
4381  020604  013701  004244                  MOV     DRVCOD,R1       ;DETERMINE PARITY
4382  020610  012703  000004                  MOV     #4,R3
4383  020614  005004                          CLR     R4
4384  020616  006001                  3$:     ROR     R1
4385  020620  103001                          BCC     4$
4386  020622  005204                          INC     R4
4387  020624  005303                  4$:     DEC     R3
4388  020626  001373                          BNE     3$
4389  020630  013737  004244  004206          MOV     DRVCOD,E.MR2    ;LOAD EXPECTED SHIFTED REG. B
4390  020636  013737  004244  004210          MOV     DRVCOD,E.MR3    ;LOAD EXPECTED SHIFTED REG. A
4391  020644  005037  004260                  CLR     PARBIT
4392  020650  032704  000001                  BIT     #BIT0,R4        ;CHECK FOR PARITY ON WORD
4393  020654  001011                          BNE     5$              ;PARITY ALREADY ODD
4394  020656  012737  100000  004260          MOV     #BIT15,PARBIT   ;SET PARITY BIT
4395  020664  052737  100000  004206          BIS     #BIT15,E.MR2
4396  020672  052737  100000  004210          BIS     #BIT15,E.MR3
4397  020700  013737  004150  001160  5$:     MOV     T.MR3,$TMP0     ;MASK ALL BITS EXCEPT PARITY
4398  020706  042737  077777  001160          BIC     #77777,$TMP0
4399  020714  023737  004260  001160          CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
4400  020722  001402                          BEQ     6$              ;  ON MESSAGE A
4401  020724  104052                          ERROR   52              ;PARITY ON MESSAGE A INCORRECT
4402  020726  000426                          BR      25$             ;CHECK IF LOOP ON ERROR
4403
4404  020730  013737  004146  001160  6$:     MOV     T.MR2,$TMP0     ;MASK ALL BITS EXCEPT PARITY
4405  020736  042737  077777  001160          BIC     #77777,$TMP0
4406  020744  023737  004260  001160          CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
4407  020752  001402                          BEQ     7$              ;  ON MESSAGE B
4408  020754  104053                          ERROR   53              ;PARITY ON MESSAGE B INCORRECT
4409  020756  000412                          BR      25$             ;CHECK IF LOOP ON ERROR
4410
4411  020760  023737  004210  004150  7$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
4412  020766  001401                          BEQ     8$              ;YES, CHECK MESSAGE B
4413  020770  104054                          ERROR   54              ;MESSAGE A INCORRECT
4414  020772  023737  004206  004146  8$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
4415  021000  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
4416  021002  104055                          ERROR   55              ;MESSAGE B INCORRECT
4417  021004  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
4418  021006  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE SELECT CODE
4419  021012  022737  000017  004244          CMP     #17,DRVCOD      ;CHECK IF FINISHED
4420  021020  103232                          BHIS    1$              ;NO, TRY NEXT CONFIGURATION
4421
4422                                  ;;*****************************************************************
4423                                  ;*TEST 40        DRIVE MESSAGE PARITY INTERACTION
4424                                  ;*
```

```
                                ;*      CLEAR THE RK611 WITH A CONTROLLER CLEAR. PUT CONTROLLER
                                ;*      IN DIAGNOSTIC MODE. LOAD COMMAND AND STATUS REGISTER 2
                                ;*      WITH DRIVE SELECT = 1. LOAD COMMAND AND STATUS REGISTER 1
                                ;*      WITH A SELECT COMMAND. VERIFY THAT THE CORRECT PARITY
                                ;*      IS GENERATED FOR BOTH MESSAGES. REPEAT FOR MESSAGE
                                ;*      SELECT = 1 AND DRIVE SELECT = 0.
                                ;*
                                ;*************************************************************************
021022  000004                  TST40:  SCOPE
021024  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
021032  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
021036  012737  000001  004244          MOV     #1,DRVCOD       ;SET INITIAL DRIVE SELECT CODE
021044  005037  004246                  CLR     MSGCOD          ;SET INITIAL MESSAGE SELECT CODE
021050  012737  100000  004206          MOV     #BIT15,E.MR2    ;LOAD EXPECTED MAINT. REG. 2 (MESS B)
021056  012737  000001  004210          MOV     #BIT0,E.MR3     ;LOAD EXPECTED MAINT. REG. 3 (MESS A)
021064  012737  100000  004260          MOV     #BIT15,PARBIT   ;LOAD PARITY FOR MESSAGE B
021072  012737  021100  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                                ;  SUBTEST LOOP
021100                          1$:
021100  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
021106  013762  004246  000026          MOV     MSGCOD,RKMR1(R2) ;LOAD MESSAGE SELECT CODE
021114  052762  000040  000026          BIS     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
021122  013762  004244  000010          MOV     DRVCOD,RKCS2(R2) ;LOAD DRIVE SELECT CODE
021130  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;ISSUE DRIVE SELECT
021136  012700  000116                  MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
021142  052762  000400  000026  2$:     BIS     #MCLK,RKMR1(R2) ;  ALL 16 BITS
021150  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
021156  005300                          DEC     R0
021160  001370                          BNE     2$
021162  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
021170  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
021176  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK ALL BITS EXCEPT PARITY
021204  042737  077777  001160          BIC     #77777,$TMP0
021212  023737  004260  001160          CMP     PARBIT,$TMP0    ;CHECK IF PARITY BIT CORRECT
021220  001002                          BNE     3$              ;  ON MESSAGE A
021222  104052                          ERROR   52              ;NO, PARITY ON MESSAGE INCORRECT
021224  000426                          BR      25$             ;CHECK IF LOOP ON ERROR
021226  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK ALL BITS EXCEPT PARITY
021234  042737  077777  001160          BIC     #77777,$TMP0
021242  023737  004260  001160          CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
021250  001402                          BEQ     4$              ;  MESSAGE B
021252  104053                          ERROR   53              ;PARITY ON MESSAGE B INCORRECT
021254  000412                          BR      25$             ;CHECK IF LOOP ON ERROR
021256  023737  004210  004150  4$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
021264  001401                          BEQ     5$              ;YES, CHECK IN MESSAGE B CORRECT
021266  104054                          ERROR   54              ;MESSAGE A INCORRECT
021270  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
021276  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
021300  104055                          ERROR   55              ;MESSAGE B INCORRECT
021302  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
021304  005737  004244                  TST     DRVCOD          ;CHECK IF DRIVE SELECT = 0 (FINISHED)
021310  001416                          BEQ     TST41           ;;YES,GO ON TO NEXT TEST
021312  005037  004244                  CLR     DRVCOD          ;SET DRIVE SELECT CODE = 0
```

```
4481  021316  012737  000001  004246          MOV     #1,MSGCOD       ;SET MESSAGE SELECT CODE
4482  021324  012737  000001  004206          MOV     #BIT0,E.MR2     ;LOAD EXPECTED MAINT REG 2 (MESS B)
4483  021332  012737  100000  004210          MOV     #BIT15,E.MR3    ;LOAD EXPECTED MAINT REG 3 (MESS A)
4484  021340  005037  004260                  CLR     PARBIT          ;LOAD PARITY FOR MESSAGE B
4485  021344  000655                          BR      1$              ;TRY SECOND CONFIGURATION
4486
4487                                  ;;*****************************************************************
4488                                  ;*TEST 41       EVEN DRIVE MESSAGE PARITY GENERATION
4489                                  ;*
4490                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER
4491                                  ;*      IN DIAGNOSTIC MODE AND MESSAGE SELECT = 1
4492                                  ;*      AND BAD PARITY SET. LOAD COMMAND AND STATUS
4493                                  ;*      REGISTER 2 WITH DRIVE SELECT = 1. LOAD COMMAND
4494                                  ;*      AND STATUS REGISTER SELECT COMMAND. VERIFY THAT
4495                                  ;*      EVEN PARITY IS GENERATED.  REPEAT FOR MESSAGE SELECT =
4496                                  ;*      DRIVE SELECT = 2-17.
4497                                  ;*
4498                                  ;;*****************************************************************
4499  021346  000004                  TST41:  SCOPE
4500  021350  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
4501  021356  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
4502  021362  012737  000001  004244          MOV     #1,DRVCOD       ;LOAD DRIVE CODE
4503  021370  012737  021376  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
4504                                                                  ;  SUBTEST LOOP
4505
4506  021376                          1$:
4507  021376  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
4508  021404  013762  004244  000026          MOV     DRVCOD,RKMR1(R2)        ;LOAD MESSAGE SELECT CODE
4509  021412  052762  000060  000026          BIS     #DMD!PAT,RKMR1(R2)      ;PUT RK611 IN MAINTENANCE MODE
4510                                                                  ;  AND SET BAD PARITY
4511  021420  013762  004244  000010          MOV     DRVCOD,RKCS2(R2)        ;LOAD DRIVE SELECT CODE
4512  021426  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE SELECT DRIVE
4513  021434  012700  000116                  MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
4514  021440  052762  000400  000026  2$:     BIS     #MCLK,RKMR1(R2) ;  ALL 16 BITS
4515  021446  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
4516  021454  005300                          DEC     R0
4517  021456  001370                          BNE     2$
4518  021460  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
4519  021466  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
4520  021474  013701  004244                  MOV     DRVCOD,R1       ;DETERMINE PARITY
4521  021500  012703  000004                  MOV     #4,R3
4522  021504  005004                          CLR     R4
4523  021506  006001                  3$:     ROR     R1
4524  021510  103001                          BCC     4$
4525  021512  005204                          INC     R4
4526  021514  005303                  4$:     DEC     R3
4527  021516  001373                          BNE     3$
4528  021520  013737  004244  004206          MOV     DRVCOD,E.MR2    ;LOAD EXPECTED SHIFTED REG. B
4529  021526  013737  004244  004210          MOV     DRVCOD,E.MR3    ;LOAD EXPECTED SHIFTED REG. A
4530  021534  005037  004260                  CLR     PARBIT
4531  021540  032704  000001                  BIT     #BIT0,R4        ;CHECK FOR PARITY ON WORD
4532  021544  001411                          BEQ     5$              ;PARITY ALREADY EVEN
4533  021546  012737  100000  004260          MOV     #BIT15,PARBIT   ;SET PARITY BIT
4534  021554  052737  100000  004206          BIS     #BIT15,E.MR2
4535  021562  052737  100000  004210          BIS     #BIT15,E.MR3
4536  021570  013737  004150  001160  5$:     MOV     T.MR3,$TMP0     ;MASK ALL BITS EXCEPT PARITY
```

```
 4537  021576  042737  077777  001160          BIC     #77777,$TMP0
 4538  021604  023737  004260  001160          CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
 4539  021612  001402                          BEQ     6$              ;  ON MESSAGE A
 4540  021614  104056                          ERROR   56              ;PARITY ON MESSAGE A INCORRECT
 4541  021616  000426                          BR      25$             ;CHECK IF LOOP ON ERROR
 4542
 4543  021620  013737  004146  001160  6$:     MOV     T.MR2,$TMP0     ;MASK ALL BITS EXCEPT PARITY
 4544  021626  042737  077777  001160          BIC     #77777,$TMP0
 4545  021634  023737  004260  001160          CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
 4546  021642  001402                          BEQ     7$              ;  ON MESSAGE B
 4547  021644  104057                          ERROR   57              ;PARITY ON MESSAGE B INCORRECT
 4548  021646  000412                          BR      25$             ;CHECK IF LOOP ON ERROR
 4549
 4550  021650  023737  004210  004150  7$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
 4551  021656  001401                          BEQ     8$              ;YES, CHECK MESSAGE B
 4552  021660  104060                          ERROR   60              ;MESSAGE A INCORRECT
 4553  021662  023737  004206  004146  8$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
 4554  021670  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
 4555  021672  104061                          ERROR   61              ;MESSAGE B INCORRECT
 4556  021674  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
 4557  021676  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE SELECT CODE
 4558  021702  022737  000017  004244          CMP     #17,DRVCOD      ;CHECK IF FINISHED
 4559  021710  103232                          BHIS    1$              ;NO, TRY NEXT CONFIGURATION
 4560
 4561
 4562                                  .SBTTL  **CLASS A COMMAND EXECUTION
 4563
 4564                                  ;;*********************************************************************
 4565                                  ;*TEST 42        RELEASE COMMAND IN DIAGNOSTIC MODE
 4566                                  ;*
 4567                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 4568                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD COMMAND AND
 4569                                  ;*      STATUS REGISTER 2 WITH DRIVE SELECT = 10. LOAD
 4570                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A SELECT.
 4571                                  ;*      CLOCK COMMAND TO COMPLETION. MAKE SURE UNIT
 4572                                  ;*      FIELD ERROR DOES NOT SET (SACK HIGH). REPEAT FOR
 4573                                  ;*      DRIVE SELECT = 11-17.
 4574                                  ;*
 4575                                  ;;*********************************************************************
 4576  021712  000004                  TST42:  SCOPE
 4577  021714  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4578  021722  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4579  021726  012737  000010  004244          MOV     #10,DRVCOD      ;INITIALIZE FOR DESELECT OF DRIVE 0
 4580  021734  012737  021742  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
 4581                                                                  ;  SUBTEST LOOP
 4582
 4583  021742                          1$:
 4584  021742  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 4585  021750  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
 4586  021756  013762  004244  000010          MOV     DRVCOD,RKCS2(R2) ;LOAD DRIVE SELECTION
 4587  021764  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;ISSUE DESELECT
 4588  021772  012700  000120                  MOV     #20.*4,R0       ;LOAD COUNT TO COMPLETE COMMAND
 4589  021776  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2) ;CLOCK THRU COMMAND
 4590  022004  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 4591  022012  005300                          DEC     R0
 4592  022014  001370                          BNE     2$
```

```
4593  022016  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4594  022024  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
4595  022032  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
4596  022040  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REGISTER
4597  022046  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED COMMAND AND STATUS REG. 1
4598  022054  013737  004244  004170          MOV     DRVCOD,E.CS2    ;GENERATE EXPECTED COMMAND AND
4599  022062  052737  000100  004170          BIS     #IR,E.CS2       ;  STATUS REG. 2
4600  022070  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REGISTER
4601  022074  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REGISTER
4602  022100  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
4603  022106  001401                          BEQ     3$              ;YES, CHECK CS2
4604  022110  104062                          ERROR   62              ;COMMAND AND STATUS REG. 1 INCORRECT
4605  022112  023737  004170  004130  3$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
4606  022120  001401                          BEQ     4$              ;YES, CHECK ERROR REGISTER
4607  022122  104063                          ERROR   63              ;COMMAND AND STATUS REG. 2 INCORRECT
4608  022124  023737  004174  004134  4$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
4609  022132  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG
4610  022134  104064                          ERROR   64              ;ERROR REGISTER INCORRECT
4611  022136  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
4612  022144  001401                          BEQ     6$              ;YES, CHECK IF LOOP ON ERROR
4613  022146  104126                          ERROR   126             ;DRIVE STATUS REG INCORRECT
4614  022150  104415                  6$:     SCOP1                   ;CHECK IF LOOP ON ERROR
4615  022152  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE NUMBER
4616  022156  022737  000017  004244          CMP     #17,DRVCOD      ;CHECK IF ALL DRIVE NUMBERS TESTED
4617  022164  103266                          BHIS    1$              ;NO, DO IT FOR NEXT DRIVE NUMBER
4618
4619                                  ;;*****************************************************************
4620                                  ;*TEST 43       SELECT COMMAND IN DIAGNOSTIC MODE
4621                                  ;*
4622                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
4623                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD COMMAND AND
4624                                  ;*      STATUS REGISTER 2 WITH DRIVE SELECT = 0. LOAD
4625                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A SELECT.
4626                                  ;*      CLOCK COMMAND TO COMPLETION. MAKE SURE MESSAGE SHIFT IS
4627                                  ;*      NOT DONE DURING THE RECEIVE CYCLE OF DRIVE MESSAGE.
4628                                  ;*      MAKE SURE NO ERRORS SET. REPEAT FOR DRIVE SELECT = 1-7.
4629                                  ;*
4630                                  ;;*****************************************************************
4631  022166  000004                  TST43:  SCOPE
4632  022170  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
4633  022176  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
4634  022202  005037  004244                  CLR     DRVCOD          ;INITIALIZE FOR SELECT OF DRIVE 0
4635  022206  012737  022214  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
4636                                                                  ;  SUBTEST LOOP
4637
4638  022214                          1$:
4639  022214  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
4640  022222  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
4641  022230  013762  004244  000010          MOV     DRVCOD,RKCS2(R2)        ;LOAD DRIVE SELECT
4642  022236  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE DRIVE SELECT
4643  022244  012700  000120                  MOV     #20.*4,R0       ;LOAD COUNT TO DESELECT COMPLETE
4644  022250  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)     ;CLOCK UNTIL DESELECT FINISHED
4645  022256  012762  000040  000026          MOV     #DMD,RKMR1(R2)
4646  022264  005300                          DEC     R0
4647  022266  001370                          BNE     2$
4648  022270  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
```

```
4649  022276  012737  000001  004160          MOV     #SELDRV,E.CS1   ;LOAD EXPECTED COMMAND AND STATUS REG. 1
4650  022304  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF READY RESET
4651  022312  001402                          BEQ     3$              ;YES, CONTINUE COMMAND
4652  022314  104065                          ERROR   65              ;COMMAND AND STATUS REG. 1 INCORRECT
4653  022316  000566                          BR      25$             ;GO CHECK IF LOOP ON ERROR
4654
4655  022320  013703  004244          3$:     MOV     DRVCOD,R3       ;GENERATE EXPECTED MAINT REG 3
4656  022324  012701  000003                  MOV     #3,R1
4657  022330  005000                          CLR     R0
4658  022332  006003                  4$:     ROR     R3
4659  022334  103001                          BCC     5$
4660  022336  005200                          INC     R0
4661  022340  005301                  5$:     DEC     R1
4662  022342  001373                          BNE     4$
4663  022344  013737  004244  004210          MOV     DRVCOD,E.MR3
4664  022352  032700  000001                  BIT     #BIT0,R0
4665  022356  001003                          BNE     6$
4666  022360  052737  100000  004210          BIS     #BIT15,E.MR3
4667  022366  012737  100000  004206  6$:     MOV     #BIT15,E.MR2    ;STORE EXPECTED MAINT REG 2
4668  022374  012701  000003                  MOV     #3,R1           ;ISSUE 3 CONTROL CLOCKS
4669  022400  012700  000004          7$:     MOV     #4,R0
4670  022404  012762  000440  000026  8$:     MOV     #DMD!MCLK,RKMR1(R2)
4671  022412  012762  000040  000026          MOV     #DMD,RKMR1(R2)
4672  022420  005300                          DEC     R0
4673  022422  001370                          BNE     8$
4674  022424  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4675  022432  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG 2
4676  022440  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG 3
4677  022446  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
4678  022454  001402                          BEQ     9$              ;YES, CHECK MAINTENANCE REG. 2
4679  022456  104066                          ERROR   66              ;CS1 INCORRECT
4680  022460  000505                          BR      25$             ;CHECK IF LOOP ON ERROR
4681
4682  022462  023737  004206  004146  9$:     CMP     E.MR2,T.MR2     ;CHECK MAINT REG 2 CORRECT
4683  022470  001402                          BEQ     10$             ;YES, CHECK MAINTENANCE REG 3
4684  022472  104067                          ERROR   67              ;MR2 INCORRECT
4685  022474  000477                          BR      25$             ;CHECK IF LOOP ON ERROR
4686
4687  022476  023737  004210  004150  10$:    CMP     E.MR3,T.MR3     ;CHECK IF MAINT REG 3 CORRECT
4688  022504  001402                          BEQ     11$             ;YES, CHECK COMMAND COMPLETE
4689  022506  104070                          ERROR   70              ;MR3 INCORRECT
4690  022510  000471                          BR      25$             ;CHECK IF LOOP ON ERROR
4691
4692  022512  005301                  11$:    DEC     R1              ;CHECK IF COMMAND FINISHED
4693  022514  001331                          BNE     7$              ;NO, ISSUE ANOTHER CONTROL CLOCK
4694  022516  012700  000004                  MOV     #4,R0           ;ISSUE LAST CONTROL CLOCK FOR READY
4695  022522  012762  000440  000026  12$:    MOV     #DMD!MCLK,RKMR1(R2)
4696  022530  012762  000040  000026          MOV     #DMD,RKMR1(R2)
4697  022536  005300                          DEC     R0
4698  022540  001370                          BNE     12$
4699  022542  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4700  022550  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
4701  022556  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
4702  022564  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REGISTER
4703  022572  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED COMMAND AND STATUS REG 1
4704  022600  013737  004244  004170          MOV     DRVCOD,E.CS2    ;GENERATE EXPECTED COMMAND AND STATUS REG. 2
```

```
 4705  022606  052737  000100  004170          BIS     #IR,E.CS2
 4706  022614  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REGISTER
 4707  022620  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REGISTER
 4708  022624  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
 4709  022632  001401                          BEQ     13$             ;YES, CHECK CS2
 4710  022634  104071                          ERROR   71              ;CS1 INCORRECT
 4711  022636  023737  004170  004130  13$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
 4712  022644  001401                          BEQ     14$             ;YES, CHECK ERROR REG
 4713  022646  104072                          ERROR   72              ;CS2 INCORRECT
 4714  022650  023737  004174  004134  14$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
 4715  022656  001401                          BEQ     15$             ;YES, CHECK DRIVE STATUS REG CORRECT
 4716  022660  104073                          ERROR   73              ;ERROR REG INCORRECT
 4717  022662  023737  004172  004132  15$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
 4718  022670  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
 4719  022672  104127                          ERROR   127             ;DRIVE STATUS REGISTER INCORRECT
 4720  022674  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
 4721  022676  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE NUMBER
 4722  022702  022737  000007  004244          CMP     #7,DRVCOD       ;CHECK IF ALL DRIVES TESTED
 4723  022710  103402                          BLO     TST44           ;;YES, GO TO NEXT TEST
 4724  022712  000137  022214                  JMP     1$              ;TRY NEXT DRIVE
 4725
 4726                                  ;;*********************************************************************
 4727                                  ;*TEST 44       RELEASE COMMAND IN NORMAL MODE
 4728                                  ;*
 4729                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 4730                                  ;*      LOAD COMMAND AND STATUS REGISTER 2 WITH DRIVE SELECT = 10.
 4731                                  ;*      LOAD COMMAND AND STATUS REGISTER 1 WITH A SELECT.
 4732                                  ;*      MAKE SURE NO ERRORS OCCUR. REPEAT FOR DRIVE
 4733                                  ;*      SELECT = 11-17
 4734                                  ;*
 4735                                  ;;*********************************************************************
 4736  022716  000004                  TST44:  SCOPE
 4737  022720  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4738  022726  013702  001270                  MOV     $BASE, R2       ;LOAD RK611 BASE
 4739  022732  012737  000010  004244          MOV     #10,DRVCOD      ;INITIALIZE FOR DESELECT OF DRIVE 0
 4740  022740  012737  022746  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
 4741                                                                  ;  SUBTEST LOOP
 4742
 4743  022746                          1$:
 4744  022746  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 4745  022754  013762  004244  000010          MOV     DRVCOD,RKCS2(R2)        ;LOAD DRIVE SELECTION
 4746  022762  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE DESELECT
 4747  022770  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
 4748  022774  105762  000000          2$:     TSTB    RKCS1(R2)
 4749  023000  100402                          BMI     3$
 4750  023002  005300                          DEC     R0
 4751  023004  001373                          BNE     2$
 4752  023006  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
 4753  023014  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
 4754  023022  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
 4755  023030  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
 4756  023036  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED COMMAND AND STATUS REG. 1
 4757  023044  013737  004244  004170          MOV     DRVCOD,E.CS2    ;GENERATE EXPECTED COMMAND AND STATUS REG. 2
 4758  023052  052737  000100  004170          BIS     #IR,E.CS2
 4759  023060  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
 4760  023064  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
```

```
 4761  023070  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
 4762  023076  001401                          BEQ     4$              ;YES, CHECK CS2
 4763  023100  104074                          ERROR   74              ;CS1 INCORRECT
 4764  023102  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
 4765  023110  001401                          BEQ     5$              ;YES, CHECK ERROR REGISTER
 4766  023112  104075                          ERROR   75              ;CS2 INCORRECT
 4767  023114  023737  004174  004134  5$:     CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
 4768  023122  001401                          BEQ     6$              ;YES, CHECK DRIVE STATUS REG CORRECT
 4769  023124  104076                          ERROR   76              ;ERROR REG INCORRECT
 4770  023126  023737  004172  004132  6$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
 4771  023134  001401                          BEQ     7$              ;YES, CHECK IF LOOP ON ERROR
 4772  023136  104130                          ERROR   130             ;DRIVE STATUS REGISTER INCORRECT
 4773  023140  104415                  7$:     SCOP1                   ;CHECK IF LOOP ON ERROR
 4774  023142  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE NUMBER
 4775  023146  022737  000017  004244          CMP     #17,DRVCOD      ;CHECK IF ALL DRIVE NUMBERS TESTED
 4776  023154  103274                          BHIS    1$              ;NO, DO IT FOR NEXT DRIVE
 4777
 4778                                  ;;*****************************************************************
 4779                                  ;*TEST 45       INTERRUPT AT COMMAND COMPLETION
 4780                                  ;*
 4781                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 4782                                  ;*      LOWER PROCESSOR PRIORITY TO ZERO. ISSUE A RELEASE
 4783                                  ;*      COMMAND WITH INTERRUPT ENABLE SET. MAKE SURE
 4784                                  ;*      INTERRUPT OCCURS. LOWER PRIORITY AFTER INTERRUPT
 4785                                  ;*      AND MAKE SURE INTERRUPT HAS CLEARED.
 4786                                  ;*
 4787                                  ;*      LOWER PROCESSOR PRIORITY TO ZERO.  REISSUE RELEASE
 4788                                  ;*      WITH INTERRUPT ENABLE RESET.  MAKE SURE NO INTERRUPT
 4789                                  ;*      OCCURS.  SET INTERRUPT ENABLE AND MAKE SURE NO
 4790                                  ;*      INTERRUPT OCCURS.
 4791                                  ;*
 4792                                  ;;*****************************************************************
 4793  023156  000004                  TST45:  SCOPE
 4794  023160  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4795  023166  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4796  023172  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 4797  023200  012762  000010  000010          MOV     #10,RKCS2(R2)   ;SET DESELECT BIT
 4798  023206  013701  004234                  MOV     RKVEC,R1        ;LOAD INTERRUPT VECTOR
 4799  023212  012721  023274                  MOV     #5$,(R1)+
 4800  023216  012711  000340                  MOV     #PR7,(R1)
 4801  023222  005046                          CLR     -(SP)           ;LOAD STACK TO ALLOW ALL INTERRUPTS
 4802  023224  012746  023232                  MOV     #64$,-(SP)      ;LOAD NEXT ADDRESS
 4803  023230  000002                          RTI                     ;CLEAR PSW
 4804
 4805  023232                          64$:
 4806  023232  012762  000101  000000          MOV     #SELDRV!IE,RKCS1(R2)    ;ISSUE SELECT DRIVE
 4807  023240  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
 4808  023244  105762  000000          2$:     TSTB    RKCS1(R2)
 4809  023250  100402                          BMI     3$
 4810  023252  005300                          DEC     R0
 4811  023254  001373                          BNE     2$
 4812  023256  012746  000340          3$:     MOV     #PR7,-(SP)      ;LOCK OUT INTERRUPTS
 4813  023262  012746  023270                  MOV     #4$,-(SP)
 4814  023266  000002                          RTI
 4815
 4816  023270  104100                  4$:     ERROR   100             ;INTERRUPT DID NOT OCCUR
```

```
4817  023272  000522                          BR      25$
4818
4819  023274  062706  000004          5$:     ADD     #4,SP           ;ADJUST STACK
4820  023300  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4821  023306  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
4822  023314  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
4823  023322  012737  000300  004160          MOV     #RDY!IE,E.CS1   ;LOAD EXPECTED CS1
4824  023330  012737  000110  004170          MOV     #IR!10,E.CS2    ;LOAD EXPECTED CS2
4825  023336  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR
4826  023342  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
4827  023350  001401                          BEQ     6$              ;YES, CHECK CS2
4828  023352  104101                          ERROR   101             ;CS1 INCORRECT
4829  023354  023737  004170  004130  6$:     CMP     E.CS2,T.CS2     ;CHECK IF CS2 INCORRECT
4830  023362  001401                          BEQ     7$              ;YES, CHECK IF ERROR REG CORRECT
4831  023364  104102                          ERROR   102             ;CS2 INCORRECT
4832  023366  023737  004174  004134  7$:     CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
4833  023374  001401                          BEQ     8$              ;YES, CHECK IF INTERRUPT CLEARED
4834  023376  104103                          ERROR   103             ;ERROR REG. INCORRECT
4835  023400  012777  023512  160626  8$:     MOV     #10$,@RKVEC     ;LOAD VECTOR FOR UNEXPECTED INTERRUPT
4836  023406  005046                          CLR     -(SP)           ;LOAD STACK TO ALLOW ALL INTERRUPTS
4837  023410  012746  023416                  MOV     #65$,-(SP)      ;LOAD NEXT ADDRESS
4838  023414  000002                          RTI                     ;CLEAR PSW
4839
4840  023416                          65$:
4841  023416  000240                          NOP                     ;WAIT FOR INTERRUPT
4842  023420  012777  023522  160606          MOV     #15$,@RKVEC     ;LOAD VECTOR ADDRESS FOR UNEXPECTED INTERRUPT
4843  023426  012762  000010  000010          MOV     #10,RKCS2(R2)   ;ISSUE DESELECT
4844  023434  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)
4845  023442  013700  004262                  MOV     WAITIM,R0
4846  023446  105762  000000          9$:     TSTB    RKCS1(R2)
4847  023452  100402                          BMI     11$
4848  023454  005300                          DEC     R0
4849  023456  001373                          BNE     9$
4850  023460  000240                  11$:    NOP                     ;WAIT FOR INTERRUPT
4851  023462  012777  023532  160544          MOV     #20$,@RKVEC     ;LOAD VECTOR ADDRESS FOR UNEXPECTED INTERRUPT
4852  023470  012762  000100  000000          MOV     #IE,RKCS1(R2)   ;SET INTERRUPT ENABLE
4853  023476  000240                          NOP                     ;ALLOW INTERRUPT TO OCCUR
4854  023500  012746  000340                  MOV     #PR7,-(SP)      ;LOCK OUT INTERRUPT
4855  023504  012746  023540                  MOV     #25$,-(SP)      ;RESTORE TRAP CATCHER
4856  023510  000002                          RTI
4857
4858  023512  062706  000004          10$:    ADD     #4,SP           ;ADJUST STACK
4859  023516  104104                          ERROR   104             ;UNEXPECTED INTERRUPT
4860  023520  000407                          BR      25$             ;RESTORE TRAP CATCHER
4861
4862  023522  062706  000004          15$:    ADD     #4,SP           ;ADJUST STACK
4863  023526  104254                          ERROR   254             ;UNEXPECTED INTERRUPT ON DESELECT
4864  023530  000403                          BR      25$             ;RESTORE TRAP CATCHER
4865
4866  023532  062706  000004          20$:    ADD     #4,SP           ;ADJUST STACK
4867  023536  104255                          ERROR   255             ;UNEXPECTED INTERRUPT WHEN SETTING
4868                                                                  ;  INTERRUPT ENABLE
4869  023540  012762  000040  000010  25$:    MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
4870  023546  013701  004234                  MOV     RKVEC,R1        ;RESTORE TRAP CATCHER
4871  023552  010111                          MOV     R1,(R1)
4872  023554  062721  000002                  ADD     #2,(R1)+
```

```
4873  023560  005011                          CLR     (R1)
4874
4875                                  ;;*****************************************************************
4876                                  ;*TEST 46       GO CLEAR OF SILO
4877                                  ;*
4878                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
4879                                  ;*      WRITE ONE WORD INTO THE SILO.  ISSUE A RELEASE COMMAND
4880                                  ;*      WITH INTERRUPT ENABLE RESET.  WAIT FOR READY.
4881                                  ;*      READ THE DATA BUFFER TO MAKE SURE THE SILO HAS BEEN
4882                                  ;*      CLEARED. (DATA LATE SET AFTER READ OF DATA BUFFER)
4883                                  ;*
4884                                  ;;*****************************************************************
4885  023562  000004                  TST46:  SCOPE
4886  023564  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
4887  023572  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
4888  023576  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
4889  023604  005062  000024                  CLR     RKDB(R2)        ;LOAD 1 WORD IN SILO
4890  023610  012762  000010  000010          MOV     #10,RKCS2(R2)   ;LOAD DESELECT DRIVE 0
4891  023616  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE DESELECT
4892  023624  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
4893  023630  105762  000000          2$:     TSTB    RKCS1(R2)
4894  023634  100402                          BMI     3$
4895  023636  005300                          DEC     R0
4896  023640  001373                          BNE     2$
4897  023642  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4898  023650  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
4899  023656  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
4900  023664  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REGISTER
4901  023672  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
4902  023700  012737  000110  004170          MOV     #IR!10,E.CS2    ;LOAD EXPECTED CS2
4903  023706  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
4904  023712  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REGISTER
4905  023716  023737  004170  004130          CMP     E.CS2,T.CS2     ;CHECK IF CS1 CORRECT
4906  023724  001401                          BEQ     10$             ;YES, READ WORD FROM SILO
4907  023726  104105                          ERROR   105             ;CS2 INCORRECT
4908  023730  005762  000024          10$:    TST     RKDB(R2)        ;READ SILO TO MAKE IT IS CLEAR
4909  023734  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4910  023742  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
4911  023750  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
4912  023756  012737  100200  004160          MOV     #CERR!RDY,E.CS1 ;LOAD EXPECTED CS1
4913  023764  012737  100110  004170          MOV     #DLT!IR!10,E.CS2 ;LOAD EXPECTED CS2
4914  023772  023737  004170  004130          CMP     E.CS2,T.CS2     ;CHECK IF DATA LATE SET
4915  024000  001401                          BEQ     11$             ;YES, CLEAR CONTROLLER REG. 1
4916  024002  104106                          ERROR   106             ;DATA LATE NOT SET
4917  024004  012762  100000  000000  11$:    MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER
4918
4919                                  ;;*****************************************************************
4920                                  ;*TEST 47       SEEK COMMAND IN DIAGNOSTIC MODE
4921                                  ;*
4922                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
4923                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK WITH CDT SET
4924                                  ;*      24 SECTOR FORMAT TO CYLINDER 1714, HEAD 7, DRIVE 0.
4925                                  ;*      MAKE SURE NO STATUS BITS ARE SET AND NO ERROR
4926                                  ;*      BITS ARE SET.
4927                                  ;*
4928                                  ;;*****************************************************************
```

```
                                        TST47:  SCOPE
024012  000004
024014  012737  000144  001200                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
024022  013702  001270                        MOV     $BASE,R2        ;LOAD RK611 BASE
024026  012762  000040  000010                MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
024034  012762  000040  000026                MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
024042  012762  001714  000020                MOV     #1714,RKDCYL(R2)        ;LOAD CYLINDER ADDRESS
024050  012762  003400  000006                MOV     #3400,RKDA(R2)  ;LOAD HEAD 7
024056  012762  012017  000000                MOV     #SEEK!CFMT!CDT,RKCS1(R2)        ;ISSUE SEEK CDT SET,24 SECTOR
024064  012700  000120                        MOV     #20.*4,R0       ;LOAD COUNT TO DESELECT DECISION
024070  012762  000440  000026  2$:           MOV     #DMD!MCLK,RKMR1(R2)
024076  012762  000040  000026                MOV     #DMD,RKMR1(R2)
024104  005300                                DEC     R0
024106  001370                                BNE     2$
024110  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
024116  012737  012017  004160                MOV     #SEEK!CFMT!CDT,E.CS1    ;LOAD EXPECTED COMMAND AND STATUS REG 1
024124  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK IF READY RESET
024132  001402                                BEQ     3$              ;YES, CONTINUE COMMAND
024134  104107                                ERROR   107
024136  000543                                BR      TST50           ;;GO ON TO NEXT TEST

024140  012737  071020  004210  3$:           MOV     #S.SEEK!S.FMT!70000,E.MR3       ;LOAD EXPECTED MAINT REG. 3
024146  012737  136300  004206                MOV     #136300,E.MR2   ;LOAD EXPECTED MAINT REG. 2
024154  012701  000003                        MOV     #3,R1           ;ISSUE 3 CONTROL CLOCKS
024160  012700  000004          4$:           MOV     #4,R0
024164  012762  000440  000026  5$:           MOV     #DMD!MCLK,RKMR1(R2)
024172  012762  000040  000026                MOV     #DMD,RKMR1(R2)
024200  005300                                DEC     R0
024202  001370                                BNE     5$
024204  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
024212  016237  000034  004146                MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG 2
024220  016237  000036  004150                MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG 3
024226  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG. 1 CORRECT
024234  001402                                BEQ     6$              ;YES, CHECK MAINTENANCE REG. 2
024236  104110                                ERROR   110             ;CS1 INCORRECT
024240  000502                                BR      TST50           ;;GO TO NEXT TEST

024242  023737  004206  004146  6$:           CMP     E.MR2,T.MR2     ;CHECK MAINT REG 2 CORRECT
024250  001402                                BEQ     7$              ;YES, CHECK MAINTENANCE REG 3
024252  104111                                ERROR   111             ;MAINT REG 2 INCORRECT
024254  000474                                BR      TST50           ;;GO TO NEXT TEST

024256  023737  004210  004150  7$:           CMP     E.MR3,T.MR3     ;CHECK IF MAINT REG 3 CORRECT
024264  001402                                BEQ     8$              ;YES, CHECK COMMAND COMPLETE
024266  104112                                ERROR   112             ;MR3 INCORRECT
024270  000466                                BR      TST50           ;;GO TO NEXT TEST

024272  005301                          8$:   DEC     R1              ;CHECK IF COMMAND FINISHED
024274  001331                                BNE     4$              ;NO, ISSUE ANOTHER CONTROL CLOCK

024276  012700  000004                        MOV     #4,R0           ;ISSUE LAST CONTROL CLOCK FOR READY
024302  012762  000440  000026  9$:           MOV     #DMD!MCLK,RKMR1(R2)
024310  012762  000040  000026                MOV     #DMD,RKMR1(R2)
024316  005300                                DEC     R0
024320  001370                                BNE     9$
024322  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
024330  016237  000010  004130                MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
```

```
 4985  024336  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
 4986  024344  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REGISTER
 4987  024352  012737  012216  004160          MOV     #RDY!CFMT!CDT!<SEEK&^C<GO>>,E.CS1       ;LOAD EXPECTED CS1
 4988  024360  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4989  024366  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REGISTER
 4990  024372  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REGISTER
 4991  024376  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF COMMAND AND STATUS REG. 2
 4992  024404  001401                          BEQ     10$             ;YES, CHECK CS2
 4993  024406  104113                          ERROR   113             ;CS1 INCORRECT
 4994  024410  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
 4995  024416  001401                          BEQ     11$             ;YES, CHECK ERROR REG
 4996  024420  104114                          ERROR   114             ;CS2 INCORRECT
 4997  024422  023737  004174  004134  11$:    CMP     E.ER,T.ER       ;CHECK ERROR REGISTER
 4998  024430  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
 4999  024432  104115                          ERROR   115             ;ERROR REG. INCORRECT
 5000  024434  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REGISTER CORRECT
 5001  024442  001401                          BEQ     TST50           ;;YES, GO ON TO NEXT TEST
 5002  024444  104131                          ERROR   131             ;DRIVE STATUS REGISTER INCORRECT
 5003
 5004                                  .SBTTL  **ERROR AND STATUS BIT FORCING WITH DRIVE MESSAGES
 5005
 5006                                  ;;*********************************************************************
 5007                                  ;*TEST 50       DRIVE STATUS FROM SHIFT REGISTER
 5008                                  ;*
 5009                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
 5010                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
 5011                                  ;*      TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 757, HEAD 1,
 5012                                  ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS
 5013                                  ;*      6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE SPEED LOSS,
 5014                                  ;*      DRIVE AVAILABLE, VOLUME VALID, OFFSET, DRIVE READY,
 5015                                  ;*      AND WRITE LOCK ARE SET.
 5016                                  ;*
 5017                                  ;;*********************************************************************
 5018  024446  000004                  TST50:  SCOPE
 5019  024450  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 5020  024456  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 5021  024462  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 5022  024470  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
 5023  024476  012762  000757  000020          MOV     #757,RKDCYL(R2) ;LOAD CYLINDER ADDRESS
 5024  024504  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD HEAD ADD =1
 5025  024512  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
 5026  024520  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
 5027  024524  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 5028  024532  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 5029  024540  005300                          DEC     R0
 5030  024542  001370                          BNE     1$
 5031  024544  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
 5032  024550  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR FOR READY
 5033  024554  105762  000000          2$:     TSTB    RKCS1(R2)
 5034  024560  100412                          BMI     3$
 5035  024562  005300                          DEC     R0
 5036  024564  001373                          BNE     2$
 5037  024566  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 5038  024574  012737  000216  004160          MOV     #RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
 5039  024602  104132                          ERROR   132             ;READY NOT SET
 5040  024604  000460                          BR      10$             ;CLEAR RK06 SUBSYSTEM
```

```
5041
5042  024606  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5043  024614  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5044  024622  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REF
5045  024630  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
5046  024636  012737  000216  004160          MOV     #RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECT CS1
5047  024644  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5048  024652  012737  104325  004172          MOV     #DRA!OFST!SPDLSS!VV!DRDY!WRL!SVAL,E.DS ;LOAD EXPECTED DRIVE STATUS
5049  024660  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REGESTER
5050  024664  032737  004325  004132          BIT     #DRA!OFST!SPDLSS!VV!DRDY!WRL,T.DS ;CHECK LOAD STATUS SET
5051  024672  001001                          BNE     4$              ;YES, CHECK REGISTERS
5052  024674  104133                          ERROR   133             ;NO BIT IN DRIVE STATUS SET
5053  024676  023737  004160  004120  4$:     CMP     E.CS1,T.CS1     ;CHECK CS1 CORRECT
5054  024704  001401                          BEQ     5$              ;YES, CONTINUE
5055  024706  104134                          ERROR   134             ;CS1 INCORRECT
5056  024710  023737  004170  004130  5$:     CMP     E.CS2,T.CS2     ;CHECK CS2 CORRECT
```

```
5057  024716  001401                          BEQ     6$              ;YES, CONTINUE
5058  024720  104135                          ERROR   135             ;CS2, INCORRECT
5059  024722  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
5060  024730  001401                          BEQ     7$              ;YES CONTINUE
5061  024732  104136                          ERROR   136             ;ERROR REG INCORRECT
5062  024734  023737  004172  004132  7$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS CORRECT
5063  024742  001401                          BEQ     10$             ;CLEAR RK611
5064  024744  104137                          ERROR   137             ;DRIVE STATUS INCORRECT
5065  024746  013737  004120  004220  10$:    MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5066  024754  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5067  024762  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5068  024770  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5069                                          ;  AND ERROR REG
5070  024776  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5071  025004  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5072  025012  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5073  025020  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5074  025026  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5075  025034  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5076  025042  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5077  025050  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5078  025054  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5079  025060  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5080  025066  001401                          BEQ     11$             ;YES, CHECK CS2
5081  025070  104224                          ERROR   224             ;CS1 INCORRECT
5082  025072  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5083  025100  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5084  025102  104225                          ERROR   225             ;CS2 INCORRECT
5085  025104  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5086  025112  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5087  025114  104226                          ERROR   226             ;ERROR REG INCORRECT
5088  025116  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5089  025124  001401                          BEQ     TST51           ;;YES, GO ON TO NEXT TEST
5090  025126  104227                          ERROR   227             ;ERROR REG INCORRECT
5091
5092                                  ;;*****************************************************************
5093                                  ;*TEST 51       DRIVE AVAILABLE SETTING
5094                                  ;*
5095                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
5096                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO A RK06,
5097                                  ;*      26 SECTOR FORMAT TO CYLINDER 2, HEAD 0, DRIVE 0.
5098                                  ;*      CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
5099                                  ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE
5100                                  ;*      AVAILIABLE SETS.
5101                                  ;*
5102                                  ;*****************************************************************
5103  025130  000004                  TST51:  SCOPE
5104  025132  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
5105  025140  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
5106  025144  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
5107  025152  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
5108  025160  012762  000002  000020          MOV     #2,RKDCYL(R2)   ;LOAD CYLINDER AND
5109  025166  012762  000000  000006          MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
5110  025174  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
5111  025202  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
5112  025206  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
```

```
5113  025214  012762  000040  000026          MOV     #DMD,RKMR1(R2)
5114  025222  005300                          DEC     R0
5115  025224  001370                          BNE     1$
5116  025226  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
5117  025232  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
5118  025236  105762  000000          2$:     TSTB    RKCS1(R2)
5119  025242  100402                          BMI     3$
5120  025244  005300                          DEC     R0
5121  025246  001373                          BNE     2$
5122  025250  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5123  025256  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5124  025264  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5125  025272  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5126  025300  012737  000216  004160          MOV     #RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
5127  025306  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5128  025314  012737  100001  004172          MOV     #SVAL!DRA,E.DS ;LOAD EXPECTED DRIVE STATUS REG
5129  025322  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
5130  025330  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5131  025336  001401                          BEQ     4$              ;YES, CONTINUE
5132  025340  104140                          ERROR   140
5133  025342  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
5134  025350  001401                          BEQ     5$              ;YES, CONTINUE
5135  025352  104141                          ERROR   141
5136  025354  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5137  025362  001401                          BEQ     6$              ;YES, CONTINUE
5138  025364  104142                          ERROR   142
5139  025366  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
5140  025374  001401                          BEQ     7$              ;YES, CLEAR RK611
5141  025376  104143                          ERROR   143
5142  025400  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5143  025406  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5144  025414  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5145  025422  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5146                                                                  ;  AND ERROR REG
5147  025430  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5148  025436  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5149  025444  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5150  025452  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5151  025460  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5152  025466  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5153  025474  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5154  025502  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5155  025506  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5156  025512  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5157  025520  001401                          BEQ     11$             ;YES, CHECK CS2
5158  025522  104224                          ERROR   224             ;CS1 INCORRECT
5159  025524  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5160  025532  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5161  025534  104225                          ERROR   225             ;CS2 INCORRECT
5162  025536  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5163  025544  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5164  025546  104226                          ERROR   226             ;ERROR REG INCORRECT
5165  025550  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5166  025556  001401                          BEQ     TST52           ;;YES, GO ON TO NEXT TEST
5167  025560  104227                          ERROR   227             ;ERROR REG INCORRECT
5168
```

```
                                ;;*****************************************************************
                                ;*TEST 52       DRIVE BUS PARITY ERROR
                                ;*
                                ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                                ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
                                ;*      TO A RK06, 26 SECTOR FORMAT TO CYLINDER 3, HEAD 0,
                                ;*      DRIVE 0. CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
                                ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE BUS
                                ;*      PARITY, DRIVE AVAILIABLE, AND CONTROLLER ERROR ARE SET.
                                ;*
                                ;;*****************************************************************
025562  000004                  TST52:  SCOPE
025564  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
025572  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
025576  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
025604  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
025612  012762  000003  000020          MOV     #3,RKDCYL(R2)   ;LOAD CYLINDER AND
025620  012762  000000  000006          MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
025626  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
025634  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
025640  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
025646  012762  000040  000026          MOV     #DMD,RKMR1(R2)
025654  005300                          DEC     R0
025656  001370                          BNE     1$
025660  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
025664  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
025670  105762  000000          2$:     TSTB    RKCS1(R2)
025674  100402                          BMI     3$
025676  005300                          DEC     R0
025700  001373                          BNE     2$
025702  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
025710  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
025716  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
025724  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
025732  012737  120216  004160          MOV     #CERR!SPAR!RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
025740  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
025746  012737  100001  004172          MOV     #SVAL!DRA,E.DS ;LOAD EXPECTED DRIVE STATUS REG
025754  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
025762  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
025770  001401                          BEQ     4$              ;YES, CONTINUE
025772  104144                          ERROR   144
025774  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
026002  001401                          BEQ     5$              ;YES, CONTINUE
026004  104145                          ERROR   145
026006  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
026014  001401                          BEQ     6$              ;YES, CONTINUE
026016  104146                          ERROR   146
026020  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
026026  001401                          BEQ     7$              ;YES, CLEAR RK611
026030  104147                          ERROR   147
026032  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
026040  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
026046  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
026054  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
                                                                ;  AND ERROR REG
026062  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
```

```
5225  026070  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5226  026076  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5227  026104  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5228  026112  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5229  026120  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5230  026126  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5231  026134  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5232  026140  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5233  026144  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5234  026152  001401                          BEQ     11$             ;YES, CHECK CS2
5235  026154  104224                          ERROR   224             ;CS1 INCORRECT
5236  026156  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5237  026164  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5238  026166  104225                          ERROR   225             ;CS2 INCORRECT
5239  026170  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5240  026176  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5241  026200  104226                          ERROR   226             ;ERROR REG INCORRECT
5242  026202  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5243  026210  001401                          BEQ     TST53           ;;YES, GO ON TO NEXT TEST
5244  026212  104227                          ERROR   227             ;ERROR REG INCORRECT
5245
5246                                  ;;*****************************************************************
5247                                  ;*TEST 53       DRIVE AVAILABLE RESET ERROR
5248                                  ;*
5249                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
5250                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SELECT
5251                                  ;*      TO A RK06, 26 SECTOR FORMAT, AND DRIVE 0.
5252                                  ;*      CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
5253                                  ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE
5254                                  ;*      IS RESET AND CONTROLLER ERROR IS SET.
5255                                  ;*
5256                                  ;;*****************************************************************
5257  026214  000004                  TST53:  SCOPE
5258  026216  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
5259  026224  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
5260  026230  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
5261  026236  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
5262  026244  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE SELDRV
5263  026252  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
5264  026256  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
5265  026264  012762  000040  000026          MOV     #DMD,RKMR1(R2)
5266  026272  005300                          DEC     R0
5267  026274  001370                          BNE     1$
5268  026276  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
5269  026302  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
5270  026306  105762  000000          2$:     TSTB    RKCS1(R2)
5271  026312  100402                          BMI     3$
5272  026314  005300                          DEC     R0
5273  026316  001373                          BNE     2$
5274  026320  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5275  026326  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5276  026334  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5277  026342  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5278  026350  012737  100200  004160          MOV     #CERR!RDY!SELDRV&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
5279  026356  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5280  026364  012737  100000  004172          MOV     #SVAL!0,E.DS ;LOAD EXPECTED DRIVE STATUS REG
```

```
5281  026372  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
5282  026400  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5283  026406  001401                          BEQ     4$              ;YES, CONTINUE
5284  026410  104150                          ERROR   150
5285  026412  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
5286  026420  001401                          BEQ     5$              ;YES, CONTINUE
5287  026422  104151                          ERROR   151
5288  026424  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5289  026432  001401                          BEQ     6$              ;YES, CONTINUE
5290  026434  104152                          ERROR   152
5291  026436  023737  004174  004134  6$:     CMP     E.' ,T.ER       ;CHECK ERROR REGISTER CORRECT
5292  026444  001401                          BEQ     7$              ;YES, CLEAR RK611
5293  026446  104153                          ERROR   153
5294  026450  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5295  026456  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5296  026464  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5297  026472  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5298                                                                  ;  AND ERROR REG
5299  026500  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5300  026506  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5301  026514  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5302  026522  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5303  026530  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5304  026536  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5305  026544  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5306  026552  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5307  026556  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5308  026562  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5309  026570  001401                          BEQ     11$             ;YES, CHECK CS2
5310  026572  104224                          ERROR   224             ;CS1 INCORRECT
5311  026574  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5312  026602  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5313  026604  104225                          ERROR   225             ;CS2 INCORRECT
5314  026606  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5315  026614  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5316  026616  104226                          ERROR   226             ;ERROR REG INCORRECT
5317  026620  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5318  026626  001401                          BEQ     TST54           ;;YES, GO ON TO NEXT TEST
5319  026630  104227                          ERROR   227             ;ERROR REG INCORRECT
5320
5321                                  ;;*****************************************************************
5322                                  ;*TEST 54        CDT SET DRIVE TYPE
5323                                  ;*
5324                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
5325                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
5326                                  ;*      WITH CDT SET, 26 SECTOR FORMAT, TO CYLINDER 23,
5327                                  ;*      HEAD 0, DRIVE 0. CLOCK IN DIAGNOSTIC MODE
5328                                  ;*      UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE
5329                                  ;*      AND MAKE SURE ONLY DRIVE AVAILIABLE SETS.
5330                                  ;*
5331                                  ;;*****************************************************************
5332  026632  000004                  TST54:  SCOPE
5333  026634  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
5334  026642  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
5335  026646  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
5336  026654  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
```

```
5337  026662  012762  000023  000020          MOV     #23,RKDCYL(R2)  ;LOAD CYLINDER AND
5338  026670  012762  000000  000006          MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
5339  026676  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)     ;ISSUE CDT!SEEK
5340  026704  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
5341  026710  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
5342  026716  012762  000040  000026          MOV     #DMD,RKMR1(R2)
5343  026724  005300                          DEC     R0
5344  026726  001370                          BNE     1$
5345  026730  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
5346  026734  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
5347  026740  105762  000000          2$:     TSTB    RKCS1(R2)
5348  026744  100402                          BMI     3$
5349  026746  005300                          DEC     R0
5350  026750  001373                          BNE     2$
5351  026752  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5352  026760  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5353  026766  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5354  026774  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5355  027002  012737  002216  004160          MOV     #CDT!RDY!CDT!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
5356  027010  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5357  027016  012737  100401  004172          MOV     #SVAL!DRA!DDT,E.DS ;LOAD EXPECTED DRIVE STATUS REG
5358  027024  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
5359  027032  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5360  027040  001401                          BEQ     4$              ;YES, CONTINUE
5361  027042  104154                          ERROR   154
5362  027044  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
5363  027052  001401                          BEQ     5$              ;YES, CONTINUE
5364  027054  104155                          ERROR   155
5365  027056  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5366  027064  001401                          BEQ     6$              ;YES, CONTINUE
5367  027066  104156                          ERROR   156
5368  027070  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
5369  027076  001401                          BEQ     7$              ;YES, CLEAR RK611
5370  027100  104157                          ERROR   157
5371  027102  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5372  027110  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5373  027116  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5374  027124  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5375                                                                  ;  AND ERROR REG
5376  027132  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5377  027140  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5378  027146  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5379  027154  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5380  027162  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5381  027170  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5382  027176  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5383  027204  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5384  027210  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5385  027214  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5386  027222  001401                          BEQ     11$             ;YES, CHECK CS2
5387  027224  104224                          ERROR   224             ;CS1 INCORRECT
5388  027226  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5389  027234  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5390  027236  104225                          ERROR   225             ;CS2 INCORRECT
5391  027240  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5392  027246  001401                          BEQ     13$             ;YES, CHECK ERROR REG
```

```
                                        ERROR   226             ;ERROR REG INCORRECT
004174  004134  13$:                    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
                                        BEQ     TST55           ;;YES, GO ON TO NEXT TEST
                                        ERROR   227             ;ERROR REG INCORRECT

                                ;;*******************************************************************
                                ;*TEST 55       CDT SET AND DRIVE TYPE ERROR
                                ;*
                                ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                                ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
                                ;*      WITH CDT SET, 26 SECTOR FORMAT, TO CYLINDER 2,
                                ;*      HEAD 0, DRIVE 0. CLOCK IN DIAGNOSTIC MODE
                                ;*      UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE
                                ;*      AND MAKE SURE DRIVE AVAILIABLE, DRIVE TYPE ERROR,
                                ;*      AND CONTROLLER ERROR SET.
                                ;*
                                ;*******************************************************************
000004                          TST55:  SCOPE
000144  001200                  MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
001270                          MOV     $BASE,R2        ;LOAD RK611 BASE
000040  000010                  MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
000040  000026                  MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
000002  000020                  MOV     #2,RKDCYL(R2)   ;LOAD CYLINDER AND
000000  000006                  MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
002017  000000                  MOV     #CDT!SEEK,RKCS1(R2)     ;ISSUE CDT!SEEK
000132                          MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
000440  000026          1$:     MOV     #DMD!MCLK,RKMR1(R2)
000040  000026                  MOV     #DMD,RKMR1(R2)
                                DEC     R0
                                BNE     1$
000026                          CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
004262                          MOV     WAITIM,R0       ;WAIT FOR READY
000000          2$:             TSTB    RKCS1(R2)
                                BMI     3$
                                DEC     R0
                                BNE     2$
004120  3$:                     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
004130                          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
004132                          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
004134                          MOV     RKER(R2),T.ER   ;STORE ERROR REG
102216  004160                  MOV     #CDT!CERR!RDY!CDT!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
000100  004170                  MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
100001  004172                  MOV     #SVAL!DRA,E.DS ;LOAD EXPECTED DRIVE STATUS REG
000040  004174                  MOV     #DTYE,E.ER      ;LOAD EXPECTED ERROR REG
004160  004120                  CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
                                BEQ     4$              ;YES, CONTINUE
                                ERROR   160
004170  004130  4$:             CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
                                BEQ     5$              ;YES, CONTINUE
                                ERROR   161
004172  004132  5$:             CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
                                BEQ     6$              ;YES, CONTINUE
                                ERROR   162
004174  004134  6$:             CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
                                BEQ     7$              ;YES, CLEAR RK611
                                ERROR   163
```

```
 5449  027534  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
 5450  027542  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
 5451  027550  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
 5452  027556  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
 5453                                                                  ;  AND ERROR REG
 5454  027564  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 5455  027572  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 5456  027600  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 5457  027606  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 5458  027614  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 5459  027622  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 5460  027630  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 5461  027636  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
 5462  027642  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
 5463  027646  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
 5464  027654  001401                          BEQ     11$             ;YES, CHECK CS2
 5465  027656  104224                          ERROR   224             ;CS1 INCORRECT
 5466  027660  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
 5467  027666  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
 5468  027670  104225                          ERROR   225             ;CS2 INCORRECT
 5469  027672  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
 5470  027700  001401                          BEQ     13$             ;YES, CHECK ERROR REG
 5471  027702  104226                          ERROR   226             ;ERROR REG INCORRECT
 5472  027704  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
 5473  027712  001401                          BEQ     TST56           ;;YES, GO ON TO NEXT TEST
 5474  027714  104227                          ERROR   227             ;ERROR REG INCORRECT
 5475
 5476                                  ;;*****************************************************************
 5477                                  ;*TEST 56       RK06 AND DRIVE TYPE ERROR
 5478                                  ;*
 5479                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR
 5480                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
 5481                                  ;*      TO A RK06, 26 SECTOR FORMAT, TO CYLINDER 23,
 5482                                  ;*      HEAD 0, DRIVE 0. CLOCK IN DIAGNOSTIC MODE
 5483                                  ;*      UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC
 5484                                  ;*      MODE AND MAKE SURE DRIVE AVAILIABLE, DRIVE TYPE ERROR,
 5485                                  ;*      AND CONTROLLER ERROR SETS.
 5486                                  ;*
 5487                                  ;;*****************************************************************
 5488  027716  000004                  TST56:  SCOPE
 5489  027720  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 5490  027726  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 5491  027732  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 5492  027740  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
 5493  027746  012762  000023  000020          MOV     #23,RKDCYL(R2)  ;LOAD CYLINDER AND
 5494  027754  012762  000000  000006          MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
 5495  027762  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
 5496  027770  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
 5497  027774  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 5498  030002  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 5499  030010  005300                          DEC     R0
 5500  030012  001370                          BNE     1$
 5501  030014  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
 5502  030020  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
 5503  030024  105762  000000          2$:     TSTB    RKCS1(R2)
 5504  030030  100402                          BMI     3$
```

```
5505  030032  005300                          DEC     R0
5506  030034  001373                          BNE     2$
5507  030036  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5508  030044  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5509  030052  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5510  030060  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5511  030066  012737  100216  004160          MOV     #CERR!RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
5512  030074  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5513  030102  012737  100401  004172          MOV     #SVAL!DRA!DDT,E.DS ;LOAD EXPECTED DRIVE STATUS REG
5514  030110  012737  000040  004174          MOV     #DTYE,E.ER      ;LOAD EXPECTED ERROR REG
5515  030116  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5516  030124  001401                          BEQ     4$              ;YES, CONTINUE
5517  030126  104164                          ERROR   164
5518  030130  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
5519  030136  001401                          BEQ     5$              ;YES, CONTINUE
5520  030140  104165                          ERROR   165
5521  030142  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5522  030150  001401                          BEQ     6$              ;YES, CONTINUE
5523  030152  104166                          ERROR   166
5524  030154  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
5525  030162  001401                          BEQ     7$              ;YES, CLEAR RK611
5526  030164  104167                          ERROR   167
5527  030166  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5528  030174  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5529  030202  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5530  030210  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5531                                                                  ;  AND ERROR REG
5532  030216  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5533  030224  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5534  030232  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5535  030240  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5536  030246  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5537  030254  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5538  030262  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5539  030270  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5540  030274  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5541  030300  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5542  030306  001401                          BEQ     11$             ;YES, CHECK CS2
5543  030310  104224                          ERROR   224             ;CS1 INCORRECT
5544  030312  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5545  030320  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5546  030322  104225                          ERROR   225             ;CS2 INCORRECT
5547  030324  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5548  030332  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5549  030334  104226                          ERROR   226             ;ERROR REG INCORRECT
5550  030336  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5551  030344  001401                          BEQ     TST57           ;;YES, GO ON TO NEXT TEST
5552  030346  104227                          ERROR   227             ;ERROR REG INCORRECT
5553
5554                                  ;;*******************************************************************
5555                                  ;*TEST 57        SPEED LOSS FROM SHIFT REG.
5556                                  ;*
5557                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
5558                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO A RK06,
5559                                  ;*      26 SECTOR FORMAT, TO CYLINDER 3, HEAD 1, DRIVE 0.
5560                                  ;*      CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6. TURN
```

```
                                        ;*      OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE AND
                                        ;*      SPEED LOSS ARE SET.
                                        ;*
                                        ;;*****************************************************************
030350  000004                  TST57:  SCOPE
030352  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
030360  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
030364  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
030372  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
030400  012762  000003  000020          MOV     #3,RKDCYL(R2)   ;LOAD CYLINDER AND
030406  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
030414  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
030422  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
030426  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
030434  012762  000040  000026          MOV     #DMD,RKMR1(R2)
030442  005300                          DEC     R0
030444  001370                          BNE     1$
030446  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
030452  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
030456  105762  000000          2$:     TSTB    RKCS1(R2)
030462  100402                          BMI     3$
030464  005300                          DEC     R0
030466  001373                          BNE     2$
030470  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
030476  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
030504  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
030512  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
030520  012737  000216  004160          MOV     #RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
030526  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
030534  012737  100021  004172          MOV     #SVAL!DRA!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
030542  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
030550  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
030556  001401                          BEQ     4$              ;YES, CONTINUE
030560  104170                          ERROR   170
030562  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
030570  001401                          BEQ     5$              ;YES, CONTINUE
030572  104171                          ERROR   171
030574  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
030602  001401                          BEQ     6$              ;YES, CONTINUE
030604  104172                          ERROR   172
030606  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
030614  001401                          BEQ     7$              ;YES, CLEAR RK611
030616  104173                          ERROR   173
030620  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
030626  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
030634  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
030642  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
                                                                ;  AND ERROR REG
030650  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
030656  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
030664  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
030672  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
030700  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
030706  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
030714  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
030722  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
```

```
5617  030726  005037  004174                  CLR     E.ER                ;LOAD EXPECTED ERROR REG
5618  030732  023737  004160  004120          CMP     E.CS1,T.CS1         ;CHECK COMMAND AND STATUS REG 1 CORRECT
5619  030740  001401                          BEQ     11$                 ;YES, CHECK CS2
5620  030742  104224                          ERROR   224                 ;CS1 INCORRECT
5621  030744  023737  004170  004130  11$:    CMP     E.CS2,T.CS2         ;CHECK COMMAND AND STATUS REG 2 CORRECT
5622  030752  001401                          BEQ     12$                 ;YES, CHECK DRIVE STATUS REG
5623  030754  104225                          ERROR   225                 ;CS2 INCORRECT
5624  030756  023737  004172  004132  12$:    CMP     E.DS,T.DS           ;CHECK IF DRIVE STATUS REG CORRECT
5625  030764  001401                          BEQ     13$                 ;YES, CHECK ERROR REG
5626  030766  104226                          ERROR   226                 ;ERROR REG INCORRECT
5627  030770  023737  004174  004134  13$:    CMP     E.ER,T.ER           ;CHECK IF ERROR REG CORRECT
5628  030776  001401                          BEQ     TST60               ;;YES, GO ON TO NEXT TEST
5629  031000  104227                          ERROR   227                 ;ERROR REG INCORRECT
5630
5631                                  ;;*****************************************************************
5632                                  ;*TEST 60       DRIVE OFF TRACK FROM SHIFT REG.
5633                                  ;*
5634                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
5635                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO A RK06,
5636                                  ;*      26 SECTOR FORMAT, TO CYLINDER 3, HEAD 2, DRIVE 0.
5637                                  ;*      CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
5638                                  ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE
5639                                  ;*      AND DRIVE OFF TRACK ARE SET.
5640                                  ;*
5641                                  ;;*****************************************************************
5642  031002  000004                  TST60:  SCOPE
5643  031004  012737  000144  001200          MOV     #100.,$TIMES        ;;DO 100. ITERATIONS
5644  031012  013702  001270                  MOV     $BASE,R2            ;LOAD RK611 BASE
5645  031016  012762  000040  000010          MOV     #SCLR,RKCS2(R2)     ;CLEAR RK06 SUBSYSTEM
5646  031024  012762  000040  000026          MOV     #DMD,RKMR1(R2)      ;PUT RK611 IN MAINT MODE
5647  031032  012762  000003  000020          MOV     #3,RKDCYL(R2)       ;LOAD CYLINDER AND
5648  031040  012762  001000  000006          MOV     #1000,RKDA(R2)      ;LOAD HEAD ADDRESS
5649  031046  012762  000017  000000          MOV     #SEEK,RKCS1(R2)     ;ISSUE SEEK
5650  031054  012700  000132                  MOV     #22.*4+2,R0         ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
5651  031060  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
5652  031066  012762  000040  000026          MOV     #DMD,RKMR1(R2)
5653  031074  005300                          DEC     R0
5654  031076  001370                          BNE     1$
5655  031100  005062  000026                  CLR     RKMR1(R2)           ;FINISH COMMAND IN NORMAL MODE
5656  031104  013700  004262                  MOV     WAITIM,R0           ;WAIT FOR READY
5657  031110  105762  000000          2$:     TSTB    RKCS1(R2)
5658  031114  100402                          BMI     3$
5659  031116  005300                          DEC     R0
5660  031120  001373                          BNE     2$
5661  031122  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5662  031130  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5663  031136  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5664  031144  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5665  031152  012737  000216  004160          MOV     #RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
5666  031160  012737  000100  004170          MOV     #IR,E.CS2           ;LOAD EXPECTED CS2
5667  031166  012737  100041  004172          MOV     #SVAL!DRA!DROT,E.DS ;LOAD EXPECTED DRIVE STATUS REG
5668  031174  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
5669  031202  023737  004160  004120          CMP     E.CS1,T.CS1         ;CHECK COMMAND AND STATUS REG.1 CORRECT
5670  031210  001401                          BEQ     4$                  ;YES, CONTINUE
5671  031212  104174                          ERROR   174
5672  031214  023737  004170  004130  4$:     CMP     E.CS2,T.CS2         ;CHECK COMMAND AND STATUS REG. 2 CORRECT
```

```
5673  031222  001401                          BEQ     5$              ;YES, CONTINUE
5674  031224  104175                          ERROR   175
5675  031226  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5676  031234  001401                          BEQ     6$              ;YES, CONTINUE
5677  031236  104176                          ERROR   176
5678  031240  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
5679  031246  001401                          BEQ     7$              ;YES, CLEAR RK611
5680  031250  104177                          ERROR   177
5681  031252  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5682  031260  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5683  031266  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5684  031274  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5685                                                                  ;  AND ERROR REG
5686  031302  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5687  031310  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5688  031316  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5689  031324  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5690  031332  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5691  031340  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5692  031346  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5693  031354  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5694  031360  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5695  031364  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5696  031372  001401                          BEQ     11$             ;YES, CHECK CS2
5697  031374  104224                          ERROR   224             ;CS1 INCORRECT
5698  031376  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5699  031404  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5700  031406  104225                          ERROR   225             ;CS2 INCORRECT
5701  031410  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5702  031416  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5703  031420  104226                          ERROR   226             ;ERROR REG INCORRECT
5704  031422  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5705  031430  001401                          BEQ     TST61           ;;YES, GO ON TO NEXT TEST
5706  031432  104227                          ERROR   227             ;ERROR REG INCORRECT
5707
5708                                  ;;*****************************************************************
5709                                  ;*TEST 61       WRITE LOCK ERROR FROM SHIFT REG.
5710                                  ;*
5711                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
5712                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A PACK ACKNOWLEDGE
5713                                  ;*      TO A RK06, 26 SECTOR FORMAT, WITH CYLINDER 0,
5714                                  ;*      HEAD 1, DRIVE 0. CLOCK IN DIAGNOSTIC MODE UNTIL
5715                                  ;*      PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE AND MAKE
5716                                  ;*      SURE SPEED LOSS, WRITE LOCK ERROR AND CONTROLLER ERROR
5717                                  ;*      ARE SET WITH DRIVE AVAILIABLE RESET.
5718                                  ;*
5719                                  ;;*****************************************************************
5720  031434  000004                  TST61:  SCOPE
5721  031436  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
5722  031444  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
5723  031450  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
5724  031456  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
5725  031464  012762  000000  000020          MOV     #0,RKDCYL(R2)   ;LOAD CYLINDER AND
5726  031472  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
5727  031500  012762  000003  000000          MOV     #PACK,RKCS1(R2) ;ISSUE PACK
5728  031506  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
```

```
5729  031512  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
5730  031520  012762  000040  000026          MOV     #DMD,RKMR1(R2)
5731  031526  005300                          DEC     R0
5732  031530  001370                          BNE     1$
5733  031532  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
5734  031536  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
5735  031542  105762  000000          2$:     TSTB    RKCS1(R2,
5736  031546  100402                          BMI     3$
5737  031550  005300                          DEC     R0
5738  031552  001373                          BNE     2$
5739  031554  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5740  031562  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5741  031570  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5742  031576  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5743  031604  012737  100202  004160          MOV     #CERR!RDY!PACK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
5744  031612  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5745  031620  012737  100020  004172          MOV     #SVAL!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
5746  031626  012737  004000  004174          MOV     #WLE,E.ER       ;LOAD EXPECTED ERROR REG
5747  031634  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5748  031642  001401                          BEQ     4$              ;YES, CONTINUE
5749  031644  104200                          ERROR   200
5750  031646  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
5751  031654  001401                          BEQ     5$              ;YES, CONTINUE
5752  031656  104201                          ERROR   201
5753  031660  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5754  031666  001401                          BEQ     6$              ;YES, CONTINUE
5755  031670  104202                          ERROR   202
5756  031672  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
5757  031700  001401                          BEQ     7$              ;YES, CLEAR RK611
5758  031702  104203                          ERROR   203
5759  031704  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5760  031712  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5761  031720  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5762  031726  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5763                                                                  ;  AND ERROR REG
5764  031734  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5765  031742  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5766  031750  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5767  031756  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5768  031764  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5769  031772  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5770  032000  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5771  032006  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5772  032012  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5773  032016  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5774  032024  001401                          BEQ     11$             ;YES, CHECK CS2
5775  032026  104224                          ERROR   224             ;CS1 INCORRECT
5776  032030  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5777  032036  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5778  032040  104225                          ERROR   225             ;CS2 INCORRECT
5779  032042  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5780  032050  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5781  032052  104226                          ERROR   226             ;ERROR REG INCORRECT
5782  032054  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5783  032062  001401                          BEQ     TST62           ;;YES, GO ON TO NEXT TEST
5784  032064  104227                          ERROR   227             ;ERROR REG INCORRECT
```

```
                                ;;*****************************************************************
                                ;*TEST 62       SEEK INCOMPLETE
                                ;*
                                ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                                ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE AN UNLOAD
                                ;*      TO A RK06, 26 SECTOR FORMAT, WITH CYLINDER 0,
                                ;*      HEAD 1, DRIVE 0, CLOCK IN DIAGNOSTIC MODE UNTIL
                                ;*      PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE AND MAKE
                                ;*      SURE SPEED LOSS, SEEK INCOMPLETE, AND CONTROLLER ERROR
                                ;*      ARE SET WITH DRIVE AVAILIABLE RESET.
                                ;*
                                ;;*****************************************************************
032066  000004                  TST62:  SCOPE
032070  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
032076  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
032102  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
032110  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
032116  012762  000000  000020          MOV     #0,RKDCYL(R2)   ;LOAD CYLINDER AND
032124  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
032132  012762  000007  000000          MOV     #UNLOAD,RKCS1(R2)       ;ISSUE UNLOAD
032140  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
032144  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
032152  012762  000040  000026          MOV     #DMD,RKMR1(R2)
032160  005300                          DEC     R0
032162  001370                          BNE     1$
032164  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
032170  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
032174  105762  000000          2$:     TSTB    RKCS1(R2)
032200  100402                          BMI     3$
032202  005300                          DEC     R0
032204  001373                          BNE     2$
032206  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
032214  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
032222  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
032230  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
032236  012737  100206  004160          MOV     #CERR!RDY!UNLOAD&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
032244  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
032252  012737  100020  004172          MOV     #SVAL!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
032260  012737  000002  004174          MOV     #SKI,E.ER       ;LOAD EXPECTED ERROR REG
032266  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
032274  001401                          BEQ     4$              ;YES, CONTINUE
032276  104204                          ERROR   204
032300  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
032306  001401                          BEQ     5$              ;YES, CONTINUE
032310  104205                          ERROR   205
032312  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
032320  001401                          BEQ     6$              ;YES, CONTINUE
032322  104206                          ERROR   206
032324  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
032332  001401                          BEQ     7$              ;YES, CLEAR RK611
032334  104207                          ERROR   207
032336  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
032344  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
032352  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
032360  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
```

```
                                                        ;  AND ERROR REG
032366  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
032374  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
032402  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
032410  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
032416  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
032424  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
032432  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
032440  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
032444  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
032450  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
032456  001401                          BEQ     11$             ;YES, CHECK CS2
032460  104224                          ERROR   224             ;CS1 INCORRECT
032462  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
032470  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
032472  104225                          ERROR   225             ;CS2 INCORRECT
032474  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
032502  001401                          BEQ     13$             ;YES, CHECK ERROR REG
032504  104226                          ERROR   226             ;ERROR REG INCORRECT
032506  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
032514  001401                          BEQ     TST63           ;;YES, GO ON TO NEXT TEST
032516  104227                          ERROR   227             ;ERROR REG INCORRECT

                                ;;*************************************************************
                                ;*TEST 63       NON-EXECUTABLE DRIVE FUNCTION FROM SHIFT REG.
                                ;*
                                ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR
                                ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE
                                ;*      A DRIVE CLEAR TO A RK06, 26 SECTOR FORMAT,
                                ;*      WITH CYLINDER 0, HEAD 1, DRIVE 0. CLOCK IN DIAGNOSTIC
                                ;*      MODE UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC
                                ;*      MODE AND MAKE SURE SPEED LOSS, NON-EXECUTABLE DRIVE FUNCTION, AND
                                ;*      CONTROLLER ERROR ARE SET WITH DRIVE AVAILIABLE RESET.
                                ;*
                                ;;*************************************************************
032520  000004                  TST63:  SCOPE
032522  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
032530  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
032534  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
032542  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
032550  012762  000000  000020          MOV     #0,RKDCYL(R2)   ;LOAD CYLINDER AND
032556  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
032564  012762  000005  000000          MOV     #CLEAR,RKCS1(R2)        ;ISSUE CLEAR
032572  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
032576  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
032604  012762  000040  000026          MOV     #DMD,RKMR1(R2)
032612  005300                          DEC     R0
032614  001370                          BNE     1$
032616  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
032622  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
032626  105762  000000          2$:     TSTB    RKCS1(R2)
032632  100402                          BMI     3$
032634  005300                          DEC     R0
032636  001373                          BNE     2$
032640  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
032646  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
```

```
5897  032654  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5898  032662  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5899  032670  012737  100204  004160          MOV     #CERR!RDY!CLEAR&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
5900  032676  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5901  032704  012737  100020  004172          MOV     #SVAL!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
5902  032712  012737  000004  004174          MOV     #NXF,E.ER       ;LOAD EXPECTED ERROR REG
5903  032720  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5904  032726  001401                          BEQ     4$              ;YES, CONTINUE
5905  032730  104210                          ERROR   210
5906  032732  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
5907  032740  001401                          BEQ     5$              ;YES, CONTINUE
5908  032742  104211                          ERROR   211
5909  032744  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5910  032752  001401                          BEQ     6$              ;YES, CONTINUE
5911  032754  104212                          ERROR   212
5912  032756  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
5913  032764  001401                          BEQ     7$              ;YES, CLEAR RK611
5914  032766  104213                          ERROR   213
5915  032770  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5916  032776  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5917  033004  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5918  033012  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5919                                                                  ;  AND ERROR REG
5920  033020  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5921  033026  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5922  033034  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5923  033042  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5924  033050  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5925  033056  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5926  033064  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5927  033072  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5928  033076  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5929  033102  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5930  033110  001401                          BEQ     11$             ;YES, CHECK CS2
5931  033112  104224                          ERROR   224             ;CS1 INCORRECT
5932  033114  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5933  033122  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5934  033124  104225                          ERROR   225             ;CS2 INCORRECT
5935  033126  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5936  033134  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5937  033136  104226                          ERROR   226             ;ERROR REG INCORRECT
5938  033140  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5939  033146  001401                          BEQ     TST64           ;;YES, GO ON TO NEXT TEST
5940  033150  104227                          ERROR   227             ;ERROR REG INCORRECT
5941
5942                                  ;;*****************************************************************
5943                                  ;*TEST 64        AC LOW AND C-D PARITY FROM SHIFT REG.
5944                                  ;*
5945                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR, PUT RK611
5946                                  ;*      CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A START SPINDLE
5947                                  ;*      TO AN RK06, IN 24 SECTOR FORMAT, CYLINDER 0, HEAD 0,
5948                                  ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
5949                                  ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE AC LOW, DRIVE
5950                                  ;*      DETECTED SERCOM PARITY, AND CONTROLLER ERROR SET WITH
5951                                  ;*      DRIVE AVAILABLE RESET.
5952                                  ;*
```

```
                                        ;;*****************************************************************
                                TST64:  SCOPE
                                        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
                                        MOV     $BASE,R2        ;LOAD RK611 BASE
                                        MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
                                        MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
                                        MOV     #SRTSPL!CFMT,RKCS1(R2)  ;ISSUE SRTSPL!CFMT
                                        MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
                                1$:     MOV     #DMD!MCLK,RKMR1(R2)
                                        MOV     #DMD,RKMR1(R2)
                                        DEC     R0
                                        BNE     1$
                                        CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
                                        MOV     WAITIM,R0       ;WAIT FOR READY
                                2$:     TSTB    RKCS1(R2)
                                        BMI     3$
                                        DEC     R0
                                        BNE     2$
                                3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
                                        MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
                                        MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
                                        MOV     RKER(R2),T.ER   ;STORE ERROR REG
                                        MOV     #CERR!CFMT!RDY!SRTSPL!CFMT&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
                                        MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
                                        MOV     #SVAL!ACLO,E.DS ;LOAD EXPECTED DRIVE STATUS REG
                                        MOV     #DRPAR,E.ER     ;LOAD EXPECTED ERROR REG
                                        CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
                                        BEQ     4$              ;YES, CONTINUE
                                        ERROR   214
                                4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
                                        BEQ     5$              ;YES, CONTINUE
                                        ERROR   215
                                5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
                                        BEQ     6$              ;YES, CONTINUE
                                        ERROR   216
                                6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
                                        BEQ     7$              ;YES, CLEAR RK611
                                        ERROR   217
                                7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
                                        MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
                                        MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
                                        MOV     T.ER,P.ER       ;  DRIVE STATUS REG
                                                                ;  AND ERROR REG
                                        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
                                        MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
                                        MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
                                        MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
                                        MOV     RKER(R2),T.ER   ;STORE ERROR REG
                                        MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
                                        MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
                                        CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
                                        CLR     E.ER            ;LOAD EXPECTED ERROR REG
                                        CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
                                        BEQ     11$             ;YES, CHECK CS2
                                        ERROR   224             ;CS1 INCORRECT
                                11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
```

```
6009  033540  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
6010  033542  104225                          ERROR   225             ;CS2 INCORRECT
6011  033544  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
6012  033552  001401                          BEQ     13$             ;YES, CHECK ERROR REG
6013  033554  104226                          ERROR   226             ;ERROR REG INCORRECT
6014  033556  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
6015  033564  001401                          BEQ     TST65           ;;YES, GO ON TO NEXT TEST
6016  033566  104227                          ERROR   227             ;ERROR REG INCORRECT
6017
6018                                  ;;*****************************************************************
6019                                  ;*TEST 65       ILLEGAL DISK ADDRESS ERROR FROM SHIFT REG.
6020                                  ;*
6021                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.   PUT
6022                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A RECALIBRATE
6023                                  ;*      TO AN RK06, IN 26 SECTOR FORMAT, CYLINDER 0, HEAD 1,
6024                                  ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE
6025                                  ;*      ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
6026                                  ;*      SPEED LOSS, ILLEGAL DISK ADDRESS ERROR, AND CONTROLLER
6027                                  ;*      ERROR ARE SET WITH DRIVE AVAILABLE RESET.
6028                                  ;*
6029                                  ;;*****************************************************************
6030  033570  000004                  TST65:  SCOPE
6031  033572  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
6032  033600  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
6033  033604  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
6034  033612  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
6035  033620  012762  000000  000020          MOV     #0,RKDCYL(R2)   ;LOAD CYLINDER AND
6036  033626  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
6037  033634  012762  000013  000000          MOV     #RECAL,RKCS1(R2)        ;ISSUE RECAL
6038  033642  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
6039  033646  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
6040  033654  012762  000040  000026          MOV     #DMD,RKMR1(R2)
6041  033662  005300                          DEC     R0
6042  033664  001370                          BNE     1$
6043  033666  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
6044  033672  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
6045  033676  105762  000000          2$:     TSTB    RKCS1(R2)
6046  033702  100402                          BMI     3$
6047  033704  005300                          DEC     R0
6048  033706  001373                          BNE     2$
6049  033710  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
6050  033716  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
6051  033724  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
6052  033732  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
6053  033740  012737  100212  004160          MOV     #CERR!RDY!RECAL&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
6054  033746  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
6055  033754  012737  100020  004172          MOV     #SVAL!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
6056  033762  012737  002000  004174          MOV     #IDAE,E.ER      ;LOAD EXPECTED ERROR REG
6057  033770  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
6058  033776  001401                          BEQ     4$              ;YES, CONTINUE
6059  034000  104220                          ERROR   220
6060  034002  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
6061  034010  001401                          BEQ     5$              ;YES, CONTINUE
6062  034012  104221                          ERROR   221
6063  034014  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
6064  034022  001401                          BEQ     6$              ;YES, CONTINUE
```

```
                                ERROR   222
034026  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
034034  001401                          BEQ     7$              ;YES, CLEAR RK611
034036  104223                          ERROR   223
034040  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
034046  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
034054  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
034062  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
                                                                ;  AND ERROR REG
034070  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
034076  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
034104  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
034112  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
034120  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
034126  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
034134  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
034142  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
034146  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
034152  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
034160  001401                          BEQ     11$             ;YES, CHECK CS2
034162  104224                          ERROR   224             ;CS1 INCORRECT
034164  023737  004170  004130  11$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
034172  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
034174  104225                          ERROR   225             ;CS2 INCORRECT
034176  023737  004172  004132  12$:     CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
034204  001401                          BEQ     13$             ;YES, CHECK ERROR REG
034206  104226                          ERROR   226             ;ERROR REG INCORRECT
034210  023737  004174  004134  13$:     CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
034216  001401                          BEQ     TST66           ;;YES, GO ON TO NEXT TEST
034220  104227                          ERROR   227             ;ERROR REG INCORRECT

                        ;;**************************************************************
                        ;*TEST 66       IDAE DETECTION IN RK611 CONTROLLER (PART 1)
                        ;*
                        ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                        ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A
                        ;*      SEEK TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 1003,
                        ;*      HEAD 0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
                        ;*      PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE
                        ;*      SURE DRIVE AVAILABLE, ILLEGAL DISK ADDRESS ERROR,
                        ;*      AND CONTROLLER ERROR ARE SET.
                        ;*
                        ;;**************************************************************
034222  000004          TST66:  SCOPE
034224  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
034232  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
034236  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
034244  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
034252  012762  001002  000020          MOV     #1002,RKDCYL(R2)        ;LOAD CYLINDER ADDRESS
034260  012737  001002  004252          MOV     #1002,CYLIN
034266  012737  000000  004250          MOV     #0,HDCODE       ;LOAD HEAD ADDRESS
034274  005046                          CLR     -(SP)
034276  113766  004250  000001          MOVB    HDCODE,1(SP)
034304  012662  000006                  MOV     (SP)+,RKDA(R2)
034310  012737  000006  004266          MOV     #6,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
034316  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK TO RK06
```

```
6121  034324  012700  000132                MOV     #22.*4+2,R0      ;ISSUE CLOCK TO GET THROUGH PHASE 6
6122  034330  012762  000440  000026  1$:   MOV     #DMD!MCLK,RKMR1(R2)
6123  034336  012762  000040  000026        MOV     #DMD,RKMR1(R2)
6124  034344  005300                        DEC     R0
6125  034346  001370                        BNE     1$
6126  034350  005062  000026                CLR     RKMR1(R2)        ;ALLOW COMMAND TO FINISH
6127  034354  013700  004262                MOV     WAITIM,R0        ;LOAD WAIT TIME
6128  034360  105762  000000          2$:   TSTB    RKCS1(R2)        ;WAIT FOR READY
6129  034364  100402                        BMI     3$
6130  034366  005300                        DEC     R0
6131  034370  001373                        BNE     2$
6132  034372  016237  000000  004120  3$:   MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6133  034400  016237  000010  004130        MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6134  034406  016237  000012  004132        MOV     RKDS(R2),T.DS    ;STORE DRIVE STATUS REG
6135  034414  016237  000014  004134        MOV     RKER(R2),T.ER    ;STORE ERROR REG
6136  034422  012737  100216  004160        MOV     #CERR!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
6137
6138  034430  012737  000100  004170        MOV     #IR,E.CS2        ;LOAD EXPECTED COMMAND AND STATUS REG.2
6139  034436  012737  100001  004172        MOV     #SVAL!DRA,E.DS   ;LOAD EXPECTED DRIVE STATUS REG
6140  034444  012737  002000  004174        MOV     #IDAE,E.ER       ;LOAD EXPECTED ERROR REG
6141  034452  023737  004160  004120        CMP     E.CS1,T.CS1      ;CHECK COMMAND AND STATUS REG1 CORRECT
6142  034460  001401                        BEQ     4$               ;YES, CHECK CS2
6143  034462  104230                        ERROR   230              ;CS1 INCORRECT
6144  034464  023737  004170  004130  4$:   CMP     E.CS2,T.CS2      ;CHECK COMMAND AND STATUS REG2 CORRECT
6145
6146  034472  001401                        BEQ     5$               ;YES, CHECK DRIVE STATUS REG.
6147  034474  104231                        ERROR   231              ;CS2 INCORRECT
6148  034476  023737  004172  004132  5$:   CMP     E.DS,T.DS        ;CHECK DRIVE STATUS REG. CORRECT
6149  034504  001401                        BEQ     6$               ;YES, CHECK ERROR REG
6150  034506  104232                        ERROR   232              ;DRIVE STATUS REG. INCORRECT
6151  034510  023737  004174  004134  6$:   CMP     E.ER,T.ER        ;CHECK ERROR REG. CORRECT
6152  034516  001401                        BEQ     7$               ;YES, CHECK CONTROLLER CLEAR
6153  034520  104233                        ERROR   233              ;ERROR REG. INCORRECT
6154  034522  013737  004120  004220  7$:   MOV     T.CS1,P.CS1      ;STORE PREVIOUS VALUES OF
6155  034530  013737  004130  004222        MOV     T.CS2,P.CS2      ;  COMMAND AND STATUS REG.1
6156  034536  013737  004132  004224        MOV     T.DS,P.DS        ;  COMMAND AND STATUS REG.2
6157  034544  013737  004134  004226        MOV     T.ER,P.ER        ;  DRIVE STATUS REG.
6158                                                                 ;  ERROR REG.
6159  034552  012762  100000  000000        MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
6160  034560  016237  000000  004120        MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6161  034566  016237  000010  004130        MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6162  034574  016237  000012  004132        MOV     RKDS(R2),T.DS    ;STORE DRIVE STATUS REG.
6163  034602  016237  000014  004134        MOV     RKER(R2),T.ER    ;STORE ERROR REG
6164  034610  012737  000200  004160        MOV     #RDY,E.CS1       ;LOAD EXPECTED CS1
6165  034616  012737  000100  004170        MOV     #IR,E.CS2        ;LOAD EXPECTED CS2
6166  034624  005037  004172                CLR     E.DS             ;LOAD EXPECTED DRIVE STATUS REG.
6167  034630  005037  004174                CLR     E.ER             ;LOAD EXPECTED ERROR REG.
6168  034634  023737  004160  004120        CMP     E.CS1,T.CS1      ;CHECK COMMAND AND STATUS REG.1 CORRECT
6169  034642  001401                        BEQ     10$              ;YES, CHECK CS2
6170  034644  104224                        ERROR   224              ;CS1 INCORRECT
6171  034646  023737  004170  004130  10$:  CMP     E.CS2,T.CS2      ;CHECK COMMAND AND STATUS REG2 CORRECT
6172  034654  001401                        BEQ     11$              ;YES, CHECK DRIVE STATUS REG
6173  034656  104225                        ERROR   225              ;CS2 INCORRECT
6174  034660  023737  004172  004132  11$:  CMP     E.DS,T.DS        ;CHECK DRIVE STATUS REG CORRECT
6175  034666  001401                        BEQ     12$              ;YES, CHECK ERROR REGISTER
6176  034670  104226                        ERROR   226              ;DRIVE STATUS REG INCORRECT
```

```
 6177  034672  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
 6178  034700  001401                          BEQ     TST67           ;;YES,GO ON TO NEXT TEST
 6179  034702  104227                          ERROR   227             ;ERROR REG. INCORRECT
 6180
 6181                                  ;;*****************************************************************
 6182                                  ;*TEST 67       IDAE DETECTION IN RK611 CONTROLLER (PART 2)
 6183                                  ;*
 6184                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT
 6185                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
 6186                                  ;*      WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 1022, HEAD
 6187                                  ;*      0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE
 6188                                  ;*      ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
 6189                                  ;*      DRIVE AVAILABLE AND POSITIONING IN PROGRESS ARE SET
 6190                                  ;*      WITH ILLEGAL DISK ADDRESS ERROR RESET.
 6191                                  ;*
 6192                                  ;;*****************************************************************
 6193  034704  000004                  TST67:  SCOPE
 6194  034706  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 6195  034714  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 6196  034720  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 6197  034726  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 6198  034734  012762  001022  000020          MOV     #1022,RKDCYL(R2)        ;LOAD CYLINDER ADDRESS
 6199  034742  012737  001022  004252          MOV     #1022,CYLIN
 6200  034750  012737  000000  004250          MOV     #0,HDCODE       ;LOAD HEAD ADDRESS
 6201  034756  005046                          CLR     -(SP)
 6202  034760  113766  004250  000001          MOVB    HDCODE,1(SP)
 6203  034766  012662  000006                  MOV     (SP)+,RKDA(R2)
 6204  034772  012737  000007  004266          MOV     #7,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
 6205  035000  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE SEEK TO RK06
 6206  035006  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
 6207  035012  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 6208  035020  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 6209  035026  005300                          DEC     R0
 6210  035030  001370                          BNE     1$
 6211  035032  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
 6212  035036  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
 6213  035042  105762  000000          2$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
 6214  035046  100402                          BMI     3$
 6215  035050  005300                          DEC     R0
 6216  035052  001373                          BNE     2$
 6217  035054  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6218  035062  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6219  035070  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 6220  035076  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 6221  035104  012737  002216  004160          MOV     #CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
 6222
 6223  035112  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
 6224  035120  012737  120401  004172          MOV     #SVAL!DRA!PIP!DDT,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
 6225  035126  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
 6226  035134  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
 6227  035142  001401                          BEQ     4$              ;YES, CHECK CS2
 6228  035144  104230                          ERROR   230             ;CS1 INCORRECT
 6229  035146  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 6230
 6231  035154  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
 6232  035156  104231                          ERROR   231             ;CS2 INCORRECT
```

```
 6233  035160  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
 6234  035166  001401                          BEQ     6$              ;YES, CHECK ERROR REG
 6235  035170  104232                          ERROR   232             ;DRIVE STATUS REG. INCORRECT
 6236  035172  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
 6237  035200  001401                          BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
 6238  035202  104233                          ERROR   233             ;ERROR REG. INCORRECT
 6239  035204  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
 6240  035212  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
 6241  035220  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
 6242  035226  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
 6243                                                                  ;  ERROR REG.
 6244  035234  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
 6245  035242  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6246  035250  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6247  035256  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 6248  035264  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 6249  035272  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 6250  035300  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 6251  035306  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 6252  035312  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 6253  035316  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 6254  035324  001401                          BEQ     10$             ;YES, CHECK CS2
 6255  035326  104224                          ERROR   224             ;CS1 INCORRECT
 6256  035330  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 6257  035336  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG
 6258  035340  104225                          ERROR   225             ;CS2 INCORRECT
 6259  035342  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
 6260  035350  001401                          BEQ     12$             ;YES, CHECK ERROR REGISTER
 6261  035352  104226                          ERROR   226             ;DRIVE STATUS REG INCORRECT
 6262  035354  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
 6263  035362  001401                          BEQ     TST70           ;;YES,GO ON TO NEXT TEST
 6264  035364  104227                          ERROR   227             ;ERROR REG. INCORRECT
 6265
 6266                                  ;;*****************************************************************
 6267                                  ;*TEST 70       IDAE DETECTION IN RK611 CONTROLLER (PART 3)
 6268                                  ;*
 6269                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT
 6270                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
 6271                                  ;*      TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 2,
 6272                                  ;*      HEAD 3, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
 6273                                  ;*      PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE
 6274                                  ;*      SURE DRIVE AVAILABLE, DRIVE OFF TRACK, SPEED LOSS,
 6275                                  ;*      ILLEGAL DISK ADDRESS ERROR, AND CONTROLLER ERROR ARE
 6276                                  ;*      SET.
 6277                                  ;*
 6278                                  ;;*****************************************************************
 6279  035366  000004                  TST70:  SCOPE
 6280  035370  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 6281  035376  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 6282  035402  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 6283  035410  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 6284  035416  012762  000002  000020          MOV     #2,RKDCYL(R2)   ;LOAD CYLINDER ADDRESS
 6285  035424  012737  000002  004252          MOV     #2,CYLIN
 6286  035432  012737  000003  004250          MOV     #3,HDCODE       ;LOAD HEAD ADDRESS
 6287  035440  005046                          CLR     -(SP)
 6288  035442  113766  004250  000001          MOVB    HDCODE,1(SP)
```

```
 6289  035450  012662  000006                    MOV     (SP)+,RKDA(R2)
 6290  035454  012737  000006  004266            MOV     #6,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
 6291  035462  012762  000017  000000            MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK TO RK06
 6292  035470  012700  000132                    MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
 6293  035474  012762  000440  000026  1$:       MOV     #DMD!MCLK,RKMR1(R2)
 6294  035502  012762  000040  000026            MOV     #DMD,RKMR1(R2)
 6295  035510  005300                            DEC     R0
 6296  035512  001370                            BNE     1$
 6297  035514  005062  000026                    CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
 6298  035520  013700  004262                    MOV     WAITIM,R0       ;LOAD WAIT TIME
 6299  035524  105762  000000          2$:       TSTB    RKCS1(R2)       ;WAIT FOR READY
 6300  035530  100402                            BMI     3$
 6301  035532  005300                            DEC     R0
 6302  035534  001373                            BNE     2$
 6303  035536  016237  000000  004120  3$:       MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6304  035544  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6305  035552  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 6306  035560  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG
 6307  035566  012737  100216  004160            MOV     #CERR!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
 6308
 6309  035574  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
 6310  035602  012737  100061  004172            MOV     #SVAL!DRA!DROT!SPDLSS,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
 6311  035610  012737  002000  004174            MOV     #IDAE,E.ER      ;LOAD EXPECTED ERROR REG
 6312  035616  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
 6313  035624  001401                            BEQ     4$              ;YES, CHECK CS2
 6314  035626  104230                            ERROR   230             ;CS1 INCORRECT
 6315  035630  023737  004170  004130  4$:       CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 6316
 6317  035636  001401                            BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
 6318  035640  104231                            ERROR   231             ;CS2 INCORRECT
 6319  035642  023737  004172  004132  5$:       CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
 6320  035650  001401                            BEQ     6$              ;YES, CHECK ERROR REG
 6321  035652  104232                            ERROR   232             ;DRIVE STATUS REG. INCORRECT
 6322  035654  023737  004174  004134  6$:       CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
 6323  035662  001401                            BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
 6324  035664  104233                            ERROR   233             ;ERROR REG. INCORRECT
 6325  035666  013737  004120  004220  7$:       MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
 6326  035674  013737  004130  004222            MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
 6327  035702  013737  004132  004224            MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
 6328  035710  013737  004134  004226            MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
 6329                                                                    ;  ERROR REG.
 6330  035716  012762  100000  000000            MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
 6331  035724  016237  000000  004120            MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6332  035732  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6333  035740  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 6334  035746  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG
 6335  035754  012737  000200  004160            MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 6336  035762  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 6337  035770  005037  004172                    CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 6338  035774  005037  004174                    CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 6339  036000  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 6340  036006  001401                            BEQ     10$             ;YES, CHECK CS2
 6341  036010  104224                            ERROR   224             ;CS1 INCORRECT
 6342  036012  023737  004170  004130  10$:      CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 6343  036020  001401                            BEQ     11$             ;YES, CHECK DRIVE STATUS REG
 6344  036022  104225                            ERROR   225             ;CS2 INCORRECT
```

```
6345  036024  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6346  036032  001401                          BEQ     12$             ;YES, CHECK ERROR REGISTER
6347  036034  104226                          ERROR   226             ;DRIVE STATUS REG INCORRECT
6348  036036  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6349  036044  001401                          BEQ     TST71           ;;YES,GO ON TO NEXT TEST
6350  036046  104227                          ERROR   227             ;ERROR REG. INCORRECT
6351
6352                                  ;;*****************************************************************
6353                                  ;*TEST 71       IDAE DETECTION IN RK611 CONTROLLER (PART 4)
6354                                  ;*
6355                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
6356                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
6357                                  ;*      TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 3, HEAD
6358                                  ;*      4, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE
6359                                  ;*      ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
6360                                  ;*      DRIVE AVAILABLE, UNSAFE, ILLEGAL DISK ADDRESS ERROR
6361                                  ;*      AND CONTROLLER ERROR ARE SET.
6362                                  ;*
6363                                  ;;*****************************************************************
6364  036050  000004                  TST71:  SCOPE
6365  036052  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
6366  036060  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
6367  036064  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
6368  036072  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
6369  036100  012762  000003  000020          MOV     #3,RKDCYL(R2)   ;LOAD CYLINDER ADDRESS
6370  036106  012737  000003  004252          MOV     #3,CYLIN
6371  036114  012737  000004  004250          MOV     #4,HDCODE       ;LOAD HEAD ADDRESS
6372  036122  005046                          CLR     -(SP)
6373  036124  113766  004250  000001          MOVB    HDCODE,1(SP)
6374  036132  012662  000006                  MOV     (SP)+,RKDA(R2)
6375  036136  012737  000006  004266          MOV     #6,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
6376  036144  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK TO RK06
6377  036152  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
6378  036156  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
6379  036164  012762  000040  000026          MOV     #DMD,RKMR1(R2)
6380  036172  005300                          DEC     R0
6381  036174  001370                          BNE     1$
6382  036176  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
6383  036202  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
6384  036206  105762  000000          2$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
6385  036212  100402                          BMI     3$
6386  036214  005300                          DEC     R0
6387  036216  001373                          BNE     2$
6388  036220  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6389  036226  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6390  036234  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
6391  036242  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
6392  036250  012737  100216  004160          MOV     #CERR!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
6393
6394  036256  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
6395  036264  012737  100001  004172          MOV     #SVAL!DRA,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
6396  036272  012737  042000  004174          MOV     #UNS!IDAE,E.ER  ;LOAD EXPECTED ERROR REG
6397  036300  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
6398  036306  001401                          BEQ     4$              ;YES, CHECK CS2
6399  036310  104230                          ERROR   230             ;CS1 INCORRECT
6400  036312  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
```

```
6401
6402  036320  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
6403  036322  104231                          ERROR   231             ;CS2 INCORRECT
6404  036324  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
6405  036332  001401                          BEQ     6$              ;YES, CHECK ERROR REG
6406  036334  104232                          ERROR   232             ;DRIVE STATUS REG. INCORRECT
6407  036336  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
6408  036344  001401                          BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
6409  036346  104233                          ERROR   233             ;ERROR REG. INCORRECT
6410  036350  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
6411  036356  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
6412  036364  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
6413  036372  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
6414                                          ;  ERROR REG.
6415  036400  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
6416  036406  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6417  036414  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6418  036422  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
6419  036430  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
6420  036436  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
6421  036444  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
6422  036452  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
6423  036456  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
6424  036462  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
6425  036470  001401                          BEQ     10$             ;YES, CHECK CS2
6426  036472  104224                          ERROR   224             ;CS1 INCORRECT
6427  036474  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
6428  036502  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG
6429  036504  104225                          ERROR   225             ;CS2 INCORRECT
6430  036506  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6431  036514  001401                          BEQ     12$             ;YES, CHECK ERROR REGISTER
6432  036516  104226                          ERROR   226             ;DRIVE STATUS REG INCORRECT
6433  036520  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6434  036526  001401                          BEQ     TST72           ;;YES,GO ON TO NEXT TEST
6435  036530  104227                          ERROR   227             ;ERROR REG. INCORRECT
6436
6437                                  ;;*****************************************************************
6438                                  ;*TEST 72       IDAE DETECTION IN RK611 CONTROLLER (PART 5)
6439                                  ;*
6440                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
6441                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
6442                                  ;*      WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 23, HEAD 5,
6443                                  ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS
6444                                  ;*      6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE
6445                                  ;*      AVAILABLE, UNSAFE, SPEED LOSS, ILLEGAL DISK ADDRESS
6446                                  ;*      ERROR, AND CONTROLLER ERROR ARE SET.
6447                                  ;*
6448                                  ;;*****************************************************************
6449  036532  000004                  TST72:  SCOPE
6450  036534  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
6451  036542  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
6452  036546  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
6453  036554  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
6454  036562  012762  000023  000020          MOV     #23,RKDCYL(R2)  ;LOAD CYLINDER ADDRESS
6455  036570  012737  000023  004252          MOV     #23,CYLIN
6456  036576  012737  000005  004250          MOV     #5,HDCODE       ;LOAD HEAD ADDRESS
```

```
 6457  036604  005046                          CLR     -(SP)
 6458  036606  113766  004250  000001          MOVB    HDCODE,1(SP)
 6459  036614  012662  000006                  MOV     (SP)+,RKDA(R2)
 6460  036620  012737  000007  004266          MOV     #7,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
 6461  036626  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE SEEK TO RK06
 6462  036634  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
 6463  036640  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 6464  036646  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 6465  036654  005300                          DEC     R0
 6466  036656  001370                          BNE     1$
 6467  036660  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
 6468  036664  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
 6469  036670  105762  000000          2$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
 6470  036674  100402                          BMI     3$
 6471  036676  005300                          DEC     R0
 6472  036700  001373                          BNE     2$
 6473  036702  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6474  036710  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6475  036716  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 6476  036724  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 6477  036732  012737  102216  004160          MOV     #CERR!CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
 6478
 6479  036740  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
 6480  036746  012737  100421  004172          MOV     #SVAL!DRA!SPDLSS!DDT,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
 6481  036754  012737  042000  004174          MOV     #UNS!IDAE,E.ER  ;LOAD EXPECTED ERROR REG
 6482  036762  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
 6483  036770  001401                          BEQ     4$              ;YES, CHECK CS2
 6484  036772  104230                          ERROR   230             ;CS1 INCORRECT
 6485  036774  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 6486
 6487  037002  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
 6488  037004  104231                          ERROR   231             ;CS2 INCORRECT
 6489  037006  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
 6490  037014  001401                          BEQ     6$              ;YES, CHECK ERROR REG
 6491  037016  104232                          ERROR   232             ;DRIVE STATUS REG. INCORRECT
 6492  037020  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
 6493  037026  001401                          BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
 6494  037030  104233                          ERROR   233             ;ERROR REG. INCORRECT
 6495  037032  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
 6496  037040  013737  004130  004222          MOV     T.CS2,P.CS2     ;   COMMAND AND STATUS REG.1
 6497  037046  013737  004132  004224          MOV     T.DS,P.DS       ;   COMMAND AND STATUS REG.2
 6498  037054  013737  004134  004226          MOV     T.ER,P.ER       ;   DRIVE STATUS REG.
 6499                                                                  ;   ERROR REG.
 6500  037062  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
 6501  037070  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6502  037076  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6503  037104  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 6504  037112  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 6505  037120  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 6506  037126  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 6507  037134  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 6508  037140  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 6509  037144  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 6510  037152  001401                          BEQ     10$             ;YES, CHECK CS2
 6511  037154  104224                          ERROR   224             ;CS1 INCORRECT
 6512  037156  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
```

```
                                        BEQ     11$             ;YES, CHECK DRIVE STATUS REG
                                        ERROR   225             ;CS2 INCORRECT
004172  004132  11$:                   CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
                                        BEQ     12$             ;YES, CHECK ERROR REGISTER
                                        ERROR   226             ;DRIVE STATUS REG INCORRECT
004174  004134  12$:                   CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
                                        BEQ     TST73           ;;YES,GO ON TO NEXT TEST
                                        ERROR   227             ;ERROR REG. INCORRECT

                                ;;**************************************************************
                                ;*TEST 73        IDAE DETECTION IN RK611 CONTROLLER (PART 6)
                                ;*
                                ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                                ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                                ;*      WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 23, HEAD 6,
                                ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS
                                ;*      6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE
                                ;*      AVAILABLE, UNSAFE, DRIVE OFF TRACK, ILLEGAL
                                ;*      DISK ADDRESS ERROR, AND CONTROLLER CLEAR ARE SET.
                                ;*
                                ;;**************************************************************
000144  001200  TST73:          SCOPE
                                        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
001270                                  MOV     $BASE,R2        ;LOAD RK611 BASE
000040  000010                          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
000040  000026                          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
000023  000020                          MOV     #23,RKDCYL(R2)  ;LOAD CYLINDER ADDRESS
000023  004252                          MOV     #23,CYLIN
000006  004250                          MOV     #6,HDCODE       ;LOAD HEAD ADDRESS
                                        CLR     -(SP)
004250  000001                          MOVB    HDCODE,1(SP)
000006                                  MOV     (SP)+,RKDA(R2)
000007  004266                          MOV     #7,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
002017  000000                          MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE SEEK TO RK06
000132                                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
000440  000026  1$:                    MOV     #DMD!MCLK,RKMR1(R2)
000040  000026                          MOV     #DMD,RKMR1(R2)
                                        DEC     R0
                                        BNE     1$
000026                                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
004262                                  MOV     WAITIM,R0       ;LOAD WAIT TIME
000000          2$:                     TSTB    RKCS1(R2)       ;WAIT FOR READY
                                        BMI     3$
                                        DEC     R0
                                        BNE     2$
000000  004120  3$:                     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
000010  004130                          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
000012  004132                          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
000014  004134                          MOV     RKER(R2),T.ER   ;STORE ERROR REG
102216  004160                          MOV     #CERR!CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1

000100  004170                          MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
100441  004172                          MOV     #SVAL!DRA!DROT!DDT,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
042000  004174                          MOV     #UNS!IDAE,E.ER  ;LOAD EXPECTED ERROR REG
004160  004120                          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
                                        BEQ     4$              ;YES, CHECK CS2
```

```
6569  037454  104230                          ERROR   230             ;CS1 INCORRECT
6570  037456  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
6571
6572  037464  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
6573  037466  104231                          ERROR   231             ;CS2 INCORRECT
6574  037470  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
6575  037476  001401                          BEQ     6$              ;YES, CHECK ERROR REG
6576  037500  104232                          ERROR   232             ;DRIVE STATUS REG. INCORRECT
6577  037502  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
6578  037510  001401                          BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
6579  037512  104233                          ERROR   233             ;ERROR REG. INCORRECT
6580  037514  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
6581  037522  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
6582  037530  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
6583  037536  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
6584                                                                  ;  ERROR REG.
6585  037544  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
6586  037552  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6587  037560  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6588  037566  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
6589  037574  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
6590  037602  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
6591  037610  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
6592  037616  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
6593  037622  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
6594  037626  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
6595  037634  001401                          BEQ     10$             ;YES, CHECK CS2
6596  037636  104224                          ERROR   224             ;CS1 INCORRECT
6597  037640  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
6598  037646  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG
6599  037650  104225                          ERROR   225             ;CS2 INCORRECT
6600  037652  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6601  037660  001401                          BEQ     12$             ;YES, CHECK ERROR REGISTER
6602  037662  104226                          ERROR   226             ;DRIVE STATUS REG INCORRECT
6603  037664  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6604  037672  001401                          BEQ     TST74           ;;YES,GO ON TO NEXT TEST
6605  037674  104227                          ERROR   227             ;ERROR REG. INCORRECT
6606
6607                                  ;;*****************************************************************
6608                                  ;*TEST 74       NON-STANDARD MESSAGE RECEIVING
6609                                  ;*
6610                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
6611                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
6612                                  ;*      WITH CDT SET IN 24 SECTOR FORMAT, CYLINDER 1757, HEAD 7,
6613                                  ;*      DRIVE 1.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
6614                                  ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE NO ERRORS SET
6615                                  ;*      AND DRIVE STATUS IS NOT REPORTED.  REPEAT FOR DRIVES
6616                                  ;*      2 AND 4.
6617                                  ;*
6618                                  ;;*****************************************************************
6619  037676  000004                  TST74:  SCOPE
6620  037700  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
6621  037706  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
6622  037712  012737  000001  004244          MOV     #1,DRVCOD       ;LOAD INITIAL DRIVE CODE
6623  037720  012737  037726  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
6624                                                                  ;  SUBTEST LOOP
```

```
6625
6626  037726                          1$:
6627  037726  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
6628  037734  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
6629  037742  012762  001757  000020          MOV     #1757,RKDCYL(R2)  ;LOAD CYLINDER ADDRESS REG
6630  037750  012762  003400  000006          MOV     #3400,RKDA(R2)  ;LOAD HEAD 7
6631  037756  013762  004244  000010          MOV     DRVCOD,RKCS2(R2)  ;LOAD DRIVE NUMBER
6632  037764  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE A SEEK WITH CDT SET
6633  037772  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS THROUGH PHASE 6
6634  037776  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
6635  040004  012762  000040  000026          MOV     #DMD,RKMR1(R2)
6636  040012  005300                          DEC     R0
6637  040014  001370                          BNE     2$
6638  040016  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
6639  040022  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
6640  040026  105762  000000          3$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
6641  040032  100402                          BMI     4$
6642  040034  005300                          DEC     R0
6643  040036  001373                          BNE     3$
6644  040040  016237  000000  004120  4$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6645  040046  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6646  040054  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
6647  040062  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
6648  040070  012737  002216  004160          MOV     #CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
6649  040076  013737  004244  004170          MOV     DRVCOD,E.CS2    ;LOAD EXPECTED CS2
6650  040104  052737  000100  004170          BIS     #IR,E.CS2
6651  040112  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
6652  040116  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
6653  040122  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
6654  040130  001401                          BEQ     5$              ;YES, CHECK CS2
6655  040132  104234                          ERROR   234             ;CS1 INCORRECT
6656  040134  023737  004170  004130  5$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
6657  040142  001401                          BEQ     6$              ;YES, CHECK DRIVE STATUS REG.
6658  040144  104235                          ERROR   235             ;CS2 INCORRECT
6659  040146  023737  004172  004132  6$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6660  040154  001401                          BEQ     7$              ;YES, CHECK ERROR REG
6661  040156  104236                          ERROR   236             ;DRIVE STATUS REG INCORRECT
6662  040160  023737  004174  004134  7$:     CMP     E.ER,T.ER       ;CHECK IF ERROR CORRECT
6663  040166  001401                          BEQ     8$              ;YES, CHECK IF LOOP ON ERROR
6664  040170  104237                          ERROR   237             ;ERROR REG INCORRECT
6665  040172  104415                  8$:     SCOP1                   ;CHECK IF LOOP ON ERROR
6666  040174  006337  004244                  ASL     DRVCOD          ;GENERATE NEXT DRIVE COME
6667  040200  032737  000010  004244          BIT     #BIT3,DRVCOD    ;CHECK IF FINISHED
6668  040206  001647                          BEQ     1$              ;NO, TRY NEXT COME
6669
6670                                  ;;*****************************************************************
6671                                  ;*TEST 75       DRIVE BUS PARITY ON NON-STANDARD MESSAGE
6672                                  ;*
6673                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
6674                                  ;*      PUT THE RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE
6675                                  ;*      A SEEK TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 2,
6676                                  ;*      HEAD 0, DRIVE 1.  CLOCK IN DIAGNOSTIC MODE UNTIL
6677                                  ;*      PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE
6678                                  ;*      SURE DRIVE BUS PARITY ERROR AND CONTROLLER ERROR SETS.
6679                                  ;*
6680                                  ;;*****************************************************************
```

```
 6681  040210  000004                    TST75:  SCOPE
 6682  040212  012737  000144  001200            MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 6683  040220  013702  001270                    MOV     $BASE,R2        ;LOAD RK611 BASE
 6684  040224  012762  000040  000010            MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 6685  040232  012762  000040  000026            MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 6686  040240  012762  000002  000020            MOV     #2,RKDCYL(R2)   ;LOAD CYLINDER ADDRESS REG
 6687  040246  012762  000001  000010            MOV     #1,RKCS2(R2)    ;LOAD DRIVE NUMBER 1
 6688  040254  012762  000017  000000            MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
 6689  040262  012700  000132                    MOV     #22.*4+2,R0     ;ISSUE CLOCKS THROUGH PHASE 6
 6690  040266  012762  000440  000026  1$:       MOV     #DMD!MCLK,RKMR1(R2)
 6691  040274  012762  000040  000026            MOV     #DMD,RKMR1(R2)
 6692  040302  005300                            DEC     R0
 6693  040304  001370                            BNE     1$
 6694  040306  005062  000026                    CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
 6695  040312  013700  004262                    MOV     WAITIM,R0       ;LOAD WAIT TIME
 6696  040316  105762  000000            3$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
 6697  040322  100402                            BMI     4$
 6698  040324  005300                            DEC     R0
 6699  040326  001373                            BNE     3$
 6700  040330  016237  000000  004120  4$:       MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6701  040336  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6702  040344  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 6703  040352  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG.
 6704  040360  012737  120216  004160            MOV     #CERR!SPAR!RDY!SEEK&^C<GO>,E.CS1  ;LOAD EXPECTED CS1
 6705  040366  012737  000101  004170            MOV     #IR!1,E.CS2     ;LOAD EXPECTED CS1
 6706  040374  005037  004172                    CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 6707  040400  005037  004174                    CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 6708  040404  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 6709  040412  001401                            BEQ     5$              ;YES, CHECK CS2
 6710  040414  104240                            ERROR   240             ;CS1 INCORRECT
 6711  040416  023737  004170  004130  5$:       CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
 6712  040424  001401                            BEQ     6$              ;YES, CHECK DRIVE STATUS REG
 6713  040426  104241                            ERROR   241             ;CS2 INCORRECT
 6714  040430  023737  004172  004132  6$:       CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
 6715  040436  001401                            BEQ     7$              ;YES, CHECK ERROR REG.
 6716  040440  104242                            ERROR   242             ;DRIVE STATUS REG. INCORRECT
 6717  040442  023737  004174  004134  7$:       CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
 6718  040450  001401                            BEQ     8$              ;YES, CLEAR RK611
 6719  040452  104243                            ERROR   243             ;ERROR REG. INCORRECT
 6720  040454  013737  004120  004220  8$:       MOV     T.CS1,P.CS1     ;STORE PREVIOUS CS1, CS2,
 6721  040462  013737  004130  004222            MOV     T.CS2,P.CS2     ;  DRIVE STATUS REG.,
 6722  040470  013737  004132  004224            MOV     T.DS,P.DS       ;  AND ERROR REG.
 6723  040476  013737  004134  004226            MOV     T.ER,P.ER
 6724  040504  012762  100000  000000            MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 6725  040512  016237  000000  004120            MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6726  040520  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6727  040526  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 6728  040534  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG:
 6729  040542  012737  000200  004160            MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 6730  040550  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 6731  040556  005037  004172                    CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 6732  040562  005037  004174                    CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 6733  040566  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 6734  040574  001401                            BEQ     10$             ;YES, CHECK CS2
 6735  040576  104224                            ERROR   224             ;CS1 INCORRECT
 6736  040600  023737  004170  004130  10$:      CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
```

```
                                                BEQ     11$             ;YES, CHECK DRIVE STATUS REG
                                                ERROR   225             ;CS2 INCORRECT
004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
                        BEQ     12$             ;YES, CHECK ERROR REG
                        ERROR   226             ;DRIVE STATUS REG. INCORRECT
004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR CORRECT
                        BEQ     TST76           ;;YES, GO ON TO NEXT TEST
                        ERROR   227             ;ERROR REG INCORRECT

                ;;*****************************************************************
                ;*TEST 76       NON-EXISTENT DRIVE (DRIVE MESSAGE TIME OUT)
                ;*
                ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                ;*      PUT THE RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE
                ;*      A SELECT TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 0,
                ;*      HEAD 0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
                ;*      PHASE ADDRESS 5.  TURN OFF DIAGNOSTIC MODE
                ;*      AND MAKE SURE NON-EXISTENT DRIVE AND CONTROLLER
                ;*      ERROR ARE SET.  THIS TEST CHECKS NON-EXISTENT DRIVE
                ;*      DUE TO DRIVE MESSAGE TIME OUT.
                ;*
                ;*****************************************************************
000004  TST76:  SCOPE
000144  001200         MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
001270           MOV     $BASE,R2        ;LOAD RK611 BASE
000040  000010 MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
000040  000026 MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
000001  000000 MOV     #SELDRV,RKCS1(R2)  ;ISSUE SELECT DRIVE
000124           MOV     #21.*4,R0       ;ISSUE CLOCKS THROUGH PHASE 4
000440  000026  1$:    MOV     #DMD!MCLK,RKMR1(R2)
000040  000026 MOV     #DMD,RKMR1(R2)
                        DEC     R0
                        BNE     1$
000026           CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
004262           MOV     WAITIM,R0       ;LOAD WAIT TIME
000000           2$:    TSTB    RKCS1(R2)       ;WAIT FOR READY
                        BMI     3$
                        DEC     R0
                        BNE     2$
004264           3$:    MOV     STALL,R0        ;STALL 100 USEC FOR MESSAGE TIME OUT
                 4$:    DEC     R0
                        BNE     4$
000000  004120 MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
000010  004130 MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
000012  004132 MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
000014  004134 MOV     RKER(R2),T.ER   ;STORE ERROR REG
100200  004160 MOV     #CERR!RDY,E.CS1 ;LOAD EXPECTED CS1
020000  004120 BIT     #SPAR,T.CS1     ;CHECK FOR BUS PARITY ERROR
                        BEQ     5$
020000  004160 BIS     #SPAR,E.CS1     ;PUT BUS PARITY ERROR IN EXPECTED CS1
010100  004170  5$:    MOV     #NED!IR,E.CS2   ;LOAD EXPECTED CS2
100000  004172 MOV     #SVAL,E.DS      ;LOAD EXPECTED DRIVE STATUS REG.
004174           CLR     E.ER            ;LOAD EXPECTED ERROR REG.
004160  004120 CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
                        BEQ     6$              ;YES, CHECK CS2
                        ERROR   244             ;CS1 INCORRECT
```

```
6793  041060  023737  004170  004130  6$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
6794  041066  001401                          BEQ     7$              ;YES, CHECK DRIVE STATUS REG
6795  041070  104245                          ERROR   245             ;CS2 INCORRECT
6796  041072  023737  004172  004132  7$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6797  041100  001401                          BEQ     8$              ;YES, CHECK ERROR REG.
6798  041102  104246                          ERROR   246             ;DRIVE STATUS INCORRECT
6799  041104  023737  004174  004134  8$:     CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6800  041112  001401                          BEQ     9$              ;YES, ISSUE CONTROLLER CLEAR
6801  041114  104247                          ERROR   247             ;ERROR REG INCORRECT
6802  041116  013737  004120  004220  9$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CS1,CS2
6803  041124  013737  004130  004222          MOV     T.CS2,P.CS2     ;  DRIVE STATUS REG.,
6804  041132  013737  004132  004224          MOV     T.DS,P.DS       ;  AND ERROR REG.
6805  041140  013737  004134  004226          MOV     T.ER,P.ER
6806  041146  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
6807  041154  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6808  041162  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6809  041170  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
6810  041176  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
6811  041204  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
6812  041212  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
6813  041220  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
6814  041224  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
6815  041230  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
6816  041236  001401                          BEQ     10$             ;YES, CHECK CS2
6817  041240  104224                          ERROR   224             ;CS1 INCORRECT
6818  041242  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
6819  041250  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG.
6820  041252  104225                          ERROR   225             ;CS2 INCORRECT
6821  041254  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6822  041262  001401                          BEQ     12$             ;YES, CHECK ERROR REG
6823  041264  104226                          ERROR   226             ;DRIVE STATUS INCORRECT
6824  041266  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6825  041274  001401                          BEQ     TST77           ;;YES, GO ON TO NEXT TEST
6826  041276  104227                          ERROR   227             ;ERROR MESSAGE INCORRECT
6827
6828                                  ;;*****************************************************************
6829                                  ;*TEST 77       NON-EXISTENT DRIVE AND NO SACK
6830                                  ;*
6831                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
6832                                  ;*      THE RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A
6833                                  ;*      SELECT TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 0,
6834                                  ;*      HEAD 0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
6835                                  ;*      PHASE ADDRESS 4.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
6836                                  ;*      NON-EXISTENT DRIVE AND CONTROLLER ERROR ARE SET.
6837                                  ;*
6838                                  ;*      THIS TEST EXERCISES THE NON-EXISTENT DRIVE LOGIC
6839                                  ;*      DUE TO RELEASE BIT RESET AND SACK RESET BUT THE PASSING
6840                                  ;*      OF THIS TEST DOES GUARENTEE THAT THIS SITUATION DID
6841                                  ;*      INDEED CAUSE A NON-EXISTENT DRIVE.
6842                                  ;*
6843                                  ;;*****************************************************************
6844  041300  000004                  TST77:  SCOPE
6845  041302  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
6846  041310  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
6847  041314  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
6848  041322  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
```

```
6849  041330  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)  ;ISSUE SELECT DRIVE
6850  041336  012700  000116                  MOV     #19.*4+2,R0        ;ISSUE CLOCKS THROUGH PHASE 3
6851  041342  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
6852  041350  012762  000040  000026          MOV     #DMD,RKMR1(R2)
6853  041356  005300                          DEC     R0
6854  041360  001370                          BNE     1$
6855  041362  005062  000026                  CLR     RKMR1(R2)          ;ALLOW COMMAND TO FINISH
6856  041366  013700  004262                  MOV     WAITIM,R0          ;LOAD WAIT TIME
6857  041372  105762  000000          3$:     TSTB    RKCS1(R2)          ;WAIT FOR READY
6858  041376  100402                          BMI     4$
6859  041400  005300                          DEC     R0
6860  041402  001373                          BNE     3$
6861  041404  016237  000000  004120  4$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6862  041412  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6863  041420  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
6864  041426  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
6865  041434  012737  100200  004160          MOV     #CERR!RDY,E.CS1 ;LOAD EXPECTED CS1
6866  041442  012737  010100  004170          MOV     #NED!IR,E.CS2   ;LOAD EXPECTED CS2
6867  041450  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
6868  041454  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
6869  041460  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
6870  041466  001401                          BEQ     5$              ;YES, CHECK CS2
6871  041470  104250                          ERROR   250             ;CS1 INCORRECT
6872  041472  023737  004170  004130  5$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
6873  041500  001401                          BEQ     6$              ;YES, CHECK DRIVE STATUS REG
6874  041502  104251                          ERROR   251             ;CS2 INCORRECT
6875  041504  023737  004172  004132  6$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6876  041512  001401                          BEQ     7$              ;YES, CHECK ERROR REG.
6877  041514  104252                          ERROR   252             ;DRIVE STATUS INCORRECT
6878  041516  023737  004174  004134  7$:     CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6879  041524  001401                          BEQ     8$              ;YES, ISSUE CONTROLLER CLEAR
6880  041526  104253                          ERROR   253             ;ERROR REG INCORRECT
6881  041530  013737  004120  004220  8$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CS1,CS2
6882  041536  013737  004130  004222          MOV     T.CS2,P.CS2     ;  DRIVE STATUS REG.,
6883  041544  013737  004132  004224          MOV     T.DS,P.DS       ;  AND ERROR REG.
6884  041552  013737  004134  004226          MOV     T.ER,P.ER
6885  041560  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
6886  041566  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6887  041574  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6888  041602  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
6889  041610  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
6890  041616  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
6891  041624  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
6892  041632  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
6893  041636  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
6894  041642  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
6895  041650  001401                          BEQ     10$             ;YES, CHECK CS2
6896  041652  104224                          ERROR   224             ;CS1 INCORRECT
6897  041654  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
6898  041662  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG.
6899  041664  104225                          ERROR   225             ;CS2 INCORRECT
6900  041666  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6901  041674  001401                          BEQ     12$             ;YES, CHECK ERROR REG
6902  041676  104226                          ERROR   226             ;DRIVE STATUS INCORRECT
6903  041700  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6904  041706  001401                          BEQ     TST100          ;;YES, GO ON TO NEXT TEST
```

```
                                        ERROR   227             ;ERROR MESSAGE INCORRECT

                                .SBTTL  **ILLEGAL FUNCTION CODE TEST

                                ;;*****************************************************************
                                ;*TEST 100      ILLEGAL FUNCTION CODE
                                ;*
                                ;*      CLEAR RK611 WITH A CONTROLLER CLEAR.  ISSUE AN ILLEGAL
                                ;*      COMMAND IN NORMAL MODE AND MAKE SURE COMMAND FINISHES
                                ;*      SETTING CONTROLLER READY WITH PROPER ERROR CONDITIONS.
                                ;*
                                ;;*****************************************************************
041712  000004                 TST100: SCOPE
041714  012737  000764  001200         MOV     #500.,$TIMES    ;;DO 500. ITERATIONS
041722  012737  000033  004270         MOV     #33,ILLFUN      ;SET ILLEGAL FUNCTION
041730  012737  041736  001110         MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                                ;  SUBTEST LOOP

041736                          1$:
041736  012762  100000  000000         MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER
041744  013737  004270  004160         MOV     ILLFUN,E.CS1    ;GENERATE EXPECTED CS1
041752  042737  000001  004160         BIC     #GO,E.CS1
041760  052737  100200  004160         BIS     #CERR!RDY,E.CS1
041766  012737  000001  004174         MOV     #ILF,E.ER       ;LOAD EXPECTED ERROR REG
041774  012762  000040  000026         MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
042002  013762  004270  000000         MOV     ILLFUN,RKCS1(R2) ;ISSUE ILLEGAL FUNCTION
042010  016237  000000  004120         MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
042016  016237  000014  004134         MOV     RKER(R2),T.ER   ;STORE ERROR REG
042024  023737  004160  004120         CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
042032  001401                       BEQ     3$              ;YES, CHECK ERROR REG
042034  104256                       ERROR   256             ;CS1 INCORRECT AFTER ILL FUNCT
042036  023737  004174  004134  3$:  CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
042044  001401                       BEQ     4$              ;YES, CLEAR CONTROLLER
042046  104257                       ERROR   257             ;ERROR REG INCORRECT AFTER ILL FUNCT
042050  012762  100000  000000  4$:  MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER
042056  016237  000000  004120         MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
042064  016237  000014  004134         MOV     RKER(R2),T.ER   ;STORE ERROR REG
042072  012737  000200  004160         MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
042100  005037  004174                 CLR     E.ER            ;LOAD EXPECTED ERROR REG
042104  023737  004160  004120         CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT (CERR CLEAR)
042112  001401                       BEQ     6$              ;YES, CHECK IF ERROR REG CORRECT
042114  104260                       ERROR   260             ;CONTROL CLEAR DID NOT CLEAR CERR
042116  023737  004174  004134  6$:  CMP     E.ER,T.ER       ;CHECK IF ILF CLEARED
042124  001401                       BEQ     7$              ;YES, GO ON TO NEXT CONFIGURATION
042126  104261                       ERROR   261             ;CONTROLLER CLEAR DID NOT CLEAR ILF
042130  104415                  7$:  SCOP1                   ;CHECK IF LOOP ON ERROR
042132  062737  000002  004270         ADD     #2,ILLFUN       ;GENERATE NEXT ILLEGAL FUNCTION
042140  022737  000041  004270         CMP     #41,ILLFUN      ;CHECK IF FINISHED
042146  101273                       BHI     1$              ;NO, USE NEXT CONFIGURATION
```

```
                                        .SBTTL  END OF PASS ROUTINE
                                        ;;*********************************************************************
                                        ;*INCREMENT THE PASS NUMBER ($PASS)
                                        ;*TYPE "END PASS #XXXXX TOTAL NUMBER OF ERRORS SINCE LAST REPORT YYYYY"
                                        ;*WHERE XXXXX AND YYYYY ARE DECIMAL NUMBERS
                                        ;*IF THERES A MONITOR GO TO IT
                                        ;*IF THERE ISN'T JUMP TO NEWPAS

042150                                  $EOP:
042150  000004                                  SCOPE
042152  005037  001102                          CLR     $TSTNM          ;;ZERO THE TEST NUMBER
042156  005037  001200                          CLR     $TIMES          ;;ZERO THE NUMBER OF ITERATIONS
042162  005237  001222                          INC     $PASS           ;;INCREMENT THE PASS NUMBER
042166  042737  100000  001222                BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
042174  005327                                  DEC     (PC)+           ;;LOOP?
042176  000001                          $EOPCT: .WORD   1
042200  003063                                  BGT     $DOAGN          ;;YES
042202  012737                                  MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
042204  000001                          $ENDCT: .WORD   1
042206  042176                                  $EOPCT
042210  104401  042216                          TYPE    ,65$            ;;TYPE ASCIZ STRING
042214  000407                                  BR      64$             ;;GET OVER THE ASCIZ
                                        ;;65$:  .ASCIZ  <12><15>/END PASS #/
042234                                  64$:
042234  013746  001222                          MOV     $PASS,-(SP)     ;;SAVE $PASS FOR TYPEOUT
                                                                        ;;TYPE PASS NUMBER
042240  104405                                  TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
042242  104401  042250                          TYPE    ,67$            ;;TYPE ASCIZ STRING
042246  000421                                  BR      66$             ;;GET OVER THE ASCIZ
                                        ;;67$:  .ASCIZ  /  TOTAL ERRORS SINCE LAST REPORT /
042312                                  66$:
042312  013746  001112                          MOV     $ERTTL,-(SP)    ;;SAVE $ERTTL FOR TYPEOUT
                                                                        ;;TOTAL NUMBER OF ERRORS
042316  104405                                  TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
042320  104401  001211                          TYPE    ,$CRLF          ;;TYPE CARRIAGE RETURN, LINE FEED
042324  005037  001112                          CLR     $ERTTL          ;;CLEAR ERROR TOTAL
042330  013700  000042                  $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
042334  001405                                  BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
042336  000005                                  RESET                   ;;CLEAR THE WORLD
042340  004710                          $ENDAD: JSR     PC,(R0)         ;;GO TO MONITOR
042342  000240                                  NOP                     ;;SAVE ROOM
042344  000240                                  NOP                     ;;FOR
042346  000240                                  NOP                     ;;ACT11
042350                                  $DOAGN:
042350  000137                                  JMP     @(PC)+          ;;RETURN
042352  005254                          $RTNAD: .WORD   NEWPAS
042354     377     377     000          $ENULL: .BYTE   -1,-1,0         ;;NULL CHARACTER STRING
042360                                          .EVEN

                                        .SBTTL  CHECK FOR MEMORY CHECK ENABLE OPTION

042360  012737  042432  000004  CHKPAR: MOV     #20$,ERRVEC     ;SET VECTOR FOR MEMORY PARITY CHECK
042366  012737  000340  000006          MOV     #PR7,ERRVEC+2
042374  012703  172100                  MOV     #MEMBAS,R3      ;LOAD REGISTER TO DETERMINE IF
                                                                ;  MEMORY CHECK ENABLE AVAILIABLE
```

```
                                        MOV     #16.,R4             ;LOAD COUNT
                                16$:    MOV     #PAR.EN,(R3)+       ;EMABLE MEMORY CHECK
                                        MOV     #MEMERR,MEMVEC      ;LOAD MEMORY CHECK VECTOR
                                        MOV     #PR7,MEMVEC+2
                                        DEC     R4                  ;CHECK IF FINISHED
                                        BNE     16$                 ;NO, SET UP NEXT MEMORY PARITY MODULE
                                        BR      22$                 ;RESTORE TRAP VECTOR

                                20$:    CMP     (SP)+,(SP)+         ;ADJUST STACK
                                22$:    MOV     #ERRVEC+2,ERRVEC    ;RESTORE TRAP CATCHER
                                        CLR     ERRVEC+2
                                        RTS     PC                  ;RETURN

                                .SBTTL  MEMORY CHECK ENABLE TRAP

                                MEMERR: MOV     #10$,$ESCAPE        ;LOAD ESCAPE
                                        MOV     (SP),TRAPPC         ;STORE PC
                                        ERROR   262                 ;REPORT MEM PARITY ERROR
                                10$:    CLR     $ESCAPE             ;CLEAR ESCAPE
                                        BIT     #SW9,@SWR           ;CHECK IF LOOP ON ERROR
                                        BNE     15$                 ;YES, FORCE STACK AND TRY AGAIN
                                        RTI                         ;NO, RETURN

                                15$:    MOV     #STACK,SP           ;INITIALIZE STACK
                                        JMP     @$LPERR             ;LOOP ON ERROR

                                .SBTTL  SCOPE HANDLER ROUTINE

                                ;;**********************************************************************
                                ;*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
                                ;*AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
                                ;*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
                                ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
                                ;*SW14=1         LOOP ON TEST
                                ;*SW11=1         INHIBIT ITERATIONS
                                ;*SW09=1         LOOP ON ERROR
                                ;*SW08=1         LOOP ON TEST IN SWR<7:0>
                                ;*CALL
                                ;*      SCOPE           ;;SCOPE=IOT

                                $SCOPE:
                                        CKSWR                       ;;TEST  FOR CHANGE IN SOFT-SWR
                                1$:     BIT     #BIT14,@SWR         ;;LOOP ON PRESENT TEST?
                                        BNE     $OVER               ;;YES IF SW14=1
                                ;#####START OF CODE FOR THE XOR TESTER#####
                                $XTSTR: BR      6$                  ;;IF RUNNING ON THE "XOR" TESTER CHANGE
                                                                    ;;THIS INSTRUCTION TO A "NOP" (NOP=240)
                                        MOV     @#ERRVEC,-(SP)      ;;SAVE THE CONTENTS OF THE ERROR VECTOR
                                        MOV     #5$,@#ERRVEC        ;;SET FOR TIMEOUT
                                        TST     @#177060            ;;TIME OUT ON XOR?
                                        MOV     (SP)+,@#ERRVEC      ;;RESTORE THE ERROR VECTOR
                                        BR      $SVLAD              ;;GO TO THE NEXT TEST
                                5$:     CMP     (SP)+,(SP)+         ;;CLEAR THE STACK AFTER A TIME OUT
                                        MOV     (SP)+,@#ERRVEC      ;;RESTORE THE ERROR VECTOR
                                        BR      7$                  ;;LOOP ON THE PRESENT TEST
                                6$:;#####END OF CODE FOR THE XOR TESTER#####
```

```
7067  042562  032777  000400  136350          BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
7068  042570  001421                          BEQ     2$              ;;BR IF NO
7069  042572  005046                          CLR     -(SP)           ;;CLEAR A TEMP. LOCATION
7070  042574  117716  136340                  MOVB    @SWR,(SP)       ;;PICKUP THE DESIRED TEST NUMBER
7071  042600  001414                          BEQ     8$              ;;BRANCH IF BAD TEST NUMBER IN SWR
7072  042602  022716  000100                  CMP     #100,(SP)       ;;CHECK THE NUMBER IN THE SWR
7073  042606  002411                          BLT     8$              ;;BRANCH IF TEST NUMBER IS OUT OF RANGE
7074  042610  011637  001102                  MOV     (SP),$TSTNM     ;;UPDATE THE TEST NUMBER
7075  042614  005316                          DEC     (SP)            ;;BACKUP BY ONE
7076  042616  006316                          ASL     (SP)            ;;SCALE THE TEST NUMBER AS AN INDEX
7077  042620  062716  043024                  ADD     #$SW08TBL,(SP)  ;;FORM THE ADDRESS OF TEST POINTER
7078  042624  013637  001106                  MOV     @(SP)+,$LPADR   ;;SET LOOP ADDRESS TO DESIRED TEST
7079  042630  000466                          BR      $OVER           ;;GO LOOP ON THE TEST
7080  042632  005726                  8$:     TST     (SP)+           ;;CLEAN THE BAD TEST NUMBER OFF OF THE STACK
7081  042634  105737  001103          2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
7082  042640  001421                          BEQ     3$              ;;BR IF NO
7083  042642  123737  001115  001103          CMPB    $ERMAX,$ERFLG   ;;MAX. ERRORS FOR THIS TEST OCCURRED?
7084  042650  101015                          BHI     3$              ;;BR IF NO
7085  042652  032777  001000  136260          BIT     #BIT09,@SWR     ;;LOOP ON ERROR?
7086  042660  001404                          BEQ     4$              ;;BR IF NO
7087  042662  013737  001110  001106  7$:     MOV     $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
7088  042670  000446                          BR      $OVER
7089  042672  105037  001103          4$:     CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
7090  042676  005037  001200                  CLR     $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
7091  042702  000415                          BR      1$              ;;ESCAPE TO THE NEXT TEST
7092  042704  032777  004000  136226  3$:     BIT     #BIT11,@SWR     ;;INHIBIT ITERATIONS?
7093  042712  001011                          BNE     1$              ;;BR IF YES
7094  042714  005737  001222                  TST     $PASS           ;;IF FIRST PASS OF PROGRAM
7095  042720  001406                          BEQ     1$              ;;      INHIBIT ITERATIONS
7096  042722  005237  001104                  INC     $ICNT           ;;INCREMENT ITERATION COUNT
7097  042726  023737  001200  001104          CMP     $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
7098  042734  002024                          BGE     $OVER           ;;BR IF MORE ITERATION REQUIRED
7099  042736  012737  000001  001104  1$:     MOV     #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
7100  042744  013737  043022  001200          MOV     $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
7101  042752  105237  001102          $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
7102  042756  113737  001102  001220          MOVB    $TSTNM,$TESTN   ;;SET TEST NUMBER IN APT MAILBOX
7103  042764  011637  001106                  MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
7104  042770  011637  001110                  MOV     (SP),$LPERR     ;;SAVE ERROR LOOP ADDRESS
7105  042774  005037  001202                  CLR     $ESCAPE         ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
7106  043000  112737  000001  001115          MOVB    #1,$ERMAX       ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
7107  043006  013777  001102  136126  $OVER:  MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
7108  043014  013716  001106                  MOV     $LPADR,(SP)     ;;FUDGE RETURN ADDRESS
7109  043020  000002                          RTI                     ;;FIXES PS
7110  043022  003720                  $MXCNT: 2000.                   ;;MAX. NUMBER OF ITERATIONS
7111  043024                          $SW08TBL:
7112  043024  005274                          .WORD   TST1+2          ;;STARTING ADDRESS OF TEST 1
7113  043026  005600                          .WORD   TST2+2          ;;STARTING ADDRESS OF TEST 2
7114  043030  006060                          .WORD   TST3+2          ;;STARTING ADDRESS OF TEST 3
7115  043032  006324                          .WORD   TST4+2          ;;STARTING ADDRESS OF TEST 4
7116  043034  006636                          .WORD   TST5+2          ;;STARTING ADDRESS OF TEST 5
7117  043036  007200                          .WORD   TST6+2          ;;STARTING ADDRESS OF TEST 6
7118  043040  007516                          .WORD   TST7+2          ;;STARTING ADDRESS OF TEST 7
7119  043042  010034                          .WORD   TST10+2         ;;STARTING ADDRESS OF TEST 10
7120  043044  010352                          .WORD   TST11+2         ;;STARTING ADDRESS OF TEST 11
7121  043046  010616                          .WORD   TST12+2         ;;STARTING ADDRESS OF TEST 12
7122  043050  011062                          .WORD   TST13+2         ;;STARTING ADDRESS OF TEST 13
```

```
7123  043052  011400                    .WORD   TST14+2         ;;STARTING ADDRESS OF TEST 14
7124  043054  011710                    .WORD   TST15+2         ;;STARTING ADDRESS OF TEST 15
7125  043056  012242                    .WORD   TST16+2         ;;STARTING ADDRESS OF TEST 16
7126  043060  012604                    .WORD   TST17+2         ;;STARTING ADDRESS OF TEST 17
7127  043062  013050                    .WORD   TST20+2         ;;STARTING ADDRESS OF TEST 20
7128  043064  013330                    .WORD   TST21+2         ;;STARTING ADDRESS OF TEST 21
7129  043066  013610                    .WORD   TST22+2         ;;STARTING ADDRESS OF TEST 22
7130  043070  014070                    .WORD   TST23+2         ;;STARTING ADDRESS OF TEST 23
7131  043072  014350                    .WORD   TST24+2         ;;STARTING ADDRESS OF TEST 24
7132  043074  014630                    .WORD   TST25+2         ;;STARTING ADDRESS OF TEST 25
7133  043076  015142                    .WORD   TST26+2         ;;STARTING ADDRESS OF TEST 26
7134  043100  015454                    .WORD   TST27+2         ;;STARTING ADDRESS OF TEST 27
7135  043102  015766                    .WORD   TST30+2         ;;STARTING ADDRESS OF TEST 30
7136  043104  016300                    .WORD   TST31+2         ;;STARTING ADDRESS OF TEST 31
7137  043106  016612                    .WORD   TST32+2         ;;STARTING ADDRESS OF TEST 32
7138  043110  017110                    .WORD   TST33+2         ;;STARTING ADDRESS OF TEST 33
7139  043112  017422                    .WORD   TST34+2         ;;STARTING ADDRESS OF TEST 34
7140  043114  017660                    .WORD   TST35+2         ;;STARTING ADDRESS OF TEST 35
7141  043116  020124                    .WORD   TST36+2         ;;STARTING ADDRESS OF TEST 36
7142  043120  020460                    .WORD   TST37+2         ;;STARTING ADDRESS OF TEST 37
7143  043122  021024                    .WORD   TST40+2         ;;STARTING ADDRESS OF TEST 40
7144  043124  021350                    .WORD   TST41+2         ;;STARTING ADDRESS OF TEST 41
7145  043126  021714                    .WORD   TST42+2         ;;STARTING ADDRESS OF TEST 42
7146  043130  022170                    .WORD   TST43+2         ;;STARTING ADDRESS OF TEST 43
7147  043132  022720                    .WORD   TST44+2         ;;STARTING ADDRESS OF TEST 44
7148  043134  023160                    .WORD   TST45+2         ;;STARTING ADDRESS OF TEST 45
7149  043136  023564                    .WORD   TST46+2         ;;STARTING ADDRESS OF TEST 46
7150  043140  024014                    .WORD   TST47+2         ;;STARTING ADDRESS OF TEST 47
7151  043142  024450                    .WORD   TST50+2         ;;STARTING ADDRESS OF TEST 50
7152  043144  025132                    .WORD   TST51+2         ;;STARTING ADDRESS OF TEST 51
7153  043146  025564                    .WORD   TST52+2         ;;STARTING ADDRESS OF TEST 52
7154  043150  026216                    .WORD   TST53+2         ;;STARTING ADDRESS OF TEST 53
7155  043152  026634                    .WORD   TST54+2         ;;STARTING ADDRESS OF TEST 54
7156  043154  027266                    .WORD   TST55+2         ;;STARTING ADDRESS OF TEST 55
7157  043156  027720                    .WORD   TST56+2         ;;STARTING ADDRESS OF TEST 56
7158  043160  030352                    .WORD   TST57+2         ;;STARTING ADDRESS OF TEST 57
7159  043162  031004                    .WORD   TST60+2         ;;STARTING ADDRESS OF TEST 60
7160  043164  031436                    .WORD   TST61+2         ;;STARTING ADDRESS OF TEST 61
7161  043166  032070                    .WORD   TST62+2         ;;STARTING ADDRESS OF TEST 62
7162  043170  032522                    .WORD   TST63+2         ;;STARTING ADDRESS OF TEST 63
7163  043172  033154                    .WORD   TST64+2         ;;STARTING ADDRESS OF TEST 64
7164  043174  033572                    .WORD   TST65+2         ;;STARTING ADDRESS OF TEST 65
7165  043176  034224                    .WORD   TST66+2         ;;STARTING ADDRESS OF TEST 66
7166  043200  034706                    .WORD   TST67+2         ;;STARTING ADDRESS OF TEST 67
7167  043202  035370                    .WORD   TST70+2         ;;STARTING ADDRESS OF TEST 70
7168  043204  036052                    .WORD   TST71+2         ;;STARTING ADDRESS OF TEST 71
7169  043206  036534                    .WORD   TST72+2         ;;STARTING ADDRESS OF TEST 72
7170  043210  037216                    .WORD   TST73+2         ;;STARTING ADDRESS OF TEST 73
7171  043212  037700                    .WORD   TST74+2         ;;STARTING ADDRESS OF TEST 74
7172  043214  040212                    .WORD   TST75+2         ;;STARTING ADDRESS OF TEST 75
7173  043216  040640                    .WORD   TST76+2         ;;STARTING ADDRESS OF TEST 76
7174  043220  041302                    .WORD   TST77+2         ;;STARTING ADDRESS OF TEST 77
7175  043222  041714                    .WORD   TST100+2                ;;STARTING ADDRESS OF TEST 100
7176                          ;;**************************************************************************
7177                          .SBTTL  LOOP ON INTERNAL ERROR
7178
```

```
7179  043224  032777  001000  135706  SCOP1$: BIT     #SW9,@SWR               ;CHECK IF LOOP ON ERROR
7180  043232  001405                          BEQ     5$                      ;NO, CONTINUE
7181  043234  105737  001103                TSTB    $ERFLG                  ;CHECK IF ERROR OCCURRED
7182  043240  001402                          BEQ     5$                      ;NO, CONTINUE
7183  043242  013716  001110                MOV     $LPERR,(SP)             ;LOAD ERROR RETURN
7184  043246  000002                  5$:     RTI                             ;RETURN
7185                                  .SBTTL  APT COMMUNICATIONS ROUTINE
7186
7187                                  ;;**************************************************************************
7188  043250  112737  000001  043514  $ATY1:  MOVB    #1,$FFLG        ;;TO REPORT FATAL ERROR
7189  043256  112737  000001  043512  $ATY3:  MOVB    #1,$MFLG        ;;TO TYPE A MESSAGE
7190  043264  000403                          BR      $ATYC
7191  043266  112737  000001  043514  $ATY4:  MOVB    #1,$FFLG        ;;TO ONLY REPORT FATAL ERROR
7192  043274                          $ATYC:
7193  043274  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
7194  043276  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
7195  043300  105737  043512                TSTB    $MFLG           ;;SHOULD TYPE A MESSAGE?
7196  043304  001450                          BEQ     5$              ;;IF NOT:  BR
7197  043306  122737  000001  001234        CMPB    #APTENV,$ENV    ;;OPERATING UNDER APT?
7198  043314  001031                          BNE     3$              ;;IF NOT:  BR
7199  043316  132737  000100  001235        BITB    #APTSPOOL,$ENVM ;;SHOULD SPOOL MESSAGES?
7200  043324  001425                          BEQ     3$              ;;IF NOT:  BR
7201  043326  017600  000004                MOV     @4(SP),R0       ;;GET MESSAGE ADDR.
7202  043332  062766  000002  000004        ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
7203  043340  005737  001214          1$:   TST     $MSGTYPE        ;;SEE IF DONE W/ LAST XMISSION?
7204  043344  001375                          BNE     1$              ;;IF NOT:  WAIT
7205  043346  010037  001230                MOV     R0,$MSGAD       ;;PUT ADDR IN MAILBOX
7206  043352  105720                  2$:     TSTB    (R0)+           ;;FIND END OF MESSAGE
7207  043354  001376                          BNE     2$
7208  043356  163700  001230                SUB     $MSGAD,R0       ;;SUB START OF MESSAGE
7209  043362  006200                          ASR     R0              ;;GET MESSAGE LNGTH IN WORDS
7210  043364  010037  001232                MOV     R0,$MSGLGT      ;;PUT LENGTH IN MAILBOX
7211  043370  012737  000004  001214        MOV     #4,$MSGTYPE     ;;TELL APT TO TAKE MSG.
7212  043376  000413                          BR      5$
7213  043400  017637  000004  043424  3$:    MOV     @4(SP),4$       ;;PUT MSG ADDR IN JSR LINKAGE
7214  043406  062766  000002  000004        ADD     #2,4(SP)                ;;BUMP RETURN ADDRESS
7215  043414  013746  177776                MOV     177776,-(SP)    ;;PUSH 177776 ON STACK
7216  043420  004737  044200                JSR     PC,$TYPE        ;;CALL TYPE MACRO
7217  043424  000000                  4$:     .WORD   0
7218  043426                          5$:
7219  043426  105737  043514          10$:    TSTB    $FFLG           ;;SHOULD REPORT FATAL ERROR?
7220  043432  001416                          BEQ     12$             ;;IF NOT:  BR
7221  043434  005737  001234                TST     $ENV            ;;RUNNING UNDER APT?
7222  043440  001413                          BEQ     12$             ;;IF NOT:  BR
7223  043442  005737  001214          11$:    TST     $MSGTYPE        ;;FINISHED LAST MESSAGE?
7224  043446  001375                          BNE     11$             ;;IF NOT:  WAIT
7225  043450  017637  000004  001216        MOV     @4(SP),$FATAL   ;;GET ERROR #
7226  043456  062766  000002  000004        ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
7227  043464  005237  001214                INC     $MSGTYPE        ;;TELL APT TO TAKE ERROR
7228  043470  105037  043514          12$:    CLRB    $FFLG           ;;CLEAR FATAL FLAG
7229  043474  105037  043513                CLRB    $LFLG           ;;CLEAR LOG FLAG
7230  043500  105037  043512                CLRB    $MFLG           ;;CLEAR MESSAGE FLAG
7231  043504  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
7232  043506  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
7233  043510  000207                          RTS     PC              ;;RETURN
7234  043512     000          $MFLG:  .BYTE   0               ;;MESSG. FLAG
```

```
7235  043513  000                     $LFLG:  .BYTE   0               ;;LOG FLAG
7236  043514  000                     $FFLG:  .BYTE   0               ;;FATAL FLAG
7237          043516                          .EVEN
7238          000200                  APTSIZE=200
7239          000001                  APTENV=001
7240          000100                  APTSPOOL=100
7241          000040                  APTCSUP=040
7242                                  .SBTTL  ERROR HANDLER ROUTINE
7243
7244                                  ;;*********************************************************************
7245                                  ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
7246                                  ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
7247                                  ;*AND GO TO TYPERR ON ERROR
7248                                  ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
7249                                  ;*SW15=1         HALT ON ERROR
7250                                  ;*SW13=1         INHIBIT ERROR TYPEOUTS
7251                                  ;*SW10=1         BELL ON ERROR
7252                                  ;*SW09=1         LOOP ON ERROR
7253                                  ;*CALL
7254                                  ;*      ERROR   N       ;;ERROR=EMT AND N=ERROR ITEM NUMBER
7255
7256  043516                          $ERROR:
7257  043516  104407                          CKSWR                   ;;TEST FOR CHANGE IN SOFT-SWR
7258  043520  105237  001103          7$:     INCB    $ERFLG          ;;SET THE ERROR FLAG
7259  043524  001775                          BEQ     7$              ;;DON'T LET THE FLAG GO TO ZERO
7260  043526  013777  001102  135406        MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
7261  043534  032777  002000  135376        BIT     #BIT10,@SWR     ;;BELL ON ERROR?
7262  043542  001402                        BEQ     1$              ;;NO - SKIP
7263  043544  104401  001204                TYPE    ,$BELL          ;;RING BELL
7264  043550  005237  001112          1$:     INC     $ERTTL          ;;COUNT THE NUMBER OF ERRORS
7265  043554  011637  001116                MOV     (SP),$ERRPC     ;;GET ADDRESS OF ERROR INSTRUCTION
7266  043560  162737  000002  001116        SUB     #2,$ERRPC
7267  043566  117737  135324  001114        MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
7268  043574  032777  020000  135336        BIT     #BIT13,@SWR     ;;SKIP TYPEOUT IF SET
7269  043602  001004                        BNE     20$             ;;SKIP TYPEOUTS
7270  043604  004737  043716                JSR     PC,TYPERR       ;;GO TO USER ERROR ROUTINE
7271  043610  104401  001211                TYPE    ,$CRLF
7272  043614                          20$:
7273  043614  122737  000001  001234        CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
7274  043622  001007                        BNE     2$              ;;NO,SKIP APT ERROR REPORT
7275  043624  113737  001114  043636        MOVB    $ITEMB,21$      ;;SET ITEM NUMBER AS ERROR NUMBER
7276  043632  004737  043266                JSR     PC,$ATY4        ;;REPORT FATAL ERROR TO APT
7277  043636     000          21$:    .BYTE   0
7278  043637     000                  .BYTE   0
7279  043640  000777          22$:    BR      22$             ;;APT ERROR LOOP
7280  043642  005777  135272          2$:     TST     @SWR            ;;HALT ON ERROR
7281  043646  100002                        BPL     3$              ;;SKIP IF CONTINUE
7282  043650  000000                        HALT                    ;;HALT ON ERROR!
7283  043652  104407                        CKSWR                   ;;TEST FOR CHANGE IN SOFT-SWR
7284  043654  032777  001000  135256  3$:   BIT     #BIT09,@SWR     ;;LOOP ON ERROR SWITCH SET?
7285  043662  001402                        BEQ     4$              ;;BR IF NO
7286  043664  013716  001110                MOV     $LPERR,(SP)     ;;FUDGE RETURN FOR LOOPING
7287  043670  005737  001202          4$:     TST     $ESCAPE         ;;CHECK FOR AN ESCAPE ADDRESS
7288  043674  001402                        BEQ     5$              ;;BR IF NONE
7289  043676  013716  001202                MOV     $ESCAPE,(SP)    ;;FUDGE RETURN ADDRESS FOR ESCAPE
7290  043702                          5$:
```

```
7291  043702  022737  042340  000042          CMP     #$ENDAD,@#42    ;;ACT-11 AUTO-ACCEPT?
7292  043710  001001                          BNE     6$              ;;BRANCH IF NO
7293  043712  000000                          HALT                    ;;YES
7294  043714                          6$:
7295  043714  000002                          RTI                     ;;RETURN
7296
7297                                  ;;**********************************************************************
7298                                  .SBTTL  TYPE ERROR ROUTINE
7299                                  ;*ENTRY JSR PC,TYPERR
7300                                  ;*RETURN RTS PC
7301                                  ;*
7302                                  ;*THIS ROUTINE USES THE "ITEM CONTROL BYTE" ($ITEMB) TO DETERMINE WHICH
7303                                  ;*ERROR IS TO BE REPORTED. IT THEN USES THE "ERROR TABLE" ($ERRTB)
7304                                  ;*ENTRY TO DEFINE WHAT INFORMATION IS TO BE REPORTED CONCERNING
7305                                  ;*THE ERROR.
7306                                  ;;**********************************************************************
7307  043716  104413                  TYPERR: SAVREG
7308  043720  113700  001114                  MOVB    $ITEMB,R0       ;ENTER ERROR NUMBER
7309  043724  042700  177400                  BIC     #177400,R0      ;CLEAR UNUSED BITS
7310  043730  005300                          DEC     R0              ;FORM INDEX FOR ERROR TABLE
7311  043732  006300                          ASL     R0
7312  043734  006300                          ASL     R0
7313  043736  006300                          ASL     R0
7314  043740  062700  001300          1$:     ADD     #$ERRTB,R0      ;FORM ADDRESS OF ERROR ENTRY
7315  043744  012037  043760                  MOV     (R0)+,2$        ;GET EM POINTER
7316  043750  001404                          BEQ     3$              ;BRANCH IF THERE ISN'T ONE
7317  043752  104401  001211                  TYPE    ,$CRLF          ;TYPE CARRIAGE RETURN LINE FEED
7318  043756  104401                          TYPE                    ;TYPE ERROR MESSAGE (EM)
7319  043760  000000                  2$:     .WORD   0               ;EM POINTER GOES HERE
7320  043762  012037  043776          3$:     MOV     (R0)+,4$        ;GET DH POINTER
7321  043766  001404                          BEQ     5$              ;BRANCH IF THERE ISN'T ONE
7322  043770  104401  001211                  TYPE    ,$CRLF          ;TYPE CR-LF
7323  043774  104401                          TYPE                    ;TYPE DATA HEADER
7324  043776  000000                  4$:     .WORD   0               ;DH POINTER GOES HERE
7325  044000  012001                  5$:     MOV     (R0)+,R1        ;GET DT POINTER
7326  044002  001445                          BEQ     20$             ;BRANCH IF THERE ARE NONE
7327  044004  005004                          CLR     R4              ;RESET INDENT SWITCH
7328  044006  012000                          MOV     (R0)+,R0        ;GET DF POINTER
7329  044010  012002                          MOV     (R0)+,R2        ;STORE NUMBER OF DH'S
7330  044012  104401  001211                  TYPE    ,$CRLF          ;TYPE <CR><LF>
7331  044016  112003                  10$:    MOVB    (R0)+,R3        ;GET & STORE NUMBER OF DATA WORDS
7332  044020  105720                          TSTB    (R0)+           ;BUMP PAST FORMAT WORD
7333  044022  005703                          TST     R3              ;TEST IF ANY DATA FOR THIS HEADER
7334  044024  001416                          BEQ     14$             ;NO - SKIP DATA PRINT
7335  044026  005704                          TST     R4              ;CHECK FOR INDENT
7336  044030  001004                          BNE     12$             ;YES, GO INDENT
7337  044032  013146                  11$:    MOV     @(R1)+,-(SP)    ;PUT FIRST DATA WORD ON STACK
7338  044034  104402                          TYPOC                   ;TYPE IT
7339  044036  005303                          DEC     R3              ;MORE DATA WORDS
7340  044040  001403                          BEQ     13$             ;NO-BRANCH
7341  044042  104401  050201          12$:    TYPE    ,SPACE2         ;TYPE SEPARATORS
7342  044046  000771                          BR      11$             ;LOOP
7343  044050  104401  001211          13$:    TYPE    ,$CRLF          ;TYPE <CR><LF>
7344  044054  005710                          TST     (R0)            ;CHECK IF NEXT HEADER AVAILIBLE
7345  044056  001401                          BEQ     14$             ;NO, DO NOT CHANGE INDENT
7346  044060  005104                          COM     R4              ;CHANGE INDENT
```

```
7347  044062  005302                  14$:    DEC     R2              ;MORE DH'S?
7348  044064  003414                          BLE     20$             ;NO-BRANCH
7349  044066  012037  044106          15$:    MOV     (R0)+,18$       ;GET NEXT DH POINTER
7350  044072  001751                          BEQ     10$             ;IF NO HEADER GO GET DATA
7351  044074  005704                          TST     R4              ;INDENT?
7352  044076  001402                          BEQ     17$             ;NO-BRANCH
7353  044100  104401  050201                  TYPE    ,SPACE2         ;YES-TYPE SPACES
7354  044104  104401                  17$:    TYPE                    ;TYPE DH
7355  044106  000000                  18$:    .WORD   0               ;DH POINTER GOES HERE
7356  044110  104401  001211                  TYPE    ,$CRLF
7357  044114  000740                          BR      10$             ;GO TYPE OUT DATA
7358  044116  104414                  20$:    RESREG
7359  044120  005237  004242                  INC     ERRCNT          ;INCREMENT THE ERROR COUNT
7360  044124  032777  010000  135006          BIT     #SW12,@SWR      ;CHECK IF SWITCH 12 SET
7361  044132  001421                          BEQ     25$             ;NO, RETURN
7362  044134  022737  000024  004242          CMP     #20.,ERRCNT     ;CHECK IF ERROR THRESHOLD EXCEEDED
7363  044142  103015                          BHIS    25$             ;NO, RETURN
7364  044144  104401  050204                  TYPE    ,ABORT          ;TYPE "PROGRAM ABORTED BECAUSE ERROR
7365                                                                  ;  THRESHOLD EXCEEDED"
7366  044150  005737  000042                  TST     42              ;CHECK IF IN CHAIN MODE
7367  044154  001407                          BEQ     22$             ;NO, HALT PROCESSOR
7368  044156  012737  000001  042176          MOV     #1,$EOPCT       ;FOR PASS COUNT FOR ABORT
7369  044164  012706  001100                  MOV     #STACK,SP       ;INITIALIZE STACK
7370  044170  000137  042150                  JMP     $EOP            ;BRING IN NEXT PROGRAM
7371
7372  044174  000000                  22$:    HALT
7373  044176  000207                  25$:    RTS     PC
7374                                  .SBTTL  TYPE ROUTINE
7375
7376                                  ;;**********************************************************************
7377                                  ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
7378                                  ;*THE POUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
7379                                  ;*NOTE1:        $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
7380                                  ;*NOTE2:        $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
7381                                  ;*NOTE3:        $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
7382                                  ;*
7383                                  ;*CALL:
7384                                  ;*1) USING A TRAP INSTRUCTION
7385                                  ;*      TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
7386                                  ;*OR
7387                                  ;*      TYPE
7388                                  ;*      MESADR
7389                                  ;*
7390
7391  044200  105737  001157          $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
7392  044204  100002                          BPL     1$              ;;BR IF YES
7393  044206  000000                          HALT                    ;;HALT HERE IF NO TERMINAL
7394  044210  000430                          BR      3$              ;;LEAVE
7395  044212  010046                  1$:     MOV     R0,-(SP)        ;;SAVE R0
7396  044214  017600  000002                  MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
7397  044220  122737  000001  001234          CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
7398  044226  001011                          BNE     62$             ;;NO,GO CHECK FOR APT CONSOLE
7399  044230  132737  000100  001235          BITB    #APTSPOOL,$ENVM ;;SPOOL MESSAGE TO APT
7400  044236  001405                          BEQ     62$             ;;NO,GO CHECK FOR CONSOLE
7401  044240  010037  044250                  MOV     R0,61$          ;;SETUP MESSAGE ADDRESS FOR APT
7402  044244  004737  043256                  JSR     PC,$ATY3        ;;SPOOL MESSAGE TO APT
```

```
7403  044250  000000                  61$:    .WORD   0                       ;;MESSAGE ADDRESS
7404  044252  132737  000040  001235  62$:    BITB    #APTCSUP,$ENVM          ;;APT CONSOLE SUPPRESSED
7405  044260  001003                          BNE     60$                     ;;YES,SKIP TYPE OUT
7406  044262  112046                  2$:     MOVB    (R0)+,-(SP)             ;;PUSH CHARACTER TO BE TYPED ONTO STACK
7407  044264  001005                          BNE     4$                      ;;BR IF IT ISN'T THE TERMINATOR
7408  044266  005726                          TST     (SP)+                   ;;IF TERMINATOR POP IT OFF THE STACK
7409  044270  012600                  60$:    MOV     (SP)+,R0                ;;RESTORE R0
7410  044272  062716  000002          3$:     ADD     #2,(SP)                 ;;ADJUST RETURN PC
7411  044276  000002                          RTI                             ;;RETURN
7412  044300  122716  000011          4$:     CMPB    #HT,(SP)                ;;BRANCH IF <HT>
7413  044304  001430                          BEQ     8$
7414  044306  122716  000200                  CMPB    #CRLF,(SP)              ;;BRANCH IF NOT <CRLF>
7415  044312  001006                          BNE     5$
7416  044314  005726                          TST     (SP)+                   ;;POP  <CR><LF> EQUIV
7417  044316  104401                          TYPE                            ;;TYPE A CR AND LF
7418  044320  001211                          $CRLF
7419  044322  105037  044530                  CLRB    $CHARCNT                ;;CLEAR CHARACTER COUNT
7420  044326  000755                          BR      2$                      ;;GET NEXT CHARACTER
7421  044330  004737  044412          5$:     JSR     PC,$TYPEC               ;;GO TYPE THIS CHARACTER
7422  044334  123726  001156          6$:     CMPB    $FILLC,(SP)+            ;;IS IT TIME FOR FILLER CHARS.?
7423  044340  001350                          BNE     2$                      ;;IF NO GO GET NEXT CHAR.
7424  044342  013746  001154                  MOV     $NULL,-(SP)             ;;GET # OF FILLER CHARS. NEEDED
7425                                                                          ;;AND THE NULL CHAR.
7426  044346  105366  000001          7$:     DECB    1(SP)                   ;;DOES A NULL NEED TO BE TYPED?
7427  044352  002770                          BLT     6$                      ;;BR IF NO--GO POP THE NULL OFF OF STACK
7428  044354  004737  044412                  JSR     PC,$TYPEC               ;;GO TYPE A NULL
7429  044360  105337  044530                  DECB    $CHARCNT                ;;DO NOT COUNT AS A COUNT
7430  044364  000770                          BR      7$                      ;;LOOP
7431
7432                                  ;HORIZONTAL TAB PROCESSOR
7433
7434  044366  112716  000040          8$:     MOVB    #' ,(SP)                ;;REPLACE TAB WITH SPACE
7435  044372  004737  044412          9$:     JSR     PC,$TYPEC               ;;TYPE A SPACE
7436  044376  132737  000007  044530          BITB    #7,$CHARCNT             ;;BRANCH IF NOT AT
7437  044404  001372                          BNE     9$                      ;;TAB STOP
7438  044406  005726                          TST     (SP)+                   ;;POP SPACE OFF STACK
7439  044410  000724                          BR      2$                      ;;GET NEXT CHARACTER
7440  044412                          $TYPEC:
7441  044412  105777  134526                  TSTB    @$TKS                   ;;CHAR IN KYBD BUFFER?                  ;MJD001
7442  044416  100022                          BPL     10$                     ;;BR IF NOT                             ;MJD001
7443  044420  017746  134522                  MOV     @$TKB,-(SP)             ;;GET CHAR                              ;MJD001
7444  044424  042716  177600                  BIC     #177600,(SP)            ;;STRIP EXTRANEOUS BITS                 ;MJD001
7445  044430  122716  000023                  CMPB    #$XOFF,(SP)             ;;WAS CHAR XOFF                         ;MJD001
7446  044434  001012                          BNE     102$                    ;;BR IF NOT                             ;MJD001
7447  044436                          101$:                                                                           ;MJD001
7448  044436  105777  134502                  TSTB    @$TKS                   ;;WAIT FOR CHAR                         ;MJD001
7449  044442  100375                          BPL     101$                                                            ;MJD001
7450  044444  117716  134476                  MOVB    @$TKB,(SP)              ;;GET CHAR                              ;MJD001
7451  044450  042716  177600                  BIC     #177600,(SP)            ;;STRIP IT                              ;MJD001
7452  044454  122716  000021                  CMPB    #$XON,(SP)              ;;WAS IT XON?                           ;MJD001
7453  044460  001366                          BNE     101$                    ;;BR IF NOT                             ;MJD001
7454  044462                          102$:                                                                           ;MJD001
7455  044462  005726                          TST     (SP)+                   ;;FIX STACK                             ;MJD001
7456  044464                          10$:                                                                            ;MJD001
7457  044464  105777  134460                  TSTB    @$TPS                   ;;WAIT UNTIL PRINTER IS READY
7458  044470  100375                          BPL     10$                                                             ;MJD001
```

```
 7459  044472  116677  000002  134452          MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
 7460  044500  122766  000015  000002          CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
 7461  044506  001003                          BNE     1$              ;;BRANCH IF NO
 7462  044510  105037  044530                  CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
 7463  044514  000406                          BR      $TYPEX          ;;EXIT
 7464  044516  122766  000012  000002  1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
 7465  044524  001402                          BEQ     $TYPEX          ;;BRANCH IF YES
 7466  044526  105227                          INCB    (PC)+           ;;COUNT THE CHARACTER
 7467  044530  000000                  $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
 7468  044532  000207                  $TYPEX: RTS     PC
 7469
 7470                                  .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
 7471
 7472                                  ;;**********************************************************************
 7473                                  ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
 7474                                  ;*OCTAL (ASCII) NUMBER AND TYPE IT.
 7475                                  ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
 7476                                  ;*CALL:
 7477                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
 7478                                  ;*      TYPOS                   ;;CALL FOR TYPEOUT
 7479                                  ;*      .BYTE   N               ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
 7480                                  ;*      .BYTE   M               ;;M=1 OR 0
 7481                                  ;*                                      ;;1=TYPE LEADING ZEROS
 7482                                  ;*                                      .;0=SUPPRESS LEADING ZEROS
 7483                                  ;*
 7484                                  ;*$TYPON----ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
 7485                                  ;*$TYPOS OR $TYPOC
 7486                                  ;*CALL:
 7487                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
 7488                                  ;*      TYPON                   ;;CALL FOR TYPEOUT
 7489                                  ;*
 7490                                  ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
 7491                                  ;*CALL:
 7492                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
 7493                                  ;*      TYPOC                   ;;CALL FOR TYPEOUT
 7494
 7495  044534  017646  000000          $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
 7496  044540  116637  000001  044757          MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
 7497  044546  112637  044761                  MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
 7498  044552  062716  000002                  ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
 7499  044556  000406                          BR      $TYPON
 7500  044560  112737  000001  044757  $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
 7501  044566  112737  000006  044761          MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
 7502  044574  112737  000005  044756  $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
 7503  044602  010346                          MOV     R3,-(SP)        ;;SAVE R3
 7504  044604  010446                          MOV     R4,-(SP)        ;;SAVE R4
 7505  044606  010546                          MOV     R5,-(SP)        ;;SAVE R5
 7506  044610  113704  044761                  MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
 7507  044614  005404                          NEG     R4
 7508  044616  062704  000006                  ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
 7509  044622  110437  044760                  MOVB    R4,$OMODE       ;;SAVE IT FOR USE
 7510  044626  113704  044757                  MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
 7511  044632  016605  000012                  MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
 7512  044636  005003                          CLR     R3              ;;CLEAR THE OUTPUT WORD
 7513  044640  006105                  1$:     ROL     R5              ;;ROTATE MSB INTO "C"
 7514  044642  000404                          BR      3$              ;;GO DO MSB
```

```
7515  044644  006105                  2$:     ROL     R5              ;;FORM THIS DIGIT
7516  044646  006105                          ROL     R5
7517  044650  006105                          ROL     R5
7518  044652  010503                          MOV     R5,R3
7519  044654  006103                  3$:     ROL     R3              ;;GET LSB OF THIS DIGIT
7520  044656  105337  044760                  DECB    $OMODE          ;;TYPE THIS DIGIT?
7521  044662  100016                          BPL     7$              ;;BR IF NO
7522  044664  042703  177770                  BIC     #177770,R3      ;;GET RID OF JUNK
7523  044670  001002                          BNE     4$              ;;TEST FOR 0
7524  044672  005704                          TST     R4              ;;SUPPRESS THIS 0?
7525  044674  001403                          BEQ     5$              ;;BR IF YES
7526  044676  005204                  4$:     INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
7527  044700  052703  000060                  BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
7528  044704  052703  000040          5$:     BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
7529  044710  110337  044754                  MOVB    R3,8$           ;;SAVE FOR TYPING
7530  044714  104401  044754                  TYPE    ,8$             ;;GO TYPE THIS DIGIT
7531  044720  105337  044756          7$:     DECB    $OCNT           ;;COUNT BY 1
7532  044724  003347                          BGT     2$              ;;BR IF MORE TO DO
7533  044726  002402                          BLT     6$              ;;BR IF DONE
7534  044730  005204                          INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
7535  044732  000744                          BR      2$              ;;GO DO THE LAST DIGIT
7536  044734  012605                  6$:     MOV     (SP)+,R5        ;;RESTORE R5
7537  044736  012604                          MOV     (SP)+,R4        ;;RESTORE R4
7538  044740  012603                          MOV     (SP)+,R3        ;;RESTORE R3
7539  044742  016666  000002  000004          MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
7540  044750  012616                          MOV     (SP)+,(SP)
7541  044752  000002                          RTI                     ;;RETURN
7542  044754     C00                  8$:     .BYTE   0               ;;STORAGE FOR ASCII DIGIT
7543  044755     000                          .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
7544  044756     000                  $OCNT:  .BYTE   0               ;;OCTAL DIGIT COUNTER
7545  044757     000                  $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
7546  044760  000000                  $OMODE: .WORD   0               ;;NUMBER OF DIGITS TO TYPE
7547                                  .SBTTL  CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
7548
7549                                  ;;**************************************************************
7550                                  ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
7551                                  ;*SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
7552                                  ;*NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
7553                                  ;*BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
7554                                  ;*REPLACED WITH SPACES.
7555                                  ;*CALL:
7556                                  ;*      MOV     NUM,-(SP)       ;;PUT THE BINARY NUMBER ON THE STACK
7557                                  ;*      TYPDS                   ;;GO TO THE ROUTINE
7558
7559  044762                          $TYPDS:
7560  044762  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
7561  044764  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
7562  044766  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
7563  044770  010346                          MOV     R3,-(SP)        ;;PUSH R3 ON STACK
7564  044772  010546                          MOV     R5,-(SP)        ;;PUSH R5 ON STACK
7565  044774  012746  020200                  MOV     #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
7566  045000  016605  000020                  MOV     20(SP),R5       ;;GET THE INPUT NUMBER
7567  045004  100004                          BPL     1$              ;;BR IF INPUT IS POS.
7568  045006  005405                          NEG     R5              ;;MAKE THE BINARY NUMBER POS.
7569  045010  112766  000055  000001          MOVB    #'-,1(SP)       ;;MAKE THE ASCII NUMBER NEG.
7570  045016  005000                  1$:     CLR     R0              ;;ZERO THE CONSTANTS INDEX
```

```
7571  045020  012703  045176            MOV     #$DBLK,R3       ;;SETUP THE OUTPUT POINTER
7572  045024  112723  000040            MOVB    #' ,(R3)+       ;;SET THE FIRST CHARACTER TO A BLANK
7573  045030  005002            2$:     CLR     R2              ;;CLEAR THE BCD NUMBER
7574  045032  016001  045166            MOV     $DTBL(R0),R1    ;;GET THE CONSTANT
7575  045036  160105            3$:     SUB     R1,R5           ;;FORM THIS BCD DIGIT
7576  045040  002402                    BLT     4$              ;;BR IF DONE
7577  045042  005202                    INC     R2              ;;INCREASE THE BCD DIGIT BY 1
7578  045044  000774                    BR      3$
7579  045046  060105            4$:     ADD     R1,R5           ;;ADD BACK THE CONSTANT
7580  045050  005702                    TST     R2              ;;CHECK IF BCD DIGIT=0
7581  045052  001002                    BNE     5$              ;;FALL THROUGH IF 0
7582  045054  105716                    TSTB    (SP)            ;;STILL DOING LEADING 0'S?
7583  045056  100407                    BMI     7$              ;;BR IF YES
7584  045060  106316            5$:     ASLB    (SP)            ;;MSD?
7585  045062  103003                    BCC     6$              ;;BR IF NO
7586  045064  116663  000001  177777    MOVB    1(SP),-1(R3)    ;;YES--SET THE SIGN
7587  045072  052702  000060    6$:     BIS     #'0,R2          ;;MAKE THE BCD DIGIT ASCII
7588  045076  052702  000040    7$:     BIS     #' ,R2          ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
7589  045102  110223                    MOVB    R2,(R3)+        ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
7590  045104  005720                    TST     (R0)+           ;;JUST INCREMENTING
7591  045106  020027  000010            CMP     R0,#10          ;;CHECK THE TABLE INDEX
7592  045112  002746                    BLT     2$              ;;GO DO THE NEXT DIGIT
7593  045114  003002                    BGT     8$              ;;GO TO EXIT
7594  045116  010502                    MOV     R5,R2           ;;GET THE LSD
7595  045120  000764                    BR      6$              ;;GO CHANGE TO ASCII
7596  045122  105726            8$:     TSTB    (SP)+           ;;WAS THE LSD THE FIRST NON-ZERO?
7597  045124  100003                    BPL     9$              ;;BR IF NO
7598  045126  116663  177777  177776    MOVB    -1(SP),-2(R3)   ;;YES--SET THE SIGN FOR TYPING
7599  045134  105013            9$:     CLRB    (R3)            ;;SET THE TERMINATOR
7600  045136  012605                    MOV     (SP)+,R5        ;;POP STACK INTO R5
7601  045140  012603                    MOV     (SP)+,R3        ;;POP STACK INTO R3
7602  045142  012602                    MOV     (SP)+,R2        ;;POP STACK INTO R2
7603  045144  012601                    MOV     (SP)+,R1        ;;POP STACK INTO R1
7604  045146  012600                    MOV     (SP)+,R0        ;;POP STACK INTO R0
7605  045150  104401  045176            TYPE    ,$DBLK          ;;NOW TYPE THE NUMBER
7606  045154  016666  000002  000004    MOV     2(SP),4(SP)     ;;ADJUST THE STACK
7607  045162  012616                    MOV     (SP)+,(SP)
7608  045164  000002                    RTI                     ;;RETURN TO USER
7609  045166  023420            $DTBL:  10000.
7610  045170  001750                    1000.
7611  045172  000144                    100.
7612  045174  000012                    10.
7613  045176  000004            $DBLK:  .BLKW   4
7614                            .SBTTL  TTY INPUT ROUTINE
7615
7616                            ;;**********************************************************************
7617                            .ENABL  LSB
7618
7619                            ;;**********************************************************************
7620                            ;*SOFTWARE SWITCH REGISTER CHANGE ROUTINE.
7621                            ;*ROUTINE IS ENTERED FROM THE TRAP HANDLER, AND WILL
7622                            ;*SERVICE THE TEST FOR CHANGE IN SOFTWARE SWITCH REGISTER TRAP CALL
7623                            ;*WHEN OPERATING IN TTY FLAG MODE.
7624  045206  022737  000176  001140  $CKSWR: CMP     #SWREG,SWR      ;;IS THE SOFT-SWR SELECTED?
7625  045214  001074                    BNE     15$             ;;BRANCH IF NO
7626  045216  105777  133722            TSTB    @$TKS           ;;CHAR THERE?
```

```
7627  045222  100071                        BPL     15$             ;;IF NO, DON'T WAIT AROUND
7628  045224  117746  133716                MOVB    @$TKB,-(SP)     ;;SAVE THE CHAR
7629  045230  042716  177600                BIC     #^C177,(SP)     ;;STRIP-OFF THE ASCII
7630  045234  022726  000007                CMP     #7,(SP)+        ;;IS IT A CONTROL G?
7631  045240  001062                        BNE     15$             ;;NO, RETURN TO USER
7632  045242  123727  001134  000001        CMPB    $AUTOB,#1       ;;ARE WE RUNNING IN AUTO-MODE?
7633  045250  001456                        BEQ     15$             ;;BRANCH IF YES
7634
7635  045252  104401  046071                TYPE    ,$CNTLG         ;;ECHO THE CONTROL-G (^G)
7636  045256  104401  046076        $GTSWR: TYPE    ,$MSWR          ;;TYPE CURRENT CONTENTS
7637  045262  013746  000176                MOV     SWREG,-(SP)     ;;SAVE SWREG FOR TYPEOUT
7638  045266  104402                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
7639  045270  104401  046107                TYPE    ,$MNEW          ;;PROMPT FOR NEW SWR
7640  045274  005046                19$:    CLR     -(SP)           ;;CLEAR COUNTER
7641  045276  005046                        CLR     -(SP)           ;;THE NEW SWR
7642  045300  105777  133640        7$:     TSTB    @$TKS           ;;CHAR THERE?
7643  045304  100375                        BPL     7$              ;;IF NOT TRY AGAIN
7644
7645  045306  117746  133634                MOVB    @$TKB,-(SP)     ;;PICK UP CHAR
7646  045312  042716  177600                BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
7647
7648
7649
7650  045316  021627  000025        9$:     CMP     (SP),#25        ;;IS IT A CONTROL-U?
7651  045322  001005                        BNE     10$             ;;BRANCH IF NOT
7652  045324  104401  046064                TYPE    ,$CNTLU         ;;YES, ECHO CONTROL-U (^U)
7653  045330  062706  000006        20$:    ADD     #6,SP           ;;IGNORE PREVIOUS INPUT
7654  045334  000757                        BR      19$             ;;LET'S TRY IT AGAIN
7655
7656
7657  045336  021627  000015        10$:    CMP     (SP),#15        ;;IS IT A <CR>?
7658  045342  001022                        BNE     16$             ;;BRANCH IF NO
7659  045344  005766  000004                TST     4(SP)           ;;YES, IS IT THE FIRST CHAR?
7660  045350  001403                        BEQ     11$             ;;BRANCH IF YES
7661  045352  016677  000002  133560        MOV     2(SP),@SWR      ;;SAVE NEW SWR
7662  045360  062706  000006        11$:    ADD     #6,SP           ;;CLEAR UP STACK
7663  045364  104401  001211        14$:    TYPE    ,$CRLF          ;;ECHO <CR> AND <LF>
7664  045370  123727  001135  000001        CMPB    $INTAG,#1       ;;RE-ENABLE TTY KBD INTERRUPTS?
7665  045376  001003                        BNE     15$             ;;BRANCH IF NOT
7666  045400  012777  000100  133536        MOV     #100,@$TKS      ;;RE-ENABLE TTY KBD INTERRUPTS
7667  045406  000002                15$:    RTI                     ;;RETURN
7668  045410  004737  044412        16$:    JSR     PC,$TYPEC       ;;ECHO CHAR
7669  045414  021627  000060                CMP     (SP),#60        ;;CHAR < 0?
7670  045420  002420                        BLT     18$             ;;BRANCH IF YES
7671  045422  021627  000067                CMP     (SP),#67        ;;CHAR > 7?
7672  045426  003015                        BGT     18$             ;;BRANCH IF YES
7673  045430  042726  000060                BIC     #60,(SP)+       ;;STRIP-OFF ASCII
7674  045434  005766  000002                TST     2(SP)           ;;IS THIS THE FIRST CHAR
7675  045440  001403                        BEQ     17$             ;;BRANCH IF YES
7676  045442  006316                        ASL     (SP)            ;;NO, SHIFT PRESENT
7677  045444  006316                        ASL     (SP)            ;;    CHAR OVER TO MAKE
7678  045446  006316                        ASL     (SP)            ;;    ROOM FOR NEW ONE.
7679  045450  005266  000002        17$:    INC     2(SP)           ;;KEEP COUNT OF CHAR
7680  045454  056616  177776                BIS     -2(SP),(SP)     ;;SET IN NEW CHAR
7681  045460  000707                        BR      7$              ;;GET THE NEXT ONE
7682  045462  104401  001210        18$:    TYPE    ,$QUES          ;;TYPE ?<CR><LF>
```

```
 7683  045466  000720                          BR      20$             ;;SIMULATE CONTROL-U
 7684                                .DSABL  LSB
 7685
 7686
 7687                                ;;**********************************************************************
 7688                                ;*THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY
 7689                                ;*CALL:
 7690                                ;*      RDCHR                       ;;INPUT A SINGLE CHARACTER FROM THE TTY
 7691                                ;*      RETURN HERE                 ;;CHARACTER IS ON THE STACK
 7692                                ;*                                  ;;WITH PARITY BIT STRIPPED OFF
 7693                                ;
 7694
 7695  045470  011646                $RDCHR: MOV     (SP),-(SP)          ;;PUSH DOWN THE PC
 7696  045472  016666  000004  000002        MOV     4(SP),2(SP)         ;;SAVE THE PS
 7697  045500  105777  133440        1$:     TSTB    @$TKS               ;;WAIT FOR
 7698  045504  100375                        BPL     1$                  ;;A CHARACTER
 7699  045506  117766  133434  000004        MOVB    @$TKB,4(SP)         ;;READ THE TTY
 7700  045514  042766  177600  000004        BIC     #^C<177>,4(SP)      ;;GET RID OF JUNK IF ANY
 7701  045522  026627  000004  000023        CMP     4(SP),#23           ;;IS IT A CONTROL-S?
 7702  045530  001013                        BNE     3$                  ;;BRANCH IF NO
 7703  045532  105777  133406        2$:     TSTB    @$TKS               ;;WAIT FOR A CHARACTER
 7704  045536  100375                        BPL     2$                  ;;LOOP UNTIL ITS THERE
 7705  045540  117746  133402                MOVB    @$TKB,-(SP)         ;;GET CHARACTER
 7706  045544  042716  177600                BIC     #^C177,(SP)         ;;MAKE IT 7-BIT ASCII
 7707  045550  022627  000021                CMP     (SP)+,#21           ;;IS IT A CONTROL-Q?
 7708  045554  001366                        BNE     2$                  ;;IF NOT DISCARD IT
 7709  045556  000750                        BR      1$                  ;;YES, RESUME
 7710  045560  026627  000004  000021  3$:   CMP     4(SP),#$XON         ;;IS IT A RANDOM XON?                   ;RAN001
 7711  045566  001744                        BEQ     1$                  ;;BRANCH IF YES                         ;RAN001
 7712  045570  026627  000004  000140        CMP     4(SP),#140          ;;IS IT UPPER CASE?
 7713  045576  002407                        BLT     4$                  ;;BRANCH IF YES
 7714  045600  026627  000004  000175        CMP     4(SP),#175          ;;IS IT A SPECIAL CHAR?
 7715  045606  003003                        BGT     4$                  ;;BRANCH IF YES
 7716  045610  042766  000040  000004        BIC     #40,4(SP)           ;;MAKE IT UPPER CASE
 7717  045616  000002                4$:     RTI                         ;;GO BACK TO USER
 7718                                ;;**********************************************************************
 7719                                ;*THIS ROUTINE WILL INPUT A STRING FROM THE TTY
 7720                                ;*CALL:
 7721                                ;*      RDLIN                       ;;INPUT A STRING FROM THE TTY
 7722                                ;*      RETURN HERE                 ;;ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
 7723                                ;*                                  ;;TERMINATOR WILL BE A BYTE OF ALL 0'S
 7724
 7725  045620  010346                $RDLIN: MOV     R3,-(SP)            ;;SAVE R3
 7726  045622  005046                        CLR     -(SP)               ;;CLEAR THE RUBOUT KEY
 7727  045624  012703  046054        1$:     MOV     #$TTYIN,R3          ;;GET ADDRESS
 7728  045630  022703  046064        2$:     CMP     #$TTYIN+8.,R3       ;;BUFFER FULL?
 7729  045634  101456                        BLOS    4$                  ;;BR IF YES
 7730  045636  104410                        RDCHR                       ;;GO READ ONE CHARACTER FROM THE TTY
 7731  045640  112613                        MOVB    (SP)+,(R3)          ;;GET CHARACTER
 7732  045642  122713  000177        10$:    CMPB    #177,(R3)           ;;IS IT A RUBOUT
 7733  045646  001022                        BNE     5$                  ;;BR IF NO
 7734  045650  005716                        TST     (SP)                ;;IS THIS THE FIRST RUBOUT?
 7735  045652  001007                        BNE     6$                  ;;BR IF NO
 7736  045654  112737  000134  046052        MOVB    #'\,9$              ;;TYPE A BACK SLASH
 7737  045662  104401  046052                TYPE    ,9$
 7738  045666  012716  177777                MOV     #-1,(SP)            ;;SET THE RUBOUT KEY
```

```
7739  045672  005303                  6$:     DEC     R3              ;;BACKUP BY ONE
7740  045674  020327  046054                  CMP     R3,#$TTYIN      ;;STACK EMPTY?
7741  045700  103434                  4$      BLO     4$              ;;BR IF YES
7742  045702  111337  046052                  MOVB    (R3),9$         ;;SETUP TO TYPEOUT THE DELETED CHAR.
7743  045706  104401  046052                  TYPE    ,9$             ;;GO TYPE
7744  045712  000746                  2$      BR      2$              ;;GO READ ANOTHER CHAR.
7745  045714  005716                  5$:     TST     (SP)            ;;RUBOUT KEY SET?
7746  045716  001406                  7$      BEQ     7$              ;;BR IF NO
7747  045720  112737  000134  046052          MOVB    #'\,9$          ;;TYPE A BACK SLASH
7748  045726  104401  046052                  TYPE    ,9$
7749  045732  005016                  7$:     CLR     (SP)            ;;CLEAR THE RUBOUT KEY
7750  045734  122713  000025          8$:     CMPB    #25,(R3)        ;;IS CHARACTER A CTRL U?
7751  045740  001003                  3$      BNE     8$              ;;BR IF NO
7752  045742  104401  046064                  TYPE    ,$CNTLU         ;;TYPE A CONTROL "U"
7753  045746  000726                  1$      BR      1$              ;;GO START OVER
7754  045750  122713  000022          4$:     CMPB    #22,(R3)        ;;IS CHARACTER A "^R"?
7755  045754  001011                  3$      BNE     3$              ;;BRANCH IF NO
7756  045756  105013                  2$:     CLRB    (R3)            ;;CLEAR THE CHARACTER
7757  045760  104401  001211                  TYPE    ,$CRLF          ;;TYPE A "CR" & "LF"
7758  045764  104401  046054                  TYPE    ,$TTYIN         ;;TYPE THE INPUT STRING
7759  045770  000717                  2$      BR      2$              ;;GO PICKUP ANOTHER CHACTER
7760  045772  104401  001210          4$:     TYPE    ,$QUES          ;;TYPE A '?'
7761  045776  000712                  1$      BR      1$              ;;CLEAR THE BUFFER AND LOOP
7762  046000  111337  046052          3$:     MOVB    (R3),9$         ;;ECHO THE CHARACTER
7763  046004  104401  046052                  TYPE    ,9$
7764  046010  122723  000015                  CMPB    #15,(R3)+       ;;CHECK FOR RETURN
7765  046014  001305                  2$      BNE     2$              ;;LOOP IF NOT RETURN
7766  046016  105063  177777                  CLRB    -1(R3)          ;;CLEAR RETURN (THE 15)
7767  046022  104401  001212                  TYPE    ,$LF            ;;TYPE A LINE FEED
7768  046026  005726                  1$      TST     (SP)+           ;;CLEAN RUBOUT KEY FROM THE STACK
7769  046030  012603                  2$      MOV     (SP)+,R3        ;;RESTORE R3
7770  046032  011646                  3$      MOV     (SP),-(SP)      ;;ADJUST THE STACK AND PUT ADDRESS OF THE
7771  046034  016666  000004  000002          MOV     4(SP),2(SP)     ;;      FIRST ASCII CHARACTER ON IT
7772  046042  012766  046054  000004          MOV     #$TTYIN,4(SP)
7773  046050  000002                  4$      RTI                     ;;RETURN
7774  046052     000                  9$:     .BYTE   0               ;;STORAGE FOR ASCII CHAR. TO TYPE
7775  046053     000                          .BYTE   0               ;;TERMINATOR
7776  046054  000010                  $TTYIN: .BLKB   8.              ;;RESERVE 8 BYTES FOR TTY INPUT
7777  046064  052536  005015     000  $CNTLU: .ASCIZ  /^U/<15><12>    ;;CONTROL "U"
7778  046071     136  006507  000012  $CNTLG: .ASCIZ  /^G/<15><12>    ;;CONTROL "G"
7779  046076  005015  053523  020122  $MSWR:  .ASCIZ  <15><12>/SWR = /
7780  046104  020075     000
7781  046107     040  047040  053505  $MNEW:  .ASCIZ  /  NEW = /
7782  046114  036440  000040
7783                                  .SBTTL  READ AN OCTAL NUMBER FROM THE TTY
7784
7785                                  ;;**********************************************************************
7786                                  ;*THIS ROUTINE WILL READ AN OCTAL (ASCII) NUMBER FROM THE TTY AND
7787                                  ;*CHANGE IT TO BINARY.
7788                                  ;*THE INPUT CHARACTERS WILL BE CHECKED TO INSURED THEY ARE LEGAL
7789                                  ;*OCTAL DIGITS. IF AN ILLEGAL CHARACTER IS READ A "?" WILL BE TYPED
7790                                  ;*FOLLOWED BY A CARRIAGE RETURN-LINE FEED. THE COMPLETE NUMBER MUST
7791                                  ;*THEN BE RETYPED. THE INPUT IS TERMINATED BY TYPING A CARRIAGE RETURN.
7792                                  ;*CALL:
7793                                  ;*      RDOCT                   ;;READ AN OCTAL NUMBER
7794                                  ;*      RETURN HERE             ;;LOW ORDER BITS ARE ON TOP OF THE STACK
```

```
                                        ;*                              ;;HIGH ORDER BITS ARE IN $HIOCT
                                        $RDOCT: MOV     (SP),-(SP)      ;;PROVIDE SPACE FOR THE
                                                MOV     4(SP),2(SP)     ;;INPUT NUMBER
                                                MOV     R0,-(SP)        ;;PUSH R0 ON STACK
                                                MOV     R1,-(SP)        ;;PUSH R1 ON STACK
                                                MOV     R2,-(SP)        ;;PUSH R2 ON STACK
                                        1$:     RDLIN                   ;;READ AN ASCIZ LINE
                                                MOV     (SP)+,R0        ;;GET ADDRESS OF 1ST CHARACTER
                                                MOV     R0,5$           ;;AND SAVE IT
                                                CLR     R1              ;;CLEAR DATA WORD
                                                CLR     R2
                                        2$:     MOVB    (R0)+,-(SP)     ;;PICKUP THIS CHARACTER
                                                BEQ     3$              ;;IF ZERO GET OUT
                                                CMPB    #'0,(SP)        ;;MAKE SURE THIS CHARACTER
                                                BGT     4$              ;;IS AN OCTAL DIGIT
                                                CMPB    #'7,(SP)
                                                BLT     4$
                                                ASL     R1              ;;*2
                                                ROL     R2
                                                ASL     R1              ;;*4
                                                ROL     R2
                                                ASL     R1              ;;*8
                                                ROL     R2
                                                BIC     #^C7,(SP)       ;;STRIP THE ASCII JUNK
                                                ADD     (SP)+,R1        ;;ADD IN THIS DIGIT
                                                BR      2$              ;;LOOP
                                        3$:     TST     (SP)+           ;;CLEAN TERMINATOR FROM STACK
                                                MOV     R1,12(SP)       ;;SAVE THE RESULT
                                                MOV     R2,$HIOCT
                                                MOV     (SP)+,R2        ;;POP STACK INTO R2
                                                MOV     (SP)+,R1        ;;POP STACK INTO R1
                                                MOV     (SP)+,R0        ;;POP STACK INTO R0
                                                RTI                     ;;RETURN
                                        4$:     TST     (SP)+           ;;CLEAN PARTIAL FROM STACK
                                                CLRB    (R0)            ;;SET A TERMINATOR
                                                TYPE                    ;;TYPE UP THRU THE BAD CHAR.
                                        5$:     .WORD   0
                                                TYPE    ,$QUES          ;;"?" "CR" & "LF"
                                                BR      1$              ;;TRY AGAIN
                                        $HIOCT: .WORD   0               ;;HIGH ORDER BITS GO HERE
                                        .SBTTL  SAVE AND RESTORE R0-R5 ROUTINES

                                        ;;******************************************************************
                                        ;*SAVE R0-R5
                                        ;*CALL:
                                        ;*      SAVREG
                                        ;*UPON RETURN FROM $SAVREG THE STACK WILL LOOK LIKE:
                                        ;*
                                        ;*TOP---(+16)
                                        ;* +2---(+18)
                                        ;* +4---R5
                                        ;* +6---R4
                                        ;* +8---R3
                                        ;*+10---R2
                                        ;*+12---R1
```

```
                                        ;**14---R0

                                        $SAVREG:
046260                                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
046260  010046                                 MOV     R1,-(SP)        ;;PUSH R1 ON STACK
046262  010146                                 MOV     R2,-(SP)        ;;PUSH R2 ON STACK
046264  010246                                 MOV     R3,-(SP)        ;;PUSH R3 ON STACK
046266  010346                                 MOV     R4,-(SP)        ;;PUSH R4 ON STACK
046270  010446                                 MOV     R5,-(SP)        ;;PUSH R5 ON STACK
046272  010546                                 MOV     22(SP),-(SP)    ;;SAVE PS OF MAIN FLOW
046274  016646  000022                        MOV     22(SP),-(SP)    ;;SAVE PC OF MAIN FLOW
046300  016646  000022                        MOV     22(SP),-(SP)    ;;SAVE PS OF CALL
046304  016646  000022                        MOV     22(SP),-(SP)    ;;SAVE PC OF CALL
046310  016646  000022                        RTI
046314  000002

                                        ;*RESTORE R0-R5
                                        ;*CALL:
                                        ;*      RESREG
046316                                  $RESREG:
046316  012666  000022                          MOV     (SP)+,22(SP)    ;;RESTORE PC OF CALL
046322  012666  000022                          MOV     (SP)+,22(SP)    ;;RESTORE PS OF CALL
046326  012666  000022                          MOV     (SP)+,22(SP)    ;;RESTORE PC OF MAIN FLOW
046332  012666  000022                          MOV     (SP)+,22(SP)    ;;RESTORE PS OF MAIN FLOW
046336  012605                                  MOV     (SP)+,R5        ;;POP STACK INTO R5
046340  012604                                  MOV     (SP)+,R4        ;;POP STACK INTO R4
046342  012603                                  MOV     (SP)+,R3        ;;POP STACK INTO R3
046344  012602                                  MOV     (SP)+,R2        ;;POP STACK INTO R2
046346  012601                                  MOV     (SP)+,R1        ;;POP STACK INTO R1
046350  012600                                  MOV     (SP)+,R0        ;;POP STACK INTO R0
046352  000002                                  RTI

                                        .SBTTL  POWER DOWN AND UP ROUTINES

                                        ;;**********************************************************************
                                        ;POWER DOWN ROUTINE
046354  017737  132560  004274          $PWRDN: MOV     @SWR,SAVSWR     ;SAVE SWITCH REG
046362  012737  046402  000024                  MOV     #$PWRUP,PWRVEC  ;SET UP VECTOR
046370  012737  000340  000026                  MOV     #PR7,PWRVEC+2
046376  000000                                  HALT
046400  000776                                  BR      .-2             ;HANG UP

                                        ;;**********************************************************************
                                        ;POWER UP ROUTINE
046402  005037  046472                  $PWRUP: CLR     $PWRCT          ;LOOP LOOP TIMER
046406  012737  000144  046474                  MOV     #100.,$PWRCT+2
046414  005237  046472                  1$:     INC     $PWRCT          ;WAIT FOR TELETYPE
046420  001375                                  BNE     1$
046422  005337  046474                          DEC     $PWRCT+2
046426  001372                                  BNE     1$
046430  012737  046354  000024                  MOV     #$PWRDN,PWRVEC  ;SET UP THE POWER DOWN VECTOR
046436  012737  000340  000026                  MOV     #PR7,PWRVEC+2
046444  012706  001100                          MOV     #STACK,SP       ;FORCE STACK POINTER
046450  104401  046476                          TYPE    ,$POWER         ;TYPE POWER
046454  004737  042360                          JSR     PC,CHKPAR       ;CHECK FOR MEMORY CHECK ENABLE OPTION
046460  013777  004274  132452                  MOV     SAVSWR,@SWR     ;RESTORE SWITCH REG
046466  000177  132414                          JMP     @$LPADR         ;START TEST AGAIN
```

```
                                        .EVEN
                                .SBTTL  TRAP DECODER

                                ;;**********************************************************************
                                ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
                                ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
                                ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
                                ;*GO TO THAT ROUTINE.

046506  010046                  $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
046510  016600  000002                  MOV     2(SP),R0        ;;GET TRAP ADDRESS
046514  005740                          TST     -(R0)           ;;BACKUP BY 2
046516  111000                          MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
046520  006300                          ASL     R0              ;;POSITION FOR INDEXING
046522  016000  046542                  MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
046526  000200                          RTS     R0              ;;GO TO ROUTINE


                                ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO

046530  011646                  $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
046532  016666  000004  000002          MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
046540  000002                          RTI                     ;;RESTORE THE PSW

                                .SBTTL  TRAP TABLE

                                ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
                                ;*BY THE "TRAP" INSTRUCTION.

                                ;       ROUTINE
                                ;       -------
046542  046530                  $TRPAD: .WORD   $TRAP2
046544  044200                          $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
046546  044560                          $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
046550  044534                          $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
046552  044574                          $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
046554  044762                          $TYPDS  ;;CALL=TYPDS    TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)

046556  045256                          $GTSWR  ;;CALL=GTSWR    TRAP+6(104406)  GET SOFT-SWR SETTING

046560  045206                          $CKSWR  ;;CALL=CKSWR    TRAP+7(104407)  TEST FOR CHANGE IN SOFT-SWR
046562  045470                          $RDCHR  ;;CALL=RDCHR    TRAP+10(104410) TTY TYPEIN CHARACTER ROUTINE
046564  045620                          $RDLIN  ;;CALL=RDLIN    TRAP+11(104411) TTY TYPEIN STRING ROUTINE
046566  046120                          $RDOCT  ;;CALL=RDOCT    TRAP+12(104412) READ AN OCTAL NUMBER FROM TTY
046570  046260                          $SAVREG ;;CALL=SAVREG   TRAP+13(104413) SAVE R0-R5 ROUTINE
046572  046316                          $RESREG ;;CALL=RESREG   TRAP+14(104414) RESTORE R0-R5 ROUTINE
046574  043224                          SCOP1$  ;;CALL=SCOP1    TRAP+15(104415) INTERNAL LOOP ON ERROR
```

```
                                        .SBTTL  DATA PRINTED BY ERROR ROUTINES

046576  001220  004272          DT000:  .WORD   $TESTN,TRAPPC
046602  001220  001116  004160  DT001:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.MR2,T.MR2,E.MR3,T.MR3
046610  004120  004206  004146
046616  004210  004150
046622  001220  001116  004160  DT002:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,DRVCOD,E.MR2,T.MR2,E.MR3,T.MR3
046630  004120  004244  004206
046636  004146  004210  004150
046644  001220  001116  004160  DT006:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,HDCODE,E.MR2,T.MR2,E.MR3,T.MR3
046652  004120  004250  004206
046660  004146  004210  004150
046666  001220  001116  004160  DT012:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.MR1,T.MR1,MSGCOD
046674  004120  004204  004144
046702  004246
046704  004206  004146  004210          .WORD   E.MR2,T.MR2,E.MR3,T.MR3
046712  004150
046714  001220  001116  004160  DT017:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,CYLIN,E.MR2,T.MR2,E.MR3,T.MR3
046722  004120  004252  004206
046730  004146  004210  004150
046736  001220  001116  004160  DT031:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,OFFVAL,E.MR2,T.MR2,E.MR3,T.MR3
046744  004120  004254  004206
046752  004146  004210  004150
046760  001220  001116  004160  DT035:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,CYLIN,OFFVAL
046766  004120  004252  004254
046774  004206  004146  004210          .WORD   E.MR2,T.MR2,E.MR3,T.MR3
047002  004150
047004  001220  001116  004230  DT050:  .WORD   $TESTN,$ERRPC,U.MR2,U.MR3,SFTCNT,E.MR2,T.MR2,E.MR3,T.MR3
047012  004232  004256  004206
047020  004146  004210  004150
047026  001220  001116  004210  DT052:  .WORD   $TESTN,$ERRPC,E.MR3,T.MR3,E.MR2,T.MR2
047034  004150  004206  004146
047042  001220  001116  004160  DT062:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.CS2,T.CS2,E.DS,T.DS,E.ER,T.ER
047050  004120  004170  004130
047056  004172  004132  004174
047064  004134
047066  001220  001116  004160  DT065:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1
047074  004120
047076  001220  001116  004206  DT067:  .WORD   $TESTN,$ERRPC,E.MR2,T.MR2,E.MR3,T.MR3
047104  004146  004210  004150
047112  001220  001116          DT100:  .WORD   $TESTN,$ERRPC
047116  001220  001116  004160  DT126:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1
047124  004120
047126  001220  001116  004160  DT224:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.CS2,T.CS2,E.DS,T.DS
047134  004120  004170  004130
047142  004172  004132
047146  004174  004134  004220          .WORD   E.ER,T.ER,P.CS1,P.CS2,P.DS,P.ER
047154  004222  004224  004226
047162  001220  001116  004266  DT230:  .WORD   $TESTN,$ERRPC,DRVTYP,CYLIN,HDCODE,E.CS1,T.CS1,E.CS2,T.CS2
047170  004252  004250  004160
047176  004120  004170  004130
047204  004172  004132  004174          .WORD   E.DS,T.DS,E.ER,T.ER
047212  004134
047214  001220  001116  004160  DT256:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.ER,T.ER,ILLFUN
047222  004120  004174  004134
047230  004270
```

```
                                        .SBTTL  DATA FORMATS
                                DF000:  .WORD   1
                                        .BYTE   2,0
                                DF001:  .WORD   7                       ;ERROR 1
                                        .BYTE   0,0
                                        .WORD   DH000A
                                        .BYTE   0,0
                                        .WORD   DH000B
                                        .BYTE   2,0
                                        .WORD   DH001A
                                        .BYTE   0,0
                                        .WORD   DH001B
                                        .BYTE   2,0
                                        .WORD   DH001C
                                        .BYTE   0,0
                                        .WORD   DH001D
                                        .BYTE   4,0
                                DF002:  .WORD   7                       ;ERRORS 2-5
                                        .BYTE   0,0
                                        .WORD   DH000A
                                        .BYTE   0,0
                                        .WORD   DH000B
                                        .BYTE   2,0
                                        .WORD   DH002A
                                        .BYTE   0,0
                                        .WORD   DH002B
                                        .BYTE   3,0
                                        .WORD   DH001C
                                        .BYTE   0,0
                                        .WORD   DH001D
                                        .BYTE   4,0
                                DF006:  .WORD   7                       ;ERRORS 6-11
                                        .BYTE   0,0
                                        .WORD   DH000A
                                        .BYTE   0,0
                                        .WORD   DH000B
                                        .BYTE   2,0
                                        .WORD   DH006A
                                        .BYTE   0,0
                                        .WORD   DH006B
                                        .BYTE   3,0
                                        .WORD   DH001C
                                        .BYTE   0,0
                                        .WORD   DH001D
                                        .BYTE   4,0
                                DF012:  .WORD   7                       ;ERRORS12-16
                                        .BYTE   0,0
                                        .WORD   DH000A
                                        .BYTE   0,0
                                        .WORD   DH000B
                                        .BYTE   2,0
                                        .WORD   DH012A
                                        .BYTE   0,0
                                        .WORD   DH012B
                                        .BYTE   5,0
```

```
8070  047406  050410                  .WORD   DH001C
8071  047410     000      000         .BYTE   0,0
8072  047412  050447                  .WORD   DH001D
8073  047414     004      000         .BYTE   4,0
8074  047416  000007           DF017: .WORD   7                ;ERRORS 17-30
8075  047420     000      000         .BYTE   0,0
8076  047422  050271                  .WORD   DH000A
8077  047424     000      000         .BYTE   0,0
8078  047426  050307                  .WORD   DH000B
8079  047430     002      000         .BYTE   2,0
8080  047432  050747                  .WORD   DH017A
8081  047434     000      000         .BYTE   0,0
8082  047436  050775                  .WORD   DH017B
8083  047440     003      000         .BYTE   3,0
8084  047442  050410                  .WORD   DH001C
8085  047444     000      000         .BYTE   0,0
8086  047446  050447                  .WORD   DH001D
8087  047450     004      000         .BYTE   4,0
8088  047452  000007           DF031: .WORD   7                ;ERRORS 31-34
8089  047454     000      000         .BYTE   0,0
8090  047456  050271                  .WORD   DH000A
8091  047460     000      000         .BYTE   0,0
8092  047462  050307                  .WORD   DH000B
8093  047464     002      000         .BYTE   2,0
8094  047466  051021                  .WORD   DH031A
8095  047470     000      000         .BYTE   0,0
8096  047472  051050                  .WORD   DH031B
8097  047474     003      000         .BYTE   3,0
8098  047476  050410                  .WORD   DH001C
8099  047500     000      000         .BYTE   0,0
8100  047502  050447                  .WORD   DH001D
8101  047504     004      000         .BYTE   4,0
8102  047506  000007           DF035: .WORD   7                ;ERROR 35-41
8103  047510     000      000         .BYTE   0,0
8104  047512  050271                  .WORD   DH000A
8105  047514     000      000         .BYTE   0,0
8106  047516  050307                  .WORD   DH000B
8107  047520     002      000         .BYTE   2,0
8108  047522  051076                  .WORD   DH035A
8109  047524     000      000         .BYTE   0,0
8110  047526  051135                  .WORD   DH035B
8111  047530     004      000         .BYTE   4,0
8112  047532  050410                  .WORD   DH001C
8113  047534     000      000         .BYTE   0,0
8114  047536  050447                  .WORD   DH001D
8115  047540     004      000         .BYTE   4,0
8116  047542  000007           DF050: .WORD   7                ;ERRORS 50 & 51
8117  047544     000      000         .BYTE   0,0
8118  047546  050271                  .WORD   DH000A
8119  047550     000      000         .BYTE   0,0
8120  047552  050307                  .WORD   DH000B
8121  047554     002      000         .BYTE   2,0
8122  047556  051173                  .WORD   DH050A
8123  047560     000      000         .BYTE   0,0
8124  047562  051221                  .WORD   DH050B
8125  047564     003      000         .BYTE   3,0
```

```
8126  047566  050410                        .WORD   DH001C
8127  047570     000      000               .BYTE   0,0
8128  047572  050447                        .WORD   DH001D
8129  047574     004      000               .BYTE   4,0
8130  047576  000005                DF052:  .WORD   5               ;ERRORS 52-61
8131  047600     000      000               .BYTE   0,0
8132  047602  050271                        .WORD   DH000A
8133  047604     000      000               .BYTE   0,0
8134  047606  050307                        .WORD   DH000B
8135  047610     002      000               .BYTE   2,0
8136  047612  050410                        .WORD   DH001C
8137  047614     000      000               .BYTE   0,0
8138  047616  050447                        .WORD   DH001D
8139  047620     004      000               .BYTE   4,0
8140  047622  000005                DF062:  .WORD   5               ;ERRORS 62-64
8141  047624     000      000               .BYTE   0,0
8142  047626  050271                        .WORD   DH000A
8143  047630     000      000               .BYTE   0,0
8144  047632  050307                        .WORD   DH000B
8145  047634     002      000               .BYTE   2,0
8146  047636  051247                        .WORD   DH062A
8147  047640     000      000               .BYTE   0,0
8148  047642  051346                        .WORD   DH062B
8149  047644     010      000               .BYTE   8.,0
8150  047646  000005                DF065:  .WORD   5               ;ERRORS-65-66
8151  047650     000      000               .BYTE   0,0
8152  047652  050271                        .WORD   DH000A
8153  047654     000      000               .BYTE   0,0
8154  047656  050307                        .WORD   DH000B
8155  047660     002      000               .BYTE   2,0
8156  047662  050353                        .WORD   DH001A
8157  047664     000      000               .BYTE   0,0
8158  047666  050372                        .WORD   DH001B
8159  047670     002      000               .BYTE   2,0
8160  047672  000005                DF067:  .WORD   5               ;ERRORS 67-70
8161  047674     000      000               .BYTE   0,0
8162  047676  050271                        .WORD   DH000A
8163  047700     000      000               .BYTE   0,0
8164  047702  050307                        .WORD   DH000B
8165  047704     002      000               .BYTE   2,0
8166  047706  051443                        .WORD   DH067A
8167  047710     000      000               .BYTE   0,0
8168  047712  051502                        .WORD   DH067B
8169  047714     004      000               .BYTE   4,0
8170  047716  000003                DF100:  .WORD   3               ;ERROR 100
8171  047720     000      000               .BYTE   0,0
8172  047722  050271                        .WORD   DH000A
8173  047724     000      000               .BYTE   0,0
8174  047726  050307                        .WORD   DH000B
8175  047730     002      000               .BYTE   2,0
8176  047732  000005                DF126:  .WORD   5               ;ERROR 126
8177  047734     000      000               .BYTE   0,0
8178  047736  050271                        .WORD   DH000A
8179  047740     000      000               .BYTE   0,0
8180  047742  050307                        .WORD   DH000B
8181  047744     002      000               .BYTE   2,0
```

```
8182  047746  051540                        .WORD   DH126A
8183  047750     000      000               .BYTE   0,0
8184  047752  051557                        .WORD   DH126B
8185  047754     002      000               .BYTE   2,0
8186  047756  000007              DF224:    .WORD   7                       ;ERRORS 224-227
8187  047760     000      000               .BYTE   0,0
8188  047762  050271                        .WORD   DH000A
8189  047764     000      000               .BYTE   0,0
8190  047766  050307                        .WORD   DH000B
8191  047770     002      000               .BYTE   2,0
8192  047772  051247                        .WORD   DH062A
8193  047774     000      000               .BYTE   0,0
8194  047776  051346                        .WORD   DH062B
8195  050000     010      000               .BYTE   8.,0
8196  050002  051575                        .WORD   DH224A
8197  050004     000      000               .BYTE   0,0
8198  050006  051630                        .WORD   DH224B
8199  050010     004      000               .BYTE   4,0
8200  050012  000007              DF230:    .WORD   7                   ;ERRORS 230-233
8201  050014     000      000               .BYTE   0,0
8202  050016  050271                        .WORD   DH000A
8203  050020     000      000               .BYTE   0,0
8204  050022  050307                        .WORD   DH000B
8205  050024     002      000               .BYTE   2,0
8206  050026  051665                        .WORD   DH230A
8207  050030     000      000               .BYTE   0,0
8208  050032  051712                        .WORD   DH230B
8209  050034     003      000               .BYTE   3,0
8210  050036  051247                        .WORD   DH062A
8211  050040     000      000               .BYTE   0,0
8212  050042  051346                        .WORD   DH062B
8213  050044     010      000               .BYTE   8.,0
8214  050046  000005              DF256:    .WORD   5                   ;ERROR 256
```

```
 8215  050050     000     000                .BYTE   0,0
 8216  050052  050271                        .WORD   DH000A
 8217  050054     000     000                .BYTE   0,0
 8218  050056  050307                        .WORD   DH000B
 8219  050060     002     000                .BYTE   2,0
 8220  050062  051736                        .WORD   DH256A
 8221  050064     000     000                .BYTE   0,0
 8222  050066  052002                        .WORD   DH256B
 8223  050070     005     000                .BYTE   5,0
```

```
8224                                    .SBTTL  ASCII MESSAGES
8225
8226  050072  005015  045522  030466    OPR001: .ASCIZ  <15><12>/RK611 BUS ADDRESS ( /
8227  050100  020061  052502  020123
8228  050106  042101  051104  051505
8229  050114  020123  020050     000
8230  050121     040  020051  020075    OPR002: .ASCIZ  / ) = /
8231  050126     000
8232  050127     122  033113  030461    OPR003: .ASCIZ  /RK611 VECTOR ADDRESS ( /
8233  050134  053040  041505  047524
8234  050142  020122  042101  051104
8235  050150  051505  020123  020050
8236  050156     000
8237  050157     122  033113  030461    OPR004: .ASCIZ  /RK611 PRIORITY ( /
8238  050164  050040  044522  051117
8239  050172  052111  020131  020050
8240  050200     000
8241  050201     040  000040            SPACE2: .ASCIZ  /  /
8242  050204  005015  051120  043517    ABORT:  .ASCIZ  <15><12>/PROGRAM ABORTED BECAUSE ERROR THRESHOLD EXCEEDED/<15><12>
8243  050212  040522  020115  041101
8244  050220  051117  042524  020104
8245  050226  042502  040503  051525
8246  050234  020105  051105  047522
8247  050242  020122  044124  042522
8248  050250  044123  046117  020104
8249  050256  054105  042503  042105
8250  050264  042105  005015     000
```

```
                                        .SBTTL  DATA HEADERS

050271  124  051505  020124  DH000A: .ASCIZ  /TEST    ERROR/
050276  020040  042440  051122
050304  051117  000
050307  116  046525  020040  DH000B: .ASCIZ  /NUM     PC/
050314  020040  050040  000103
050322  042524  052123  020040  DH000C: .ASCII  /TEST    TRAP/<15><12>
050330  020040  051124  050101
050336  005015
050340  052516  020115  020040          .ASCIZ  /NUM     PC/
050346  020040  041520  000
050353  105  050130  041505  DH001A: .ASCIZ  /EXPECT  ACTUAL/
050360  020124  040440  052103
050366  040525  000114
050372  045522  051503  020061  DH001B: .ASCIZ  /RKCS1   RKCS1/
050400  020040  045522  051503
050406  000061
050410  054105  042520  052103  DH001C: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL/
050416  020040  041501  052524
050424  046101  020040  054105
050432  042520  052103  020040
050440  041501  052524  046101
050446  000
050447  115  051505  020123  DH001D: .ASCIZ  /MESS A  MESS A  MESS B  MESS B/
050454  020101  046440  051505
050462  020123  020101  046440
050470  051505  020123  020102
050476  046440  051505  020123
050504  000102
050506  054105  042520  052103  DH002A: .ASCIZ  /EXPECT  ACTUAL  DRIVE/
050514  020040  041501  052524
050522  046101  020040  051104
050530  053111  000105
050534  045522  051503  020061  DH002B: .ASCIZ  /RKCS1   RKCS1   SELECT/
050542  020040  045522  051503
050550  020061  020040  042523
050556  042514  052103  000
050563  105  050130  041505  DH006A: .ASCIZ  /EXPECT  ACTUAL  HEAD/
050570  020124  040440  052103
050576  040525  020114  044040
050604  040505  000104
050610  045522  051503  020061  DH006B: .ASCIZ  /RKCS1   RKCS1   ADD/
050616  020040  045522  051503
050624  020061  020040  042101
050632  000104
050634  054105  042520  052103  DH012A: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL  MESS/
050642  020040  041501  052524
050650  046101  020040  054105
050656  042520  052103  020040
050664  041501  052524  046101
050672  020040  042515  051523
050700  000
050701  122  041513  030523  DH012B: .ASCIZ  /RKCS1   RKCS1   RKMR1   RKMR1  SELECT/
050706  020040  051040  041513
050714  030523  020040  051040
```

```
8307  050722  046513  030522  020040
8308  050730  051040  046513  030522
8309  050736  020040  042523  042514
8310  050744  052103     000
8311  050747     105  050130  041505  DH017A: .ASCIZ  /EXPECT  ACTUAL  CYLIN/
8312  050754  020124  040440  052103
8313  050762  040525  020114  041440
8314  050770  046131  047111     000
8315  050775     122  041513  030523  DH017B: .ASCIZ  /RKCS1   RKCS1   ADD/
8316  051002  020040  051040  041513
8317  051010  030523  020040  040440
8318  051016  042104     000
8319  051021     105  050130  041505  DH031A: .ASCIZ  /EXPECT  ACTUAL  OFFSET/
8320  051026  020124  040440  052103
8321  051034  040525  020114  047440
8322  051042  043106  042523  000124
8323  051050  045522  051503  020061  DH031B: .ASCIZ  /RKCS1   RKCS1   VALUE/
8324  051056  020040  045522  051503
8325  051064  020061  020040  040526
8326  051072  052514  000105
8327  051076  054105  042520  052103  DH035A: .ASCIZ  /EXPECT  ACTUAL  CYLIN   OFFSET/
8328  051104  020040  041501  052524
8329  051112  046101  020040  054503
8330  051120  044514  020116  020040
8331  051126  043117  051506  052105
8332  051134     000
8333  051135     122  041513  030523  DH035B: .ASCIZ  /RKCS1   RKCS1   ADD     VALUE/
8334  051142  020040  051040  041513
8335  051150  030523  020040  040440
8336  051156  042104  020040  020040
8337  051164  053040  046101  042525
8338  051172     000
8339  051173     102  043105  051117  DH050A: .ASCIZ  /BEFORE SHIFTING SHIFT/
8340  051200  020105  044123  043111
8341  051206  044524  043516  051440
8342  051214  044510  052106     000
8343  051221     115  051505  020123  DH050B: .ASCIZ  /MESS A  MESS B  COUNT/
8344  051226  020101  046440  051505
8345  051234  020123  020102  041440
8346  051242  052517  052116     000
8347  051247     105  050130  041505  DH062A: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL  EXPECT  ACTUAL  EXPECT  ACTUAL/
8348  051254  020124  040440  052103
8349  051262  040525  020114  042440
8350  051270  050130  041505  020124
8351  051276  040440  052103  040525
8352  051304  020114  042440  050130
8353  051312  041505  020124  040440
8354  051320  052103  040525  020114
8355  051326  042440  050130  041505
8356  051334  020124  040440  052103
8357  051342  040525  000114
8358  051346  045522  051503  020061  DH062B: .ASCIZ  /RKCS1   RKCS1   RKCS2   RKCS2   RKDS    RKDS    RKER    RKER/
8359  051354  020040  045522  051503
8360  051362  020061  020040  045522
8361  051370  051503  020062  020040
8362  051376  045522  051503  020062
```

```
 8363  051404  020040  045522  051504
 8364  051412  020040  020040  045522
 8365  051420  051504  020040  020040
 8366  051426  045522  051105  020040
 8367  051434  020040  045522  051105
 8368  051442     000
 8369  051443     105  050130  041505  DH067A: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL/
 8370  051450  020124  040440  052103
 8371  051456  040525  020114  042440
 8372  051464  050130  041505  020124
 8373  051472  040440  052103  040525
 8374  051500  000114
 8375  051502  045522  051115  020062  DH067B: .ASCIZ  /RKMR2   RKMR2   RKMR3   RKMR3/
 8376  051510  020040  045522  051115
 8377  051516  020062  020040  045522
 8378  051524  051115  020063  020040
 8379  051532  045522  051115  000063
 8380  051540  054105  042520  052103  DH126A: .ASCIZ  /EXPECT  ACTUAL/
 8381  051546  020040  041501  052524
 8382  051554  046101     000
 8383  051557     122  041513  030523  DH126B: .ASCIZ  /RKCS1   RKCS1/
 8384  051564  020040  051040  041513
 8385  051572  030523     000
 8386  051575     120  042522  044526  DH224A: .ASCIZ  /PREVIOUS REGISTER CONTENTS/
 8387  051602  052517  020123  042522
 8388  051610  044507  052123  051105
 8389  051616  041440  047117  042524
 8390  051624  052116  000123
 8391  051630  045522  051503  020061  DH224B: .ASCIZ  /RKCS1   RKCS2   RKDS    RKER/
 8392  051636  020040  045522  051503
 8393  051644  020062  020040  045522
 8394  051652  051504  020040  020040
 8395  051660  045522  051105     000
 8396  051665     104  044522  042526  DH230A: .ASCIZ  /DRIVE   CYLIN   HEAD/
 8397  051672  020040  041440  046131
 8398  051700  047111  020040  044040
 8399  051706  040505  000104
 8400  051712  054524  042520  020040  DH230B: .ASCIZ  /TYPE    ADD     ADD/
 8401  051720  020040  042101  020104
 8402  051726  020040  020040  042101
 8403  051734  000104
 8404  051736  054105  042520  052103  DH256A: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL  ILL/
 8405  051744  020040  041501  052524
 8406  051752  046101  020040  054105
 8407  051760  042520  052103  020040
 8408  051766  041501  052524  046101
 8409  051774  020040  046111  000114
 8410  052002  045522  051503  020061  DH256B: .ASCIZ  /RKCS1   RKCS1   RKER    RKER    FUNCT/
 8411  052010  020040  045522  051503
 8412  052016  020061  020040  045522
 8413  052024  051105  020040  020040
 8414  052032  045522  051105  020040
 8415  052040  020040  052506  041516
 8416  052046  000124
```

```
8417                                    .SBTTL  ERROR MESSAGES
8418
8419  052050  047125  054105  042520  EM000:  .ASCIZ  /UNEXPECTED MEMORY PARITY ENABLE TRAP/
8420  052056  052103  042103  046440
8421  052064  046505  051117  020131
8422  052072  040520  044522  054524
8423  052100  042440  040516  046102
8424  052106  020105  051124  050101
8425  052114     000
8426  052115     101  052124  046505  EM100:  .ASCIZ  /ATTEMPTING A SELECT IN 24 SECTOR FORMAT IN MAINT MODE/
8427  052122  052120  047111  020107
8428  052130  020101  042523  042514
8429  052136  052103  044440  020116
8430  052144  032062  051440  041505
8431  052152  047524  020122  047506
8432  052160  046522  052101  044440
8433  052166  020116  040515  047111
8434  052174  020124  047515  042504
8435  052202     000
8436  052203     101  052124  046505  EM101:  .ASCIZ  /ATTEMPTING A DRIVE CLEAR IN MAINT MODE/
8437  052210  052120  047111  020107
8438  052216  020101  051104  053111
8439  052224  020105  046103  040505
8440  052232  020122  047111  046440
8441  052240  044501  052116  046440
8442  052246  042117  000105
8443  052252  052101  042524  050115  EM102:  .ASCIZ  /ATTEMPTING A UNLOAD IN MAINT MODE/
8444  052260  044524  043516  040440
8445  052266  052440  046116  040517
8446  052274  020104  047111  046440
8447  052302  044501  052116  046440
8448  052310  042117  000105
8449  052314  052101  042524  050115  EM103:  .ASCIZ  /ATTEMPTING A PACK ACKNOWLEDGE IN MAINT MODE/
8450  052322  044524  043516  040440
8451  052330  050040  041501  020113
8452  052336  041501  047113  053517
8453  052344  042514  043504  020105
8454  052352  047111  046440  044501
8455  052360  052116  046440  042117
8456  052366  000105
8457  052370  052101  042524  050115  EM104:  .ASCIZ  /ATTEMPTING A RECALIBRATE IN MAINT MODE/
8458  052376  044524  043516  040440
8459  052404  051040  041505  046101
8460  052412  041111  040522  042524
8461  052420  044440  020116  040515
8462  052426  047111  020124  047515
8463  052434  042504     000
8464  052437     101  052124  046505  EM105:  .ASCIZ  /ATTEMPTING A START SPINDLE/
8465  052444  052120  047111  020107
8466  052452  020101  052123  051101
8467  052460  020124  050123  047111
8468  052466  046104  000105
8469  052472  052101  042524  050115  EM106:  .ASCIZ  /ATTEMPTING A SELECT USING ALL DRIVE SELECTION CONFIGS IN MAINT MODE/
8470  052500  044524  043516  040440
8471  052506  051440  046105  041505
8472  052514  020124  051525  047111
```

```
 8473  052522  020107  046101  020114
 8474  052530  051104  053111  020105
 8475  052536  042523  042514  052103
 8476  052544  047511  020116  047503
 8477  052552  043116  043511  020123
 8478  052560  047111  046440  044501
 8479  052566  052116  046440  042117
 8480  052574  000105
 8481  052576  052101  042524  050115  EM107:  .ASCIZ  /ATTEMPTING A SELECT USING ALL HEAD ADD CONFIGS IN MAINT MODE/
 8482  052604  044524  043516  040440
 8483  052612  051440  046105  041505
 8484  052620  020124  051525  047111
 8485  052626  020107  046101  020114
 8486  052634  042510  042101  040440
 8487  052642  042104  041440  047117
 8488  052650  044506  051507  044440
 8489  052656  020116  040515  047111
 8490  052664  020124  047515  042504
 8491  052672     000
 8492  052673     101  052124  046505  EM108:  .ASCIZ  /ATTEMPTING A SELECT USING ALL MESS SELECT CONFIGS IN MAINT MODE/
 8493  052700  052120  047111  020107
 8494  052706  020101  042523  042514
 8495  052714  052103  052440  044523
 8496  052722  043516  040440  046114
 8497  052730  046440  051505  020123
 8498  052736  042523  042514  052103
 8499  052744  041440  047117  044506
 8500  052752  051507  044440  020116
 8501  052760  040515  047111  020124
 8502  052766  047515  042504     000
 8503  052773     101  052124  046505  EM109:  .ASCIZ  /ATTEMPTING A SEEK TO AN RK06 IN MAINT MODE/
 8504  053000  052120  047111  020107
 8505  053006  020101  042523  045505
 8506  053014  052040  020117  047101
 8507  053022  051040  030113  020066
 8508  053030  047111  046440  044501
 8509  053036  052116  046440  042117
 8510  053044  000105
 8511  053046  052101  042524  050115  EM110:  .ASCIZ  /ATTEMPTING A SEEK WITH CDT SET IN MAINT MODE/
 8512  053054  044524  043516  040440
 8513  053062  051440  042505  020113
 8514  053070  044527  044124  041440
 8515  053076  052104  051440  052105
 8516  053104  044440  020116  040515
 8517  053112  047111  020124  047515
 8518  053120  042504     000
 8519  053123     101  052124  046505  EM111:  .ASCIZ  /ATTEMPTING AN OFFSET IN MAINT MODE/
 8520  053130  052120  047111  020107
 8521  053136  047101  047440  043106
 8522  053144  042523  020124  047111
 8523  053152  046440  044501  052116
 8524  053160  046440  042117  000105
 8525  053166  052101  042524  050115  EM112:  .ASCII  /ATTEMPTING COMMAND WITH NON-ZERO CYLINDER ADDRESS AND/<15><12>
 8526  053174  044524  043516  041440
 8527  053202  046517  040515  042116
 8528  053210  053440  052111  020110
```

```
 8529  053216  047516  026516  042532
 8530  053224  047522  041440  046131
 8531  053232  047111  042504  020122
 8532  053240  042101  051104  051505
 8533  053246  020123  047101  006504
 8534  053254     012
 8535  053255     116  047117  055055          .ASCIZ  /NON-ZERO OFFSET IN MAINTENANCE MODE/
 8536  053262  051105  020117  043117
 8537  053270  051506  052105  044440
 8538  053276  020116  040515  047111
 8539  053304  042524  040516  041516
 8540  053312  020105  047515  042504
 8541  053320     000
 8542  053321     101  052124  046505  EM113:  .ASCII  /ATTEMPTING COMMAND WITH NON-ZERO MESSAGE SELECT CODE/<15><12>
 8543  053326  052120  047111  020107
 8544  053334  047503  046515  047101
 8545  053342  020104  044527  044124
 8546  053350  047040  047117  055055
 8547  053356  051105  020117  042515
 8548  053364  051523  043501  020105
 8549  053372  042523  042514  052103
 8550  053400  041440  042117  006505
 8551  053406     012
 8552  053407     111  020116  040515          .ASCIZ  /IN MAINTENANCE MODE/
 8553  053414  047111  042524  040516
 8554  053422  041516  020105  047515
 8555  053430  042504     000
 8556  053433     101  052124  046505  EM114:  .ASCIZ  /ATTEMPTING TO SHIFT DRIVE MESSAGES/
 8557  053440  052120  047111  020107
 8558  053446  047524  051440  044510
 8559  053454  052106  042040  044522
 8560  053462  042526  046440  051505
 8561  053470  040523  042507  000123
 8562  053476  052101  042524  050115  EM115:  .ASCIZ  /ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE/
 8563  053504  044524  043516  052040
 8564  053512  020117  042507  042516
 8565  053520  040522  042524  047440
 8566  053526  042104  050040  051101
 8567  053534  052111  020131  047117
 8568  053542  051440  046105  041505
 8569  053550  020124  051104  053111
 8570  053556  020105  042515  051523
 8571  053564  043501  000105
 8572  053570  052101  042524  050115  EM116:  .ASCIZ  /ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE/
 8573  053576  044524  043516  052040
 8574  053604  020117  042507  042516
 8575  053612  040522  042524  042440
 8576  053620  042526  020116  040520
 8577  053626  044522  054524  047440
 8578  053634  020116  042523  042514
 8579  053642  052103  042040  044522
 8580  053650  042526  046440  051505
 8581  053656  040523  042507     000
 8582  053663     101  052124  046505  EM117:  .ASCII  /ATTEMPTING COMPLETE EXECUTION OF DESELECT DRIVE COMMAND/
 8583  053670  052120  047111  020107
 8584  053676  047503  050115  042514
```

```
 8585  053704  042524  042440  042530
 8586  053712  052503  044524  047117
 8587  053720  047440  020106  042504
 8588  053726  042523  042514  052103
 8589  053734  042040  044522  042526
 8590  053742  041440  046517  040515
 8591  053750  042116
 8592  053752  005015  047111  046440          .ASCIZ  <15><12>/IN MAINTENANCE MODE/
 8593  053760  044501  052116  047105
 8594  053766  047101  042503  046440
 8595  053774  042117  000105
 8596  054000  052101  042524  050115  EM118:  .ASCII  /ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE COMMAND/
 8597  054006  044524  043516  041440
 8598  054014  046517  046120  052105
 8599  054022  020105  054105  041505
 8600  054030  052125  047511  020116
 8601  054036  043117  051440  046105
 8602  054044  041505  020124  051104
 8603  054052  053111  020105  047503
 8604  054060  046515  047101     104
 8605  054065     015  044412  020116          .ASCIZ  <15><12>/IN MAINTENANCE MODE/
 8606  054072  040515  047111  042524
 8607  054100  040516  041516  020105
 8608  054106  047515  042504     000
 8609  054113     101  052124  046505  EM119:  .ASCIZ  /ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL SPEED/
 8610  054120  052120  047111  020107
 8611  054126  054105  041505  052125
 8612  054134  047511  020116  043117
 8613  054142  042040  051505  046105
 8614  054150  041505  020124  051104
 8615  054156  053111  020105  052101
 8616  054164  047040  051117  040515
 8617  054172  020114  050123  042505
 8618  054200  000104
 8619  054202  052101  042524  050115  EM120:  .ASCIZ  /ATTEMPTING TO WRITE COMMAND AND STATUS REG. 1 IN MAINT MODE/
 8620  054210  044524  043516  052040
 8621  054216  020117  051127  052111
 8622  054224  020105  047503  046515
 8623  054232  047101  020104  047101
 8624  054240  020104  052123  052101
 8625  054246  051525  051040  043505
 8626  054254  020056  020061  047111
 8627  054262  046440  044501  052116
 8628  054270  046440  042117  000105
 8629  054276  052101  042524  050115  EM121:  .ASCIZ  /ATTEMPTING EXECUTION OF DESELECT DRIVE WITH INTERRUPT ENABLE SET/
 8630  054304  044524  043516  042440
 8631  054312  042530  052503  044524
 8632  054320  047117  047440  020106
 8633  054326  042504  042523  042514
 8634  054334  052103  042040  044522
 8635  054342  042526  053440  052111
 8636  054350  020110  047111  042524
 8637  054356  051122  050125  020124
 8638  054364  047105  041101  042514
 8639  054372  051440  052105     000
 8640  054377     101  052124  046505  EM122:  .ASCII  /ATTEMPTING DESELECT COMMAND AFTER WRITING SILO /
```

```
 8641  054404  052120  047111  020107
 8642  054412  042504  042523  042514
 8643  054420  052103  041440  046517
 8644  054426  040515  042116  040440
 8645  054434  052106  051105  053440
 8646  054442  044522  044524  043516
 8647  054450  051440  046111  020117
 8648  054456  047524  041440  042510          .ASCIZ  /TO CHECK GO CLEAR/
 8649  054464  045503  043440  020117
 8650  054472  046103  040505  000122
 8651  054500  052101  042524  050115  EM123:  .ASCIZ  /ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE/
 8652  054506  044524  043516  041440
 8653  054514  046517  046120  052105
 8654  054522  020105  054105  041505
 8655  054530  052125  047511  020116
 8656  054536  043117  051440  042505
 8657  054544  020113  047111  046440
 8658  054552  044501  052116  046440
 8659  054560  042117  000105
 8660  054564  052101  042524  050115  EM124:  .ASCIZ  /ATTEMPTING SELECT DRIVE IN MAINT MODE/
 8661  054572  044524  043516  051440
 8662  054600  046105  041505  020124
 8663  054606  051104  053111  020105
 8664  054614  047111  046440  044501
 8665  054622  052116  046440  042117
 8666  054630  000105
 8667  054632  052101  042524  050115  EM125:  .ASCII  /ATTEMPTING CHECK "LOAD STATUS" BY FORCING/<15><12>
 8668  054640  044524  043516  041440
 8669  054646  042510  045503  021040
 8670  054654  047514  042101  051440
 8671  054662  040524  052524  021123
 8672  054670  041040  020131  047506
 8673  054676  041522  047111  006507
 8674  054704     012
 8675  054705     104  044522  042526          .ASCII  /DRIVE AVAILIABLE, SPEED LOSS, VOLUME VALID,/<15><12>
 8676  054712  040440  040526  046111
 8677  054720  040511  046102  026105
 8678  054726  051440  042520  042105
 8679  054734  046040  051517  026123
 8680  054742  053040  046117  046525
 8681  054750  020105  040526  044514
 8682  054756  026104  005015
 8683  054762  043117  051506  052105          .ASCII  /OFFSET, DRIVE READY, AND WRITE LOCK/<15><12>
 8684  054770  020054  051104  053111
 8685  054776  020105  042522  042101
 8686  055004  026131  040440  042116
 8687  055012  053440  044522  042524
 8688  055020  046040  041517  006513
 8689  055026     012
 8690  055027     104  044522  042526          .ASCIZ  /DRIVE STATUS REG./
 8691  055034  051440  040524  052524
 8692  055042  020123  042522  027107
 8693  055050     000
 8694  055051     101  052124  046505  EM126:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE AVAILIABLE/
 8695  055056  052120  047111  020107
 8696  055064  047524  043040  051117
```

```
 8697  055072  042503  042040  044522
 8698  055100  042526  040440  040526
 8699  055106  046111  040511  046102
 8700  055114  000105
 8701  055116  052101  042524  050115  EM127:  .ASCII  /ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR/<15><12>
 8702  055124  044524  043516  052040
 8703  055132  020117  047506  041522
 8704  055140  020105  051104  053111
 8705  055146  020105  052502  020123
 8706  055154  040520  044522  054524
 8707  055162  042440  051122  051117
 8708  055170  005015
 8709  055172  042504  042524  052103          .ASCIZ  /DETECTED BY RK611/
 8710  055200  042105  041040  020131
 8711  055206  045522  030466  000061
 8712  055214  052101  042524  050115  EM128:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE AVAILIABLE RESET ERROR/
 8713  055222  044524  043516  052040
 8714  055230  020117  047506  041522
 8715  055236  020105  051104  053111
 8716  055244  020105  053101  044501
 8717  055252  044514  041101  042514
 8718  055260  051040  051505  052105
 8719  055266  042440  051122  051117
 8720  055274     000
 8721  055275     124  051505  044524  EM129:  .ASCIZ  /TESTING CDT SET DRIVE TYPE DETECTION/
 8722  055302  043516  041440  052104
 8723  055310  051440  052105  042040
 8724  055316  044522  042526  052040
 8725  055324  050131  020105  042504
 8726  055332  042524  052103  047511
 8727  055340  000116
 8728  055342  052101  042524  050115  EM130:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CDT SET/
 8729  055350  044524  043516  052040
 8730  055356  020117  047506  041522
 8731  055364  020105  051104  053111
 8732  055372  020105  054524  042520
 8733  055400  042440  051122  051117
 8734  055406  053440  052111  020110
 8735  055414  042103  020124  042523
 8736  055422  000124
 8737  055424  052101  042524  050115  EM131:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06/
 8738  055432  044524  043516  052040
 8739  055440  020117  047506  041522
 8740  055446  020105  051104  053111
 8741  055454  020105  054524  042520
 8742  055462  042440  051122  051117
 8743  055470  040440  042104  042522
 8744  055476  051523  047111  020107
 8745  055504  045522  033060     000
 8746  055511     101  052124  046505  EM132:  .ASCIZ  /ATTEMPTING TO FORCE SPEED LOSS/
 8747  055516  052120  047111  020107
 8748  055524  047524  043040  051117
 8749  055532  042503  051440  042520
 8750  055540  042105  046040  051517
 8751  055546  000123
 8752  055550  052101  042524  050115  EM133:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE OFF TRACK/
```

```
 8753  055556  044524  043516  052040
 8754  055564  020117  047506  041522
 8755  055572  020105  051104  053111
 8756  055600  020105  043117  020106
 8757  055606  051124  041501  000113
 8758  055614  052101  042524  050115  EM134:  .ASCIZ  /ATTEMPTING TO FORCE WRITE LOCK ERROR/
 8759  055622  044524  043516  052040
 8760  055630  020117  047506  041522
 8761  055636  020105  051127  052111
 8762  055644  020105  047514  045503
 8763  055652  042440  051122  051117
 8764  055660     000
 8765  055661     101  052124  046505  EM135:  .ASCIZ  /ATTEMPTING TO FORCE SEEK INCOMPLETE/
 8766  055666  052120  047111  020107
 8767  055674  047524  043040  051117
 8768  055702  042503  051440  042505
 8769  055710  020113  047111  047503
 8770  055716  050115  042514  042524
 8771  055724     000
 8772  055725     101  052124  046505  EM136:  .ASCIZ  /ATTEMPTING TO FORCE NON-EXECUTABLE FUNCTION/
 8773  055732  052120  047111  020107
 8774  055740  047524  043040  051117
 8775  055746  042503  047040  047117
 8776  055754  042455  042530  052503
 8777  055762  040524  046102  020105
 8778  055770  052506  041516  044524
 8779  055776  047117     000
 8780  056001     101  052124  046505  EM137:  .ASCIZ  /ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR/
 8781  056006  052120  047111  020107
 8782  056014  047524  043040  051117
 8783  056022  042503  040440  020103
 8784  056030  047514  020127  047101
 8785  056036  020104  026503  020104
 8786  056044  040520  044522  054524
 8787  056052  042440  051122  051117
 8788  056060     000
 8789  056061     101  052124  046505  EM138:  .ASCII  /ATTEMPTING TO FORCE ILLEGAL DISK ADDRESS ERROR/
 8790  056066  052120  047111  020107
 8791  056074  047524  043040  051117
 8792  056102  042503  044440  046114
 8793  056110  043505  046101  042040
 8794  056116  051511  020113  042101
 8795  056124  051104  051505  020123
 8796  056132  051105  047522     122
 8797  056137     015  043012  047522          .ASCIZ  <15><12>/FROM DRIVE MESSAGE BITS/
 8798  056144  020115  051104  053111
 8799  056152  020105  042515  051523
 8800  056160  043501  020105  044502
 8801  056166  051524     000
 8802  056171     101  052124  046505  EM139:  .ASCIZ  /ATTEMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR/
 8803  056176  052120  047111  020107
 8804  056204  047524  041440  042514
 8805  056212  051101  051040  033113
 8806  056220  030461  053440  052111
 8807  056226  020110  020101  047503
 8808  056234  052116  047522  046114
```

```
8809  056242  051105  041440  042514
8810  056250  051101     000
8811  056253     124  051505  044524  EM140:  .ASCIZ  /TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611/
8812  056260  043516  044440  046114
8813  056266  043505  046101  042040
8814  056274  051511  020113  042101
8815  056302  051104  051505  020123
8816  056310  051105  047522  020122
8817  056316  047514  044507  020103
8818  056324  047111  051040  033113
8819  056332  030461     000
8820  056335     101  052124  046505  EM141:  .ASCIZ  /ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES/
8821  056342  052120  047111  020107
8822  056350  047524  051040  041505
8823  056356  044505  042526  047040
8824  056364  047117  051455  040524
8825  056372  042116  051101  020104
8826  056400  042515  051523  043501
8827  056406  051505     000
8828  056411     101  052124  046505  EM142:  .ASCII  /ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES/
8829  056416  052120  047111  020107
8830  056424  047524  051040  041505
8831  056432  044505  042526  047040
8832  056440  047117  051455  040524
8833  056446  042116  051101  020104
8834  056454  042515  051523  043501
8835  056462  051505
8836  056464  053440  052111  020110          .ASCIZ  / WITH PARITY ERROR/
8837  056472  040520  044522  054524
8838  056500  042440  051122  051117
8839  056506     000
8840  056507     101  052124  046505  EM143:  .ASCIZ  /ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)/
8841  056514  052120  047111  020107
8842  056522  047524  043040  051117
8843  056530  042503  047040  047117
8844  056536  042455  044530  052123
8845  056544  047105  020124  051104
8846  056552  053111  020105  042050
8847  056560  044522  042526  041040
8848  056566  051525  052040  046511
8849  056574  047505  052125  000051
8850  056602  052101  042524  050115  EM144:  .ASCIZ  /ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)/
8851  056610  044524  043516  052040
8852  056616  020117  047506  041522
8853  056624  020105  047516  026516
8854  056632  054105  051511  042524
8855  056640  052116  042040  044522
8856  056646  042526  024040  047516
8857  056654  051440  041501  024513
8858  056662     000
8859  056663     101  052124  046505  EM145:  .ASCIZ  /ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE RESET/
8860  056670  052120  047111  020107
8861  056676  054105  041505  052125
8862  056704  047511  020116  043117
8863  056712  042040  051505  046105
8864  056720  041505  020124  051104
```

```
8865  056726  053111  020105  044527
8866  056734  044124  044440  020105
8867  056742  042522  042523  000124
8868  056750  052101  042524  050115  EM146:  .ASCIZ  /ATTEMPTING TO EXECUTE AN ILLEGAL FUNCTION/
8869  056756  044524  043516  052040
8870  056764  020117  054105  041505
8871  056772  052125  020105  047101
8872  057000  044440  046114  043505
8873  057006  046101  043040  047125
8874  057014  052103  047511  000116
8875  057022  052101  042524  050115  EM147:  .ASCIZ  /ATTEMPTINC TO CLEAR ILLEGAL FUNCTION/
8876  057030  044524  043516  052040
8877  057036  020117  046103  040505
8878  057044  020122  046111  042514
8879  057052  040507  020114  052506
8880  057060  041516  044524  047117
8881  057066     000
8882  057067     104  044522  042526  EM2000: .ASCIZ  /DRIVE COMMAND BIT DID NOT SET IN DRIVE MESS A/
8883  057074  041440  046517  040515
8884  057102  042116  041040  052111
8885  057110  042040  042111  047040
8886  057116  052117  051440  052105
8887  057124  044440  020116  051104
8888  057132  053111  020105  042515
8889  057140  051523  040440     000
8890  057145     104  044522  042526  EM2001: .ASCIZ  /DRIVE MESS A INCORRECT/
8891  057152  046440  051505  020123
8892  057160  020101  047111  047503
8893  057166  051122  041505  000124
8894  057174  051104  053111  020105  EM2002: .ASCIZ  /DRIVE MESS B INCORRECT/
8895  057202  042515  051523  041040
8896  057210  044440  041516  051117
8897  057216  042522  052103     000
8898  057223     103  046517  040515  EM2003: .ASCIZ  /COMMAND AND STAUS REG. 1 INCORRECT/
8899  057230  042116  040440  042116
8900  057236  051440  040524  051525
8901  057244  051040  043505  020056
8902  057252  020061  047111  047503
8903  057260  051122  041505  000124
8904  057266  051104  053111  020105  EM2004: .ASCIZ  /DRIVE SELECT CODE IN MESSAGE A INCORRECT/
8905  057274  042523  042514  052103
8906  057302  041440  042117  020105
8907  057310  047111  046440  051505
8908  057316  040523  042507  040440
8909  057324  044440  041516  051117
8910  057332  042522  052103     000
8911  057337     110  040505  020104  EM2005: .ASCIZ  /HEAD ADD CODE IN MESSAGE A INCORRECT/
8912  057344  042101  020104  047503
8913  057352  042504  044440  020116
8914  057360  042515  051523  043501
8915  057366  020105  020101  047111
8916  057374  047503  051122  041505
8917  057402  000124
8918  057404  040515  047111  020124  EM2006: .ASCIZ  /MAINT REG. 1 INCORRECT/
8919  057412  042522  027107  030440
8920  057420  044440  041516  051117
```

```
8921  057426  042522  052103     000
8922  057433     115  051505  020123  EM2007: .ASCIZ  /MESS SELECT CODE IN MESSAGE B INCORRECT/
8923  057440  042523  042514  052103
8924  057446  041440  042117  020105
8925  057454  047111  046440  051505
8926  057462  040523  042507  041040
8927  057470  044440  041516  051117
8928  057476  042522  052103     000
8929  057503     103  046131  047111  EM2008: .ASCIZ  /CYLINDER ADD BITS IN MESSAGE B INCORRECT/
8930  057510  042504  020122  042101
8931  057516  020104  044502  051524
8932  057524  044440  020116  042515
8933  057532  051523  043501  020105
8934  057540  020102  047111  047503
8935  057546  051122  041505  000124
8936  057554  043117  051506  052105  EM2009: .ASCIZ  /OFFSET VALUE BITS IN MESSAGE B INCORRECT/
8937  057562  053040  046101  042525
8938  057570  041040  052111  020123
8939  057576  047111  046440  051505
8940  057604  040523  042507  041040
8941  057612  044440  041516  051117
8942  057620  042522  052103     000
8943  057625     120  051101  052111  EM2010: .ASCIZ  /PARITY BIT IN MESSAGE A INCORRECT/
8944  057632  020131  044502  020124
8945  057640  047111  046440  051505
8946  057646  040523  042507  040440
8947  057654  044440  041516  051117
8948  057662  042522  052103     000
8949  057667     120  051101  052111  EM2011: .ASCIZ  /PARITY BIT IN MESSAGE B INCORRECT/
8950  057674  020131  044502  020124
8951  057702  047111  046440  051505
8952  057710  040523  042507  041040
8953  057716  044440  041516  051117
8954  057724  042522  052103     000
8955  057731     103  046517  040515  EM2012: .ASCIZ  /COMMAND AND STATUS REG 2 INCORRECT/
8956  057736  042116  040440  042116
8957  057744  051440  040524  052524
8958  057752  020123  042522  020107
8959  057760  020062  047111  047503
8960  057766  051122  041505  000124
8961  057774  051105  047522  020122  EM2013: .ASCIZ  /ERROR REG INCORRECT/
8962  060002  042522  020107  047111
8963  060010  047503  051122  041505
8964  060016  000124
8965  060020  047503  046515  047101  EM2014: .ASCIZ  /COMMAND AND STATUS REG 1 INCORRECT AT PHASE ADDRESS 4/
8966  060026  020104  047101  020104
8967  060034  052123  052101  051525
8968  060042  051040  043505  030440
8969  060050  044440  041516  051117
8970  060056  042522  052103  040440
8971  060064  020124  044120  051501
8972  060072  020105  042101  051104
8973  060100  051505  020123  000064
8974  060106  047503  046515  047101  EM2015: .ASCIZ  /COMMAND AND STATUS REG 1 INVALID DURING COMMAND EXECUTION/
8975  060114  020104  047101  020104
8976  060122  052123  052101  051525
```

```
 8977  060130  051040  043505  030440
 8978  060136  044440  053116  046101
 8979  060144  042111  042040  051125
 8980  060152  047111  020107  047503
 8981  060160  046515  047101  020104
 8982  060166  054105  041505  052125
 8983  060174  047511  000116
 8984  060200  040515  047111  042524  EM2016: .ASCIZ  /MAINTENANCE REG 2 UNEXPECTEDLY CHANGED DURING COMMAND EXECUTION/
 8985  060206  040516  041516  020105
 8986  060214  042522  020107  020062
 8987  060222  047125  054105  042520
 8988  060230  052103  042105  054514
 8989  060236  041440  040510  043516
 8990  060244  042105  042040  051125
 8991  060252  047111  020107  047503
 8992  060260  046515  047101  020104
 8993  060266  054105  041505  052125
 8994  060274  047511  000116
 8995  060300  040515  047111  042524  EM2017: .ASCIZ  /MAINTENANCE REG 3 UNEXPECTEDLY CHANGED DURING COMMAND EXECUTION/
 8996  060306  040516  041516  020105
 8997  060314  042522  020107  020063
 8998  060322  047125  054105  042520
 8999  060330  052103  042105  054514
 9000  060336  041440  040510  043516
 9001  060344  042105  042040  051125
 9002  060352  047111  020107  047503
 9003  060360  046515  047101  020104
 9004  060366  054105  041505  052125
 9005  060374  047511  000116
 9006  060400  047111  042524  051122  EM2018: .ASCIZ  /INTERRUPT DID NOT OCCUR/
 9007  060406  050125  020124  044504
 9008  060414  020104  047516  020124
 9009  060422  041517  052503  000122
 9010  060430  047503  046515  047101  EM2019: .ASCIZ  /COMMAND AND STATUS REG 1 INCORRECT AFTER INTERRUPT/
 9011  060436  020104  047101  020104
 9012  060444  052123  052101  051525
 9013  060452  051040  043505  030440
 9014  060460  044440  041516  051117
 9015  060466  042522  052103  040440
 9016  060474  052106  051105  044440
 9017  060502  052116  051105  052522
 9018  060510  052120     000
 9019  060513     103  046517  040515  EM2020: .ASCIZ  /COMMAND AND STATUS REG 2 INCORRECT AFTER INTERRUPT/
 9020  060520  042116  040440  042116
 9021  060526  051440  040524  052524
 9022  060534  020123  042522  020107
 9023  060542  020062  047111  047503
 9024  060550  051122  041505  020124
 9025  060556  043101  042524  020122
 9026  060564  047111  042524  051122
 9027  060572  050125  000124
 9028  060576  051105  047522  020122  EM2021: .ASCIZ  /ERROR REGISTER INCORRECT AFTER INTERRUPT/
 9029  060604  042522  044507  052123
 9030  060612  051105  044440  041516
 9031  060620  051117  042522  052103
 9032  060626  040440  052106  051105
```

```
 9033  060634  044440  052116  051105
 9034  060642  052522  052120     000
 9035  060647     111  052116  051105  EM2022: .ASCIZ  /INTERRUPT DID NOT CLEAR IN RK611/
 9036  060654  052522  052120  042040
 9037  060662  042111  047040  052117
 9038  060670  041440  042514  051101
 9039  060676  044440  020116  045522
 9040  060704  030466  000061
 9041  060710  040504  040524  046040  EM2023: .ASCIZ  /DATA LATE DID NOT OCCUR WHEN LEAVING SILO/
 9042  060716  052101  020105  044504
 9043  060724  020104  047516  020124
 9044  060732  041517  052503  020122
 9045  060740  044127  047105  046040
 9046  060746  040505  044526  043516
 9047  060754  051440  046111  000117
 9048  060762  051104  053111  020105  EM2024: .ASCIZ  /DRIVE COMMAND BITS IN MESSAGE INCORRECT/
 9049  060770  047503  046515  047101
 9050  060776  020104  044502  051524
 9051  061004  044440  020116  042515
 9052  061012  051523  043501  020105
 9053  061020  047111  047503  051122
 9054  061026  041505  000124
 9055  061032  051104  053111  020105  EM2025: .ASCIZ  /DRIVE STATUS REGISTER INCORRECT/
 9056  061040  052123  052101  051525
 9057  061046  051040  043505  051511
 9058  061054  042524  020122  047111
 9059  061062  047503  051122  041505
 9060  061070  000124
 9061  061072  047503  052116  047522  EM2026: .ASCIZ  /CONTROLLER READY DID NOT SET/
 9062  061100  046114  051105  051040
 9063  061106  040505  054504  042040
 9064  061114  042111  047040  052117
 9065  061122  051440  052105     000
 9066  061127     114  040517  020104  EM2027: .ASCIZ  /LOAD STATUS DID NOT LOAD DRIVE STATUS REG./
 9067  061134  052123  052101  051525
 9068  061142  042040  042111  047040
 9069  061150  052117  046040  040517
 9070  061156  020104  051104  053111
 9071  061164  020105  052123  052101
 9072  061172  051525  051040  043505
 9073  061200  000056
 9074  061202  047125  054105  042520  EM2028: .ASCIZ  /UNEXPECTED INTERRUPT OCCURRED/
 9075  061210  052103  042105  044440
 9076  061216  052116  051105  052522
 9077  061224  052120  047440  041503
 9078  061232  051125  042522  000104
 9079  061240  047111  042524  051122  EM2029: .ASCIZ  /INTERRUPT OCCURRED WHEN INTERRUPT ENABLE SET/
 9080  061246  050125  020124  041517
 9081  061254  052503  051122  042105
 9082  061262  053440  042510  020116
 9083  061270  047111  042524  051122
 9084  061276  050125  020124  047105
 9085  061304  041101  042514  051440
 9086  061312  052105     000
 9087          000001                  .END
```

```
ABASE = 177440            937#   1172   1213
ABORT   050204           7364    8242#
ACDW1 = 000000           1172    1215
ACDW2 = 000000           1172    1216
ACLO  = 000010           1032#   5977
ACPUOP= 000000           1172    1187
ADDW0 = 000000           1172
ADDW1 = 000000           1172
ADDW10= 000000           1172
ADDW11= 000000           1172
ADDW12= 000000           1172
ADDW13= 000000           1172
ADDW14= 000000           1172
ADDW15= 000000           1172
ADDW2 = 000000           1172
ADDW3 = 000000           1172
ADDW4 = 000000           1172
ADDW5 = 000000           1172
ADDW6 = 000000           1172
ADDW7 = 000000           1172
ADDW8 = 000000           1172
ADDW9 = 000000           1172
ADEVCT= 000000           1172    1178
ADEVM = 000000           1172    1214
AENV  = 000000           1172    1183
AENVM = 000000           1172    1184
AFATAL= 000000           1172    1175
AMADR1= 000000           1172    1200
AMADR2= 000000           1172    1204
AMADR3= 000000           1172    1207
AMADR4= 000000           1172    1210
AMAMS1= 000000           1172    1194
AMAMS2= 000000           1172    1202
AMAMS3= 000000           1172    1205
AMAMS4= 000000           1172    1208
AMSGAD= 000000           1172    1180
AMSGLG= 000000           1172    1181
AMSGTY= 000000           1172    1174
AMTYP1= 000000           1172    1195
AMTYP2= 000000           1172    1203
AMTYP3= 000000           1172    1206
AMTYP4= 000000           1172    1209
APASS = 000000           1172    1177
APRIOR= 000005            936#   1172
APTCSU= 000040           7241#   7404
APTENV= 000001           7197    7239#   7273    7397
APTSIZ= 000200           2401    7238#
APTSPO= 000100           7199    7240#   7399
ASWREG= 000000           1172    1185
ATESTN= 000000           1172    1176
AUNIT = 000000           1172    1179
AUSWR = 000000           1172    1186
AVECT1= 120210            935#   1172   1211
AVECT2= 000000           1172    1212
BAI   = 000020            995#
BA16  = 000400            980#
```

```
BA17   = 001000   981#
BIT0   = 000001   917#   977   1010   1029   4206   4262   4392   4439   4482   4531   4664
BIT00  = 000001   907#   917
BIT01  = 000002   906#   916
BIT02  = 000004   905#   915
BIT03  = 000010   904#   914
BIT04  = 000020   903#   913
BIT05  = 000040   902#   912
BIT06  = 000100   901#   911
BIT07  = 000200   900#   910
BIT08  = 000400   899#   909   7067
BIT09  = 001000   898#   908   7085   7284
BIT1   = 000002   916#  1011
BIT10  = 002000   897#   982   1001   1020   1053   1068   3322   7261
BIT11  = 004000   896#   983   1002   1021   1038   1054   1069   7092
BIT12  = 010000   895#   985   1003   1022   1055   4236   4237
BIT13  = 020000   894#   986   1004   1023   1039   1056   7268
BIT14  = 040000   893#   987   1005   1024   1040   1057   7053
BIT15  = 100000   892#   988    989   1006   1025   1041   1058   2537   2546   4301   4307   4332   4337
                 4394   4395   4396   4438   4440   4483   4533   4534   4535   4666   4667
BIT2   = 000004   915#  1012   1031
BIT3   = 000010   914#   994   1013   1032   6667
BIT4   = 000020   913#   995   1014   1033   1047   1062
BIT5   = 000040   912#   996   1015   1034   1048   1063
BIT6   = 000100   911#   978    997   1016   1035   1049   1064
BIT7   = 000200   910#   979    998   1017   1036   1050   1065   3320
BIT8   = 000400   909#   980    999   1018   1037   1051   1066
BIT9   = 001000   908#   981   1000   1019   1052   1067
BPTVEC = 000014   924#
BSE    = 000200  1017#
CCLR   = 100000   989#  2498   2570   2587   2621   2639   2677   2701   2741   2764   2770   2811   2827
                 2874   2890   2937   2953   2993   3011   3042   3060   3097   3118   3165   3181   3228
                 3249   3299   3326   3365   3383   3418   3436   3478   3496   3538   3556   3598   3616
                 3658   3676   3715   3737   3743   3782   3804   3810   3849   3871   3877   3916   3938
                 3944   3983   4005   4011   4050   4072   4078   4110   4132   4138   4179   4234   4289
                 4318   4369   4445   4507   4917   5070   5147   5224   5299   5376   5454   5532   5609
                 5586   5764   5842   5920   5996   6074   6159   6244   6330   6415   6500   6585   6724
                 6806   6885   6924   6939
CDT    = 002000   982#  3223   3231   4936   4943   4987   5339   5355   5417   5433   6205   6221   6461
                 6477   6546   6562   6632   6648
CERR   = 100000   988#  4912   5203   5278   5433   5511   5743   5821   5899   5975   6053   6136   6307
                 6392   6477   6562   6704   6783   6865   6927
CFMT   = 010000   985#  2623   2624   2848   2850   2911   2913   2974   2976   4243   4936   4943   4987
                 5959   5975
CHKPAR  042360   2479   7007#  7904
CKSWR  = 104407   7052   7257   7283   7951#
CLEAR  = 000005   962#  2805   3477   3482   3781   3785   5883   5899
COE    = 001000  1019#
CR     = 000015   832#  7460   7470
CRLF   = 000200   833#  2426   7414   7470
CTO    = 004000   983#
CYLIN   004252  2336#  3091*  3099   3110   3140*  3141   3158*  3167   3203   3205*  3222*  3230   3241
                 3271   3273*  3274*  3275   3362*  3415*  3475*  3535*  3595*  3655*  6114*  6199*  6285*
                 6370*  6455*  6540*  7975   7981   8006
DCK    = 100000  1025#
DDISP  = 177570   839#  1145   2389
```

```
DDT    = 000400   1037#  5357  5513  6224  6480  6565
DF000    047232   2277  8016#
DF001    047236   1238  1680  1686  1692  1698  1704  1710  1716  1722  8018#
DF002    047272   1243  1248  1253  1258  8032#
DF006    047326   1263  1268  1273  1278  8046#
DF012    047362   1283  1288  1293  1298  1303  1410  1416  1428  1434  1440  8060#
DF017    047416   1308  1313  1318  1323  1333  1338  1344  1349  1354  8074#
DF031    047452   1359  1364  1369  1374  8088#
DF035    047506   1380  1386  1392  1398  1404  8102#
DF050    047542   1446  1452  8116#
DF052    047576   1458  1464  1470  1476  1482  1488  1494  1500  8130#
DF062    047622   1506  1512  1518  1552  1558  1564  1570  1576  1582  1599  1605  1611  1624
                  1631  1662  1668  1674  1728  1734  1740  1746  1758  1764  1770  1776  1782
                  1788  1794  1800  1806  1812  1818  1824  1830  1836  1842  1848  1854  1860
                  1866  1872  1878  1884  1890  1896  1902  1908  1914  1920  1926  1932  1938
                  1944  1950  1956  1962  1968  1974  1980  1986  1992  1998  2004  2010  2016
                  2022  2028  2034  2040  2046  2052  2058  2064  2070  2076  2082  2088  2094
                  2148  2154  2160  2166  2172  2178  2184  2190  2196  2202  2208  2214  2220
                  2226  2232  2238  8140#
DF065    047646   1525  1532  1587  1637  1643  8150#
DF067    047672   1539  1546  1650  1656  8160#
DF100    047716   1593  1617  1752  2244  2250  8170#
DF126    047732   8176#
DF224    047756   2100  2106  2112  2118  8186#
DF230    050012   2124  2130  2136  2142  8200#
DF256    050046   2256  2262  2267  2272  8214#
DH000A   050271   8020  8034  8048  8062  8076  8090  8104  8118  8132  8142  8152  8162  8172
                  8178  8188  8202  8216  8253#
DH000B   050307   8022  8036  8050  8064  8078  8092  8106  8120  8134  8144  8154  8164  8174
                  8180  8190  8204  8218  8256#
DH000C   050322   2275  8258#
DH001A   050353   8024  8156  8263#
DH001B   050372   8026  8158  8266#
DH001C   050410   8028  8042  8056  8070  8084  8098  8112  8126  8136  8269#
DH001D   050447   8030  8044  8058  8072  8086  8100  8114  8128  8138  8275#
DH002A   050506   8038  8281#
DH002B   050534   8040  8285#
DH006A   050563   8052  8289#
DH006B   050610   8054  8293#
DH012A   050634   8066  8297#
DH012B   050701   8068  8304#
DH017A   050747   8080  8311#
DH017B   050775   8082  8315#
DH031A   051021   8094  8319#
DH031B   051050   8096  8323#
DH035A   051076   8108  8327#
DH035B   051135   8110  8333#
DH050A   051173   8122  8339#
DH050B   051221   8124  8343#
DH062A   051247   8146  8192  8210  8347#
DH062B   051346   8148  8194  8212  8358#
DH067A   051443   8166  8369#
DH067B   051502   8168  8375#
DH126A   051540   8182  8380#
DH126B   051557   8184  8383#
DH224A   051575   8196  8386#
```

```
DH224B  051630          8198    8391#
DH230A  051665          8206    8396#
DH230B  051712          8208    8400#
DH256A  051736          8220    8404#
DH256B  052002          8222    8410#
DI    = 040000           987#
DISPLA  001142          1145#   2389*   2397*   7107*   7260*
DISPRE  000174          1077#   2397
DLT   = 100000          1006#   4913
DMD   = 000040          1048#   2499    2512    2513    2571    2575    2576    2622    2626    2627    2678    2684    2685
                        2743    2755    2812    2815    2816    2875    2878    2879    2938    2941    2942    2994    2998
                        2999    3043    3047    3048    3098    3102    3103    3166    3170    3171    3229    3233    3234
                        3300    3304    3305    3366    3371    3372    3419    3424    3425    3479    3484    3485    3539
                        3544    3545    3599    3604    3605    3659    3664    3665    3716    3728    3783    3795    3850
                        3862    3917    3929    3984    3996    4051    4063    4111    4123    4185    4240    4290    4293
                        4294    4319    4323    4324    4371    4447    4509    4585    4589    4590    4640    4644    4645
                        4670    4671    4695    4696    4933    4938    4939    4953    4954    4979    4980    5022    5027
                        5028    5107    5112    5113    5184    5189    5190    5261    5264    5265    5336    5341    5342
                        5414    5419    5420    5492    5497    5498    5569    5574    5575    5646    5651    5652    5724
                        5729    5730    5802    5807    5808    5880    5885    5886    5958    5961    5962    6034    6039
                        6040    6112    6122    6123    6197    6207    6208    6283    6293    6294    6368    6378    6379
                        6453    6463    6464    6538    6548    6549    6628    6634    6635    6685    6690    6691    6763
                        6766    6767    6848    6851    6852    6929
DRA   = 000001          1029#   5048    5050    5128    5205    5357    5435    5513    5590    5667    6139    6224    6310
                        6395    6480    6565
DRDY  = 000200          1036#   5048    5050
DROT  = 000040          1034#   5667    6310    6565
DRPAR = 000010          1013#   5978
DRVCOD  004244          2333#   2564*   2572    2582    2592    2604*   2605    4364*   4370    4372    4381    4389    4390
                        4418*   4419    4436*   4448    4478    4480*   4502*   4508    4511    4520    4528    4529    4557*
                        4558    4579*   4586    4598    4615*   4616    4634*   4641    4655    4663    4704    4721*   4722
                        4739*   4745    4757    4774*   4775    6622*   6631    6649    6666*   6667    7964
DRVMSK= 000007          993#
DRVTYP  004266          2342#   6119*   6204*   6290*   6375*   6460*   6545*   8006
DSC   = 040000          1040#
DSWR  = 177570           838#   1144    2388
DTE   = 010000          1022#
DTYE  = 000040          1015#   5436    5514
DT000   046576          2276    7960#
DT001   046602          1237    1679    1685    1691    1697    1703    1709    1715    1721    7961#
DT002   046622          1242    1247    1252    1257    7964#
DT006   046644          1262    1267    1272    1277    7967#
DT012   046666          1282    1287    1292    1297    1302    1409    1415    1421    1422    1427    1433    1439    7970#
DT017   046714          1307    1312    1317    1322    1327    1328    1332    1337    1343    1348    1353    7975#
DT031   046736          1358    1363    1368    1373    7978#
DT035   046760          1379    1385    1391    1397    1403    7981#
DT050   047004          1445    1451    7985#
DT052   047026          1457    1463    1469    1475    1481    1487    1493    1499    7988#
DT062   047042          1505    1511    1517    1551    1557    1563    1569    1575    1581    1598    1604    1610    1623
                        1630    1661    1667    1673    1727    1733    1739    1745    1757    1763    1769    1775    1781
                        1787    1793    1799    1805    1811    1817    1823    1829    1835    1841    1847    1853    1859
                        1865    1871    1877    1883    1889    1895    1901    1907    1913    1919    1925    1931    1937
                        1943    1949    1955    1961    1967    1973    1979    1985    1991    1997    2003    2009    2015
                        2021    2027    2033    2039    2045    2051    2057    2063    2069    2075    2081    2087    2093
                        2147    2153    2159    2165    2171    2177    2183    2189    2195    2201    2207    2213    2219
                        2225    2231    2237    7990#
```

```
DT065   047066          1524    1531    1586    1636    1642    7994#
DT067   047076          1538    1545    1649    1655    7996#
DT100   047112          1592    1616    1751    2243    2249    7998#
DT126   047116          7999#
DT224   047126          2099    2105    2111    2117    8001#
DT230   047162          2123    2129    2135    2141    8006#
DT256   047214          2255    2261    2266    2271    8011#
ECCW  = 020000          1056#   2756    2758    3729    3731    3796    3798    3863    3865    3930    3932    3997    3999
                        4064    4066    4124    4126
ECH   = 000100          1016#
EMTVEC= 000030           927#   2372*   2373*
EM000   052050          2274    8419#
EM1N    001300          1235#   2620*   2637*   2644*   2650*   2654*   2804*   2825*   2835*   2841*   2845*   2867*   2888*
                        2898*   2904*   2908*   2930*   2951*   2961*   2967*   2971*   2992*   3009*   3016*   3022*   3026*
                        3041*   3058*   3065*   3071*   3075*
EM100   052115          2620    8426#
EM101   052203          2804    8436#
EM102   052252          2867    8443#
EM103   052314          2930    8449#
EM104   052370          2992    8457#
EM105   052437          3041    8464#
EM106   052472          1240    1245    1250    1255    8469#
EM107   052576          1260    1265    1270    1275    8481#
EM108   052673          1280    1285    1290    1295    1300    8492#
EM109   052773          1305    1310    1315    1320    1325    8503#
EM110   053046          1330    1335    1341    1346    1351    8511#
EM111   053123          1356    1361    1366    1371    8519#
EM112   053166          1377    1383    1389    1395    1401    8525#
EM113   053321          1407    1413    1419    1425    1431    1437    8542#
EM114   053433          1443    1449    8556#
EM115   053476          1455    1461    1467    1473    8562#
EM116   053570          1479    1485    1491    1497    8572#
EM117   053663          1503    1509    1515    1725    8582#
EM118   054000          1522    1529    1536    1543    1549    1555    1561    1731    8596#
EM119   054113          1567    1573    1579    1737    8609#
EM120   054202          1584    8619#
EM121   054276          1590    1596    1602    1608    1614    8629#
EM122   054377          1621    1628    8640#
EM123   054500          1634    1640    1647    1653    1659    1665    1671    1743    8651#
EM124   054564          1677    1683    1689    1695    1701    1707    1713    1719    8660#
EM125   054632          1749    1755    1761    1767    1773    1779    8667#
EM126   055051          1785    1791    1797    1803    8694#
EM127   055116          1809    1815    1821    1827    8701#
EM128   055214          1833    1839    1845    1851    8712#
EM129   055275          1857    1863    1869    1875    8721#
EM130   055342          1881    1887    1893    1899    8728#
EM131   055424          1905    1911    1917    1923    8737#
EM132   055511          1929    1935    1941    1947    8746#
EM133   055550          1953    1959    1965    1971    8752#
EM134   055614          1977    1983    1989    1995    8758#
EM135   055661          2001    2007    2013    2019    8765#
EM136   055725          2025    2031    2037    2043    8772#
EM137   056001          2049    2055    2061    2067    8780#
EM138   056061          2073    2079    2085    2091    8789#
EM139   056171          2097    2103    2109    2115    8802#
EM140   056253          2121    2127    2133    2139    8811#
```

```
EM141   056335          2145    2151    2157    2163    8820#
EM142   056411          2169    2175    2181    2187    8828#
EM143   056507          2193    2199    2205    2211    8840#
EM144   056602          2217    2223    2229    2235    8850#
EM145   056663          2241    2247    8859#
EM146   056750          2253    2259    8868#
EM147   057022          2264    2269    8875#
EM2000  057067          1311    1336    1384    1420    2644    2835    2898    2961    3016    3065    8882#
EM2001  057145          1251    1271    1296    1321    1347    1367    1372    1396    1432    1444    1468    1492    1568
                        2650    2841    2904    2967    3022    3071    8890#
EM2002  057174          1256    1276    1301    1326    1352    1402    1438    1450    1474    1498    2654    2845    2908
                        2971    3026    3075    8894#
EM2003  057223          1241    1261    1281    1306    1331    1357    1378    1408    1504    1550    1585    1660    1678
                        1762    1786    1810    1834    1858    1882    1906    1930    1954    1978    2002    2026    2050
                        2074    2098    2122    2146    2170    2194    2218    2254    2265    2637    2825    2888    2951
                        3009    3058    8898#
EM2004  057266          1246    1684    8904#
EM2005  057337          1266    1696    8911#
EM2006  057404          1286    1414    8918#
EM2007  057433          1291    1426    1708    8922#
EM2008  057503          1316    1342    1390    1714    8929#
EM2009  057554          1362    8936#
EM2010  057625          1456    1480    1702    8943#
EM2011  057667          1462    1486    1720    8949#
EM2012  057731          1510    1556    1574    1622    1666    1768    1792    1816    1340    1864    1888    1912    1936
                        1960    1984    2008    2032    2056    2080    2104    2128    2152    2176    2200    2224    8955#
EM2013  057774          1516    1562    1580    1672    1774    1804    1828    1852    1876    1900    1924    1948    1972
                        1996    2020    2044    2068    2092    2116    2140    2164    2188    2212    2236    2260    2270
                        8961#
EM2014  060020          1523    1635    8965#
EM2015  060106          1530    1641    8974#
EM2016  060200          1537    1648    8984#
EM2017  060300          1544    1654    8995#
EM2018  060400          1591    9006#
EM2019  060430          1597    9010#
EM2020  060513          1603    9019#
EM2021  060576          1609    9028#
EM2022  060647          1615    9035#
EM2023  060710          1629    9041#
EM2024  060762          1690    9048#
EM2025  061032          1726    1732    1738    1744    1780    1798    1822    1846    1870    1894    1918    1942    1966
                        1990    2014    2038    2062    2086    2110    2134    2158    2182    2206    2230    9055#
EM2026  061072          1750    9061#
EM2027  061127          1756    9066#
EM2028  061202          2242    9074#
EM2029  061240          2248    9079#
ERRCNT  004242          2332#   2405*   7359*   7362
ERRVEC= 000004           920#   2386    2387*   2398*   7007*   7008*   7020*   7021*   7058    7059*   7061*   7064*
E.ASOF  004176          2306#
E.BA    004164          2301#
E.CS1   004160          2299#   2505*   2506    2519*   2522    2565*   2584    2624*   2635    2672*   2698    2736*   2761
                        2805*   2813    2823    2848    2850*   2868*   2876    2886    2911    2913*   2931*   2939    2949
                        2974    2976*   2996*   3007    3045*   3056    3092*   3115    3160*   3178    3223*   3246    3293*
                        3323    3364*   3380    3417*   3433    3477*   3493    3537*   3553    3597*   3613    3657*   3673
                        3714*   3734    3781*   3801    3848*   3868    3915*   3935    3982*   4002    4049*   4069    4109*
                        4129    4597*   4602    4649*   4650    4677    4703*   4708    4756*   4761    4823*   4826    4901*
```

```
                4912*  4943*  4944   4960   4987*  4991   5038*  5046*  5053   5075*  5079   5126*  5130
                5152*  5156   5203*  5207   5229*  5233   5278*  5282   5304*  5308   5355*  5359   5381*
                5385   5433*  5437   5459*  5463   5511*  5515   5537*  5541   5588*  5592   5614*  5618
                5665*  5669   5691*  5695   5743*  5747   5769*  5773   5821*  5825   5847*  5851   5899*
                5903   5925*  5929   5975*  5979   6001*  6005   6053*  6057   6079*  6083   6136*  6141
                6164*  6168   6221*  6226   6249*  6253   6307*  6312   6335*  6339   6392*  6397   6420*
                6424   6477*  6482   6505*  6509   6562*  6567   6590*  6594   6648*  6653   6704*  6708
                6729*  6733   6783*  6786*  6790   6811*  6815   6865*  6869   6890*  6894   6925*  6926*
                6927*  6933   6942*  6944   7961   7964   7967   7970   7975   7978   7981   7990   7994
                7999   8001   8006   8011
E.CS2   004170  2303#  4598*  4599*  4605   4704*  4705*  4711   4757*  4758*  4764   4824*  4829   4902*
                4905   4913*  4914   4988*  4994   5047*  5056   5076*  5082   5127*  5133   5153*  5159
                5204*  5210   5230*  5236   5279*  5285   5305*  5311   5356*  5362   5382*  5388   5434*
                5440   5460*  5466   5512*  5518   5538*  5544   5589*  5595   5615*  5621   5666*  5672
                5692*  5698   5744*  5750   5770*  5776   5822*  5828   5848*  5854   5900*  5906   5926*
                5932   5976*  5982   6002*  6008   6054*  6060   6080*  6086   6138*  6144   6165*  6171
                6223*  6229   6250*  6256   6309*  6315   6336*  6342   6394*  6400   6421*  6427   6479*
                6485   6506*  6512   6564*  6570   6591*  6597   6649*  6650*  6656   6705*  6711   6730*
                6736   6787*  6793   6812*  6818   6866*  6872   6891*  6897   7990   8001   8006
E.DA    004166  2302#
E.DB    004202  2308#
E.DCYL  004200  2307#
E.DS    004172  2304#  4600*  4611   4706*  4717   4759*  4770   4903*  4989*  5000   5048*  5062   5077*
                5085   5128*  5136   5154*  5162   5205*  5213   5231*  5239   5280*  5288   5306*  5314
                5357*  5365   5383*  5391   5435*  5443   5461*  5469   5513*  5521   5539*  5547   5590*
                5598   5616*  5624   5667*  5675   5693*  5701   5745*  5753   5771*  5779   5823*  5831
                5849*  5857   5901*  5909   5927*  5935   5977*  5985   6003*  6011   6055*  6063   6081*
                6089   6139*  6148   6166*  6174   6224*  6233   6251*  6259   6310*  6319   6337*  6345
                6395*  6404   6422*  6430   6480*  6489   6507*  6515   6565*  6574   6592*  6600   6651*
                6659   6706*  6714   6731*  6739   6788*  6796   6913*  6821   6867*  6875   6892*  6900
                7990   8001   8009
E.ECPS  004212  2312#
E.ECPT  004214  2313#
E.ER    004174  2305#  4601*  4608   4707*  4714   4760*  4767   4825*  4832   4904*  4990*  4997   5049*
                5059   5078*  5088   5129*  5139   5155*  5165   5206*  5216   5232*  5242   5281*  5291
                5307*  5317   5358*  5368   5384*  5394   5436*  5446   5462*  5472   5514*  5524   5540*
                5550   5591*  5601   5617*  5627   5668*  5678   5694*  5704   5746*  5756   5772*  5782
                5824*  5834   5850*  5860   5902*  5912   5928*  5938   5978*  5988   6004*  6014   6056*
                6066   6082*  6092   6140*  6151   6167*  6177   6225*  6236   6252*  6262   6311*  6322
                6338*  6348   6396*  6407   6423*  6433   6481*  6492   6508*  6518   6566*  6577   6593*
                6603   6652*  6662   6707*  6717   6732*  6742   6789*  6799   6814*  6824   6868*  6878
                6893*  6903   6928*  6936   6943*  6947   7990   8004   8009   8011
E.MR1   004204  2309#  2754*  2755*  2758*  2767   3728*  3731*  3740   3795*  3798*  3807   3862*  3865*
                3874   3929*  3932*  3941   3996*  3999*  4008   4063*  4066*  4075   4123*  4126*  4135
                7970
E.MR2   004206  2310#  2520*  2582*  2597   2633*  2648   2691*  2692*  2693*  2694*  2695*  2696*  2706
                2711   2759*  2780   2806*  2832   2839   2851*  2869*  2895   2902   2914*  2932*  2958
                2965   2977*  3005*  3020   3054*  3069   3109*  3133   3177*  3196   3240*  3264   3284*
                3336   3378*  3393   3431*  3453   3491*  3513   3551*  3573   3611*  3633   3671*  3693
                3732*  3760   3799*  3827   3866*  3894   3933*  3961   4000*  4028   4067*  4088   4127*
                4155   4181*  4196   4213*  4236*  4252   4269*  4299*  4315   4330*  4345   4389*  4395*
                4414   4436*  4474   4482*  4528*  4534*  4553   4667*  4682   4950*  4965   7961   7964
                7967   7973   7975   7978   7983   7985   7988   7996
E.MR3   004210  2311#  2521*  2583*  2600   2634*  2652   2697*  2714   2760*  2783   2822*  2843   2885*
                2906   2948*  2969   3006*  3024   3055*  3073   3110*  3111*  3112*  3113*  3114*  3128
                3136   3159*  3191   3199   3206*  3241*  3242*  3243*  3244*  3245*  3259   3287   3311*
```

```
                    3312*  3313*  3314*  3315*  3316*  3317*  3318*  3319*  3322*  3331   3339   3379*  3396
                    3432*  3456   3492*  3516   3552*  3576   3612*  3636   3672*  3696   3733*  3763   3800*
                    3830   3867*  3897   3934*  3964   4001*  4031   4068*  4091   4128*  4158   4183*  4201
                    4206   4214*  4238*  4257   4262   4270*  4300*  4312   4331*  4342   4390*  4396*  4411
                    4439*  4471   4483*  4529*  4535*  4550   4663*  4666*  4687   4949*  4970   7961   7964
                    7967   7973   7975   7978   7983   7985   7988   7996
E.SPAR  004216      2314#
E.WC    004162      2300#
FMTE  = 000020      1014#
GNS   = ****** U    1076   2425   6978   6985   7943   7944   7945   7946   7947   7949   7951   7952   7953
                    7954   7955   7956   7957
GO    = 000001       977#  4987   5038   5046   5126   5203   5278   5355   5433   5511   5588   5665   5743
                    5821   5899   5975   6053   6136   6221   6307   6392   6477   6562   6648   6704   6926
GTSWR = 104406      2420   7949#
HDCODE  004250      2335#  2671*  2680   2692   2718*  2719   6115*  6117   6200*  6202   6286*  6288   6371*
                    6373   6456*  6458   6541*  6543   7967   8006
HT    = 000011       830#  7412   7470
HVRC  = 000400      1018#
IDAE  = 002000      1020#  6056   6140   6311   6396   6481   6566
IE    = 000100       978#  4806   4823   4852
ILF   = 000001      1010#  6928
ILLFUN  004270      2343#  6919*  6925   6930   6951*  6952   8011
INTR  = 000300       973#
IOTVEC= 000020       925#  2370*  2371*
IR    = 000100       997#  4599   4705   4758   4824   4902   4913   4988   5047   5076   5127   5153   5204
                    5230   5279   5305   5356   5382   5434   5460   5512   5538   5589   5615   5666   5692
                    5744   5770   5822   5848   5900   5926   5976   6002   6054   6080   6138   6165   6223
                    6250   6309   6336   6394   6421   6479   6506   6564   6591   6650   6705   6730   6787
                    6812   6866   6891
LF    = 000012       831#  7464   7470
MCLK  = 000400      1051#  2512   2575   2626   2684   2746   2747   2815   2878   2941   2998   3047   3102
                    3170   3233   3304   3371   3424   3484   3544   3604   3664   3720   3721   3787   3788
                    3854   3855   3921   3922   3988   3989   4055   4056   4115   4116   4190   4191   4246
                    4247   4293   4323   4375   4376   4451   4452   4514   4515   4589   4644   4670   4695
                    4938   4953   4979   5027   5112   5189   5264   5341   5419   5497   5574   5651   5729
                    5807   5885   5961   6039   6122   6207   6293   6378   6463   6548   6634   6690   6766
                    6851
MDS   = 001000      1000#
MEMBAS= 172100       933#  7009
MEMERR  042450      7013   7026#
MEMVEC= 000114       932#  7013*  7014*
MERD  = 001000      1052#
MESMSK= 000017      1045#
MEWD  = 002000      1053#  2755   3728   3795   3862   3929   3996   4063   4123
MIND  = 000200      1050#
MSGCOD  004246      2334#  2735*  2742   2754   2760   2775   2787*  2788   3713*  3780*  3847*  3914*  3981*
                    4048*  4108*  4437*  4446   4481*  7970
MSP   = 000100      1049#
NED   = 010000      1003#  6787   6866
NEM   = 004000      1002#
NEWPAS  005254      2479#  7001
NXF   = 000004      1012#  5902
OFFSET= 000015       966#  3293   3302   4049   4053
OFFVAL  004254      2337#  3292*  3301   3312   3320   3343*  3344   3363*  3416*  3476*  3536*  3596*  3656*
                    7978   7981
OFST  = 000004      1031#  5048   5050
```

```
OPI    = 020000  1023#
OPR001   050072  2429  8226#
OPR002   050121  2432  2443  2460  8230#
OPR003   050127  2439  8232#
OPR004   050157  2451  8237#
OR     = 000200   998#
PACK   = 000003   961#  2931  3417  3422  3714  3718  5727  5743
PARBIT   004260  2339#  4391* 4394* 4399  4406  4440* 4459  4466  4484* 4530* 4533* 4538  4545
PARM     004276  1083  2348#
PAR.EN= 000001   934#  7012
PAT    = 000020  1047#  4319  4323  4324  4509
PCA    = 004000  1054#
PCD    = 010000  1055#
PGE    = 002000  1001#
PIP    = 020000  1039#  6224
PIRQ   = 177772   837#
PIRQVE= 000240   931#
PR0    = 000000   854#
PR1    = 000040   855#
PR2    = 000100   856#
PR3    = 000140   857#
PR4    = 000200   858#
PR5    = 000240   859#  2327
PR6    = 000300   860#
PR7    = 000340   861#  2357  2480  4800  4812  4854  7008  7014  7888  7901
PS     = 177776   834#   835
PSW    = 177776   835#
PWRVEC= 000024   926#  2376* 2377* 7887* 7888* 7900* 7901*
P.CS1    004220  2318#  5065* 5142* 5219* 5294* 5371* 5449* 5527* 5604* 5681* 5759* 5837* 5915*
                 5991*  6069* 6154* 6239* 6325* 6410* 6495* 6580* 6720* 6802* 6881* 8004
P.CS2    004222  2319#  5066* 5143* 5220* 5295* 5372* 5450* 5528* 5605* 5682* 5760* 5838* 5916*
                 5992*  6070* 6155* 6240* 6326* 6411* 6496* 6581* 6721* 6803* 6882* 8004
P.DS     004224  2320#  5067* 5144* 5221* 5296* 5373* 5451* 5529* 5606* 5683* 5761* 5839* 5917*
                 5993*  6071* 6156* 6241* 6327* 6412* 6497* 6582* 6722* 6804* 6883* 8004
P.ER     004226  2321#  5068* 5145* 5222* 5297* 5374* 5452* 5530* 5607* 5684* 5762* 5840* 5918*
                 5994*  6072* 6157* 6242* 6328* 6413* 6498* 6583* 6723* 6805* 6884* 8004
RDCHR  = 104410  7730  7952#
RDDATA= 000021   968#
RDGATE= 100000  1058#
RDHEAD= 000025   970#
RDLIN  = 104411  7802  7953#
RDOCT  = 104412  2433  2444  2461  7954#
RDY    = 000200   979#  4597  4703  4756  4823  4901  4912  4987  5038  5046  5075  5126  5152
                 5203   5229  5278  5304  5355  5381  5433  5459  5511  5537  5588  5614  5665
                 5691   5743  5769  5821  5847  5899  5925  5975  6001  6053  6079  6136  6164
                 6221   6249  6307  6335  6392  6420  6477  6505  6562  6590  6648  6704  6729
                 6783   6811  6865  6890  6927  6942
RECAL  = 000013   965#  2995  2996  3657  3662  3982  3986  6037  6053
RESREG= 104414  7358  7956#
RESTRT   004306  1081  2351#
RESVEC= 000010   921#
RKASOF= 000010   948#  3301* 3368* 3421* 3481* 3541* 3601* 3661*
RKBA   = 000004   943#
RKCS1  = 000000   941#  2498* 2500* 2504  2516  2570* 2573* 2579  2587* 2621* 2623* 2630  2639*
                 2677*  2682* 2688  2701* 2741* 2744* 2750  2764* 2770* 2811* 2813* 2819  2827*
                 2874*  2876* 2882  2890* 2937* 2939* 2945  2953* 2993* 2995* 3002  3011* 3042*
```

```
                    3044*  3051   3060*  3097*  3100*  3106   3118*  3165*  3168*  3174   3181*  3228*  3231*
                    3237   3249*  3299*  3302*  3308   3326*  3365*  3369*  3375   3383*  3418*  3422*  3428
                    3436*  3478*  3482*  3488   3496*  3538*  3542*  3548   3556*  3598*  3602*  3608   3616*
                    3658*  3662*  3668   3676*  3715*  3718*  3724   3737*  3743*  3782*  3785*  3791   3804*
                    3810*  3849*  3852*  3858   3871*  3877*  3916*  3919*  3925   3938*  3944*  3983*  3986*
                    3992   4005*  4011*  4050*  4053*  4059   4072*  4078*  4110*  4113*  4119   4132*  4138*
                    4179*  4188*  4234*  4243*  4289*  4291*  4318*  4321*  4369*  4373*  4445*  4449*  4507*
                    4512*  4587*  4593   4642*  4648   4674   4699   4746*  4748   4752   4806*  4808   4820
                    4844*  4846   4852*  4891*  4893   4897   4909   4917*  4936*  4942   4957   4983   5025*
                    5033   5037   5042   5070*  5071   5110*  5118   5122   5147*  5148   5187*  5195   5199
                    5224*  5225   5262*  5270   5274   5299*  5300   5339*  5347   5351   5376*  5377   5417*
                    5425   5429   5454*  5455   5495*  5503   5507   5532*  5533   5572*  5580   5584   5609*
                    5610   5649*  5657   5661   5686*  5687   5727*  5735   5739   5764*  5765   5805*  5813
                    5817   5842*  5843   5883*  5891   5895   5920*  5921   5959*  5967   5971   5996*  5997
                    6037*  6045   6049   6074*  6075   6120*  6128   6132   6159*  6160   6205*  6213   6217
                    6244*  6245   6291*  6299   6303   6330*  6331   6376*  6384   6388   6415*  6416   6461*
                    6469   6473   6500*  6501   6546*  6554   6558   6585*  6586   6632*  6640   6644   6688*
                    6696   6700   6724*  6725   6764*  6772   6779   6806*  6807   6849*  6857   6861   6885*
                    6886   6924*  6930*  6931   6939*  6940
RKCS2 = 000010        945#   2572*  4187*  4372*  4448*  4511*  4584*  4586*  4594   4639*  4641*  4700   4744*
                    4745*  4753   4796*  4797*  4821   4843*  4869*  4888*  4890*  4898   4910   4932*  4984
                    5021*  5043   5072   5106*  5123   5149   5183*  5200   5226   5260*  5275   5301   5335*
                    5352   5378   5413*  5430   5456   5491*  5508   5534   5568*  5585   5611   5645*  5662
                    5688   5723*  5740   5766   5801*  5818   5844   5879*  5896   5922   5957*  5972   5998
                    6033*  6050   6076   6111*  6133   6161   6196*  6218   6246   6282*  6304   6332   6367*
                    6389   6417   6452*  6474   6502   6537*  6559   6587   6627*  6631*  6645   6684*  6687*
                    6701   6726   6762*  6780   6808   6847*  6862   6887
RKDA  = 000006         944#   2681*  4242*  4935*  5024*  5109*  5186*  5338*  5416*  5494*  5571*  5648*  5726*
                    5804*  5882*  6036*  6118*  6203*  6289*  6374*  6459*  6544*  6630*
RKDB  = 000024         950#   4889*  4908
RKDCYL= 000020         949#   3099*  3167*  3230*  3367*  3420*  3480*  3540*  3600*  3660*  4241*  4934*  5023*
                    5108*  5185*  5337*  5415*  5493*  5570*  5647*  5725*  5803*  5881*  6035*  6113*  6198*
                    6284*  6369*  6454*  6539*  6629*  6686*
RKDS  = 000012         946#   4595   4701   4754   4899   4985   5044   5073   5124   5150   5201   5227   5276
                    5302   5353   5379   5431   5457   5509   5535   5586   5612   5663   5689   5741   5767
                    5819   5845   5897   5923   5973   5999   6051   6077   6134   6162   6219   6247   6305
                    6333   6390   6418   6475   6503   6560   6588   6646   6702   6727   6781   6809   6863
                    6888
RKECPS= 000030         954#
RKECPT= 000032         955#
RKER  = 000014         947#   4596   4702   4755   4822   4900   4911   4986   5045   5074   5125   5151   5202
                    5228   5277   5303   5354   5380   5432   5458   5510   5536   5587   5613   5664   5690
                    5742   5768   5820   5846   5898   5924   5974   6000   6052   6078   6135   6163   6220
                    6248   6306   6334   6391   6419   6476   6504   6561   6589   6647   6703   6728   6782
                    6810   6864   6889   6932   6941
RKMR1 = 000026         951#   2499*  2512*  2513*  2571*  2575*  2576*  2622*  2626*  2627*  2678*  2684*  2685*
                    2742*  2743*  2746*  2747*  2751   2812*  2815*  2816*  2875*  2878*  2879*  2938*  2941*
                    2942*  2994*  2998*  2999*  3043*  3047*  3048*  3098*  3102*  3103*  3166*  3170*  3171*
                    3229*  3233*  3234*  3300*  3304*  3305*  3366*  3371*  3372*  3419*  3424*  3425*  3479*
                    3484*  3485*  3539*  3544*  3545*  3599*  3604*  3605*  3659*  3664*  3665*  3716*  3720*
                    3721*  3725   3783*  3787*  3788*  3792   3850*  3854*  3855*  3859   3917*  3921*  3922*
                    3926   3984*  3988*  3989*  3993   4051*  4055*  4056*  4060   4111*  4115*  4116*  4120
                    4185*  4190*  4191*  4240*  4246*  4247*  4290*  4293*  4294*  4319*  4323*  4324*  4370*
                    4371*  4375*  4376*  4446*  4447*  4451*  4452*  4508*  4509*  4514*  4515*  4585*  4589*
                    4590*  4640*  4644*  4645*  4670*  4671*  4695*  4696*  4933*  4938*  4939*  4953*  4954*
                    4979*  4980*  5022*  5027*  5028*  5031*  5107*  5112*  5113*  5116*  5184*  5189*  5190*
```

```
                5193* 5261* 5264* 5265* 5268* 5336* 5341* 5342* 5345* 5414* 5419* 5420* 5423*
                5492* 5497* 5498* 5501* 5569* 5574* 5575* 5578* 5646* 5651* 5652* 5655* 5724*
                5729* 5730* 5733* 5802* 5807* 5808* 5811* 5880* 5885* 5886* 5889* 5958* 5961*
                5962* 5965* 6034* 6039* 6040* 6043* 6112* 6122* 6123* 6126* 6197* 6207* 6208*
                6211* 6283* 6293* 6294* 6297* 6368* 6378* 6379* 6382* 6453* 6463* 6464* 6467*
                6538* 6548* 6549* 6552* 6628* 6634* 6635* 6638* 6685* 6690* 6691* 6694* 6767*
                6766* 6767* 6770* 6848* 6851* 6852* 6855* 6929*
RKMR2 = 000034    952# 2517  2580  2631  2689  2752  2820  2883  2946  3003  3052  3107  3175
                3238  3309  3376  3429  3489  3549  3609  3669  3726  3793  3860  3927  3994
                4061  4121  4194  4250  4297  4328  4379  4455  4518  4675  4958
RKMR3 = 000036    953# 2518  2581  2632  2690  2753  2821  2884  2947  3004  3053  3108  3176
                3239  3310  3377  3430  3490  3550  3610  3670  3727  3794  3861  3928  3995
                4062  4122  4195  4251  4298  4329  4380  4456  4519  4676  4959
RKPRI   004236  2327# 2477*
RKSPAR= 000022    956#
RKVEC   004234  2326# 2475* 2476* 4798  4835* 4842* 4851* 4870
RKWC  = 000002    942#
RLS   = 000010    994#
SAVREG= 104413  7307  7955#
SAVSWR  004274  2345# 7886* 7905
SCLR  = 000040    996# 4584  4639  4744  4796  4869  4888  4932  5021  5106  5183  5260  5335
                5413  5491  5568  5645  5723  5801  5879  5957  6033  6111  6196  6282  6367
                6452  6537  6627  6684  6762  6847
SCOP1 = 104415  2603  2717  2786  2847  2910  2973  3139  3202  3270  3342  4417  4477  4556
                4614  4720  4773  6665  6950  7957#
SCOP1$  043224  7179# 7957
SEEK  = 000017    967# 3092  3100  3160  3168  3223  3231  4109  4113  4243  4936  4943  4987
                5025  5038  5046  5110  5126  5187  5203  5339  5355  5417  5433  5495  5511
                5572  5588  5649  5665  6120  6136  6205  6221  6291  6307  6376  6392  6461
                6477  6546  6562  6632  6648  6688  6704
SELDRV= 000001    960# 2500  2505  2519  2565  2573  2623  2624  2672  2682  2736  2744  3364
                3369  4188  4291  4321  4373  4449  4512  4587  4642  4649  4746  4806  4844
                4891  5262  5278  5764  6849
SFTCNT  004256  2338# 4180* 4216* 4217  4235* 4272* 4273  7985
SKI   = 000002  1011# 5824
SPACE2  050201  7341  7353  8241#
SPAR  = 020000    986# 5203  6704  6784  6786
SPDLSS= 000020  1033# 5048  5050  5590  5745  5823  5901  6055  6310  6480
SRTFLG  004240  2328# 2348* 2351* 2354* 2427
SRTSPL= 000011    964# 3044  3045  3597  3602  3915  3919  5959  5975
STACK = 001100    825# 2356  2368  7034  7369  7902
STALL   004264  2341# 6776
START   004316  1080  2354#
START1  004322  2349  2352  2355#
STKLMT= 177774    836#
SVAL  = 100000  1041# 5048  5128  5205  5280  5357  5435  5513  5590  5667  5745  5823  5901
                5977  6055  6139  6224  6310  6395  6480  6565  6788
SWR     001140  1144# 2366  2388* 2390  2396* 2403* 2418  7030  7053  7067  7070  7085  7092
                7179  7261  7268  7280  7284  7360  7624  7661* 7886  7905*
SWREG   000176  1078# 2396  2418  7624  7637
SW0   = 000001    889#
SW00  = 000001    879#  889
SW01  = 000002    878#  888
SW02  = 000004    877#  887
SW03  = 000010    876#  886
SW04  = 000020    875#  885
```

```
SW05  = 000040          874#   884
SW06  = 000100          873#   883
SW07  = 000200          872#   882
SW08  = 000400          871#   881
SW09  = 001000          870#   880
SW1   = 000002          888#
SW10  = 002000          869#
SW11  = 004000          868#
SW12  = 010000          867#  7360
SW13  = 020000          866#
SW14  = 040000          865#
SW15  = 100000          864#
SW2   = 000004          887#
SW3   = 000010          886#
SW4   = 000020          885#
SW5   = 000040          884#
SW6   = 000100          883#
SW7   = 000200          882#
SW8   = 000400          881#
SW9   = 001000          880#  7030  7179
S.CLR = 000400         1066#  2806  2831  3491  3500  3799  3814
S.FMT = 001000         1067#  2633  2642  2831  2851  2894  2914  2957  2977  4236  4237  4949
S.PACK= 004000         1069#  2932  2957  3431  3440  3732  3747
S.RECL= 000040         1063#  3005  3014  3671  3680  4000  4015
S.RTC = 000200         1065#
S.SEEK= 000020         1062#  3109  3121  3177  3184  3240  3252  4127  4142  4236  4237  4949
S.STSP= 000100         1064#  3054  3063  3611  3620  3933  3948
S.UNLD= 002000         1068#  2869  2894  3551  3560  3866  3881
TBITVE= 000014          922#
TKVEC = 000060          929#
TPVEC = 000064          930#
TRAPPC  004272         2344#  7027*  7960
TRAPVE= 000034          928#  2374*  2375*
TRTVEC= 000014          923#
TST1    005272         2481   2495#  7112
TST10   010032         2912   2927#  7119
TST100  041712         6904   6917#  7175
TST11   010350         2975   2989#  7120
TST12   010614         3012   3018   3025  3038#  7121
TST13   011060         3061   3067   3074  3088#  7122
TST14   011376         3155#  7123
TST15   011706         3204   3219#  7124
TST16   012240         3289#  7125
TST17   012602         3359#  7126
TST2    005576         2509   2525   2547  2561#  7113
TST20   013046         3384   3391   3397  3412#  7127
TST21   013326         3437   3444   3451  3457   3472#  7128
TST22   013606         3497   3504   3511  3517   3532#  7129
TST23   014066         3557   3564   3571  3577   3592#  7130
TST24   014346         3617   3624   3631  3637   3652#  7131
TST25   014626         3677   3684   3691  3697   3710#  7132
TST26   015140         3738   3744   3751  3758   3764   3777#  7133
TST27   015452         3805   3811   3818  3825   3831   3844#  7134
TST3    006056         2617#  7114
TST30   015764         3872   3878   3885  3892   3898   3911#  7135
TST31   016276         3939   3945   3952  3959   3965   3978#  7136
```

```
TST32   016610          4006    4012    4019    4026    4032    4045#   7137
TST33   017106          4073    4079    4086    4092    4105#   7138
TST34   017420          4133    4139    4146    4153    4159    4176#   7139
TST35   017656          4199    4204    4231#   7140
TST36   020122          4255    4260    4286#   7141
TST37   020456          4335    4340    4346    4361#   7142
TST4    006322          2640    2646    2653    2668#   7115
TST40   021022          4433#   7143
TST41   021346          4479    4499#   7144
TST42   021712          4576#   7145
TST43   022166          4631#   7146
TST44   022716          4723    4736#   7147
TST45   023156          4793#   7148
TST46   023562          4885#   7149
TST47   024012          4929#   7150
TST5    006634          2732#   7116
TST50   024446          4947    4963    4968    4973    5001    5018#   7151
TST51   025130          5089    5103#   7152
TST52   025562          5166    5180#   7153
TST53   026214          5243    5257#   7154
TST54   026632          5318    5332#   7155
TST55   027264          5395    5410#   7156
TST56   027716          5473    5488#   7157
TST57   030350          5551    5565#   7158
TST6    007176          2801#   7117
TST60   031002          5628    5642#   7159
TST61   031434          5705    5720#   7160
TST62   032066          5783    5798#   7161
TST63   032520          5861    5876#   7162
TST64   033152          5939    5954#   7163
TST65   033570          6015    6030#   7164
TST66   034222          6093    6108#   7165
TST67   034704          6178    6193#   7166
TST7    007514          2849    2864#   7118
TST70   035366          6263    6279#   7167
TST71   036050          6349    6364#   7168
TST72   036532          6434    6449#   7169
TST73   037214          6519    6534#   7170
TST74   037676          6604    6619#   7171
TST75   040210          6681#   7172
TST76   040636          6743    6759#   7173
TST77   041300          6825    6844#   7174
TYPDS =  104405         6982    6989    7947#
TYPE  =  104401         2412    2429    2432    2439    2443    2451    2460    6976    6983    6990    7263    7271    7317
                        7318    7322    7323    7330    7341    7343    7353    7354    7356    7364    7417    7530    7605
                        7635    7636    7639    7652    7663    7682    7737    7743    7748    7752    7757    7758    7760
                        7763    7767    7831    7833    7903    7943#
TYPERR  043716          7270    7307#
TYPOC =  104402         2431    2442    2459    7338    7638    7944#
TYPON =  104404         7946#
TYPOS =  104403         7945#
T.ASOF  004136          2287#
T.BA    004124          2282#
T.CS1   004120          2280#   2504*   2506    2516*   2522    2579*   2584    2630*   2635    2688*   2698    2750*   2761
                        2819*   2823    2882*   2886    2945*   2949    3002*   3007    3051*   3056    3106*   3113    3174*
                        3178    3237*   3246    3308*   3323    3375*   3380    3428*   3433    3488*   3493    3548*   3553
```

```
                    3608*  3613   3668*  3673   3724*  3734   3791*  3801   3858*  3868   3925*  3935   3992*
                    4002   4059*  4069   4119*  4129   4593*  4602   4648*  4650   4674*  4677   4699*  4708
                    4752*  4761   4820*  4826   4897*  4909*  4942*  4944   4957*  4960   4983*  4991   5037*
                    5042*  5053   5065   5071*  5079   5122*  5130   5142   5148*  5156   5199*  5207   5219
                    5225*  5233   5274*  5282   5294   5300*  5308   5351*  5359   5371   5377*  5385   5429*
                    5437   5449   5455*  5463   5507*  5515   5527   5533*  5541   5584*  5592   5604   5610*
                    5618   5661*  5669   5681   5687*  5695   5739*  5747   5759   5765*  5773   5817*  5825
                    5837   5843*  5851   5895*  5903   5915   5921*  5929   5971*  5979   5991   5997*  6005
                    6049*  6057   6069   6075*  6083   6132*  6141   6154   6160*  6168   6217*  6226   6239
                    6245*  6253   6303*  6312   6325   6331*  6339   6388*  6397   6410   6416*  6424   6473*
                    6482   6495   6501*  6509   6558*  6567   6580   6586*  6594   6644*  6653   6700*  6708
                    6720   6725*  6733   6779*  6784   6790   6802   6807*  6815   6861*  6869   6881   6886*
                    6894   6931*  6933   6940*  6944   7961   7964   7967   7970   7975   7978   7981   7990
                    7994   7999   8001   8006   8011
T.CS2   004130      2284#  4594*  4605   4700*  4711   4753*  4764   4821*  4829   4898*  4905   4910*  4914
                    4984*  4994   5043*  5056   5066   5072*  5082   5123*  5133   5143   5149*  5159   5200*
                    5210   5220   5226*  5236   5275*  5285   5295   5301*  5311   5352*  5362   5372   5378*
                    5388   5430*  5440   5450   5456*  5466   5508*  5518   5528   5534*  5544   5585*  5595
                    5605   5611*  5621   5662*  5672   5682   5688*  5698   5740*  5750   5760   5766*  5776
                    5818*  5828   5838   5844*  5854   5896*  5906   5916   5922*  5932   5972*  5982   5992
                    5998*  6008   6050*  6060   6070   6076*  6086   6133*  6144   6155   6161*  6171   6218*
                    6229   6240   6246*  6256   6304*  6315   6326   6332*  6342   6389*  6400   6411   6417*
                    6427   6474*  6485   6496   6502*  6512   6559*  6570   6581   6587*  6597   6645*  6656
                    6701*  6711   6721   6726*  6736   6780*  6793   6803   6808*  6818   6862*  6872   6882
                    6887*  6897   7990   8001   8006
T.DA    004126      2283#
T.DB    004142      2289#
T.DCYL  004140      2288#
T.DS    004132      2285#  4595*  4611   4701*  4717   4754*  4770   4899*  4985*  5000   5044*  5050   5062
                    5067   5073*  5085   5124*  5136   5144   5150*  5162   5201*  5213   5221   5227*  5239
                    5276*  5288   5296   5302*  5314   5353*  5365   5373   5379*  5391   5431*  5443   5451
                    5457*  5469   5509*  5521   5529   5535*  5547   5586*  5598   5606   5612*  5624   5663*
                    5675   5683   5689*  5701   5741*  5753   5761   5767*  5779   5819*  5831   5839   5845*
                    5857   5897*  5909   5917   5923*  5935   5973*  5985   5993   5999*  6011   6051*  6063
                    6071   6077*  6089   6134*  6148   6156   6162*  6174   6219*  6233   6241   6247*  6259
                    6305*  6319   6327   6333*  6345   6390*  6404   6412   6418*  6430   6475*  6489   6497
                    6503*  6515   6560*  6574   6582   6588*  6600   6646*  6659   6702*  6714   6722   6727*
                    6739   6781*  6796   6804   6809*  6821   6863*  6875   6883   6888*  6900   7990   8001
                    8009
T.ECPS  004152      2293#
T.ECPT  004154      2294#
T.ER    004134      2286#  4596*  4608   4702*  4714   4755*  4767   4822*  4832   4900*  4911*  4986*  4997
                    5045*  5059   5068   5074*  5088   5125*  5139   5145   5151*  5165   5202*  5216   5222
                    5228*  5242   5277*  5291   5297   5303*  5317   5354*  5368   5374   5380*  5394   5432*
                    5446   5452   5458*  5472   5510*  5524   5530   5536*  5550   5587*  5601   5607   5613*
                    5627   5664*  5678   5684   5690*  5704   5742*  5756   5762   5768*  5782   5820*  5834
                    5840   5846*  5860   5898*  5912   5918   5924*  5938   5974*  5988   5994   6000*  6014
                    6052*  6066   6072   6078*  6092   6135*  6151   6157   6163*  6177   6220*  6236   6242
                    6248*  6262   6306*  6322   6328   6334*  6348   6391*  6407   6413   6419*  6433   6476*
                    6492   6498   6504*  6518   6561*  6577   6583   6589*  6603   6647*  6662   6703*  6717
                    6723   6728*  6742   6782*  6799   6805   6810*  6824   6864*  6878   6884   6889*  6903
                    6932*  6936   6941*  6947   7990   8004   8009   8011
T.MR1   004144      2290#  2751*  2756   2767   3725*  3729   3740   3792*  3796   3807   3859*  3863   3874
                    3926*  3930   3941   3993*  3997   4008   4060*  4064   4075   4120*  4124   4135   7970
T.MR2   004146      2291#  2517*  2527   2530   2534   2537   2580*  2590   2597   2631*  2642   2648   2689*
                    2704   2711   2752*  2780   2820*  2830   2839   2883*  2893   2902   2946*  2956   2965
```

```
                    3003*  3014   3020   3052*  3063   3069   3107*  3121   3133   3175*  3184   3196   3238*
                    3252   3264   3309*  3336   3376*  3393   3429*  3440   3453   3489*  3500   3513   3549*
                    3560   3573   3609*  3620   3633   3669*  3680   3693   3726*  3747   3760   3793*  3814
                    3827   3860*  3881   3894   3927*  3948   3961   3994*  4015   4028   4061*  4088   4121*
                    4142   4155   4194*  4196   4250*  4252   4297*  4307   4315   4328*  4337   4345   4379*
                    4404   4414   4455*  4464   4474   4518*  4543   4553   4675*  4682   4958*  4965   7961
                    7964   7967   7973   7975   7978   7983   7985   7988   7996
T.MR3   004150      2292#  2518*  2540   2543   2546   2581*  2600   2632*  2652   2690*  2714   2753*  2773
                    2783   2821*  2843   2884*  2906   2947*  2969   3004*  3024   3053*  3073   3108*  3126
                    3136   3176*  3189   3199   3239*  3257   3267   3310*  3329   3339   3377*  3387   3396
                    3430*  3447   3456   3490*  3507   3516   3550*  3567   3576   3610*  3627   3636   3670*
                    3687   3696   3727*  3754   3763   3794*  3821   3830   3861*  3888   3897   3928*  3955
                    3964   3995*  4022   4031   4062*  4082   4091   4122*  4149   4158   4195*  4201   4251*
                    4257   4298*  4301   4312   4329*  4332   4342   4380*  4397   4411   4456*  4457   4471
                    4519*  4536   4550   4676*  4687   4959*  4970   7961   7964   7967   7973   7975   7978
                    7983   7985   7988   7996
T.SPAR  004156      2295#
T.WC    004122      2281#
UFE     = 000400     999#
UNLOAD= 000007       963#  2868   3537   3542   3848   3852   5805   5821
UNS     = 040000    1024#  6396   6481   6566
UPE     = 020000    1004#
U.MR2   004230      2322#  4182*  4237*  7985
U.MR3   004232      2323#  4184*  4239*  7985
VV      = 000100    1035#  5048   5050
WAITIM  004262      2340#  4747   4807   4845   4892   5032   5117   5194   5269   5346   5424   5502   5579
                    5656   5734   5812   5890   5966   6044   6127   6212   6298   6383   6468   6553   6639
                    6695   6771   6856
WCE     = 040000    1005#
WLE     = 004000    1021#  5746
WRDATA= 000023       969#
WRHEAD= 000027       971#
WRL     = 004000    1038#  5048   5050
WRTCHK= 000031       972#
WRTGAT= 040000    1057#
$APTHD  001000    1104   1110#
$ASTAT= ****** U  7219   7234
$ATYC   043274    7190   7192#
$ATY1   043250    7188#
$ATY3   043256    7189#  7402
$ATY4   043266    7191#  7276
$AUTOB  001154    1141#  2422*  7632   7783
$BASE   001270    1213#  2430   2438*  2497   2563   2619   2670   2734   2803   2866   2929   2991   3040
                  3090   3157   3221   3291   3361   3414   3474   3534   3594   3654   3712   3779   3846
                  3913   3980   4047   4107   4178   4233   4288   4363   4435   4501   4578   4633   4738
                  4795   4887   4931   5020   5105   5182   5259   5334   5412   5490   5567   5644   5722
                  5800   5878   5956   6032   6110   6195   6281   6366   6451   6536   6621   6683   6761
                  6846
$BDADR  001122    1136#
$BDDAT  001126    1138#
$BELL   001204    1164#  7263   7296
$CDW1   001274    1215#
$CDW2   001276    1216#
$CHARC  044530    7419*  7429*  7436   7462*  7467#
$CKSWR  045206    7624#  7951
$CMTAG  001100    1124#  2363   2364   2372   2378   2379   2380
```

```
$CM3  = 000000  1154#
$CM4  = 000010  1154#  1155#  1156#  1157#  1158#  1159#  1160#  1161#  1162#
$CNTLG  046071  7635  7778#
$CNTLU  046064  7652  7752  7777#
$CPUOP  001242  1187#
$CRLF   001211  1166#  6990  7271  7296  7317  7322  7330  7343  7356  7418  7470  7663  7757
                7777  7836
$DBLK   045176  7571  7605  7613#
$DEVCT  001224  1178#
$DEVM   001272  1214#
$DOAGN  042350  6972  6993  6999#
$DTBL   045166  7574  7609#
$ENDAD  042340  1090  2410  6995#  7291
$ENDCT  042204  2378  6974#
$ENULL  042354  7002#
$ENV    001234  1183#  2416  7197  7221  7273  7397
$ENVM   001235  1184#  2401  7199  7399  7404
$EOP    042150  6964#  7370
$EOPCT  042176  2378*  6971#  6975  7368*
$ERFLG  001103  1127#  7042  7081  7083  7089*  7111  7181  7258*  7296
$ERMAX  001115  1133#  2381*  7083  7106*  7111
$ERROR  043516  2372  7256#
$ERRPC  001116  1134#  7265*  7266*  7267  7296  7961  7964  7967  7970  7975  7978  7981  7985
                7988  7990  7994  7996  7998  7999  8001  8006  8011
$ERRTB  001300  1233#  7314
$ERTTL  001112  1131#  6987  6991*  7264*  7296
$ESCAP  001202  1163#  2380*  7026*  7029*  7105*  7287  7289  7296
$ETABL  001234  1182#
$ETEND  001300  1116  1217#
$FATAL  001216  1175#  7225*
$FFLG   043514  7188*  7191*  7219  7228*  7236#
$FILLC  001156  1152#  7422  7470
$FILLS  001155  1151#  7470
$GDADR  001120  1135#
$GDDAT  001124  1137#
$GET42  042330  6992#
$GTSWR  045256  7636#  7949
$HD   = 000000  810
$HIBTS  001000  1111#
$HIOCT  046256  7824*  7835#
$ICNT   001104  1128#  7096*  7097  7099*  7110
$INTAG  001135  1142#  7664  7783
$ITEMB  001114  1132#  7267*  7275  7296  7308
$LF     001212  1167#  7296  7470  7767  7777  7836
$LFLG   043513  7229*  7235#
$LPADR  001106  1129#  2382*  7078*  7087*  7103*  7108  7110  7906
$LPERR  001110  1130#  2383*  2566*  2673*  2737*  2807*  2870*  2933*  3093*  3161*  3224*  3295*  4365*
                4441*  4503*  4580*  4635*  4740*  6623*  6920*  7035  7087  7104*  7110  7183  7286
$MADR1  001246  1200#
$MADR2  001252  1204#
$MADR3  001256  1207#
$MADR4  001262  1210#
$MAIL   001214  1112  1116  1173#  2400  2416  7102  7273  7397
$MAMS1  001244  1194#
$MAMS2  001250  1202#
$MAMS3  001254  1205#
```

```
$MAMS4  001260          1208#
$MBADR  001002          1112#
$MFLG   043512          7189*   7195    7230*   7234#
$MNEW   046107          7639    7781#
$MSGAD  001230          1180#   7205*   7208
$MSGLG  001232          1181#   7210*
$MSGTY  001214          1174#   7203    7211*   7223    7227*
$MSWR   046076          7636    7779#
$MTYP1  001245          1195#
$MTYP2  001251          1203#
$MTYP3  001255          1206#
$MTYP4  001261          1209#
$MXCNT  043022          7100    7110#
$NULL   001154          1150#   7424    7470
$NWTST= 000001          2485#   2487    2550#   2552    2608#   2610    2657#   2659    2722#   2724    2791#   2793    2854#
                        2856    2917#   2919    2980#   2982    3029#   3031    3078#   3080    3144#   3146    3209#   3211
                        3278#   3280    3347#   3349    3400#   3402    3460#   3462    3520#   3522    3580#   3582    3640#
                        3642    3700#   3702    3767#   3769    3834#   3836    3901#   3903    3968#   3970    4035#   4037
                        4095#   4097    4165#   4167    4220#   4222    4276#   4278    4349#   4351    4422#   4424    4487#
                        4489    4564#   4566    4619#   4621    4726#   4728    4778#   4780    4875#   4877    4919#   4921
                        5006#   5008    5092#   5094    5169#   5171    5246#   5248    5321#   5323    5398#   5400    5476#
                        5478    5554#   5556    5631#   5633    5708#   5710    5786#   5788    5864#   5866    5942#   5944
                        6018#   6020    6096#   6098    6181#   6183    6266#   6268    6352#   6354    6437#   6439    6522#
                        6524    6607#   6609    6670#   6672    6746#   6748    6828#   6830    6909#   6911
$OCNT   044756          7502*   7531*   7544#
$OMODE  044760          7497*   7501*   7506    7509*   7520*   7546#
$OVER   043006          7054    7079    7088    7098    7107#
$PASS   001222          1177#   2400*   6968*   6969*   6980    7002    7094    7111
$PASTM  001006          1114#
$POWER  046476          7903    7909#
$PWRCT  046472          7894*   7895*   7896*   7898*   7908#
$PWRDN  046354          2376    7886#   7900
$PWRUP  046402          7887    7894#
$QUES   001210          1165#   7296    7470    7682    7760    7777    7833    7836
$RDCHR  045470          7695#   7952
$RDDEC= ****** U        7955
$RDLIN  045620          7725#   7953
$RDOCT  046120          7797#   7954
$RDSZ = 000010          7718#
$RESRE  046316          7869#   7956
$RTNAD  042352          7001#
$R2A  = ****** U        7957
$SAVRE  046260          7853#   7955
$SCOPE  042512          2370    7051#
$SETUP= 000137          2348#   2369    2370    2372    2374    2376    2378    2379    2380    2382    2410    2413    6966
                        7052    7257    7283    7291    7619    7783
$STUP = 177777          2348#
$SVLAD  042752          7062    7101#
$SVPC = 000220          1088#   1093
$SWR  = 167400           800#    810     814     815     816     817     818     819     820     821    1162    1163    1164
                        2379    2380    2382    2383    2496    2562    2618    2669    2733    2802    2865    2928    2990
                        3039    3089    3156    3220    3290    3360    3413    3473    3533    3593    3653    3711    3778
                        3845    3912    3979    4046    4106    4177    4232    4287    4362    4434    4500    4577    4632
                        4737    4794    4886    4930    5019    5104    5181    5258    5333    5411    5489    5566    5643
                        5721    5799    5877    5955    6031    6109    6194    6280    6365    6450    6535    6620    6682
                        6760    6845    6918    6961    6967    6994    7000    7002    7043    7044    7045    7046    7047
```

```
                    7053    7065    7067    7068    7081    7082    7083    7090    7091    7092    7104    7107    7110
                    7248    7249    7250    7251    7252    7261    7268    7280    7284    7296
$SWREG  001236      1185#   2403
$SWRMK= 000000       821     822    7047    7048    7071
$SW08T  043024      7077    7111#
$TESTN  001220      1176#   7102*   7960    7961    7964    7967    7970    7975    7978    7981    7985    7988    7990
                    7994    7996    7998    7999    8001    8006    8011
$TIMES  001200      1162#   2379*   2496*   2562*   2618*   2669*   2733*   2802*   2865*   2928*   2990*   3039*   3089*
                    3156*   3220*   3290*   3360*   3413*   3473*   3533*   3593*   3653*   3711*   3778*   3845*   3912*
                    3979*   4046*   4106*   4177*   4232*   4287*   4362*   4434*   4500*   4577*   4632*   4737*   4794*
                    4886*   4930*   5019*   5104*   5181*   5258*   5333*   5411*   5489*   5566*   5643*   5721*   5799*
                    5877*   5955*   6031*   6109*   6194*   6280*   6365*   6450*   6535*   6620*   6682*   6760*   6845*
                    6918*   6967*   7090*   7097    7100*   7110
$TKB    001146      1147#   7443    7450    7470    7617    7628    7645    7699    7705
$TKS    001144      1146#   7441    7448    7470    7617    7626    7642    7666*   7697    7703
$TMP0   001160      1154#   2434*   2436    2438    2445*   2447    2450    2462*   2464    2466    2468*   2469*   2470*
                    2471*   2472*   2474    2590*   2591*   2592    2704*   2705*   2706    2773*   2774*   2775    2830*
                    2831*   2832    2893*   2894*   2895    2956*   2957*   2958    3126*   3127*   3128    3189*   3190*
                    3191    3257*   3258*   3259    3329*   3330*   3331    3387*   3388*   3447*   3448*   3507*   3508*
                    3567*   3568*   3627*   3628*   3687*   3688*   3754*   3755*   3821*   3822*   3888*   3889*   3955*
                    3956*   4022*   4023*   4082*   4083*   4149*   4150*   4397*   4398*   4399    4404*   4405*   4406
                    4457*   4458*   4459    4464*   4465*   4466    4536*   4537*   4538    4543*   4544*   4545
$TMP1   001162      1155#
$TMP2   001164      1156#
$TMP3   001166      1157#
$TMP4   001170      1158#
$TMP5   001172      1159#
$TMP6   001174      1160#
$TMP7   001176      1161#
$TN   = 000101       800#    810    2485    2496#   2509    2525    2547    2550    2562#   2608    2618#   2640    2646
                    2653    2657    2669#   2722    2733#   2791    2802#   2849    2854    2865#   2912    2917    2928#
                    2975    2980    2990#   3012    3018    3025    3029    3039#   3061    3067    3074    3078    3089#
                    3144    3156#   3204    3209    3220#   3278    3290#   3347    3360#   3384    3391    3397    3400
                    3413#   3437    3444    3451    3457    3460    3473#   3497    3504    3511    3517    3520    3533#
                    3557    3564    3571    3577    3580    3593#   3617    3624    3631    3637    3640    3653#   3677
                    3684    3691    3697    3700    3711#   3738    3744    3751    3758    3764    3767    3778#   3805
                    3811    3818    3825    3831    3834    3845#   3872    3878    3885    3892    3898    3901    3912#
                    3939    3945    3952    3959    3965    3968    3979#   4006    4012    4019    4026    4032    4035
                    4046#   4073    4079    4086    4092    4095    4106#   4133    4139    4146    4153    4159    4165
                    4177#   4199    4204    4220    4232#   4255    4260    4276    4287#   4335    4340    4346    4349
                    4362#   4422    4434#   4479    4487    4500#   4564    4577#   4619    4632#   4723    4726    4737#
                    4778    4794#   4875    4886#   4919    4930#   4947    4963    4968    4973    5001    5006    5019#
                    5089    5092    5104#   5166    5169    5181#   5243    5246    5258#   5318    5321    5333#   5395
                    5398    5411#   5473    5476    5489#   5551    5554    5566#   5628    5631    5643#   5705    5708
                    5721#   5783    5786    5799#   5861    5864    5877#   5939    5942    5955#   6015    6018    6031#
                    6093    6096    6109#   6178    6181    6194#   6263    6266    6280#   6349    6352    6365#   6434
                    6437    6450#   6519    6522    6535#   6604    6607    6620#   6670    6682#   6743    6746    6760#
                    6825    6828    6845#   6904    6909    6918#   7072    7112
$TPB    001152      1149#   7459*   7470
$TPFLG  001157      1153#   7391    7470
$TPS    001150      1148#   7457    7470
$TRAP   046506      2374    7920#
$TRAP2  046530      7931#   7942
$TRP  = 000016      7935#   7944#   7945#   7946#   7947#   7948#   7949    7950#   7951    7952#   7953#   7954#   7955#
                    7956#   7957#   7958#
$TRPAD  046542      7925    7942#
```

```
$TSTM   001004          1113#
$TSTNM  001102          1126#   6966*   7042    7074*   7101*   7102    7107    7111    7260    7296
$TTYIN  046054          7727    7728    7740    7758    7772    7776#
$TYPBN= ****** U        7948
$TYPDS  044762          7559#   7947
$TYPE   044200          7216    7391#   7935    7943
$TYPEC  044412          7421    7428    7435    7440#   7668
$TYPEX  044532          7463    7465    7468#
$TYPOC  044560          7500#   7944
$TYPON  044574          7499    7502#   7946
$TYPOS  044534          7495#   7945
$UNIT   001226          1179#
$UNITM  001010          1115#
$USWR   001240          1186#
$VECT1  001264          1211#   2440    2449*   2450*   2453    2473*   2474*   2475    2477
$VECT2  001266          1212#
$XOFF = 000023          7445    7470
$XON  = 000021          7452    7470    7710
$XTSTR  042524          7056#
$$GET4= 000000          6994#
$$SW08= 000101          7111#   7112    7113#   7114#   7115#   7116#   7117#   7118#   7119#   7120#   7121#   7122#   7123#
                        7124#   7125#   7126#   7127#   7128#   7129#   7130#   7131#   7132#   7133#   7134#   7135#   7136#
                        7137#   7138#   7139#   7140#   7141#   7142#   7143#   7144#   7145#   7146#   7147#   7148#   7149#
                        7150#   7151#   7152#   7153#   7154#   7155#   7156#   7157#   7158#   7159#   7160#   7161#   7162#
                        7163#   7164#   7165#   7166#   7167#   7168#   7169#   7170#   7171#   7172#   7173#   7174#   7175#
                        7176#
$OFILL  044757          7496*   7500*   7510    7545#
$40CAT= ****** U        7053    7270
.       = 061315        1072#   1076#   1082#   1088    1089#   1091#   1093#   1094#   1100    1101#   1103#   1105#   1123#
                        1168    2367    2382    2383    6979#   7002    7003#   7110    7111    7237#   7296    7470    7613#
                        7617    7776#   7777    7783    7836    7890
.$ASTA= ****** U        7189    7192
.$X   = 001000          1100#   1105
```

```
CLRPSW  1117#  4801  4836
COMMEN     1#   932#
CYLWRT  1117#  3361  3414  3474  3534  3594  3654
ENDCOM     1#   932#
ERROR    826#  2508  2524  2529  2533  2536  2539  2542  2545  2548  2586  2594  2599  2602  2638
        2645  2651  2655  2700  2708  2713  2716  2763  2769  2777  2782  2785  2826  2836  2842
        2846  2889  2899  2905  2909  2952  2962  2968  2972  3010  3017  3023  3027  3059  3066
        3072  3076  3117  3123  3130  3135  3138  3180  3186  3193  3198  3201  3248  3254  3261
        3266  3269  3325  3333  3338  3341  3382  3390  3395  3398  3435  3443  3450  3455  3458
        3495  3503  3510  3515  3518  3555  3563  3570  3575  3578  3615  3623  3630  3635  3638
        3675  3683  3690  3695  3698  3736  3742  3750  3757  3762  3765  3803  3809  3817  3824
        3829  3832  3870  3876  3884  3891  3896  3899  3937  3943  3951  3958  3963  3966  4004
        4010  4018  4025  4030  4033  4071  4077  4085  4090  4093  4131  4137  4145  4152  4157
        4160  4198  4203  4254  4259  4304  4309  4314  4317  4334  4339  4344  4347  4401  4408
        4413  4416  4461  4468  4473  4476  4540  4547  4552  4555  4604  4607  4610  4613  4652
        4679  4684  4689  4710  4713  4716  4719  4763  4766  4769  4772  4816  4828  4831  4834
        4859  4863  4867  4907  4916  4946  4962  4967  4972  4993  4996  4999  5002  5039  5052
        5055  5058  5061  5064  5081  5084  5087  5090  5132  5135  5138  5141  5158  5161  5164
        5167  5209  5212  5215  5218  5235  5238  5241  5244  5284  5287  5290  5293  5310  5313
        5316  5319  5361  5364  5367  5370  5387  5390  5393  5396  5439  5442  5445  5448  5465
        5468  5471  5474  5517  5520  5523  5526  5543  5546  5549  5552  5594  5597  5600  5603
        5620  5623  5626  5629  5671  5674  5677  5680  5697  5700  5703  5706  5749  5752  5755
        5758  5775  5778  5781  5784  5827  5830  5833  5836  5853  5856  5859  5862  5905  5908
        5911  5914  5931  5934  5937  5940  5981  5984  5987  5990  6007  6010  6013  6016  6059
        6062  6065  6068  6085  6088  6091  6094  6143  6147  6150  6153  6170  6173  6176  6179
        6228  6232  6235  6238  6255  6258  6261  6264  6314  6318  6321  6324  6341  6344  6347
        6350  6399  6403  6406  6409  6426  6429  6432  6435  6484  6488  6491  6494  6511  6514
        6517  6520  6569  6573  6576  6579  6596  6599  6602  6605  6655  6658  6661  6664  6710
        6713  6716  6719  6735  6738  6741  6744  6792  6795  6798  6801  6817  6820  6823  6826
        6871  6874  6877  6880  6896  6899  6902  6905  6935  6938  6946  6949  7028
ESCAPE     1#   932#
FORERR  1117#  5105  5182  5259  5334  5412  5490  5567  5644  5722  5800  5878  5956  6032
GETPRI     1#   932#
GETSWR     1#   932#  2413#
IDAETT  1117#  6110  6195  6281  6366  6451  6536
LDLPER  1117#  2566  2673  2737  2807  2870  2933  3093  3161  3224  3295  4365  4441  4503  4580
        4635  4740  6623  6920
MESCMD  1117#  2619  2991  3040
MESSFT  1117#  4178  4233
MSCMD1  1117#  2803  2866  2929
MSG     2485#  2487  2550#  2552  2608#  2610  2657#  2659  2722#  2724  2791#  2793  2854#  2856  2917#
        2919  2980#  2982  3029#  3031  3078#  3080  3144#  3146  3209#  3211  3278#  3280  3347#  3349
        3400#  3402  3460#  3462  3520#  3522  3580#  3582  3640#  3642  3700#  3702  3767#  3769  3834#
        3836  3901#  3903  3968#  3970  4035#  4037  4095#  4097  4165#  4167  4220#  4222  4276#  4278
        4349#  4351  4422#  4424  4487#  4489  4564#  4566  4619#  4621  4726#  4728  4778#  4780  4875#
        4877  4919#  4921  5006#  5008  5092#  5094  5169#  5171  5246#  5248  5321#  5323  5398#  5400
        5476#  5478  5554#  5556  5631#  5633  5708#  5710  5786#  5788  5864#  5866  5942#  5944  6018#
        6020  6096#  6098  6181#  6183  6266#  6268  6352#  6354  6437#  6439  6522#  6524  6607#  6609
        6670#  6672  6746#  6748  6828#  6830  6909#  6911
MSGSEL  1117#  3712  3779  3846  3913  3980  4047  4107
MULT       1#   932#
NEWTST     1#   932#  2485  2550  2608  2657  2722  2791  2854  2917  2980  3029  3078  3144  3209
        3278  3347  3400  3460  3520  3580  3640  3700  3767  3834  3901  3968  4035  4095  4165
        4220  4276  4349  4422  4487  4564  4619  4726  4778  4875  4919  5006  5092  5169  5246
        5321  5398  5476  5554  5631  5708  5786  5864  5942  6018  6096  6181  6266  6352  6437
        6522  6607  6670  6746  6828  6909
```

```
PARGEN  1117#  4363  4501
POP     1#  932#  7231  7232  7600  7825  7874
PUSH    1#  932#  7192  7194  7215  7559  7799  7854
REPORT  1#  932#
SCOPE   827#  2495  2561  2617  2668  2732  2801  2864  2927  2989  3038  3088  3155  3219  3289
        3359  3412  3472  3532  3592  3652  3710  3777  3844  3911  3978  4045  4105  4176  4231
        4286  4361  4433  4499  4576  4631  4736  4793  4885  4929  5018  5103  5180  5257  5332
        5410  5488  5565  5642  5720  5798  5876  5954  6030  6108  6193  6279  6364  6449  6534
        6619  6681  6759  6844  6917  6965
SETPRI  1#  932#
SETTRA  7935#  7944  7945  7946  7947  7949  7951  7952  7953  7954  7955  7956  7957
SETUP   1#  932#  2361
SKIP    1#  932#  2509  2525  2547  2640  2646  2653  2849  2912  2975  3012  3018  3025  3061
        3067  3074  3204  3384  3391  3397  3437  3444  3451  3457  3497  3504  3511  3517  3557
        3564  3571  3577  3617  3624  3631  3637  3677  3684  3691  3697  3738  3744  3751  3758
        3764  3805  3811  3818  3825  3831  3872  3878  3885  3892  3898  3939  3945  3952  3959
        3965  4006  4012  4019  4026  4032  4073  4079  4086  4092  4133  4139  4146  4153  4159
        4199  4204  4255  4260  4335  4340  4346  4479  4723  4947  4963  4968  4973  5001  5089
        5166  5243  5318  5395  5473  5551  5628  5705  5783  5861  5939  6015  6093  6178  6263
        6349  6434  6519  6604  6743  6825  6904
SLASH   1#  932#
SPACE   932#
STARS   1#  932#  1086  1097  1099  1106  1119  1168  1171  2485  2494  2550  2560  2608  2616
        2657  2667  2722  2731  2791  2800  2854  2863  2917  2926  2980  2988  3029  3037  3078
        3087  3144  3154  3209  3218  3278  3288  3347  3358  3400  3411  3460  3471  3520  3531
        3580  3591  3640  3651  3700  3709  3767  3776  3834  3843  3901  3910  3968  3977  4035
        4044  4095  4104  4165  4175  4220  4230  4276  4285  4349  4360  4422  4432  4487  4498
        4564  4575  4619  4630  4726  4735  4778  4792  4875  4884  4919  4928  5006  5017  5092
        5102  5169  5179  5246  5255  5321  5331  5398  5409  5476  5487  5554  5564  5631  5641
        5708  5719  5786  5797  5864  5875  5942  5953  6018  6029  6096  6107  6181  6192  6266
        6278  6352  6363  6437  6448  6522  6533  6607  6618  6670  6680  6746  6758  6828  6843
        6909  6916  6957  7039  7176  7187  7244  7297  7306  7376  7472  7549  7616  7619  7687
        7718  7785  7838  7884  7892  7914
SWRSU   1#  932#  2384#
TRMTRP  7935#
TYPBIN  1#  932#
TYPDEC  1#  932#  6980  6987
TYPNAM  1#  932#  2406
TYPNUM  1#  932#
TYPOCS  1#  932#
TYPOCT  1#  932#  2430  7637
TYPTXT  1#  932#  6976  6983
$$CMRE  1117#
$$CMTM  1117#  1154  1155  1156  1157  1158  1159  1160  1161
$$ESCA  1#  932#
$$NEWT  1#  932#  2485  2550  2608  2657  2722  2791  2854  2917  2980  3029  3078  3144  3209
        3278  3347  3400  3460  3520  3580  3640  3700  3767  3834  3901  3968  4035  4095  4165
        4220  4276  4349  4422  4487  4564  4619  4726  4778  4875  4919  5006  5092  5169  5246
        5321  5398  5476  5554  5631  5708  5786  5864  5942  6018  6096  6181  6266  6352  6437
        6522  6607  6670  6746  6828  6909
$$SET   7935#  7944  7945  7946  7947  7949  7951  7952  7953  7954  7955  7956  7957
$$SETM  2400#
$$SKIP  1#  932#  2509  2525  2547  2640  2646  2653  2849  2912  2975  3012  3018  3025  3061
        3067  3074  3204  3384  3391  3397  3437  3444  3451  3457  3497  3504  3511  3517  3557
        3564  3571  3577  3617  3624  3631  3637  3677  3684  3691  3697  3738  3744  3751  3758
        3764  3805  3811  3818  3825  3831  3872  3878  3885  3892  3898  3939  3945  3952  3959
```

```
        3965    4006    4012    4019    4026    4032    4073    4079    4086    4092    4133    4139    4146    4153    4159
        4199    4204    4255    4260    4335    4340    4346    4479    4723    4947    4963    4968    4973    5001    5089
        5166    5243    5318    5395    5473    5551    5628    5705    5783    5861    5939    6015    6093    6178    6263
        6349    6434    6519    6604    6743    6825    6904
.EQUAT     1#    800#    822
.HEADE     1#    800#
.KT11      1#
.SETUP     1#    800#   2348
.SWRHI     1#    800#    810
.SWRLO   800#    822#
.$ACTI     1#    800#   1084
.$APTB     1#   1169#
.$APTH     1#    800#   1095
.$APTY     1#    800#   7185
.$ASTA     1#
.$CATC     1#    800#   1070
.$CMTA     1#    800#   1117
.$DB2D     1#
.$DB2O     1#
.$DIV      1#
.$EOP      1#    800#   6955
.$ERRO     1#    800#   7242
.$ERRT     1#    800#
.$MULT     1#
.$POWE     1#    800#
.$RAND     1#
.$RDDE     1#
.$RDOC     1#    800#   7783
.$READ     1#    800#   7614
.$R2AZ     1#
.$SAVE     1#    800#   7836
.$SB2D     1#
.$SB2O     1#
.$SCOP     1#    800#   7037
.$SIZE     1#
.$SUPR     1#
.$TRAP     1#    800#   7912
.$TYPB     1#
.$TYPD     1#    800#   7547
.$TYPE     1#    800#   7374
.$TYPO     1#    800#   7470
.$40CA     1#
.1170      1#

. ABS.  061315     000

 ERRORS DETECTED:  0

 CZR6BD,CZR6BD.LST/SOL/CRF/NL:TOC=SYSMAC.SML,CZR6BD.P11
 RUN-TIME: 32 37 3 SECONDS
 RUN-TIME RATIO: 141/73=1.9
 CORE USED:  42K  (84 PAGES)
```