RK611

DISKLESS CONTR DIAG 2

MD-11-DZR6B-B

EP-DZR6B-B-DL-A

FICHE 1 OF 2

NOV 1976

digital

MADE IN USA

RK611

DIAGNOSTIC PART 2

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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZR6B-B

PRODUCT NAME: RK611 DISKLESS CONTROLLER DIAGNOSTIC: PART 2

DATE: AUG. 1976

MAINTAINER: DIAGNOSTIC GROUP

AUTHOR: ROY SPITZER

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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
MAINDEC-11-DZR6A

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 XXDF.

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 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.

TEST 2 DRIVE SELECT BITS LOADING FOR DRIVE MESS.

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

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.

TEST 7 UNLOAD COMMAND LOADING FOR DRIVE MESS.

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

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 WITH A START SPINDLE. CLOCK MESSAGES A AND B INTO SHIFT REGISTERS. 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 = 777-1777.

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 WITH A SELECT COMMAND. CLOCK ALL 16 BITS THROUGH THE DRIVE MESSAGE LOOPBACK. VERIFY PARITY HAS BEEN PRECONDITIONED 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 1 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 = 10.
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 SET
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 RK06,
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 RK06,
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.

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 2, DRIVE 0.
CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE
AND DRIVE OFF TRACK ARE SET.

TEST 61 WRITE LOCK ERROR FROM SHIFT REG.

CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A PACK ACKNOWLEDGE
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, WRITE LOCK ERROR AND CONTROLLER ERROR
ARE SET WITH DRIVE AVAILIABLE RESET.

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.

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.

TEST 64 AC LOW AND C-D PARITY FROM SHIFT REG.

CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR, PUT RK611
CONTROLLER IN DIAGNOSTIC MODE. ISSUE A START SPINDLE
TO AN RK06, IN 24 SECTOR FORMAT, CYLINDER 0, HEAD 0,
DRIVE 0. CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
TURN OFF DIAGNOSTIC MODE AND MAKE SURE AC LOW, DRIVE

DETECTED SERCOM PARITY, AND CONTROLLER ERROR SET WITH DRIVE AVAILABLE RESET.

TEST 65 ILLEGAL DISK ADDRESS ERROR FROM SHIFT REG.

CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT RK611 CONTROLLER IN DIAGNOSTIC MODE. ISSUE A RECALIBRATE 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 (PART 4)

CLEAR RKD6 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT RK611 CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 23, HEAD 3, DRIVE 0. CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILABLE, DRIVE OFF TRACK, AND SPEED LOSS ARE SET WITH ILLEGAL DISK ADDRESS ERROR RESET.

TEST 72 IDAE DETECTION IN RK611 CONTROLLER (PART 5)

CLEAR RKD6 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT RK611 CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 22, HEAD 4, DRIVE 0. CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILABLE AND UNSAFE ARE SET WITH ILLEGAL DISK ADDRESS ERROR RESET.

TEST 73 IDAE DETECTION IN RK611 CONTROLLER (PART 6)

CLEAR RKD6 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT RK611 CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO AN RKD6 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 74 IDAE DETECTION IN RK611 CONTROLLER (PART 7)

CLEAR RKD6 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 75 IDAE DETECTION IN RK611 CONTROLLER (PART 8)

CLEAR RKD6 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 76 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 77 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 100 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 101 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 102 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.

```
                        .TITLE  RK611 DISKLESS CONTROLLER DIAGNOSTIC: P2 MD-11-DZR6B-B
                        ;*COPYRIGHT (C) 1976
                        ;*DIGITAL EQUIPMENT CORP.
                        ;*MAYNARD, MASS. 01754
                        ;*
                        ;*PROGRAM BY ROY SPITZER
                        ;*
                        ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC-11 MACRO
                        ;*PACKAGE (MAINDEC-11-DZQAC-C1),MAR 24, 1976.
                        ;*
                        .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
                        .EQUIV  R6,SP           ;;STACK POINTER
                        .EQUIV  R7,PC           ;;PROGRAM COUNTER

                        ;*PRIORITY LEVEL DEFINITIONS
000000                  PR0=    0               ;;PRIORITY LEVEL 0
000040                  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
000017                  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
                        OPI=    BIT13                   ;OPERATION (SEARCH) INCOMPLETE
```

```
                        UNS=    BIT14                   ;DRIVE UNSAFE
                        DCK=    BIT15                   ;DATA CHECK

                        .SBTTL  STATUS REGISTER BIT DEFINITION

                        DRA=    BIT0                    ;DRIVE AVAILABLE (CONTROLLER IS SET IF
                                                        ;  THIS BIT IS RESET)
                        OFST=   BIT2                    ;DRIVE OFFSET
                        ACLO=   BIT3                    ;AC LOW
                        SPDLSS= BIT4                    ;SPEED LOSS
                        DROT=   BIT5                    ;DRIVE OFF TRACK
                        VV=     BIT6                    ;VOLUME VALID
                        DRDY=   BIT7                    ;DRIVE READY
                        DDT=    BIT8                    ;DRIVE TYPE (0=RK06)
                        WRL=    BIT11                   ;WRITE LOCK
                        PIP=    BIT13                   ;POSITIONING IN PROGRESS
                        DSC=    BIT14                   ;DRIVE STATUS CHANGE
                        SVAL=   BIT15                   ;STATUS VALID

                        .SBTTL  MAINTENANCE REGISTER 1 BIT DEFINITION

                        MESMSK= 17                      ;MESSAGE MASK

                        PAT=    BIT4                    ;FORCE EVEN PARITY ON DRIVE MESSAGE LINES
                        DMD=    BIT5                    ;DIAGNOSTIC MODE
                        MSP=    BIT6                    ;MAINTENANCE SECTOR PULSE
                        MIND=   BIT7                    ;MAINTENANCE INDEX
                        MCLK=   BIT8                    ;MAINTENANCE CLOCK
                        MERD=   BIT9                    ;MAINTENANCE ENCODED READ DATA
                        MEWD=   BIT10                   ;MAINTENACNE ENCODED WRITE DATA
                        PCA=    BIT11                   ;PRECOMPENSATION ADVANCE
                        PCD=    BIT12                   ;PRECOMPENSATION DELAY
                        ECCW=   BIT13                   ;ECC WORD IS BEING READ OR WRITTEN
                        WRTGAT= BIT14                   ;WRITE GATE
                        RDGATE= BIT15                   ;READ GATE

                        .SBTTL  TRANSMITTED MESSAGE A

                        S.SEEK= BIT4                    ;SEEK COMMAND
                        S.RECL= BIT5                    ;RECALIBRATE COMMAND
                        S.STSP= BIT6                    ;START SPINDLE COMMAND
                        S.RTC=  BIT7                    ;DRIVE RETURN TO CENTERLINE COMMAND
                        S.CLR=  BIT8                    ;CLEAR ERROR AND DSC
                        S.FMT=  BIT9                    ;FORMAT
                        S.UNLD= BIT10                   ;UNLOAD
                        S.PACK= BIT11                   ;SET VOLUME VALID (PACK ACKNOWNLEDGE)
                        .SBTTL  TRAP CATCHER

                                .=0
                        ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
                        ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
                        ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
                                .=174
000174  000000  DISPREG: .WORD  0                       ;;SOFTWARE DISPLAY REGISTER
000176  000000  SWREG:   .WORD  0                       ;;SOFTWARE SWITCH REGISTER
                        .SBTTL  STARTING ADDRESS(ES)
```

```
000200  000137  004316            JMP     @#START ;;JUMP TO STARTING ADDRESS OF PROGRAM
000204  000137  004306            JMP     RESTRT          ;JUMP TO RESTART ROUTINE
        000214                    .=214
000214  000137  004276            JMP     PARM            ;JUMP TO OPERATOR ASSIGNED PARMETERS
                          .SBTTL  ACT11 HOOKS

                          ;;*****************************************************************
                          ;HOOKS REQUIRED BY ACT11
        000220                    $SVPC=.                 ;SAVE PC
        000046                    .=46
000046  043502                    $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
        000052                    .=52
000052  000000                    .WORD   0               ;;2)SET LOC.52 TO ZERO
        000220                    .=$SVPC                 ;; RESTORE PC
        001000                    .=1000
                          .SBTTL  APT PARAMETER BLOCK

                          ;;*****************************************************************
                          ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
                          ;;*****************************************************************
        001000                    .$X=.   ;;SAVE CURRENT LOCATION
        000024                    .=24    ;;SET POWER FAIL TO POINT TO START OF PROGRAM
000024  000200                    200     ;;FOR APT START UP
        000044                    .=44    ;;POINT TO APT INDIRECT ADDRESS PNTR.
000044  001000                    $APTHDR ;;POINT TO APT HEADER BLOCK
        001000                    .=.$X   ;;RESET LOCATION COUNTER
                          ;;*****************************************************************
                          ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
                          ;INTERFACE SPEC.

001000                    $APTHD:
001000  000000            $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
001002  001214            $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
001004  000001            $TSTM:  .WORD   1       ;;RUN TIM OF LONGEST TEST
001006  000007            $PASTM: .WORD   7       ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
001010  000007            $UNITM: .WORD   7       ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
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
```

```
001214                  $MAIL:                          ;;APT MAILBOX
001214  000000          $MSGTY: .WORD   AMSGTY          ;;MESSAGE TYPE CODE
001216  000000          $FATAL: .WORD   AFATAL          ;;FATAL ERROR NUMBER
001220  000000          $TESTN: .WORD   ATESTN          ;;TEST NUMBER
001222  000000          $PASS:  .WORD   APASS           ;;PASS COUNT
001224  000000          $DEVCT: .WORD   ADEVCT          ;;DEVICE COUNT
001226  000000          $UNIT:  .WORD   AUNIT           ;;I/O UNIT NUMBER
001230  000000          $MSGAD: .WORD   AMSGAD          ;;MESSAGE ADDRESS
001232  000000          $MSGLG: .WORD   AMSGLG          ;;MESSAGE LENGTH
001234                  $ETABLE:                        ;;APT ENVIRONMENT TABLE
001234     000          $ENV:   .BYTE   AENV            ;;ENVIRONMENT BYTE
001235     000          $ENVM:  .BYTE   AENVM           ;;ENVIRONMENT MODE BITS
001236  000000          $SWREG: .WORD   ASWREG          ;;APT SWITCH REGISTER
001240  000000          $USWR:  .WORD   AUSWR           ;;USER SWITCHES
001242  000000          $CPUOP: .WORD   ACPUOP          ;;CPU TYPE,OPTIONS
                        ;*                              BITS 15-11=CPU TYPE
                        ;*                                      11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
                        ;*                                      11/70=06,PDQ=07,Q=10
                        ;*                              BIT 10=REAL TIME CLOCK
                        ;*                              BIT  9=FLOATING POINT PROCESSOR
                        ;*                              BIT  8=MEMORY MANAGEMENT
001244     000          $MAMS1: .BYTE   AMAMS1          ;;HIGH ADDRESS,M.S. BYTE
001245     000          $MTYP1: .BYTE   AMTYP1          ;;MEM. TYPE,BLK#1
                        ;*                              MEM.TYPE BYTE   --  (HIGH BYTE)
                        ;*                                      900 NSEC CORE=001
                        ;*                                      300 NSEC BIPOLAR=002
                        ;*                                      500 NSEC MOS=003
001246  000000          $MADR1: .WORD   AMADR1          ;;HIGH ADDRESS,BLK#1
                        ;*                               MEM.LAST ADDR.=3 BYTES,THIS WORD AND LOW OF "TYPE" ABOVE
001250     000          $MAMS2: .BYTE   AMAMS2          ;;HIGH ADDRESS,M.S. BYTE
001251     000          $MTYP2: .BYTE   AMTYP2          ;;MEM.TYPE,BLK#2
001252  000000          $MADR2: .WORD   AMADR2          ;;MEM.LAST ADDRESS,BLK#2
001254     000          $MAMS3: .BYTE   AMAMS3          ;;HIGH ADDRESS,M.S.BYTE
001255     000          $MTYP3: .BYTE   AMTYP3          ;;MEM.TYPE,BLK#3
001256  000000          $MADR3: .WORD   AMADR3          ;;MEM.LAST ADDRESS,BLK#3
001260     000          $MAMS4: .BYTE   AMAMS4          ;;HIGH ADDRESS,M.S.BYTE
001261     000          $MTYP4: .BYTE   AMTYP4          ;;MEM.TYPE,BLK#4
001262  000000          $MADR4: .WORD   AMADR4          ;;MEM.LAST ADDRESS,BLK#4
001264  120210          $VECT1: .WORD   AVECT1          ;;INTERRUPT VECTOR#1,BUS PRIORITY#1
001266  000000          $VECT2: .WORD   AVECT2          ;;INTERRUPT VECTOR#2BUS PRIORITY#2
001270  177440          $BASE:  .WORD   ABASE           ;;BASE ADDRESS OF EQUIPMENT UNDER TEST
001272  000000          $DEVM:  .WORD   ADEVM           ;;DEVICE MAP
001274  000000          $CDW1:  .WORD   ACDW1           ;;CONTROLLER DESCRIPTION WORD#1
001276  000000          $CDW2:  .WORD   ACDW2           ;;CONTROLLER DESCRIPTION WORD#2
001300                  $ETEND:
                        .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  047666                          DT001
001306  050322                          DF001
                                ;       ERROR 2: ATTEMPTING A SELECT OF DRIVE NUM - CS1 INCORRECT
001310  053556                          EM106
001312  060307                          EM2003
001314  047706                          DT002
001316  050356                          DF002
                                ;       ERROR 3: ATTEMPTING A SELECT  OF DRIVE NUM - DRIVE NUM INCORRECT
001320  053556                          EM106
001322  060352                          EM2004
001324  047706                          DT002
001326  050356                          DF002
                                ;       ERROR 4: ATTEMPTING A SELECT OF DRIVE NUM - MESSAGE A INCORRECT
001330  053556                          EM106
001332  060231                          EM2001
001334  047706                          DT002
001336  050356                          DF002
                                ;       ERROR 5: ATTEMPTING A SELECT OF DRIVE NUM - MESSAGE B INCORRECT
001340  053556                          EM106
001342  060260                          EM2002
001344  047706                          DT002
001346  050356                          DF002
                                ;       ERROR 6: ATTEMPTING A SELECT WITH HEAD ADD - CS1 INCORRECT
001350  053662                          EM107
001352  060307                          EM2003
001354  047730                          DT006
001356  050412                          DF006
                                ;       ERROR 7: ATTEMPTING A SELECT WITH HEAD ADD - HEAD INCORRECT
001360  053662                          EM107
001362  060423                          EM2005
001364  047730                          DT006
001366  050412                          DF006
                                ;       ERROR 10: ATTEMPTING A SELECT WITH HEAD ADD - MESSAGE A INCORRECT
001370  053662                          EM107
001372  060231                          EM2001
001374  047730                          DT006
001376  050412                          DF006
                                ;       ERROR 11: ATTEMPTING A SELECT WITH HEAD ADD - MESSAGE B INCORRECT
```

```
  476  DC1400  053662                    EM107
  477  001402  060260                    EM2002
  478  001404  047730                    DT006
  479  001406  050412                    DF006
  480                          ;         ERROR 12: ATTEMPTING A SELECT WITH MESS SELECT BITS - CS1 INCORRECT
  481  001410  053757                    EM108
  482  001412  060307                    EM2003
  483  001414  047752                    DT012
  484  001416  050446                    DF012
  485                          ;         ERROR 13: ATTEMPTING A SELECT WITH MESS SELECT BITS - MR1 INCORRECT
  486  001420  053757                    EM108
  487  001422  060470                    EM2006
  488  001424  047752                    DT012
  489  001426  050446                    DF012
  490                          ;         ERROR 14: ATTEMPTING A SELECT WITH MESS SELECT BITS - MESS SELECT CODE INCORRECT
  491  001430  053757                    EM108
  492  001432  060517                    EM2007
  493  001434  047752                    DT012
  494  001436  050446                    DF012
  495                          ;         ERROR 15: ATTEMPTING A SELECT WITH MESS SELECT BITS - MESS A INCORRECT
  496  001440  053757                    EM108
  497  001442  060231                    EM2001
  498  001444  047752                    DT012
  499  001446  050446                    DF012
  500                          ;         ERROR 16: ATTEMPTING A SELECT WITH MESS SELECT BITS - MESS B INCORRECT
  501  001450  053757                    EM108
  502  001452  060260                    EM2002
  503  001454  047752                    DT012
  504  001456  050446                    DF012
  505                          ;         ERROR 17: ATTEMPTING A SEEK TO AN RK06 - CS1 INCORRECT
  506  001460  054057                    EM109
  507  001462  060307                    EM2003
  508  001464  050000                    DT017
  509  001466  050502                    DF017
  510                          ;         ERROR 20: ATTEMPTING A SEEK TO AN RK06 - SEEK BIT IN MESS A NOT SET
  511  001470  054057                    EM109
  512  001472  060153                    EM2000
  513  001474  050000                    DT017
  514  001476  050502                    DF017
  515                          ;         ERROR 21: ATTEMPTING A SEEK TO AN RK06 - CYLINDER ADD INCORRECT IN MESS B
  516  001500  054057                    EM109
  517  001502  060567                    EM2008
  518  001504  050000                    DT017
  519  001506  050502                    DF017
  520                          ;         ERROR 22: ATTEMPTING A SEEK TO AN RK06 - MESSAGE A INCORRECT
  521  001510  054057                    EM109
  522  001512  060231                    EM2001
  523  001514  050000                    DT017
  524  001516  050502                    DF017
  525                          ;         ERROR 23: ATTEMPTING A SEEK TO AN RK06 - MESSAGE B INCORRECT
  526  001520  054057                    EM109
  527  001522  060260                    EM2002
  528  001524  050000                    DT017
  529  001526  050000                    DT017
  530                          ;         ERROR 24: ATTEMPTING A SEEK WITH CDT SET - CS1 INCORRECT
  531  001530  054132                    EM110
```

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532  001532  060307                          EM2003
533  001534  050000                          DT017
534  001536  050502                          DF017
535                              ;           ERROR 25: ATTEMPTING A SEEK TO AN RK611 - SEEK BIT IN MESS A NOT SET
536  001540  054132                          EM110
537  001542  060153                          EM2000
538  001544  050000                          DT017
539  001546  050502                          DF017
540                              ;           ERROR 26: ATTEMPTING A SEEK WITH CDT SET
541                              ;           CYLINDER ADD INCORRECT IN MESS B
542  001550  054132                          EM110
543  001552  060567                          EM2008
544  001554  050000                          DT017
545  001556  050502                          DF017
546                              ;           ERROR 27: ATTEMPTING A SEEK WITH CDT SET - MESSAGE A INCORRECT
547  001560  054132                          EM110
548  001562  060231                          EM2001
549  001564  050000                          DT017
550  001566  050502                          DF017
551                              ;           ERROR 30: ATTEMPTING A SEEK WITH CDT SET - MESSAGE B INCORRECT
552  001570  054132                          EM110
553  001572  060260                          EM2002
554  001574  050000                          DT017
555  001576  050502                          DF017
556                              ;           ERROR 31: ATTEMPTING OFFSET - CS1 INCORRECT
557  001600  054207                          EM111
558  001602  060307                          EM2003
559  001604  050022                          DT031
560  001606  050536                          DF031
561                              ;           ERROR 32: ATTEMPTING OFFSET - OFFSET BITS INCORRECT
562  001610  054207                          EM111
563  001612  060640                          EM2009
564  001614  050022                          DT031
565  001616  050536                          DF031
566                              ;           ERROR 33: ATTEMPTING OFFSET - MESS A INCORRECT
567  001620  054207                          EM111
568  001622  060231                          EM2001
569  001624  050022                          DT031
570  001626  050536                          DF031
571                              ;           ERROR 34: ATTEMPTING OFFSET - MESS B INCORRECT
572  001630  054207                          EM111
573  001632  060231                          EM2001
574  001634  050022                          DT031
575  001636  050536                          DF031
576                              ;           ERROR 35: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
577                              ;                     CS1 INCORRECT
578  001640  054252                          EM112
579  001642  060307                          EM2003
580  001644  050044                          DT035
581  001646  050572                          DF035
582                              ;           ERROR 36: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
583                              ;                     DRIVE COMMAND BIT NOT SET IN MESS A
584  001650  054252                          EM112
585  001652  060153                          EM2000
586  001654  050044                          DT035
587  001656  050572                          DF035
```

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                                ;       ERROR 37: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
                                ;                 CYLINDER ADDRESS BITS INCORRECT IN MESS B
001660  054252                          EM112
001662  060567                          EM2008
001664  050044                          DT035
001666  050572                          DF035
                                ;       ERROR 40: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
                                ;                 MESS A INCORRRECT
001670  054252                          EM112
001672  060231                          EM2001
001674  050044                          DT035
001676  050572                          DF035
                                ;       ERROR 41: ATTEMPTING COMMAND WITH NON-ZERO CYL ADD AND OFFSET-
                                ;                 MESS B INCORRECT
001700  054252                          EM112
001702  060260                          EM2002
001704  050044                          DT035
001706  050572                          DF035
                                ;       ERROR 42: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
                                ;                 CS1 INCORRECT
001710  054405                          EM113
001712  060307                          EM2003
001714  047752                          DT012
001716  050446                          DF012
                                ;       ERROR 43: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
                                ;                 MAINT REG 1 INCORRECT
001720  054405                          EM113
001722  060470                          EM2006
001724  047752                          DT012
001726  050446                          DF012
                                ;       ERROR 44: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
                                ;                 DRIVE COMMAND BIT INCORRECT
001730  054405                          EM113
001732  060153                          EM2000
001734  047752                          DT012
001736  047752                          DT012
                                ;       ERROR 45: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
                                ;                 MESSAGE SELECT SELECT CODE IN MESSAGE B INCORRECT
001740  054405                          EM113
001742  060517                          EM2007
001744  047752                          DT012
001746  050446                          DF012
                                ;       ERROR 46: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
                                ;                 MESS A INCORRECT
001750  054405                          EM113
001752  060231                          EM2001
001754  047752                          DT012
001756  050446                          DF012
                                ;       ERROR 47: ATTEMPTING COMMAND WITH NON-ZERO MSG SELECT
                                ;                 MESS B INCORRECT
001760  054405                          EM113
001762  060260                          EM2002
001764  047752                          DT012
001766  050446                          DF012
                                ;       ERROR 50:       ATTEMPTING TO SHIFT DRIVE MESSAGE
                                ;                       SHIFT REG A INCORRECT
```

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644  0C1770  054517                    EM114
645  001772  060231                    EM2001
646  001774  050070                    DT050
647  001776  050626                    DF050
648                          ;         ERROR 51:       ATTEMPTING TO SHIFT DRIVE MESSAGE
649                          ;                         SHIFT REG B INCORRECT
650  002000  054517                    EM114
651  002002  060260                    EM2002
652  002004  050070                    DT050
653  002006  050626                    DF050
654                          ;         ERROR 52:       ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE
655                          ;                         PARITY ON MESSAGE A INCORRECT
656  002010  054562                    EM115
657  002012  060711                    EM2010
658  002014  050112                    DT052
659  002016  050662                    DF052
660                          ;         ERROR 53:       ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE
661                          ;                         PARITY ON MESSAGE B INCORRECT
662  002020  054562                    EM115
663  002022  060753                    EM2011
664  002024  050112                    DT052
665  002026  050662                    DF052
666                          ;         ERROR 54:       ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE
667                          ;                         MESSAGE A INCORRECT
668  002030  054562                    EM115
669  002032  060231                    EM2001
670  002034  050112                    DT052
671  002036  050662                    DF052
672                          ;         ERROR 55:       ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE
673                          ;                         MESSAGE B INCORRECT
674  002040  054562                    EM115
675  002042  060260                    EM2002
676  002044  050112                    DT052
677  002046  050662                    DF052
678                          ;         ERROR 56:       ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE
679                          ;                         PARITY ON MESSAGE A INCORRECT
680  002050  054654                    EM116
681  002052  060711                    EM2010
682  002054  050112                    DT052
683  002056  050662                    DF052
684                          ;         ERROR 57:       ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE
685                          ;                         PARITY ON MESSAGE IS INCORRECT
686  002060  054654                    EM116
687  002062  060753                    EM2011
688  002064  050112                    DT052
689  002066  050662                    DF052
690                          ;         ERROR 60:       ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE
691                          ;                         MESSAGE A INCORRECT
692  002070  054654                    EM116
693  002072  060231                    EM2001
694  002074  050112                    DT052
695  002076  050662                    DF052
696                          ;         ERROR 61:       ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE
697                          ;                         MESSAGE B INCORRECT
698  002100  054654                    EM116
699  002102  060260                    EM2002
```

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002104  050112                          DF052
002106  050662                          DF052
                                ;       ERROR 62:       ATTEMPTING COMPLETE EXECUTION OF DESELECT DRIVE IN
                                ;                       MAINT MODE - COMMAND AND STATUS REG 1 INCORRECT.
002110  054747                          EM117
002112  060307                          EM2003
002114  050126                          DT062
002116  050706                          DF062
                                ;       ERROR 63:       ATTEMPTING COMPLETE EXECUTION OF DESELECT DRIVE IN
                                ;                       MAINT MODE - COMMAND AND STATUS REG 2 INCORRECT.
002120  054747                          EM117
002122  061015                          EM2012
002124  050126                          DT062
002126  050706                          DF062
                                ;       ERROR 64:       ATTEMPTING COMPELTE EXECUTION OF DESELECT DRIVE IN
                                ;                       MAINT MODE - ERROR REG. INCORRECT.
002130  054747                          EM117
002132  061060                          EM2013
002134  050126                          DT062
002136  050706                          DF062
                                ;       ERROR 65:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
                                ;                       MAINT MODE - COMMAND AND STATUS REGISTER 1 INCORRECT AT
                                ;                       PHASE ADDRESS 4
002140  055064                          EM118
002142  061104                          EM2014
002144  050152                          DT065
002146  050732                          DF065
                                ;       ERROR 66:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
                                ;                       MAINT MODE - COMMAND AND STATUS REG 1 INVALID DURING
                                ;                       COMMAND EXECUTION.
002150  055064                          EM118
002152  061172                          EM2015
002154  050152                          DT065
002156  050732                          DF065
                                ;       ERROR 67:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
                                ;                       MAINT MODE - MAINTENANCE REG 2 UNEXPECTEDLY CHANGED
                                ;                       DURING COMMAND EXECUTION.
002160  055064                          EM118
002162  061264                          EM2016
002164  050162                          DT067
002166  050756                          DF067
                                ;       ERROR 70:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
                                ;                       MAINT MODE - MAINTENANCE REG 3 UNEXPECTEDLY CHANGED
                                ;                       DURING COMMAND EXECUTION.
002170  055064                          EM118
002172  061364                          EM2017
002174  050162                          DT067
002176  050756                          DF067
                                ;       ERROR 71:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
                                ;                       MAINT MODE - COMMAND AND STATUS REG 1 INCORRECT:
002200  055064                          EM118
002202  060307                          EM2003
002204  050126                          DT062
002206  050706                          DF062
                                ;       ERROR 72:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
                                ;                       MAINT MODE - COMMAND AND STATUS REG. 2 INCORRECT.
```

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 756  002210  055064                          EM118
 757  002212  061015                          EM2012
 758  002214  050126                          DT062
 759  002216  050706                          DF062
 760                          ;       ERROR 73:       ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE IN
 761                          ;                       MAINT MODE - ERROR REGISTER INCORRECT.
 762  002220  055064                          EM118
 763  002222  061060                          EM2013
 764  002224  050126                          DT062
 765  002226  050706                          DF062
 766                          ;       ERROR 74:       ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL
 767                          ;                       SPEED - COMMAND AND STATUS REG. 1 INCORRECT.
 768  002230  055177                          EM119
 769  002232  060231                          EM2001
 770  002234  050126                          DT062
 771  002236  050706                          DF062
 772                          ;       ERROR 75:       ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL
 773                          ;                       SPEED - COMMAND AND STATUS REG. 2 INCORRECT.
 774  002240  055177                          EM119
 775  002242  061015                          EM2012
 776  002244  050126                          DT062
 777  002246  050706                          DF062
 778                          ;       ERROR 76:       ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL
 779                          ;                       SPEED - ERROR REG INCORRECT.
 780  002250  055177                          EM119
 781  002252  061060                          EM2013
 782  002254  050126                          DT062
 783  002256  050706                          DF062
 784                          ;       ERROR 77:       ATTEMPTING TO WRITE CS1 IN MAINT MODE - CS1 INCORRECT
 785  002260  055266                          EM120
 786  002262  060307                          EM2003
 787  002264  050152                          DT065
 788  002266  050732                          DF065
 789                          ;       ERROR 100:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
 790                          ;                       INTERRUPT DID NOT OCCUR.
 791  002270  055362                          EM121
 792  002272  061464                          EM2018
 793  002274  050176                          DT100
 794  002276  051002                          DF100
 795                          ;       ERROR 101:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
 796                          ;                       CS1 INCORRECT AFTER INTERRUPT.
 797  002300  055362                          EM121
 798  002302  061514                          EM2019
 799  002304  050126                          DT062
 800  002306  050706                          DF062
 801                          ;       ERROR 102:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
 802                          ;                       CS2 INCORRECT AFTER INTERRUPT.
 803  002310  055362                          EM121
 804  002312  061577                          EM2020
 805  002314  050126                          DT062
 806  002316  050706                          DF062
 807                          ;       ERROR 103:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
 808                          ;                       ERROR REGISTER IN CORRECT AFTER INTERRUPT
 809  002320  055362                          EM121
 810  002322  061662                          EM2021
 811  002324  050126                          DT062
```

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002326  050706                          DF062
                              ;         ERROR 104:      ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE SET
                              ;                         INTERRUPT DID NOT CLEAR IN RK611
002330  055362                          EM121
002332  061733                          EM2022
002334  050176                          DT100
002336  051002                          DF100
                              ;         ERROR 105:      ATTEMPTING DESELECT COMMAND AFTER WRITING SILO
                              ;                         TO CHECK GO CLEAR-CS2 INCORRECT

002340  055463                          EM122
002342  061015                          EM2012
002344  050126                          DT062
002346  050706                          DF062
                              ;         ERROR 106:      ATTEMPTING DESELECT COMMAND AFTER WRITING SILO
                              ;                         TO CHECK GO CLEAR-DATA LATE DID NOT OCCUR WHEN
                              ;                         READING SILO
002350  055463                          EM122
002352  061774                          EM2023
002354  050126                          DT062
002356  050706                          DF062
                              ;         ERROR 107:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
                              ;                         COMMAND AND STATUS REG 1 INCORRECT AT PHASE ADDRESS 4
002360  055564                          EM123
002362  061104                          EM2014
002364  050152                          DT065
002366  050732                          DF065
                              ;         ERROR 110:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
                              ;                         COMMAND AND STATUS REG 1 INVALID DURING COMMAND EXECUTION
002370  055564                          EM123
002372  061172                          EM2015
002374  050152                          DT065
002376  050732                          DF065

                              ;         ERROR 111:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
                              ;                         MAINTENANCE REG 2 UNEXPECTEDLY CHANGED DURING COMMAND EXECUTION
002400  055564                          EM123
002402  061264                          EM2016
002404  050162                          DT067
002406  050756                          DF067
                              ;         ERROR 112:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
                              ;                         MAINTENANCE REG 3 UNEXPECTEDLY CHANGED DURING COMMAND EXECUTION
002410  055564                          EM123
002412  061364                          EM2017
002414  050162                          DT067
002416  050756                          DF067
                              ;         ERROR 113:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
                              ;                         COMMAND AND STATUS REG. 1 INCORRECT
002420  055564                          EM123
002422  060307                          EM2003
002424  050126                          DT062
002426  050706                          DF062
                              ;         ERROR 114:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
                              ;                         COMMAND AND STATUS REG. 2 INCORRECT
002430  055564                          EM123
002432  061015                          EM2012
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  868  002434  050126                        DI062
  869  002436  050706                        DF062
  870                          ;       ERROR 115:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
  871                          ;                       ERROR REGISTER INCORRECT
  872  002440  055564                        EM123
  873  002442  061060                        EM2013
  874  002444  050126                        DT062
  875  002446  050706                        DF062
  876                          ;       ERROR 116:      ATTEMPTING SELECT DRIVE IN MAINT MODE
  877                          ;                       COMMAND AND STATUS REG. 1 INCORRECT
  878  002450  055650                        EM124
  879  002452  060307                        EM2003
  880  002454  047666                        DT001
  881  002456  050322                        DF001
  882                          ;       ERROR 117:      ATTEMPTING SELECT DRIVE IN MAINT MODE
  883                          ;                       DRIVE SELECT CODE IN MESSAGE INCORRECT
  884  002460  055650                        EM124
  885  002462  060352                        EM2004
  886  002464  047666                        DT001
  887  002466  050322                        DF001
  888                          ;       ERROR 120:      ATTEMPTING SELECT DRIVE IN MAINT MODE
  889                          ;                       DRIVE COMMAND BITS IN MESSAGE INCORRECT
  890  002470  055650                        EM124
  891  002472  062046                        EM2024
  892  002474  047666                        DT001
  893  002476  050322                        DF001
  894                          ;       ERROR 121:      ATTEMPTING SELECT DRIVE IN MAINT MODE
  895                          ;                       HEAD ADD CODE IN MESSAGE A INCORRECT
  896  002500  055650                        EM124
  897  002502  060423                        EM2005
  898  002504  047666                        DT001
  899  002506  050322                        DF001
  900                          ;       ERROR 122:      ATTEMPTING SELECT DRIVE IN MAINT MODE
  901                          ;                       PARITY BIT IN MESSAGE INCORRECT
  902  002510  055650                        EM124
  903  002512  060711                        EM2010
  904  002514  047666                        DT001
  905  002516  050322                        DF001
  906                          ;       ERROR 123:      ATTEMPTING SELECT DRIVE IN MAINT MODE
  907                          ;                       MESS SELECT CODE IN MESSAGE IN CORRECT
  908  002520  055650                        EM124
  909  002522  060517                        EM2007
  910  002524  047666                        DT001
  911  002526  050322                        DFG01
  912                          ;       ERROR 124:      ATTEMPTING SELECT DRIVE IN MAINT MODE
  913                          ;                       CYLINDER AND BITS IN MESSAGE IS INCORRECT
  914  002530  055650                        EM124
  915  002532  060567                        EM2008
  916  002534  047666                        DT001
  917  002536  050322                        DF001
  918                          ;       ERROR 125:      ATTEMPTING SELECT DRIVE IN MAINT MODE
  919                          ;                       PARITY BIT IN MESSAGE IS INCORRECT
  920  002540  055650                        EM124
  921  002542  060753                        EM2011
  922  002544  047666                        DT001
  923  002546  050322                        DF001
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                                ;       ERROR 126:      ATTEMPTING COMPLETE EXECUTION OF DESELECT DRIVE IN
                                ;                       MAINT MODE - DRIVE STATUS REG INCORRECT
002550  054747                          EM117
002552  062116                          EM2025
002554  050126                          DT062
002556  050706                          DF062
                                ;       ERROR 127:      ATTEMPTING EXECUTION OF SELECT DRIVE IN
                                ;                       MAINT MODE - DRIVE STATUS REG INCORRECT
002560  055064                          EM118
002562  062116                          EM2025
002564  050126                          DT062
002566  050706                          DF062
                                ;       ERROR 130:      ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL
                                ;                       SPEED - DRIVE STATUS REG INCORRECT
002570  055177                          EM119
002572  062116                          EM2025
002574  050126                          DT062
002576  050706                          DF062
                                ;       ERROR 131:      ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE
                                ;                       DRIVE STATUS REG INCORRECT
002600  055564                          EM123
002602  062116                          EM2025
002604  050126                          DT062
002606  050706                          DF062
                                ;       ERROR 132:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WRL
                                ;                   CONTROLLER READY DID NOT SET
002610  055716                          EM125
002612  062156                          EM2026
002614  050176                          DT100
002616  051002                          DF100
                                ;       ERROR 133:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WRL
                                ;                   LOAD STATUS DID NOT LOAD DRIVE STATUS REF
002620  055716                          EM125
002622  062213                          EM2027
002624  050126                          DT062
002626  050706                          DF062
                                ;       ERROR 134:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WRL
                                ;                   CS1 INCORRECT
002630  055716                          EM125
002632  060307                          EM2003
002634  050126                          DT062
002636  050706                          DF062
                                ;       ERROR 135:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WRL
                                ;                   CS2 INCORRECT
002640  055716                          EM125
002642  061015                          EM2012
002644  050126                          DT062
002646  050706                          DF062
                                ;       ERROR 136:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WL
                                ;                   ERROR REG. INCORRECT
002650  055716                          EM125
002652  061060                          EM2013
002654  050126                          DT062
002656  050706                          DF062
                                ;       ERROR 137:  ATTEMPTING TO FORCE DRA,SPDLSS,VV,OFST,DRDY,WL
                                ;                   DRIVE STATUS REG. INCORRECT
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  980  002660  055716                    EM125
  981  002662  062116                    EM2025
  982  002664  050126                    DT062
  983  002666  050706                    DF062
  984                          ;         ERROR 140:  ATTEMPTING TO FORCE DRIVE AVAILIABLE
  985                          ;                     CS1 INCORRECT
  986  002670  056135                    EM126
  987  002672  060307                    EM2003
  988  002674  050126                    DT062
  989  002676  050706                    DF062
  990                          ;         ERROR 141:  ATTEMPTING TO FORCE DRIVE AVAILABLE
  991                          ;                     CS2 INCORRECT
  992  002700  056135                    EM126
  993  002702  061015                    EM2012
  994  002704  050126                    DT062
  995  002706  050706                    DF062
  996                          ;         ERROR 142:  ATTEMPTING TO FORCE DRIVE AVAILIABLE
  997                          ;                     DRIVE STATUS REC INCORRECT
  998  002710  056135                    EM126
  999  002712  062116                    EM2025
 1000  002714  050126                    DT062
 1001  002716  050706                    DF062
 1002                          ;         ERROR 143:  ATTEMPTING TO FORCE DRIVE AVAIVIABLE
 1003                          ;                     ERROR REGISTER INCORRECT
 1004  002720  056135                    EM126
 1005  002722  061060                    EM2013
 1006  002724  050126                    DT062
 1007  002726  050706                    DF062
 1008                          ;         ERROR 144:  ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR DETECTED BY RK611
 1009                          ;                     CS1 INCORRECT
 1010  002730  056202                    EM127
 1011  002732  060307                    EM2003
 1012  002734  050126                    DT062
 1013  002736  050706                    DF062
 1014                          ;         ERROR 145:  ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR DETECTED BY RK611
 1015                          ;                     CS2 INCORRECT
 1016  002740  056202                    EM127
 1017  002742  061015                    EM2012
 1018  002744  050126                    DT062
 1019  002746  050706                    DF062
 1020                          ;         ERROR 146:  ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR DETECTED BY RK611
 1021                          ;                     DRIVE STATUS REG INCORRECT
 1022  002750  056202                    EM127
 1023  002752  062116                    EM2025
 1024  002754  050126                    DT062
 1025  002756  050706                    DF062
 1026                          ;         ERROR 147:  ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR DETECTED BY RK611
 1027                          ;                     ERROR REC INCORRRECT
 1028  002760  056202                    EM127
 1029  002762  061060                    EM2013
 1030  002764  050126                    DT062
 1031  002766  050706                    DF062
 1032                          ;         ERROR 150:  ATTEMPTING TO FORCE DRIVE AVAILIABLE RESET ERROR
 1033                          ;                     CS1 INCORRECT
 1034  002770  056300                    EM128
 1035  002772  060307                    EM2003
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1036  002774  050126                    DT062
1037  002776  050706                    DF062
1038                          ;         ERROR 151:  ATTEMPTING TO FORCE DRIVE AVAILABLE RESET ERROR
1039                          ;                     CS2 INCORRECT
1040  003000  056300                    EM128
1041  003002  061015                    EM2012
1042  003004  050126                    DT062
1043  003006  050706                    DF062
1044                          ;         ERROR 152:  ATTEMPTING TO FORCE DRIVE AVAILABLE RESET ERROR
1045                          ;                     DRIVE STATUS REG. INCORRECT
1046  003010  056300                    EM128
1047  003012  062116                    EM2025
1048  003014  050126                    DT062
1049  003016  050706                    DF062
1050                          ;         ERROR 153:  ATTEMPTING TO FORCE DRIVE AVAILABLE RESET ERROR
1051                          ;                     ERROR REG. INCORRECT
1052  003020  056300                    EM128
1053  003022  061060                    EM2013
1054  003024  050126                    DT062
1055  003026  050706                    DF062
1056                          ;         ERROR 154:  TESTING CDT SET DRIVE TYPE DETECTION
1057                          ;                     CS1 INCORRECT
1058  003030  056361                    EM129
1059  003032  060307                    EM2003
1060  003034  050126                    DT062
1061  003036  050706                    DF062
1062                          ;         ERROR 155:  TESTING CDT SET DRIVE TYPE DETECTION
1063                          ;                     CS2 INCORRECT
1064  003040  056361                    EM129
1065  003042  061015                    EM2012
1066  003044  050126                    DT062
1067  003046  050706                    DF062
1068                          ;         ERROR 156:  TESTING CDT SET DRIVE TYPE DETECTION
1069                          ;                     DRIVE STATUS REG INCORRECT
1070  003050  056361                    EM129
1071  003052  062116                    EM2025
1072  003054  050126                    DT062
1073  003056  050706                    DF062
1074                          ;         ERROR 157:  TESTING CDT SET DRIVE TYPE DETECTION
1075                          ;                     ERROR REG INCORRECT
1076  003060  056361                    EM129
1077  003062  061060                    EM2013
1078  003064  050126                    DT062
1079  003066  050706                    DF062
1080                          ;         ERROR 160:  ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06
1081                          ;                     CS1 INCORRECT
1082  003070  056426                    EM130
1083  003072  060307                    EM2003
1084  003074  050126                    DT062
1085  003076  050706                    DF062
1086                          ;         ERROR 161:  ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06
1087                          ;                     CS2 INCORRECT
1088  003100  056426                    EM130
1089  003102  061015                    EM2012
1090  003104  050126                    DT062
1091  003106  050706                    DF062
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1092                                    ;       ERROR 162:  ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06
1093                                    ;                   DRIVE STATUS REG INCORRECT
1094  003110  056426                           EM130
1095  003112  062116                           EM2025
1096  003114  050126                           DT062
1097  003116  050706                           DF062
1098                                    ;       ERROR 163:  ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06
1099                                    ;                   ERROR REG INCORRECT
1100  003120  056426                           EM130
1101  003122  061060                           EM2013
1102  003124  050126                           DT062
1103  003126  050706                           DF062
1104                                    ;       ERROR 164:  ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CTD SET
1105                                    ;                   CS1 INCORRECT
1106  003130  056510                           EM131
1107  003132  060307                           EM2003
1108  003134  050126                           DT062
1109  003136  050706                           DF062
1110                                    ;       ERROR 165:  ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CDT SET
1111                                    ;                   CS2 INCORRECT
1112  003140  056510                           EM131
1113  003142  061015                           EM2012
1114  003144  050126                           DT062
1115  003146  050706                           DF062
1116                                    ;       ERROR 166:  ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CDT SET
1117                                    ;                   DRIVE STATUS REG INCORRECT
1118  003150  056510                           EM131
1119  003152  062116                           EM2025
1120  003154  050126                           DT062
1121  003156  050706                           DF062
1122                                    ;       ERROR 167:  ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CDT SET
1123                                    ;                   ERROR REG INCORRECT
1124  003160  056510                           EM131
1125  003162  061060                           EM2013
1126  003164  050126                           DT062
1127  003166  050706                           DF062
1128                                    ;       ERROR 170:  ATTEMPTING TO FORCE SPEED LOSS
1129                                    ;                   CS1 INCORRECT
1130  003170  056575                           EM132
1131  003172  060307                           EM2003
1132  003174  050126                           DT062
1133  003176  050706                           DF062
1134                                    ;       ERROR 171:  ATTEMPTING TO FORCE SPEED LOSS
1135                                    ;                   CS2 INCORRECT
1136  003200  056575                           EM132
1137  003202  061015                           EM2012
1138  003204  050126                           DT062
1139  003206  050706                           DF062
1140                                    ;       ERROR 172:  ATTEMPTING TO FORCE SPEED LOSS
1141                                    ;                   DRIVE STATUS REG INCORRECT
1142  003210  056575                           EM132
1143  003212  062116                           EM2025
1144  003214  050126                           DT062
1145  003216  050706                           DF062
1146                                    ;       ERROR 173:  ATTEMPTING TO FORCE SPEED LOSS
1147                                    ;                   ERROR REG. INCORRECT
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1148  003220  056575                        EM132
1149  003222  061060                        EM2013
1150  003224  050126                        DT062
1151  003226  050706                        DF062
1152                          ;             ERROR 174:  ATTEMPTING TO FORCE DRIVE OFF TRACK
1153                          ;                         CS1 INCORRECT
1154  003230  056634                        EM133
1155  003232  060307                        EM2003
1156  003234  050126                        DT062
1157  003236  050706                        DF062
1158                          ;             ERROR 175:  ATTEMPTING TO FORCE DRIVE OFF TRACK
1159                          ;                         CS2 INCORRECT
1160  003240  056634                        EM133
1161  003242  061015                        EM2012
1162  003244  050126                        DT062
1163  003246  050706                        DF062
1164                          ;             ERROR 176:  ATTEMPTING TO FORCE DRIVE OFF TRACK
1165                          ;                         DRIVE STATUS REG INCORRECT
1166  003250  056634                        EM133
1167  003252  062116                        EM2025
1168  003254  050126                        DT062
1169  003256  050706                        DF062
1170                          ;             ERROR 177:  ATTEMPTING TO FORCE DRIVE OFF TRACK
1171                          ;                         ERROR REG INCORRECT
1172  003260  056634                        EM133
1173  003262  061060                        EM2013
1174  003264  050126                        DT062
1175  003266  050706                        DF062
1176                          ;             ERROR 200:  ATTEMPTING TO FORCE WRITE LOCK ERROR
1177                          ;                         CS1 INCORRECT
1178  003270  056700                        EM134
1179  003272  060307                        EM2003
1180  003274  050126                        DT062
1181  003276  050706                        DF062
1182                          ;             ERROR 201:  ATTEMPTING TO FORCE WRITE LOCK ERROR
1183                          ;                         CS2 INCORRECT
1184  003300  056700                        EM134
1185  003302  061015                        EM2012
1186  003304  050126                        DT062
1187  003306  050706                        DF062
1188                          ;             ERROR 202:  ATTEMPTING TO FORCE WRITE LOCK ERROR
1189                          ;                         DRIVE STATUS REG INCORRECT
1190  003310  056700                        EM134
1191  003312  062116                        EM2025
1192  003314  050126                        DT062
1193  003316  050706                        DF062
1194                          ;             ERROR 203:  ATTEMPTING TO FORCE WRITE LOCK ERROR
1195                          ;                         ERROR REG INCORRECT
1196  003320  056700                        EM134
1197  003322  061060                        EM2013
1198  003324  050126                        DT062
1199  003326  050706                        DF062
1200                          ;             ERROR 204:  ATTEMPTING TO FORCE SEEK INCOMPLETE
1201                          ;                         CS1 INCORRECT
1202  003330  056745                        EM135
1203  003332  060307                        EM2003
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1204  003334  050126                  DT062
1205  003336  050706                  DF062
1206                          ;       ERROR 205:  ATTEMPTING TO FORCE SFEK INCOMPLETE
1207                          ;                   CS2 INCORRECT
1208  003340  056745                  EM135
1209  003342  061015                  EM2012
1210  003344  050126                  DT062
1211  003346  050706                  DF062
1212                          ;       ERROR 206:  ATTEMPTING TO FORCE SEEK INCOMPLETE
1213                          ;                   DRIVE STATUS REG INCORRECT
1214  003350  056745                  EM135
1215  003352  062116                  EM2025
1216  003354  050126                  DT062
1217  003356  050706                  DF062
1218                          ;       ERROR 207:  ATTEMPTING TO FORCE SEEK INCOMPLETE
1219                          ;                   ERROR REG INCORRECT
1220  003360  056745                  EM135
1221  003362  061060                  EM2013
1222  003364  050126                  DT062
1223  003366  050706                  DF062
1224                          ;       ERROR 210:  ATTEMPTING TO FORCE NON-EXECUTABLE FUNCTION
1225                          ;                   CS1 INCORRECT
1226  003370  057011                  EM136
1227  003372  060307                  EM2003
1228  003374  050126                  DT062
1229  003376  050706                  DF062
1230                          ;       ERROR 211:  ATTEMPTING TO FORCE NON-EXECUTABLE FUNCTION
1231                          ;                   CS2 INCORRECT
1232  003400  057011                  EM136
1233  003402  061015                  EM2012
1234  003404  050126                  DT062
1235  003406  050706                  DF062
1236                          ;       ERROR 212:  ATTEMPTING TO FORCE NON-EXECUTABLE FUNCTION
1237                          ;                   DRIVE STATUS REG INCORRECT
1238  003410  057011                  EM136
1239  003412  062116                  EM2025
1240  003414  050126                  DT062
1241  003416  050706                  DF062
1242                          ;       ERROR 213:  ATTEMPTING TO FROCE NON-EXECUTABLE FUNCTION
1243                          ;                   ERROR REG INCORRECT
1244  003420  057011                  EM136
1245  003422  061060                  EM2013
1246  003424  050126                  DT062
1247  003426  050706                  DF062
1248                          ;       ERROR 214:  ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR
1249                          ;                   CS1 INCORRECT
1250  003430  057065                  EM137
1251  003432  060307                  EM2003
1252  003434  050126                  DT062
1253  003436  050706                  DF062
1254                          ;       ERROR 215:  ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR
1255                          ;                   CS2 INCORRECT
1256  003440  057065                  EM137
1257  003442  061015                  EM2012
1258  003444  050126                  DT062
1259  003446  050706                  DF062
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1260                                    ;       ERROR 216:  ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR
1261                                    ;                   DRIVE STATUS REG INCORRECT
1262  003450  057065                            EM137
1263  003452  062116                            EM2025
1264  003454  050126                            DT062
1265  003456  050706                            DF062
1266                                    ;       ERROR 217:  ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR
1267                                    ;                   ERROR REG INCORRECT
1268  003460  057065                            EM137
1269  003462  061060                            EM2013
1270  003464  050126                            DT062
1271  003466  050706                            DF062
1272                                    ;       ERROR 220:  ATTEMPTING TO FORCE ILLEGAL DISK ADDRESS ERROR (DRIVE)
1273                                    ;                   CS1 INCORRECT
1274  003470  057145                            EM138
1275  003472  060307                            EM2003
1276  003474  050126                            DT062
1277  003476  050706                            DF062
1278                                    ;       ERROR 221:  ATTEMPTING TO FORCE ILLEGAL DISK ADDRESS ERROR (DRIVE)
1279                                    ;                   CS2 INCORRECT
1280  003500  057145                            EM138
1281  003502  061015                            EM2012
1282  003504  050126                            DT062
1283  003506  050706                            DF062
1284                                    ;       ERROR 222:  ATTEMPTING TO FORCE ILLEGAL DISK ADDRRESS ERROR (DRIVE)
1285                                    ;                   DRIVE STATUS REG INCORRECT
1286  003510  057145                            EM138
1287  003512  062116                            EM2025
1288  003514  050126                            DT062
1289  003516  050706                            DF062
1290                                    ;       ERROR 223:  ATTEMPTING TO FORCE ILLEGAL DISK ADDRESS ERROR (DRIVE)
1291                                    ;                   ERROR REG INCORRECT
1292  003520  057145                            EM138
1293  003522  061060                            EM2013
1294  003524  050126                            DT062
1295  003526  050706                            DF062
1296                                    ;       ERROR 224:  ATTERMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR
1297                                    ;                   CS1 INCORRECT
1298  003530  057255                            EM139
1299  003532  060307                            EM2003
1300  003534  050212                            DT224
1301  003536  051042                            DF224
1302                                    ;       ERROR 225:  ATTERMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR
1303                                    ;                   CS2 INCORRECT
1304  003540  057255                            EM139
1305  003542  061015                            EM2012
1306  003544  050212                            DT224
1307  003546  051042                            DF224
1308                                    ;       ERROR 226:  ATTERMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR
1309                                    ;                   DRIVE STATUS REG INCORRECT
1310  003550  057255                            EM139
1311  003552  062116                            EM2025
1312  003554  050212                            DT224
1313  003556  051042                            DF224
1314                                    ;       ERROR 227:  ATTERMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR
1315                                    ;                   ERROR REG INCORRECT
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 1316  003560  057255                    EM139
 1317  003562  061060                    EM2013
 1318  003564  050212                    DT224
 1319  003566  051042                    DF224
 1320                          ;         ERROR 230: TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611
 1321                          ;                    CSI INCORRECT
 1322  003570  057337                    EM140
 1323  003572  060307                    EM2003
 1324  003574  050246                    DT230
 1325  003576  051076                    DF230
 1326                          ;         ERROR 231: TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611
 1327                          ;                    CS2 INCORRECT
 1328  003600  057337                    EM140
 1329  003602  061015                    EM2012
 1330  003604  050246                    DT230
 1331  003606  051076                    DF230
 1332                          ;         ERROR 232: TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611
 1333                          ;                    DRIVE STATUS REG INCORRECT
 1334  003610  057337                    EM140
 1335  003612  062116                    EM2025
 1336  003614  050246                    DT230
 1337  003616  051076                    DF230
 1338                          ;         ERROR 233: TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611
 1339                          ;                    ERROR REGISTER
 1340  003620  057337                    EM140
 1341  003622  061060                    EM2013
 1342  003624  050246                    DT230
 1343  003626  051076                    DF230
 1344                          ;         ERROR 234: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES
 1345                          ;                    CS1 INCORRECT
 1346  003630  057421                    EM141
 1347  003632  060307                    EM2003
 1348  003634  050126                    DT062
 1349  003636  050706                    DF062
 1350                          ;         ERROR 235: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES
 1351                          ;                    CS2 INCORRECT
 1352  003640  057421                    EM141
 1353  003642  061015                    EM2012
 1354  003644  050126                    DT062
 1355  003646  050706                    DF062
 1356                          ;         ERROR 236: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES
 1357                          ;                    DRIVE STATUS REG. INCORRECT
 1358  003650  057421                    EM141
 1359  003652  062116                    EM2025
 1360  003654  050126                    DT062
 1361  003656  050706                    DF062
 1362                          ;         ERROR 237: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES
 1363                          ;                    ERROR REG. INCORRECT
 1364  003660  057421                    EM141
 1365  003662  061060                    EM2013
 1366  003664  050126                    DT062
 1367  003666  050706                    DF062
 1368                          ;         ERROR 240: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES WITH
 1369                          ;                    BAD PARITY - CS1 INCORRECT
 1370  003670  057475                    EM142
 1371  003672  060307                    EM2003
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1372  003674  050126                          DT062
1373  003676  050706                          DF062
1374                                ;         ERROR 241: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES WITH
1375                                ;                    BAD PARITY - CS2 INCORRECT
1376  003700  057475                          EM142
1377  003702  061015                          EM2012
1378  003704  050126                          DT062
1379  003706  050706                          DF062
1380                                ;         ERROR 242: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES WITH
1381                                ;                    BAD PARITY - DRIVE STATUS REG. INCORRECT
1382  003710  057475                          EM142
1383  003712  062116                          EM2025
1384  003714  050126                          DT062
1385  003716  050706                          DF062
1386                                ;         ERROR 243: ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES WITH
1387                                ;                    BAD PARITY - ERROR ERROR INCOMPLETE
1388  003720  057475                          EM142
1389  003722  061060                          EM2013
1390  003724  050126                          DT062
1391  003726  050706                          DF062
1392                                ;         ERROR 244: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)
1393                                ;                    CS1 INCORRECT
1394  003730  057573                          EM143
1395  003732  060307                          EM2003
1396  003734  050126                          DT062
1397  003736  050706                          DF062
1398                                ;         ERROR 245: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)
1399                                ;                    CS2 INCORRECT
1400  003740  057573                          EM143
1401  003742  061015                          EM2012
1402  003744  050126                          DT062
1403  003746  050706                          DF062
1404                                ;         ERROR 246: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)
1405                                ;                    DRIVE STATUS REG INCORRECT
1406  003750  057573                          EM143
1407  003752  062116                          EM2025
1408  003754  050126                          DT062
1409  003756  050706                          DF062
1410                                ;         ERROR 247: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)
1411                                ;                    ERROR REG INCORRECT
1412  003760  057573                          EM143
1413  003762  061060                          EM2013
1414  003764  050126                          DT062
1415  003766  050706                          DF062
1416                                ;         ERROR 250: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)
1417                                ;                    CS1 INCORRECT
1418  003770  057666                          EM144
1419  003772  060307                          EM2003
1420  003774  050126                          DT062
1421  003776  050706                          DF062
1422                                ;         ERROR 251: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)
1423                                ;                    CS2 INCORRECT
1424  004000  057666                          EM144
1425  004002  061015                          EM2012
1426  004004  050126                          DT062
1427  004006  050706                          DF062
```

```
1428                                    ;       ERROR 252: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)
1429                                    ;                  DRIVE STATUS REG INCORRECT
1430  004010  057666                           EM144
1431  004012  062116                           EM2025
1432  004014  050126                           DT062
1433  004016  050706                           DF062
1434                                    ;       ERROR 253: ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)
1435                                    ;                  ERROR REG INCORRECT
1436  004020  057666                           EM144
1437  004022  061060                           EM2013
1438  004024  050126                           DT062
1439  004026  050706                           DF062
1440                                    ;       ERROR 254: ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE RESET
1441                                    ;                  UNEXPECTED INTERRUPT OCCURRED
1442  004030  057747                           EM145
1443  004032  062266                           EM2028
1444  004034  050176                           DT100
1445  004036  051002                           DF100
1446                                    ;       ERROR 255: ATTEMPTING EXECUTION FO DESELECT DRIVE WITH IE RESET
1447                                    ;                  INTERRUPT OCCURRED WHEN INTERRUPT ENABLE SET
1448  004040  057747                           EM145
1449  004042  062324                           EM2029
1450  004044  050176                           DT100
1451  004046  051002                           DF100
1452                                    ;       ERROR 256:      ATTEMPTING TO EXECUTE AN ILLEGAL FUNCTION
1453                                    ;                       CS1 INCORRECT
1454  004050  060034                           EM146
1455  004052  060307                           EM2003
1456  004054  050300                           DT256
1457  004056  051132                           DF256
1458                                    ;       ERROR 257:      ATTEMPTING TO EXECUTE AN ILLEGAL FUNCTION
1459                                    ;                       ERROR REG INCORRECT
1460  004060  060034                           EM146
1461  004062  061060                           EM2013
1462  004064  050300                           DT256
1463  004066  051132                           DF256
1464                                    ;       ERROR 260:      ATTEMPTING TO CLEAR ILLEGAL FUNCTION - CS1 INCORRECT
1465  004070  060106                           EM147
1466  004072  060307                           EM2003
1467  004074  050300                           DT256
1468  004076  051132                           DF256
1469                                    ;       ERROR 261:      ATTEMPTING TO CLEAR ILLEGAL FUNCTION - ERROR REG INCORRECT
1470  004100  060106                           EM147
1471  004102  061060                           EM2013
1472  004104  050300                           DT256
1473  004106  051132                           DF256
1474                                    ;       ERROR 262:  UNEXPECTED MEMORY PARITY ERROR TRAP
1475  004110  053134                           EM000
1476  004112  051406                           DH000C
1477  004114  047662                           DT000
1478  004116  050316                           DF000
```

```
1479                                    .SBTTL  TEMPORARY STORAGE FOR RK611 CONTROLLER REGISTER
1480
1481  004120  000000                    T.CS1:  .WORD   0               ;CONTROL AND STATUS REGISTER 1
1482  004122  000000                    T.WC:   .WORD   0               ;WORD COUNT REGISTER
1483  004124  000000                    T.BA:   .WORD   0               ;BUS ADDRESS REGISTER
1484  004126  000000                    T.DA:   .WORD   0               ;DESIRED TRACK SECTOR REGISTER
1485  004130  000000                    T.CS2:  .WORD   0               ;CONTROL AND STATUS REGISTER 2
1486  004132  000000                    T.DS:   .WORD   0               ;DRIVE STATUS REGISTER
1487  004134  000000                    T.ER:   .WORD   0               ;ERROR REGISTER
1488  004136  000000                    T.ASOF: .WORD   0               ;ATTENTION SUMMARY AND OFFSET REGISTER
1489  004140  000000                    T.DCYL: .WORD   0               ;DESIRED CYLINDER REGISTER
1490  004142  000000                    T.DB:   .WORD   0               ;DATA BUFFER
1491  004144  000000                    T.MR1:  .WORD   0               ;MAINTENANCE REGISTER 1
1492  004146  000000                    T.MR2:  .WORD   0               ;MAINTENANCE REGISTER 2
1493  004150  000000                    T.MR3:  .WORD   0               ;MAINTENANCE REGISTER 3
1494  004152  000000                    T.ECPS: .WORD   0               ;ECC POSITION INFORMATION
1495  004154  000000                    T.ECPT: .WORD   0               ;ECC PATTERN INFORMATION
1496  004156  000000                    T.SPAR: .WORD   0               ;SPARE REGISTER
1497
1498                                    .SBTTL  EXPECTED RK611 CONTROLLER REGISTERS
1499
1500  004160  000000                    E.CS1:  .WORD   0               ;CONTROL AND STATUS REGISTER 1
1501  004162  000000                    E.WC:   .WORD   0               ;WORD COUNT REGISTER
1502  004164  000000                    E.BA:   .WORD   0               ;BUS ADDRESS REGISTER
1503  004166  000000                    E.DA:   .WORD   0               ;DESIRED TRACK SECTOR REGISTER
1504  004170  000000                    E.CS2:  .WORD   0               ;CONTROL AND STATUS REGISTER 2
1505  004172  000000                    E.DS:   .WORD   0               ;DRIVE STATUS REGISTER
1506  004174  000000                    E.ER:   .WORD   0               ;ERROR REGISTER
1507  004176  000000                    E.ASOF: .WORD   0               ;ATTENTION SUMMARY AND OFFSET REGISTER
1508  004200  000000                    E.DCYL: .WORD   0               ;DESIRED CYLINDER REGISTER
1509  004202  000000                    E.DB:   .WORD   0               ;DATA BUFFER
1510  004204  000000                    E.MR1:  .WORD   0               ;MAINTENANCE REGISTER 1
1511  004206  000000                    E.MR2:  .WORD   0               ;MAINTENANCE REGISTER 2
1512  004210  000000                    E.MR3:  .WORD   0               ;MAINTENANCE REGISTER 3
1513  004212  000000                    E.ECPS: .WORD   0               ;ECC POSITION INFORMATION
1514  004214  000000                    E.ECPT: .WORD   0               ;ECC PATTERN INFORMATION
1515  004216  000000                    E.SPAR: .WORD   0               ;SPARE REGISTER
1516
1517                                    .SBTTL  PREVIOUS RK611 CONTROLLER REGISTERS
1518
1519  004220  000000                    P.CS1:  .WORD   0               ;PREVIOUS COMMAND AND STATUS REG 1
1520  004222  000000                    P.CS2:  .WORD   0               ;PREVIOUS COMMAND AND STATUS REG 2
1521  004224  000000                    P.DS:   .WORD   0               ;PREVIOUS DRIVE STATUS REG
1522  004226  000000                    P.ER:   .WORD   0               ;PREVIOUS ERROR REG
1523  004230  000000                    U.MR2:  .WORD   0               ;UNSHIFTED MAINTENANCE REG 2
1524  004232  000000                    U.MR3:  .WORD   0               ;UNSHIFTED MAINTENANCE REG 3
```

```
                                        .SBTTL  PROGRAM DEFINED VARIABLES

004234  000210          RKVEC:  .WORD   210             ;RK611 VECTOR
004236  000240          RKPRI:  .WORD   PR5             ;RK611 PRIORITY
004240  000000          SRTFLG: .WORD   0               ;START FLAG
                                                        ;  0 = 200
                                                        ;  1 = 214
                                                        ; -1 = 204
004242  000000          ERRCNT: .WORD   0               ;ERROR COUNT FOR SWITCH 12 ABORT
004244  000000          DRVCOD: .WORD   0               ;DRIVE SELECT CODE
004246  000000          MSGCOD: .WORD   0               ;MESSAGE SELECT CODE
004250  000000          HDCODE: .WORD   0               ;HEAD SELECT CODE
004252  000000          CYLIN:  .WORD   0               ;CYLINDER ADD VALUE
004254  000000          OFFVAL: .WORD   0               ;OFFSET VALUE
004256  000000          SFTCNT: .WORD   0               ;SHIFT COUNT FOR DRIVE MESSAGE SHIFTING
004260  000000          PARBIT: .WORD   0               ;PARITY BIT FOR SHIFT
004262  000015          WAITIM: .WORD   15              ;WAITING FOR DESELECT COMMAND
004264  000144          STALL:  .WORD   100.            ;STALL TIME FOR MESSAGE TIME OUT (NED)
004266  000000          DRVTYP: .WORD   0               ;DRIVE TYPE INDICATOR
004270  000000          ILLFUN: .WORD   0               ;ILLEGAL FUNCTION CODE
004272  000000          TRAPFC: .WORD   0               ;ADDRESS OF TRAP FROM MEMORY CHECK
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     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
004346  005026                          CLR     (R6)+           ;;CLEAR MEMORY LOCATION
004350  022706  001140                  CMP     #SWR,R6 ;;DONE?
004354  001374                          BNE     .-6             ;;LOOP BACK IF NO
004356  012706  001100                  MOV     #STACK,SP       ;;SETUP THE STACK POINTER
                                ;;INITIALIZE A FEW VECTORS
004362  012737  043654  000020          MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
004370  012737  000340  000022          MOV     #340,@#IOTVEC+2 ;;LEVEL 7
004376  012737  044664  000030          MOV     #$ERROR,@#EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
004404  012737  000340  000032          MOV     #340,@#EMTVEC+2 ;;LEVEL 7
004412  012737  047572  000034          MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
004420  012737  000340  000036          MOV     #340,@#TRAPVEC+2;LEVEL 7
004426  012737  047440  000024          MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
004434  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;LEVEL 7
004442  013737  043346  043340          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
```

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1603  004602  001403                          BEQ     67$             ;;YES,USE NON-APT SWITCH
1604  004604  012737  001236  001140          MOV     #$SWREG,SWR     ;;NO,USE APT SWITCH REGISTER
1605  004612                          67$:
1606  004612  005037  004242                  CLR     ERRCNT          ;CLEAR ERROR COUNT FOR SWITCH 12 ABORT
1607                                  .SBTTL  TYPE PROGRAM NAME
1608                                  ;;TYPE THE NAME OF THE PROGRAM IF FIRST PASS
1609  004616  005227  177777                  INC     #-1             ;;FIRST TIME?
1610  004622  001063                          BNE     68$             ;;BRANCH IF NO
1611  004624  022737  043502  000042          CMP     #$ENDAD,@#42    ;;ACT-11?
1612  004632  001457                          BEQ     68$             ;;BRANCH IF YES
1613  004634  104401  004702                  TYPE    ,69$            ;;TYPE ASCIZ STRING
1614                                  .SBTTL  GET VALUE FOR SOFTWARE SWITCH REGISTER
1615  004640  005737  000042                  TST     @#42            ;;ARE WE RUNNING UNDER XXDP/ACT?
1616  004644  001012                          BNE     70$             ;;BRANCH IF YES
1617  004646  123727  001234  000001          CMPB    $ENV,#1         ;;ARE WE RUNNING UNDER APT?
1618  004654  001406                          BEQ     70$             ;;BRANCH IF YES
1619  004656  023727  001140  000176          CMP     SWR,#SWREG      ;;SOFTWARE SWITCH REG SELECTED?
1620  004664  001005                          BNE     71$             ;;BRANCH IF NO
1621  004666  104406                          GTSWR                   ;;GET SOFT-SWR SETTINGS
1622  004670  000403                          BR      71$
1623  004672  112737  000001  001134  70$:     MOVB    #1,$AUTOB       ;;SET AUTO-MODE INDICATOR
1624  004700                          71$:
1625  004700  000434                          BR      68$             ;;GET OVER THE ASCIZ
1626                                  ;;69$:  .ASCIZ  <CRLF>/RK611 DISKLESS DIAGNOSTIC: PART 2 MAINDEC-11-DZR6B-B/<CRLF>
1627  004772                          68$:
1628  004772  022737  000001  004240          CMP     #1,SRTFLG       ;CHECK IF PARAMETER START
1629  005000  001122                          BNE     15$             ;NO, CONTINUE SETUP
1630  005002  104401  051156          5$:     TYPE    ,OPR001         ;TYPE "RK611 BUS ADDRESS (  ) ="
1631  005006  013746  001270                  MOV     $BASE,-(SP)     ;;SAVE $BASE FOR TYPEOUT
1632  005012  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
1633  005014  104401  051235                  TYPE    ,OPR002
1634  005020  104412                          RDOCT                   ;GET VALUE
1635  005022  012637  001160                  MOV     (SP)+,$TMP0
1636  005026  001407                          BEQ     7$              ;CHECK IF <CR>
1637  005030  022737  160000  001160          CMP     #160000,$TMP0   ;CHECK IF IN I/O PAGE
1638  005036  101361                          BHI     5$
1639  005040  013737  001160  001270          MOV     $TMP0,$BASE     ;LOAD NEW BUS ADDRESS
1640  005046  104401  051213          7$:     TYPE    ,OPR003         ;TYPE "RK611 VECTOR ADDRESS (  ) ="
1641  005052  013746  001264                  MOV     $VECT1,-(SP)
1642  005056  042716  160000                  BIC     #160000,(SP)
1643  005062  104402                          TYPOC
1644  005064  104401  051205                  TYPE    ,OPR002
1645  005070  104412                          RDOCT                   ;GET VALUE
1646  005072  012637  001160                  MOV     (SP)+,$TMP0
1647  005076  001412                          BEQ     10$             ;CHECK IF <CR>
1648  005100  022737  001000  001160          CMP     #1000,$TMP0     ;CHECK IF LEGAL
1649  005106  101757                          BLOS    7$
1650  005110  042737  017777  001264          BIC     #17777,$VECT1   ;LOAD NEW VECTOR ADDRESS
1651  005116  053737  001160  001264          BIS     $TMP0,$VECT1
1652  005124  104401  051243          10$:    TYPE    ,OPR004         ;TYPE "RK611 PRIORITY (  ) ="
1653  005130  005046                          CLR     -(SP)           ;MAKE ROOM ON THE STACK
1654  005132  113716  001265                  MOVB    $VECT1+1,(SP)
1655  005136  006216                          ASR     (SP)            ;SHIFT 5 BITS RIGHT
1656  005140  006216                          ASR     (SP)
1657  005142  006216                          ASR     (SP)
1658  005144  006216                          ASR     (SP)
```

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 1659  005146  006216                          ASR     (SP.
 1660  005150  104402                          TYPOC
 1661  005152  104401  051205                  TYPE    .OPR002
 1662  005156  104412                          RDOCT                   ;GET VALUE
 1663  005160  012637  001160                  MOV     (SP)+,$TMPO
 1664  005164  001430                          BEQ     15$             ;CHECK FOR DEFAULT
 1665  005166  022737  000007  001160          CMP     #7,$TMPO        ;CHECK IF LEGAL
 1666  005174  103753                          BLO     10$
 1667  005176  022737  000004  001160          CMP     #4,$TMPO
 1668  005204  101347                          BHI     10$
 1669  005206  006337  001160                  ASL     $TMPO           ;SHIFT 5 BITS LEFT
 1670  005212  006337  001160                  ASL     $TMPO
 1671  005216  006337  001160                  ASL     $TMPO
 1672  005222  006337  001160                  ASL     $TMPO
 1673  005226  006337  001160                  ASL     $TMPO
 1674  005232  042737  160000  001264          BIC     #160000,$VECT1  ;STORE NEW PRIORITY
 1675  005240  153737  001160  001265          BISB    $TMPO,$VECT1+1
 1676  005246  013737  001264  004234  15$:    MOV     $VECT1,RKVEC    ;STORE RK611 VECTOR
 1677  005254  042737  160000  004234          BIC     #160000,RKVEC
 1678  005262  113737  001265  004236          MOVB    $VECT1+1,RKPRI  ;STORE RK611 PRIORITY
 1679
 1680  005270  004737  043522          NEWPAS: JSR     PC,CHKPAR       ;CHECK FOR MEMORY CHECK ENABLE
 1681  005274  012746  000340                  MOV     #PR7,-(SP)      ;LOCK OUT INTERRUPTS
 1682  005300  012746  005306                  MOV     #TST1,-(SP)
 1683  005304  000002                          PTI
```

```
                                        .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.
                                        ;*
                                        ;;*************************************************************
005306  000004                  TST1:   SCOPE
005310  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
005316  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
005322  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
005330  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
005336  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;LOAD CS1 WITH SELECT DRIVE
005344  012700  000015                  MOV     #15,R0          ;WAIT FOR READY TO SET
005350  005300                  1$:     DEC     R0
005352  001376                          BNE     1$
005354  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
005362  012737  000001  004160          MOV     #SELDRV,E.CS1   ;LOAD EXPECT CS1
005370  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CHANGED
005376  001402                          BEQ     2$              ;NO, CONTINUE
005400  104077                          ERROR   77              ;CS1 INCORRECT
005402  000503                          BR      TST2            ;;GO ON TO NEXT TEST
                                
005404  012700  000016          2$:     MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
005410  012762  000440  000026  3$:     MOV     #DMD!MCLK,RKMR1(R2)
005416  012762  000040  000026          MOV     #DMD,RKMR1(R2)
005424  005300                          DEC     R0
005426  001370                          BNE     3$
005430  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
005436  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
005444  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
005452  012737  000001  004160          MOV     #SELDRV,E.CS1   ;LOAD EXPECTED CS1
005460  005037  004206                  CLR     E.MR2           ;LOAD EXPECTED MAINT REG. 2
005464  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
005470  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG. 1 CORRECT
005476  001402                          BEQ     4$              ;YES, CHECK MESSAGES A & B
005500  104116                          ERROR   116             ;CS1 INCORRECT
005502  000443                          BR      TST2            ;;GO ON TO NEXT TEST
                                
005504  032737  000017  004146  4$:     BIT     #17,T.MR2       ;CHECK IF DRIVE SELECT BITS ZERO
005512  001401                          BEQ     5$              ;YES, CONTINUE
005514  104117                          ERROR   117             ;MESSAGE SELECT BITS NOT ZERO
005516  032737  007760  004146  5$:     BIT     #7760,T.MR2     ;CHECK IF COMMAND BITS ZERO
005524  001401                          BEQ     6$              ;YES, CONTINUE
                                
005526  104120                          ERROR   120             ;COMMAND BITS NOT ZERO
005530  032737  070000  004146  6$:     BIT     #70000,T.MR2    ;CHECK IF HEAD SELECT BITS ZERO
005536  001401                          BEQ     7$              ;YES, CONTINUE
005540  104121                          ERROR   121             ;HEAD SELECT NOT ZERO
005542  032737  100000  004146  7$:     BIT     #BIT15,T.MR2    ;CHECK PARITY BIT ON MESS A ZERO
005550  001401                          BEQ     8$              ;YES, CONTINUE
```

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                                        ERROR   122             ;PARITY ON MESS A NOT ZERO
005554 032737 000017 004150 8$:         BIT     #17,T.MR3       ;CHECK MESS SELECT BITS ZERO
005562 001401                           BEQ     9$              ;YES, CONTINUE
005564 104123                           ERROR   123             ;MESSAGE SELECT BITS NOT ZERO
005566 032737 077760 004150 9$:         BIT     #77760,T.MR3    ;CHECK CYLINDER ADDRESS BUFFER
005574 001401                           BEQ     10$             ;YES, CONTINUE
005576 104124                           ERROR   124             ;CYLINDER ADD BITS NOT ZERO
005600 032737 100000 004150 10$:        BIT     #BIT15,T.MR3    ;CHECK PARITY BIT ON MESSAGE B
005606 001401                           BEQ     TST2            ;;YES, GO ON TO NEXT TEST
005610 104125                           ERROR   125             ;PARITY ON MESS. B NOT ZERO

                                ;;*****************************************************************
                                ;*TEST 2        DRIVE SELECT BITS LOADING FOR DRIVE MESS.
                                ;*
                                ;*      INITIALIZE RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 2 WITH
                                ;*      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.
                                ;*
                                ;;*****************************************************************
005612 000004                   TST2:   SCOPE
005614 012737 000144 001200             MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
005622 013702 001270                    MOV     $BASE,R2        ;LOAD RK611 BASE
005626 005037 004244                    CLR     DRVCOD          ;INITIALIZE DRIVE SELECT CODE
005632 012737 000001 004160             MOV     #SELDRV,E.CS1   ;LOAD EXPECTED CS1
005640 012737 005646 001110             MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                                ;  SUBTEST LOOP

005646                          1$:
005646 012762 100000 000000             MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
005654 012762 000040 000026             MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
005662 013762 004244 000010             MOV     DRVCOD,RKCS2(R2) ;LOAD DRIVE NUMBER
005670 012762 000001 000000             MOV     #SELDRV,RKCS1(R2) ;LOAD SELECT COMMAND
005676 012700 000016                    MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
005702 012762 000440 000026 2$:         MOV     #DMD!MCLK,RKMR1(R2)
005710 012762 000040 000026             MOV     #DMD,RKMR1(R2)
005716 005300                           DEC     R0
005720 001370                           BNE     2$
005722 016237 000000 004120             MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
005730 016237 000034 004146             MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
005736 016237 000036 004150             MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
005744 013737 004244 004206             MOV     DRVCOD,E.MR2    ;LOAD EXPECTED MAINT REG. 2
005752 005037 004210                    CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
005756 023737 004160 004120             CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
005764 001405                           BEQ     3$              ;YES, CHECK MESSAGE A&B
005766 104002                           ERROR   2
005770 012762 100000 000000             MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
005776 000426                           BR      25$             ;CHECK IF LOOP ON ERROR

006000 013737 004146 001160 3$:         MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
006006 042737 177760 001160             BIC     #177760,$TMP0
006014 023737 004244 001160             CMP     DRVCOD,$TMP0    ;CHECK IF DRIVE SELECT BITS CORRECT
006022 001402                           BEQ     4$              ;YES, CHECK MESSAGES A&B
006024 104003                           ERROR   3               ;DRIVE SELECT BITS INCORRECT
```

```
1796  006026  000412                          BR      25$             ;CHECK IF LOOP ON ERROR
1797
1798  006030  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
1799  006036  001401                          BEQ     5$              ;YES, CHECK MESSAGE B
1800  006040  104004                          ERROR   4               ;MESSAGE A INCORRECT
1801  006042  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
1802  006050  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
1803  006052  104005                          ERROR   5               ;MESSAGE B INCORRECT
1804  006054  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
1805  006056  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE SELECT CODE
1806  006062  022737  000017  00424-          CMP     #17,DRVCOD      ;CHECK IF FINISHED
1807  006070  103266                          BHIS    1$              ;NO, TRY NEXT CONFIGURATION
1808
1809                                  ;;*****************************************************************
1810                                  ;*TEST 3        FORMAT BIT LOADING TO FOR DRIVE MESS.
1811                                  ;*
1812                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
1813                                  ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
1814                                  ;*      A SELECT COMMAND AND 24 SECTOR MODE FORMAT.  MAKE SURE
1815                                  ;*      CORRECT MESSAGE IS LOADED.
1816                                  ;*
1817                                  ;;*****************************************************************
1818  006072  000004                  TST3:   SCOPE
1819  006074  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
1820  006102  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
1821  006106  012737  053201  001300          MOV     #EM100,EM1N     ;LOAD ERROR MESSAGE
1822  006114  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
1823  006122  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
1824  006130  012762  010001  000000          MOV     #CFMT!SELDRV,RKCS1(R2)  ;LOAD CFMT!SELDRV INTO COMMAND AND STATUS REG.
1825  006136  012737  010001  004160          MOV     #CFMT!SELDRV,E.CS1      ;LOAD EXPECT CS1
1826  006144  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGES
1827  006150  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
1828  006156  012762  000040  000026          MOV     #DMD,RKMR1(R2)
1829  006164  005300                          DEC     R0
1830  006166  001370                          BNE     1$
1831  006170  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
1832  006176  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
1833  006204  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
1834  006212  012737  001000  004206          MOV     #S.FMT,E.MR2    ;LOAD EXPECTED MAINT REG. 2
1835  006220  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
1836  006224  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
1837  006232  001410                          BEQ     2$              ;YES, CHECK MESSAGE A&B
1838  006234  012737  060307  001302          MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
1839  006242  104001                          ERROR   1
1840  006244  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT TEST
1841  006252  000431                          BR      TST4            ;;GO ON TO NEXT TEST
1842
1843  006254  032737  001000  004146  2$:     BIT     #S.FMT,T.MR2    ;CHECK IF S.FMT SET IN MESSAGE A
1844  006262  001005                          BNE     3$              ;YES, CHECK MESSAGES A&B
1845  006264  012737  060153  001302          MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
1846  006272  104001                          ERROR   1
1847  006274  000420                          BR      TST4            ;;GO ON TO NEXT TEST
1848
1849  006276  023737  004206  004146  3$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
1850  006304  001404                          BEQ     4$              ;YES, CHECK MESSAGE B
1851  006306  012737  060231  001302          MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
```

```
                        ERROR   1
006316  023737  004210  004150  4$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
005324  001404                          BEQ     TST4            ;;YES, GO ON TO NEXT TEST
006326  012737  060260  001302          MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
006334  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.
                        ;*
                        ;*****************************************************************
006336  000004         TST4:   SCOPE
006340  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
006346  013702  001270          MOV     $BASE,R2        ;LOAD RK611 BASE
006352  005037  004250          CLR     HDCODE          ;CLEAR HEAD SELECT CODE
006356  012737  000001  004160          MOV     #SELDRV,E.CS1   ;LOAD EXPECTED CS1
006364  012737  006372  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                        ;  SUBTEST LOOP

006372                  1$:
006372  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
006400  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
006406  005046                          CLR     -(SP)           ;MAKE ROOM ON STACK
006410  113766  004250  000001          MOVB    HDCODE,1(SP)    ;LOAD HEAD ADDRESS
006416  012662  000006          MOV     (SP)+,RKDA(R2)
006422  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;LOAD SELECT COMMAND
006430  012700  000016          MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
006434  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
006442  012762  000040  000026          MOV     #DMD,RKMR1(R2)
006450  005300                          DEC     R0
006452  001370                          BNE     2$
006454  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMMAND AND STATUS REG. 1
006462  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
006470  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
006476  005037  004206          CLR     E.MR2
006502  113737  004250  004207          MOVB    HDCODE,E.MR2+1  ;GENERATE EXPECTED MAINT REG. 2
006510  006337  004206          ASL     E.MR2
006514  006337  004206          ASL     E.MR2
006520  006337  004206          ASL     E.MR2
006524  006337  004206          ASL     E.MR2
006530  005037  004210          CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
006534  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
006542  001405                          BEQ     3$              ;YES, CHECK MESSAGE A&B
006544  104006                          ERROR   6
006546  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
006554  000426                          BR      25$             ;CHECK IF LOOP ON ERROR

006556  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
006564  042737  103777  001160          BIC     #103777,$TMP0
006572  023737  004206  001160          CMP     E.MR2,$TMP0     ;CHECK IF HEAD SELECT BITS CORRECT
```

```
 1908  006600  001402                          BEQ     4$              ;YES, CHECK MESSAGES A&B
 1909  006602  104007                          ERROR   7               ;HEAD SELECT BITS INCORRECT
 1910  006604  000412                          BR      25$             ;CHECK IF LOOP ON ERROR
 1911
 1912  006606  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
 1913  006614  001401                          BEQ     5$              ;YES, CHECK MESSAGE B
 1914  006616  104010                          ERROR   10              ;MESSAGE A INCORRECT
 1915  006620  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
 1916  006626  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
 1917  006630  104011                          ERROR   11              ;MESSAGE B INCORRECT
 1918  006632  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
 1919  006634  005237  004250                  INC     HDCODE          ;INCREMENT HEAD SELECT CODE F
 1920  006640  022737  000007  004250          CMP     #7,HDCODE       ;CHECK IF FINISHED
 1921  006646  103251                          BHIS    1$              ;NO, TRY NEXT CONFIGURATION
 1922
 1923                                  ;;*****************************************************************
 1924                                  ;*TEST 5        MESSAGE SELECT BITS LOADING FOR DRIVE MESS.
 1925                                  ;*
 1926                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
 1927                                  ;*      DIAGNOSTIC MODE AND ZERO IN MESSAGE SELECT BITS.  LOAD
 1928                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A SELECT COMMAND.  CLOCK
 1929                                  ;*      IN MESSAGE A AND B INTO SHIFT REGISTER.   MAKE SURE
 1930                                  ;*      CORRECT MESSAGE IS LOADED.  REPEAT FOR MESSAGE SELECT = 1-17.
 1931                                  ;*
 1932                                  ;;*****************************************************************
 1933  006650  000004                  TST5:   SCOPE
 1934  006652  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 1935  006660  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 1936  006664  005037  004246                  CLR     MSGCOD          ;INITIALIZE MESSAGE SELECT
 1937  006670  012737  000001  004160          MOV     #SELDRV,E.CS1   ;LOAD EXPECTED CS1
 1938  006676  012737  006704  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
 1939                                                                  ;  SUBTEST LOOP
 1940
 1941  006704                          1$:
 1942  006704  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 1943  006712  013762  004246  000026          MOV     MSGCOD,RKMR1(R2) ;LOAD MESSAGE SELECT BITS
 1944  006720  052762  000040  000026          BIS     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
 1945  006726  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;LOAD SELECT COMMAND
 1946  006734  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IF DRIVE MESSAGE
 1947  006740  052762  000400  000026  2$:     BIS     #MCLK,RKMR1(R2)
 1948  006746  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
 1949  006754  005300                          DEC     R0
 1950  006756  001370                          BNE     2$
 1951  006760  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
 1952  006766  016237  000026  004144          MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
 1953  006774  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG. 2
 1954  007002  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
 1955  007010  013737  004246  004204          MOV     MSGCOD,E.MR1    ;LOAD EXPECTED MAINT REG. 1
 1956  007016  052737  002040  004204          BIS     #MEWD!DMD,E.MR1
 1957  007024  032737  020000  004144          BIT     #ECCW,T.MR1
 1958  007032  001403                          BEQ     10$
 1959  007034  052737  020000  004204          BIS     #ECCW,E.MR1
 1960  007042  005037  004206          10$:    CLR     E.MR2           ;LOAD EXPECTED MAINT REG. 2
 1961  007046  013737  004246  004210          MOV     MSGCOD,E.MR3    ;LOAD EXPECTED MAINT REG. 3
 1962  007054  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
 1963  007062  001405                          BEQ     3$              ;YES, CHECK MAINT REG. 1
```

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

                                3$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
                                        BEQ     4$              ;YES, CHECK MESSAGE A&B
                                        ERROR   13              ;MR1 INCORRECT
                                        MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
                                        BR      25$             ;CHECK IF LOOP ON ERROR

                                4$:     MOV     T.MR3,$TMP0     ;MASK BITS NOT UNDER TEST
                                        BIC     #177760,$TMP0
                                        CMP     MSGCOD,$TMP0    ;CHECK IF MESSAGE SELECT CODE CORRECT
                                        BEQ     5$              ;YES, CHECK MESSAGES A&B
                                        ERROR   14              ;MESSAGE SELECT CODE INCORRECT
                                        BR      25$

                                5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
                                        BEQ     6$              ;YES, CHECK MESSAGE B
                                        ERROR   15              ;MESSAGE A INCORRECT
                                6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
                                        BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
                                        ERROR   16              ;MESSAGE B INCORRECT
                                25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
                                        INC     MSGCOD          ;INCREMENT MESSAGE SELECT CODE
                                        CMP     #17,MSGCOD      ;CHECK IF FINISHED
                                        BHIS    1$              ;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.
                        ;*
                        ;**************************************************************
000212  000004         TST6:   SCOPE
000214  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
000222  013702  001270          MOV     $BASE,R2        ;LOAD RK611 BASE
000226  012737  053267  001300          MOV     #EM101,EMIN     ;LOAD ERROR MESSAGE
000234  012737  000005  004160          MOV     #CLEAR,E.CS1    ;LOAD EXPECTED COMMAND AND STATUS REG. 1
000242  012737  000400  004206          MOV     #S.CLR,E.MR2    ;LOAD EXPECTED MAINT. REG. 2
000250  012737  007256  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                                ;  SUBTEST LOOP

007256                          1$:
007256  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
007264  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
007272  013762  004160  000000          MOV     E.CS1,RKCS1(R2) ;LOAD CLEAR INTO COMMAND AND STATUS REG. 1
007300  012700  000016          MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
007304  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
007312  012762  000040  000026          MOV     #DMD,RKMR1(R2)
007320  005300          DEC     R0
007322  001370          BNE     2$
```

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 2020  007324  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
 2021  007332  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG. 2
 2022  007340  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
 2023  007346  005037  004210                  CLR     E.MR3           ;STORE EXPECTED MAINT REG. 3
 2024  007352  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
 2025  007360  001410                          BEQ     3$              ;YES, CHECK MESSAGE A&B
 2026  007362  012737  060307  001302          MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
 2027  007370  104001                          ERROR   1
 2028  007372  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
 2029  007400  000437                          BR      25$             ;CHECK IF LOOP ON ERROR
 2030
 2031  007402  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
 2032  007410  042737  176377  001160          BIC     #^C<S.FMT!S.CLR>,$TMP0
 2033  007416  023737  004206  001160          CMP     E.MR2,$TMP0     ;CHECK IF S.CLR AND FORMAT
 2034                                                                  ;   BITS IN MESSAGE CORRECT
 2035  007424  001405                          BEQ     4$              ;YES, CHECK MESSAGE A&B
 2036  007426  012737  060153  001302          MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
 2037  007434  104001                          ERROR   1
 2038  007436  000420                          BR      25$             ;CHECK IF LOOP ON ERROR
 2039
 2040  007440  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
 2041  007446  001404                          BEQ     5$              ;YES, CHECK MESSAGE B
 2042  007450  012737  060231  001302          MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
 2043  007456  104001                          ERROR   1
 2044  007460  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
 2045  007466  001404                          BEQ     25$             ;YES, CHECK IF LOOP ON EROR
 2046  007470  012737  060260  001302          MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
 2047  007476  104001                          ERROR   1
 2048  007500  104415          25$:            SCOP1                   ;CHECK IF LOOP ON ERROR
 2049  007502  032737  010000  004160          BIT     #CFMT,E.CS1     ;CHECK IF ISSUED IN 24 SECTOR FORMAT
 2050  007510  001007                          BNE     TST7            ;;YES, GO ON TO NEXT TEST
 2051  007512  052737  010000  004160          BIS     #CFMT,E.CS1     ;INDICATE COMMAND IN 24 SECTOR FORMAT
 2052  007520  052737  001000  004206          BIS     #S.FMT,E.MR2
 2053  007526  000653                          BR      1$              ;REISSUE IN 24 SECTOR FORMAT
 2054
 2055                                  ;;*****************************************************************
 2056                                  ;*TEST 7        UNLOAD COMMAND LOADING FOR DRIVE MESS.
 2057                                  ;*
 2058                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
 2059                                  ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
 2060                                  ;*      AN UNLOAD COMMAND.  CLOCK IN MESSAGES A AND B INTO SHIFT
 2061                                  ;*      REGISTERS.  MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.
 2062                                  ;*      REPEAT FOR 24 SECTOR FORMAT.
 2063                                  ;*
 2064                                  ;;*****************************************************************
 2065  007530  000004          TST7:   SCOPE
 2066  007532  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 2067  007540  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 2068  007544  012737  053336  001300          MOV     #EM102,EM1N     ;LOAD ERROR MESSAGE
 2069  007552  012737  000007  004160          MOV     #UNLOAD,E.CS1   ;LOAD EXPECTED COMMAND AND STATUS REG. 1
 2070  007560  012737  002000  004206          MOV     #S.UNLD,E.MR2   ;LOAD EXPECTED MAINT. REG. 2
 2071  007566  012737  007574  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
 2072                                                                  ;  SUBTEST LOOP
 2073
 2074  007574                  1$:
 2075  007574  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
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2076  007602  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
2077  007610  013762  004160  000000          MOV     E.CS1,RKCS1(R2) ;LOAD UNLOAD INTO COMMAND AND STATUS REG. 1
2078  007616  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2079  007622  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
2080  007630  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2081  007636  005300                          DEC     R0
2082  007640  001370                          BNE     2$
2083  007642  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2084  007650  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG. 2
2085  007656  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
2086  007664  005037  004210                  CLR     E.MR3           ;STORE EXPECTED MAINT REG. 3
2087  007670  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2088  007676  001410                          BEQ     3$              ;YES, CHECK MESSAGE A&B
2089  007700  012737  060307  001302          MOV     #EM2003,EMIN+2  ;LOAD ERROR MESSAGE
2090  007706  104001                          ERROR   1
2091  007710  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
2092  007716  000437                          BR      25$             ;CHECK IF LOOP ON ERROR
2093
2094  007720  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
2095  007726  042737  174777  001160          BIC     #^C<S.FMT!S.UNLD>,$TMP0
2096  007734  023737  004206  001160          CMP     E.MR2,$TMP0     ;CHECK IF S.UNLD AND FORMAT
2097                                                                  ;  BITS IN MESSAGE CORRECT
2098  007742  001405                          BEQ     4$              ;YES, CHECK MESSAGE A&B
2099  007744  012737  060153  001302          MOV     #EM2000,EMIN+2  ;LOAD ERROR MESSAGE
2100  007752  104001                          ERROR   1
2101  007754  000420                          BR      25$             ;CHECK IF LOOP ON ERROR
2102
2103  007756  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
2104  007764  001404                          BEQ     5$              ;YES, CHECK MESSAGE B
2105  007766  012737  060231  001302          MOV     #EM2001,EMIN+2  ;LOAD ERROR MESSAGE
2106  007774  104001                          ERROR   1
2107  007776  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
2108  010004  001404                          BEQ     25$             ;YES, CHECK IF LOOP ON EROR
2109  010006  012737  060260  001302          MOV     #EM2002,EMIN+2  ;LOAD ERROR MESSAGE
2110  010014  104001                          ERROR   1
2111  010016  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
2112  010020  032737  010000  004160          BIT     #CFMT,E.CS1     ;CHECK IF ISSUED IN 24 SECTOR FORMAT
2113  010026  001007                          BNE     TST10           ;;YES, GO ON TO NEXT TEST
2114  010030  052737  010000  004160          BIS     #CFMT,E.CS1     ;INDICATE COMMAND IN 24 SECTOR FORMAT
2115  010036  052737  001000  004206          BIS     #S.FMT,E.MR2
2116  010044  000653                          BR      1$              ;REISSUE IN 24 SECTOR FORMAT
2117
2118                                  ;;*****************************************************************
2119                                  ;*TEST 10       PACK ACKNOWLEDGE COMMAND LOADING FOR DRIVE MESS.
2120                                  ;*
2121                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2122                                  ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
2123                                  ;*      A PACK ACKNOWLEDGE.  CLOCK MESSAGES A AND B INTO SHIFT
2124                                  ;*      REGISTERS.  MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.
2125                                  ;*      REPEAT FOR 24 SECTOR FORMAT.
2126                                  ;*
2127                                  ;;*****************************************************************
2128  010046  000004                  TST10:  SCOPE
2129  010050  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2130  010056  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
2131  010062  012737  053400  001300          MOV     #EM103,EMIN     ;LOAD ERROR MESSAGE
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2132  010070  012737  000003  004160          MOV     #PACK,E.CS1     ;LOAD EXPECTED COMMAND AND STATUS REG. 1
2133  010076  012737  004000  004206          MOV     #S.PACK,E.MR2   ;LOAD EXPECTED MAINT. REG. 2
2134  010104  012737  010112  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
2135                                                                  ;  SUBTEST LOOP
2136
2137  010112                          1$:
2138  010112  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2139  010120  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
2140  010126  013762  004160  000000          MOV     E.CS1,RKCS1(R2) ;LOAD PACK INTO COMMAND AND STATUS REG. 1
2141  010134  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2142  010140  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
2143  010146  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2144  010154  005300                          DEC     R0
2145  010156  001370                          BNE     2$
2146  010160  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2147  010166  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG. 2
2148  010174  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
2149  010202  005037  004210                  CLR     E.MR3           ;STORE EXPECTED MAINT REG. 3
2150  010206  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2151  010214  001410                          BEQ     3$              ;YES, CHECK MESSAGE A&B
2152  010216  012737  060307  001302          MOV     #EM2003,EMIN+2  ;LOAD ERROR MESSAGE
2153  010224  104001                          ERROR   1
2154  010226  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
2155  010234  000437                          BR      25$             ;CHECK IF LOOP ON ERROR
2156
2157  010236  013737  004146  001160  3$:     MOV     T.MR2,$TMP0     ;MASK BITS NOT UNDER TEST
2158  010244  042737  172777  001160          BIC     #^C<S.FMT!S.PACK>,$TMP0
2159  010252  023737  004206  001160          CMP     E.MR2,$TMP0     ;CHECK IF S.PACK AND FORMAT
2160                                                                  ;  BITS IN MESSAGE CORRECT
2161  010260  001405                          BEQ     4$              ;YES, CHECK MESSAGE A&B
2162  010262  012737  060153  001302          MOV     #EM2000,EMIN+2  ;LOAD ERROR MESSAGE
2163  010270  104001                          ERROR   1
2164  010272  000420                          BR      25$             ;CHECK IF LOOP ON ERROR
2165
2166  010274  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
2167  010302  001404                          BEQ     5$              ;YES, CHECK MESSAGE B
2168  010304  012737  060231  001302          MOV     #EM2001,EMIN+2  ;LOAD ERROR MESSAGE
2169  010312  104001                          ERROR   1
2170  010314  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
2171  010322  001404                          BEQ     25$             ;YES, CHECK IF LOOP ON EROR
2172  010324  012737  060260  001302          MOV     #EM2002,EMIN+2  ;LOAD ERROR MESSAGE
2173  010332  104001                          ERROR   1
2174  010334  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
2175  010336  032737  010000  004160          BIT     #CFMT,E.CS1     ;CHECK IF ISSUED IN 24 SECTOR FORMAT
2176  010344  001007                          BNE     TST11           ;;YES, GO ON TO NEXT TEST
2177  010346  052737  010000  004160          BIS     #CFMT,E.CS1     ;INDICATE COMMAND IN 24 SECTOR FORMAT
2178  010354  052737  001000  004206          BIS     #S.FMT,E.MR2
2179  010362  000653                          BR      1$              ;REISSUE IN 24 SECTOR FORMAT
2180
2181                                  ;;*****************************************************************
2182                                  ;*TEST 11       RECALIBRATE COMMAND LOADING FOR DRIVE MESS.
2183                                  ;*
2184                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2185                                  ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
2186                                  ;*      A RECALIBRATE.  CLOCK MESSAGES A AND B INTO SHIFT REGISTERS.
2187                                  ;*      MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.
```

```
                                        ;*
                                        ;;*****************************************************************
010364  000004                  TST11:  SCOPE
010366  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
010374  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
010400  012737  053454  001300          MOV     #EM104,EM1N     ;LOAD ERROR MESSAGE
010406  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
010414  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
010422  012762  000013  000000          MOV     #RECAL,RKCS1(R2)        ;LOAD RECAL INTO COMMAND AND STATUS REG.  1
010430  012737  000013  004160          MOV     #RECAL,E.CS1    ;LOAD EXPECT CS1
010436  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGES
010442  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
010450  012762  000040  000026          MOV     #DMD,RKMR1(R2)
010456  005300                  DEC     R0
010460  001370                  BNE     1$
010462  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
010470  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
010476  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
010504  012737  000040  004206          MOV     #S.RECL,E.MR2   ;LOAD EXPECTED MAINT REG. 2
010512  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
010516  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
010524  001410                  BEQ     2$              ;YES, CHECK MESSAGE A&B
010526  012737  060307  001302          MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
010534  104001                  ERROR   1
010536  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT TEST
010544  000431                  BR      TST12           ;;GO ON TO NEXT TEST
                                        ;
010546  032737  000040  004146  2$:     BIT     #S.RECL,T.MR2   ;CHECK IF S.RECL SET IN MESSAGE A
010554  001005                  BNE     3$              ;YES, CHECK MESSAGES A&B
010556  012737  060153  001302          MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
010564  104001                  ERROR   1
010566  000420                  BR      TST12           ;;GO ON TO NEXT TEST
                                        ;
010570  023737  004206  004146  3$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A COPRECT
010576  001404                  BEQ     4$              ;YES, CHECK MESSAGE B
010600  012737  060231  001302          MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
010606  104001                  ERROR   1
010610  023737  004210  004150  4$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
010616  001404                  BEQ     TST12           ;;YES, GO ON TO NEXT TEST
010620  012737  060260  001302          MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
010626  104001                  ERROR   1
                                        ;
                                        ;;*****************************************************************
                                        ;*TEST 12       START SPINDLE COMMAND LOADING FOR DRIVE MESS.
                                        ;*
                                        ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
                                        ;*      DIAGNOSTIC MODE.  LOAD COMMAND AND STATUS REGISTER 1 WITH
                                        ;*      A START SPINDLE.  CLOCK MESSAGES A AND B INTO SHIFT REGISTERS.
                                        ;*      MAKE SURE SHIFT REGISTERS ARE LOADED CORRECTLY.
                                        ;*
                                        ;;*****************************************************************
010630  000004                  TST12:  SCOPE
010632  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
010640  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
010644  012737  053523  001300          MOV     #EM10$,EM1N     ;LOAD ERROR MESSAGE
010652  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
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2244  010660  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
2245  010666  012762  000011  000000          MOV     #SRTSPL,RKCS1(R2)       ;LOAD SRTSPL INTO COMMAND AND STATUS REG.  1
2246  010674  012737  000011  004160          MOV     #SRTSPL,E.CS1   ;LOAD EXPECT CS1
2247  010702  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGES
2248  010706  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
2249  010714  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2250  010722  005300                          DEC     R0
2251  010724  001370                          BNE     1$
2252  010726  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2253  010734  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2254  010742  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
2255  010750  012737  000100  004206          MOV     #S.STSP,E.MR2   ;LOAD EXPECTED MAINT REG. 2
2256  010756  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
2257  010762  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2258  010770  001410                          BEQ     2$              ;YES, CHECK MESSAGE A&B
2259  010772  012737  060307  001302          MOV     #EM2003,EM1N+2  ;LOAD ERROR MESSAGE
2260  011000  104001                          ERROR   1
2261  011002  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT TEST
2262  011010  000431                          BR      TST13           ;;GO ON TO NEXT TEST
2263
2264  011012  032737  000100  004146  2$:     BIT     #S.STSP,T.MR2   ;CHECK IF S.STSP SET IN MESSAGE A
2265  011020  001005                          BNE     3$              ;YES, CHECK MESSAGES A&B
2266  011022  012737  060153  001302          MOV     #EM2000,EM1N+2  ;LOAD ERROR MESSAGE
2267  011030  104001                          ERROR   1
2268  011032  000420                          BR      TST13           ;;GO ON TO NEXT TEST
2269
2270  011034  023737  004206  004146  3$:     CMP     E.MR2,T.MR2     ;CHECK IF DRIVE MESSAGE A CORRECT
2271  011042  001404                          BEQ     4$              ;YES, CHECK MESSAGE B
2272  011044  012737  060231  001302          MOV     #EM2001,EM1N+2  ;LOAD ERROR MESSAGE
2273  011052  104001                          ERROR   1
2274  011054  023737  004210  004150  4$:     CMP     E.MR3,T.MR3     ;CHECK IF DRIVE MESSAGE B CORRECT
2275  011062  001404                          BEQ     TST13           ;;YES, GO ON TO NEXT TEST
2276  011064  012737  060260  001302          MOV     #EM2002,EM1N+2  ;LOAD ERROR MESSAGE
2277  011072  104001                          ERROR   1
2278
2279                                  ;;*****************************************************************
2280                                  ;*TEST 13       SEEK AND CYLINDER ADD 0-777 LOADING FOR DRIVE MESS
2281                                  ;*
2282                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2283                                  ;*      DIAGNOSTIC MODE.  LOAD ZERO IN CYLINDER ADDRESS.  LOAD
2284                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A SEEK COMMAND.
2285                                  ;*      CLOCK IN MESSAGE A AND B INTO SHIFT REGISTER.  MAKE SURE
2286                                  ;*      CORRECT MESSAGE IS LOADED.  REPEAT FOR CYLINDER = 1-777.
2287                                  ;*
2288                                  ;;*****************************************************************
2289  011074  000004                  TST13:  SCOPE
2290  011076  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2291  011104  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
2292  011110  005037  004252                  CLR     CYLIN           ;INITIALIZE CYLINDER
2293  011114  012737  000017  004160          MOV     #SEEK,E.CS1     ;LOAD EXPECTED CS1
2294  011122  012737  011130  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
2295                                                                  ;  SUBTEST LOOP
2296
2297  011130                          1$:
2298  011130  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2299  011136  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
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2300  011144  013762  004252  000020          MOV     CYLIN,RKDCYL(R2) ;LOAD CYLINDER ADDRESS
2301  011152  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
2302  011160  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2303  011164  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
2304  011172  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2305  011200  005300                          DEC     R0
2306  011202  001370                          BNE     2$
2307  011204  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2308  011212  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2309  011220  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
2310  011226  012737  000020  004206          MOV     #S.SEEK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
2311  011234  013737  004252  004210          MOV     CYLIN,E.MR3     ;GENERATE EXPECTED MAINT REG. 3
2312  011242  006337  004210                  ASL     E.MR3
2313  011246  006337  004210                  ASL     E.MR3
2314  011252  006337  004210                  ASL     E.MR3
2315  011256  006337  004210                  ASL     E.MR3
2316  011262  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2317  011270  001405                          BEQ     3$              ;YES, CHECK MESSAGE A&B
2318  011272  104017                          ERROR   17
2319  011274  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
2320  011302  000434                          BR      25$             ;CHECK IF LOOP ON ERROR
2321
2322  011304  032737  000020  004146  3$:     BIT     #S.SEEK,T.MR2   ;CHECK IF SEEK COMMAND BIT SET
2323  011312  001002                          BNE     4$              ;YES, CHECK CYLINDER ADDRESS BITS
2324  011314  104020                          ERROR   20              ;SEEK BIT NOT SET
2325  011316  000426                          BR      25$             ;CHECK IF LOOP ON ERROR
2326
2327  011320  013737  004150  001160  4$:     MOV     T.MR3,$TMP0     ;MASK BITS NOT UNDER TEST
2328  011326  042737  140017  001160          BIC     #140017,$TMP0
2329  011334  023737  004210  001160          CMP     E.MR3,$TMP0     ;CHECK IF CYLINDER ADDRESS BITS CORRECT
2330  011342  001402                          BEQ     5$              ;YES, CHECK MESSAGES A&B
2331  011344  104021                          ERROR   21              ;CYLINDER ADDRESS BITS INCORRECT
2332  011346  000412                          BR      25$             ;CHECK IF LOOP ON ERROR
2333
2334  011350  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSSAGE A CORRECT
2335  011356  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
2336  011360  104022                          ERROR   22              ;MESSAGE A INCORRECT
2337  011362  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
2338  011370  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
2339  011372  104023                          ERROR   23              ;MESSAGE B INCORRECT
2340  011374  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
2341  011376  005237  004252                  INC     CYLIN           ;INCREMENT CYLINDER NUMBER
2342  011402  022737  000777  004252          CMP     #777,CYLIN      ;CHECK IF FINISHED
2343  011410  103247                          BHIS    1$              ;NO, TRY NEXT CONFIGURATION
2344
2345                                  ;;*****************************************************************
2346                                  ;*TEST 14       SEEK AND CYLINDER BIT 9 AND RK06 FOR DRIVE MESS.
2347                                  ;*
2348                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2349                                  ;*      DIAGNOSTIC MODE.  LOAD 1000 IN CYLINDER ADDRESS.  LOAD
2350                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A SEEK COMMAND.
2351                                  ;*      CLOCK IN MESSAGE A AND B INTO SHIFT REGISTERS.  MAKE
2352                                  ;*      SURE CYLINDER BIT 9 IN MESSAGE IN RESET.  REPEAT FOR
2353                                  ;*      CYLINDER = 1400.
2354                                  ;*
2355                                  ;;*****************************************************************
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2356  011412  000004                        TST14:  SLOPE
2357  011414  012737  000144  001200                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2358  011422  013702  001270                        MOV     $BASE,R2        ;LOAD RK611 BASE
2359  011426  012737  001000  004252                MOV     #1000,CYLIN     ;INITIALIZE CYLINDER
2360  011434  005037  004210                        CLR     E.MR3           ;LOAD EXPECTED
2361  011440  012737  000017  004160                MOV     #SEEK,E.CS1     ;LOAD EXPECTED CS1
2362  011446  012737  011454  001110                MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
2363                                                                        ;  SUBTEST LOOP
2364
2365  011454                                1$:
2366  011454  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2367  011462  012762  000040  000026                MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
2368  011470  013762  004252  000020                MOV     CYLIN,RKDCYL(R2) ;LOAD CYLINDER ADDRESS
2369  011476  012762  000017  000000                MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
2370  011504  012700  000016                        MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2371  011510  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
2372  011516  012762  000040  000026                MOV     #DMD,RKMR1(R2)
2373  011524  005300                                DEC     R0
2374  011526  001370                                BNE     2$
2375  011530  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2376  011536  016237  000034  004146                MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG.2
2377  011544  016237  000036  004150                MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG.3
2378  011552  012737  000020  004206                MOV     #S.SEEK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
2379  011560  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2380  011566  001405                                BEQ     3$                      ;YES, CHECK MESSAGE A&B
2381  011570  104017                                ERROR   17
2382  011572  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGURATION
2383  011600  000434                                BR      25$             ;CHECK IF LOOP ON ERROR
2384
2385  011602  032737  000020  004146  3$:     BIT     #S.SEEK,T.MR2   ;CHECK IF SEEK COMMAND BIT SEEK
2386  011610  001002                                BNE     4$              ;YES, CHECK CYLINDER ADDRESS BITS
2387  011612  104020                                ERROR   20              ;SEEK BIT NOT SET
2388  011614  000426                                BR      25$             ;CHECK IF LOOP ON ERROR
2389
2390  011616  013737  004150  001160  4$:     MOV     T.MR3,$TMP0     ;MASK BITS NOT UNDER TEST
2391  011624  042737  140017  001160                BIC     #140017,$TMP0
2392  011632  023737  004210  001160                CMP     E.MR3,$TMP0     ;CHECK IF CYLINDER ADDRESS BITS CORRECT
2393  011640  001402                                BEQ     5$              ;YES, CHECK MESSAGES A&B
2394  011642  104021                                ERROR   21              ;CYLINDER ADDRESS BITS INCORRECT
2395  011644  000412                                BR      25$             ;CHECK IF LOOP ON ERROR
2396
2397  011646  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
2398  011654  001401                                BEQ     6$              ;YES, CHECK MESSAGE B
2399  011656  104022                                ERROR   22              ;MESSAGE B INCORRECT
2400  011660  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE IS CORRECT
2401  011666  001401                                BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
2402  011670  104023                                ERROR   23              ;MESSAGE INCORRECT
2403  011672  104415                        25$:    SCOPI                   ;CHECK IF LOOP ON ERROR
2404  011674  022737  001400  004252                CMP     #1400,CYLIN     ;CHECK IF CYLINDER 1400
2405  011702  001007                                BNE     TST15           ;;YES, GO ON TO NEXT TEST
2406  011704  012737  001400  004252                MOV     #1400,CYLIN     ;SET CYLINDER=1400
2407  011712  012737  010000  004210                MOV     #10000,E.MR3    ;LOAD EXPECTED CONFIGUR
2408  011720  000655                                BR      1$              ;TRY NEXT CONFIGURATION
2409
2410                                        ;;*****************************************************************
2411                                        ;*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.
                                        ;*
                                        ;**************************************************************
011722  000004                  T5T15:  SCOPE
011724  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
011732  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
011736  005037  004252                  CLR     CYLIN           ;INITIALIZE CYLINDER
011742  012737  002017  004160          MOV     #CDT!SEEK,E.CS1 ;LOAD EXPECTED CS1
011750  012737  011756  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                                ;  SUBTEST LOOP
011756                          1$:
011756  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
011764  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
011772  013762  004252  000020          MOV     CYLIN,RKDCYL(R2) ;LOAD CYLINDER ADDRESS
012000  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2) ;ISSUE SEEK WITH CDT SET
012006  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
012012  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
012020  012762  000040  000026          MOV     #DMD,RKMR1(R2)
012026  005300                          DEC     R0
012030  001370                          BNE     2$
012032  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
012040  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
012046  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
012054  012737  000020  004206          MOV     #S.SEEK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
012062  013737  004252  004210          MOV     CYLIN,E.MR3     ;GENERATE EXPECTED MAINT REG. 3
012070  006337  004210                  ASL     E.MR3
012074  006337  004210                  ASL     E.MR3
012100  006337  004210                  ASL     E.MR3
012104  006337  004210                  ASL     E.MR3
012110  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
012116  001405                          BEQ     3$              ;YES, CHECK MESSAGE A&B
012120  104024                          ERROR   24
012122  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAN UP FOR NEXT CONFIGRURATION
012130  000434                          BR      25$             ;CHECK IF LOOP ON ERROR

012132  032737  000020  004146  3$:     BIT     #S.SEEK,T.MR2   ;CHECK IF SEEK COMMAND BIT SET
012140  001002                          BNE     4$              ;YES, CHECK CYLINDER ADDRESS BITS
012142  104025                          ERROR   25              ;SEEK BIT NOT SEEK
012144  000426                          BR      25$             ;CHECK IF LOOP ON ERROR

012146  013737  004150  001160  4$:     MOV     T.MR3,$TMP0     ;MASK BITS NOT UNDER TEST
012154  042737  140017  001160          BIC     #140017,$TMP0
012162  023737  004210  001160          CMP     E.MR3,$TMP0     ;CHECK IF CYLINDER ADDRESS BITS CORRECT
012170  001402                          BEQ     5$              ;YES, CHECK MESSAGES A&B
012172  104026                          ERROR   26              ;CYLINDER ADDRESS BIT INCORRECT
012174  000412                          BR      25$             ;CHECK IF LOOP ON ERROR

012176  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
012204  001401                          BEQ     6$              ;YES, CHECK M MESSAGE B
012206  104027                          ERROR   27
```

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2468  012210  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B
2469  012216  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
2470  012220  104030                          ERROR   30              ;MESSAGE B INCORRECT
2471  012222  104415                  25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
2472  012224  005737  004252                  TST     CYLIN           ;CHECK IF ZERO
2473  012230  001003                          BNE     26$             ;NO, INCREMENT CYLINDER
2474  012232  012737  000776  004252          MOV     #776,CYLIN      ;NEXT CYLINDER=777
2475  012240  005237  004252          26$:    INC     CYLIN           ;INCREMENT CYLINDER NUMBER
2476  012244  022737  001777  004252          CMP     #1777,CYLIN     ;CHECK IF FINISHED
2477  012252  103241                          BHIS    1$              ;NO, TRY NEXT CONFIGURATION
2478
2479                                  ;;*****************************************************************
2480                                  ;*TEST 16       OFFSET COMMAND LOADING FOR DRIVE MESS.
2481                                  ;*
2482                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2483                                  ;*      DIAGNOSTIC MODE.  LOAD OFFSET REGISTER WITH 0.  LOAD
2484                                  ;*      COMMAND AND STATUS REGISTER 1 WITH AN OFFSET.  CLOCK
2485                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE SHIFT
2486                                  ;*      REGISTERS ARE LOADED CORRECTLY.  REPEAT FOR OFFSET
2487                                  ;*      REGISTER = 1-377.
2488                                  ;*
2489                                  ;;*****************************************************************
2490  012254  000004                  TST16:  SCOPE
2491  012256  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2492  012264  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
2493  012270  005037  004254                  CLR     OFFVAL          ;INITIALIZE OFFSET VALUE
2494  012274  012737  000015  004160          MOV     #OFFSET,E.CS1   ;LOAD EXPECTED CS1
2495  012302  005037  004206                  CLR     E.MR2           ;LOAD EXPECT MAINT REG 2
2496  012306  012737  012314  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
2497                                                                  ;  SUBTEST LOOP
2498
2499  012314                          1$:
2500  012314  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2501  012322  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
2502  012330  012762  004254  000016          MOV     OFFVAL,RKASOF(R2);LOAD OFFSET VALUE
2503  012336  012762  000015  000000          MOV     #OFFSET,RKCS1(R2);ISSUE OFFSET
2504  012344  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2505  012350  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
2506  012356  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2507  012364  005300                          DEC     R0
2508  012366  001370                          BNE     2$
2509  012370  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2510  012376  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2511  012404  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
2512  012412  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 2
2513  012416  013737  004254  004210          MOV     OFFVAL,E.MR3    ;GENERATE EXPECTED MR3
2514  012424  005137  004210                  COM     E.MR3
2515  012430  042737  177700  004210          BIC     #177700,E.MR3
2516  012436  006337  004210                  ASL     E.MR3
2517  012442  006337  004210                  ASL     E.MR3
2518  012446  006337  004210                  ASL     E.MR3
2519  012452  006337  004210                  ASL     E.MR3
2520  012456  052737  014000  004210          BIS     #14000,E.MR3
2521  012464  032737  000200  004254          BIT     #BIT7,OFFVAL    ;DETERMINE SIGN
2522  012472  001003                          BNE     10$
2523  012474  052737  002000  004210          BIS     #BIT10,E.MR3
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2524  012502  023737  004160  004120  10$:    CMP     E.CS1,T.CS1      ;CHECK IF CS1 CORRECT
2525  012510  001405                          BEQ     4$               ;YES, CHECK MESSAGE A&B
2526  012512  104031                          ERROR   31
2527  012514  012762  100000  000000          MOV     #CCLR,RKCS1(R2)  ;CLEAN UP FOR NEXT CONFIGURATION
2528  012522  000426                          BR      25$              ;CHECK IF LOOP ON ERROR
2529
2530  012524  013737  004150  001160  4$:     MOV     T.MR3,$TMP0      ;MASK BITS NOT UNDER TEST
2531  012532  042737  140017  001160          BIC     #140017,$TMP0
2532  012540  023737  004210  001160          CMP     E.MR3,$TMP0      ;CHECK IF OFFSET VALUE CORRECT
2533  012546  001402                          BEQ     5$               ;YES, CHECK MESSAGES A&B
2534  012550  104032                          ERROR   32               ;OFFSET VALUE INCORRECT
2535  012552  000412                          BR      25$              ;CHECK IF LOOP ON ERROR
2536
2537  012554  023737  004206  004146  5$:     CMP     E.MR2,T.MR2      ;CHECK IF MESSAGE A CORRECT
2538  012562  001401                          BEQ     6$               ;YES, CHECK MESSAGE B
2539  012564  104033                          ERROR   33               ;MESSAGE A INCORRECT
2540  012566  023737  004210  004150  6$:     CMP     E.MR3,T.MR3      ;CHECK IF MESSAGE B CORRECT
2541  012574  001401                          BEQ     25$              ;YES, CHECK IF LOOP ON ERROR
2542  012576  104034                          ERROR   34               ;MESSAGE B INCORRECT
2543  012600  104415                  25$:    SCOP1                    ;CHECK IF LOOP ON ERROR
2544  012602  005237  004254                  INC     OFFVAL           ;INCREMENT OFFSET VALUE
2545  012606  022737  000377  004254          CMP     #377,OFFVAL      ;CHECK IF FINISHED
2546  012614  103237                          BHIS    1$               ;NO, TRY NEXT CONFIGURATION
2547
2548                                  ;;*****************************************************************
2549                                  ;*TEST 17       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 1)
2550                                  ;*
2551                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2552                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
2553                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
2554                                  ;*      AND STATUS REGISTER 1 WITH A SELECT.  CLOCK
2555                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
2556                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
2557                                  ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
2558                                  ;*
2559                                  ;*****************************************************************
2560  012616  000004                  TST17:  SCOPE
2561  012620  012737  000144  001200          MOV     #100.,$TIMES     ;;DO 100. ITERATIONS
2562  012626  013702  001270                  MOV     $BASE,R2         ;LOAD RK611 BASE
2563  012632  012737  001777  004252          MOV     #1777,CYLIN      ;LOAD CYLINDER VALUE
2564  012640  012737  000052  004254          MOV     #52,OFFVAL       ;LOAD OFFSET VALUE
2565  012646  012737  000001  004160          MOV     #SELDRV,E.CS1    ;LOAD EXPECTED CS1
2566  012654  012762  100000  000000          MOV     #CCLR,RKCS1(R2)  ;CLEAR RK611
2567  012662  012762  000040  000026          MOV     #DMD,RKMR1(R2)   ;PUT RK611 IN MAINTENANCE MODE
2568  012670  012762  001777  000020          MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
2569  012676  012762  000052  000016          MOV     #52,RKASOF(R2)  ;LOAD OFFSET VALUE
2570  012704  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;ISSUE SELDRV
2571  012712  012700  000016                  MOV     #3*4+2,R0        ;CLOCK IN DRIVE MESSAGE
2572  012716  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
2573  012724  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2574  012732  005300                          DEC     R0
2575  012734  001370                          BNE     1$
2576  012736  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2577  012744  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2578  012752  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
2579  012760  012737  000000  004206          MOV     #0,E.MR2         ;LOAD EXPECTED MAINT REG. 2
```

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2580  012766  005037  004210                    CLR     E.MR3             ;LOAD EXPECTED MAINTENANCE REG. 3
2581  012772  023737  004160  004120            CMP     E.CS1,T.CS1       ;CHECK IF CS1 CORRECT
2582  013000  001405                           BEQ     2$                ;YES, CHECK MESSAGES A&B
2583  013002  104035                           ERROR   35
2584  013004  012762  100000  000000           MOV     #CCLR,RKCS1(R2)   ;CLEAR CONTROLLER FOR NEXT TEST
2585  013012  000423                           BR      TST20             ;;GO ON TO NEXT TEST
2586
2587  013014                          2$:
2588  013014  013737  004150  001160           MOV     T.MR3,$TMP0       ;MASK OUT BITS NOT UNDER TEST
2589  013022  042737  140017  001160           BIC     #140017,$TMP0
2590  013030  001402                           BEQ     4$                ;CHECK IF CYLINDER ADDRESS ZERO
2591  013032  104037                           ERROR   37                ;CYLINDER ADDRESS BITS INCORRECT
2592  013034  000412                           BR      TST20             ;;GO ON TO NEXT TEST
2593
2594  013036  023737  004206  004146  4$:      CMP     E.MR2,T.MR2       ;CHECK IF MESSAGE A CORRECT
2595  013044  001401                           BEQ     5$                ;YES, CHECK MESSAGE B
2596  013046  104040                           ERROR   40                ;MESS A INCORRECT
2597  013050  023737  004210  004150  5$:      CMP     E.MR3,T.MR3       ;CHECK IF MESSAGE B CORRECT
2598  013056  001401                           BEQ     TST20             ;;YES, GO ON TO NEXT TEST
2599  013060  104041                           ERROR   41                ;MESS B INCORRECT
2600
2601                                  ;;*****************************************************************
2602                                  ;*TEST 20       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 2)
2603                                  ;*
2604                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2605                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
2606                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
2607                                  ;*      AND STATUS REGISTER 1 WITH A PACK ACKNOWLEDGE.  CLOCK
2608                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
2609                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
2610                                  ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
2611                                  ;*
2612                                  ;;*****************************************************************
2613  013062  000004                  TST20:  SCOPE
2614  013064  012737  000144  001200           MOV     #100.,$TIMES      ;;DO 100. ITERATIONS
2615  013072  013702  001270                   MOV     $BASE,R2          ;LOAD RK611 BASE
2616  013076  012737  001777  004252           MOV     #1777,CYLIN       ;LOAD CYLINDER VALUE
2617  013104  012737  000052  004254           MOV     #52,OFFVAL        ;LOAD OFFSET VALUE
2618  013112  012737  000003  004160           MOV     #PACK,E.CS1       ;LOAD EXPECTED CS1
2619  013120  012762  100000  000000           MOV     #CCLR,RKCS1(R2)   ;CLEAR RK611
2620  013126  012762  000040  000026           MOV     #DMD,RKMR1(R2)    ;PUT RK611 IN MAINTENANCE MODE
2621  013134  012762  001777  000020           MOV     #1777,RKDCYL(R2)  ;LOAD CYLINDER VALUE
2622  013142  012762  000052  000016           MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
2623  013150  012762  000003  000000           MOV     #PACK,RKCS1(R2)   ;ISSUE PACK
2624  013156  012700  000016                   MOV     #3*4+2,R0         ;CLOCK IN DRIVE MESSAGE
2625  013162  012762  000440  000026  1$:      MOV     #DMD!MCLK,RKMR1(R2)
2626  013170  012762  000040  000026           MOV     #DMD,RKMR1(R2)
2627  013176  005300                           DEC     R0
2628  013200  001370                           BNE     1$
2629  013202  016237  000000  004120           MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2630  013210  016237  000034  004146           MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2631  013216  016237  000036  004150           MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
2632  013224  012737  004000  004206           MOV     #S.PACK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
2633  013232  005037  004210                   CLR     E.MR3             ;LOAD EXPECTED MAINTENANCE REG. 3
2634  013236  023737  004160  004120           CMP     E.CS1,T.CS1       ;CHECK IF CS1 CORRECT
2635  013244  001405                           BEQ     2$                ;YES, CHECK MESSAGES A&B
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2636  013246  104035                          ERROR   35
2637  013250  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
2638  013256  000431                          BR      TST21           ;;GO ON TO NEXT TEST
2639
2640  013260                          2$:
2641  013260  032737  004000  004146          BIT     #S.PACK,T.MR2   ;CHECK IF PACK COMMAND
2642                                                                  ;  BIT SET
2643  013266  001002                          BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
2644  013270  104036                          ERROR   36               ;S.PACK BIT NOT SET
2645  013272  000423                          BR      TST21           ;;GO ON TO NEXT TEST
2646
2647  013274                          3$:
2648  013274  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
2649  013302  042737  140017  001160          BIC     #140017,$TMP0
2650  013310  001402                          BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
2651  013312  104037                          ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
2652  013314  000412                          BR      TST21           ;;GO ON TO NEXT TEST
2653
2654  013316  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
2655  013324  001401                          BEQ     5$              ;YES, CHECK MESSAGE B
2656  013326  104040                          ERROR   40              ;MESS A INCORRECT
2657  013330  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
2658  013336  001401                          BEQ     TST21           ;;YES, GO ON TO NEXT TEST
2659  013340  104041                          ERROR   41              ;MESS B INCORRECT
2660
2661                                  ;;******************************************************************
2662                                  ;*TEST 21       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 3)
2663                                  ;*
2664                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2665                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
2666                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
2667                                  ;*      AND STATUS REGISTER 1 WITH A CLEAR DRIVE.  CLOCK
2668                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
2669                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
2670                                  ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
2671                                  ;*
2672                                  ;******************************************************************
2673  013342  000004                  TST21:  SCOPE
2674  013344  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2675  013352  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
2676  013356  012737  001777  004252          MOV     #1777,CYLIN     ;LOAD CYLINDER VALUE
2677  013364  012737  000052  004254          MOV     #52,OFFVAL      ;LOAD OFFSET VALUE
2678  013372  012737  000005  004160          MOV     #CLEAR,E.CS1    ;LOAD EXPECTED CS1
2679  013400  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2680  013406  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
2681  013414  012762  001777  000020          MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
2682  013422  012762  000052  000016          MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
2683  013430  012762  000005  000000          MOV     #CLEAR,RKCS1(R2) ;ISSUE CLEAR
2684  013436  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2685  013442  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
2686  013450  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2687  013456  005300                          DEC     R0
2688  013460  001370                          BNE     1$
2689  013462  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2690  013470  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2691  013476  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
```

```
 2692  013504  012737  000400  004206          MOV     #S.CLR,E.MR2    ;LOAD EXPECTED MAINT REG. 2
 2693  013512  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINTENANCE REG. 3
 2694  013516  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
 2695  013524  001405                          BEQ     2$              ;YES, CHECK MESSAGES A&B
 2696  013526  104035                          ERROR   35
 2697  013530  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
 2698  013536  000431                          BR      TST22           ;;GO ON TO NEXT TEST
 2699
 2700  013540                          2$:
 2701  013540  032737  000400  004146          BIT     #S.CLR,T.MR2    ;CHECK IF CLEAR COMMAND
 2702                                                                  ;   BIT SET
 2703  013546  001002                          BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
 2704  013550  104036                          ERROR   36               ;S.CLR BIT NOT SET
 2705  013552  000423                          BR      TST22           ;;GO ON TO NEXT TEST
 2706
 2707  013554                          3$:
 2708  013554  013737  004150  001160          MOV     T.MR3,$TMPO     ;MASK OUT BITS NOT UNDER TEST
 2709  013562  042737  140017  001160          BIC     #140017,$TMPO
 2710  013570  001402                          BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
 2711  013572  104037                          ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
 2712  013574  000412                          BR      TST22           ;;GO ON TO NEXT TEST
 2713
 2714  013576  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
 2715  013604  001401                          BEQ     5$              ;YES, CHECK MESSAGE B
 2716  013606  104040                          ERROR   40              ;MESS A INCORRECT
 2717  013610  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
 2718  013616  001401                          BEQ     TST22           ;;YES, GO ON TO NEXT TEST
 2719  013620  104041                          ERROR   41              ;MESS B INCORRECT
 2720
 2721                                  ;;*****************************************************************
 2722                                  ;*TEST 22       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 4)
 2723                                  ;*
 2724                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
 2725                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
 2726                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
 2727                                  ;*      AND STATUS REGISTER 1 WITH AN UNLOAD.  CLOCK
 2728                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
 2729                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
 2730                                  ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
 2731                                  ;*
 2732                                  ;*****************************************************************
 2733  013622  000004                  TST22:  SCOPE
 2734  013624  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 2735  013632  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 2736  013636  012737  001777  004252          MOV     #1777,CYLIN     ;LOAD CYLINDER VALUE
 2737  013644  012737  000052  004254          MOV     #52,OFFVAL      ;LOAD OFFSET VALUE
 2738  013652  012737  000007  004160          MOV     #UNLOAD,E.CS1   ;LOAD EXPECTED CS1
 2739  013660  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 2740  013666  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 2741  013674  012762  001777  000020          MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
 2742  013702  012762  000052  000016          MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
 2743  013710  012762  000007  000000          MOV     #UNLOAD,RKCS1(R2) ;ISSUE UNLOAD
 2744  013716  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
 2745  013722  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 2746  013730  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 2747  013736  005300                          DEC     R0
```

```
2748  013740  001370                          BNE     1$
2749  013742  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2750  013750  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2751  013756  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
2752  013764  012737  002000  004206          MOV     #S.UNLD,E.MR2   ;LOAD EXPECTED MAINT REG. 2
2753  013772  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINTENANCE REG. 3
2754  013776  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2755  014004  001405                          BEQ     2$              ;YES, CHECK MESSAGES A&B
2756  014006  104035                          ERROR   35
2757  014010  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
2758  014016  000431                          BR      TST23           ;;GO ON TO NEXT TEST
2759
2760  014020                          2$:
2761  014020  032737  002000  004146          BIT     #S.UNLD,T.MR2   ;CHECK IF UNLOAD COMMAND
2762                                                                  ;  BIT SET
2763  014026  001002                          BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
2764  014030  104036                          ERROR   36              ;S.UNLD BIT NOT SET
2765  014032  000423                          BR      TST23           ;;GO ON TO NEXT TEST
2766
2767  014034                          3$:
2768  014034  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
2769  014042  042737  140017  001160          BIC     #140017,$TMP0
2770  014050  001402                          BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
2771  014052  104037                          ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
2772  014054  000412                          BR      TST23           ;;GO ON TO NEXT TEST
2773
2774  014056  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
2775  014064  001401                          BEQ     5$              ;YES, CHECK MESSAGE B
2776  014066  104040                          ERROR   40              ;MESS A INCORRECT
2777  014070  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
2778  014076  001401                          BEQ     TST23           ;;YES, GO ON TO NEXT TEST
2779  014100  104041                          ERROR   41              ;MESS B INCORRECT
2780
2781                                  ;;*****************************************************************
2782                                  ;*TEST 23       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 5)
2783                                  ;*
2784                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2785                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
2786                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
2787                                  ;*      AND STATUS REGISTER 1 WITH A START SPINDLE.  CLOCK
2788                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
2789                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
2790                                  ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
2791                                  ;*
2792                                  ;;*****************************************************************
2793  014102  000004                  TST23:  SCOPE
2794  014104  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2795  014112  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
2796  014116  012737  001777  004252          MOV     #1777,CYLIN     ;LOAD CYLINDER VALUE
2797  014124  012737  000052  004254          MOV     #52,OFFVAL      ;LOAD OFFSET VALUE
2798  014132  012737  000011  004160          MOV     #SRTSPL,E.CS1   ;LOAD EXPECTED CS1
2799  014140  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2800  014146  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
2801  014154  012762  001777  000020          MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
2802  014162  012762  000052  000016          MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
2803  014170  012762  000011  000000          MOV     #SRTSPL,RKCS1(R2) ;ISSUE SRTSPL
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2804  014176  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2805  014202  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
2806  014210  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2807  014216  005300                          DEC     R0
2808  014220  001370                          BNE     1$
2809  014222  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2810  014230  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2811  014236  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
2812  014244  012737  000100  004206          MOV     #S.STSP,E.MR2   ;LOAD EXPECTED MAINT REG. 2
2813  014252  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINTENANCE REG. 3
2814  014256  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2815  014264  001405                          BEQ     2$              ;YES, CHECK MESSAGES A&B
2816  014266  104035                          ERROR   35
2817  014270  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
2818  014276  000431                          BR      TST24           ;;GO ON TO NEXT TEST
2819
2820  014300                          2$:
2821  014300  032737  000100  004146          BIT     #S.STSP,T.MR2   ;CHECK IF SRTSPL COMMAND
2822                                                                  ;  BIT SET
2823  014306  001002                          BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
2824  014310  104036                          ERROR   36              ;S.STSP BIT NOT SET
2825  014312  000423                          BR      TST24           ;;GO ON TO NEXT TEST
2826
2827  014314                          3$:
2828  014314  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
2829  014322  042737  140017  001160          BIC     #140017,$TMP0
2830  014330  001402                          BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
2831  014332  104037                          ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
2832  014334  000412                          BR      TST24           ;;GO ON TO NEXT TEST
2833
2834  014336  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
2835  014344  001401                          BEQ     5$              ;YES, CHECK MESSAGE B
2836  014346  104040                          ERROR   40              ;MESS A INCORRECT
2837  014350  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
2838  014356  001401                          BEQ     TST24           ;;YES, GO ON TO NEXT TEST
2839  014360  104041                          ERROR   41              ;MESS B INCORRECT
2840
2841                                  ;;*****************************************************************
2842                                  ;*TEST 24       CYLINDER ADDRESS LOADING OF DRIVE MESS (PART 6)
2843                                  ;*
2844                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2845                                  ;*      DIAGNOSTIC MODE.  LOAD CYLINDER ADDRESS REGISTER
2846                                  ;*      WITH 777.  LOAD THE OFFSET REG TO 52.  LOAD COMMAND
2847                                  ;*      AND STATUS REGISTER 1 WITH A RECALIBRATE.  CLOCK
2848                                  ;*      MESSAGES A AND B INTO SHIFT REGISTERS.  MAKE SURE
2849                                  ;*      SHIFT REGISTERS ARE LOADED CORRECTLY AND THE CYLINDER
2850                                  ;*      ADDRESS FIELD IS ZERO IN DRIVE MESSAGE.
2851                                  ;*
2852                                  ;*****************************************************************
2853  014362  000004                  TST24:  SCOPE
2854  014364  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2855  014372  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
2856  014376  012737  001777  004252          MOV     #1777,CYLIN     ;LOAD CYLINDER VALUE
2857  014404  012737  000052  004254          MOV     #52,OFFVAL      ;LOAD OFFSET VALUE
2858  014412  012737  000013  004160          MOV     #RECAL,E.CS1    ;LOAD EXPECTED CS1
2859  014420  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
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2860  014426  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
2861  014434  012762  001777  000020          MOV     #1777,RKDCYL(R2) ;LOAD CYLINDER VALUE
2862  014442  012762  000052  000016          MOV     #52,RKASOF(R2) ;LOAD OFFSET VALUE
2863  014450  012762  000013  000000          MOV     #RECAL,RKCS1(R2) ;ISSUE RECAL
2864  014456  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2865  014462  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
2866  014470  012762  000040  000026          MOV     #DMD,RKMR1(R2)
2867  014476  005300                          DEC     R0
2868  014500  001370                          BNE     1$
2869  014502  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2870  014510  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG. 2
2871  014516  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG. 3
2872  014524  012737  000040  004206          MOV     #S.RECL,E.MR2   ;LOAD EXPECTED MAINT REG. 2
2873     532  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINTENANCE REG. 3
2874  ..+536  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2875  014544  001405                          BEQ     2$              ;YES, CHECK MESSAGES A&B
2876  014546  104035                          ERROR   35
2877  014550  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR CONTROLLER FOR NEXT TEST
2878  014556  000431                          BR      TST25           ;;GO ON TO NEXT TEST
2879
2880  014560                          2$:
2881  014560  032737  000040  004146          BIT     #S.RECL,T.MR2   ;CHECK IF RECAL COMMAND
2882                                                                  ;  BIT SET
2883  014566  001002                          BNE     3$              ;YES, CHECK CYLINDER ADDRESS BITS
2884  014570  104036                          ERROR   36               ;S.RECL BIT NOT SET
2885  014572  000423                          BR      TST25           ;;GO ON TO NEXT TEST
2886
2887  014574                          3$:
2888  014574  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
2889  014602  042737  140017  001160          BIC     #140017,$TMP0
2890  014610  001402                          BEQ     4$              ;CHECK IF CYLINDER ADDRESS ZERO
2891  014612  104037                          ERROR   37              ;CYLINDER ADDRESS BITS INCORRECT
2892  014614  000412                          BR      TST25           ;;GO ON TO NEXT TEST
2893
2894  014616  023737  004206  004146  4$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
2895  014624  001401                          BEQ     5$              ;YES, CHECK MESSAGE B
2896  014626  104040                          ERROR   40              ;MESS A INCORRECT
2897  014630  023737  004210  004150  5$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
2898  014636  001401                          BEQ     TST25           ;;YES, GO ON TO NEXT TEST
2899  014640  104041                          ERROR   41              ;MESS B INCORRECT
2900
2901                                  ;;*****************************************************************
2902                                  ;*TEST 25       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 1)
2903                                  ;*
2904                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
2905                                  ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
2906                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A PACK ACKNOWLEDGE.
2907                                  ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
2908                                  ;*      MESSAGE SELECT BITS ARE CLEARED.
2909                                  ;*
2910                                  ;;*****************************************************************
2911  014642  000004                  TST25:  SCOPE
2912  014644  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
2913  014652  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
2914  014656  012737  000017  004246          MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
2915  014664  012737  000003  004160          MOV     #PACK,E.CS1     ;LOAD EXPECTED CS1
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2916  014672  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
2917  014700  012762  000057  000026          MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
2918                                                                    ;  SELECT MESSAGE 17
2919  014706  012762  000003  000000          MOV     #PACK,RKCS1(R2) ;ISSUE PACK
2920  014714  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
2921  014720  052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
2922  014726  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
2923  014734  005300                          DEC     R0
2924  014736  001370                          BNE     1$
2925  014740  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
2926  014746  016237  000026  004144          MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
2927  014754  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
2928  014762  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
2929  014770  012737  002040  004204          MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
2930  014776  032737  020000  004144          BIT     #ECCW,T.MR1
2931  015004  001403                          BEQ     10$
2932  015006  052737  020000  004204          BIS     #ECCW,E.MR1
2933  015014  012737  004000  004206  10$:    MOV     #S.PACK,E.MR2   ;LOAD EXPECTED MAINT REG. 2
2934  015022  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
2935  015026  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
2936  015034  001405                          BEQ     2$              ;YES, CHECK MAINT REG. 1
2937  015036  104042                          ERROR   42
2938  015040  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
2939  015046  000442                          BR      TST26           ;;GO ON TO NEXT TEST
2940
2941  015050  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
2942  015056  001405                          BEQ     3$              ;YES, CHECK MESSAGES A&B
2943  015060  104043                          ERROR   43              ;MAINT REG. 1 INCORRECT
2944  015062  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
2945  015070  000431                          BR      TST26           ;;GO ON TO NEXT TEST
2946
2947  015072                          3$:
2948  015072  032737  004000  004146          BIT     #S.PACK,T.MR2   ;CHECK IF PACK COMMAND
2949                                                                  ;  BIT SET
2950  015100  001002                          BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
2951  015102  104044                          ERROR   44              ;S.PACK BIT NOT SET
2952  015104  000423                          BR      TST26           ;;GO ON TO NEXT TEST
2953
2954  015106                          4$:
2955  015106  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
2956  015114  042737  177760  001160          BIC     #177760,$TMP0
2957  015122  001402                          BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
2958  015124  104045                          ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
2959  015126  000412                          BR      TST26           ;;GO ON TO NEXT TEST
2960
2961  015130  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
2962  015136  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
2963  015140  104046                          ERROR   46              ;MESSAGE A INCORRECT
2964  015142  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
2965  015150  001401                          BEQ     TST26           ;;YES, GO ON TO NEXT TEST
2966  015152  104047                          ERROR   47              ;MESS B INCORRECT
2967
2968                                  ;;*****************************************************************
2969                                  ;*TEST 26       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 2)
2970                                  ;*
2971                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
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                                        ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
                                        ;*      COMMAND AND STATUS REGISTER 1 WITH A DRIVE CLEAR.
                                        ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
                                        ;*      MESSAGE SELECT BITS ARE CLEARED.
                                        ;*
                                        ;;*****************************************************************
015154  000004                        TST26:  SCOPE
015156  012737  000144  001200                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
015164  013702  001270                        MOV     $BASE,R2        ;LOAD RK611 BASE
015170  012737  000017  004246                MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
015176  012737  000005  004160                MOV     #CLEAR,E.CS1    ;LOAD EXPECTED CS1
015204  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
015212  012762  000057  000026                MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
                                                                        ;  SELECT MESSAGE 17
015220  012762  000005  000000                MOV     #CLEAR,RKCS1(R2)        ;ISSUE CLEAR
015226  012700  000016                        MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
015232  052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
015240  042762  000400  000026                BIC     #MCLK,RKMR1(R2)
015246  005300                                DEC     R0
015250  001370                                BNE     1$
015252  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
015260  016237  000026  004144                MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
015266  016237  000034  004146                MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
015274  016237  000036  004150                MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
015302  012737  002040  004204                MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
015310  032737  020000  004144                BIT     #ECCW,T.MR1
015316  001403                                BEQ     10$
015320  052737  020000  004204                BIS     #ECCW,E.MR1
015326  012737  000400  004206  10$:     MOV     #S.CLR,E.MR2    ;LOAD EXPECTED MAINT REG. 2
015334  005037  004210                        CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
015340  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
015346  001405                                BEQ     2$              ;YES, CHECK MAINT REG. 1
015350  104042                                ERROR   42
015352  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
015360  000442                                BR      TST27           ;;GO ON TO NEXT TEST

015362  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
015370  001405                                BEQ     3$              ;YES, CHECK MESSAGES A&B
015372  104043                                ERROR   43              ;MAINT REG. 1 INCORRECT
015374  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
015402  000431                                BR      TST27           ;;GO ON TO NEXT TEST

015404                                  3$:
015404  032737  000400  004146                BIT     #S.CLR,T.MR2    ;CHECK IF CLEAR COMMAND
                                                                        ;  BIT SET
015412  001002                                BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
015414  104044                                ERROR   44              ;S.CLR BIT NOT SET
015416  000423                                BR      TST27           ;;GO ON TO NEXT TEST

015420                                  4$:
015420  013737  004150  001160                MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
015426  042737  177760  001160                BIC     #177760,$TMP0
015434  001402                                BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
015436  104045                                ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
015440  000412                                BR      TST27           ;;GO ON TO NEXT TEST
```

```
3028  015442  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3029  015450  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
3030  015452  104046                          ERROR   46              ;MESSAGE A INCORRECT
3031  015454  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
3032  015462  001401                          BEQ     TST27           ;;YES, GO ON TO NEXT TEST
3033  015464  104047                          ERROR   47              ;MESS B INCORRECT
3034
3035                                  ;;*****************************************************************
3036                                  ;*TEST 27       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 3)
3037                                  ;*
3038                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3039                                  ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
3040                                  ;*      COMMAND AND STATUS REGISTER 1 WITH AN UNLOAD.
3041                                  ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
3042                                  ;*      MESSAGE SELECT BITS ARE CLEARED.
3043                                  ;*
3044                                  ;;*****************************************************************
3045  015466  000004                  TST27:  SCOPE
3046  015470  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3047  015476  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3048  015502  012737  000017  004246          MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
3049  015510  012737  000007  004160          MOV     #UNLOAD,E.CS1   ;LOAD EXPECTED CS1
3050  015516  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3051  015524  012762  000057  000026          MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
3052                                                                  ;  SELECT MESSAGE 17
3053  015532  012762  000007  000000          MOV     #UNLOAD,RKCS1(R2)       ;ISSUE UNLOAD
3054  015540  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
3055  015544  052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
3056  015552  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
3057  015560  005300                          DEC     R0
3058  015562  001370                          BNE     1$
3059  015564  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3060  015572  016237  000026  004144          MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
3061  015600  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
3062  015606  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
3063  015614  012737  002040  004204          MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
3064  015622  032737  020000  004144          BIT     #ECCW,T.MR1
3065  015630  001403                          BEQ     10$
3066  015632  052737  020000  004204          BIS     #ECCW,E.MR1
3067  015640  012737  002000  004206  10$:    MOV     #S.UNLD,E.MR2   ;LOAD EXPECTED MAINT REG. 2
3068  015646  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
3069  015652  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3070  015660  001405                          BEQ     2$              ;YES, CHECK MAINT REG. 1
3071  015662  104042                          ERROR   42
3072  015664  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3073  015672  000442                          BR      TST30           ;;GO ON TO NEXT TEST
3074
3075  015674  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
3076  015702  001405                          BEQ     3$              ;YES, CHECK MESSAGES A&B
3077  015704  104043                          ERROR   43              ;MAINT REG. 1 INCORRECT
3078  015706  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3079  015714  000431                          BR      TST30           ;;GO ON TO NEXT TEST
3080
3081  015716                          3$:
3082  015716  032737  002000  004146          BIT     #S.UNLD,T.MR2   ;CHECK IF UNLOAD COMMAND
3083                                                                  ;  BIT SET
```

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                        001002                          BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
                        104044                          ERROR   44              ;S.UNLD BIT NOT SET
                        000423                          BR      TST30           ;;GO ON TO NEXT TEST

                                                4$:
                        013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
                        042737  177760  001160          BIC     #177760,$TMP0
                        001402                          BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
                        104045                          ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
                        000412                          BR      TST30           ;;GO ON TO NEXT TEST

                        023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
                        001401                          BEQ     6$              ;YES, CHECK MESSAGE B
                        104046                          ERROR   46              ;MESSAGE A INCORRECT
                        023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
                        001401                          BEQ     TST30           ;;YES, GO ON TO NEXT TEST
                        104047                          ERROR   47              ;MESS B INCORRECT

                                                ;;*****************************************************************
                                                ;*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.
                                                ;*
                                                ;;*****************************************************************
                        000004                  TST30:  SCOPE
                        012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
                        013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
                        012737  000017  004246          MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
                        012737  000011  004160          MOV     #SRTSPL,E.CS1   ;LOAD EXPECTED CS1
                        012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
                        012762  000057  000026          MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
                                                                                ;  SELECT MESSAGE 17
                        012762  000011  000000          MOV     #SRTSPL,RKCS1(R2)       ;ISSUE SRTSPL
                        012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
                        052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
                        042762  000400  000026          BIC     #MCLK,RKMR1(R2)
                        005300                          DEC     R0
                        001370                          BNE     1$
                        016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
                        016237  000026  004144          MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
                        016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
                        016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
                        012737  002040  004204          MOV     #MEMD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
                        032737  020000  004144          BIT     #ECCW,T.MR1
                        001403                          BEQ     10$
                        052737  020000  004204          BIS     #ECCW,E.MR1
                        012737  000100  004206  10$:    MOV     #S.STSP,E.MR2   ;LOAD EXPECTED MAINT REG. 2
                        005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
                        023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
                        001405                          BEQ     2$              ;YES, CHECK MAINT REG. 1
                        104042                          ERROR   42
                        012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
```

```
3140  016204  000442                          BR      TST31           ;;GO ON TO NEXT TEST
3141
3142  016206  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
3143  016214  001405                          BEQ     3$              ;YES, CHECK MESSAGES A&B
3144  016216  104043                          ERROR   43              ;MAINT REG. 1 INCORRECT
3145  016220  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3146  016226  000431                          BR      TST31           ;;GO ON TO NEXT TEST
3147
3148  016230                          3$:
3149  016230  032737  000100  004146          BIT     #S.STSP,T.MR2   ;CHECK IF SRTSPL COMMAND
3150                                                                  ;   BIT SET
3151  016236  001002                          BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
3152  016240  104044                          ERROR   44              ;S.STSP BIT NOT SET
3153  016242  000423                          BR      TST31           ;;GO ON TO NEXT TEST
3154
3155  016244                          4$:
3156  016244  013737  004150  001160          MOV     T.MR3,$TMPO     ;MASK OUT BITS NOT UNDER TEST
3157  016252  042737  177760  001160          BIC     #177760,$TMPO
3158  016260  001402                          BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
3159  016262  104045                          ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
3160  016264  000412                          BR      TST31           ;;GO ON TO NEXT TEST
3161
3162  016266  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3163  016274  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
3164  016276  104046                          ERROR   46              ;MESSAGE A INCORRECT
3165  016300  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
3166  016306  001401                          BEQ     TST31           ;;YES, GO ON TO NEXT TEST
3167  016310  104047                          ERROR   47              ;MESS B INCORRECT
3168
3169                                  ;;**************************************************************
3170                                  ;*TEST 31       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 5)
3171                                  ;*
3172                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3173                                  ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
3174                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A RECALIBRATE.
3175                                  ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
3176                                  ;*      MESSAGE SELECT BITS ARE CLEARED.
3177                                  ;*
3178                                  ;**************************************************************
3179  016312  000004                  TST31:  SCOPE
3180  016314  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3181  016322  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3182  016326  012737  000017  004246          MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
3183  016334  012737  000013  004160          MOV     #RECAL,E.CS1    ;LOAD EXPECTED CS1
3184  016342  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3185  016350  012762  000057  000026          MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
3186                                                                  ;   SELECT MESSAGE 17
3187  016356  012762  000013  000000          MOV     #RECAL,RKCS1(R2)        ;ISSUE RECAL
3188  016364  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
3189  016370  052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
3190  016376  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
3191  016404  005300                          DEC     R0
3192  016406  001370                          BNE     1$
3193  016410  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3194  016416  016237  000026  004144          MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
3195  016424  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
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3196  016432  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
3197  016440  012737  002040  004204          MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
3198  016446  032737  020000  004144          BIT     #ECCW,T.MR1
3199  016454  001403                          BEQ     10$
3200  016456  052737  020000  004204          BIS     #ECCW,E.MR1
3201  016464  012737  000040  004206  10$:    MOV     #S.RECL,E.MR2   ;LOAD EXPECTED MAINT REG. 2
3202  016472  005037  004210                  CLR     E.MR3           ;LOAD EXPECTED MAINT REG. 3
3203  016476  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3204  016504  001405                          BEQ     2$              ;YES, CHECK MAINT REG. 1
3205  016506  104042                          ERROR   42
3206  016510  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3207  016516  000442                          BR      TST32           ;;GO ON TO NEXT TEST
3208
3209  016520  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
3210  016526  001405                          BEQ     3$              ;YES, CHECK MESSAGES A&B
3211  016530  104043                          ERROR   43              ;MAINT REG. 1 INCORRECT
3212  016532  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3213  016540  000431                          BR      TST32           ;;GO ON TO NEXT TEST
3214
3215  016542                          3$:
3216  016542  032737  000040  004146          BIT     #S.RECL,T.MR2   ;CHECK IF RECAL COMMAND
3217                                                                  ;  BIT SET
3218  016550  001002                          BNE     4$              ;YES, CHECK MESSAGE SELECT BITS
3219  016552  104044                          ERROR   44              ;S.RECL BIT NOT SET
3220  016554  000423                          BR      TST32           ;;GO ON TO NEXT TEST
3221
3222  016556                          4$:
3223  016556  013737  004150  001160          MOV     T.MR3,$TMP0     ;MASK OUT BITS NOT UNDER TEST
3224  016564  042737  177760  001160          BIC     #177760,$TMP0
3225  016572  001402                          BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
3226  016574  104045                          ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
3227  016576  000412                          BR      TST32           ;;GO ON TO NEXT TEST
3228
3229  016600  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3230  016606  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
3231  016610  104046                          ERROR   46              ;MESSAGE A INCORRECT
3232  016612  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
3233  016620  001401                          BEQ     TST32           ;;YES, GO ON TO NEXT TEST
3234  016622  104047                          ERROR   47              ;MESS B INCORRECT
3235
3236                                  ;;*****************************************************************
3237                                  ;*TEST 32       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 6)
3238                                  ;*
3239                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3240                                  ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
3241                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A OFFSET.
3242                                  ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
3243                                  ;*      MESSAGE SELECT BITS ARE CLEARED.
3244                                  ;*
3245                                  ;;*****************************************************************
3246  016624  000004                  TST32:  SCOPE
3247  016626  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3248  016634  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3249  016640  012737  000017  004246          MOV     #17,MSGCOD      ;LOAD MESSAGE CODE FOR PRINT OUT
3250  016646  012737  000015  004160          MOV     #OFFSET,E.CS1   ;LOAD EXPECTED CS1
3251  016654  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
```

```
3252  016662  012762  000057  000026          MOV     #DMD!17,RKMR1(R2) ;PUT Rk611 IN MAINTENANCE MODE
3253                                                                    ;  SELECT MESSAGE 17
3254  016670  012762  000015  000000          MOV     #OFFSET,RKCS1(R2)       ;ISSUE OFFSET
3255  016676  012700  000016                  MOV     #3*4+2,R0       ;CLOCK IN DRIVE MESSAGE
3256  016702  052762  000400  000026  1$:     BIS     #MCLK,RKMR1(R2)
3257  016710  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
3258  016716  005300                          DEC     R0
3259  016720  001370                          BNE     1$
3260  016722  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3261  016730  016237  000026  004144          MOV     RKMR1(R2),T.MR1 ;STORE MAINTENANCE REG. 1
3262  016736  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINTENANCE REG.2
3263  016744  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINTENANCE REG. 3
3264  016752  012737  002040  004204          MOV     #MEWD!DMD,E.MR1 ;LOAD EXPECTED MAINT REG. 1
3265  016760  032737  020000  004144          BIT     #ECCW,T.MR1
3266  016766  001403                          BEQ     10$
3267  016770  052737  020000  004204          BIS     #ECCW,E.MR1
3268  016776  005037  004206          10$:    CLR     E.MR2           ;LOAD EXPECTED MAINT REG 2
3269  017002  012737  017760  004210          MOV     #17760,E.MR3    ;LOAD EXPECTED MAINT REG 3
3270  017010  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
3271  017016  001405                          BEQ     2$              ;YES, CHECK MAINT REG. 1
3272  017020  104042                          ERROR   42
3273  017022  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3274  017030  000434                          BR      TST33           ;;GO ON TO NEXT TEST
3275
3276  017032  023737  004204  004144  2$:     CMP     E.MR1,T.MR1     ;CHECK IF MAINT REG. 1 CORRECT
3277  017040  001405                          BEQ     3$              ;YES, CHECK MESSAGES A&B
3278  017042  104043                          ERROR   43              ;MAINT REG. 1 INCORRECT
3279  017044  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3280  017052  000423                          BR      TST33           ;;GO ON TO NEXT TEST
3281
3282  017054                          3$:
3283  017054  013737  004150  001160          MOV     T.MR3,$TMPO     ;MASK OUT BITS NOT UNDER TEST
3284  017062  042737  177760  001160          BIC     #177760,$TMPO
3285  017070  001402                          BEQ     5$              ;CHECK IF MESSAGE SELECT ZERO
3286  017072  104045                          ERROR   45              ;MESSAGE SELECT BITS NOT ZERO
3287  017074  000412                          BR      TST33           ;;GO ON TO NEXT TEST
3288
3289  017076  023737  004206  004146  5$:     CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE A CORRECT
3290  017104  001401                          BEQ     6$              ;YES, CHECK MESSAGE B
3291  017106  104046                          ERROR   46              ;MESSAGE A INCORRECT
3292  017110  023737  004210  004150  6$:     CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE B CORRECT
3293  017116  001401                          BEQ     TST33           ;;YES, GO ON TO NEXT TEST
3294  017120  104047                          ERROR   47              ;MESS B INCORRECT
3295
3296                                  ;;*****************************************************************
3297                                  ;*TEST 33       MESSAGE SELECT BIT CLEARING FOR CLASS A (PART 7)
3298                                  ;*
3299                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR.  PUT CONTROLLER IN
3300                                  ;*      DIAGNOSTIC MODE WITH MESSAGE SELECT BITS = 17.  LOAD
3301                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A SEEK.
3302                                  ;*      CLOCK MESSAGE TO LOAD B SHIFT REG. TIME.  MAKE SURE
3303                                  ;*      MESSAGE SELECT BITS ARE CLEARED.
3304                                  ;*
3305                                  ;;*****************************************************************
3306  017122  000004                  TST33:  SCOPE
3307  017124  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
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```
3308  017132  013702  001270                    MOV     $BASE,R2          ;LOAD RK611 BASE
3309  017136  012737  000017  004246            MOV     #17,MSGCOD        ;LOAD MESSAGE CODE FOR PRINT OUT
3310  017144  012737  000017  004160            MOV     #SEEK,E.CS1       ;LOAD EXPECTED CS1
3311  017152  012762  100000  000000            MOV     #CCLR,RKCS1(R2)   ;CLEAR RK611
3312  017160  012762  000057  000026            MOV     #DMD!17,RKMR1(R2) ;PUT RK611 IN MAINTENANCE MODE
3313                                                                      ;  SELECT MESSAGE 17
3314  017166  012762  000017  000000            MOV     #SEEK,RKCS1(R2)   ;ISSUE SEEK
3315  017174  012700  000016                    MOV     #3*4+2,R0         ;CLOCK IN DRIVE MESSAGE
3316  017200  052762  000400  000026  1$:       BIS     #MCLK,RKMR1(R2)
3317  017206  042762  000400  000026            BIC     #MCLK,RKMR1(R2)
3318  017214  005300                            DEC     R0
3319  017216  001370                            BNE     1$
3320  017220  016237  000000  004120            MOV     RKCS1(R2),T.CS1   ;STORE COMMAND AND STATUS REG. 1
3321  017226  016237  000026  004144            MOV     RKMR1(R2),T.MR1   ;STORE MAINTENANCE REG. 1
3322  017234  016237  000034  004146            MOV     RKMR2(R2),T.MR2   ;STORE MAINTENANCE REG.2
3323  017242  016237  000036  004150            MOV     RKMR3(R2),T.MR3   ;STORE MAINTENANCE REG. 3
3324  017250  012737  002040  004204            MOV     #MEWD!DMD,E.MR1   ;LOAD EXPECTED MAINT REG. 1
3325  017256  032737  020000  004144            BIT     #ECCW,T.MR1
3326  017264  001403                            BEQ     10$
3327  017266  052737  020000  004204            BIS     #ECCW,E.MR1
3328  017274  012737  000020  004206  10$:      MOV     #S.SEEK,E.MR2     ;LOAD EXPECTED MAINT REG. 2
3329  017302  005037  004210                    CLR     E.MR3             ;LOAD EXPECTED MAINT REG. 3
3330  017306  023737  004160  004120            CMP     E.CS1,T.CS1       ;CHECK IF CS1 CORRECT
3331  017314  001405                            BEQ     2$                ;YES, CHECK MAINT REG. 1
3332  017316  104042                            ERROR   42
3333  017320  012762  100000  000000            MOV     #CCLR,RKCS1(R2)   ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3334  017326  000442                            BR      TST34             ;;GO ON TO NEXT TEST
3335
3336  017330  023737  004204  004144  2$:       CMP     E.MR1,T.MR1       ;CHECK IF MAINT REG. 1 CORRECT
3337  017336  001405                            BEQ     3$                ;YES, CHECK MESSAGES A&B
3338  017340  104043                            ERROR   43                ;MAINT REG. 1 INCORRECT
3339  017342  012762  100000  000000            MOV     #CCLR,RKCS1(R2)   ;CLEAR RK611 CONTROLLER FOR NEXT TEST
3340  017350  000431                            BR      TST34             ;;GO ON TO NEXT TEST
3341
3342  017352                          3$:
3343  017352  032737  000020  004146            BIT     #S.SEEK,T.MR2     ;CHECK IF SEEK COMMAND
3344                                                                      ;  BIT SET
3345  017360  001002                            BNE     4$                ;YES, CHECK MESSAGE SELECT BITS
3346  017362  104044                            ERROR   44                ;S.SEEK BIT NOT SET
3347  017364  000423                            BR      TST34             ;;GO ON TO NEXT TEST
3348
3349  017366                          4$:
3350  017366  013737  004150  001160            MOV     T.MR3,$TMP0       ;MASK OUT BITS NOT UNDER TEST
3351  017374  042737  177760  001160            BIC     #177760,$TMP0
3352  017402  001402                            BEQ     5$                ;CHECK IF MESSAGE SELECT ZERO
3353  017404  104045                            ERROR   45                ;MESSAGE SELECT BITS NOT ZERO
3354  017406  000412                            BR      TST34             ;;GO ON TO NEXT TEST
3355
3356  017410  023737  004206  004146  5$:       CMP     E.MR2,T.MR2       ;CHECK IF MESSAGE A CORRECT
3357  017416  001401                            BEQ     6$                ;YES, CHECK MESSAGE B
3358  017420  104046                            ERROR   46                ;MESSAGE A INCORRECT
3359  017422  023737  004210  004150  6$:       CMP     E.MR3,T.MR3       ;CHECK IF MESSAGE B CORRECT
3360  017430  001401                            BEQ     TST34             ;;YES, GO ON TO NEXT TEST
3361  017432  104047                            ERROR   47                ;MESS B INCORRECT
3362
3363
```

```
                                        .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.
                                        ;*
                                        ;;*****************************************************************
017434  000004                        TST34:  SCOPE
017436  012737  000144  001200              MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
017444  013702  001270                      MOV     $BASE,R2        ;LOAD RK611 BASE
017450  012762  100000  000000              MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
017456  005037  004256                      CLR     SFTCNT          ;INITIALIZE SHIFT COUNT
017462  012737  000005  004206              MOV     #5,E.MR2        ;LOAD EXPECTED SHIFT REG. A
017470  012737  000005  004230              MOV     #5,U.MR2        ;LOAD UNSHIFTED SHIFT REG. A
017476  012737  000003  004210              MOV     #3,E.MR3        ;LOAD EXPECTED SHIFT REG.B
017504  012737  000003  004232              MOV     #3,U.MR3        ;LOAD UNSHIFTED SHIFT REG.B
017512  012762  000043  000026              MOV     #DMD!3,RKMR1(R2)        ;PUT RK611 IN MAINT. MODE
                                                                        ;  MESSAGE SELECT = 3
017520  012762  000005  000010              MOV     #5,RKCS2(R2)    ;LOAD DRIVE NUMBER = 5
017526  012762  000001  000000              MOV     #SELDRV,RKCS1(R2)       ;ISSUE SELECT DRIVE
017534  012700  000016                      MOV     #3*4+2,R0       ;CLOCK IN MESSAGE
017540  052762  000400  000026  1$:         BIS     #MCLK,RKMR1(R2) ;ISSUE CLOCKS
017546  042762  000400  000026              BIC     #MCLK,RKMR1(R2)
017554  005300                              DEC     R0
017556  001370                              BNE     1$
017560  016237  000034  004146              MOV     RKMR2(R2),T.MR2 ;STORE SHIFT REG. A
017566  016237  000036  004150              MOV     RKMR3(R2),T.MR3 ;STORE SHIFT REG. B
017574  023737  004206  004146              CMP     E.MR2,T.MR2     ;CHECK SHIFT REG A CORRECT
017602  001402                              BEQ     2$              ;YES, CHECK SHIFT REG. B
017604  104050                              ERROR   50              ;SHIFT REG A INCORRECT
017606  000431                              BR      TST35           ;;GO ON TO NEXT TEST

017610  023737  004210  004150  2$:         CMP     E.MR3,T.MR3     ;CHECK SHIFT REG B CORRECT
017616  001402                              BEQ     3$              ;YES, SHIFT A BIT
017620  104051                              ERROR   51              ;SHIFT REG B INCORRECT
017622  000423                              BR      TST35           ;;GO ON TO NEXT TEST

017624  032737  000001  004210  3$:         BIT     #BIT0,E.MR3     ;CHECK IF SHIFT BIT = 1
017632  001402                              BEQ     4$              ;NO, CLEAR SHIFT BIT
017634  000261                              SEC                     ;SET SHIFT BIT
017636  000401                              BR      5$              ;GENERATE EXPECTED SHIFT
                                                                    ;  REGISTERS A & B

017640  000241                      4$:     CLC                     ;CLEAR SHIFT BIT
017642  006037  004206              5$:     ROR     E.MR2           ;GENERATE EXPECTED SHIFT REG A
017646  006037  004210                      ROR     E.MR3           ;GENERATE EXPECTED SHIFT REG B
017652  012700  000004                      MOV     #4,R0           ;LOAD COUNT FOR 1 BIT SHIFT
017656  005237  004256                      INC     SFTCNT          ;INCREMENT SHIFT BIT COUNT
017662  022737  000004  004256              CMP     #4,SFTCNT       ;CHECK IF FINISHED
017670  103323                              BHIS    1$              ;NO, SHIFT IN NEXT BIT
```

```
                                        ;;*****************************************************************
                                        ;*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.
                                        ;*
                                        ;;*****************************************************************
017672  000004                        TST35:  SCOPE
017674  012737  000144  001200              MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
017702  013702  001270                      MOV     $BASE,R2        ;LOAD RK611 BASE
017706  012762  100000  000000              MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
017714  005037  004256                      CLR     SFTCNT          ;INITIALIZE SHIFT COUNT
017720  012737  011020  004206              MOV     #S.FMT!S.SEEK!BIT12,E.MR2       ;LOAD EXPECTED SHIFT REG. A
017726  012737  011020  004230              MOV     #S.FMT!S.SEEK!BIT12,U.MR2       ;LOAD UNSHIFTED SHIFT REG. A
017734  012737  011020  004210              MOV     #11020,E.MR3    ;LOAD EXPECTED SHIFT REG. B
017742  012737  011020  004232              MOV     #11020,U.MR3    ;LOAD UNSHIFTED SHIFT REG. B
017750  012762  000040  000026              MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT. MODE
017756  012762  000441  000020              MOV     #441,RKDCYL(R2) ;LOAD CYLINDER ADD. REG.
017764  012762  000400  000006              MOV     #400,RKDA(R2)   ;LOAD DISK ADDRESS REG.
017772  012762  010017  000000              MOV     #SEEK!CFMT,RKCS1(R2)    ;ISSUE SEEK

020000  012700  000016                      MOV     #3*4+2,R0       ;CLOCK IN MESSAGE
020004  052762  000400  000026  1$:         BIS     #MCLK,RKMR1(R2) ;ISSUE CLOCKS
020012  042762  000400  000026              BIC     #MCLK,RKMR1(R2)
020020  005300                              DEC     R0
020022  001370                              BNE     1$
020024  016237  000034  004146              MOV     RKMR2(R2),T.MR2 ;STORE SHIFT REG. A
020032  016237  000036  004150              MOV     RKMR3(R2),T.MR3 ;STORE SHIFT REG. B
020040  023737  004206  004146              CMP     E.MR2,T.MR2     ;CHECK SHIFT REG A CORRECT
020046  001402                              BEQ     2$              ;YES, CHECK SHIFT REG. B
020050  104050                              ERROR   50              ;SHIFT REG A INCORRECT
020052  000431                              BR      TST36           ;;GO ON TO NEXT TEST

020054  023737  004210  004150  2$:         CMP     E.MR3,T.MR3     ;CHECK SHIFT REG B CORRECT
020062  001402                              BEQ     3$              ;YES, SHIFT A BIT
020064  104051                              ERROR   51              ;SHIFT REG B INCORRECT
020066  000423                              BR      TST36           ;;GO ON TO NEXT TEST

020070  032737  000001  004210  3$:         BIT     #BIT0,E.MR3     ;CHECK IF SHIFT BIT = 1
020076  001402                              BEQ     4$              ;NO, CLEAR SHIFT BIT
020100  000261                              SEC                     ;SET SHIFT BIT
020102  000401                              BR      5$              ;GENERATE EXPECTED SHIFT
                                                                    ;  REGISTERS A & B

020104  000241                      4$:     CLC                     ;CLEAR SHIFT BIT
020106  006037  004206              5$:     ROR     E.MR2           ;GENERATE EXPECTED SHIFT REG A
020112  006037  004210                      ROR     E.MR3           ;GENERATE EXPECTED SHIFT REG B
020116  012700  000004                      MOV     #4,R0           ;LOAD COUNT FOR 1 BIT SHIFT
020122  005237  004256                      INC     SFTCNT          ;INCREMENT SHIFT BIT COUNT
020126  022737  000010  004256              CMP     #8.,SFTCNT      ;CHECK IF FINISHED
020134  103323                              BHIS    1$              ;NO, SHIFT IN NEXT BIT
```

```
3476
3477                                    ;;*****************************************************************
3478                                    ;*TEST 36       DRIVE MESSAGE PARITY PRECONDITIONING
3479                                    ;*
3480                                    ;*      CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER
3481                                    ;*      IN DIAGNOSTIC MODE. LOAD COMMAND AND STATUS REGISTER 1 WITH
3482                                    ;*      A SELECT COMMAND. CLOCK ALL 16 BITS THROUGH THE
3483                                    ;*      DRIVE MESSAGE LOOPBACK. VERIFY PARITY HAS BEEN PRECONDITIONED
3484                                    ;*      PROPERLY. REPEAT FOR BAD PARITY GENERATION.
3485                                    ;*
3486                                    ;*****************************************************************
3487  020136  000004                    T3T36:  SCOPE
3488  020140  012737  000144  001200            MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3489  020146  013702  001270                    MOV     $BASE,R2        ;LOAD RK611 BASE
3490  020152  012762  100000  000000            MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3491  020160  012762  000040  000026            MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
3492  020166  012762  000001  000000            MOV     #SELDRV,RKCS1(R2) ;ISSUE SELECT DRIVE
3493  020174  012700  000116                    MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
3494  020200  012762  000440  000026  1$:       MOV     #DMD!MCLK,RKMR1(R2) ;  ALL 16 BITS
3495  020206  012762  000040  000026            MOV     #DMD,RKMR1(R2)
3496  020214  005300                            DEC     R0
3497  020216  001370                            BNE     1$
3498  020220  016237  000034  004146            MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
3499  020226  016237  000036  004150            MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
3500  020234  012737  100000  004206            MOV     #100000,E.MR2   ;LOAD EXPECTED MESSAGE B
3501  020242  012737  100000  004210            MOV     #100000,E.MR3   ;LOAD EXPECTED MESSAGE A
3502  020250  032737  100000  004150            BIT     #BIT15,T.MR3    ;CHECK IF PARITY ON MESSAGE A CORRECT
3503
3504  020256  001002                            BNE     2$              ;YES, CHECK PARITY ON MESSAGE B
3505  020260  104052                            ERROR   52              ;PARITY ON MESSAGE A INCORRECT
3506  020262  000420                            BR      5$              ;TRY EVEN PARITY
3507
3508  020264  032737  100000  004146  2$:       BIT     #BIT15,T.MR2    ;CHECK IF PARITY ON MESS B CORRECT
3509  020272  001002                            BNE     3$              ;YES, CHECK MESSAGE A AND B
3510  020274  104053                            ERROR   53              ;PARITY ON MESSAGE B INCORRECT
3511  020276  000412                            BR      5$              ;TRY EVEN PARITY
3512
3513  020300  023737  004210  004150  3$:       CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
3514  020306  001401                            BEQ     4$              ;YES, CHECK MESSAGE B
3515  020310  104054                            ERROR   54              ;MESSAGE A INCORRECT
3516  020312  023737  004206  004146  4$:       CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
3517  020320  001401                            BEQ     5$              ;YES, TRY EVEN PARITY
3518  020322  104055                            ERROR   55              ;MESSAGE B INCORRECT
3519  020324  012762  100000  000000  5$:       MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3520  020332  012762  000060  000026            MOV     #DMD!PAT,RKMR1(R2) ;PUT RK611 MAINTENANCE MODE
3521                                                                    ;  AND EVEN PARITY
3522  020340  012762  000001  000000            MOV     #SELDRV,RKCS1(R2) ;ISSUE SELECT DRIVE
3523  020346  012700  000116                    MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
3524  020352  012762  000460  000026  6$:       MOV     #DMD!PAT!MCLK,RKMR1(R2) ;  ALL 16 BITS
3525  020360  012762  000060  000026            MOV     #DMD!PAT,RKMR1(R2)
3526  020366  005300                            DEC     R0
3527
3528  020370  001370                            BNE     6$
3529  020372  016237  000034  004146            MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
3530  020400  016237  000036  004150            MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
3531  020406  005C37  004206                    CLR     E.MR2           ;LOAD EXPECTED MESSAGE B
```

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3532  020412  005037  004210                    CLR     E.MR3           ;LOAD EXPECTED MESSAGE A
3533  020416  032737  100000  004150            BIT     #BIT15,T.MR3    ;CHECK IF PARITY ON MESSAGE A CORRECT
3534  020424  001402                            BEQ     7$              ;YES, CHECK PARITY ON MESSAGE B
3535  020426  104056                            ERROR   56              ;PARITY ON MESSAGE A INCORRECT
3536  020430  000420                            BR      TST37           ;;GO ON TO NEXT TEST
3537
3538  020432  032737  100000  004146  7$:       BIT     #BIT15,T.MR2    ;CHECK IF PARITY ON MESS B CORRECT
3539  020440  001402                            BEQ     8$              ;YES, CHECK MESSAGE A AND B
3540  020442  104057                            ERROR   57              ;PARITY ON MESSAGE B INCORRECT
3541  020444  000412                            BR      TST37           ;;GO ON TO NEXT TEST
3542
3543  020446  023737  004210  004150  8$:       CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
3544  020454  001401                            BEQ     9$              ;YES, CHECK MESSAGE B
3545  020456  104060                            ERROR   60              ;MESSAGE A INCORRECT
3546  020460  023737  004206  004146  9$:       CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
3547  020466  001401                            BEQ     TST37           ;;YES, GO ON TO NEXT TEST
3548  020470  104061                            ERROR   61              ;MESSAGE B INCORRECT
3549
3550                                  ;;*****************************************************************
3551                                  ;*TEST 37       ODD DRIVE MESSAGE PARITY GENERATION
3552                                  ;*
3553                                  ;*      CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER
3554                                  ;*      IN DIAGNOSTIC MODE AND MESSAGE SELECT = 1.
3555                                  ;*      LOAD COMMAND AND STATUS REGISTER 2 WITH DRIVE
3556                                  ;*      SELECT = 1. LOAD COMMAND AND STATUS REGISTER 1 WITH
3557                                  ;*      A SELECT COMMAND. VERIFY THAT PARITY HAS BEEN
3558                                  ;*      GENERATED CORRECTLY. REPEAT FOR MESSAGE SELECT =
3559                                  ;*      DRIVE SELECT = 2-17.
3560                                  ;*
3561                                  ;*****************************************************************
3562  020472  000004                  TST37:  SCOPE
3563  020474  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3564  020502  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3565  020506  012737  000001  004244          MOV     #1,DRVCOD       ;LOAD DRIVE CODE
3566  020514  012737  020522  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
3567                                                                  ;  SUBTEST LOOP
3568
3569  020522                          1$:
3570  020522  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3571  020530  013762  004244  000026          MOV     DRVCOD,RKMR1(R2)        ;LOAD MESSAGE SELECT CODE
3572  020536  052762  000040  000026          BIS     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
3573  020544  013762  004244  000010          MOV     DRVCOD,RKCS2(R2)        ;LOAD DRIVE SELECT CODE
3574  020552  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE SELECT DRIVE
3575  020560  012700  000116                  MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
3576  020564  052762  000400  000026  2$:     BIS     #MCLK,RKMR1(R2) ;  ALL 16 BITS
3577  020572  042762  000400  000026          BIC     #MCLK,RKMR1(R2)
3578  020600  005300                          DEC     R0
3579  020602  001370                          BNE     2$
3580  020604  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
3581  020612  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
3582  020620  013701  004244                  MOV     DRVCOD,R1       ;DETERMINE PARITY
3583  020624  012703  000004                  MOV     #4,R3
3584  020630  005004                          CLR     R4
3585  020632  006001                  3$:     ROR     R1
3586  020634  103001                          BCC     4$
3587  020636  005204                          INC     R4
```

```
3588  020640  005303                    4$:     DEC     R3
3589  020642  001373                            BNE     3$
3590  020644  013737  004244  004206            MOV     DRVCOD,E.MR2    ;LOAD EXPECTED SHIFTED REG. B
3591  020652  013737  004244  004210            MOV     DRVCOD,E.MR3    ;LOAD EXPECTED SHIFTED REG. A
3592  020660  005037  004260                    CLR     PARBIT
3593  020664  032704  000001                    BIT     #BIT0,R4        ;CHECK FOR PARITY ON WORD
3594  020670  001011                            BNE     5$              ;PARITY ALREADY ODD
3595  020672  012737  100000  004260            MOV     #BIT15,PARBIT   ;SET PARITY BIT
3596  020700  052737  100000  004206            BIS     #BIT15,E.MR2
3597  020706  052737  100000  004210            BIS     #BIT15,E.MR3
3598  020714  013737  004150  001160  5$:       MOV     T.MR3,$TMP0     ;MASK ALL BITS EXCEPT PARITY
3599  020722  042737  077777  001160            BIC     #77777,$TMP0
3600  020730  023737  004260  001160            CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
3601  020736  001402                            BEQ     6$              ;  ON MESSAGE A
3602  020740  104052                            ERROR   52              ;PARITY ON MESSAGE A INCORRECT
3603  020742  000426                            BR      25$             ;CHECK IF LOOP ON ERROR
3604
3605  020744  013737  004146  001160  6$:       MOV     T.MR2,$TMP0     ;MASK ALL BITS EXCEPT PARITY
3606  020752  042737  077777  001160            BIC     #77777,$TMP0
3607  020760  023737  004260  001160            CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
3608  020766  001402                            BEQ     7$              ;  ON MESSAGE B
3609  020770  104053                            ERROR   53              ;PARITY ON MESSAGE B INCORRECT
3610  020772  000412                            BR      25$             ;CHECK IF LOOP ON ERROR
3611
3612  020774  023737  004210  004150  7$:       CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
3613  021002  001401                            BEQ     8$              ;YES, CHECK MESSAGE B
3614  021004  104054                            ERROR   54              ;MESSAGE A INCORRECT
3615  021006  023737  004206  004146  8$:       CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
3616  021014  001401                            BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
3617  021016  104055                            ERROR   55              ;MESSAGE B INCORRECT
3618  021020  104415                    25$:     SCOP1                   ;CHECK IF LOOP ON ERROR
3619  021022  005237  004244                    INC     DRVCOD          ;INCREMENT DRIVE SELECT CODE
3620  021026  022737  000017  004244            CMP     #17,DRVCOD      ;CHECK IF FINISHED
3621  021034  103232                            BHIS    1$              ;NO, TRY NEXT CONFIGURATION
3622
3623                                    ;;*****************************************************************
3624                                    ;*TEST 40       DRIVE MESSAGE PARITY INTERACTION
3625                                    ;*
3626                                    ;*      CLEAR THE RK611 WITH A CONTROLLER CLEAR. PUT CONTROLLER
3627                                    ;*      IN DIAGNOSTIC MODE. LOAD COMMAND AND STATUS REGISTER 2
3628                                    ;*      WITH DRIVE SELECT = 1. LOAD COMMAND AND STATUS REGISTER 1
3629                                    ;*      WITH A SELECT COMMAND. VERIFY THAT THE CORRECT PARITY
3630                                    ;*      IS GENERATED FOR BOTH MESSAGES. REPEAT FOR MESSAGE
3631                                    ;*      SELECT = 1 AND DRIVE SELECT = 0.
3632                                    ;*
3633                                    ;;*****************************************************************
3634  021036  000004                    1$TST40: SCOPE
3635  021040  012737  000144  001200            MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3636  021046  013702  001270                    MOV     $BASE,R2        ;LOAD RK611 BASE
3637  021052  012737  000001  004244            MOV     #1,DRVCOD       ;SET INITIAL DRIVE SELECT CODE
3638  021060  005037  004246                    CLR     MSGCOD          ;SET INITIAL MESSAGE SELECT CODE
3639  021064  012737  100000  004206            MOV     #BIT15,E.MR2    ;LOAD EXPECTED MAINT. REG. 2 (MESS B)
3640  021072  012737  000001  004210            MOV     #BIT0,E.MR3     ;LOAD EXPECTED MAINT. REG. 3 (MESS A)
3641  021100  012737  100000  004260            MOV     #BIT15,PARBIT   ;LOAD PARITY FOR MESSAGE B
3642  021106  012737  021114  001110            MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
3643                                                                    ;  SUBTEST LOOP
```

```
3644
3645  021114                                1$:
3646  021114  012762  100000  000000              MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3647  021122  013762  004246  000026              MOV     MSGCOD,RKMR1(R2) ;LOAD MESSAGE SELECT CODE
3648  021130  052762  000040  000026              BIS     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
3649  021136  013762  004244  000010              MOV     DRVCOD,RKCS2(R2) ;LOAD DRIVE SELECT CODE
3650  021144  012762  000001  000000              MOV     #SELDRV,RKCS1(R2) ;ISSUE DRIVE SELECT
3651  021152  012700  000116                      MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
3652  021156  052762  000400  000026  2$:         BIS     #MCLK,RKMR1(R2) ;  ALL 16 BITS
3653  021164  042762  000400  000026              BIC     #MCLK,RKMR1(R2)
3654  021172  005300                              DEC     R0
3655  021174  001370                              BNE     2$
3656  021176  016237  000034  004146              MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
3657  021204  016237  000036  004150              MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
3658  021212  013737  004150  001160              MOV     T.MR3,$TMP0     ;MASK ALL BITS EXCEPT PARITY
3659  021220  042737  077777  001160              BIC     #77777,$TMP0
3660  021226  023737  004260  001160              CMP     PARBIT,$TMP0    ;CHECK IF PARITY BIT CORRECT
3661  021234  001002                              BNE     3$              ;  ON MESSAGE A
3662  021236  104052                              ERROR   52              ;NO, PARITY ON MESSAGE INCORRECT
3663  021240  000426                              BR      25$             ;CHECK IF LOOP ON ERROR
3664
3665  021242  013737  004146  001160  3$:         MOV     T.MR2,$TMP0     ;MASK ALL BITS EXCEPT PARITY
3666  021250  042737  077777  001160              BIC     #77777,$TMP0
3667  021256  023737  004260  001160              CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
3668  021264  001402                              BEQ     4$              ;  MESSAGE B
3669  021266  104053                              ERROR   53              ;PARITY ON MESSAGE B INCORRECT
3670  021270  000412                              BR      25$             ;CHECK IF LOOP ON ERROR
3671
3672  021272  023737  004210  004150  4$:         CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
3673  021300  001401                              BEQ     5$              ;YES, CHECK IN MESSAGE B CORRECT
3674  021302  104054                              ERROR   54              ;MESSAGE A INCORRECT
3675  021304  023737  004206  004146  5$:         CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
3676  021312  001401                              BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
3677  021314  104055                              ERROR   55              ;MESSAGE B INCORRECT
3678  021316  104415                      25$:    SCOP1                   ;CHECK IF LOOP ON ERROR
3679  021320  005737  004244                      TST     DRVCOD          ;CHECK IF DRIVE SELECT = 0 (FINISHED)
3680  021324  001416                              BEQ     TST41           ;YES,GO ON TO NEXT TEST
3681  021326  005037  004244                      CLR     DRVCOD          ;SET DRIVE SELECT CODE = 0
3682  021332  012737  000001  004246              MOV     #1,MSGCOD       ;SET MESSAGE SELECT CODE
3683  021340  012737  000001  004206              MOV     #BIT0,E.MR2     ;LOAD EXPECTED MAINT REG 2 (MESS B)
3684  021346  012737  100000  004210              MOV     #BIT15,E.MR3    ;LOAD EXPECTED MAINT REG 3 (MESS A)
3685  021354  005037  004260                      CLR     PARBIT          ;LOAD PARITY FOR MESSAGE B
3686  021360  000655                              BR      1$              ;TRY SECOND CONFIGURATION
3687
3688                                ;;*****************************************************************
3689                                ;*TEST 41       EVEN DRIVE MESSAGE PARITY GENERATION
3690                                ;*
3691                                ;*       CLEAR RK611 WITH CONTROLLER CLEAR. PUT CONTROLLER
3692                                ;*       IN DIAGNOSTIC MODE AND MESSAGE SELECT = 1
3693                                ;*       AND BAD PARITY SET. LOAD COMMAND AND STATUS
3694                                ;*       REGISTER 2 WITH DRIVE SELECT = 1. LOAD COMMAND
3695                                ;*       AND STATUS REGISTER SELECT COMMAND. VERIFY THAT
3696                                ;*       EVEN PARITY IS GENERATED.  REPEAT FOR MESSAGE SELECT =
3697                                ;*       DRIVE SELECT = 2-17.
3698                                ;*
3699                                ;;*****************************************************************
```

```
                                TST41:  SCOPE
3700  021362  000004
3701  021364  012737  000144  001200        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3702  021372  013702  001270                MOV     $BASE,R2        ;LOAD RK611 BASE
3703  021376  012737  000001  004244        MOV     #1,DRVCOD       ;LOAD DRIVE CODE
3704  021404  012737  021412  001110        MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
3705                                                                ;  SUBTEST LOOP
3706
3707  021412                                1$:
3708  021412  012762  100000  000000        MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
3709  021420  013762  004244  000026        MOV     DRVCOD,RKMR1(R2)        ;LOAD MESSAGE SELECT CODE
3710  021426  052762  000060  000026        BIS     #DMD!PAT,RKMR1(R2)      ;PUT RK611 IN MAINTENANCE MODE
3711                                                                ;  AND SET BAD PARITY
3712  021434  013762  004244  000010        MOV     DRVCOD,RKCS2(R2)        ;LOAD DRIVE SELECT CODE
3713  021442  012762  000001  000000        MOV     #SELDRV,RKCS1(R2)       ;ISSUE SELECT DRIVE
3714  021450  012700  000116                MOV     #19.*4+2,R0     ;LOAD DRIVE MESSAGE AND SHIFT
3715  021454  052762  000400  000026  2$:   BIS     #MCLK,RKMR1(R2) ;  ALL 16 BITS
3716  021462  042762  000400  000026        BIC     #MCLK,RKMR1(R2)
3717  021470  005300                        DEC     R0
3718  021472  001370                        BNE     2$
3719  021474  016237  000034  004146        MOV     RKMR2(R2),T.MR2 ;STORE SHIFTED MESSAGE B
3720  021502  016237  000036  004150        MOV     RKMR3(R2),T.MR3 ;STORE SHIFTED MESSAGE A
3721  021510  013701  004244                MOV     DRVCOD,R1       ;DETERMINE PARITY
3722  021514  012703  000004                MOV     #4,R3
3723  021520  005004                        CLR     R4
3724  021522  006001                3$:     ROR     R1
3725  021524  103001                        BCC     4$
3726  021526  005204                        INC     R4
3727  021530  005303                4$:     DEC     R3
3728  021532  001373                        BNE     3$
3729  021534  013737  004244  004206        MOV     DRVCOD,E.MR2    ;LOAD EXPECTED SHIFTED REG. B
3730  021542  013737  004244  004210        MOV     DRVCOD,E.MR3    ;LOAD EXPECTED SHIFTED REG. A
3731  021550  005037  004260                CLR     PARBIT
3732  021554  032704  000001                BIT     #BIT0,R4        ;CHECK FOR PARITY ON WORD
3733  021560  001411                        BEQ     5$              ;PARITY ALREADY EVEN
3734  021562  012737  100000  004260        MOV     #BIT15,PARBIT   ;SET PARITY BIT
3735  021570  052737  100000  004206        BIS     #BIT15,E.MR2
3736  021576  052737  100000  004210        BIS     #BIT15,E.MR3
3737  021604  013737  004150  001160  5$:   MOV     T.MR3,$TMP0     ;MASK ALL BITS EXCEPT PARITY
3738  021612  042737  077777  001160        BIC     #77777,$TMP0
3739  021620  023737  004260  001160        CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
3740  021626  001402                        BEQ     6$              ;  ON MESSAGE A
3741  021630  104056                        ERROR   56              ;PARITY ON MESSAGE A INCORRECT
3742  021632  000426                        BR      25$             ;CHECK IF LOOP ON ERROR
3743
3744  021634  013737  004146  001160  6$:   MOV     T.MR2,$TMP0     ;MASK ALL BITS EXCEPT PARITY
3745  021642  042737  077777  001160        BIC     #77777,$TMP0
3746  021650  023737  004260  001160        CMP     PARBIT,$TMP0    ;CHECK IF PARITY CORRECT
3747  021656  001402                        BEQ     7$              ;  ON MESSAGE B
3748  021660  104057                        ERROR   57              ;PARITY ON MESSAGE B INCORRECT
3749  021662  000412                        BR      25$             ;CHECK IF LOOP ON ERROR
3750
3751  021664  023737  004210  004150  7$:   CMP     E.MR3,T.MR3     ;CHECK IF MESSAGE A CORRECT
3752  021672  001401                        BEQ     8$              ;YES, CHECK MESSAGE B
3753  021674  104060                        ERROR   60              ;MESSAGE A INCORRECT
3754  021676  023737  004206  004146  8$:   CMP     E.MR2,T.MR2     ;CHECK IF MESSAGE B CORRECT
3755  021704  001401                        BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
```

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3756  021706  104061                          ERROR   61              ;MESSAGE B INCORRECT
3757  021710  104415                  25$:    SCOPE                   ;CHECK IF LOOP ON ERROR
3758  021712  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE SELECT CODE
3759  021716  022737  000017  004244          CMP     #17,DRVCOD      ;CHECK IF FINISHED
3760  021724  103232                          BHIS    1$              ;NO, TRY NEXT CONFIGURATION
3761
3762
3763                                  .SBTTL  **CLASS A COMMAND EXECUTION
3764
3765                                  ;;*****************************************************************
3766                                  ;*TEST 42       RELEASE COMMAND IN DIAGNOSTIC MODE
3767                                  ;*
3768                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
3769                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD COMMAND AND
3770                                  ;*      STATUS REGISTER 2 WITH DRIVE SELECT = 10. LOAD
3771                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A SELECT.
3772                                  ;*      CLOCK COMMAND TO COMPLETION. MAKE SURE UNIT
3773                                  ;*      FIELD ERROR DOES NOT SET (SACK HIGH). REPEAT FOR
3774                                  ;*      DRIVE SELECT = 11-17.
3775                                  ;*
3776                                  ;;*****************************************************************
3777  021726  000004                  TST42:  SCOPE
3778  021730  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3779  021736  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3780  021742  012737  000010  004244          MOV     #10,DRVCOD      ;INITIALIZE FOR DESELECT OF DRIVE 0
3781  021750  012737  021756  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
3782                                                                  ;  SUBTEST LOOP
3783
3784  021756                          1$:
3785  021756  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
3786  021764  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
3787  021772  013762  004244  000010          MOV     DRVCOD,RKCS2(R2) ;LOAD DRIVE SELECTION
3788  022000  012762  000001  000000          MOV     #SELDRV,RKCS1(R2) ;ISSUE DESELECT
3789  022006  012700  000120                  MOV     #20.*4,R0       ;LOAD COUNT TO COMPLETE COMMAND
3790  022012  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2) ;CLOCK THRU COMMAND
3791  022020  012762  000040  000026          MOV     #DMD,RKMR1(R2)
3792  022026  005300                          DEC     R0
3793  022030  001370                          BNE     2$
3794  022032  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3795  022040  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
3796  022046  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
3797  022054  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REGISTER
3798  022062  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED COMMAND AND STATUS REG. 1
3799  022070  013737  004244  004170          MOV     DRVCOD,E.CS2    ;GENERATE EXPECTED COMMAND AND
3800  022076  052737  000100  004170          BIS     #IR,E.CS2       ;  STATUS REG. 2
3801  022104  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REGISTER
3802  022110  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REGISTER
3803  022114  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
3804  022122  001401                          BEQ     3$              ;YES, CHECK CS2
3805  022124  104062                          ERROR   62              ;COMMAND AND STATUS REG. 1 INCORRECT
3806  022126  023737  004170  004130  3$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
3807  022134  001401                          BEQ     4$              ;YES, CHECK ERROR REGISTER
3808  022136  104063                          ERROR   63              ;COMMAND AND STATUS REG. 2 INCORRECT
3809  022140  023737  004174  004134  4$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
3810  022146  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG
3811  022150  104064                          ERROR   64              ;ERROR REGISTER INCORRECT
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3812  022152  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
3813  022160  001401                          BEQ     6$              ;YES, CHECK IF LOOP ON ERROR
3814  022162  104126                          ERROR   126             ;DRIVE STATUS REG INCORRECT
3815  022164  104415                  6$:     SCOPE                   ;CHECK IF LOOP ON ERROR
3816  022166  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE NUMBER
3817  022172  022737  000017  004244          CMP     #17,DRVCOD      ;CHECK IF ALL DRIVE NUMBERS TESTED
3818  022200  103266                          BHIS    1$              ;NO, DO IT FOR NEXT DRIVE NUMBER
3819
3820                                  ;;*-*************************************************************
3821                                  ;*TEST 43       SELECT COMMAND IN DIAGNOSTIC MODE
3822                                  ;*
3823                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
3824                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. LOAD COMMAND AND
3825                                  ;*      STATUS REGISTER 2 WITH DRIVE SELECT = 0. LOAD
3826                                  ;*      COMMAND AND STATUS REGISTER 1 WITH A SELECT.
3827                                  ;*      CLOCK COMMAND TO COMPLETION. MAKE SURE MESSAGE SHIFT IS
3828                                  ;*      NOT DONE DURING THE RECEIVE CYCLE OF DRIVE MESSAGE.
3829                                  ;*      MAKE SURE NO ERRORS SET. REPEAT FOR DRIVE SELECT = 1-7.
3830                                  ;*
3831                                  ;;*************************************************************
3832  022202  000004                  TST43:  SCOPE
3833  022204  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
3834  022212  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
3835  022216  005037  004244                  CLR     DRVCOD          ;INITIALIZE FOR SELECT OF DRIVE 0
3836  022222  012737  022230  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
3837                                                                  ;  SUBTEST LOOP
3838
3839  022230                          1$:
3840  022230  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
3841  022236  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
3842  022244  013762  004244  000010          MOV     DRVCOD,RKCS2(R2)        ;LOAD DRIVE SELECT
3843  022252  012762  0000C1  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE DRIVE SELECT
3844  022260  012700  000120                  MOV     #20.*4,R0       ;LOAD COUNT TO DESELECT COMPLETE
3845  022264  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)     ;CLOCK UNTIL DESELECT FINISHED
3846  022272  012762  000040  000026          MOV     #DMD,RKMR1(R2)
3847  022300  005300                          DEC     R0
3848  022302  OC.370                          BNE     2$
3849  022304  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3850  022312  012737  000001  004160          MOV     #SELDRV,E.CS1   ;LOAD EXPECTED COMMAND AND STATUS REG. 1
3851  022320  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF READY RESET
3852  022326  001402                          BEQ     3$              ;YES, CONTINUE COMMAND
3853  022330  104065                          ERROR   65              ;COMMAND AND STATUS REG. 1 INCORRECT
3854  022332  000566                          BR      25$             ;GO CHECK IF LOOP ON ERROR
3855
3856  022334  013703  004244          3$:     MOV     DRVCOD,R3       ;GENERATE EXPECTED MAINT REG 3
3857  022340  012701  000003                  MOV     #3,R1
3858  022344  005000                          CLR     R0
3859  022346  006003                  4$:     ROR     R3
3860  022350  103001                          BCC     5$
3861  022352  005200                          INC     R0
3862  022354  005301                  5$:     DEC     R1
3863  022356  001373                          BNE     4$
3864  022360  013737  004244  004210          MOV     DRVCOD,E.MR3
3865  022366  032700  000001                  BIT     #BIT0,R0
3866  022372  001003                          BNE     6$
3867  022374  052737  100000  004210          BIS     #BIT15,E.MR3
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3868  022402  012737  100000  004206  6$:     MOV     #BIT15,E.MR2    ;STORE EXPECTED MAINT REG 2
3869  022410  012701  000003                  MOV     #3,R1           ;ISSUE 3 CONTROL CLOCKS
3870  022414  012700  000004          7$:     MOV     #4,R0
3871  022420  012762  000440  000026  8$:     MOV     #DMD!MCLK,RKMR1(R2)
3872  022426  012762  000040  000026          MOV     #DMD,RKMR1(R2)
3873  022434  005300                          DEC     R0
3874  022436  001370                          BNE     8$
3875  022440  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3876  022446  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG 2
3877  022454  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG 3
3878  022462  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
3879  022470  001402                          BEQ     9$              ;YES, CHECK MAINTENANCE REG. 2
3880  022472  104066                          ERROR   66              ;CS1 INCORRECT
3881  022474  000505                          BR      25$             ;CHECK IF LOOP ON ERROR
3882
3883  022476  023737  004206  004146  9$:     CMP     E.MR2,T.MR2     ;CHECK MAINT REG 2 CORRECT
3884  022504  001402                          BEQ     10$             ;YES, CHECK MAINTENANCE REG 3
3885  022506  104067                          ERROR   67              ;MR2 INCORRECT
3886  022510  000477                          BR      25$             ;CHECK IF LOOP ON ERROR
3887
3888  022512  023737  004210  004150  10$:    CMP     E.MR3,T.MR3     ;CHECK IF MAINT REG 3 CORRECT
3889  022520  001402                          BEQ     11$             ;YES, CHECK COMMAND COMPLETE
3890  022522  104070                          ERROR   70              ;MR3 INCORRECT
3891  022524  000471                          BR      25$             ;CHECK IF LOOP ON ERROR
3892
3893  022526  005301                  11$:    DEC     R1              ;CHECK IF COMMAND FINISHED
3894  022530  001331                          BNE     7$              ;NO, ISSUE ANOTHER CONTROL CLOCK
3895  022532  012700  000004                  MOV     #4,R0           ;ISSUE LAST CONTROL CLOCK FOR READY
3896  022536  012762  000440  000026  12$:    MOV     #DMD!MCLK,RKMR1(R2)
3897  022544  012762  000040  000026          MOV     #DMD,RKMR1(R2)
3898  022552  005300                          DEC     R0
3899  022554  001370                          BNE     12$
3900  022556  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
3901  022564  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
3902  022572  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
3903  022600  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REGISTER
3904  022606  012737  00020C  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED COMMAND AND STATUS REG 1
3905  022614  013737  004244  004170          MOV     DRVCOD,E.CS2    ;GENERATE EXPECTED COMMAND AND STATUS REG. 2
3906  022622  052737  000100  004170          BIS     #IR,E.CS2
3907  022630  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REGISTER
3908  022634  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REGISTER
3909  022640  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
3910  022646  001401                          BEQ     13$             ;YES, CHECK CS2
3911  022650  104071                          ERROR   71              ;CS1 INCORRECT
3912  022652  023737  004170  004130  13$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
3913  022660  001401                          BEQ     14$             ;YES, CHECK ERROR REG
3914  022662  104072                          ERROR   72              ;CS2 INCORRECT
3915  022664  023737  004174  004134  14$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
3916  022672  001401                          BEQ     15$             ;YES, CHECK DRIVE STATUS REG CORRECT
3917  022674  104073                          ERROR   73              ;ERROR REG INCORRECT
3918  022676  023737  004172  004132  15$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
3919  022704  001401                          BEQ     25$             ;YES, CHECK IF LOOP ON ERROR
3920  022706  104127                          ERROR   127             ;DRIVE STATUS REGISTER INCORRECT
3921  022710  104415                  25$:    SCOPE                   ;CHECK IF LOOP ON ERROR
3922  022712  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE NUMBER
3923  022716  022737  000007  004244          CMP     #7,DRVCOD       ;CHECK IF ALL DRIVES TESTED
```

```
                                ;;*****************************************************************
                                ;*TEST 44        RELEASE COMMAND IN NORMAL MODE
                                ;*
                                ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
                                ;*      LOAD COMMAND AND STATUS REGISTER 2 WITH DRIVE SELECT = 10.
                                ;*      LOAD COMMAND AND STATUS REGISTER 1 WITH A SELECT.
                                ;*      MAKE SURE NO ERRORS OCCUR. REPEAT FOR DRIVE
                                ;*      SELECT = 11-17
                                ;*
                                ;;*****************************************************************
022732  000004                  TST44:  SCOPE
022734  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
022742  013702  001270          MOV     $BASE, R2       ;LOAD RK611 BASE
022746  012737  000010  004244          MOV     #10,DRVCOD      ;INITIALIZE FOR DESELECT OF DRIVE 0
022754  012737  022762  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
                                                                ;  SUBTEST LOOP
022762                          1$:
022762  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
022770  013762  004244  000010          MOV     DRVCOD,RKCS2(R2)        ;LOAD DRIVE SELECTION
022776  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE DESELECT
023004  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
023010  105762  000000          2$:     TSTB    RKCS1(R2)
023014  100402                  BMI     3$
023016  005300                  DEC     R0
023020  001373                  BNE     2$
023022  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
023030  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
023036  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
023044  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
023052  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED COMMAND AND STATUS REG. 1
023060  013737  004244  004170          MOV     DRVCOD,E.CS2    ;GENERATE EXPECTED COMMAND AND STATUS REG. 2
023066  052737  000100  004170          BIS     #IR,E.CS2
023074  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
023100  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
023104  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
023112  001401                  BEQ     4$              ;YES, CHECK CS2
023114  104074                  ERROR   74              ;CS1 INCORRECT
023116  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
023124  001401                  BEQ     5$              ;YES, CHECK ERROR REGISTER
023126  104075                  ERROR   75              ;CS2 INCORRECT
023130  023737  004174  004134  5$:     CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
023136  001401                  BEQ     6$              ;YES, CHECK DRIVE STATUS REG CORRECT
023140  104076                  ERROR   76              ;ERROR REG INCORRECT
023142  023737  004172  004132  6$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
023150  001401                  BEQ     7$              ;YES, CHECK IF LOOP ON ERROR
023152  104130                  ERROR   130             ;DRIVE STATUS REGISTER INCORRECT
023154  104415                  7$:     SCOP1           ;CHECK IF LOOP ON ERROR
023156  005237  004244                  INC     DRVCOD          ;INCREMENT DRIVE NUMBER
023162  022737  000017  004244          CMP     #17,DRVCOD      ;CHECK IF ALL DRIVE NUMBERS TESTED
023170  103274                  BHIS    1$              ;NO, DO IT FOR NEXT DRIVE

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

```
                                        ;*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.
                                        ;*
                                        ;**********************************************************************
023172  000004                  TST45:  SCOPE
023174  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
023202  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
023206  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
023214  012762  000010  000010          MOV     #10,RKCS2(R2)   ;SET DESELECT BIT
023222  013701  004234                  MOV     RKVEC,R1        ;LOAD INTERRUPT VECTOR
023226  012721  023310                  MOV     #5$,(R1)+
023232  012711  000340                  MOV     #PR7,(R1)
023236  005046                          CLR     -(SP)           ;LOAD STACK TO ALLOW ALL INTERRUPTS
023240  012746  023246                  MOV     #64$,-(SP)      ;LOAD NEXT ADDRESS
023244  000002                          RTI                     ;CLEAR PSW

023246                          64$:
023246  012762  000101  000000          MOV     #SELDRV!IE,RKCS1(R2)    ;ISSUE SELECT DRIVE
023254  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
023260  105762  000000          2$:     TSTB    RKCS1(R2)
023264  100402                          BMI     3$
023266  005300                          DEC     R0
023270  001373                          BNE     2$
023272  012746  000340          3$:     MOV     #PR7,-(SP)      ;LOCK OUT INTERRUPTS
023276  012746  023304                  MOV     #4$,-(SP)
023302  000002                          RTI

023304  104100                  4$:     ERROR   100             ;INTERRUPT DID NOT OCCUR
023306  000513                          BR      25$

023310  062706  000004          5$:     ADD     #4,SP           ;ADJUST STACK
023314  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
023322  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
023330  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
023336  012737  000300  004160          MOV     #RDY!IE,E.CS1   ;LOAD EXPECTED CS1
023344  012737  000110  004170          MOV     #IR!10,E.CS2    ;LOAD EXPECTED CS2
023352  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR
023356  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
023364  001401                          BEQ     6$              ;YES, CHECK CS2
023366  104101                          ERROR   101             ;CS1 INCORRECT
023370  023737  004170  004130  6$:     CMP     E.CS2,T.CS2     ;CHECK IF CS2 INCORRECT
023376  001401                          BEQ     7$              ;YES, CHECK IF ERROR REG CORRECT
023400  104102                          ERROR   102             ;CS2 INCORRECT
023402  023737  004174  004134  7$:     CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
023410  001401                          BEQ     8$              ;YES, CHECK IF INTERRUPT CLEARED
023412  104103                          ERROR   103             ;ERROR REG. INCORRECT
```

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4036  023414  012777  023510  160612  9$:     MOV     #10$,@RKVEC     ;LOAD VECTOR FOR UNEXPECTED INTERRUPT
4037  023422  005046                          CLR     -(SP)           ;LOAD STACK TO ALLOW ALL INTERRUPTS
4038  023424  012746  023432                  MOV     #65$,-(SP)      ;LOAD NEXT ADDRESS
4039  023430  000002                          RTI                     ;CLEAR PSW
4040
4041  023432                          65$:
4042  023432  000240                          NOP                     ;WAIT FOR INTERRUPT
4043  023434  012777  023520  160572          MOV     #15$,@RKVEC     ;LOAD VECTOR ADDRESS FOR UNEXPECTED INTERRUPT
4044  023442  012762  000010  000010          MOV     #10,RKCS2(R2)   ;ISSUE DESELECT
4045  023450  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)
4046  023456  000240                          NOP                     ;WAIT FOR INTERRUPT
4047  023460  012777  023530  160546          MOV     #20$,@RKVEC     ;LOAD VECTOR ADDRESS FOR UNEXPECTED INTERRUPT
4048  023466  012762  000100  000000          MOV     #IE,RKCS1(R2)   ;SET INTERRUPT ENABLE
4049  023474  000240                          NOP                     ;ALLOW INTERRUPT TO OCCUR
4050  023476  012746  000340                  MOV     #PR7,-(SP)      ;LOCK OUT INTERRUPT
4051  023502  012746  023536                  MOV     #25$,-(SP)      ;RESTORE TRAP CATCHER
4052  023506  000002                          RTI
4053
4054  023510  062706  000004          10$:    ADD     #4,SP           ;ADJUST STACK
4055  023514  104104                          ERROR   104             ;UNEXPECTED INTERRUPT
4056  023516  000407                          BR      25$             ;RESTORE TRAP CATCHER
4057
4058  023520  062706  000004          15$:    ADD     #4,SP           ;ADJUST STACK
4059  023524  104254                          ERROR   254             ;UNEXPECTED INTERRUPT ON DESELECT
4060  023526  000403                          BR      25$             ;RESTORE TRAP CATCHER
4061
4062  023530  062706  000004          20$:    ADD     #4,SP           ;ADJUST STACK
4063  023534  104255                          ERROR   255             ;UNEXPECTED INTERRUPT WHEN SETTING
4064                                                                  ;  INTERRUPT ENABLE
4065  023536  012762  000040  000010  25$:    MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
4066  023544  013701  004234                  MOV     RKVEC,R1        ;RESTORE TRAP CATCHER
4067  023550  010111                          MOV     R1,(R1)
4068  023552  062721  000002                  ADD     #2,(R1)+
4069  023556  005011                          CLR     (R1)
4070
4071                                  ;;*****************************************************************
4072                                  ;*TEST 46       GO CLEAR OF SILO
4073                                  ;*
4074                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
4075                                  ;*      WRITE ONE WORD INTO THE SILO.  ISSUE A RELEASE COMMAND
4076                                  ;*      WITH INTERRUPT ENABLE RESET.  WAIT FOR READY.
4077                                  ;*      READ THE DATA BUFFER TO MAKE SURE THE SILO HAS BEEN
4078                                  ;*      CLEARED. (DATA LATE SET AFTER READ OF DATA BUFFER)
4079                                  ;*
4080                                  ;;*****************************************************************
4081  023560  000004                  TST46:  SCOPE
4082  023562  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
4083  023570  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
4084  023574  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
4085  023602  005062  000024                  CLR     RKDB(R2)        ;LOAD 1 WORD IN SILO
4086  023606  012762  000010  000010          MOV     #10,RKCS2(R2)   ;LOAD DESELECT DRIVE 0
4087  023614  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE DESELECT
4088  023622  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
4089  023626  105762  000000          2$:     TSTB    RKCS1(R2)
4090  023632  100402                          BMI     3$
4091  023634  005300                          DEC     R0
```

```
4092  023636  001373                          BNE     2$
4093  023640  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4094  023646  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
4095  023654  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
4096  023662  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REGISTER
4097  023670  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
4098  023676  012737  000110  004170          MOV     #IR!10,E.CS2    ;LOAD EXPECTED CS2
4099  023704  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
4100  023710  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REGISTER
4101  023714  023737  004170  004130          CMP     E.CS2,T.CS2     ;CHECK IF CS1 CORRECT
4102  023722  001401                          BEQ     10$             ;YES, READ WORD FROM SILO
4103  023724  104105                          ERROR   105             ;CS2 INCORRECT
4104  023726  005762  000024          10$:    TST     RKDB(R2)        ;READ SILO TO MAKE IT IS CLEAR
4105  023732  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4106  023740  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
4107  023746  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
4108  023754  012737  100200  004160          MOV     #CERR!RDY,E.CS1 ;LOAD EXPECTED CS1
4109  023762  012737  100110  004170          MOV     #DLT!IR!10,E.CS2 ;LOAD EXPECTED CS2
4110  023770  023737  004170  004130          CMP     E.CS2,T.CS2     ;CHECK IF DATA LATE SET
4111  023776  001401                          BEQ     11$             ;YES, CLEAR CONTROLLER REG. 1
4112  024000  104106                          ERROR   106             ;DATA LATE NOT SET
4113  024002  012762  100000  000000  11$:    MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER
4114
4115                                  ;;*******************************************************
4116                                  ;*TEST 47       SEEK COMMAND IN DIAGNOSTIC MODE
4117                                  ;*
4118                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
4119                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK WITH CDT SET
4120                                  ;*      24 SECTOR FORMAT TO CYLINDER 1714, HEAD 7, DRIVE 0.
4121                                  ;*      MAKE SURE NO STATUS BITS ARE SET AND NO ERROR
4122                                  ;*      BITS ARE SET.
4123                                  ;*
4124                                  ;;*******************************************************
4125  024010  000004          TST47:  SCOPE
4126  024012  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
4127  024020  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
4128  024024  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
4129  024032  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
4130  024040  012762  001714  000020          MOV     #1714,RKDCYL(R2)        ;LOAD CYLINDER ADDRESS
4131  024046  012762  003400  000006          MOV     #3400,RKDA(R2)  ;LOAD HEAD 7
4132  024054  012762  012017  000000          MOV     #SEEK!CFMT!CDT,RKCS1(R2)        ;ISSUE SEEK CDT SET,24 SECTOR
4133  024062  012700  000120                  MOV     #20.*4,R0       ;LOAD COUNT TO DESELECT DECISION
4134  024066  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
4135  024074  012762  000040  000026          MOV     #DMD,RKMR1(R2)
4136  024102  005300                          DEC     R0
4137  024104  001370                          BNE     2$
4138  024106  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4139  024114  012737  012017  004160          MOV     #SEEK!CFMT!CDT,E.CS1    ;LOAD EXPECTED COMMAND AND STATUS REG 1
4140  024122  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF READY RESET
4141  024130  001402                          BEQ     3$              ;YES, CONTINUE COMMAND
4142  024132  104107                          ERROR   107
4143  024134  000543                          BR      TST50           ;;GO ON TO NEXT TEST
4144
4145  024136  012737  071020  004210  3$:     MOV     #S.SEEK!S.FMT!70000,E.MR3       ;LOAD EXPECTED MAINT REG. 3
4146  024144  012737  136300  004206          MOV     #136300,E.MR2   ;LOAD EXPECTED MAINT REG. 2
4147  024152  012701  000003                  MOV     #3,R1           ;ISSUE 3 CONTROL CLOCKS
```

```
4148  024156  012700  000004          4$:     MOV     #4,R0
4149  024162  012762  000440  000026  5$:     MOV     #DMD!MCLK,RKMR1(R2)
4150  024170  012762  000040  000026          MOV     #DMD,RKMR1(R2)
4151  024176  005300                          DEC     R0
4152  024200  001370                          BNE     5$
4153  024202  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
4154  024210  016237  000034  004146          MOV     RKMR2(R2),T.MR2 ;STORE MAINT REG 2
4155  024216  016237  000036  004150          MOV     RKMR3(R2),T.MR3 ;STORE MAINT REG 3
4156  024224  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG. 1 CORRECT
4157  024232  001402                          BEQ     6$              ;YES, CHECK MAINTENANCE REG. 2
4158  024234  104110                          ERROR   11C             ;CS1 INCORRECT
4159  024236  000502                          BR      TST50           ;;GO TO NEXT TEST
4160
4161  024240  023737  004206  004146  6$:     CMP     E.MR2,T.MR2     ;CHECK MAINT REG 2 CORRECT
4162  024246  001402                          BEQ     7$              ;YES, CHECK MAINTENANCE REG 3
4163  024250  104111                          ERROR   111             ;MAINT REG 2 INCORRECT
4164  024252  000474                          BR      TST50           ;;GO TO NEXT TEST
4165
4166  024254  023737  004210  004150  7$:     CMP     E.MR3,T.MR3     ;CHECK IF MAINT REG 3 CORRECT
4167  024262  001402                          BEQ     8$              ;YES, CHECK COMMAND COMPLETE
4168  024264  104112                          ERROR   112             ;MR3 INCORRECT
4169  024266  000466                          BR      TST50           ;;GO TO NEXT TEST
4170
4171  024270  005301                  8$:     DEC     R1              ;CHECK IF COMMAND FINISHED
4172  024272  001331                          BNE     4$              ;NO, ISSUE ANOTHER CONTROL CLOCK
4173
4174  024274  012700  000004                  MOV     #4,R0           ;ISSUE LAST CONTROL CLOCK FOR READY
4175  024300  012762  000440  000026  9$:     MOV     #DMD!MCLK,RKMR1(R2)
4176  024306  012762  000040  000026          MOV     #DMD,RKMR1(R2)
4177  024314  005300                          DEC     R0
4178  024316  001370                          BNE     9$
4179  024320  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
4180  024326  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG. 2
4181  024334  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REGISTER
4182  024342  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REGISTER
4183  024350  012737  012216  004160          MOV     #RDY!CFMT!CDT!<SEEK&^C<GO>>,E.CS1       ;LOAD EXPECTED CS1
4184  024356  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
4185  024364  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REGISTER
4186  024370  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REGISTER
4187  024374  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF COMMAND AND STATUS REG. 2
4188  024402  001401                          BEQ     10$             ;YES, CHECK CS2
4189  024404  104113                          ERROR   113             ;CS1 INCORRECT
4190  024406  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
4191  024414  001401                          BEQ     11$             ;YES, CHECK ERROR REG
4192  024416  104114                          ERROR   114             ;CS2 INCORRECT
4193  024420  023737  004174  004134  11$:    CMP     E.ER,T.ER       ;CHECK ERROR REGISTER
4194  024426  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
4195  024430  104115                          ERROR   115             ;ERROR REG. INCORRECT
4196  024432  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REGISTER CORRECT
4197  024440  001401                          BEQ     TST50           ;;YES, GO ON TO NEXT TEST
4198  024442  104131                          ERROR   131             ;DRIVE STATUS REGISTER INCORRECT
4199
4200                                  .SBTTL  **ERROR AND STATUS BIT FORCING WITH DRIVE MESSAGES
4201
4202                                  ;;**********************************************************
4203                                  ;*TEST 50        DRIVE STATUS FROM SHIFT REGISTER
```

```
4204                                    ;*
4205                                    ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
4206                                    ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
4207                                    ;*      TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 757, HEAD 1,
4208                                    ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS
4209                                    ;*      6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE SPEED LOSS,
4210                                    ;*      DRIVE AVAILABLE, VOLUME VALID, OFFSET, DRIVE READY,
4211                                    ;*      AND WRITE LOCK ARE SET.
4212                                    ;*
4213                                    ;**************************************************************
4214  024444  000004                    T5T50:  SCOPE
4215  024446  012737  000144  001200            MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
4216  024454  013702  001270                    MOV     $BASE,R2        ;LOAD RK611 BASE
4217  024460  012762  000040  000010            MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
4218  024466  012762  000040  000026            MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
4219  024474  012762  000757  000020            MOV     #757,RKDCYL(R2) ;LOAD CYLINDER ADDRESS
4220  024502  012762  000400  000006            MOV     #400,RKDA(R2)   ;LOAD HEAD ADD =1
4221  024510  012762  000017  000000            MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
4222  024515  012700  000132                    MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
4223  024522  012762  000440  000026  1$:       MOV     #DMD!MCLK,RKMR1(R2)
4224  024530  012762  000040  000026            MOV     #DMD,RKMR1(R2)
4225  024536  005300                            DEC     R0
4226  024540  001370                            BNE     1$
4227  024542  005062  000026                    CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
4228  024546  013700  004262                    MOV     WAITIM,R0       ;WAIT FOR FOR READY
4229  024552  105762  000000            2$:     TSTB    RKCS1(R2)
4230  024556  100412                            BMI     3$
4231  024560  005300                            DEC     R0
4232  024562  001373                            BNE     2$
4233  024564  016237  000000  004120            MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
4234  024572  012737  000216  004160            MOV     #RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
4235  024600  104132                            ERROR   132             ;READY NOT SET
4236  024602  000460                            BR      10$             ;CLEAR RK06 SUBSYSTEM
4237
4238  024604  016237  000000  004120  3$:       MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
4239  024612  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
4240  024620  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REF
4241  024626  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG.
4242  024634  012737  000216  004160            MOV     #RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECT CS1
4243  024642  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
4244  024650  012737  104325  004172            MOV     #DRA!OFST!SPDLSS!VV!DRDY!WRL!SVAL,E.DS ;LOAD EXPECTED DRIVE STATUS
4245  024656  005037  004174                    CLR     E.ER            ;LOAD EXPECTED ERROR REGESTER
4246  024662  032737  004325  004132            BIT     #DRA!OFST!SPDLSS!VV!DRDY!WRL,T.DS ;CHECK LOAD STATUS SET
4247  024670  001001                            BNE     4$              ;YES, CHECK REGISTERS
4248  024672  104133                            ERROR   133             ;NO BIT IN DRIVE STATUS SET
4249  024674  023737  004160  004120  4$:       CMP     E.CS1,T.CS1     ;CHECK CS1 CORRECT
4250  024702  001401                            BEQ     5$              ;YES, CONTINUE
4251  024704  104134                            ERROR   134             ;CS1 INCORRECT
4252  024706  023737  004170  004130  5$:       CMP     E.CS2,T.CS2     ;CHECK CS2 CORRECT
4253  024714  001401                            BEQ     6$              ;YES, CONTINUE
4254  024716  104135                            ERROR   135             ;CS2, INCORRECT
4255  024720  023737  004174  004134  6$:       CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
4256  024726  001401                            BEQ     7$              ;YES CONTINUE
4257  024730  104136                            ERROR   136             ;ERROR REG INCORRECT
4258  024732  023737  004172  004132  7$:       CMP     E.DS,T.DS       ;CHECK DRIVE STATUS CORRECT
4259  024740  001401                            BEQ     10$             ;CLEAR RK611
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4260  024742  104137                          ERROR   137             ;DRIVE STATUS INCORRECT
4261  024744  013737  004120  004220  10$:    MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
4262  024752  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
4263  024760  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
4264  024766  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
4265                                                                  ;  AND ERROR REG
4266  024774  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
4267  025002  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
4268  025010  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
4269  025016  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
4270  025024  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
4271  025032  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
4272  025040  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
4273  025046  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
4274  025052  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
4275  025056  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
4276  025064  001401                          BEQ     11$             ;YES, CHECK CS2
4277  025066  104224                          ERROR   224             ;CS1 INCORRECT
4278  025070  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
4279  025076  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
4280  025100  104225                          ERROR   225             ;CS2 INCORRECT
4281  025102  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
4282  025110  001401                          BEQ     13$             ;YES, CHECK ERROR REG
4283  025112  104226                          ERROR   226             ;ERROR REG INCORRECT
4284  025114  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
4285  025122  001401                          BEQ     TST51           ;YES, GO ON TO NEXT TEST
4286  025124  104227                          ERROR   227             ;ERROR REG INCORRECT
4287
4288                                  ;;**********************************************************************
4289                                  ;*TEST 51       DRIVE AVAILABLE SETTING
4290                                  ;*
4291                                  ;*       CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
4292                                  ;*       PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO A RK06.
4293                                  ;*       26 SECTOR FORMAT TO CYLINDER 2, HEAD 0, DRIVE 0.
4294                                  ;*       CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
4295                                  ;*       TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE
4296                                  ;*       AVAILIABLE SETS.
4297                                  ;*
4298                                  ;**********************************************************************
4299  025126  000004                  TST51:  SCOPE
4300  025130  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
4301  025136  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
4302  025142  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
4303  025150  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
4304  025156  012762  000002  000020          MOV     #2,RKDCYL(R2)   ;LOAD CYLINDER AND
4305  025164  012762  000000  000006          MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
4306  025172  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
4307  025200  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
4308  025204  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
4309  025212  012762  000040  000026          MOV     #DMD,RKMR1(R2)
4310  025220  005300                          DEC     R0
4311  025222  001370                          BNE     1$
4312  025224  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
4313  025230  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
4314  025234  105762  000000          2$:     TSTB    RKCS1(R2)
4315  025240  100402                          BMI     3$
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4316  025242  005300                          DEC     R0
4317  025244  001373                          BNE     2$
4318  025246  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
4319  025254  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
4320  025262  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
4321  025270  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
4322  025276  012737  000216  004160          MOV     #RDY!SEEK&<^C<GO>),E.CS1 ;LOAD EXPECTED CS1
4323  025304  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
4324  025312  012737  100001  004172          MOV     #SVAL!DRA,E.DS ;LOAD EXPECTED DRIVE STATUS REG
4325  025320  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
4326  025326  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
4327  025334  001401                          BEQ     4$              ;YES, CONTINUE
4328  025336  104140                          ERROR   140
4329  025340  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
4330  025346  001401                          BEQ     5$              ;YES, CONTINUE
4331  025350  104141                          ERROR   141
4332  025352  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
4333  025360  001401                          BEQ     6$              ;YES, CONTINUE
4334  025362  104142                          ERROR   142
4335  025364  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
4336  025372  001401                          BEQ     7$              ;YES, CLEAR RK611
4337  025374  104143                          ERROR   143
4338  025376  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
4339  025404  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
4340  025412  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
4341  025420  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
4342                                                                  ;  AND ERROR REG
4343  025426  012762  100000  000000          MOV     #CCLR,RKCS1(F2) ;CLEAR RK611
4344  025434  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
4345  025442  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
4346  025450  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
4347  025456  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
4348  025464  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
4349  025472  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
4350  025500  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
4351  025504  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
4352  025510  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
4353  025516  001401                          BEQ     11$             ;YES, CHECK CS2
4354  025520  104224                          ERROR   224             ;CS1 INCORRECT
4355  025522  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
4356  025530  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
4357  025532  104225                          ERROR   225             ;CS2 INCORRECT
4358  025534  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
4359  025542  001401                          BEQ     13$             ;YES, CHECK ERROR REG
4360  025544  104226                          ERROR   226             ;ERROR REG INCORRECT
4361  025546  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
4362  025554  001401                          BEQ     TST52           ;YES, GO ON TO NEXT TEST
4363  025556  104227                          ERROR   227             ;ERROR REG INCORRECT
4364
4365                                  ;;*****************************************************************
4366                                  ;*TEST 52       DRIVE BUS PARITY ERROR
4367                                  ;*
4368                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
4369                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
4370                                  ;*      TO A RK06, 26 SECTOR FORMAT TO CYLINDER 3, HEAD 0,
4371                                  ;*      DRIVE 0. CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
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                                        ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE BUS
                                        ;*      PARITY, DRIVE AVAILIABLE, AND CONTROLLER ERROR ARE SET.
                                        ;*
                                        ;;*****************************************************************
025560  000004                          TST52:  SCOPE
025562  012737  000144  001200                  MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
025570  013702  001270                          MOV     $BASE,R2        ;LOAD RK611 BASE
025574  012762  000040  000010                  MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
025602  012762  000040  000026                  MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
025610  012762  000003  000020                  MOV     #3,RKDCYL(R2)   ;LOAD CYLINDER AND
025616  012762  000000  000006                  MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
025624  012762  000017  000000                  MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
025632  012700  000132                          MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
025636  012762  000440  000026  1$:             MOV     #DMD!MCLK,RKMR1(R2)
025644  012762  000040  000026                  MOV     #DMD,RKMR1(R2)
025652  005300                                  DEC     R0
025654  001370                                  BNE     1$
025656  005062  000026                          CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
025662  013700  004262                          MOV     WAITIM,R0       ;WAIT FOR READY
025666  105762  000000          2$:             TSTB    RKCS1(R2)
025672  100402                                  BMI     3$
025674  005300                                  DEC     R0
025676  001373                                  BNE     2$
025700  016237  000000  004120  3$:             MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
025706  016237  000010  004130                  MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
025714  016237  000012  004132                  MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
025722  016237  000014  004134                  MOV     RKER(R2),T.ER   ;STORE ERROR REG
025730  012737  120216  004160                  MOV     #CERR!SPAR!RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
025736  012737  000100  004170                  MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
025744  012737  100001  004172                  MOV     #SVAL!DRA,E.DS ;LOAD EXPECTED DRIVE STATUS REG
025752  012737  000000  004174                  MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
025760  023737  004160  004120                  CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
025766  001401                                  BEQ     4$              ;YES, CONTINUE
025770  104144                                  ERROR   144
025772  023737  004170  004130  4$:             CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
026000  001401                                  BEQ     5$              ;YES, CONTINUE
026002  104145                                  ERROR   145
026004  023737  004172  004132  5$:             CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
026012  001401                                  BEQ     6$              ;YES, CONTINUE
026014  104146                                  ERROR   146
026016  023737  004174  004134  6$:             CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
026024  001401                                  BEQ     7$              ;YES, CLEAR RK611
026026  104147                                  ERROR   147
026030  013737  004120  004220  7$:             MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
026036  013737  004130  004222                  MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
026044  013737  004132  004224                  MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
026052  013737  004134  004226                  MOV     T.ER,P.ER       ;  DRIVE STATUS REG
                                                                        ;  AND ERROR REG
026060  012762  100000  000000                  MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
026066  016237  000000  004120                  MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
026074  016237  000010  004130                  MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
026102  016237  000012  004132                  MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
026110  016237  000014  004134                  MOV     RKER(R2),T.ER   ;STORE ERROR REG
026116  012737  000200  004160                  MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
026124  012737  000100  004170                  MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
026132  005037  004172                          CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
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 4428  026136  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
 4429  026142  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
 4430  026150  001401                          BEQ     11$             ;YES, CHECK CS2
 4431  026152  104224                          ERROR   224             ;CS1 INCORRECT
 4432  026154  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
 4433  026162  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
 4434  026164  104225                          ERROR   225             ;CS2 INCORRECT
 4435  026166  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
 4436  026174  001401                          BEQ     13$             ;YES, CHECK ERROR REG
 4437  026176  104226                          ERROR   226             ;ERROR REG INCORRECT
 4438  026200  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
 4439  026206  001401                          BEQ     TST53           ;;YES, GO ON TO NEXT TEST
 4440  026210  104227                          ERROR   227             ;ERROR REG INCORRECT
 4441
 4442                                  ;;*****************************************************************
 4443                                  ;*TEST 53       DRIVE AVAILABLE RESET ERROR
 4444                                  ;*
 4445                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 4446                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SELECT
 4447                                  ;*      TO A RK06, 26 SECTOR FORMAT, AND DRIVE 0.
 4448                                  ;*      CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
 4449                                  ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE
 4450                                  ;*      IS RESET AND CONTROLLER ERROR IS SET.
 4451                                  ;*
 4452                                  ;;*****************************************************************
 4453  026212  000004                  TST53:  SCOPE
 4454  026214  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4455  026222  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4456  026226  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 4457  026234  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
 4458  026242  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)       ;ISSUE SELDRV
 4459  026250  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
 4460  026254  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 4461  026262  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 4462  026270  005300                          DEC     R0
 4463  026272  001370                          BNE     1$
 4464  026274  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
 4465  026300  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
 4466  026304  105762  000000          2$:     TSTB    RKCS1(R2)
 4467  026310  100402                          BMI     3$
 4468  026312  005300                          DEC     R0
 4469  026314  001373                          BNE     2$
 4470  026316  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 4471  026324  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 4472  026332  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 4473  026340  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 4474  026346  012737  100200  004160          MOV     #CERR!RDY!SELDRV&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
 4475  026354  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4476  026362  012737  100000  004172          MOV     #SVAL!0,E.DS ;LOAD EXPECTED DRIVE STATUS REG
 4477  026370  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
 4478  026376  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 4479  026404  001401                          BEQ     4$              ;YES, CONTINUE
 4480  026406  104150                          ERROR   150
 4481  026410  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
 4482  026416  001401                          BEQ     5$              ;YES, CONTINUE
 4483  026420  104151                          ERROR   151
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 4484  026422  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
 4485  026430  001401                          BEQ     6$              ;YES, CONTINUE
 4486  026432  104152                          ERROR   152
 4487  026434  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
 4488  026442  001401                          BEQ     7$              ;YES, CLEAR RK611
 4489  026444  104153                          ERROR   153
 4490  026446  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
 4491  026454  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
 4492  026462  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
 4493  026470  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
 4494                                                                  ;  AND ERROR REG
 4495  026476  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 4496  026504  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 4497  026512  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 4498  026520  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 4499  026526  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 4500  026534  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 4501  026542  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4502  026550  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
 4503  026554  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
 4504  026560  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
 4505  026566  001401                          BEQ     11$             ;YES, CHECK CS2
 4506  026570  104224                          ERROR   224             ;CS1 INCORRECT
 4507  026572  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
 4508  026600  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
 4509  026602  104225                          ERROR   225             ;CS2 INCORRECT
 4510  026604  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
 4511  026612  001401                          BEQ     13$             ;YES, CHECK ERROR REG
 4512  026614  104226                          ERROR   226             ;ERROR REG INCORRECT
 4513  026616  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
 4514  026624  001401                          BEQ     TST54           ;YES, GO ON TO NEXT TEST
 4515  026626  104227                          ERROR   227             ;ERROR REG INCORRECT
 4516
 4517                                  ;;*****************************************************************
 4518                                  ;*TEST 54       CDT SET DRIVE TYPE
 4519                                  ;*
 4520                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 4521                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
 4522                                  ;*      WITH CDT SET, 26 SECTOR FORMAT, TO CYLINDER 23,
 4523                                  ;*      HEAD 0, DRIVE 0. CLOCK IN DIAGNOSTIC MODE
 4524                                  ;*      UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE
 4525                                  ;*      AND MAKE SURE ONLY DRIVE AVAILIABLE SETS.
 4526                                  ;*
 4527                                  ;;*****************************************************************
 4528  026630  000004                  TST54:  SCOPE
 4529  026632  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4530  026640  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4531  026644  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 4532  026652  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
 4533  026660  012762  000023  000020          MOV     #23,RKDCYL(R2)  ;LOAD CYLINDER AND
 4534  026666  012762  000000  000006          MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
 4535  026674  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)     ;ISSUE CDT!SEEK
 4536  026702  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
 4537  026706  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 4538  026714  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 4539  026722  005300                          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$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
                                        MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
                                        MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
                                        MOV     RKER(R2),T.ER   ;STORE ERROR REG
                                        MOV     #CDT!RDY!CDT!SEEK&^C<GO>),E.CS1 ;LOAD EXPECTED CS1
                                        MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
                                        MOV     #SVAL!DRA!DDT,E.DS ;LOAD EXPECTED DRIVE STATUS REG
                                        MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
                                        CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
                                        BEQ     4$              ;YES, CONTINUE
                                        ERROR   154
                                4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
                                        BEQ     5$              ;YES, CONTINUE
                                        ERROR   155
                                5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
                                        BEQ     6$              ;YES, CONTINUE
                                        ERROR   156
                                6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
                                        BEQ     7$              ;YES, CLEAR RK611
                                        ERROR   157
                                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$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
                                        BEQ     12$             ;YES, CHECK DRIVE STATUS REG
                                        ERROR   225             ;CS2 INCORRECT
                                12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
                                        BEQ     13$             ;YES, CHECK ERROR REG
                                        ERROR   226             ;ERROR REG INCORRECT
                                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.
                                        ;*
                                        ;*************************************************************
027262  000004                TST55:  SCOPE
027264  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
027272  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
027276  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
027304  012762  000040  000036          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
027312  012762  000002  000020          MOV     #2,RKDCYL(R2)   ;LOAD CYLINDER AND
027320  012762  000000  000006          MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
027326  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)     ;ISSUE CDT!SEEK
027334  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
027340  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
027346  012762  000040  000026          MOV     #DMD,RKMR1(R2)
027354  005300                          DEC     R0
027356  001370                          BNE     1$
027360  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
027364  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
027370  105762  000000          2$:     TSTB    RKCS1(R2)
027374  100402                          BMI     3$
027376  005300                          DEC     R0
027400  001373                          BNE     2$
027402  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
027410  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
027416  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
027424  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
027432  012737  102216  004160          MOV     #CDT!CERR!RDY!CDT!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
027440  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
027446  012737  100001  004172          MOV     #SVAL!DRA,E.DS ;LOAD EXPECTED DRIVE STATUS REG
027454  012737  000040  004174          MOV     #DTYE,E.ER      ;LOAD EXPECTED ERROR REG
027462  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
027470  001401                          BEQ     4$              ;YES, CONTINUE
027472  104160                          ERROR   160
027474  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
027502  001401                          BEQ     5$              ;YES, CONTINUE
027504  104161                          ERROR   161
027506  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
027514  001401                          BEQ     6$              ;YES, CONTINUE
027516  104162                          ERROR   162
027520  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
027526  001401                          BEQ     7$              ;YES, CLEAR RK611
027530  104163                          ERROR   163
027532  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
027540  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
027546  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
027554  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
                                                                ;  AND ERROR REG
027562  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
027570  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
```

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 4652  027576  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 4653  027604  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 4654  027612  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 4655  027620  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 4656  027626  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4657  027634  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
 4658  027640  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
 4659  027644  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
 4660  027652  001401                          BEQ     11$             ;YES, CHECK CS2
 4661  027654  104224                          ERROR   224             ;CS1 INCORRECT
 4662  027656  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
 4663  027664  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
 4664  027666  104225                          ERROR   225             ;CS2 INCORRECT
 4665  027670  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
 4666  027676  001401                          BEQ     13$             ;YES, CHECK ERROR REG
 4667  027700  104226                          ERROR   226             ;ERROR REG INCORRECT
 4668  027702  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
 4669  027710  001401                          BEQ     TST56           ;YES, GO ON TO NEXT TEST
 4670  027712  104227                          ERROR   227             ;ERROR REG INCORRECT
 4671
 4672                                  ;;*****************************************************************
 4673                                  ;*TEST 56       RK06 AND DRIVE TYPE ERROR
 4674                                  ;*
 4675                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR
 4676                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK
 4677                                  ;*      TO A RK06, 26 SECTOR FORMAT, TO CYLINDER 23,
 4678                                  ;*      HEAD 0, DRIVE 0. CLOCK IN DIAGNOSTIC MODE
 4679                                  ;*      UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC
 4680                                  ;*      MODE AND MAKE SURE DRIVE AVAILIABLE, DRIVE TYPE ERROR,
 4681                                  ;*      AND CONTROLLER ERROR SETS.
 4682                                  ;*
 4683                                  ;;*****************************************************************
 4684  027714  000004                  TST56:  SCOPE
 4685  027716  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4686  027724  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4687  027730  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 4688  027736  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
 4689  027744  012762  000023  000020          MOV     #23,RKDCYL(R2)  ;LOAD CYLINDER AND
 4690  027752  012762  000000  000006          MOV     #0,RKDA(R2)     ;LOAD HEAD ADDRESS
 4691  027760  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
 4692  027766  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
 4693  027772  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 4694  030000  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 4695  030006  005300                          DEC     R0
 4696  030010  001370                          BNE     1$
 4697  030012  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
 4698  030016  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
 4699  030022  105762  030000          2$:     TSTB    RKCS1(R2)
 4700  030026  100402                          BMI     3$
 4701  030030  005300                          DEC     R0
 4702  030032  001373                          BNE     2$
 4703  030034  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 4704  030042  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 4705  030050  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 4706  030056  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 4707  030064  012737  100216  004160          MOV     #CERR!RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
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```
 4708  030072  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4709  030100  012737  100401  004172          MOV     #SVAL!DRA!DDT,E.DS ;LOAD EXPECTED DRIVE STATUS REG
 4710  030106  012737  000040  004174          MOV     #DTYE,E.ER      ;LOAD EXPECTED ERROR REG
 4711  030114  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 4712  030122  001401                          BEQ     4$              ;YES, CONTINUE
 4713  030124  104164                          ERROR   164
 4714  030126  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
 4715  030134  001401                          BEQ     5$              ;YES, CONTINUE
 4716  030136  104165                          ERROR   165
 4717  030140  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
 4718  030146  001401                          BEQ     6$              ;YES, CONTINUE
 4719  030150  104166                          ERROR   166
 4720  030152  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
 4721  030160  001401                          BEQ     7$              ;YES, CLEAR RK611
 4722  030162  104167                          ERROR   167
 4723  030164  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
 4724  030172  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
 4725  030200  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
 4726  030206  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
 4727                                                                  ;  AND ERROR REG
 4728  030214  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 4729  030222  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 4730  030230  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 4731  030236  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 4732  030244  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 4733  030252  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 4734  030260  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4735  030266  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
 4736  030272  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
 4737  030276  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
 4738  030304  001401                          BEQ     11$             ;YES, CHECK CS2
 4739  030306  104224                          ERROR   224             ;CS1 INCORRECT
 4740  030310  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
 4741  030316  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
 4742  030320  104225                          ERROR   225             ;CS2 INCORRECT
 4743  030322  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
 4744  030330  001401                          BEQ     13$             ;YES, CHECK ERROR REG
 4745  030332  104226                          ERROR   226             ;ERROR REG INCORRECT
 4746  030334  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
 4747  030342  001401                          BEQ     TST57           ;;YES, GO ON TO NEXT TEST
 4748  030344  104227                          ERROR   227             ;ERROR REG INCORRECT
 4749
 4750                                  ;;*****************************************************************
 4751                                  ;*TEST 57       SPEED LOSS FROM SHIFT REG.
 4752                                  ;*
 4753                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 4754                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO A RK06.
 4755                                  ;*      26 SECTOR FORMAT, TO CYLINDER 3, HEAD 1, DRIVE 0.
 4756                                  ;*      CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6. TURN
 4757                                  ;*      OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE AND
 4758                                  ;*      SPEED LOSS ARE SET.
 4759                                  ;*
 4760                                  ;;*****************************************************************
 4761  030346  000004                  TST57:  SCOPE
 4762  030350  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4763  030356  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
```

```
 4764  030362  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 4765  030370  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
 4766  030376  012762  000003  000020          MOV     #3,RKDCYL(R2)   ;LOAD CYLINDER AND
 4767  030404  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
 4768  030412  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
 4769  030420  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
 4770  030424  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 4771  030432  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 4772  030440  005300                          DEC     R0
 4773  030442  001370                          BNE     1$
 4774  030444  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
 4775  030450  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
 4776  030454  105762  000000          2$:     TSTB    RKCS1(R2)
 4777  030460  100402                          BMI     3$
 4778  030462  005300                          DEC     R0
 4779  030464  001373                          BNE     2$
 4780  030466  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 4781  030474  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 4782  030502  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 4783  030510  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 4784  030516  012737  000216  004160          MOV     #RDY!SEEK&(^C<GO>),E.CS1 ;LOAD EXPECTED CS1
 4785  030524  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4786  030532  012737  100021  004172          MOV     #SVAL!DRA!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
 4787  030540  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
 4788  030546  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 4789  030554  001401                          BEQ     4$              ;YES, CONTINUE
 4790  030556  104170                          ERROR   170
 4791  030560  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
 4792  030566  001401                          BEQ     5$              ;YES, CONTINUE
 4793  030570  104171                          ERROR   171
 4794  030572  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
 4795  030600  001401                          BEQ     6$              ;YES, CONTINUE
 4796  030602  104172                          ERROR   172
 4797  030604  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
 4798  030612  001401                          BEQ     7$              ;YES, CLEAR RK611
 4799  030614  104173                          ERROR   173
 4800  030616  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
 4801  030624  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
 4802  030632  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
 4803  030640  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
 4804                                                                  ;  AND ERROR REG
 4805  030646  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 4806  030654  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 4807  030662  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 4808  030670  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 4809  030676  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 4810  030704  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 4811  030712  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4812  030720  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
 4813  030724  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
 4814  030730  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
 4815  030736  001401                          BEQ     11$             ;YES, CHECK CS2
 4816  030740  104224                          ERROR   224             ;CS1 INCORRECT
 4817  030742  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
 4818  030750  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
 4819  030752  104225                          ERROR   225             ;CS2 INCORRECT
```

```
 4820  030754  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
 4821  030762  001401                          BEQ     13$             ;YES, CHECK ERROR REG
 4822  030764  104226                          ERROR   226             ;ERROR REG INCORRECT
 4823  030766  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
 4824  030774  001401                          BEQ     TST60           ;;YES, GO ON TO NEXT TEST
 4825  030776  104227                          ERROR   227             ;ERROR REG INCORRECT
 4826
 4827                                          ;;*****************************************************************
 4828                                          ;*TEST 60       DRIVE OFF TRACK FROM SHIFT REG.
 4829                                          ;*
 4830                                          ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 4831                                          ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A SEEK TO A RK06,
 4832                                          ;*      26 SECTOR FORMAT, TO CYLINDER 3, HEAD 2, DRIVE 0.
 4833                                          ;*      CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
 4834                                          ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILIABLE
 4835                                          ;*      AND DRIVE OFF TRACK ARE SET.
 4836                                          ;*
 4837                                          ;*****************************************************************
 4838  031000  000004                 TST60:  SCOPE
 4839  031002  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4840  031010  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4841  031014  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 4842  031022  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
 4843  031030  012762  000003  000020          MOV     #3,RKDCYL(R2)   ;LOAD CYLINDER AND
 4844  031036  012762  001000  000006          MOV     #1000,RKDA(R2)  ;LOAD HEAD ADDRESS
 4845  031044  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
 4846  031052  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
 4847  031056  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 4848  031064  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 4849  031072  005300                          DEC     R0
 4850  031074  001370                          BNE     1$
 4851  031076  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
 4852  031102  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
 4853  031106  105762  000000          2$:     TSTB    RKCS1(R2)
 4854  031112  100402                          BMI     3$
 4855  031114  005300                          DEC     R0
 4856  031116  001373                          BNE     2$
 4857  031120  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 4858  031126  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 4859  031134  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 4860  031142  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 4861  031150  012737  000216  004160          MOV     #RDY!SEEK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
 4862  031156  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4863  031164  012737  100041  004172          MOV     #SVAL!DRA!DROT,E.DS ;LOAD EXPECTED DRIVE STATUS REG
 4864  031172  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
 4865  031200  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 4866  031206  001401                          BEQ     4$              ;YES, CONTINUE
 4867  031210  104174                          ERROR   174
 4868  031212  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
 4869  031220  001401                          BEQ     5$              ;YES, CONTINUE
 4870  031222  104175                          ERROR   175
 4871  031224  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
 4872  031232  001401                          BEQ     6$              ;YES, CONTINUE
 4873  031234  104176                          ERROR   176
 4874  031236  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
 4875  031244  001401                          BEQ     7$              ;YES, CLEAR RK611
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 4876  031246  104177                                ERROR   177
 4877  031250  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
 4878  031256  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
 4879  031264  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
 4880  031272  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
 4881                                                                  ;  AND ERROR REG
 4882  031300  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
 4883  031306  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
 4884  031314  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
 4885  031322  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 4886  031330  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 4887  031336  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 4888  031344  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 4889  031352  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
 4890  031356  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
 4891  031362  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
 4892  031370  001401                          BEQ     11$             ;YES, CHECK CS2
 4893  031372  104224                          ERROR   224             ;CS1 INCORRECT
 4894  031374  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
 4895  031402  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
 4896  031404  104225                          ERROR   225             ;CS2 INCORRECT
 4897  031406  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
 4898  031414  001401                          BEQ     13$             ;YES, CHECK ERROR REG
 4899  031416  104226                          ERROR   226             ;ERROR REG INCORRECT
 4900  031420  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
 4901  031426  001401                          BEQ     TST61           ;YES, GO ON TO NEXT TEST
 4902  031430  104227                          ERROR   227             ;ERROR REG INCORRECT
 4903
 4904                                  ;;*****************************************************************
 4905                                  ;*TEST 61       WRITE LOCK ERROR FROM SHIFT REG.
 4906                                  ;*
 4907                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 4908                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE A PACK ACKNOWLEDGE
 4909                                  ;*      TO A RK06, 26 SECTOR FORMAT, WITH CYLINDER 0,
 4910                                  ;*      HEAD 1, DRIVE 0. CLOCK IN DIAGNOSTIC MODE UNTIL
 4911                                  ;*      PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE AND MAKE
 4912                                  ;*      SURE SPEED LOSS, WRITE LOCK ERROR AND CONTROLLER ERROR
 4913                                  ;*      ARE SET WITH DRIVE AVAILIABLE RESET.
 4914                                  ;*
 4915                                  ;;*****************************************************************
 4916  031432  000004                  TST61:  SCOPE
 4917  031434  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 4918  031442  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 4919  031446  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 4920  031454  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
 4921  031462  012762  000000  000020          MOV     #0,RKDCYL(R2)   ;LOAD CYLINDER AND
 4922  031470  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
 4923  031476  012762  000003  000000          MOV     #PACK,RKCS1(R2) ;ISSUE PACK
 4924  031504  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
 4925  031510  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 4926  031516  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 4927  031524  005300                          DEC     R0
 4928  031526  001370                          BNE     1$
 4929  031530  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
 4930  031534  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
 4931  031540  105762  000000          2$:     TSTB    RKCS1(R2)
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4932  031544  100402                          BMI     3$
4933  031546  005300                          DEC     R0
4934  031550  001373                          BNE     2$
4935  031552  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
4936  031560  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
4937  031566  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
4938  031574  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
4939  031602  012737  100202  004160          MOV     #CERR!RDY!PACK&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
4940  031610  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
4941  031616  012737  100020  004172          MOV     #SVAL!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
4942  031624  012737  004000  004174          MOV     #WLE,E.ER       ;LOAD EXPECTED ERROR REG
4943  031632  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
4944  031640  001401                          BEQ     4$              ;YES, CONTINUE
4945  031642  104200                          ERROR   200
4946  031644  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
4947  031652  001401                          BEQ     5$              ;YES, CONTINUE
4948  031654  104201                          ERROR   201
4949  031656  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
4950  031664  001401                          BEQ     6$              ;YES, CONTINUE
4951  031666  104202                          ERROR   202
4952  031670  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
4953  031676  001401                          BEQ     7$              ;YES, CLEAR RK611
4954  031700  104203                          ERROR   203
4955  031702  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
4956  031710  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
4957  031716  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
4958  031724  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
4959                                                                  ;  AND ERROR REG
4960  031732  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
4961  031740  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
4962  031746  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
4963  031754  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
4964  031762  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
4965  031770  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
4966  031776  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
4967  032004  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
4968  032010  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
4969  032014  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
4970  032022  001401                          BEQ     11$             ;YES, CHECK CS2
4971  032024  104224                          ERROR   224             ;CS1 INCORRECT
4972  032026  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
4973  032034  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
4974  032036  104225                          ERROR   225             ;CS2 INCORRECT
4975  032040  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
4976  032046  001401                          BEQ     13$             ;YES, CHECK ERROR REG
4977  032050  104226                          ERROR   226             ;ERROR REG INCORRECT
4978  032052  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
4979  032060  001401                          BEQ     TST62           ;YES, GO ON TO NEXT TEST
4980  032062  104227                          ERROR   227             ;ERROR REG INCORRECT
4981
4982                                  ;;*****************************************************************
4983                                  ;*TEST 62       SEEK INCOMPLETE
4984                                  ;*
4985                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
4986                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE AN UNLOAD
4987                                  ;*      TO A RK06, 26 SECTOR FORMAT, WITH CYLINDER 0,
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                                        ;*      HEAD 1, DRIVE 0, CLOCK IN DIAGNOSTIC MODE UNTIL
                                        ;*      PHASE ADDRESS 6. TURN OFF DIAGNOSTIC MODE AND MAKE
                                        ;*      SURE SPEED LOSS, SEEK INCOMPLETE, AND CONTROLLER ERROR
                                        ;*      ARE SET WITH DRIVE AVAILIABLE RESET.
                                        ;*
                                        ;*************************************************************
032064  000004                        TST62:  SCOPE
032066  012737  000144  001200                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
032074  013702  001270                        MOV     $BASE,R2        ;LOAD RK611 BASE
032100  012762  000040  000010                MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
032106  012762  000040  000026                MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
032114  012762  000000  000020                MOV     #0,RKDCYL(R2)   ;LOAD CYLINDER AND
032122  012762  000400  000006                MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
032130  012762  000007  000000                MOV     #UNLOAD,RKCS1(R2)       ;ISSUE UNLOAD
032136  012700  000132                        MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
032142  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
032150  012762  000040  000026                MOV     #DMD,RKMR1(R2)
032156  005300                                DEC     R0
032160  001370                                BNE     1$
032162  005062  000026                        CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
032166  013700  004262                        MOV     WAITIM,R0       ;WAIT FOR READY
032172  105762  000000            2$:     TSTB    RKCS1(R2)
032176  100402                                BMI     3$
032200  005300                                DEC     R0
032202  001373                                BNE     2$
032204  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
032212  016237  000010  004130                MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
032220  016237  000012  004132                MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
032226  016237  000014  004134                MOV     RKER(R2),T.ER   ;STORE ERROR REG
032234  012737  100206  004160                MOV     #CERR!RDY!UNLOAD&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
032242  012737  000100  004170                MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
032250  012737  100020  004172                MOV     #SVAL!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
032256  012737  000002  004174                MOV     #SKI,E.ER       ;LOAD EXPECTED ERROR REG
032264  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
032272  001401                                BEQ     4$              ;YES, CONTINUE
032274  104204                                ERROR   204
032276  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
032304  001401                                BEQ     5$              ;YES, CONTINUE
032306  104205                                ERROR   205
032310  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
032316  001401                                BEQ     6$              ;YES, CONTINUE
032320  104206                                ERROR   206
032322  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
032330  001401                                BEQ     7$              ;YES, CLEAR RK611
032332  104207                                ERROR   207
032334  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
032342  013737  004130  004222                MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
032350  013737  004132  004224                MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
032356  013737  004134  004226                MOV     T.ER,P.ER       ;  DRIVE STATUS REG
                                                                        ;  AND ERROR REG
032364  012762  100000  000000                MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
032372  016237  000000  004120                MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
032400  016237  000010  004130                MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
032406  016237  000012  004132                MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
032414  016237  000014  004134                MOV     RKER(R2),T.ER   ;STORE ERROR REG
032422  012737  000200  004160                MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
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5044  032430  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5045  032436  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5046  032442  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5047  032446  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5048  032454  001401                          BEQ     11$             ;YES, CHECK CS2
5049  032456  104224                          ERROR   224             ;CS1 INCORRECT
5050  032460  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5051  032466  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5052  032470  104225                          ERROR   225             ;CS2 INCORRECT
5053  032472  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5054  032500  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5055  032502  104226                          ERROR   226             ;ERROR REG INCORRECT
5056  032504  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5057  032512  001401                          BEQ     TST63           ;;YES, GO ON TO NEXT TEST
5058  032514  104227                          ERROR   227             ;ERROR REG INCORRECT
5059
5060                                  ;;*****************************************************************
5061                                  ;*TEST 63       NON-EXECUTABLE DRIVE FUNCTION FROM SHIFT REG.
5062                                  ;*
5063                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR
5064                                  ;*      PUT CONTROLLER IN DIAGNOSTIC MODE. ISSUE
5065                                  ;*      A DRIVE CLEAR TO A RK06, 26 SECTOR FORMAT,
5066                                  ;*      WITH CYLINDER 0, HEAD 1, DRIVE 0. CLOCK IN DIAGNOSTIC
5067                                  ;*      MODE UNTIL PHASE ADDRESS 6. TURN OFF DIAGNOSTIC
5068                                  ;*      MODE AND MAKE SURE SPEED LOSS, NON-EXECUTABLE DRIVE FUNCTION, AND
5069                                  ;*      CONTROLLER ERROR ARE SET WITH DRIVE AVAILIABLE RESET.
5070                                  ;*
5071                                  ;;*****************************************************************
5072  032516  000004                  TST63:  SCOPE
5073  032520  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
5074  032526  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
5075  032532  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
5076  032540  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
5077  032546  012762  000000  000020          MOV     #0,RKDCYL(R2)   ;LOAD CYLINDER AND
5078  032554  012762  000400  000006          MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
5079  032562  012762  000005  000000          MOV     #CLEAR,RKCS1(R2)        ;ISSUE CLEAR
5080  032570  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
5081  032574  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
5082  032602  012762  000040  000026          MOV     #DMD,RKMR1(R2)
5083  032610  005300                          DEC     R0
5084  032612  001370                          BNE     1$
5085  032614  005062  000026                  CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
5086  032620  013700  004262                  MOV     WAITIM,R0       ;WAIT FOR READY
5087  032624  105762  000000          2$:     TSTB    RKCS1(R2)
5088  032630  100402                          BMI     3$
5089  032632  005300                          DEC     R0
5090  032634  001373                          BNE     2$
5091  032636  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5092  032644  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5093  032652  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5094  032660  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5095  032666  012737  100204  004160          MOV     #CERR!RDY!CLEAR&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
5096  032674  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5097  032702  012737  100020  004172          MOV     #SVAL!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
5098  032710  012737  000004  004174          MOV     #NXF,E.ER       ;LOAD EXPECTED ERROR REG
5099  032716  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
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5100  032724  001401                          BEQ     4$              ;YES, CONTINUE
5101  032726  104210                          ERROR   210
5102  032730  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
5103  032736  001401                          BEQ     5$              ;YES, CONTINUE
5104  032740  104211                          ERROR   211
5105  032742  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5106  032750  001401                          BEQ     6$              ;YES, CONTINUE
5107  032752  104212                          ERROR   212
5108  032754  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
5109  032762  001401                          BEQ     7$              ;YES, CLEAR RK611
5110  032764  104213                          ERROR   213
5111  032766  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5112  032774  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5113  033002  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5114  033010  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5115                                                                  ;  AND ERROR REG
5116  033016  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5117  033024  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5118  033032  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5119  033040  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5120  033046  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5121  033054  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5122  033062  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5123  033070  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5124  033074  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5125  033100  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5126  033106  001401                          BEQ     11$             ;YES, CHECK CS2
5127  033110  104224                          ERROR   224             ;CS1 INCORRECT
5128  033112  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5129  033120  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5130  033122  104225                          ERROR   225             ;CS2 INCORRECT
5131  033124  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5132  033132  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5133  033134  104226                          ERROR   226             ;ERROR REG INCORRECT
5134  033136  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5135  033144  001401                          BEQ     TST64           ;;YES, GO ON TO NEXT TEST
5136  033146  104227                          ERROR   227             ;ERROR REG INCORRECT
5137
5138                                  ;;*****************************************************************
5139                                  ;*TEST 64       AC LOW AND C-D PARITY FROM SHIFT REG.
5140                                  ;*
5141                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR, PUT RK611
5142                                  ;*      CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A START SPINDLE
5143                                  ;*      TO AN RK06, IN 24 SECTOR FORMAT, CYLINDER 0, HEAD 0,
5144                                  ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
5145                                  ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE AC LOW, DRIVE
5146                                  ;*      DETECTED SERCOM PARITY, AND CONTROLLER ERROR SET WITH
5147                                  ;*      DRIVE AVAILABLE RESET.
5148                                  ;*
5149                                  ;;*****************************************************************
5150  033150  000004                  TST64:  SCOPE
5151  033152  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
5152  033160  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
5153  033164  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
5154  033172  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
5155  033200  012762  010011  000000          MOV     #SRTSPL!CFMT,RKCS1(R2)  ;ISSUE SRTSPL!CFMT
```

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5156  033206  012700  000132                    MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
5157  033212  012762  000440  000026  1$:       MOV     #DMD!MCLK,RKMR1(R2)
5158  033220  012762  000040  000026            MOV     #DMD,RKMR1(R2)
5159  033226  005300                            DEC     R0
5160  033230  001370                            BNE     1$
5161  033232  005062  000026                    CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
5162  033236  013700  004262                    MOV     WAITIM,R0       ;WAIT FOR READY
5163  033242  105762  000000          2$:       TSTB    RKCS1(R2)
5164  033246  100402                            BMI     3$
5165  033250  005300                            DEC     R0
5166  033252  001373                            BNE     2$
5167  033254  016237  000000  004120  3$:       MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5168  033262  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5169  033270  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5170  033276  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG
5171  033304  012737  110210  004160            MOV     #CERR!CFMT!RDY!SRTSPL!CFMT&<^C<GO>>,E.CS1 ;LOAD EXPECTED CS1
5172  033312  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5173  033320  012737  100010  004172            MOV     #SVAL!ACLO,E.DS ;LOAD EXPECTED DRIVE STATUS REG
5174  033326  012737  000010  004174            MOV     #DRPAR,E.ER     ;LOAD EXPECTED ERROR REG
5175  033334  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5176  033342  001401                            BEQ     4$              ;YES, CONTINUE
5177  033344  104214                            ERROR   214
5178  033346  023737  004170  004130  4$:       CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
5179  033354  001401                            BEQ     5$              ;YES, CONTINUE
5180  033356  104215                            ERROR   215
5181  033360  023737  004172  004132  5$:       CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5182  033366  001401                            BEQ     6$              ;YES, CONTINUE
5183  033370  104216                            ERROR   216
5184  033372  023737  004174  004134  6$:       CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
5185  033400  001401                            BEQ     7$              ;YES, CLEAR RK611
5186  033402  104217                            ERROR   217
5187  033404  013737  004120  004220  7$:       MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
5188  033412  013737  004130  004222            MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
5189  033420  013737  004132  004224            MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
5190  033426  013737  004134  004226            MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5191                                            ;  AND ERROR REG
5192  033434  012762  100000  000000            MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5193  033442  016237  000000  004120            MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5194  033450  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5195  033456  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5196  033464  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG
5197  033472  012737  000200  004160            MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5198  033500  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5199  033506  005037  004172                    CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5200  033512  005037  004174                    CLR     E.ER            ;LOAD EXPECTED ERROR REG
5201  033516  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5202  033524  001401                            BEQ     11$             ;YES, CHECK CS2
5203  033526  104224                            ERROR   224             ;CS1 INCORRECT
5204  033530  023737  004170  004130  11$:      CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5205  033536  001401                            BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5206  033540  104225                            ERROR   225             ;CS2 INCORRECT
5207  033542  023737  004172  004132  12$:      CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5208  033550  001401                            BEQ     13$             ;YES, CHECK ERROR REG
5209  033552  104226                            ERROR   226             ;ERROR REG INCORRECT
5210  033554  023737  004174  004134  13$:      CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5211  033562  001401                            BEQ     TST65           ;;YES, GO ON TO NEXT TEST
```

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                                ERROR   227             ;ERROR REG INCORRECT

                        ;;*****************************************************************
                        ;*TEST 65       ILLEGAL DISK ADDRESS ERROR FROM SHIFT REG.
                        ;*
                        ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.   PUT
                        ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A RECALIBRATE
                        ;*      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.
                        ;*
                        ;;*****************************************************************
033566  000004         TST65:  SCOPE
033570  012737  000144  001200        MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
033576  013702  001270            MOV     $BASE,R2        ;LOAD RK611 BASE
033602  012762  000040  000010        MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
033610  012762  000040  000026        MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINT MODE
033616  012762  000000  000020        MOV     #0,RKDCYL(R2)   ;LOAD CYLINDER AND
033624  012762  000400  000006        MOV     #400,RKDA(R2)   ;LOAD HEAD ADDRESS
033632  012762  000013  000000        MOV     #RECAL,RKCS1(R2)        ;ISSUE RECAL
033640  012700  000132            MOV     #22.*4+2,R0     ;ISSUE CLOCKS UNTIL PHASE ADDRESS 6
033644  012762  000440  000026  1$:   MOV     #DMD!MCLK,RKMR1(R2)
033652  012762  000040  000026        MOV     #DMD,RKMR1(R2)
033660  005300                DEC     R0
033662  001370                BNE     1$
033664  005062  000026            CLR     RKMR1(R2)       ;FINISH COMMAND IN NORMAL MODE
033670  013700  004262            MOV     WAITIM,R0       ;WAIT FOR READY
033674  105762  000000        2$:   TSTB    RKCS1(R2)
033700  100402                BMI     3$
033702  005300                DEC     R0
033704  001373                BNE     2$
033706  016237  000000  004120  3$:   MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
033714  016237  000010  004130        MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
033722  016237  000012  004132        MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
033730  016237  000014  004134        MOV     RKER(R2),T.ER   ;STORE ERROR REG
033736  012737  100212  004160        MOV     #CERR!RDY!RECAL&^C<GO>,E.CS1 ;LOAD EXPECTED CS1
033744  012737  000100  004170        MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
033752  012737  100020  004172        MOV     #SVAL!SPDLSS,E.DS ;LOAD EXPECTED DRIVE STATUS REG
033760  012737  002000  004174        MOV     #IDAE,E.ER      ;LOAD EXPECTED ERROR REG
033766  023737  004160  004120        CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
033774  001401                BEQ     4$              ;YES, CONTINUE
033776  104220                ERROR   220
034000  023737  004170  004130  4$:   CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG. 2 CORRECT
034006  001401                BEQ     5$              ;YES, CONTINUE
034010  104221                ERROR   221
034012  023737  004172  004132  5$:   CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
034020  001401                BEQ     6$              ;YES, CONTINUE
034022  104222                ERROR   222
034024  023737  004174  004134  6$:   CMP     E.ER,T.ER       ;CHECK ERROR REGISTER CORRECT
034032  001401                BEQ     7$              ;YES, CLEAR RK611
034034  104223                ERROR   223
034036  013737  004120  004220  7$:   MOV     T.CS1,P.CS1     ;STORE PREVIOUS CONTENTS OF
034044  013737  004130  004222        MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG 1
034052  013737  004132  004224        MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG 2
```

```
5268  034060  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG
5269                                                                    ;  AND ERROR REG
5270  034066  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611
5271  034074  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
5272  034102  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG 2
5273  034110  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5274  034116  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5275  034124  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5276  034132  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5277  034140  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG
5278  034144  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
5279  034150  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG 1 CORRECT
5280  034156  001401                          BEQ     11$             ;YES, CHECK CS2
5281  034160  104224                          ERROR   224             ;CS1 INCORRECT
5282  034162  023737  004170  004130  11$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG 2 CORRECT
5283  034170  001401                          BEQ     12$             ;YES, CHECK DRIVE STATUS REG
5284  034172  104225                          ERROR   225             ;CS2 INCORRECT
5285  034174  023737  004172  004132  12$:    CMP     E.DS,T.DS       ;CHECK IF DRIVE STATUS REG CORRECT
5286  034202  001401                          BEQ     13$             ;YES, CHECK ERROR REG
5287  034204  104226                          ERROR   226             ;ERROR REG INCORRECT
5288  034206  023737  004174  004134  13$:    CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
5289  034214  001401                          BEQ     TST66           ;YES, GO ON TO NEXT TEST
5290  034216  104227                          ERROR   227             ;ERROR REG INCORRECT
5291
5292                                  ;;*****************************************************************
5293                                  ;*TEST 66       IDAE DETECTION IN RK611 CONTROLLER (PART 1)
5294                                  ;*
5295                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
5296                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A
5297                                  ;*      SEEK TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 1003,
5298                                  ;*      HEAD 0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
5299                                  ;*      PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE
5300                                  ;*      SURE DRIVE AVAILABLE, ILLEGAL DISK ADDRESS ERROR,
5301                                  ;*      AND CONTROLLER ERROR ARE SET.
5302                                  ;*
5303                                  ;*****************************************************************
5304  034220  000004                  TST66:  SCOPE
5305  034222  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
5306  034230  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
5307  034234  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
5308  034242  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
5309  034250  012762  001002  000020          MOV     #1002,RKDCYL(R2)        ;LOAD CYLINDER ADDRESS
5310  034256  012737  001002  004252          MOV     #1002,CYLIN
5311  034264  012737  000000  004250          MOV     #0,HDCODE       ;LOAD HEAD ADDRESS
5312  034272  005046                          CLR     -(SP)
5313  034274  113766  004250  000001          MOVB    HDCODE,1(SP)
5314  034302  012662  000006                  MOV     (SP)+,RKDA(R2)
5315  034306  012737  000006  004266          MOV     #6,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
5316  034314  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK TO RK06
5317  034322  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
5318  034326  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
5319  034334  012762  000040  000026          MOV     #DMD,RKMR1(R2)
5320  034342  005300                          DEC     R0
5321  034344  001370                          BNE     1$
5322  034346  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
5323  034352  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
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5324  034356  105762  000000          2$:   TSTB    RKCS1(R2)          ;WAIT FOR READY
5325  034362  100402                        BMI     3$
5326  034364  005300                        DEC     R0
5327  034366  001373                        BNE     2$
5328  034370  016237  000000  004120  3$:   MOV     RKCS1(R2),T.CS1    ;STORE COMMAND AND STATUS REG.1
5329  034376  016237  000010  004130        MOV     RKCS2(R2),T.CS2    ;STORE COMMAND AND STATUS REG.2
5330  034404  016237  000012  004132        MOV     RKDS(R2),T.DS      ;STORE DRIVE STATUS REG
5331  034412  016237  000014  004134        MOV     RKER(R2),T.ER      ;STORE ERROR REG
5332  034420  012737  100216  004160        MOV     #CERR!RDY!<SEEK$!C<GO>>,E.CS1  ;LOAD EXPECTED CS1
5333
5334  034426  012737  000100  004170        MOV     #IR,E.CS2          ;LOAD EXPECTED COMMAND AND STATUS REG.2
5335  034434  012737  100001  004172        MOV     #SVAL!DPA,E.DS     ;LOAD EXPECTED DRIVE STATUS REG
5336  034442  012737  002000  004174        MOV     #IDAE,E.ER         ;LOAD EXPECTED ERROR REG
5337  034450  023737  004160  004120        CMP     E.CS1,T.CS1        ;CHECK COMMAND AND STATUS REG1 CORRECT
5338  034456  001401                        BEQ     4$                 ;YES, CHECK CS2
5339  034460  104230                        ERROR   230                ;CS1 INCORRECT
5340  034462  023737  004170  004130  4$:   CMP     E.CS2,T.CS2        ;CHECK COMMAND AND STATUS REG2 CORRECT
5341  034470  001401                        BEQ     5$                 ;YES, CHECK DRIVE STATUS REG.
5342  034472  104231                        ERROR   231                ;CS2 INCORRECT
5343  034474  023737  004172  004132  5$:   CMP     E.DS,T.DS          ;CHECK DRIVE STATUS REG. CORRECT
5344  034502  001401                        BEQ     6$                 ;YES, CHECK ERROR REG
5345  034504  104232                        ERROR   232                ;DRIVE STATUS REG. INCORRECT
5346  034506  023737  004174  004134  6$:   CMP     E.ER,T.ER          ;CHECK ERROR REG. CORRECT
5347  034514  001401                        BEQ     7$                 ;YES, CHECK CONTROLLER CLEAR
5348  034516  104233                        ERROR   233                ;ERROR REG. INCORRECT
5349  034520  013737  004120  004220  7$:   MOV     T.CS1,P.CS1        ;STORE PREVIOUS VALUES OF
5350  034526  013737  004130  004222        MOV     T.CS2,P.CS2        ;  COMMAND AND STATUS REG.1
5351  034534  013737  004132  004224        MOV     T.DS,P.DS          ;  COMMAND AND STATUS REG.2
5352  034542  013737  004134  004226        MOV     T.ER,P.ER          ;  DRIVE STATUS REG.
5353                                                                   ;  ERROR REG.
5354  034550  012762  100000  000000        MOV     #CCLR,RKCS1(R2)    ;ISSUE CONTROLLER CLEAR
5355  034556  016237  000000  004120        MOV     RKCS1(R2),T.CS1    ;STORE COMMAND AND STATUS REG.1
5356  034564  016237  000010  004130        MOV     RKCS2(R2),T.CS2    ;STORE COMMAND AND STATUS REG.2
5357  034572  016237  000012  004132        MOV     RKDS(R2),T.DS      ;STORE DRIVE STATUS REG.
5358  034600  016237  000014  004134        MOV     RKER(R2),T.ER      ;STORE ERROR REG
5359  034606  012737  000200  004160        MOV     #RDY,E.CS1         ;LOAD EXPECTED CS1
5360  034614  012737  000100  004170        MOV     #IR,E.CS2          ;LOAD EXPECTED CS2
5361  034622  005037  004172                CLR     E.DS               ;LOAD EXPECTED DRIVE STATUS REG.
5362  034626  005037  004174                CLR     E.ER               ;LOAD EXPECTED ERROR REG.
5363  034632  023737  004160  004120        CMP     E.CS1,T.CS1        ;CHECK COMMAND AND STATUS REG.1 CORRECT
5364  034640  001401                        BEQ     10$                ;YES, CHECK CS2
5365  034642  104224                        ERROR   224                ;CS1 INCORRECT
5366  034644  023737  004170  004130  10$:  CMP     E.CS2,T.CS2        ;CHECK COMMAND AND STATUS REG2 CORRECT
5367  034652  001401                        BEQ     11$                ;YES, CHECK DRIVE STATUS REG
5368  034654  104225                        ERROR   225                ;CS2 INCORRECT
5369  034656  023737  004172  004132  11$:  CMP     E.DS,T.DS          ;CHECK DRIVE STATUS REG CORRECT
5370  034664  001401                        BEQ     12$                ;YES, CHECK ERROR REGISTER
5371  034666  104226                        ERROR   226                ;DRIVE STATUS REG INCORRECT
5372  034670  023737  004174  004134  12$:  CMP     E.ER,T.ER          ;CHECK ERROR REG CORRECT
5373  034676  001401                        BEQ     TST67              ;YES,GO ON TO NEXT TEST
5374  034700  104227                        ERROR   227                ;ERROR REG. INCORRECT
5375
5376                                  ;;*****************************************************************
5377                                  ;*TEST 67       IDAE DETECTION IN RK611 CONTROLLER (PART 2)
5378                                  ;*
5379                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT
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                                        ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                                        ;*      WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 1022, HEAD
                                        ;*      0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE
                                        ;*      ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
                                        ;*      DRIVE AVAILABLE AND POSITIONING IN PROGRESS ARE SET
                                        ;*      WITH ILLEGAL DISK ADDRESS ERROR RESET.
                                        ;*
                                        ;;*****************************************************************
034702  000004                  TST67:  SCOPE
034704  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
034712  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
034716  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
034724  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
034732  012762  001022  000020          MOV     #1022,RKDCYL(R2)        ;LOAD CYLINDER ADDRESS
034740  012737  001022  004252          MOV     #1022,CYLIN
034746  012737  000000  004250          MOV     #0,HDCODE       ;LOAD HEAD ADDRESS
034754  005046                          CLR     -(SP)
034756  113766  004250  000001          MOVB    HDCODE,1(SP)
034764  012662  000006                  MOV     (SP)+,RKDA(R2)
034770  012737  000007  004266          MOV     #7,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
034776  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE SEEK TO RK06
035004  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
035010  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
035016  012762  000040  000026          MOV     #DMD,RKMR1(R2)
035024  005300                          DEC     R0
035026  001370                          BNE     1$
035030  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
035034  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
035040  105762  000000          2$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
035044  100402                          BMI     3$
035046  005300                          DEC     R0
035050  001373                          BNE     2$
035052  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
035060  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
035066  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
035074  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
035102  012737  002216  004160          MOV     #CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1

035110  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
035116  012737  120401  004172          MOV     #SVAL!DRA!PIP!DDT,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
035124  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
035132  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
035140  001401                          BEQ     4$              ;YES, CHECK CS2
035142  104230                          ERROR   230             ;CS1 INCORRECT
035144  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
035152  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
035154  104231                          ERROR   231             ;CS2 INCORRECT
035156  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
035164  001401                          BEQ     6$              ;YES, CHECK ERROR REG
035166  104232                          ERROR   232             ;DRIVE STATUS REG. INCORRECT
035170  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
035176  001401                          BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
035200  104233                          ERROR   233             ;ERROR REG. INCORRECT
035202  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
035210  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
035216  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
```

```
5436  035224  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
5437                                                                  ;  ERROR REG.
5438  035232  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
5439  035240  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
5440  035246  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
5441  035254  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
5442  035262  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
5443  035270  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5444  035276  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5445  035304  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
5446  035310  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
5447  035314  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5448  035322  001401                          BEQ     10$             ;YES, CHECK CS2
5449  035324  104224                          ERROR   224             ;CS1 INCORRECT
5450  035326  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
5451  035334  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG
5452  035336  104225                          ERROR   225             ;CS2 INCORRECT
5453  035340  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
5454  035346  001401                          BEQ     12$             ;YES, CHECK ERROR REGISTER
5455  035350  104226                          ERROR   226             ;DRIVE STATUS REG INCORRECT
5456  035352  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
5457  035360  001401                          BEQ     TST70           ;YES,GO ON TO NEXT TEST
5458  035362  104227                          ERROR   227             ;ERROR REG. INCORRECT
5459
5460                                  ;;**********************************************************************
5461                                  ;*TEST 70        IDAE DETECTION IN RK611 CONTROLLER (PART 3)
5462                                  ;*
5463                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR. PUT
5464                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
5465                                  ;*      TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 2,
5466                                  ;*      HEAD 3, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
5467                                  ;*      PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE
5468                                  ;*      SURE DRIVE AVAILABLE, DRIVE OFF TRACK, SPEED LOSS,
5469                                  ;*      ILLEGAL DISK ADDRESS ERROR, AND CONTROLLER ERROR ARE
5470                                  ;*      SET.
5471                                  ;*
5472                                  ;**********************************************************************
5473  035364  000004                  TST70:  SCOPE
5474  035366  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
5475  035374  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
5476  035400  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
5477  035406  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
5478  035414  012762  000002  000020          MOV     #2,RKDCYL(R2)   ;LOAD CYLINDER ADDRESS
5479  035422  012737  000002  004252          MOV     #2,CYLIN
5480  035430  012737  000003  004250          MOV     #3,HDCODE       ;LOAD HEAD ADDRESS
5481  035436  005046                          CLR     -(SP)
5482  035440  113766  004250  000001          MOVB    HDCODE,1(SP)
5483  035446  012662  000006                  MOV     (SP)+,RKDA(R2)
5484  035452  012737  000006  004266          MOV     #6,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
5485  035460  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK TO RK06
5486  035466  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
5487  035472  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
5488  035500  012762  000040  000026          MOV     #DMD,RKMR1(R2)
5489  035506  005300                          DEC     R0
5490  035510  001370                          BNE     1$
5491  035512  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
```

```
5492  035516  013700  004262                    MOV     WAITIM,R0       ;LOAD WAIT TIME
5493  035522  105762  000000          2$:       TSTB    RKCS1(R2)       ;WAIT FOR READY
5494  035526  100402                            BMI     3$
5495  035530  005300                            DEC     R0
5496  035532  001373                            BNE     2$
5497  035534  016237  000000  004120  3$:       MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
5498  035542  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
5499  035550  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5500  035556  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG
5501  035564  012737  100216  004160            MOV     #CERR!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
5502
5503  035572  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
5504  035600  012737  100061  004172            MOV     #SVAL!DRA!DROT!SPDLSS,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
5505  035606  012737  002000  004174            MOV     #IDAE,E.ER      ;LOAD EXPECTED ERROR REG
5506  035614  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
5507  035622  001401                            BEQ     4$              ;YES, CHECK CS2
5508  035624  104230                            ERROR   230             ;CS1 INCORRECT
5509  035626  023737  004170  004130  4$:       CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
5510  035634  001401                            BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
5511  035636  104231                            ERROR   231             ;CS2 INCORRECT
5512  035640  023737  004172  004132  5$:       CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5513  035646  001401                            BEQ     6$              ;YES, CHECK ERROR REG
5514  035650  104232                            ERROR   232             ;DRIVE STATUS REG. INCORRECT
5515  035652  023737  004174  004134  6$:       CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
5516  035660  001401                            BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
5517  035662  104233                            ERROR   233             ;ERROR REG. INCORRECT
5518  035664  013737  004120  004220  7$:       MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
5519  035672  013737  004130  004222            MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
5520  035700  013737  004132  004224            MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
5521  035706  013737  004134  004226            MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
5522                                                                    ;  ERROR REG.
5523  035714  012762  100000  000000            MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
5524  035722  016237  000000  004120            MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
5525  035730  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
5526  035736  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
5527  035744  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG
5528  035752  012737  000200  004160            MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5529  035760  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5530  035766  005037  004172                    CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
5531  035772  005037  004174                    CLR     E.ER            ;LOAD EXPECTED ERROR REG.
5532  035776  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5533  036004  001401                            BEQ     10$             ;YES, CHECK CS2
5534  036006  104224                            ERROR   224             ;CS1 INCORRECT
5535  036010  023737  004170  004130  10$:      CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
5536  036016  001401                            BEQ     11$             ;YES, CHECK DRIVE STATUS REG
5537  036020  104225                            ERROR   225             ;CS2 INCORRECT
5538  036022  023737  004172  004132  11$:      CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
5539  036030  001401                            BEQ     12$             ;YES, CHECK ERROR REGISTER
5540  036032  104226                            ERROR   226             ;DRIVE STATUS REG INCORRECT
5541  036034  023737  004174  004134  12$:      CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
5542  036042  001401                            BEQ     TST71           ;YES,GO ON TO NEXT TEST
5543  036044  104227                            ERROR   227             ;ERROR REG. INCORRECT
5544
5545                                  ;;*****************************************************************
5546                                  ;*TEST 71        IDAE DETECTION IN RK611 CONTROLLER (PART 4)
5547                                  ;*
```

```
                                        ;*      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 3,
                                        ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
                                        ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE AVAILABLE,
                                        ;*      DRIVE OFF TRACK, AND SPEED LOSS ARE SET WITH ILLEGAL DISK
                                        ;*      ADDRESS ERROR RESET.
                                        ;*
                                        ;;*****************************************************************
036046  000004                  T$T71:  SCOPE
036050  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
036056  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
036062  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
036070  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
036076  012762  000023  000020          MOV     #23,RKDCYL(R2)  ;LOAD CYLINDER ADDRESS
036104  012737  000023  004252          MOV     #23,CYLIN
036112  012737  000003  004250          MOV     #3,HDCODE       ;LOAD HEAD ADDRESS
036120  005046                          CLR     -(SP)
036122  113766  004250  000001          MOVB    HDCODE,1(SP)
036130  012662  000006                  MOV     (SP)+,RKDA(R2)
036134  012737  000007  004266          MOV     #7,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
036142  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE SEEK TO RK06
036150  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
036154  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
036162  012762  000040  000026          MOV     #DMD,RKMR1(R2)
036170  005300                          DEC     R0
036172  001370                          BNE     1$
036174  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
036200  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
036204  105762  000000          2$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
036210  100402                          BMI     3$
036212  005300                          DEC     R0
036214  001373                          BNE     2$
036216  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
036224  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
036232  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
036240  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
036246  012737  002216  004160          MOV     #CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1

036254  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
036262  012737  100461  004172          MOV     #SVAL!DRA!DROT!SPDLSS!DDT,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
036270  012737  000000  004174          MOV     #0,E.ER ;LOAD EXPECTED ERROR REG
036276  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
036304  001401                          BEQ     4$              ;YES, CHECK CS2
036306  104230                          ERROR   230             ;CS1 INCORRECT
036310  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
036316  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
036320  104231                          ERROR   231             ;CS2 INCORRECT
036322  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
036330  001401                          BEQ     6$              ;YES, CHECK ERROR REG
036332  104232                          ERROR   232             ;DRIVE STATUS REG. INCORRECT
036334  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
036342  001401                          BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
036344  104233                          ERROR   233             ;ERROR REG. INCORRECT
036346  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
036354  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
```

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 5604  036362  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
 5605  036370  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
 5606                                                                  ;  ERROR REG.
 5607  036376  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
 5608  036404  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 5609  036412  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 5610  036420  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 5611  036426  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 5612  036434  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 5613  036442  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 5614  036450  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 5615  036454  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 5616  036460  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 5617  036466  001401                          BEQ     10$             ;YES, CHECK CS2
 5618  036470  104224                          ERROR   224             ;CS1 INCORRECT
 5619  036472  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 5620  036500  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG
 5621  036502  104225                          ERROR   225             ;CS2 INCORRECT
 5622  036504  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
 5623  036512  001401                          BEQ     12$             ;YES, CHECK ERROR REGISTER
 5624  036514  104226                          ERROR   226             ;DRIVE STATUS REG INCORRECT
 5625  036516  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
 5626  036524  001401                          BEQ     TST72           ;YES,GO ON TO NEXT TEST
 5627  036526  104227                          ERROR   227             ;ERROR REG. INCORRECT
 5628
 5629                                  ;;*****************************************************************
 5630                                  ;*TEST 72       IDAE DETECTION IN RK611 CONTROLLER (PART 5)
 5631                                  ;*
 5632                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 5633                                  ;*      PUT RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A
 5634                                  ;*      SEEK WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 22,
 5635                                  ;*      HEAD 4, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
 5636                                  ;*      PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND
 5637                                  ;*      MAKE SURE DRIVE AVAILABLE AND UNSAFE ARE SET WITH
 5638                                  ;*      ILLEGAL DISK ADDRESS ERROR RESET.
 5639                                  ;*
 5640                                  ;;*****************************************************************
 5641  036530  000004                  TST72:  SCOPE
 5642  036532  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 5643  036540  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 5644  036544  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 5645  036552  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 5646  036560  012762  000022  000020          MOV     #22,RKDCYL(R2)  ;LOAD CYLINDER ADDRESS
 5647  036566  012737  000022  004252          MOV     #22,CYLIN
 5648  036574  012737  000004  004250          MOV     #4,HDCODE       ;LOAD HEAD ADDRESS
 5649  036602  005046                          CLR     -(SP)
 5650  036604  113766  004250  000001          MOVB    HDCODE,1(SP)
 5651  036612  012662  000006                  MOV     (SP)+,RKDA(R2)
 5652  036616  012737  000007  004266          MOV     #7,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
 5653  036624  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE SEEK TO RK06
 5654  036632  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
 5655  036636  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 5656  036644  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 5657  036652  005300                          DEC     R0
 5658  036654  001370                          BNE     1$
 5659  036656  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
```

```
5660  036662  013700  004262                    MOV     WAITIM,R0       ;LOAD WAIT TIME
5661  036666  105762  000000          2$:       TSTB    RKCS1(R2)       ;WAIT FOR READY
5662  036672  100402                            BMI     3$
5663  036674  005300                            DEC     R0
5664  036676  001373                            BNE     2$
5665  036700  016237  000000  004120  3$:       MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
5666  036706  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
5667  036714  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
5668  036722  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG
5669  036730  012737  002216  004160            MOV     #CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
5670
5671  036736  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
5672  036744  012737  100401  004172            MOV     #SVAL!DRA!DDT,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
5673  036752  012737  040000  004174            MOV     #UNS,E.ER       ;LOAD EXPECTED ERROR REG
5674  036760  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
5675  036766  001401                            BEQ     4$              ;YES, CHECK CS2
5676  036770  104230                            ERROR   230             ;CS1 INCORRECT
5677  036772  023737  004170  004130  4$:       CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
5678  037000  001401                            BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
5679  037002  104231                            ERROR   231             ;CS2 INCORRECT
5680  037004  023737  004172  004132  5$:       CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
5681  037012  001401                            BEQ     6$              ;YES, CHECK ERROR REG
5682  037014  104232                            ERROR   232             ;DRIVE STATUS REG. INCORRECT
5683  037016  023737  004174  004134  6$:       CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
5684  037024  001401                            BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
5685  037026  104233                            ERROR   233             ;ERROR REG. INCORRECT
5686  037030  013737  004120  004220  7$:       MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
5687  037036  013737  004130  004222            MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
5688  037044  013737  004132  004224            MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
5689  037052  013737  004134  004226            MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
5690                                                                    ;  ERROR REG.
5691  037060  012762  100000  000000            MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
5692  037066  016237  000000  004120            MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
5693  037074  016237  000010  004130            MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
5694  037102  016237  000012  004132            MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
5695  037110  016237  000014  004134            MOV     RKER(R2),T.ER   ;STORE ERROR REG
5696  037116  012737  000200  004160            MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
5697  037124  012737  000100  004170            MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
5698  037132  005037  004172                    CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
5699  037136  005037  004174                    CLR     E.ER            ;LOAD EXPECTED ERROR REG.
5700  037142  023737  004160  004120            CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
5701  037150  001401                            BEQ     10$             ;YES, CHECK CS2
5702  037152  104224                            ERROR   224             ;CS1 INCORRECT
5703  037154  023737  004170  004130  10$:      CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
5704  037162  001401                            BEQ     11$             ;YES, CHECK DRIVE STATUS REG
5705  037164  104225                            ERROR   225             ;CS2 INCORRECT
5706  037166  023737  004172  004132  11$:      CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
5707  037174  001401                            BEQ     12$             ;YES, CHECK ERROR REGISTER
5708  037176  104226                            ERROR   226             ;DRIVE STATUS REG INCORRECT
5709  037200  023737  004174  004134  12$:      CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
5710  037206  001401                            BEQ     TST73           ;;YES,GO ON TO NEXT TEST
5711  037210  104227                            ERROR   227             ;ERROR REG. INCORRECT
5712
5713                                    ;;*****************************************************************
5714                                    ;*TEST 73        IDAE DETECTION IN RK611 CONTROLLER (PART 6)
5715                                    ;*
```

```
                                        ;*      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.
                                        ;*
                                        ;;*****************************************************************
037212  000004                  1ST73:  SCOPE
037214  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
037222  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
037226  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
037234  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
037242  012762  000003  000020          MOV     #3,RKDCYL(R2)   ;LOAD CYLINDER ADDRESS
037250  012737  000003  004252          MOV     #3,CYLIN
037256  012737  000004  004250          MOV     #4,HDCODE       ;LOAD HEAD ADDRESS
037264  005046                          CLR     -(SP)
037266  113766  004250  000001          MOVB    HDCODE,1(SP)
037274  012662  000006                  MOV     (SP)+,RKDA(R2)
037300  012737  000006  004266          MOV     #6,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
037306  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK TO RK06
037314  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
037320  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
037326  012762  000040  000026          MOV     #DMD,RKMR1(R2)
037334  005300                          DEC     R0
037336  001370                          BNE     1$
037340  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
037344  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
037350  105762  000000          2$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
037354  100402                          BMI     3$
037356  005300                          DEC     R0
037360  001373                          BNE     2$
037362  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
037370  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
037376  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
037404  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
037412  012737  100216  004160          MOV     #CERR!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1

037420  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
037426  012737  100001  004172          MOV     #SVAL!DRA,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
037434  012737  042000  004174          MOV     #UNS!IDAE,E.ER  ;LOAD EXPECTED ERROR REG
037442  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
037450  001401                          BEQ     4$              ;YES, CHECK CS2
037452  104230                          ERROR   230             ;CS1 INCORRECT
037454  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
037462  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
037464  104231                          ERROR   231             ;CS2 INCORRECT
037466  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
037474  001401                          BEQ     6$              ;YES, CHECK ERROR REG
037476  104232                          ERROR   232             ;DRIVE STATUS REG. INCORRECT
037500  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
037506  001401                          BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
037510  104233                          ERROR   233             ;ERROR REG. INCORRECT
037512  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
037520  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
```

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 5772  037526  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
 5773  037534  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
 5774                                                                  ;  ERROR REG.
 5775  037542  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
 5776  037550  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 5777  037556  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 5778  037564  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 5779  037572  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 5780  037600  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 5781  037606  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 5782  037614  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 5783  037620  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 5784  037624  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 5785  037632  001401                          BEQ     10$             ;YES, CHECK CS2
 5786  037634  104224                          ERROR   224             ;CS1 INCORRECT
 5787  037636  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 5788  037644  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG
 5789  037646  104225                          ERROR   225             ;CS2 INCORRECT
 5790  037650  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
 5791  037656  001401                          BEQ     12$             ;YES, CHECK ERROR REGISTER
 5792  037660  104226                          ERROR   226             ;DRIVE STATUS REG INCORRECT
 5793  037662  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
 5794  037670  001401                          BEQ     TST74           ;:YES,GO ON TO NEXT TEST
 5795  037672  104227                          ERROR   227             ;ERROR REG. INCORRECT
 5796
 5797                                  ;;*****************************************************************
 5798                                  ;*TEST 74       IDAE DETECTION IN RK611 CONTROLLER (PART 7)
 5799                                  ;*
 5800                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
 5801                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
 5802                                  ;*      WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 23, HEAD 5,
 5803                                  ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS
 5804                                  ;*      6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE
 5805                                  ;*      AVAILABLE, UNSAFE, SPEED LOSS, ILLEGAL DISK ADDRESS
 5806                                  ;*      ERROR, AND CONTROLLER ERROR ARE SET.
 5807                                  ;*
 5808                                  ;*****************************************************************
 5809  037674  000004                  TST74:  SCOPE
 5810  037676  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 5811  037704  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 5812  037710  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 5813  037716  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 5814  037724  012762  000023  000020          MOV     #23,RKDCYL(R2)  ;LOAD CYLINDER ADDRESS
 5815  037732  012737  000023  004252          MOV     #23,CYLIN
 5816  037740  012737  000005  004250          MOV     #5,HDCODE       ;LOAD HEAD ADDRESS
 5817  037746  005046                          CLR     -(SP)
 5818  037750  113766  004250  000001          MOVB    HDCODE,1(SP)
 5819  037756  012662  000006                  MOV     (SP)+,RKDA(R2)
 5820  037762  012737  000007  004266          MOV     #7,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
 5821  037770  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE SEEK TO RK06
 5822  037776  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
 5823  040002  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 5824  040010  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 5825  040016  005300                          DEC     R0
 5826  040020  001370                          BNE     1$
 5827  040022  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
```

```
 5828  040026  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
 5829  040032  105762  000000          2$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
 5830  040036  100402                          BMI     3$
 5831  040040  005300                          DEC     R0
 5832  040042  001373                          BNE     2$
 5833  040044  016237  000000  004120  3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 5834  040052  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 5835  040060  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
 5836  040066  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 5837  040074  012737  102216  004160          MOV     #CERR!CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
 5838
 5839  040102  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
 5840  040110  012737  100421  004172          MOV     #SVAL!DRA!SPDLSS!DDT,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
 5841  040116  012737  042000  004174          MOV     #UNS!IDAE,E.ER  ;LOAD EXPECTED ERROR REG
 5842  040124  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
 5843  040132  001401                          BEQ     4$              ;YES, CHECK CS2
 5844  040134  104230                          ERROR   230             ;CS1 INCORRECT
 5845  040136  023737  004170  004130  4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 5846  040144  001401                          BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
 5847  040146  104231                          ERROR   231             ;CS2 INCORRECT
 5848  040150  023737  004172  004132  5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
 5849  040156  001401                          BEQ     6$              ;YES, CHECK ERROR REG
 5850  040160  104232                          ERROR   232             ;DRIVE STATUS REG. INCORRECT
 5851  040162  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
 5852  040170  001401                          BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
 5853  040172  104233                          ERROR   233             ;ERROR REG. INCORRECT
 5854  040174  013737  004120  004220  7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
 5855  040202  013737  004130  004222          MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
 5856  040210  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
 5857  040216  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
 5858                                                                  ;  ERROR REG.
 5859  040224  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
 5860  040232  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 5861  040240  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 5862  040246  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 5863  040254  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 5864  040262  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 5865  040270  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 5866  040276  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 5867  040302  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 5868  040306  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 5869  040314  001401                          BEQ     10$             ;YES, CHECK CS2
 5870  040316  104224                          ERROR   224             ;CS1 INCORRECT
 5871  040320  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 5872  040326  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG
 5873  040330  104225                          ERROR   225             ;CS2 INCORRECT
 5874  040332  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
 5875  040340  001401                          BEQ     12$             ;YES, CHECK ERROR REGISTER
 5876  040342  104226                          ERROR   226             ;DRIVE STATUS REG INCORRECT
 5877  040344  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
 5878  040352  001401                          BEQ     TST75           ;;YES,GO ON TO NEXT TEST
 5879  040354  104227                          ERROR   227             ;ERROR REG. INCORRECT
 5880
 5881                                  ;;*****************************************************************
 5882                                  ;*TEST 75        IDAE DETECTION IN RK611 CONTROLLER (PART 8)
 5883                                  ;*
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                                        ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
                                        ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
                                        ;*      WITH CDT SET IN 26 SECTOR FORMAT, CYLINDER 23, HEAD 6,
                                        ;*      DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS
                                        ;*      6.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE DRIVE
                                        ;*      AVAILABLE, UNSAFE, DRIVE OFF TRACK, ILLEGAL
                                        ;*      DISK ADDRESS ERROR, AND CONTROLLER CLEAR ARE SET.
                                        ;*
                                        ;;*****************************************************************
040356  000004                        T$T75:  SCOPE
040360  012737  000144  001200                MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
040366  013702  001270                        MOV     $BASE,R2        ;LOAD RK611 BASE
040372  012762  000040  000010                MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
040400  012762  000040  000026                MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
040406  012762  000023  00002C                MOV     #23,RKDCYL(R2)  ;LOAD CYLINDER ADDRESS
040414  012737  000023  004252                MOV     #23,CYLIN
040422  012737  000006  00425C                MOV     #6,HDCODE       ;LOAD HEAD ADDRESS
040430  005046                                CLR     -(SP)
040432  113766  004250  000001                MOVB    HDCODE,1(SP)
040440  012662  000006                        MOV     (SP)+,RKDA(R2)
040444  012737  000007  004266                MOV     #7,DRVTYP       ;LOAD DRIVE TYPE FOR PRINT OUT
040452  012762  002017  000000                MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE SEEK TO RK06
040460  012700  000132                        MOV     #22.*4+2,R0     ;ISSUE CLOCK TO GET THROUGH PHASE 6
040464  012762  000440  000026        1$:     MOV     #DMD!MCLK,RKMR1(R2)
040472  012762  000040  000026                MOV     #DMD,RKMR1(R2)
040500  005300                                DEC     R0
040502  001370                                BNE     1$
040504  005062  000026                        CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
040510  013700  004262                        MOV     WAITIM,R0       ;LOAD WAIT TIME
040514  105762  000000                2$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
040520  100402                                BMI     3$
040522  005300                                DEC     R0
040524  001373                                BNE     2$
040526  016237  000000  004120        3$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
040534  016237  000010  004130                MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
040542  016237  000012  004132                MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
040550  016237  000014  004134                MOV     RKER(R2),T.ER   ;STORE ERROR REG
040556  012737  102216  004160                MOV     #CERR!CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
                                        
040564  012737  000100  004170                MOV     #IR,E.CS2       ;LOAD EXPECTED COMMAND AND STATUS REG.2
040572  012737  100441  004172                MOV     #SVAL!DRA!DROT!DDT,E.DS  ;LOAD EXPECTED DRIVE STATUS REG
040600  012737  042000  004174                MOV     #UNS!IDAE,E.ER  ;LOAD EXPECTED ERROR REG
040606  023737  004160  004120                CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
040614  001401                                BEQ     4$              ;YES, CHECK CS2
040616  104230                                ERROR   230             ;CS1 INCORRECT
040620  023737  004170  004130        4$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
040626  001401                                BEQ     5$              ;YES, CHECK DRIVE STATUS REG.
040630  104231                                ERROR   231             ;CS2 INCORRECT
040632  023737  004172  004132        5$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG. CORRECT
040640  001401                                BEQ     6$              ;YES, CHECK ERROR REG
040642  104232                                ERROR   232             ;DRIVE STATUS REG. INCORRECT
040644  023737  004174  004134        6$:     CMP     E.ER,T.ER       ;CHECK ERROR REG. CORRECT
040652  001401                                BEQ     7$              ;YES, CHECK CONTROLLER CLEAR
040654  104233                                ERROR   233             ;ERROR REG. INCORRECT
040656  013737  004120  004220        7$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS VALUES OF
040664  013737  004130  004222                MOV     T.CS2,P.CS2     ;  COMMAND AND STATUS REG.1
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 5940  040672  013737  004132  004224          MOV     T.DS,P.DS       ;  COMMAND AND STATUS REG.2
 5941  040700  013737  004134  004226          MOV     T.ER,P.ER       ;  DRIVE STATUS REG.
 5942                                                                  ;  ERROR REG.
 5943  040706  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
 5944  040714  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 5945  040722  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 5946  040730  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 5947  040736  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 5948  040744  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 5949  040752  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 5950  040760  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 5951  040764  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 5952  040770  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 5953  040776  001401                          BEQ     10$             ;YES, CHECK CS2
 5954  041000  104224                          ERROR   224             ;CS1 INCORRECT
 5955  041002  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG2 CORRECT
 5956  041010  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG
 5957  041012  104225                          ERROR   225             ;CS2 INCORRECT
 5958  041014  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
 5959  041022  001401                          BEQ     12$             ;YES, CHECK ERROR REGISTER
 5960  041024  104226                          ERROR   226             ;DRIVE STATUS REG INCORRECT
 5961  041026  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
 5962  041034  001401                          BEQ     TST76           ;;YES,GO ON TO NEXT TEST
 5963  041036  104227                          ERROR   227             ;ERROR REG. INCORRECT
 5964
 5965                                  ;;*****************************************************************
 5966                                  ;*TEST 76       NON-STANDARD MESSAGE RECEIVING
 5967                                  ;*
 5968                                  ;*      CLEAR RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
 5969                                  ;*      RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A SEEK
 5970                                  ;*      WITH CDT SET IN 24 SECTOR FORMAT, CYLINDER 1757, HEAD 7,
 5971                                  ;*      DRIVE 1.  CLOCK IN DIAGNOSTIC MODE UNTIL PHASE ADDRESS 6.
 5972                                  ;*      TURN OFF DIAGNOSTIC MODE AND MAKE SURE NO ERRORS SET
 5973                                  ;*      AND DRIVE STATUS IS NOT REPORTED.  REPEAT FOR DRIVES
 5974                                  ;*      2 AND 4.
 5975                                  ;*
 5976                                  ;*****************************************************************
 5977  041040  000004                  TST76:  SCOPE
 5978  041042  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 5979  041050  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 5980  041054  012737  000001  004244          MOV     #1,DRVCOD       ;LOAD INITIAL DRIVE CODE
 5981  041062  012737  041070  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
 5982                                                                  ;  SUBTEST LOOP
 5983
 5984  041070                          1$:
 5985  041070  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 5986  041076  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 5987  041104  012762  001757  000020          MOV     #1757,RKDCYL(R2)  ;LOAD CYLINDER ADDRESS REG
 5988  041112  012762  003400  000006          MOV     #3400,RKDA(R2)  ;LOAD HEAD 7
 5989  041120  013762  004244  000010          MOV     DRVCOD,RKCS2(R2)  ;LOAD DRIVE NUMBER
 5990  041126  012762  002017  000000          MOV     #CDT!SEEK,RKCS1(R2)  ;ISSUE A SEEK WITH CDT SET
 5991  041134  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS THROUGH PHASE 6
 5992  041140  012762  000440  000026  2$:     MOV     #DMD!MCLK,RKMR1(R2)
 5993  041146  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 5994  041154  005300                          DEC     R0
 5995  041156  001370                          BNE     2$
```

```
 5996  041160  005062  000026                  CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
 5997  041164  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
 5998  041170  105762  000000          3$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
 5999  041174  100402                          BMI     4$
 6000  041176  005300                          DEC     R0
 6001  041200  001373                          BNE     3$
 6002  041202  016237  000000  004120  4$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6003  041210  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6004  041216  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 6005  041224  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
 6006  041232  012737  002216  004160          MOV     #CDT!RDY!<SEEK&^C<GO>>,E.CS1  ;LOAD EXPECTED CS1
 6007  041240  013737  004244  004170          MOV     DRVCOD,E.CS2    ;LOAD EXPECTED CS2
 6008  041246  052737  000100  004170          BIS     #IR,E.CS2
 6009  041254  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 6010  041260  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 6011  041264  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
 6012  041272  001401                          BEQ     5$              ;YES, CHECK CS2
 6013  041274  104234                          ERROR   234             ;CS1 INCORRECT
 6014  041276  023737  004170  004130  5$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
 6015  041304  001401                          BEQ     6$              ;YES, CHECK DRIVE STATUS REG.
 6016  041306  104235                          ERROR   235             ;CS2 INCORRECT
 6017  041310  023737  004172  004132  6$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
 6018  041316  001401                          BEQ     7$              ;YES, CHECK ERROR REG
 6019  041320  104236                          ERROR   236             ;DRIVE STATUS REG INCORRECT
 6020  041322  023737  004174  004134  7$:     CMP     E.ER,T.ER       ;CHECK IF ERROR CORRECT
 6021  041330  001401                          BEQ     8$              ;YES, CHECK IF LOOP ON ERROR
 6022  041332  104237                          ERROR   237             ;ERROR REG INCORRECT
 6023  041334  104415                  8$:     SCOP1                   ;CHECK IF LOOP ON ERROR
 6024  041336  006337  004244                  ASL     DRVCOD          ;GENERATE NEXT DRIVE COME
 6025  041342  032737  000010  004244          BIT     #BIT3,DRVCOD    ;CHECK IF FINISHED
 6026  041350  001647                          BEQ     1$              ;NO, TRY NEXT COME
 6027
 6028                                  ;;*****************************************************************
 6029                                  ;*TEST 77       DRIVE BUS PARITY ON NON-STANDARD MESSAGE
 6030                                  ;*
 6031                                  ;*       CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
 6032                                  ;*       PUT THE RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE
 6033                                  ;*       A SEEK TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 2,
 6034                                  ;*       HEAD 0, DRIVE 1.  CLOCK IN DIAGNOSTIC MODE UNTIL
 6035                                  ;*       PHASE ADDRESS 6.  TURN OFF DIAGNOSTIC MODE AND MAKE
 6036                                  ;*       SURE DRIVE BUS PARITY ERROR AND CONTROLLER ERROR SETS.
 6037                                  ;*
 6038                                  ;;*****************************************************************
 6039  041352  000004                  TST77:  SCOPE
 6040  041354  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 6041  041362  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 6042  041366  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 6043  041374  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 6044  041402  012762  000002  000020          MOV     #2,RKDCYL(R2)   ;LOAD CYLINDER ADDRESS REG
 6045  041410  012762  000001  000010          MOV     #1,RKCS2(R2)    ;LOAD DRIVE NUMBER 1
 6046  041416  012762  000017  000000          MOV     #SEEK,RKCS1(R2) ;ISSUE SEEK
 6047  041424  012700  000132                  MOV     #22.*4+2,R0     ;ISSUE CLOCKS THROUGH PHASE 6
 6048  041430  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 6049  041436  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 6050  041444  005300                          DEC     R0
 6051  041446  001370                          BNE     1$
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 6052  041450  005062  000026                    CLR     RKMR1(R2)          ;ALLOW COMMAND TO FINISH
 6053  041454  013700  004262                    MOV     WAITIM,R0          ;LOAD WAIT TIME
 6054  041460  105762  000000          3$:       TSTB    RKCS1(R2)          ;WAIT FOR READY
 6055  041464  100402                            BMI     4$
 6056  041466  005300                            DEC     R0
 6057  041470  001373                            BNE     3$
 6058  041472  016237  000000  004120  4$:       MOV     RKCS1(R2),T.CS1    ;STORE COMMAND AND STATUS REG.1
 6059  041500  016237  000010  004130            MOV     RKCS2(R2),T.CS2    ;STORE COMMAND AND STATUS REG.2
 6060  041506  016237  000012  004132            MOV     RKDS(R2),T.DS      ;STORE DRIVE STATUS REG.
 6061  041514  016237  000014  004134            MOV     RKER(R2),T.ER      ;STORE ERROR REG.
 6062  041522  012737  120216  004160            MOV     #CERR!SPAR!RDY!SEEK&^C<GO>,E.CS1  ;LOAD EXPECTED CS1
 6063  041530  012737  000101  004170            MOV     #IR!1,E.CS2        ;LOAD EXPECTED CS1
 6064  041536  005037  004172                    CLR     E.DS               ;LOAD EXPECTED DRIVE STATUS REG.
 6065  041542  005037  004174                    CLR     E.ER               ;LOAD EXPECTED ERROR REG.
 6066  041546  023737  004160  004120            CMP     E.CS1,T.CS1        ;CHECK COMMAND AND STATUS REG.1 CORRECT
 6067  041554  001401                            BEQ     5$                 ;YES, CHECK CS2
 6068  041556  104240                            ERROR   240                ;CS1 INCORRECT
 6069  041560  023737  004170  004130  5$:       CMP     E.CS2,T.CS2        ;CHECK COMMAND AND STATUS REG.2 CORRECT
 6070  041566  001401                            BEQ     6$                 ;YES, CHECK DRIVE STATUS REG
 6071  041570  104241                            ERROR   241                ;CS2 INCORRECT
 6072  041572  023737  004172  004132  6$:       CMP     E.DS,T.DS          ;CHECK DRIVE STATUS REG. CORRECT
 6073  041600  001401                            BEQ     7$                 ;YES, CHECK ERROR REG.
 6074  041602  104242                            ERROR   242                ;DRIVE STATUS REG. INCORRECT
 6075  041604  023737  004174  004134  7$:       CMP     E.ER,T.ER          ;CHECK ERROR REG CORRECT
 6076  041612  001401                            BEQ     8$                 ;YES, CLEAR RK611
 6077  041614  104243                            ERROR   243                ;ERROR REG. INCORRECT
 6078  041616  013737  004120  004220  8$:       MOV     T.CS1,P.CS1        ;STORE PREVIOUS CS1, CS2,
 6079  041624  013737  004130  004222            MOV     T.CS2,P.CS2        ;  DRIVE STATUS REG.,
 6080  041632  013737  004132  004224            MOV     T.DS,P.DS          ;  AND ERROR REG.
 6081  041640  013737  004134  004226            MOV     T.ER,P.ER
 6082  041646  012762  100000  000000            MOV     #CCLR,RKCS1(R2)    ;CLEAR RK611
 6083  041654  016237  000000  004120            MOV     RKCS1(R2),T.CS1    ;STORE COMMAND AND STATUS REG.1
 6084  041662  016237  000010  004130            MOV     RKCS2(R2),T.CS2    ;STORE COMMAND AND STATUS REG.2
 6085  041670  016237  000012  004132            MOV     RKDS(R2),T.DS      ;STORE DRIVE STATUS REG.
 6086  041676  016237  000014  004134            MOV     RKER(R2),T.ER      ;STORE ERROR REG:
 6087  041704  012737  000200  004160            MOV     #RDY,E.CS1         ;LOAD EXPECTED CS1
 6088  041712  012737  000100  004170            MOV     #IR,E.CS2          ;LOAD EXPECTED CS2
 6089  041720  005037  004172                    CLR     E.DS               ;LOAD EXPECTED DRIVE STATUS REG.
 6090  041724  005037  004174                    CLR     E.ER               ;LOAD EXPECTED ERROR REG.
 6091  041730  023737  004160  004120            CMP     E.CS1,T.CS1        ;CHECK COMMAND AND STATUS REG.1 CORRECT
 6092  041736  001401                            BEQ     10$                ;YES, CHECK CS2
 6093  041740  104224                            ERROR   224                ;CS1 INCORRECT
 6094  041742  023737  004170  004130  10$:      CMP     E.CS2,T.CS2        ;CHECK COMMAND AND STATUS REG.2 CORRECT
 6095  041750  001401                            BEQ     11$                ;YES, CHECK DRIVE STATUS REG
 6096  041752  104225                            ERROR   225                ;CS2 INCORRECT
 6097  041754  023737  004172  004132  11$:      CMP     E.DS,T.DS          ;CHECK DRIVE STATUS REG CORRECT
 6098  041762  001401                            BEQ     12$                ;YES, CHECK ERROR REG
 6099  041764  104226                            ERROR   226                ;DRIVE STATUS REG. INCORRECT
 6100  041766  023737  004174  004134  12$:      CMP     E.ER,T.ER          ;CHECK ERROR CORRECT
 6101  041774  001401                            BEQ     TST100             ;YES, GO ON TO NEXT TEST
 6102  041776  104227                            ERROR   227                ;ERROR REG INCORRECT
 6103
 6104                                    ;;*****************************************************************
 6105                                    ;*TEST 100      NON-EXISTENT DRIVE (DRIVE MESSAGE TIME OUT)
 6106                                    ;*
 6107                                    ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.
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6108                                    ;*      PUT THE RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE
6109                                    ;*      A SELECT TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 0,
6110                                    ;*      HEAD 0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
6111                                    ;*      PHASE ADDRESS 5.  TURN OFF DIAGNOSTIC MODE
6112                                    ;*      AND MAKE SURE NON-EXISTENT DRIVE AND CONTROLLER
6113                                    ;*      ERROR ARE SET.  THIS TEST CHECKS NON-EXISTENT DRIVE
6114                                    ;*      DUE TO DRIVE MESSAGE TIME OUT.
6115                                    ;*
6116                                    ;;*****************************************************************
6117  042000  000004                    T100:  SCOPE
6118  042002  012737  000144  001200           MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
6119  042010  013702  001270                   MOV     $BASE,R2        ;LOAD RK611 BASE
6120  042014  012762  000040  000010           MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
6121  042022  012762  000040  000026           MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
6122  042030  012762  000001  000000           MOV     #SELDRV,RKCS1(R2)  ;ISSUE SELECT DRIVE
6123  042036  012700  000124                   MOV     #21.*4,R0       ;ISSUE CLOCKS THROUGH PHASE 4
6124  042042  012762  000440  000026  1$:      MOV     #DMD!MCLK,RKMR1(R2)
6125  042050  012762  000040  000026           MOV     #DMD,RKMR1(R2)
6126  042056  005300                           DEC     R0
6127  042060  001370                           BNE     1$
6128  042062  005062  000026                   CLR     RKMR1(R2)       ;ALLOW COMMAND TO FINISH
6129  042066  013700  004262                   MOV     WAITIM,R0       ;LOAD WAIT TIME
6130  042072  105762  000000           2$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
6131  042076  100402                           BMI     3$
6132  042100  005300                           DEC     R0
6133  042102  001373                           BNE     2$
6134  042104  013700  004264           3$:     MOV     STALL,R0        ;STALL 100 USEC FOR MESSAGE TIME OUT
6135  042110  005300                   4$:     DEC     R0
6136  042112  001376                           BNE     4$
6137  042114  016237  000000  004120           MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6138  042122  016237  000010  004130           MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6139  042130  016237  000012  004132           MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
6140  042136  016237  000014  004134           MOV     RKER(R2),T.ER   ;STORE ERROR REG
6141  042144  012737  100200  004160           MOV     #CERR!RDY,E.CS1 ;LOAD EXPECTED CS1
6142  042152  032737  020000  004120           BIT     #SPAR,T.CS1     ;CHECK FOR BUS PARITY ERROR
6143  042160  001403                           BEQ     5$
6144  042162  052737  020000  004160           BIS     #SPAR,E.CS1     ;PUT BUS PARITY ERROR IN EXPECTED CS1
6145  042170  012737  010100  004170  5$:      MOV     #NED!IR,E.CS2   ;LOAD EXPECTED CS2
6146  042176  012737  100000  004172           MOV     #SVAL,E.DS      ;LOAD EXPECTED DRIVE STATUS REG.
6147  042204  005037  004174                   CLR     E.ER            ;LOAD EXPECTED ERROR REG.
6148  042210  023737  004160  004120           CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
6149  042216  001401                           BEQ     6$              ;YES, CHECK CS2
6150  042220  104244                           ERROR   244             ;CS1 INCORRECT
6151  042222  023737  004170  004130  6$:      CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
6152  042230  001401                           BEQ     7$              ;YES, CHECK DRIVE STATUS REG
6153  042232  104245                           ERROR   245             ;CS2 INCORRECT
6154  042234  023737  004172  004132  7$:      CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6155  042242  001401                           BEQ     8$              ;YES, CHECK ERROR REG.
6156  042244  104246                           ERROR   246             ;DRIVE STATUS INCORRECT
6157  042246  023737  004174  004134  8$:      CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6158  042254  001401                           BEQ     9$              ;YES, ISSUE CONTROLLER CLEAR
6159  042256  104247                           ERROR   247             ;ERROR REG INCORRECT
6160  042260  013737  004120  004220  9$:      MOV     T.CS1,P.CS1     ;STORE PREVIOUS CS1,CS2
6161  042266  013737  004130  004222           MOV     T.CS2,P.CS2     ;  DRIVE STATUS REG.,
6162  042274  013737  004132  004224           MOV     T.DS,P.DS       ;  AND ERROR REG.
6163  042302  013737  004134  004226           MOV     T.ER,P.ER
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```
 6164  042310  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
 6165  042316  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
 6166  042324  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
 6167  042332  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
 6168  042340  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
 6169  042346  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
 6170  042354  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
 6171  042362  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
 6172  042366  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
 6173  042372  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORPECT
 6174  042400  001401                          BEQ     10$             ;YES, CHECK CS2
 6175  042402  104224                          ERROR   224             ;CS1 INCORRECT
 6176  042404  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
 6177  042412  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG.
 6178  042414  104225                          ERROR   225             ;CS2 INCORRECT
 6179  042416  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
 6180  042424  001401                          BEQ     12$             ;YES, CHECK ERROR REG
 6181  042426  104226                          ERROR   226             ;DRIVE STATUS INCORRECT
 6182  042430  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
 6183  042436  001401                          BEQ     TST101          ;YES, GO ON TO NEXT TEST
 6184  042440  104227                          ERROR   227             ;ERROR MESSAGE INCORRECT
 6185
 6186                                  ;;*****************************************************************
 6187                                  ;*TEST 101      NON-EXISTENT DRIVE AND NO SACK
 6188                                  ;*
 6189                                  ;*      CLEAR THE RK06 SUBSYSTEM WITH A SUBSYSTEM CLEAR.  PUT
 6190                                  ;*      THE RK611 CONTROLLER IN DIAGNOSTIC MODE.  ISSUE A
 6191                                  ;*      SELECT TO AN RK06 IN 26 SECTOR FORMAT, CYLINDER 0,
 6192                                  ;*      HEAD 0, DRIVE 0.  CLOCK IN DIAGNOSTIC MODE UNTIL
 6193                                  ;*      PHASE ADDRESS 4.  TURN OFF DIAGNOSTIC MODE AND MAKE SURE
 6194                                  ;*      NON-EXISTENT DRIVE AND CONTROLLER ERROR ARE SET.
 6195                                  ;*
 6196                                  ;*      THIS TEST EXERCISES THE NON-EXISTENT DRIVE LOGIC
 6197                                  ;*      DUE TO RELEASE BIT RESET AND SACK RESET BUT THE PASSING
 6198                                  ;*      OF THIS TEST DOES GUARENTEE THAT THIS SITUATION DID
 6199                                  ;*      INDEED CAUSE A NON-EXISTENT DRIVE.
 6200                                  ;*
 6201                                  ;*****************************************************************
 6202  042442  000004                  TST101: SCOPE
 6203  042444  012737  000144  001200          MOV     #100.,$TIMES    ;;DO 100. ITERATIONS
 6204  042452  013702  001270                  MOV     $BASE,R2        ;LOAD RK611 BASE
 6205  042456  012762  000040  000010          MOV     #SCLR,RKCS2(R2) ;CLEAR RK06 SUBSYSTEM
 6206  042464  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN MAINTENANCE MODE
 6207  042472  012762  000001  000000          MOV     #SELDRV,RKCS1(R2)  ;ISSUE SELECT DRIVE
 6208  042500  012700  000116                  MOV     #19.*4+2,R0     ;ISSUE CLOCKS THROUGH PHASE 3
 6209  042504  012762  000440  000026  1$:     MOV     #DMD!MCLK,RKMR1(R2)
 6210  042512  012762  000040  000026          MOV     #DMD,RKMR1(R2)
 6211  042520  005300                          DEC     R0
 6212  042522  001370                          BNE     1$
 6213  042524  005062  000026                  CLR     RKMP1(R2)       ;ALLOW COMMAND TO FINISH
 6214  042530  013700  004262                  MOV     WAITIM,R0       ;LOAD WAIT TIME
 6215  042534  105762  000000          3$:     TSTB    RKCS1(R2)       ;WAIT FOR READY
 6216  042540  100402                          BMI     4$
 6217  042542  005300                          DEC     R0
 6218  042544  001373                          BNE     3$
 6219  042546  016237  000000  004120  4$:     MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
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```
6220  042554  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6221  042562  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG
6222  042570  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
6223  042576  012737  100200  004160          MOV     #CERR!RDY,E.CS1 ;LOAD EXPECTED CS1
6224  042604  012737  010100  004170          MOV     #NED!IR,E.CS2   ;LOAD EXPECTED CS2
6225  042612  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
6226  042616  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
6227  042622  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG.1 CORRECT
6228  042630  001401                          BEQ     5$              ;YES, CHECK CS2
6229  042632  104250                          ERROR   250             ;CS1 INCORRECT
6230  042634  023737  004170  004130  5$:     CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
6231  042642  001401                          BEQ     6$              ;YES, CHECK DRIVE STATUS REG
6232  042644  104251                          ERROR   251             ;CS2 INCORRECT
6233  042646  023737  004172  004132  6$:     CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6234  042654  001401                          BEQ     7$              ;YES, CHECK ERROR REG.
6235  042656  104252                          ERROR   252             ;DRIVE STATUS INCORRECT
6236  042660  023737  004174  004134  7$:     CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6237  042666  001401                          BEQ     8$              ;YES, ISSUE CONTROLLER CLEAR
6238  042670  104253                          ERROR   253             ;ERROR REG INCORRECT
6239  042672  013737  004120  004220  8$:     MOV     T.CS1,P.CS1     ;STORE PREVIOUS CS1,CS2
6240  042700  013737  004130  004222          MOV     T.CS2,P.CS2     ;  DRIVE STATUS REG..
6241  042706  013737  004132  004224          MOV     T.DS,P.DS       ;  AND ERROR REG.
6242  042714  013737  004134  004226          MOV     T.ER,P.ER
6243  042722  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;ISSUE CONTROLLER CLEAR
6244  042730  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG.1
6245  042736  016237  000010  004130          MOV     RKCS2(R2),T.CS2 ;STORE COMMAND AND STATUS REG.2
6246  042744  016237  000012  004132          MOV     RKDS(R2),T.DS   ;STORE DRIVE STATUS REG.
6247  042752  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG.
6248  042760  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
6249  042766  012737  000100  004170          MOV     #IR,E.CS2       ;LOAD EXPECTED CS2
6250  042774  005037  004172                  CLR     E.DS            ;LOAD EXPECTED DRIVE STATUS REG.
6251  043000  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG.
6252  043004  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK COMMAND AND STATUS REG1 CORRECT
6253  043012  001401                          BEQ     10$             ;YES, CHECK CS2
6254  043014  104224                          ERROR   224             ;CS1 INCORRECT
6255  043016  023737  004170  004130  10$:    CMP     E.CS2,T.CS2     ;CHECK COMMAND AND STATUS REG.2 CORRECT
6256  043024  001401                          BEQ     11$             ;YES, CHECK DRIVE STATUS REG.
6257  043026  104225                          ERROR   225             ;CS2 INCORRECT
6258  043030  023737  004172  004132  11$:    CMP     E.DS,T.DS       ;CHECK DRIVE STATUS REG CORRECT
6259  043036  001401                          BEQ     12$             ;YES, CHECK ERROR REG
6260  043040  104226                          ERROR   226             ;DRIVE STATUS INCORRECT
6261  043042  023737  004174  004134  12$:    CMP     E.ER,T.ER       ;CHECK ERROR REG CORRECT
6262  043050  001401                          BEQ     TST102          ;;YES, GO ON TO NEXT TEST
6263  043052  104227                          ERROR   227             ;ERROR MESSAGE INCORRECT
6264
6265                                  .SBTTL  **ILLEGAL FUNCTION CODE TEST
6266
6267                                  ;;*****************************************************************
6268                                  ;*TEST 102      ILLEGAL FUNCTION CODE
6269                                  ;*
6270                                  ;*      CLEAR RK611 WITH A CONTROLLER CLEAR.  ISSUE AN ILLEGAL
6271                                  ;*      COMMAND IN NORMAL MODE AND MAKE SURE COMMAND FINISHES
6272                                  ;*      SETTING CONTROLLER READY WITH PROPER ERROR CONDITIONS.
6273                                  ;*
6274                                  ;;*****************************************************************
6275  043054  000004                  TST102: SCOPE
```

```
6276  043056  012737  000764  001200          MOV     #500.,$TIMES    ;;DO 500. ITERATIONS
6277  043064  012737  000033  004270          MOV     #33,ILLFUN      ;SET ILLEGAL FUNCTION
6278  043072  012737  043100  001110          MOV     #1$,$LPERR      ;LOAD LOOP ON ERROR LOCATION FOR
6279                                                                  ;  SUBTEST LOOP
6280
6281  043100                          1$:
6282  043100  012762  100000  000000          MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER
6283  043106  013737  004270  004160          MOV     ILLFUN,E.CS1    ;GENERATE EXPECTED CS1
6284  043114  042737  000001  004160          BIC     #GO,E.CS1
6285  043122  052737  100200  004160          BIS     #CERR!RDY,E.CS1
6286  043130  012737  000001  004174          MOV     #ILF,E.ER       ;LOAD EXPECTED ERROR REG
6287  043136  012762  000040  000026          MOV     #DMD,RKMR1(R2)  ;PUT RK611 IN DIAGNOSTIC MODE
6288  043144  013762  004270  000000          MOV     ILLFUN,RKCS1(R2) ;ISSUE ILLEGAL FUNCTION
6289  043152  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG 1
6290  043160  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
6291  043166  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT
6292  043174  001401                          BEQ     3$              ;YES, CHECK ERROR REG
6293  043176  104256                          ERROR   256             ;CS1 INCORRECT AFTER ILL FUNCT
6294  043200  023737  004174  004134  3$:     CMP     E.ER,T.ER       ;CHECK IF ERROR REG CORRECT
6295  043206  001401                          BEQ     4$              ;YES, CLEAR CONTROLLER
6296  043210  104257                          ERROR   257             ;ERROR REG INCORRECT AFTER ILL FUNCT
6297  043212  012762  100000  000000  4$:     MOV     #CCLR,RKCS1(R2) ;CLEAR RK611 CONTROLLER
6298  043220  016237  000000  004120          MOV     RKCS1(R2),T.CS1 ;STORE COMMAND AND STATUS REG. 1
6299  043226  016237  000014  004134          MOV     RKER(R2),T.ER   ;STORE ERROR REG
6300  043234  012737  000200  004160          MOV     #RDY,E.CS1      ;LOAD EXPECTED CS1
6301  043242  005037  004174                  CLR     E.ER            ;LOAD EXPECTED ERROR REG
6302  043246  023737  004160  004120          CMP     E.CS1,T.CS1     ;CHECK IF CS1 CORRECT (CERR CLEAR)
6303  043254  001401                          BEQ     6$              ;YES, CHECK IF ERROR REG CORRECT
6304  043256  104260                          ERROR   260             ;CONTROL CLEAR DID NOT CLEAR CERR
6305  043260  023737  004174  004134  6$:     CMP     E.ER,T.ER       ;CHECK IF ILF CLEARED
6306  043266  001401                          BEQ     7$              ;YES, GO ON TO NEXT CONFIGURATION
6307  043270  104261                          ERROR   261             ;CONTROLLER CLEAR DID NOT CLEAR ILF
6308  043272  104415                  7$:     SCOPI                   ;CHECK IF LOOP ON ERROR
6309  043274  062737  000002  004270          ADD     #2,ILLFUN       ;GENERATE NEXT ILLEGAL FUNCTION
6310  043302  022737  000041  004270          CMP     #41,ILLFUN      ;CHECK IF FINISHED
6311  043310  101273                          BHI     1$              ;NO, USE NEXT CONFIGURATION
6312
```

```
                                        .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

043312                                  $EOP:
043312  000004                                SCOPE
043314  005037  001102                       CLR     $TSTNM          ;;ZERO THE TEST NUMBER
043320  005037  001200                       CLR     $TIMES          ;;ZERO THE NUMBER OF ITERATIONS
043324  005237  001222                       INC     $PASS           ;;INCREMENT THE PASS NUMBER
043330  042737  100000  001222               BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
043336  005327                               DEC     (PC)+           ;;LOOP?
043340  000001                          $EOPCT: .WORD   1
043342  003063                               BGT     $DOAGN          ;;YES
043344  012737                               MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
043346  000001                          $ENDCT: .WORD   1
043350  043340                               $EOPCT
043352  104401  043360                       TYPE    ,65$            ;;TYPE ASCIZ STRING
043356  000407                               BR      64$             ;;GET OVER THE ASCIZ
                                        ;;65$:  .ASCIZ  <12><15>/END PASS */
043376                                  64$:
043376  013746  001222                       MOV     $PASS,-(SP)     ;;SAVE $PASS FOR TYPEOUT
                                                                    ;;TYPE PASS NUMBER
043402  104405                               TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
043404  104401  043412                       TYPE    ,67$            ;;TYPE ASCIZ STRING
043410  000421                               BR      66$             ;;GET OVER THE ASCIZ
                                        ;;67$:  .ASCIZ  /  TOTAL ERRORS SINCE LAST REPORT /
043454                                  66$:
043454  013746  001112                       MOV     $ERTTL,-(SP)    ;;SAVE $ERTTL FOR TYPEOUT
                                                                    ;;TOTAL NUMBER OF ERRORS
043460  104405                               TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
043462  104401  001211                       TYPE    ,$CRLF          ;;TYPE CARRIAGE RETURN, LINE FEED
043466  005037  001112                       CLR     $ERTTL          ;;CLEAR ERROR TOTAL
043472  013700  000042               $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
043476  001405                               BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
043500  000005                               RESET                   ;;CLEAR THE WORLD
043502  004710                          $ENDAD: JSR     PC,(R0)         ;;GO TO MONITOR
043504  000240                               NOP                     ;;SAVE ROOM
043506  000240                               NOP                     ;;FOR
043510  000240                               NOP                     ;;ACT11
043512                                  $DOAGN:
043512  000137                               JMP     @(PC)+          ;;RETURN
043514  005270                          $RTNAD: .WORD   NEWPAS
043516     377     377     000          $ENULL: .BYTE   -1,-1,0         ;;NULL CHARACTER STRING
            043522                              .EVEN

                                        .SBTTL  CHECK FOR MEMORY CHECK ENABLE OPTION

043522  012737  043574  000004  CHKPAR: MOV     #20$,ERRVEC     ;SET VECTOR FOR MEMORY PARITY CHECK
043530  012737  000340  000006          MOV     #PR7,ERRVEC+2
043536  012703  172100                  MOV     #MEMBAS,R3      ;LOAD REGISTER TO DETERMINE IF
                                                                ;  MEMORY CHECK ENABLE AVAILIABLE
```

```
6369  043542  012704  000020              MOV     #16.,R4          ;LOAD COUNT
6370  043546  012723  000001      16$:    MOV     #PAR.EN,(R3)+    ;EMABLE MEMORY CHECK
6371  043552  012737  043612  000114      MOV     #MEMERR,MEMVEC   ;LOAD MEMORY CHECK VECTOR
6372  043560  012737  000340  000116      MOV     #PR7,MEMVEC+2
6373  043566  005304                      DEC     R4               ;CHECK IF FINISHED
6374  043570  001366                      BNE     16$              ;NO, SET UP NEXT MEMORY PARITY MODULE
6375  043572  000401                      BR      22$              ;RESTORE TRAP VECTOR
6376
6377  043574  022626              20$:    CMP     (SP)+,(SP)+      ;ADJUST STACK
6378  043576  012737  000006  000004  22$:    MOV     #ERRVEC+2,ERRVEC  ;RESTORE TRAP CATCHER
6379  043604  005037  000006              CLR     ERRVEC+2
6380  043610  000207                      RTS     PC               ;RETURN
6381
6382                          .SBTTL  MEMORY CHECK ENABLE TRAP
6383
6384  043612  012737  043625  001202  MEMERR: MOV     #10$,$ESCAPE     ;LOAD ESCAPE
6385  043620  011637  004272              MOV     (SP),TRAPPC      ;STORE PC
6386  043624  104262                      ERROR   262              ;REPORT MEM PARITY ERROR
6387  043626  005037  001202      10$:    CLR     $ESCAPE          ;CLEAR ESCAPE
6388  043632  032777  001000  135300      BIT     #SW9,@SWR        ;CHECK IF LOOP ON ERROR
6389  043640  001001                      BNE     15$              ;YES, FORCE STACK AND TRY AGAIN
6390  043642  000002                      RTI                      ;NO, RETURN
6391
6392  043644  012706  001100      15$:    MOV     #STACK,SP        ;INITIALIZE STACK
6393  043650  000177  135234              JMP     @$LPERR          ;LOOP ON ERROR
6394
6395                          .SBTTL  SCOPE HANDLER ROUTINE
6396
6397                          ;;**************************************************************
6398                          ;*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
6399                          ;*AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
6400                          ;*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
6401                          ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
6402                          ;*SW14=1         LOOP ON TEST
6403                          ;*SW11=1         INHIBIT ITERATIONS
6404                          ;*SW09=1         LOOP ON ERROR
6405                          ;*SW08=1         LOOP ON TEST IN SWR<7:0>
6406                          ;*CALL
6407                          ;*      SCOPE            ;;SCOPE=IOT
6408
6409  043654                  $SCOPE:
6410  043654  104407                      CKSWR                    ;;TEST  FOR CHANGE IN SOFT-SWR
6411  043656  032777  040000  135254  1$:     BIT     #BIT14,@SWR      ;;LOOP ON PRESENT TEST?
6412  043664  001131                      BNE     $OVER            ;;YES IF SW14=1
6413                          ;*****START OF CODE FOR THE XOR TESTER*****
6414  043666  000416          $XTSTR: BR      6$                       ;;IF RUNNING ON THE "XOR" TESTER CHANGE
6415                                                                   ;;THIS INSTRUCTION TO A "NOP" (NOP=240)
6416  043670  013746  000004              MOV     @#ERRVEC,-(SP)   ;;SAVE THE CONTENTS OF THE ERROR VECTOR
6417  043674  012737  043714  000004      MOV     #5$,@#ERRVEC     ;;SET FOR TIMEOUT
6418  043702  005737  177060              TST     @#177060         ;;TIME OUT ON XOR?
6419  043706  012637  000004              MOV     (SP)+,@#ERRVEC   ;;RESTORE THE ERROR VECTOR
6420  043712  000500                      BR      $SVLAD           ;;GO TO THE NEXT TEST
6421  043714  022626              5$:     CMP     (SP)+,(SP)+      ;;CLEAR THE STACK AFTER A TIME OUT
6422  043716  012637  000004              MOV     (SP)+,@#ERRVEC   ;;RESTORE THE ERROR VECTOR
6423  043722  000440                      BR      7$               ;;LOOP ON THE PRESENT TEST
6424  043724                  6$:;*****END OF CODE FOR THE XOR TESTER*****
```

```
 6425  043724  032777  000400  135206          BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
 6426  043732  001421                          BEQ     2$              ;;BR IF NO
 6427  043734  005046                          CLR     -(SP)           ;;CLEAR A TEMP. LOCATION
 6428  043736  117716  135176                  MOVB    @SWR,(SP)       ;;PICKUP THE DESIRED TEST NUMBER
 6429  043742  001414                          BEQ     8$              ;;BRANCH IF BAD TEST NUMBER IN SWR
 6430  043744  022716  000102                  CMP     #102,(SP)       ;;CHECK THE NUMBER IN THE SWR
 6431  043750  002411                          BLT     8$              ;;BRANCH IF TEST NUMBER IS OUT OF RANGE
 6432  043752  011637  001102                  MOV     (SP),$TSTNM     ;;UPDATE THE TEST NUMBER
 6433  043756  005316                          DEC     (SP)            ;;BACKUP BY ONE
 6434  043760  006316                          ASL     (SP)            ;;SCALE THE TEST NUMBER AS AN INDEX
 6435  043762  062716  044166                  ADD     #$SW08TBL,(SP)  ;;FORM THE ADDRESS OF TEST POINTER
 6436  043766  013637  001106                  MOV     @(SP)+,$LPADR   ;;SET LOOP ADDRESS TO DESIRED TEST
 6437  043772  000466                          BR      $OVER           ;;GO LOOP ON THE TEST
 6438  043774  005726                  8$:     TST     (SP)+           ;;CLEAN THE BAD TEST NUMBER OFF OF THE STACK
 6439  043776  105737  001103          2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
 6440  044002  001421                          BEQ     3$              ;;BR IF NO
 6441  044004  123737  001115  001103          CMPB    $ERMAX,$ERFLG   ;;MAX. ERRORS FOR THIS TEST OCCURRED?
 6442  044012  101015                          BHI     3$              ;;BR IF NO
 6443  044014  032777  001000  135116          BIT     #BIT09,@SWR     ;;LOOP ON ERROR?
 6444  044022  001404                          BEQ     4$              ;;BR IF NO
 6445  044024  013737  001110  001106  7$:     MOV     $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
 6446  044032  000446                          BR      $OVER
 6447  044034  105037  001103          4$:     CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
 6448  044040  005037  001200                  CLR     $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
 6449  044044  000415                          BR      1$              ;;ESCAPE TO THE NEXT TEST
 6450  044046  032777  004000  135064  3$:     BIT     #BIT11,@SWR     ;;INHIBIT ITERATIONS?
 6451  044054  001011                          BNE     1$              ;;BR IF YES
 6452  044056  005737  001222                  TST     $PASS           ;;IF FIRST PASS OF PROGRAM
 6453  044062  001406                          BEQ     1$              ;;      INHIBIT ITERATIONS
 6454  044064  005237  001104                  INC     $ICNT           ;;INCREMENT ITERATION COUNT
 6455  044070  023737  001200  001104          CMP     $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
 6456  044076  002024                          BGE     $OVER           ;;BR IF MORE ITERATION REQUIRED
 6457  044100  012737  000001  001104  1$:     MOV     #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
 6458  044106  013737  044160  001200          MOV     $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
 6459  044114  105237  001102          $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
 6460  044120  113737  001102  001220          MOVB    $TSTNM,$TESTN   ;;SET TEST NUMBER IN APT MAILBOX
 6461  044126  011637  001106                  MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
 6462  044132  011637  001110                  MOV     (SP),$LPERR     ;;SAVE ERROR LOOP ADDRESS
 6463  044136  005037  001202                  CLR     $ESCAPE         ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
 6464  044142  112737  000001  001115          MOVB    #1,$ERMAX       ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
 6465  044150  013777  001102  134764  $OVER:  MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
 6466  044156  013716  001106                  MOV     $LPADR,(SP)     ;;FUDGE RETURN ADDRESS
 6467  044162  000002                          RTI                     ;;FIXES PS
 6468  044164  003720                  $MXCNT: 2000.                   ;;MAX. NUMBER OF ITERATIONS
 6469  044166                          $SW08TBL:
 6470  044166  005310                          .WORD   TST1+2          ;;STARTING ADDRESS OF TEST 1
 6471  044170  005614                          .WORD   TST2+2          ;;STARTING ADDRESS OF TEST 2
 6472  044172  006074                          .WORD   TST3+2          ;;STARTING ADDRESS OF TEST 3
 6473  044174  006340                          .WORD   TST4+2          ;;STARTING ADDRESS OF TEST 4
 6474  044176  006652                          .WORD   TST5+2          ;;STARTING ADDRESS OF TEST 5
 6475  044200  007214                          .WORD   TST6+2          ;;STARTING ADDRESS OF TEST 6
 6476  044202  007532                          .WORD   TST7+2          ;;STARTING ADDRESS OF TEST 7
 6477  044204  010050                          .WORD   TST10+2         ;;STARTING ADDRESS OF TEST 10
 6478  044206  010366                          .WORD   TST11+2         ;;STARTING ADDRESS OF TEST 11
 6479  044210  010632                          .WORD   TST12+2         ;;STARTING ADDRESS OF TEST 12
 6480  044212  011076                          .WORD   TST13+2         ;;STARTING ADDRESS OF TEST 13
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 6481  044214  011414                .WORD   TST14+2          ;;STARTING ADDRESS OF TEST 14
 6482  044216  011724                .WORD   TST15+2          ;;STARTING ADDRESS OF TEST 15
 6483  044220  012256                .WORD   TST16+2          ;;STARTING ADDRESS OF TEST 16
 6484  044222  012620                .WORD   TST17+2          ;;STARTING ADDRESS OF TEST 17
 6485  044224  013064                .WORD   TST20+2          ;;STARTING ADDRESS OF TEST 20
 6486  044226  013344                .WORD   TST21+2          ;;STARTING ADDRESS OF TEST 21
 6487  044230  013624                .WORD   TST22+2          ;;STARTING ADDRESS OF TEST 22
 6488  044232  014104                .WORD   TST23+2          ;;STARTING ADDRESS OF TEST 23
 6489  044234  014364                .WORD   TST24+2          ;;STARTING ADDRESS OF TEST 24
 6490  044236  014644                .WORD   TST25+2          ;;STARTING ADDRESS OF TEST 25
 6491  044240  015156                .WORD   TST26+2          ;;STARTING ADDRESS OF TEST 26
 6492  044242  015470                .WORD   TST27+2          ;;STARTING ADDRESS OF TEST 27
 6493  044244  016002                .WORD   TST30+2          ;;STARTING ADDRESS OF TEST 30
 6494  044246  016214                .WORD   TST31+2          ;;STARTING ADDRESS OF TEST 31
 6495  044250  016626                .WORD   TST32+2          ;;STARTING ADDRESS OF TEST 32
 6496  044252  017124                .WORD   TST33+2          ;;STARTING ADDRESS OF TEST 33
 6497  044254  017436                .WORD   TST34+2          ;;STARTING ADDRESS OF TEST 34
 6498  044256  017674                .WORD   TST35+2          ;;STARTING ADDRESS OF TEST 35
 6499  044260  020140                .WORD   TST36+2          ;;STARTING ADDRESS OF TEST 36
 5500  044262  020474                .WORD   TST37+2          ;;STARTING ADDRESS OF TEST 37
 6501  044264  021040                .WORD   TST40+2          ;;STARTING ADDRESS OF TEST 40
 6502  044266  021364                .WORD   TST41+2          ;;STARTING ADDRESS OF TEST 41
 6503  044270  021730                .WORD   TST42+2          ;;STARTING ADDRESS OF TEST 42
 6504  044272  022204                .WORD   TST43+2          ;;STARTING ADDRESS OF TEST 43
 6505  044274  022734                .WORD   TST44+2          ;;STARTING ADDRESS OF TEST 44
 6506  044276  023174                .WORD   TST45+2          ;;STARTING ADDRESS OF TEST 45
 6507  044300  023562                .WORD   TST46+2          ;;STARTING ADDRESS OF TEST 46
 6508  044302  024012                .WORD   TST47+2          ;;STARTING ADDRESS OF TEST 47
 6509  044304  024446                .WORD   TST50+2          ;;STARTING ADDRESS OF TEST 50
 6510  044306  025130                .WORD   TST51+2          ;;STARTING ADDRESS OF TEST 51
 5511  044310  025562                .WORD   TST52+2          ;;STARTING ADDRESS OF TEST 52
 6512  044312  026214                .WORD   TST53+2          ;;STARTING ADDRESS OF TEST 53
 6513  044314  026632                .WORD   TST54+2          ;;STARTING ADDRESS OF TEST 54
 6514  044316  027264                .WORD   TST55+2          ;;STARTING ADDRESS OF TEST 55
 6515  044320  027716                .WORD   TST56+2          ;;STARTING ADDRESS OF TEST 56
 6516  044322  030350                .WORD   TST57+2          ;;STARTING ADDRESS OF TEST 57
 6517  044324  031002                .WORD   TST60+2          ;;STARTING ADDRESS OF TEST 60
 6518  044326  031434                .WORD   TST61+2          ;;STARTING ADDRESS OF TEST 61
 6519  044330  032066                .WORD   TST62+2          ;;STARTING ADDRESS OF TEST 62
 6520  044332  032520                .WORD   TST63+2          ;;STARTING ADDRESS OF TEST 63
 6521  044334  033152                .WORD   TST64+2          ;;STARTING ADDRESS OF TEST 64
 6522  044336  033570                .WORD   TST65+2          ;;STARTING ADDRESS OF TEST 65
 6523  044340  034222                .WORD   TST66+2          ;;STARTING ADDRESS OF TEST 66
 6524  044342  034704                .WORD   TST67+2          ;;STARTING ADDRESS OF TEST 67
 6525  044344  035366                .WORD   TST70+2          ;;STARTING ADDRESS OF TEST 70
 6526  044346  036050                .WORD   TST71+2          ;;STARTING ADDRESS OF TEST 71
 6527  044350  036532                .WORD   TST72+2          ;;STARTING ADDRESS OF TEST 72
 6528  044352  037214                .WORD   TST73+2          ;;STARTING ADDRESS OF TEST 73
 6529  044354  037676                .WORD   TST74+2          ;;STARTING ADDRESS OF TEST 74
 6530  044356  040360                .WORD   TST75+2          ;;STARTING ADDRESS OF TEST 75
 6531  044360  041042                .WORD   TST76+2          ;;STARTING ADDRESS OF TEST 76
 6532  044362  041354                .WORD   TST77+2          ;;STARTING ADDRESS OF TEST 77
 6533  044364  042002                .WORD   TST100+2                 ;;STARTING ADDRESS OF TEST 100
 6534  044366  042444                .WORD   TST101+2                 ;;STARTING ADDRESS OF TEST 101
 6535  044370  043056                .WORD   TST102+2                 ;;STARTING ADDRESS OF TEST 102
 6536                        ;;*****************************************************************
```

```
                                        .SBTTL  LOOP ON INTERNAL ERROR

044372  032777  001000  134540  SCOP1$: BIT     #SW9,@SWR               ;CHECK IF LOOP ON ERROR
044400  001405                  BEQ     5$                      ;NO, CONTINUE
044402  105737  001103                  TSTB    $ERFLG                  ;CHECK IF ERROR OCCURRED
044406  001402                  BEQ     5$                      ;NO, CONTINUE
044410  013716  001110                  MOV     $LPERR,(SP)             ;LOAD ERROR RETURN
044414  000002                  5$:     RTI                             ;RETURN
                                        .SBTTL  APT COMMUNICATIONS ROUTINE

                                        ;;**********************************************************************
044416  112737  000001  044662  $ATY1:  MOVB    #1,$FFLG        ;;TO REPORT FATAL ERROR
044424  112737  000001  044660  $ATY3:  MOVB    #1,$MFLG        ;;TO TYPE A MESSAGE
044432  000403                  BR      $ATYC
044434  112737  000001  044662  $ATY4:  MOVB    #1,$FFLG        ;;TO ONLY REPORT FATAL ERROR
044442                          $ATYC:
044442  010046                  MOV     R0,-(SP)        ;;PUSH R0 ON STACK
044444  010146                  MOV     R1,-(SP)        ;;PUSH R1 ON STACK
044446  105737  044660          TSTB    $MFLG           ;;SHOULD TYPE A MESSAGE?
044452  001450                  BEQ     5$              ;;IF NOT:  BR
044454  122737  000001  001234  CMPB    #APTENV,$ENV    ;;OPERATING UNDER APT?
044462  001031                  BNE     3$              ;;IF NOT:  BR
044464  132737  000100  001235  BITB    #APTSPOOL,$ENVM ;;SHOULD SPOOL MESSAGES?
044472  001425                  BEQ     3$              ;;IF NOT:  BR
044474  017600  000004          MOV     @4(SP),R0       ;;GET MESSAGE ADDR.
044500  062766  000002  000004  ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
044506  005737  001214  1$:     TST     $MSGTYPE        ;;SEE IF DONE W/ LAST XMISSION?
044512  001375                  BNE     1$              ;;IF NOT:  WAIT
044514  010037  001230          MOV     R0,$MSGAD       ;;PUT ADDR IN MAILBOX
044520  105720          2$:     TSTB    (R0)+           ;;FIND END OF MESSAGE
044522  001376                  BNE     2$
044524  163700  001230          SUB     $MSGAD,R0       ;;SUB START OF MESSAGE
044530  006200                  ASR     R0              ;;GET MESSAGE LNGTH IN WORDS
044532  010037  001232          MOV     R0,$MSGLGT      ;;PUT LENGTH IN MAILBOX
044536  012737  000004  001214  MOV     #4,$MSGTYPE     ;;TELL APT TO TAKE MSG.
044544  000413                  BR      5$
044546  017637  000004  044572  3$:     MOV     @4(SP),4$       ;;PUT MSG ADDR IN JSR LINKAGE
044554  062766  000002  000004  ADD     #2,4(SP)                ;;BUMP RETURN ADDRESS
044562  013746  177776          MOV     177776,-(SP)    ;;PUSH 177776 ON STACK
044566  004737  045346          JSR     PC,$TYPE        ;;CALL TYPE MACRO
044572  000000          4$:     .WORD   0
044574                  5$:
044574  105737  044662  10$:     TSTB    $FFLG           ;;SHOULD REPORT FATAL ERROR?
044600  001416                  BEQ     12$             ;;IF NOT:  BR
044602  005737  001234          TST     $ENV            ;;RUNNING UNDER APT?
044606  001413                  BEQ     12$             ;;IF NOT:  BR
044610  005737  001214  11$:     TST     $MSGTYPE        ;;FINISHED LAST MESSAGE?
044614  001375                  BNE     11$             ;;IF NOT:  WAIT
044616  017637  000004  001216  MOV     @4(SP),$FATAL   ;;GET ERROR #
044624  062766  000002  000004  ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
044632  005237  001214          INC     $MSGTYPE        ;;TELL APT TO TAKE ERROR
044636  105037  044662  12$:     CLRB    $FFLG           ;;CLEAR FATAL FLAG
044642  105037  044661          CLRB    $LFLG           ;;CLEAR LOG FLAG
044646  105037  044660          CLRB    $MFLG           ;;CLEAR MESSAGE FLAG
044652  012601                  MOV     (SP)+,R1        ;;POP STACK INTO R1
044654  012600                  MOV     (SP)+,R0        ;;POP STACK INTO R0
```

```
                                        RTS     PC              ;;RETURN
044660  000                     $MFLG:  .BYTE   0               ;;MESSG. FLAG
044661  000                     $LFLG:  .BYTE   0               ;;LOG FLAG
044662  000                     $FFLG:  .BYTE   0               ;;FATAL FLAG
044664                                  .EVEN
000200                          APTSIZE=200
000001                          APTENV=001
000100                          APTSPOOL=100
000040                          APTCSUP=040
                                .SBTTL  ERROR HANDLER ROUTINE

                                ;;**************************************************************
                                ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
                                ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
                                ;*AND GO TO TYPERR ON ERROR
                                ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
                                ;*SW15=1         HALT ON ERROR
                                ;*SW13=1         INHIBIT ERROR TYPEOUTS
                                ;*SW10=1         BELL ON ERROR
                                ;*SW09=1         LOOP ON ERROR
                                ;*CALL
                                ;*      ERROR   N       ;;ERROR=EMT AND N=ERROR ITEM NUMBER

044664                          $ERROR:
044664  104407                         CKSWR                   ;;TEST FOR CHANGE IN SOFT-SWR
044666  105237  001103         7$:     INCB    $ERFLG          ;;SET THE ERROR FLAG
044672  001775                         BEQ     7$              ;;DON'T LET THE FLAG GO TO ZERO
044674  013777  001102  134240         MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
044702  032777  102000  134230         BIT     #BIT10,@SWR     ;;BELL ON ERROR?
044710  001402                         BEQ     1$              ;;NO - SKIP
044712  104401  001204                 TYPE    ,$BELL          ;;RING BELL
044716  005237  001112         1$:     INC     $ERTTL          ;;COUNT THE NUMBER OF ERRORS
044722  011637  001116                 MOV     (SP),$ERRPC     ;;GET ADDRESS OF ERROR INSTRUCTION
044726  162737  000002  001116         SUB     #2,$ERRPC
044734  117737  134156  001114         MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
044742  032777  020000  134170         BIT     #BIT13,@SWR     ;;SKIP TYPEOUT IF SET
044750  001004                         BNE     20$             ;;SKIP TYPEOUTS
044752  004737  045064                 JSR     PC,TYPERR       ;;GO TO USER ERROR ROUTINE
044756  104401  001211                 TYPE    ,$CRLF
044762                          20$:
044762  122737  000001  001234         CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
044770  001007                         BNE     2$              ;;NO,SKIP APT ERROR REPORT
044772  113737  001114  045004         MOVB    $ITEMB,21$      ;;SET ITEM NUMBER AS ERROR NUMBER
045000  004737  044434                 JSR     PC,$ATY4        ;;REPORT FATAL ERROR TO APT
045004  000                     21$:    .BYTE   0
045005  000                             .BYTE   0
045006  000777                 22$:     BR      22$             ;;APT ERROR LOOP
045010  005777  134124         2$:     TST     @SWR            ;;HALT ON ERROR
045014  100002                         BPL     3$              ;;SKIP IF CONTINUE
045016  000000                         HALT                    ;;HALT ON ERROR!
045020  104407                         CKSWR                   ;;TEST FOR CHANGE IN SOFT-SWR
045022  032777  001000  134110 3$:     BIT     #BIT09,@SWR     ;;LOOP ON ERROR SWITCH SET?
045030  001402                         BEQ     4$              ;;BR IF NO
045032  013716  001110                 MOV     $LPERR,(SP)     ;;FUDGE RETURN FOR LOOPING
045036  005737  001202         4$:     TST     $ESCAPE         ;;CHECK FOR AN ESCAPE ADDRESS
045042  001402                         BEQ     5$              ;;BR IF NONE
```

```
 6649  045044  013716  001202                MOV     $ESCAPE,(SP)    ;;FUDGE RETURN ADDRESS FOR ESCAPE
 6650  045050                        5$:
 6651  045050  022737  043502  000042        CMP     #$ENDAD,@#42    ;;ACT-11 AUTO-ACCEPT?
 6652  045056  001001                        BNE     6$              ;;BRANCH IF NO
 6653  045060  000000                        HALT                    ;;YES
 6654  045062                        6$:
 6655  045062  000002                        RTI                     ;;RETURN
 6656
 6657                                ;;*****************************************************************
 6658                                .SBTTL  TYPE ERROR ROUTINE
 6659                                ;*ENTRY JSR PC,TYPERR
 6660                                ;*RETURN RTS PC
 6661                                ;*
 6662                                ;*THIS ROUTINE USES THE "ITEM CONTROL BYTE" ($ITEMB) TO DETERMINE WHICH
 6663                                ;*ERROR IS TO BE REPORTED. IT THEN USES THE "ERROR TABLE" ($ERRTB)
 6664                                ;*ENTRY TO DEFINE WHAT INFORMATION IS TO BE REPORTED CONCERNING
 6665                                ;*THE ERROR.
 6666                                ;;*****************************************************************
 6667  045064  104413                TYPERR: SAVREG
 6668  045066  113700  001114                MOVB    $ITEMB,R0       ;ENTER ERROR NUMBER
 6669  045072  042700  177400                BIC     #177400,R0      ;CLEAR UNUSED BITS
 6670  045076  005300                        DEC     R0              ;FORM INDEX FOR ERROR TABLE
 6671  045100  006300                        ASL     R0
 6672  045102  006300                        ASL     R0
 6673  045104  006300                        ASL     R0
 6674  045106  062700  001300        1$:     ADD     #$ERRTB,R0      ;FORM ADDRESS OF ERROR ENTRY
 6675  045112  012037  045126                MOV     (R0)+,2$        ;GET EM POINTER
 6676  045116  001404                        BEQ     3$              ;BRANCH IF THERE ISN'T ONE
 6677  045120  104401  001211                TYPE    ,$CRLF          ;TYPE CARRIAGE RETURN LINE FEED
 6678  045124  104401                        TYPE                    ;TYPE ERROR MESSAGE (EM)
 6679  045126  000000        2$:     .WORD   0                       ;EM POINTER GOES HERE
 6680  045130  012037  045144        3$:     MOV     (R0)+,4$        ;GET DH POINTER
 6681  045134  001404                        BEQ     5$              ;BRANCH IF THERE ISN'T ONE
 6682  045136  104401  001211                TYPE    ,$CRLF          ;TYPE CR-LF
 6683  045142  104401                        TYPE                    ;TYPE DATA HEADER
 6684  045144  000000        4$:     .WORD   0                       ;DH POINTER GOES HERE
 6685  045146  012001        5$:     MOV     (R0)+,R1                ;GET DT POINTER
 6686  045150  001445                        BEQ     20$             ;BRANCH IF THERE ARE NONE
 6687  045152  005004                        CLR     R4              ;RESET INDENT SWITCH
 6688  045154  012000                        MOV     (R0)+,R0        ;GET DF POINTER
 6689  045156  012002                        MOV     (R0)+,R2        ;STORE NUMBER OF DH'S
 6690  045160  104401  001211                TYPE    ,$CRLF          ;TYPE <CR><LF>
 6691  045164  112003        10$:    MOVB    (R0)+,R3                ;GET & STORE NUMBER OF DATA WORDS
 6692  045166  105720                        TSTB    (R0)+           ;BUMP PAST FORMAT WORD
 6693  045170  005703                        TST     R3              ;TEST IF ANY DATA FOR THIS HEADER
 6694  045172  001416                        BEQ     14$             ;NO - SKIP DATA PRINT
 6695  045174  005704                        TST     R4              ;CHECK FOR INDENT
 6696  045176  001004                        BNE     12$             ;YES, GO INDENT
 6697  045200  013146        11$:    MOV     @(R1)+,-(SP)            ;PUT FIRST DATA WORD ON STACK
 6698  045202  104402                        TYPOC                   ;TYPE IT
 6699  045204  005303                        DEC     R3              ;MORE DATA WORDS
 6700  045206  001403                        BEQ     13$             ;NO-BRANCH
 6701  045210  104401  051265        12$:    TYPE    ,SPACE2         ;TYPE SEPARATORS
 6702  045214  000771                        BR      11$             ;LOOP
 6703  045216  104401  001211        13$:    TYPE    ,$CRLF          ;TYPE <CR><LF>
 6704  045222  005710                        TST     (R0)            ;CHECK IF NEXT HEADER AVAILIBLE
```

```
                                        BEQ     14$             ;NO, DO NOT CHANGE INDENT
                                        COM     R4              ;CHANGE INDENT
                                14$:    DEC     R2              ;MORE DH'S?
                                        BLE     20$             ;NO-BRANCH
                                15$:    MOV     (R0)+,18$       ;GET NEXT DH POINTER
                                        BEQ     10$             ;IF NO HEADER GO GET DATA
                                        TST     R4              ;INDENT?
                                        BEQ     17$             ;NO-BRANCH
                                        TYPE    ,SPACE2         ;YES-TYPE SPACES
                                17$:    TYPE                    ;TYPE DH
                                18$:    .WORD   0               ;DH POINTER GOES HERE
                                        TYPE    ,$CRLF
                                        BR      10$             ;GO TYPE OUT DATA
                                20$:    RESREG
                                        INC     ERRCNT          ;INCREMENT THE ERROR COUNT
                                        BIT     #SW12,@SWR      ;CHECK IF SWITCH 12 SET
                                        BEQ     25$             ;NO, RETURN
                                        CMP     #20.,ERRCNT     ;CHECK IF ERROR THRESHOLD EXCEEDED
                                        BHIS    25$             ;NO, RETURN
                                        TYPE    ,ABORT          ;TYPE "PROGRAM ABORTED BECAUSE ERROR
                                                                ;  THRESHOLD EXCEEDED"
                                        TST     42              ;CHECK IF IN CHAIN MODE
                                        BEQ     22$             ;NO, HALT PROCESSOR
                                        MOV     #1,$EOPCT       ;FOR PASS COUNT FOR ABORT
                                        MOV     #STACK,SP       ;INITIALIZE STACK
                                        JMP     $EOP            ;BRING IN NEXT PROGRAM

                                22$:    HALT
                                25$:    RTS     PC
                                .SBTTL  TYPE ROUTINE

                                ;;**************************************************************
                                ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
                                ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
                                ;*NOTE1:        $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
                                ;*NOTE2:        $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
                                ;*NOTE3:        $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
                                ;*
                                ;*CALL:
                                ;*1) USING A TRAP INSTRUCTION
                                ;*      TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
                                ;*OR
                                ;*      TYPE
                                ;*      MESADR
                                ;*

                                $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
                                        BPL     1$              ;;BR IF YES
                                        HALT                    ;;HALT HERE IF NO TERMINAL
                                        BR      3$              ;;LEAVE
                                1$:     MOV     R0,-(SP)        ;;SAVE R0
                                        MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
                                        CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
                                        BNE     62$             ;;NO,GO CHECK FOR APT CONSOLE
                                        BITB    #APTSPOOL,$ENVM ;;SPOOL MESSAGE TO APT
                                        BEQ     62$             ;;NO,GO CHECK FOR CONSOLE
```

```
 6761  045406  010037  045416                 MOV     R0,61$          ;;SETUP MESSAGE ADDRESS FOR APT
 6762  045412  004737  044424                 JSR     PC,$ATY3        ;;SPOOL MESSAGE TO APT
 6763  045416  000000                 61$:    .WORD   0               ;;MESSAGE ADDRESS
 6764  045420  132737  000040  001235 62$:    BITB    #APTCSUP,$ENVM  ;;APT CONSOLE SUPPRESSED
 6765  045426  001003                         BNE     60$             ;;YES,SKIP TYPE OUT
 6766  045430  112046                 2$:     MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
 6767  045432  001005                         BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
 6768  045434  005726                         TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
 6769  045436  012600                 60$:    MOV     (SP)+,R0        ;;RESTORE R0
 6770  045440  062716  000002                 ADD     #2,(SP)         ;;ADJUST RETURN PC
 6771  045444  000002                         RTI                     ;;RETURN
 6772  045446  122716  000011         4$:     CMPB    #HT,(SP)        ;;BRANCH IF <HT>
 6773  045452  001430                         BEQ     8$
 6774  045454  122716  000200                 CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
 6775  045460  001006                         BNE     5$
 6776  045462  005726                         TST     (SP)+           ;;POP  <CR><LF> EQUIV
 6777  045464  104401                         TYPE                    ;;TYPE A CR AND LF
 6778  045466  001211                         $CRLF
 6779  045470  105037  045624                 CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
 6780  045474  000755                         BR      2$              ;;GET NEXT CHARACTER
 6781  045476  004737  045560         5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
 6782  045502  123726  001156         6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
 6783  045506  001350                         BNE     2$              ;;IF NO GO GET NEXT CHAR.
 6784  045510  013746  001154                 MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
 6785                                                                 ;;AND THE NULL CHAR.
 6786  045514  105366  000001         7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
 6787  045520  002770                         BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
 6788  045522  004737  045560                 JSR     PC,$TYPEC       ;;GO TYPE A NULL
 6789  045526  105337  045624                 DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
 6790  045532  000770                         BR      7$              ;;LOOP
 6791
 6792                                 ;HORIZONTAL TAB PROCESSOR
 6793
 6794  045534  112716  000040         8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
 6795  045540  004737  045560         9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
 6796  045544  132737  000007  045624         BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
 6797  045552  001372                         BNE     9$              ;;TAB STOP
 6798  045554  005726                         TST     (SP)+           ;;POP SPACE OFF STACK
 6799  045556  000724                         BR      2$              ;;GET NEXT CHARACTER
 6800  045560  105777  133364         $TYPEC: TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
 6801  045564  100375                         BPL     $TYPEC
 6802  045566  116677  000002  133356         MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
 6803  045574  122766  000015  000002         CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
 6804  045602  001003                         BNE     1$              ;;BRANCH IF NO
 6805  045604  105037  045624                 CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
 6806  045610  000406                         BR      $TYPEX          ;;EXIT
 6807  045612  122766  000012  000002 1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
 6808  045620  001402                         BEQ     $TYPEX          ;;BRANCH IF YES
 6809  045622  105227                         INCB    (PC)+           ;;COUNT THE CHARACTER
 6810  045624  000000                 $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
 6811  045626  000207                 $TYPEX: RTS     PC
 6812
 6813                                 .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
 6814
 6815                                 ;;******************************************************************
 6816                                 ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
```

```
                                ;*OCTAL (ASCII) NUMBER AND TYPE IT.
                                ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
                                ;*CALL:
                                ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                ;*      TYPOS                   ;;CALL FOR TYPEOUT
                                ;*      .BYTE   N               ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
                                ;*      .BYTE   M               ;;M=1 OR 0
                                ;*                                      ;;1=TYPE LEADING ZEROS
                                ;*                                      ;;0=SUPPRESS LEADING ZEROS
                                ;*
                                ;*$TYPON----ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
                                ;*$TYPOS OR $TYPOC
                                ;*CALL:
                                ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                ;*      TYPON                   ;;CALL FOR TYPEOUT
                                ;*
                                ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
                                ;*CALL:
                                ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                ;*      TYPOC                   ;;CALL FOR TYPEOUT

045630  017646  000000        $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
045634  116637  000001 046053         MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
045642  112637  046055               MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
045646  062716  000002               ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
045652  000406                       BR      $TYPON
045654  112737  000001 046053 $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
045662  112737  000006 046055         MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
045670  112737  000005 046052 $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
045676  010346                       MOV     R3,-(SP)        ;;SAVE R3
045700  010446                       MOV     R4,-(SP)        ;;SAVE R4
045702  010546                       MOV     R5,-(SP)        ;;SAVE R5
045704  113704  046055               MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
045710  005404                       NEG     R4
045712  062704  000006               ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
045716  110437  046054               MOVB    R4,$OMODE       ;;SAVE IT FOR USE
045722  113704  046053               MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
045726  016605  000012               MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
045732  005003                       CLR     R3              ;;CLEAR THE OUTPUT WORD
045734  006105                1$:    ROL     R5              ;;ROTATE MSB INTO "C"
045736  000404                       BR      3$              ;;GO DO MSB
045740  006105                2$:    ROL     R5              ;;FORM THIS DIGIT
045742  006105                       ROL     R5
045744  006105                       ROL     R5
045746  010503                       MOV     R5,R3
045750  006103                3$:    ROL     R3              ;;GET LSB OF THIS DIGIT
045752  105337  046054               DECB    $OMODE          ;;TYPE THIS DIGIT?
045756  100016                       BPL     7$              ;;BR IF NO
045760  042703  177770               BIC     #177770,R3      ;;GET RID OF JUNK
045764  001002                       BNE     4$              ;;TEST FOR 0
045766  005704                       TST     R4              ;;SUPPRESS THIS 0?
045770  001403                       BEQ     5$              ;;BR IF YES
045772  005204                4$:    INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
045774  052703  000060               BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
046000  052703  000040         5$:   BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
046004  110337  046050               MOVB    R3,8$           ;;SAVE FOR TYPING
```

```
                                TYPE    .B$             ;;GO TYPE THIS DIGIT
                        7$:     DECB    $OCNT           ;;COUNT BY 1
                                BGT     2$              ;;BR IF MORE TO DO
                                BLT     6$              ;;BR IF DONE
                                INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
                                BR      2$              ;;GO DO THE LAST DIGIT
                        6$:     MOV     (SP)+,R5        ;;RESTORE R5
                                MOV     (SP)+,R4        ;;RESTORE R4
                                MOV     (SP)+,R3        ;;RESTORE R3
                                MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
                                MOV     (SP)+,(SP)
                                RTI                     ;;RETURN
                        B$:     .BYTE   0               ;;STORAGE FOR ASCII DIGIT
                                .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
                        $OCNT:  .BYTE   0               ;;OCTAL DIGIT COUNTER
                        $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
                        $OMODE: .WORD   0               ;;NUMBER OF DIGITS TO TYPE
                        .SBTTL  CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

                        ;;**************************************************************
                        ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
                        ;*SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
                        ;*NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
                        ;*BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
                        ;*REPLACED WITH SPACES.
                        ;*CALL:
                        ;*      MOV     NUM,-(SP)       ;;PUT THE BINARY NUMBER ON THE STACK
                        ;*      TYPDS                   ;;GO TO THE ROUTINE

                        $TYPDS:
                                MOV     R0,-(SP)        ;;PUSH R0 ON STACK
                                MOV     R1,-(SP)        ;;PUSH R1 ON STACK
                                MOV     R2,-(SP)        ;;PUSH R2 ON STACK
                                MOV     R3,-(SP)        ;;PUSH R3 ON STACK
                                MOV     R5,-(SP)        ;;PUSH R5 ON STACK
                                MOV     #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
                                MOV     20(SP),R5       ;;GET THE INPUT NUMBER
                                BPL     1$              ;;BR IF INPUT IS POS.
                                NEG     R5              ;;MAKE THE BINARY NUMBER POS.
                                MOVB    #'-,1(SP)       ;;MAKE THE ASCII NUMBER NEG.
                        1$:     CLR     R0              ;;ZERO THE CONSTANTS INDEX
                                MOV     #$DBLK,R3       ;;SETUP THE OUTPUT POINTER
                                MOVB    #' ,(R3)+       ;;SET THE FIRST CHARACTER TO A BLANK
                        2$:     CLR     R2              ;;CLEAR THE BCD NUMBER
                                MOV     $DTBL(R0),R1    ;;GET THE CONSTANT
                        3$:     SUB     R1,R5           ;;FORM THIS BCD DIGIT
                                BLT     4$              ;;BR IF DONE
                                INC     R2              ;;INCREASE THE BCD DIGIT BY 1
                                BR      3$
                        4$:     ADD     R1,R5           ;;ADD BACK THE CONSTANT
                                TST     R2              ;;CHECK IF BCD DIGIT=0
                                BNE     5$              ;;FALL THROUGH IF 0
                                TSTB    (SP)            ;;STILL DOING LEADING 0'S?
                                BMI     7$              ;;BR IF YES
                        5$:     ASLB    (SP)            ;;MSD?
                                BCC     6$              ;;BR IF NO
```

```
 6929  046160  116663  000001  177777          MOVB    1(SP),-1(R3)    ;;YES--SET THE SIGN
 6930  046166  052702  000060          6$:     BIS     #'0,R2          ;;MAKE THE BCD DIGIT ASCII
 6931  046172  052702  000040          7$:     BIS     #' ,R2          ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
 6932  046176  110223                          MOVB    R2,(R3)+        ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
 6933  046200  005720                          TST     (R0)+           ;;JUST INCREMENTING
 6934  046202  020027  000010                  CMP     R0,#10          ;;CHECK THE TABLE INDEX
 6935  046206  002746                          BLT     2$              ;;GO DO THE NEXT DIGIT
 6936  046210  003002                          BGT     8$              ;;GO TO EXIT
 6937  046212  010502                          MOV     R5,R2           ;;GET THE LSD
 6938  046214  000764                          BR      6$              ;;GO CHANGE TO ASCII
 6939  046216  105726                  9$:     TSTB    (SP)+           ;;WAS THE LSD THE FIRST NON-ZERO?
 6940  046220  100003                          BPL     9$              ;;BR IF NO
 6941  046222  116663  177777  177776          MOVB    -1(SP),-2(R3)   ;;YES--SET THE SIGN FOR TYPING
 6942  046230  105013                  9$:     CLRB    (R3)            ;;SET THE TERMINATOR
 6943  046232  012605                          MOV     (SP)+,R5        ;;POP STACK INTO R5
 6944  046234  012603                          MOV     (SP)+,R3        ;;POP STACK INTO R3
 6945  046236  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
 6946  046240  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
 6947  046242  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
 6948  046244  104401  046272                  TYPE    ,$DBLK          ;;NOW TYPE THE NUMBER
 6949  046250  016666  000002  000004          MOV     2(SP),4(SP)     ;;ADJUST THE STACK
 6950  046256  012616                          MOV     (SP)+,(SP)
 6951  046260  000002                          RTI                     ;;RETURN TO USER
 6952  046262  023420                  $DTBL:  10000.
 6953  046264  001750                          1000.
 6954  046266  000144                          100.
 6955  046270  000012                          10.
 6956  046272  000004                  $DBLK:  .BLKW   4
 6957                                  .SBTTL  TTY INPUT ROUTINE
 6958
 6959                                  ;;**********************************************************************
 6960                                  .ENABL  LSB
 6961
 6962                                  ;;**********************************************************************
 6963                                  ;*SOFTWARE SWITCH REGISTER CHANGE ROUTINE.
 6964                                  ;*ROUTINE IS ENTERED FROM THE TRAP HANDLER, AND WILL
 6965                                  ;*SERVICE THE TEST FOR CHANGE IN SOFTWARE SWITCH REGISTER TRAP CALL
 6966                                  ;*WHEN OPERATING IN TTY FLAG MODE.
 6967  046302  022737  000176  001140  $CKSWR: CMP     #SWREG,SWR      ;;IS THE SOFT-SWR SELECTED?
 6968  046310  001074                          BNE     15$             ;;BRANCH IF NO
 6969  046312  105777  132626                  TSTB    @$TKS           ;;CHAR THERE?
 6970  046316  100071                          BPL     15$             ;;IF NO, DON'T WAIT AROUND
 6971  046320  117746  132622                  MOVB    @$TKB,-(SP)     ;;SAVE THE CHAR
 6972  046324  042716  177600                  BIC     #^C177,(SP)     ;;STRIP-OFF THE ASCII
 6973  046330  022726  000007                  CMP     #7,(SP)+        ;;IS IT A CONTROL G?
 6974  046334  001062                          BNE     15$             ;;NO, RETURN TO USER
 6975  046336  123727  001134  000001          CMPB    $AUTOB,#1       ;;ARE WE RUNNING IN AUTO-MODE?
 6976  046344  001456                          BEQ     15$             ;;BRANCH IF YES
 6977
 6978  046346  104401  047155                  TYPE    ,$CNTLG         ;;ECHO THE CONTROL-G (^G)
 6979  046352  104401  047162  $GTSWR: TYPE    ,$MSWR          ;;TYPE CURRENT CONTENTS
 6980  046356  013746  000176                  MOV     $WREG,-(SP)     ;;SAVE SWREG FOR TYPEOUT
 6981  046362  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
 6982  046364  104401  047173                  TYPE    ,$MNEW          ;;PROMPT FOR NEW SWR
 6983  046370  005046                  19$:    CLR     -(SP)           ;;CLEAR COUNTER
 6984  046372  005046                          CLR     -(SP)           ;;THE NEW SWR
```

```
6985  046374  105777  132544          7$:     TSTB    @$TKS           ;;CHAR THERE?
6986  046400  100375                  BPL     7$              ;;IF NOT TRY AGAIN
6987
6988  046402  117746  132540          MOVB    @$TKB,-(SP)     ;;PICK UP CHAR
6989  046406  042716  177600          BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
6990
6991
6992
6993  046412  021627  000025          9$:     CMP     (SP),#25        ;;IS IT A CONTROL-U?
6994  046416  001005                  BNE     10$             ;;BRANCH IF NOT
6995  046420  104401  047150          TYPE    ,$CNTLU         ;;YES, ECHO CONTROL-U (^U)
6996  046424  062706  000006          20$:    ADD     #6,SP           ;;IGNORE PREVIOUS INPUT
6997  046430  000757                  BR      19$             ;;LET'S TRY IT AGAIN
6998
6999
7000  046432  021627  000015          10$:    CMP     (SP),#15        ;;IS IT A <CR>?
7001  046436  001022                  BNE     16$             ;;BRANCH IF NO
7002  046440  005766  000004          TST     4(SP)           ;;YES, IS IT THE FIRST CHAR?
7003  046444  001403                  BEQ     11$             ;;BRANCH IF YES
7004  046446  016677  000002  132464  MOV     2(SP),@SWR      ;;SAVE NEW SWR
7005  046454  062706  000006          11$:    ADD     #6,SP           ;;CLEAR UP STACK
7006  046460  104401  001211          14$:    TYPE    ,$CRLF          ;;ECHO <CR> AND <LF>
7007  046464  123727  001135  000001  CMPB    $INTAG,#1       ;;RE-ENABLE TTY KBD INTERRUPTS?
7008  046472  001003                  BNE     15$             ;;BRANCH IF NOT
7009  046474  012777  000100  132442  MOV     #100,@$TKS      ;;RE-ENABLE TTY KBD INTERRUPTS
7010  046502  000002                  15$:    RTI             ;;RETURN
7011  046504  004737  045560          16$:    JSR     PC,$TYPEC       ;;ECHO CHAR
7012  046510  021627  000060          CMP     (SP),#60        ;;CHAR < 0?
7013  046514  002420                  BLT     18$             ;;BRANCH IF YES
7014  046516  021627  000067          CMP     (SP),#67        ;;CHAR > 7?
7015  046522  003015                  BGT     18$             ;;BRANCH IF YES
7016  046524  042726  000060          BIC     #60,(SP)+       ;;STRIP-OFF ASCII
7017  046530  005766  000002          TST     2(SP)           ;;IS THIS THE FIRST CHAR
7018  046534  001403                  BEQ     17$             ;;BRANCH IF YES
7019  046536  006316                  ASL     (SP)            ;;NO, SHIFT PRESENT
7020  046540  006316                  ASL     (SP)            ;;   CHAR OVER TO MAKE
7021  046542  006316                  ASL     (SP)            ;;   ROOM FOR NEW ONE.
7022  046544  005266  000002          17$:    INC     2(SP)           ;;KEEP COUNT OF CHAR
7023  046550  056616  177776          BIS     -2(SP),(SP)     ;;SET IN NEW CHAR
7024  046554  000737                  BR      7$              ;;GET THE NEXT ONE
7025  046556  104401  001210          18$:    TYPE    ,$QUES          ;;TYPE ?<CR><LF>
7026  046562  000720                  BR      20$             ;;SIMULATE CONTROL-U
7027                                  .DSABL  LSB
7028
7029
7030                                  ;;*****************************************************************
7031                                  ;*THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY
7032                                  ;*CALL:
7033                                  ;*      RDCHR                   ;;INPUT A SINGLE CHARACTER FROM THE TTY
7034                                  ;*      RETURN HERE             ;;CHARACTER IS ON THE STACK
7035                                  ;*                              ;;WITH PARITY BIT STRIPPED OFF
7036                                  ;
7037
7038  046564  011646                  $RDCHR: MOV     (SP),-(SP)      ;;PUSH DOWN THE PC
7039  046566  016666  000004  000002  MOV     4(SP),2(SP)     ;;SAVE THE PS
7040  046574  105777  132344          1$:     TSTB    @$TKS           ;;WAIT FOR
```

```
7041  046600  100375                          BPL     1$              ;;A CHARACTER
7042  046602  117766  132340  000004          MOVB    @$TKB,4(SP)     ;;READ THE TTY
7043  046610  042766  177600  000004          BIC     #^C<177>,4(SP)  ;;GET RID OF JUNK IF ANY
7044  046616  026627  000004  000023          CMP     4(SP),#23       ;;IS IT A CONTROL-S?
7045  046624  001013                          BNE     3$              ;;BRANCH IF NO
7046  046626  105777  132312          2$:     TSTB    @$TKS           ;;WAIT FOR A CHARACTER
7047  046632  100375                          BPL     2$              ;;LOOP UNTIL ITS THERE
7048  046634  117746  132306                  MOVB    @$TKB,-(SP)     ;;GET CHARACTER
7049  046640  042716  177600                  BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
7050  046644  022627  000021                  CMP     (SP)+,#21       ;;IS IT A CONTROL-Q?
7051  046650  001366                          BNE     2$              ;;IF NOT DISCARD IT
7052  046652  000750                          BR      1$              ;;YES, RESUME
7053  046654  026627  000004  000140  3$:     CMP     4(SP),#140      ;;IS IT UPPER CASE?
7054  046662  002407                          BLT     4$              ;;BRANCH IF YES
7055  046664  026627  000004  000175          CMP     4(SP),#175      ;;IS IT A SPECIAL CHAR?
7056  046672  003003                          BGT     4$              ;;BRANCH IF YES
7057  046674  042766  000040  000004          BIC     #40,4(SP)       ;;MAKE IT UPPER CASE
7058  046702  000002                  4$:     RTI                     ;;GO BACK TO USER
7059                                          ;;**************************************************************
7060                                          ;*THIS ROUTINE WILL INPUT A STRING FROM THE TTY
7061                                          ;*CALL:
7062                                          ;*      RDLIN                   ;;INPUT A STRING FROM THE TTY
7063                                          ;*      RETURN HERE             ;;ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
7064                                          ;*                              ;;TERMINATOR WILL BE A BYTE OF ALL 0'S
7065
7066  046704  010346                  $RDLIN: MOV     R3,-(SP)        ;;SAVE R3
7067  046706  005046                          CLR     -(SP)           ;;CLEAR THE RUBOUT KEY
7068  046710  012703  047140          1$:     MOV     #$TTYIN,R3      ;;GET ADDRESS
7069  046714  022703  047150          2$:     CMP     #$TTYIN+8.,R3   ;;BUFFER FULL?
7070  046720  101456                          BLOS    4$              ;;BR IF YES
7071  046722  104410                          RDCHR                   ;;GO READ ONE CHARACTER FROM THE TTY
7072  046724  112613                          MOVB    (SP)+,(R3)      ;;GET CHARACTER
7073  046726  122713  000177          10$:    CMPB    #177,(R3)       ;;IS IT A RUBOUT
7074  046732  001022                          BNE     5$              ;;BR IF NO
7075  046734  005716                          TST     (SP)            ;;IS THIS THE FIRST RUBOUT?
7076  046736  001007                          BNE     6$              ;;BR IF NO
7077  046740  112737  000134  047136          MOVB    #'\,9$          ;;TYPE A BACK SLASH
7078  046746  104401  047136                  TYPE    ,9$
7079  046752  012716  177777                  MOV     #-1,(SP)        ;;SET THE RUBOUT KEY
7080  046756  005303                  6$:     DEC     R3              ;;BACKUP BY ONE
7081  046760  020327  047140                  CMP     R3,#$TTYIN      ;;STACK EMPTY?
7082  046764  103434                          BLO     4$              ;;BR IF YES
7083  046766  111337  047136                  MOVB    (R3),9$         ;;SETUP TO TYPEOUT THE DELETED CHAR.
7084  046772  104401  047136                  TYPE    ,9$             ;;GO TYPE
7085  046776  000746                          BR      2$              ;;GO READ ANOTHER CHAR.
7086  047000  005716                  5$:     TST     (SP)            ;;RUBOUT KEY SET?
7087  047002  001406                          BEQ     7$              ;;BR IF NO
7088  047004  112737  000134  047136          MOVB    #'\,9$          ;;TYPE A BACK SLASH
7089  047012  104401  047136                  TYPE    ,9$
7090  047016  005016                          CLR     (SP)            ;;CLEAR THE RUBOUT KEY
7091  047020  122713  000025          7$:     CMPB    #25,(R3)        ;;IS CHARACTER A CTRL U?
7092  047024  001003                          BNE     8$              ;;BR IF NO
7093  047026  104401  047150                  TYPE    ,$CNTLU         ;;TYPE A CONTROL "U"
7094  047032  000726                          BR      1$              ;;GO START OVER
7095  047034  122713  000022          8$:     CMPB    #22,(R3)        ;;IS CHARACTER A "^R"?
7096  047040  001011                          BNE     3$              ;;BRANCH IF NO
```

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7097  047042  105013                          CLRB    (R3)            ;;CLEAR THE CHARACTER
7098  047044  104401  001211                  TYPE    ,$CRLF          ;;TYPE A "CR" & "LF"
7099  047050  104401  047140                  TYPE    ,$TTYIN         ;;TYPE THE INPUT STRING
7100  047054  000717                          BR      2$              ;;GO PICKUP ANOTHER CHACTER
7101  047056  104401  001210          4$:     TYPE    ,$QUES          ;;TYPE A '?'
7102  047062  000712                          BR      1$              ;;CLEAR THE BUFFER AND LOOP
7103  047064  111337  047136          3$:     MOVB    (R3),9$         ;;ECHO THE CHARACTER
7104  047070  104401  047136                  TYPE    ,9$
7105  047074  122723  000015                  CMPB    #15,(R3)+       ;;CHECK FOR RETURN
7106  047100  001305                          BNE     2$              ;;LOOP IF NOT RETURN
7107  047102  105063  177777                  CLRB    -1(R3)          ;;CLEAR RETURN (THE 15)
7108  047106  104401  001212                  TYPE    ,$LF            ;;TYPE A LINE FEED
7109  047112  005726                          TST     (SP)+           ;;CLEAN RUBOUT KEY FROM THE STACK
7110  047114  012603                          MOV     (SP)+,R3        ;;RESTORE R3
7111  047116  011646                          MOV     (SP),-(SP)      ;;ADJUST THE STACK AND PUT ADDRESS OF THE
7112  047120  016666  000004  000002          MOV     4(SP),2(SP)     ;;      FIRST ASCII CHARACTER ON IT
7113  047126  012766  047140  000004          MOV     #$TTYIN,4(SP)
7114  047134  000002                          RTI                     ;;RETURN
7115  047136     000          9$:     .BYTE   0                       ;;STORAGE FOR ASCII CHAR. TO TYPE
7116  047137     000                  .BYTE   0                       ;;TERMINATOR
7117  047140  000010          $TTYIN: .BLKB   8.                      ;;RESERVE 8 BYTES FOR TTY INPUT
7118  047150  052536  005015     000  $CNTLU: .ASCIZ  /↑U/<15><12>    ;;CONTROL "U"
7119  047155     136  006507  000012  $CNTLG: .ASCIZ  /↑G/<15><12>    ;;CONTROL "G"
7120  047162  005015  053523  020122  $MSWR:  .ASCIZ  <15><12>/SWR = /
7121  047170  020075     000
7122  047173     040  047040  053505  $MNEW:  .ASCIZ  /  NEW = /
7123  047200  036440  000040
7124                                  .SBTTL  READ AN OCTAL NUMBER FROM THE TTY
7125
7126                                  ;;**************************************************************
7127                                  ;*THIS ROUTINE WILL READ AN OCTAL (ASCII) NUMBER FROM THE TTY AND
7128                                  ;*CHANGE IT TO BINARY.
7129                                  ;*THE INPUT CHARACTERS WILL BE CHECKED TO INSURED THEY ARE LEGAL
7130                                  ;*OCTAL DIGITS. IF AN ILLEGAL CHARACTER IS READ A "?" WILL BE TYPED
7131                                  ;*FOLLOWED BY A CARRIAGE RETURN-LINE FEED. THE COMPLETE NUMBER MUST
7132                                  ;*THEN BE RETYPED. THE INPUT IS TERMINATED BY TYPING A CARRIAGE RETURN.
7133                                  ;*CALL:
7134                                  ;*      RDOCT                   ;;READ AN OCTAL NUMBER
7135                                  ;*      RETURN HERE             ;;LOW ORDER BITS ARE ON TOP OF THE STACK
7136                                  ;*                              ;;HIGH ORDER BITS ARE IN $HIOCT
7137
7138  047204  011646          $RDOCT: MOV     (SP),-(SP)      ;;PROVIDE SPACE FOR THE
7139  047206  016666  000004  000002          MOV     4(SP),2(SP)     ;;INPUT NUMBER
7140  047214  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
7141  047216  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
7142  047220  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
7143  047222  104411          1$:     RDLIN                           ;;READ AN ASCIZ LINE
7144  047224  012600                          MOV     (SP)+,R0        ;;GET ADDRESS OF 1ST CHARACTER
7145  047226  010037  047332                  MOV     R0,5$           ;;AND SAVE IT
7146  047232  005001                          CLR     R1              ;;CLEAR DATA WORD
7147  047234  005002                          CLR     R2
7148  047236  112046          2$:     MOVB    (R0)+,-(SP)     ;;PICKUP THIS CHARACTER
7149  047240  001420                          BEQ     3$              ;;IF ZERO GET OUT
7150  047242  122716  000060                  CMPB    #'0,(SP)        ;;MAKE SURE THIS CHARACTER
7151  047246  003026                          BGT     4$              ;;IS AN OCTAL DIGIT
7152  047250  122716  000067                  CMPB    #'7,(SP)
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```
7153  047254  002423                        BLT     4$
7154  047256  006301                        ASL     R1              ;;*2
7155  047260  006102                        ROL     R2
7156  047262  006301                        ASL     R1              ;;*4
7157  047264  006102                        ROL     R2
7158  047266  006301                        ASL     R1              ;;*8
7159  047270  006102                        ROL     R2
7160  047272  042716  177770               BIC     #^C7,(SP)       ;;STRIP THE ASCII JUNK
7161  047276  062601                        ADD     (SP)+,R1        ;;ADD IN THIS DIGIT
7162  047300  000756                        BR      2$              ;;LOOP
7163  047302  005726                3$:     TST     (SP)+           ;;CLEAN TERMINATOR FROM STACK
7164  047304  010166  000012               MOV     R1,12(SP)       ;;SAVE THE RESULT
7165  047310  010237  047342               MOV     R2,$HIOCT
7166  047314  012602                        MOV     (SP)+,R2        ;;POP STACK INTO R2
7167  047316  012601                        MOV     (SP)+,R1        ;;POP STACK INTO R1
7168  047320  012600                        MOV     (SP)+,R0        ;;POP STACK INTO R0
7169  047322  000002                        RTI                     ;;RETURN
7170  047324  005726                4$:     TST     (SP)+           ;;CLEAN PARTIAL FROM STACK
7171  047326  105010                        CLRB    (R0)            ;;SET A TERMINATOR
7172  047330  104401                        TYPE                    ;;TYPE UP THRU THE BAD CHAR.
7173  047332  000000                5$:     .WORD   0
7174  047334  104401  001210               TYPE    $QUES           ;;"?" "CR" & "LF"
7175  047340  000730                        BR      1$              ;;TRY AGAIN
7176  047342  000000                $HIOCT: .WORD   0               ;;HIGH ORDER BITS GO HERE
7177                                        .SBTTL  SAVE AND RESTORE R0-R5 ROUTINES
7178
7179                                        ;;******************************************************************
7180                                        ;*SAVE R0-R5
7181                                        ;*CALL:
7182                                        ;*      SAVREG
7183                                        ;*UPON RETURN FROM $SAVREG THE STACK WILL LOOK LIKE:
7184                                        ;*
7185                                        ;*TOP---(+16)
7186                                        ;* +2---(+18)
7187                                        ;* +4---R5
7188                                        ;* +6---R4
7189                                        ;* +8---R3
7190                                        ;*+10---R2
7191                                        ;*+12---R1
7192                                        ;*+14---R0
7193
7194  047344                                $SAVREG:
7195  047344  010046                                MOV     R0,-(SP)        ;;PUSH R0 ON STACK
7196  047346  010146                                MOV     R1,-(SP)        ;;PUSH R1 ON STACK
7197  047350  010246                                MOV     R2,-(SP)        ;;PUSH R2 ON STACK
7198  047352  010346                                MOV     R3,-(SP)        ;;PUSH R3 ON STACK
7199  047354  010446                                MOV     R4,-(SP)        ;;PUSH R4 ON STACK
7200  047356  010546                                MOV     R5,-(SP)        ;;PUSH R5 ON STACK
7201  047360  016646  000022                        MOV     22(SP),-(SP)    ;;SAVE PS OF MAIN FLOW
7202  047364  016646  000022                        MOV     22(SP),-(SP)    ;;SAVE PC OF MAIN FLOW
7203  047370  016646  000022                        MOV     22(SP),-(SP)    ;;SAVE PS OF CALL
7204  047374  016646  000022                        MOV     22(SP),-(SP)    ;;SAVE PC OF CALL
7205  047400  000002                                RTI
7206
7207                                        ;*RESTORE R0-R5
7208                                        ;*CALL:
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```
7209                                        ;*      RESREG
7210  047402                                $RESREG:
7211  047402  012666  000022                        MOV     (SP)+,22(SP)    ;;RESTORE PC OF CALL
7212  047406  012666  000022                        MOV     (SP)+,22(SP)    ;;RESTORE PS OF CALL
7213  047412  012666  000022                        MOV     (SP)+,22(SP)    ;;RESTORE PC OF MAIN FLOW
7214  047416  012666  000022                        MOV     (SP)+,22(SP)    ;;RESTORE PS OF MAIN FLOW
7215  047422  012605                              MOV     (SP)+,R5        ;;POP STACK INTO R5
7216  047424  012604                              MOV     (SP)+,R4        ;;POP STACK INTO R4
7217  047426  012603                              MOV     (SP)+,R3        ;;POP STACK INTO R3
7218  047430  012602                              MOV     (SP)+,R2        ;;POP STACK INTO R2
7219  047432  012601                              MOV     (SP)+,R1        ;;POP STACK INTO R1
7220  047434  012600                              MOV     (SP)+,R0        ;;POP STACK INTO R0
7221  047436  000002                              RTI
7222
7223                                        .SBTTL  POWER DOWN AND UP ROUTINES
7224
7225                                        ;;**************************************************************
7226                                        ;POWER DOWN ROUTINE
7227  047440  017737  131474  004274       $PWRDN: MOV     @SWR,SAVSWR     ;SAVE SWITCH REG
7228  047446  012737  047466  000024               MOV     #$PWRUP,PWRVEC  ;SET UP VECTOR
7229  047454  012737  000340  000026               MOV     #PR7,PWRVEC+2
7230  047462  000000                              HALT
7231  047464  000776                              BR      .-2             ;HANG UP
7232
7233                                        ;;**************************************************************
7234                                        ;POWER UP ROUTINE
7235  047466  005037  047556               $PWRUP: CLR     $PWRCT          ;LOOP LOOP TIMER
7236  047472  012737  000144  047560               MOV     #100.,$PWRCT+2
7237  047500  005237  047556               1$:     INC     $PWRCT          ;WAIT FOR TELETYPE
7238  047504  001375                              BNE     1$
7239  047506  005337  047560                      DEC     $PWRCT+2
7240  047512  001372                              BNE     1$
7241  047514  012737  047440  000024               MOV     #$PWRDN,PWRVEC  ;SET UP THE POWER DOWN VECTOR
7242  047522  012737  000340  000026               MOV     #PR7,PWRVEC+2
7243  047530  012706  001100                      MOV     #STACK,SP       ;FORCE STACK POINTER
7244  047534  104401  047562                      TYPE    ,$POWER         ;TYPE POWER
7245  047540  004737  043522                      JSR     PC,CHKPAR       ;CHECK FOR MEMORY CHECK ENABLE OPTION
7246  047544  013777  004274  131366               MOV     SAVSWR,@SWR     ;RESTORE SWITCH REG
7247  047552  000177  131330                      JMP     @$LPADR         ;START TEST AGAIN
7248
7249  047556  000000  000000       $PWRCT: .WORD   0,0             ;COUNTER FOR TELETYPE
7250  047562  005015  047520  042527  $POWER: .ASCIZ  <15><12>/POWER/
7251  047570  000122
7252                                              .EVEN
7253                                        .SBTTL  TRAP DECODER
7254
7255                                        ;;**************************************************************
7256                                        ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
7257                                        ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
7258                                        ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
7259                                        ;*GO TO THAT ROUTINE.
7260
7261  047572  010046                       $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
7262  047574  016600  000002                      MOV     2(SP),R0        ;;GET TRAP ADDRESS
7263  047600  005740                              TST     -(R0)           ;;BACKUP BY 2
7264  047602  111000                              MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
```

```
7265  047604  006300                          ASL     R0              ;;POSITION FOR INDEXING
7266  047606  016000  047626                  MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
7267  047612  000200                          RTS     R0              ;;GO TO ROUTINE
7268
7269
7270                                  ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO
7271
7272  047614  011646                  $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
7273  047616  016666  000004  000002          MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
7274  047624  000002                          RTI                     ;;RESTORE THE PSW
7275
7276                                  .SBTTL  TRAP TABLE
7277
7278                                  ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
7279                                  ;*BY THE "TRAP" INSTRUCTION.
7280
7281                                  ;       ROUTINE
7282                                  ;       -------
7283  047626  047614                  $TRPAD: .WORD   $TRAP2
7284  047630  045346                          $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
7285  047632  045654                          $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
7286  047634  045630                          $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
7287  047636  045670                          $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
7288  047640  046056                          $TYPDS  ;;CALL=TYPDS    TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)
7289
7290  047642  046352                          $GTSWR  ;;CALL=GTSWR    TRAP+6(104406)  GET SOFT-SWR SETTING
7291
7292  047644  046302                          $CKSWR  ;;CALL=CKSWR    TRAP+7(104407)  TEST FOR CHANGE IN SOFT-SWR
7293  047646  046564                          $RDCHR  ;;CALL=RDCHR    TRAP+10(104410) TTY TYPEIN CHARACTER ROUTINE
7294  047650  046704                          $RDLIN  ;;CALL=RDLIN    TRAP+11(104411) TTY TYPEIN STRING ROUTINE
7295  047652  047204                          $RDOCT  ;;CALL=RDOCT    TRAP+12(104412) READ AN OCTAL NUMBER FROM TTY
7296  047654  047344                          $SAVREG ;;CALL=SAVREG   TRAP+13(104413) SAVE R0-R5 ROUTINE
7297  047656  047402                          $RESREG ;;CALL=RESREG   TRAP+14(104414) RESTORE R0-R5 ROUTINE
7298  047660  044372                          SCOP1$  ;;CALL=SCOP1    TRAP+15(104415) INTERNAL LOOP ON ERROR
```

```
7299                                            .SBTTL  DATA PRINTED BY ERROR ROUTINES
7300
7301  047662  001220  004272          DT000:  .WORD   $TESTN,TRAPPC
7302  047666  001220  001116  004160  DT001:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.MR2,T.MR2,E.MR3,T.MR3
7303  047674  004120  004206  004146
7304  047702  004210  004150
7305  047706  001220  001116  004160  DT002:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,DRVCOD,E.MR2,T.MR2,E.MR3,T.MR3
7306  047714  004120  004244  004206
7307  047722  004146  004210  004150
7308  047730  001220  001116  004160  DT006:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,HDCODE,E.MR2,T.MR2,E.MR3,T.MR3
7309  047736  004120  004250  004206
7310  047744  004146  004210  004150
7311  047752  001220  001116  004160  DT012:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.MR1,T.MR1,MSGCOD
7312  047760  004120  004204  004144
7313  047766  004246
7314  047770  004206  004146  004210          .WORD   E.MR2,T.MR2,E.MR3,T.MR3
7315  047776  004150
7316  050000  001220  001116  004160  DT017:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,CYLIN,E.MR2,T.MR2.E.MR3,T.MR3
7317  050006  004120  004252  004206
7318  050014  004146  004210  004150
7319  050022  001220  001116  004160  DT031:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,OFFVAL,E.MR2,T.MR2,E.MR3,T.MR3
7320  050030  004120  004254  004206
7321  050036  004146  004210  004150
7322  050044  001220  001116  004160  DT035:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,CYLIN,OFFVAL
7323  050052  004120  004252  004254
7324  050060  004206  004146  004210          .WORD   E.MR2,T.MR2,E.MR3,T.MR3
7325  050066  004150
7326  050070  001220  001116  004230  DT050:  .WORD   $TESTN,$ERRPC,U.MR2,U.MR3,SFTCNT,E.MR2,T.MR2,E.MR3,T.MR3
7327  050076  004232  004256  004206
7328  050104  004146  004210  004150
7329  050112  001220  001116  004210  DT052:  .WORD   $TESTN,$ERRPC,E.MR3,T.MR3,E.MR2,T.MR2
7330  050120  004150  004206  004146
7331  050126  001220  001116  004160  DT062:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.CS2,T.CS2,E.DS,T.DS,E.ER,T.ER
7332  050134  004120  004170  004130
7333  050142  004172  004132  004174
7334  050150  004134
7335  050152  001220  001116  004160  DT065:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1
7336  050160  004120
7337  050162  001220  001116  004206  DT067:  .WORD   $TESTN,$ERRPC,E.MR2,T.MR2,E.MR3,T.MR3
7338  050170  004146  004210  004150
7339  050176  001220  001116          DT100:  .WORD   $TESTN,$ERRPC
7340  050202  001220  001116  004160  DT126:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1
7341  050210  004120
7342  050212  001220  001116  004160  DT224:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.CS2,T.CS2,E.DS,T.DS
7343  050220  004120  004170  004130
7344  050226  004172  004132
7345  050232  004174  004134  004220          .WORD   E.ER,T.ER,P.CS1,P.CS2,P.DS,P.ER
7346  050240  004222  004224  004226
7347  050246  001220  001116  004266  DT230:  .WORD   $TESTN,$ERRPC,DRVTYP,CYLIN,HDCODE,E.CS1,T.CS1,E.CS2,T.CS2
7348  050254  004252  004250  004160
7349  050262  004120  004170  004130
7350  050270  004172  004132  004174          .WORD   E.DS,T.DS,E.ER,T.ER
7351  050276  004134
7352  050300  001220  001116  004160  DT256:  .WORD   $TESTN,$ERRPC,E.CS1,T.CS1,E.ER,T.ER,ILLFUN
7353  050306  004120  004174  004134
7354  050314  004270
```

```
                                        .SBTTL  DATA FORMATS

050316  000001                  DF000:  .WORD   1
050320     002     000                  .BYTE   2,0
050322  000007                  DF001:  .WORD   7                       ;ERROR 1
050324     000     000                  .BYTE   0,0
050326  051355                          .WORD   DH000A
050330     000     000                  .BYTE   0,0
050332  051373                          .WORD   DH000B
050334     002     000                  .BYTE   2,0
050336  051437                          .WORD   DH001A
050340     000     000                  .BYTE   0,0
050342  051456                          .WORD   DH001B
050344     002     000                  .BYTE   2,0
050346  051474                          .WORD   DH001C
050350     000     000                  .BYTE   0,0
050352  051533                          .WORD   DH001D
050354     004     000                  .BYTE   4,0
050356  000007                  DF002:  .WORD   7                       ;ERRORS 2-5
050360     000     000                  .BYTE   0,0
050362  051355                          .WORD   DH000A
050364     000     000                  .BYTE   0,0
050366  051373                          .WORD   DH000B
050370     002     000                  .BYTE   2,0
050372  051572                          .WORD   DH002A
050374     000     000                  .BYTE   0,0
050376  051620                          .WORD   DH002B
050400     003     000                  .BYTE   3,0
050402  051474                          .WORD   DH001C
050404     000     000                  .BYTE   0,0
050406  051533                          .WORD   DH001D
050410     004     000                  .BYTE   4,0
050412  000007                  DF006:  .WORD   7                       ;ERRORS 6-11
050414     000     000                  .BYTE   0,0
050416  051355                          .WORD   DH000A
050420     000     000                  .BYTE   0,0
050422  051373                          .WORD   DH000B
050424     002     000                  .BYTE   2,0
050426  051647                          .WORD   DH006A
050430     000     000                  .BYTE   0,0
050432  051674                          .WORD   DH006B
050434     003     000                  .BYTE   3,0
050436  051474                          .WORD   DH001C
050440     000     000                  .BYTE   0,0
050442  051533                          .WORD   DH001D
050444     004     000                  .BYTE   4,0
050446  000007                  DF012:  .WORD   7                       ;ERRORS12-16
050450     000     000                  .BYTE   0,0
050452  051355                          .WORD   DH000A
050454     000     000                  .BYTE   0,0
050456  051373                          .WORD   DH000B
050460     002     000                  .BYTE   2,0
050462  051720                          .WORD   DH012A
050464     000     000                  .BYTE   0,0
050466  051765                          .WORD   DH012B
050470     005     000                  .BYTE   5,0
```

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050472  051474                   .WORD   DH001C
050474     000     000           .BYTE   0,0
050476  051533                   .WORD   DH001D
050500     004     000           .BYTE   4,0
050502  000007          DF017:   .WORD   7                      ;ERRORS 17-30
050504     000     000           .BYTE   0,0
050506  051355                   .WORD   DH000A
050510     000     000           .BYTE   0,0
050512  051373                   .WORD   DH000B
050514     002     000           .BYTE   2,0
050516  052033                   .WORD   DH017A
050520     000     000           .BYTE   0,0
050522  052061                   .WORD   DH017B
050524     003     000           .BYTE   3,0
050526  051474                   .WORD   DH001C
050530     000     000           .BYTE   0,0
050532  051533                   .WORD   DH001D
050534     004     000           .BYTE   4,0
050536  000007          DF031:   .WORD   7                      ;ERRORS 31-34
050540     000     000           .BYTE   0,0
050542  051355                   .WORD   DH000A
050544     000     000           .BYTE   0,0
050546  051373                   .WORD   DH000B
050550     002     000           .BYTE   2,0
050552  052105                   .WORD   DH031A
050554     000     000           .BYTE   0,0
050556  052134                   .WORD   DH031B
050560     003     000           .BYTE   3,0
050562  051474                   .WORD   DH001C
050564     000     000           .BYTE   0,0
050566  051533                   .WORD   DH001D
050570     004     000           .BYTE   4,0
050572  000007          DF035:   .WORD   7                      ;ERROR 35-41
050574     000     000           .BYTE   0,0
050576  051355                   .WORD   DH000A
050600     000     000           .BYTE   0,0
050602  051373                   .WORD   DH000B
050604     002     000           .BYTE   2,0
050606  052162                   .WORD   DH035A
050610     000     000           .BYTE   0,0
050612  052221                   .WORD   DH035B
050614     004     000           .BYTE   4,0
050616  051474                   .WORD   DH001C
050620     000     000           .BYTE   0,0
050622  051533                   .WORD   DH001D
050624     004     000           .BYTE   4,0
050626  000007          DF050:   .WORD   7                 ;ERRORS 50 & 51
050630     000     000           .BYTE   0,0
050632  051355                   .WORD   DH000A
050634     000     000           .BYTE   0,0
050636  051373                   .WORD   DH000B
050640     002     000           .BYTE   2,0
050642  052257                   .WORD   DH050A
050644     000     000           .BYTE   0,0
050646  052305                   .WORD   DH050B
050650     003     000           .BYTE   3,0
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7467  050652  051474                        .WORD   DH001C
7468  050654     000  000                   .BYTE   0,0
7469  050656  051533                        .WORD   DH001D
7470  050660     004  000                   .BYTE   4,0
7471  050662  000005                DF052:  .WORD   5               ;ERRORS 52-61
7472  050664     000  000                   .BYTE   0,0
7473  050666  051355                        .WORD   DH000A
7474  050670     000  000                   .BYTE   0,0
7475  050672  051373                        .WORD   DH000B
7476  050674     002  000                   .BYTE   2,0
7477  050676  051474                        .WORD   DH001C
7478  050700     000  000                   .BYTE   0,0
7479  050702  051533                        .WORD   DH001D
7480  050704     004  000                   .BYTE   4,0
7481  050706  000005                DF062:  .WORD   5               ;ERRORS 62-64
7482  050710     000  000                   .BYTE   0,0
7483  050712  051355                        .WORD   DH000A
7484  050714     000  000                   .BYTE   0,0
7485  050716  051373                        .WORD   DH000B
7486  050720     002  000                   .BYTE   2,0
7487  050722  052333                        .WORD   DH062A
7488  050724     000  000                   .BYTE   0,0
7489  050726  052432                        .WORD   DH062B
7490  050730     010  000                   .BYTE   8.,0
7491  050732  000005                DF065:  .WORD   5               ;ERRORS-65-66
7492  050734     000  000                   .BYTE   0,0
7493  050736  051355                        .WORD   DH000A
7494  050740     000  000                   .BYTE   0,0
7495  050742  051373                        .WORD   DH000B
7496  050744     002  000                   .BYTE   2,0
7497  050746  051437                        .WORD   DH001A
7498  050750     000  000                   .BYTE   0,0
7499  050752  051456                        .WORD   DH001B
7500  050754     002  000                   .BYTE   2,0
7501  050756  000005                DF067:  .WORD   5               ;ERRORS 67-70
7502  050760     000  000                   .BYTE   0,0
7503  050762  051355                        .WORD   DH000A
7504  050764     000  000                   .BYTE   0,0
7505  050766  051373                        .WORD   DH000B
7506  050770     002  000                   .BYTE   2,0
7507  050772  052527                        .WORD   DH067A
7508  050774     000  000                   .BYTE   0,0
7509  050776  052566                        .WORD   DH067B
7510  051000     004  000                   .BYTE   4,0
7511  051002  000003                DF100:  .WORD   3               ;ERROR 100
7512  051004     000  000                   .BYTE   0,0
7513  051006  051355                        .WORD   DH000A
7514  051010     000  000                   .BYTE   0,0
7515  051012  051373                        .WORD   DH000B
7516  051014     002  000                   .BYTE   2,0
7517  051016  000005                DF126:  .WORD   5               ;ERROR 126
7518  051020     000  000                   .BYTE   0,0
7519  051022  051355                        .WORD   DH000A
7520  051024     000  000                   .BYTE   0,0
7521  051026  051373                        .WORD   DH000B
7522  051030     002  000                   .BYTE   2,0
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 7523  051032  052624                    .WORD   DH126A
 7524  051034     000  000               .BYTE   0,0
 7525  051036  052643                    .WORD   DH126B
 7526  051040     002  000               .BYTE   2,0
 7527  051042  000007            DF224:  .WORD   7                       ;ERRORS 224-227
 7528  051044     000  000               .BYTE   0,0
 7529  051046  051355                    .WORD   DH000A
 7530  051050     000  000               .BYTE   0,0
 7531  051052  051373                    .WORD   DH000B
 7532  051054     002  000               .BYTE   2,0
 7533  051056  052333                    .WORD   DH062A
 7534  051060     000  000               .BYTE   0,0
 7535  051062  052432                    .WORD   DH062B
 7536  051064     010  000               .BYTE   8.,0
 7537  051066  052661                    .WORD   DH224A
 7538  051070     000  000               .BYTE   0,0
 7539  051072  052714                    .WORD   DH224B
 7540  051074     004  000               .BYTE   4,0
 7541  051076  000007            DF230:  .WORD   7                       ;ERRORS 230-233
 7542  051100     000  000               .BYTE   0,0
 7543  051102  051355                    .WORD   DH000A
 7544  051104     000  000               .BYTE   0,0
 7545  051106  051373                    .WORD   DH000B
 7546  051110     002  000               .BYTE   2,0
 7547  051112  052751                    .WORD   DH230A
 7548  051114     000  000               .BYTE   0,0
 7549  051116  052776                    .WORD   DH230B
 7550  051120     003  000               .BYTE   3,0
 7551  051122  052333                    .WORD   DH062A
 7552  051124     000  000               .BYTE   0,0
 7553  051126  052432                    .WORD   DH062B
 7554  051130     010  000               .BYTE   8..0
 7555  051132  000005            DF256:  .WORD   5                       ;ERROR 256
 7556  051134     000  000               .BYTE   0,0
 7557  051136  051355                    .WORD   DH000A
 7558  051140     000  000               .BYTE   0,0
 7559  051142  051373                    .WORD   DH000B
 7560  051144     002  000               .BYTE   2,0
 7561  051146  053022                    .WORD   DH256A
 7562  051150     000  000               .BYTE   0,0
 7563  051152  053066                    .WORD   DH256B
 7564  051154     005  000               .BYTE   5,0
```

```
 7565                                           .SBTTL  ASCII MESSAGES
 7566
 7567  051156  005015  045522  030466  OPR001: .ASCIZ  <15><12>/RK611 BUS ADDRESS ( /
 7568  051164  020061  052502  020123
 7569  051172  042101  051104  051505
 7570  051200  020123  020050     000
 7571  051205     040  020051  020075  OPR002: .ASCIZ  / ) = /
 7572  051212     000
 7573  051213     122  033113  030461  OPR003: .ASCIZ  /RK611 VECTOR ADDRESS ( /
 7574  051220  053040  041505  047524
 7575  051226  020122  042101  051104
 7576  051234  051505  020123  020050
 7577  051242     000
 7578  051243     122  033113  030461  OPR004: .ASCIZ  /RK611 PRIORITY ( /
 7579  051250  050040  044522  051117
 7580  051256  052111  020131  020050
 7581  051264     000
 7582  051265     040  000040          SPACE2: .ASCIZ  /  /
 7583  051270  005015  051120  043517  ABORT:  .ASCIZ  <15><12>/PROGRAM ABORTED BECAUSE ERROR THRESHOLD EXCEEDED/<15><12>
 7584  051276  040522  020115  041101
 7585  051304  051117  042524  020104
 7586  051312  042502  040503  051525
 7587  051320  020105  051105  047522
 7588  051326  020122  044124  042522
 7589  051334  044123  046117  020104
 7590  051342  054105  042503  042105
 7591  051350  042105  005015     000
```

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                                                .SBTTL  DATA HEADERS

051355     124   051505  020124  DH000A: .ASCIZ  /TEST    ERROR/
051362  020040   042440  051122
051370  051117      000
051373     116   046525  020040  DH000B: .ASCIZ  /NUM     PC/
051400  020040   050040  000103
051406  042524   052123  020040  DH000C: .ASCII  /TEST    TRAP/<15><12>
051414  020040   051124  050101
051422  005015
051424  052516   020115  020040          .ASCIZ  /NUM     PC/
051432  020040   041520     000
051437     105   050130  041505  DH001A: .ASCIZ  /EXPECT  ACTUAL/
051444  020124   040440  052103
051452  040525   000114
051456  045522   051503  020061  DH001B: .ASCIZ  /RKCS1   RKCS1/
051464  020040   045522  051503
051472  000061
051474  054105   042520  052103  DH001C: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL/
051502  020040   041501  052524
051510  046101   020040  054105
051516  042520   052103  020040
051524  041501   052524  046101
051532     000
051533     115   051505  020123  DH001D: .ASCIZ  /MESS A  MESS A  MESS B  MESS B/
051540  020101   046440  051505
051546  020123   020101  046440
051554  051505   020123  020102
051562  046440   051505  020123
051570  000102
051572  054105   042520  052103  DH002A: .ASCIZ  /EXPECT  ACTUAL  DRIVE/
051600  020040   041501  052524
051606  046101   020040  051104
051614  053111   000105
051620  045522   051503  020061  DH002B: .ASCIZ  /RKCS1   RKCS1   SELECT/
051626  020040   045522  051503
051634  020061   020040  042523
051642  042514   052103     000
051647     105   050130  041505  DH006A: .ASCIZ  /EXPECT  ACTUAL  HEAD/
051654  020124   040440  052103
051662  040525   020114  044040
051670  040505   000104
051674  045522   051503  020061  DH006B: .ASCIZ  /RKCS1   RKCS1   ADD/
051702  020040   045522  051503
051710  020061   020040  042101
051716  000104
051720  054105   042520  052103  DH012A: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL  MESS/
051726  020040   041501  052524
051734  046101   020040  054105
0517[illegible]  042520   052103  020040
051750  041501   052524  046101
051756  020040   042515  051523
051764     000
051765     122   041513  030523  DH012B: .ASCIZ  /RKCS1   RKCS1   RKMR1   RKMR1  SELECT/
051772  020040   051040  041513
052000  030523   020040  051040
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 7648  052006  046513  030522  020040
 7649  052014  051040  046513  030522
 7650  052022  020040  042523  042514
 7651  052030  052103     000
 7652  052033     105  050130  041505  DH017A: .ASCIZ  /EXPECT  ACTUAL  CYLIN/
 7653  052040  020124  040440  052103
 7654  052046  040525  020114  041440
 7655  052054  046131  047111     000
 7656  052061     122  041517  030523  DH017B: .ASCIZ  /RKCS1   RKCS1   ADD/
 7657  052066  020040  051040  041513
 7658  052074  030523  020040  040440
 7659  052102  042104     000
 7660  052105     105  050130  041505  DH031A: .ASCIZ  /EXPECT  ACTUAL  OFFSET/
 7661  052112  020124  040440  052103
 7662  052120  040525  020114  047440
 7663  052126  043106  042523  000124
 7664  052134  045522  051503  020061  DH031B: .ASCIZ  /RKCS1   RKCS1   VALUE/
 7665  052142  020040  045522  051503
 7666  052150  020061  020040  040526
 7667  052156  052514  000105
 7668  052162  054105  042520  052103  DH035A: .ASCIZ  /EXPECT  ACTUAL  CYLIN   OFFSET/
 7669  052170  020040  041501  052524
 7670  052176  046101  020040  054503
 7671  052204  044514  020116  020040
 7672  052212  043117  051506  052105
 7673  052220     000
 7674  052221     122  041513  030523  DH035B: .ASCIZ  /RKCS1   RKCS1   ADD     VALUE/
 7675  052226  020040  051040  041513
 7676  052234  030523  020040  040440
 7677  052242  042104  020040  020040
 7678  052250  053040  046101  042525
 7679  052256     000
 7680  052257     102  043105  051117  DH050A: .ASCIZ  /BEFORE SHIFTING SHIFT/
 7681  052264  020[illegible]  044123  043111
 7682  052272  044[illegible]  043516  051440
 7683  052300  044510  052106     000
 7684  052305     115  051505  020123  DH050B: .ASCIZ  /MESS A  MESS B  COUNT/
 7685  052312  020101  046440  051505
 7686  052320  020123  020102  041440
 7687  052326  052517  052116     000
 7688  052333     105  050130  041505  DH062A: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL  EXPECT  ACTUAL  EXPECT  ACTUAL/
 7689  052340  020124  040440  052103
 7690  052346  040525  020114  042440
 7691  052354  050130  041505  020124
 7692  052362  040440  052103  040525
 7693  052370  020114  042440  050130
 7694  052376  041505  020124  040440
 7695  052404  052103  040525  020114
 7696  052412  042440  050130  041505
 7697  052420  020124  040440  052103
 7698  052426  040525  000114
 7699  052432  045522  051503  020061  DH062B: .ASCIZ  /RKCS1   RKCS1   RKCS2   RKCS2   RKDS    RKDS    RKER    RKER/
 7700  052440  020040  045522  051503
 7701  052446  020061  020040  045522
 7702  052454  051503  020062  020040
 7703  052462  045522  051503  020062
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7704  052470  020040  045522  051504
7705  052476  020040  020040  045522
7706  052504  051504  020040  020040
7707  052512  045522  051105  020040
7708  052520  020040  045522  051105
7709  052526     000
7710  052527     105  050130  041505  DH067A: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL/
7711  052534  020124  040440  052103
7712  052542  040525  020114  042440
7713  052550  050130  041505  020124
7714  052556  040440  052103  040525
7715  052564  000114
7716  052566  045522  051115  020062  DH067B: .ASCIZ  /RKMR2   RKMR2   RKMR3   RKMR3/
7717  052574  020040  045522  051115
7720  052602  020062  020040  045522
7721  052610  051115  020063  020040
7722  052616  045522  051115  000063
7723  052624  054105  042520  052103  DH126A: .ASCIZ  /EXPECT  ACTUAL/
7724  052632  020040  041501  052524
7725  052640  046101     000
7726  052643     122  041513  030523  DH126B: .ASCIZ  /RKCS1   RKCS1/
7727  052650  020040  051040  041513
7730  052656  030523     000
7731  052661     120  042522  044526  DH224A: .ASCIZ  /PREVIOUS REGISTER CONTENTS/
7732  052666  052517  020123  042522
7733  052674  044507  052123  051105
7734  052702  041440  047117  042524
7735  052710  052116  000123
7736  052714  045522  051503  020061  DH224B: .ASCIZ  /RKCS1   RKCS2   RKDS    RKER/
7737  052722  020040  045522  051503
7740  052730  020062  020040  045522
7741  052736  051504  020040  020040
7742  052744  045522  051105     000
7743  052751     104  044522  042526  DH230A: .ASCIZ  /DRIVE   CYLIN   HEAD/
7744  052756  020040  041440  046131
7745  052764  047111  020040  044040
7746  052772  040505  000104
7747  052776  054524  042520  020040  DH230B: .ASCIZ  /TYPE    ADD     ADD/
7750  053004  020040  042101  020104
7751  053012  020040  020040  042101
7752  053020  000104
7753  053022  054105  042520  052103  DH256A: .ASCIZ  /EXPECT  ACTUAL  EXPECT  ACTUAL  ILL/
7754  053030  020040  041501  052524
7755  053036  046101  020040  054105
7756  053044  042520  052103  020040
7757  053052  041501  052524  046101
7760  053060  020040  046111  000114
7761  053066  045522  051503  020061  DH256B: .ASCIZ  /RKCS1   RKCS1   RKER    RKER    FUNCT/
7762  053074  020040  045522  051503
7763  053102  020061  020040  045522
7764  053110  051105  020040  020040
7765  053116  045522  051105  020040
7766  053124  020040  052506  041516
7767  053132  000124
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                                                .SBTTL  ERROR MESSAGES

053134 047125 054105 042520  EM000:  .ASCIZ  /UNEXPECTED MEMORY PARITY ENABLE TRAP/
053142 052103 042105 046440
053150 046505 051117 020131
053156 040520 044522 054524
053164 042440 040516 046102
053172 020105 051124 050101
053200    000
053201    101 052124 046505  EM100:  .ASCIZ  /ATTEMPTING A SELECT IN 24 SECTOR FORMAT IN MAINT MODE/
053206 052120 047111 020107
053214 020101 042523 042514
053222 052103 044440 020116
053230 032062 051440 041505
053236 047524 020122 047506
053244 046522 052101 044440
053252 020116 040515 047111
053260 020124 047515 042504
053266    000
053267    101 052124 046505  EM101:  .ASCIZ  /ATTEMPTING A DRIVE CLEAR IN MAINT MODE/
053274 052120 047111 020107
053302 020101 051104 053111
053310 020105 046103 040505
053316 020122 047111 046440
053324 044501 052116 046440
053332 042117 000105
053336 052101 042524 050115  EM102:  .ASCIZ  /ATTEMPTING A UNLOAD IN MAINT MODE/
053344 044524 043516 040440
053352 052440 046116 040517
053360 020104 047111 046440
053366 044501 052116 046440
053374 042117 000105
053400 052101 042524 050115  EM103:  .ASCIZ  /ATTEMPTING A PACK ACKNOWLEDGE IN MAINT MODE/
053406 044524 043516 040440
053414 050040 041501 020113
053422 041501 047113 053517
053430 042514 043504 020105
053436 047111 046440 044501
053444 052116 046440 042117
053452 000105
053454 052101 042524 050115  EM104:  .ASCIZ  /ATTEMPTING A RECALIBRATE IN MAINT MODE/
053462 044524 043516 040440
053470 051040 041505 046101
053476 041111 040522 042524
053504 044440 020116 040515
053512 047111 020124 047515
053520 042504    000
053523    101 052124 046505  EM105:  .ASCIZ  /ATTEMPTING A START SPINDLE/
053530 052120 047111 020107
053536 020101 052123 051101
053544 020124 050123 047111
053552 046104 000105
053556 052101 042524 050115  EM106:  .ASCIZ  /ATTEMPTING A SELECT USING ALL DRIVE SELECTION CONFIGS IN MAINT MODE/
053564 044524 043516 040440
053572 051440 046105 041505
053600 020124 051525 047111
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 7814  053606  020107  046101  020114
 7815  053614  051104  053111  020105
 7816  053622  042523  042514  052103
 7817  053630  047511  020116  047503
 7818  053636  043116  043511  020123
 7819  053644  047111  046440  044501
 7820  053652  052116  046440  042117
 7821  053660  000105
 7822  053662  052101  042524  050115  EM107:  .ASCIZ  /ATTEMPTING A SELECT USING ALL HEAD ADD CONFIGS IN MAINT MODE/
 7823  053670  044524  043516  040440
 7824  053676  051440  046105  041505
 7825  053704  020124  051525  047111
 7826  053712  020107  046101  020114
 7827  053720  042510  042101  040440
 7828  053726  042104  041440  047117
 7829  053734  044506  051507  044440
 7830  053742  020116  040515  047111
 7831  053750  020124  047515  042504
 7832  053756     000
 7833  053757     101  052124  046505  EM108:  .ASCIZ  /ATTEMPTING A SELECT USING ALL MESS SELECT CONFIGS IN MAINT MODE/
 7834  053764  052120  047111  020107
 7835  053772  020101  042523  042514
 7836  054000  052103  052440  044523
 7837  054006  043516  040440  046114
 7838  054014  046440  051505  020123
 7839  054022  042523  042514  052103
 7840  054030  041440  047117  044506
 7841  054036  051507  044440  020116
 7842  054044  040515  047111  020124
 7843  054052  047515  042504     000
 7844  054057     101  052124  046505  EM109:  .ASCIZ  /ATTEMPTING A SEEK TO AN RK06 IN MAINT MODE/
 7845  054064  052120  047111  020107
 7846  054072  020101  042523  045505
 7847  054100  052040  020117  047101
 7848  054106  051040  030113  020066
 7849  054114  047111  046440  044501
 7850  054122  052116  046440  042117
 7851  054130  000105
 7852  054132  052101  042524  050115  EM110:  .ASCIZ  /ATTEMPTING A SEEK WITH CDT SET IN MAINT MODE/
 7853  054140  044524  043516  040440
 7854  054146  051440  042505  020113
 7855  054154  044527  044124  041440
 7856  054162  052104  051440  052105
 7857  054170  044440  020116  040515
 7858  054176  047111  020124  047515
 7859  054204  042504     000
 7860  054207     101  052124  046505  EM111:  .ASCIZ  /ATTEMPTING AN OFFSET IN MAINT MODE/
 7861  054214  052120  047111  020107
 7862  054222  047101  047440  043106
 7863  054230  042523  020124  047111
 7864  054236  046440  044501  052116
 7865  054244  046440  042117  000105
 7866  054252  052101  042524  050115  EM112:  .ASCII  /ATTEMPTING COMMAND WITH NON-ZERO CYLINDER ADDRESS AND/<15><12>
 7867  054260  044524  043516  041440
 7868  054266  046517  040515  042116
 7869  054274  053440  052111  020110
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7870  054302  047516  026516  042532
7871  054310  047522  041440  046131
7872  054316  047111  042504  020122
7873  054324  042101  051104  051505
7874  054332  020123  047101  006504
7875  054340     012
7876  054341     116  047117  055055          .ASCIZ  /NON-ZERO OFFSET IN MAINTENANCE MODE/
7877  054346  051105  020117  043117
7878  054354  051506  052105  044440
7879  054362  020116  040515  047111
7880  054370  042524  040516  041516
7881  054376  020105  047515  042504
7882  054404     000
7883  054405     101  052124  046505  EM113:  .ASCII  /ATTEMPTING COMMAND WITH NON-ZERO MESSAGE SELECT CODE/<15><12>
7884  054412  052120  047111  020107
7885  054420  047503  046515  047101
7886  054426  020104  044527  044124
7887  054434  047040  047117  055055
7888  054442  051105  020117  042515
7889  054450  051523  043501  020105
7890  054456  042523  042514  052103
7891  054464  041440  042117  006505
7892  054472     012
7893  054473     111  020116  040515          .ASCIZ  /IN MAINTENANCE MODE/
7894  054500  047111  042524  040516
7895  054506  041516  020105  047515
7896  054514  042504     000
7897  054517     101  052124  046505  EM114:  .ASCIZ  /ATTEMPTING TO SHIFT DRIVE MESSAGES/
7898  054524  052120  047111  020107
7899  054532  047524  051440  044510
7900  054540  052106  042040  044522
7901  054546  042526  046440  051505
7902  054554  040523  042507  000123
7903  054562  052101  042524  050115  EM115:  .ASCIZ  /ATTEMPTING TO GENERATE ODD PARITY ON SELECT DRIVE MESSAGE/
7904  054570  044524  043516  052040
7905  054576  020117  042507  042516
7906  054604  040522  042524  047440
7907  054612  042104  050040  051101
7908  054620  052111  020131  047117
7909  054626  051440  046105  041505
7910  054634  020124  051104  053111
7911  054642  020105  042515  051523
7912  054650  043501  000105
7913  054654  052101  042524  050115  EM116:  .ASCIZ  /ATTEMPTING TO GENERATE EVEN PARITY ON SELECT DRIVE MESSAGE/
7914  054662  044524  043516  052040
7915  054670  020117  042507  042516
7916  054676  040522  042524  042440
7917  054704  042526  020116  040520
7918  054712  044522  054524  047440
7919  054720  020116  042523  042514
7920  054726  052103  042040  044522
7921  054734  042526  046440  051505
7922  054742  040523  042507     000
7923  054747     101  052124  046505  EM117:  .ASCII  /ATTEMPTING COMPLETE EXECUTION OF DESELECT DRIVE COMMAND/
7924  054754  052120  047111  020107
7925  054762  047503  050115  042514
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 7926  054770  042524  042440  042530
 7927  054776  052503  044524  047117
 7928  055004  047440  020106  042504
 7929  055012  042523  042514  052103
 7930  055020  042040  044522  042526
 7931  055026  041440  046517  040515
 7932  055034  042116
 7933  055036  005015  047111  046440          .ASCIZ  <15><12>/IN MAINTENANCE MODE/
 7934  055044  044501  052116  047105
 7935  055052  047101  042503  046440
 7936  055060  042117  000105
 7937  055064  052101  042524  050115  EM118:  .ASCII  /ATTEMPTING COMPLETE EXECUTION OF SELECT DRIVE COMMAND/
 7938  055072  044524  043516  041440
 7939  055100  046517  046120  052105
 7940  055106  020105  054105  041505
 7941  055114  052125  047511  020116
 7942  055122  043117  051440  046105
 7943  055130  041505  020124  051104
 7944  055136  053111  020105  047503
 7945  055144  046515  047101     104
 7946  055151     015  044412  020116          .ASCIZ  <15><12>/IN MAINTENANCE MODE/
 7947  055156  040515  047111  042524
 7948  055164  040516  041516  020105
 7949  055172  047515  042504     000
 7950  055177     101  052124  046505  EM119:  .ASCIZ  /ATTEMPTING EXECUTION OF DESELECT DRIVE AT NORMAL SPEED/
 7951  055204  052120  047111  020107
 7952  055212  054105  041505  052125
 7953  055220  047511  020116  043117
 7954  055226  042040  051505  046105
 7955  055234  041505  020124  051104
 7956  055242  053111  020105  052101
 7957  055250  047040  051117  040515
 7958  055256  020114  050123  042505
 7959  055264  000104
 7960  055266  052101  042524  050115  EM120:  .ASCIZ  /ATTEMPTING TO WRITE COMMAND AND STATUS REG. 1 IN MAINT MODE/
 7961  055274  044524  043516  052040
 7962  055302  020117  051127  052111
 7963  055310  020105  047503  046515
 7964  055316  047101  020104  047101
 7965  055324  020104  052123  052101
 7966  055332  051525  051040  043505
 7967  055340  020056  020061  047111
 7968  055346  046440  044501  052116
 7969  055354  046440  042117  000105
 7970  055362  052101  042524  050115  EM121:  .ASCIZ  /ATTEMPTING EXECUTION OF DESELECT DRIVE WITH INTERRUPT ENABLE SET/
 7971  055370  044524  043516  042440
 7972  055376  042530  052503  044524
 7973  055404  047117  047440  020106
 7974  055412  042504  042523  042514
 7975  055420  052103  042040  044522
 7976  055426  042526  053440  052111
 7977  055434  020110  047111  042524
 7978  055442  051122  050125  020124
 7979  055450  047105  041101  042514
 7980  055456  051440  052105     000
 7981  055463     101  052124  046505  EM122:  .ASCII  /ATTEMPTING DESELECT COMMAND AFTER WRITING SILO /
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 7982  055470  052120  047111  020107
 7983  055476  042504  042523  042514
 7984  055504  052103  041440  046517
 7985  055512  040515  042116  040440
 7986  055520  052106  051105  053440
 7987  055526  044522  044524  043516
 7988  055534  051440  046111  020117
 7989  055542  047524  041440  042510          .ASCIZ  /TO CHECK GO CLEAR/
 7990  055550  045503  043440  020117
 7991  055556  046103  040505  000122
 7992  055564  052101  042524  050115  EM123:  .ASCIZ  /ATTEMPTING COMPLETE EXECUTION OF SEEK IN MAINT MODE/
 7993  055572  044524  043516  041440
 7994  055600  046517  046120  052105
 7995  055606  020105  054105  041505
 7996  055614  052125  047511  020116
 7997  055622  043117  051440  042505
 7998  055630  020113  047111  046440
 7999  055636  044501  052116  046440
 8000  055644  042117  000105
 8001  055650  052101  042524  050115  EM124:  .ASCIZ  /ATTEMPTING SELECT DRIVE IN MAINT MODE/
 8002  055656  044524  043516  051440
 8003  055664  046105  041505  020124
 8004  055672  051104  053111  020105
 8005  055700  047111  046440  044501
 8006  055706  052116  046440  042117
 8007  055714  000105
 8008  055716  052101  042524  050115  EM125:  .ASCII  /ATTEMPTING CHECK "LOAD STATUS" BY FORCING/<15><12>
 8009  055724  044524  043516  041440
 8010  055732  042510  045503  021040
 8011  055740  047514  042101  051440
 8012  055746  040524  052524  021123
 8013  055754  041040  020131  047506
 8014  055762  041522  047111  006507
 8015  055770     012
 8016  055771     104  044522  042526          .ASCII  /DRIVE AVAILIABLE, SPEED LOSS, VOLUME VALID,/<15><12>
 8017  055776  040440  040526  046111
 8018  056004  040511  046102  026105
 8019  056012  051440  042520  042105
 8020  056020  046040  051517  026123
 8021  056026  053040  046117  046525
 8022  056034  020105  040526  044514
 8023  056042  026104  005015
 8024  056046  043117  051506  052105          .ASCII  /OFFSET, DRIVE READY, AND WRITE LOCK/<15><12>
 8025  056054  020054  051104  053111
 8026  056062  020105  042522  042101
 8027  056070  026131  040440  042116
 8028  056076  053440  044522  042524
 8029  056104  046040  041517  006513
 8030  056112     012
 8031  056113     104  044522  042526          .ASCIZ  /DRIVE STATUS REG./
 8032  056120  051440  040524  052524
 8033  056126  020123  042522  027107
 8034  056134     000
 8035  056135     101  052124  046505  EM126:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE AVAILIABLE/
 8036  056142  052120  047111  020107
 8037  056150  047524  043040  051117
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 8038  056156  042503  042040  044522
 8039  056164  042526  040440  040526
 8040  056172  046111  040511  046102
 8041  056200  000105
 8042  056202  052101  042524  050115  EM127:  .ASCII  /ATTEMPTING TO FORCE DRIVE BUS PARITY ERROR/<15><12>
 8043  056210  044524  043516  052040
 8044  056216  020117  047506  041522
 8045  056224  020105  051104  053111
 8046  056232  020105  052502  020123
 8047  056240  040520  044522  054524
 8048  056246  042440  051122  051117
 8049  056254  005015
 8050  056256  042504  042524  052103          .ASCIZ  /DETECTED BY RK611/
 8051  056264  042105  041040  020131
 8052  056272  045522  030466  000061
 8053  056300  052101  042524  050115  EM128:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE AVAILIABLE RESET ERROR/
 8054  056306  044524  043516  052040
 8055  056314  020117  047506  041522
 8056  056322  020105  051104  053111
 8057  056330  020105  053101  044501
 8058  056336  044514  041101  042514
 8059  056344  051040  051505  052105
 8060  056352  042440  051122  051117
 8061  056360     000
 8062  056361     124  051505  044524  EM129:  .ASCIZ  /TESTING CDT SET DRIVE TYPE DETECTION/
 8063  056366  043516  041440  052104
 8064  056374  051440  052105  042040
 8065  056402  044522  042526  052040
 8066  056410  050131  020105  042504
 8067  056416  042524  052103  047511
 8068  056424  000116
 8069  056426  052101  042524  050115  EM130:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE TYPE ERROR WITH CDT SET/
 8070  056434  044524  043516  052040
 8071  056442  020117  047506  041522
 8072  056450  020105  051104  053111
 8073  056456  020105  054524  042520
 8074  056464  042440  051122  051117
 8075  056472  053440  052111  020110
 8076  056500  042103  020124  042523
 8077  056506  000124
 8078  056510  052101  042524  050115  EM131:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE TYPE ERROR ADDRESSING RK06/
 8079  056516  044524  043516  052040
 8080  056524  020117  047506  041522
 8081  056532  020105  051104  053111
 8082  056540  020105  054524  042520
 8083  056546  042440  051122  051117
 8084  056554  040440  042104  042522
 8085  056562  051523  047111  020107
 8086  056570  045522  033060     000
 8087  056575     101  052124  046505  EM132:  .ASCIZ  /ATTEMPTING TO FORCE SPEED LOSS/
 8088  056602  052120  047111  020107
 8089  056610  047524  043040  051117
 8090  056616  042503  051440  042520
 8091  056624  042105  046040  051517
 8092  056632  000123
 8093  056634  052101  042524  050115  EM133:  .ASCIZ  /ATTEMPTING TO FORCE DRIVE OFF TRACK/
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 8094  056642  04 024  043516  052040
 8095  056650  020117  047506  041522
 8096  056656  020105  051104  053111
 8097  056664  020105  043117  020106
 8098  056672  051124  041501  000113
 8099  056700  052101  042524  050115  EM134:  .ASCIZ  /ATTEMPTING TO FORCE WRITE LOCK ERROR/
 8100  056706  044524  043516  052040
 8101  056714  020117  047506  041522
 8102  056722  020105  051127  052111
 8103  056730  020105  047514  045503
 8104  056736  042440  051122  051117
 8105  056744     000
 8106  056745     101  052124  046505  EM135:  .ASCIZ  /ATTEMPTING TO FORCE SEEK INCOMPLETE/
 8107  056752  052120  047111  020107
 8108  056760  047524  043040  051117
 8109  056766  042503  051440  042505
 8110  056774  020113  047111  047503
 8111  057002  050115  042514  042524
 8112  057010     000
 8113  057011     101  052124  046505  EM136:  .ASCIZ  /ATTEMPTING TO FORCE NON-EXECUTABLE FUNCTION/
 8114  057016  052120  047111  020107
 8115  057024  047524  043040  051117
 8116  057032  042503  047040  047117
 8117  057040  042455  042530  052503
 8118  057046  040524  046102  020105
 8119  057054  052506  041516  044524
 8120  057062  047117     000
 8121  057065     101  052124  046505  EM137:  .ASCIZ  /ATTEMPTING TO FORCE AC LOW AND C-D PARITY ERROR/
 8122  057072  052120  047111  020107
 8123  057100  047524  043040  051117
 8124  057106  042503  040440  020103
 8125  057114  047514  020127  047101
 8126  057122  020104  026503  020104
 8127  057130  040520  044522  054524
 8128  057136  042440  051122  051117
 8129  057144     000
 8130  057145     101  052124  046505  EM138:  .ASCII  /ATTEMPTING TO FORCE ILLEGAL DISK ADDRESS ERROR/
 8131  057152  052120  047111  020107
 8132  057160  047524  043040  051117
 8133  057166  042503  044440  046114
 8134  057174  043505  046101  042040
 8135  057202  051511  020113  042101
 8136  057210  051104  051505  020123
 8137  057216  051105  047522     122
 8138  057223     015  043012  047522          .ASCIZ  <15><12>/FROM DRIVE MESSAGE BITS/
 8139  057230  020115  051104  053111
 8140  057236  020105  042515  051523
 8141  057244  043501  020105  044502
 8142  057252  051524     000
 8143  057255     101  052124  046505  EM139:  .ASCIZ  /ATTEMPTING TO CLEAR RK611 WITH A CONTROLLER CLEAR/
 8144  057262  052120  047111  020107
 8145  057270  047524  041440  042514
 8146  057276  051101  051040  033113
 8147  057304  030461  053440  052111
 8148  057312  020110  020101  047503
 8149  057320  052116  047522  046114
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8150  057326  051105  041440  042514
8151  057334  051101     000
8152  057337     124  051505  044524  EM140:  .ASCIZ  TESTING ILLEGAL DISK ADDRESS ERROR LOGIC IN RK611/
8153  057344  043516  044440  046114
8154  057352  043505  046101  042040
8155  057360  051511  020113  042101
8156  057366  051104  051505  020123
8157  057374  051105  047522  020122
8158  057402  047514  044507  020103
8159  057410  047111  051040  033113
8160  057416  030461     000
8161  057421     101  052124  046505  EM141:  .ASCIZ  /ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES/
8162  057426  052120  047111  020107
8163  057434  047524  051040  041505
8164  057442  044505  042526  047040
8165  057450  047117  051455  040524
8166  057456  042116  051101  020104
8167  057464  042515  051523  043501
8168  057472  051505     000
8169  057475     101  052124  046505  EM142:  .ASCII  /ATTEMPTING TO RECEIVE NON-STANDARD MESSAGES/
8170  057503  052120  047111  020107
8171  057510  047524  051040  041505
8172  057516  044505  042526  047040
8173  057524  047117  051455  040524
8174  057532  042116  051101  020104
8175  057540  042515  051523  043501
8176  057546  051505
8177  057550  053440  052111  020110          .ASCIZ  / WITH PARITY ERROR/
8178  057556  040520  044522  054524
8179  057564  042440  051122  051117
8180  057572     000
8181  057573     101  052124  046505  EM143:  .ASCIZ  /ATTEMPTING TO FORCE NON-EXISTENT DRIVE (DRIVE BUS TIMEOUT)/
8182  057600  052120  047111  020107
8183  057606  047524  043040  051117
8184  057614  042503  047040  047117
8185  057622  042455  044530  052123
8186  057630  047105  020124  051104
8187  057636  053111  020105  042050
8188  057644  044522  042526  041040
8189  057652  051525  052040  046511
8190  057660  047505  052125  000051
8191  057666  052101  042524  050115  EM144:  .ASCIZ  /ATTEMPTING TO FORCE NON-EXISTENT DRIVE (NO SACK)/
8192  057674  044524  043516  052040
8193  057702  020117  047506  041522
8194  057710  020105  047516  026516
8195  057716  054105  051511  042524
8196  057724  052116  042040  044522
8197  057732  042526  024040  047516
8198  057740  051440  041501  024513
8199  057746     000
8200  057747     101  052124  046505  EM145:  .ASCIZ  /ATTEMPTING EXECUTION OF DESELECT DRIVE WITH IE RESET/
8201  057754  052120  047111  020107
8202  057762  054105  041505  052125
8203  057770  047511  020116  043117
8204  057776  042040  051505  046105
8205  060004  041505  020124  051104
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 8206  060012  053111  020105  044527
 8207  060020  044124  044440  020105
 8208  060026  042522  042523  000124
 8209  060034  052101  042524  050115  EM146:  .ASCIZ  /ATTEMPTING TO EXECUTE AN ILLEGAL FUNCTION/
 8210  060042  044524  043516  052040
 8211  060050  020117  054105  041505
 8212  060056  052125  020105  047101
 8213  060064  044440  046114  043505
 8214  060072  046101  043040  047125
 8215  060100  052103  047511  000116
 8216  060106  052101  042524  050115  EM147:  .ASCIZ  /ATTEMPTING TO CLEAR ILLEGAL FUNCTION/
 8217  060114  044524  043516  052040
 8218  060122  020117  046103  040505
 8219  060130  020122  046111  042514
 8220  060136  040507  020114  052506
 8221  060144  041516  044524  047117
 8222  060152     000
 8223  060153     104  044522  042526  EM2000: .ASCIZ  /DRIVE COMMAND BIT DID NOT SET IN DRIVE MESS A/
 8224  060160  041440  046517  040515
 8225  060166  042116  041040  052111
 8226  060174  042040  042111  047040
 8227  060202  052117  051440  052105
 8228  060210  044440  020116  051104
 8229  060216  053111  020105  042515
 8230  060224  051523  040440     000
 8231  060231     104  044522  042526  EM2001: .ASCIZ  /DRIVE MESS A INCORRECT/
 8232  060236  046440  051505  020123
 8233  060244  020101  047111  047503
 8234  060252  051122  041505  000124
 8235  060260  051104  053111  020105  EM2002: .ASCIZ  /DRIVE MESS B INCORRECT/
 8236  060266  042515  051523  041040
 8237  060274  044440  041516  051117
 8238  060302  042522  052103     000
 8239  060307     103  046517  040515  EM2003: .ASCIZ  /COMMAND AND STAUS REG. 1 INCORRECT/
 8240  060314  042116  040440  042116
 8241  060322  051440  040524  051525
 8242  060330  051040  043505  020056
 8243  060336  020061  047111  047503
 8244  060344  051122  041505  000124
 8245  060352  051104  053111  020105  EM2004: .ASCIZ  /DRIVE SELECT CODE IN MESSAGE A INCORRECT/
 8246  060360  042523  042514  052103
 8247  060366  041440  042117  020105
 8248  060374  047111  046440  051505
 8249  060402  040523  042507  040440
 8250  060410  044440  041516  051117
 8251  060416  042522  052103     000
 8252  060423     110  040505  020104  EM2005: .ASCIZ  /HEAD ADD CODE IN MESSAGE A INCORRECT/
 8253  060430  042101  020104  047503
 8254  060436  042504  044440  020116
 8255  060444  042515  051523  043501
 8256  060452  020105  020101  047111
 8257  060460  047503  051122  041505
 8258  060466  000124
 8259  060470  040515  047111  020124  EM2006: .ASCIZ  /MAINT REG. 1 INCORRECT/
 8260  060476  042522  027107  030440
 8261  060504  044440  041516  051117
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 8262  060512  042522  052103     000
 8263  060517     115  051505  020123  EM2007: .ASCIZ  /MESS SELECT CODE IN MESSAGE B INCORRECT/
 8264  060524  042523  042514  052103
 8265  060532  041440  042117  020105
 8266  060540  047111  046440  051505
 8267  060546  040523  042507  041040
 8268  060554  044440  041516  051117
 8269  060562  042522  052103     000
 8270  060567     103  046131  047111  EM2008: .ASCIZ  /CYLINDER ADD BITS IN MESSAGE B INCORRECT/
 8271  060574  042504  020122  042101
 8272  060602  020104  044502  051524
 8273  060610  044440  020116  042515
 8274  060616  051523  043501  020105
 8275  060624  020102  047111  047503
 8276  060632  051122  041505  000124
 8277  060640  043117  051506  052105  EM2009: .ASCIZ  /OFFSET VALUE BITS IN MESSAGE B INCORRECT/
 8278  060646  053040  046101  042525
 8279  060654  041040  052111  020123
 8280  060662  047111  046440  051505
 8281  060670  040523  042507  041040
 8282  060676  044440  041516  051117
 8283  060704  042522  052103     000
 8284  060711     120  051101  052111  EM2010: .ASCIZ  /PARITY BIT IN MESSAGE A INCORRECT/
 8285  060716  020131  044502  020124
 8286  060724  047111  046440  051505
 8287  060732  040523  042507  040440
 8288  060740  044440  041516  051117
 8289  060746  042522  052103     000
 8290  060753     120  051101  052111  EM2011: .ASCIZ  /PARITY BIT IN MESSAGE B INCORRECT/
 8291  060760  020131  044502  020124
 8292  060766  047111  046440  051505
 8293  060774  040523  042507  041040
 8294  061002  044440  041516  051117
 8295  061010  042522  052103     000
 8296  061015     103  046517  040515  EM2012: .ASCIZ  /COMMAND AND STATUS REG 2 INCORRECT/
 8297  061022  042116  040440  042116
 8298  061030  051440  040524  052524
 8299  061036  020123  042522  020107
 8300  061044  020062  047111  047503
 8301  061052  051122  041505  000124
 8302  061060  051105  047522  020122  EM2013: .ASCIZ  /ERROR REG INCORRECT/
 8303  061066  042522  020107  047111
 8304  061074  047503  051122  041505
 8305  061102  000124
 8306  061104  047503  046515  047101  EM2014: .ASCIZ  /COMMAND AND STATUS REG 1 INCORRECT AT PHASE ADDRESS 4/
 8307  061112  020104  047101  020104
 8308  061120  052123  052101  051525
 8309  061126  051040  043505  030440
 8310  061134  044440  041516  051117
 8311  061142  042522  052103  040440
 8312  061150  020124  044120  051501
 8313  061156  020105  042101  051104
 8314  061164  051505  020123  000064
 8315  061172  047503  046515  047101  EM2015: .ASCIZ  /COMMAND AND STATUS REG 1 INVALID DURING COMMAND EXECUTION/
 8316  061200  020104  047101  020104
 8317  061206  052123  052101  051525
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 8318  061214  051040  043505  030440
 8319  061222  044440  053116  046101
 8320  061230  042111  042040  051125
 8321  061236  047111  020107  047503
 8322  061244  046515  047101  020104
 8323  061252  054105  041505  052125
 8324  061260  047511  000116
 8325  061264  040515  047111  042524  EM2016: .ASCIZ  /MAINTENANCE REG 2 UNEXPECTEDLY CHANGED DURING COMMAND EXECUTION/
 8326  061272  040516  041516  020105
 8327  061300  042522  020107  020062
 8328  061306  047125  054105  042520
 8329  061314  052103  042105  054514
 8330  061322  041440  040510  043516
 8331  061330  042105  042040  051125
 8332  061336  047111  020107  047503
 8333  061344  046515  047101  020104
 8334  061352  054105  041505  052125
 8335  061360  047511  000116
 8336  061364  040515  047111  042524  EM2017: .ASCIZ  /MAINTENANCE REG 3 UNEXPECTEDLY CHANGED DURING COMMAND EXECUTION/
 8337  061372  040516  041516  020105
 8338  061400  042522  020107  020063
 8339  061406  047125  054105  042520
 8340  061414  052103  042105  054514
 8341  061422  041440  040510  043516
 8342  061430  042105  042040  051125
 8343  061436  047111  020107  047503
 8344  061444  046515  047101  020104
 8345  061452  054105  041505  052125
 8346  061460  047511  000116
 8347  061464  047111  042524  051122  EM2018: .ASCIZ  /INTERRUPT DID NOT OCCUR/
 8348  061472  050125  020124  044504
 8349  061500  020104  047516  020124
 8350  061506  041517  052503  000122
 8351  061514  047503  046515  047101  EM2019: .ASCIZ  /COMMAND AND STATUS REG 1 INCORRECT AFTER INTERRUPT/
 8352  061522  020104  047101  020104
 8353  061530  052123  052101  051525
 8354  061536  051040  043505  030440
 8355  061544  044440  041516  051117
 8356  061552  042522  052103  040440
 8357  061560  052106  051105  044440
 8358  061566  052116  051105  052522
 8359  061574  052120     000
 8360  061577     103  046517  040515  EM2020: .ASCIZ  /COMMAND AND STATUS REG 2 INCORRECT AFTER INTERRUPT/
 8361  061604  042116  040440  042116
 8362  061612  051440  040524  052524
 8363  061620  020123  042522  020107
 8364  061626  020062  047111  047503
 8365  061634  051122  041505  020124
 8366  061642  043101  042524  020122
 8367  061650  047111  042524  051122
 8368  061656  050125  000124
 8369  061662  051105  047522  020122  EM2021: .ASCIZ  /ERROR REGISTER INCORRECT AFTER INTERRUPT/
 8370  061670  042522  044507  052123
 8371  061676  051105  044440  041516
 8372  061704  051117  042522  052103
 8373  061712  040440  052106  051105
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 8374  061720  044440  052116  051105
 8375  061726  052522  052120     000
 8376  061733     111  052116  051105  EM2022: .ASCIZ  /INTERRUPT DID NOT CLEAR IN RK611/
 8377  061740  052522  052120  042040
 8378  061746  042111  047040  052117
 8379  061754  041440  042514  051101
 8380  061762  044440  020116  045522
 8381  061770  030466  000061
 8382  061774  040504  040524  046040  EM2023: .ASCIZ  /DATA LATE DID NOT OCCUR WHEN LEAVING SILO/
 8383  062002  052101  020105  044504
 8384  062010  020104  047516  020124
 8385  062016  041517  052503  020122
 8386  062024  044127  047105  046040
 8387  062032  040505  044526  043516
 8388  062040  051440  046111  000117
 8389  062046  051104  053111  020105  EM2024: .ASCIZ  /DRIVE COMMAND BITS IN MESSAGE INCORRECT/
 8390  062054  047503  046515  047101
 8391  062062  020104  044502  051524
 8392  062070  044440  020116  042515
 8393  062076  051523  043501  020105
 8394  062104  047111  047503  051122
 8395  062112  041505  000124
 8396  062116  051104  053111  020105  EM2025: .ASCIZ  /DRIVE STATUS REGISTER INCORRECT/
 8397  062124  052123  052101  051525
 8398  062132  051040  043505  051511
 8399  062140  042524  020122  047111
 8400  062146  047503  051122  041105
 8401  062154  000124
 8402  062156  047503  052116  047522  EM2026: .ASCIZ  /CONTROLLER READY DID NOT SET/
 8403  062164  046114  051105  051040
 8404  062172  040505  054504  042040
 8405  062200  042111  047040  052117
 8406  062206  051440  052105     000
 8407  062213     114  040517  020104  EM2027: .ASCIZ  /LOAD STATUS DID NOT LOAD DRIVE STATUS REG./
 8408  062220  052123  052101  051525
 8409  062226  042040  042111  047040
 8410  062234  052117  046040  040517
 8411  062242  020104  051104  053111
 8412  062250  020105  052123  052101
 8413  062256  051525  051040  043505
 8414  062264  000056
 8415  062266  047125  054105  042520  EM2028: .ASCIZ  /UNEXPECTED INTERRUPT OCCURRED/
 8416  062274  052103  042105  044440
 8417  062302  052116  051105  052522
 8418  062310  052120  047440  041503
 8419  062316  051125  042522  000104
 8420  062324  047111  042524  051122  EM2029: .ASCIZ  /INTERRUPT OCCURRED WHEN INTERRUPT ENABLE SET/
 8421  062332  050125  020124  041517
 8422  062340  052503  051122  042105
 8423  062346  053440  042510  020116
 8424  062354  047111  042524  051122
 8425  062362  050125  020124  047105
 8426  062370  041101  042514  051440
 8427  062376  052105     000
 8428          000001                  .END
```

```
ABASE = 177440            138#    373     414
ABORT   051270           6724    7583#
ACDW1 = 000000            373     416
ACDW2 = 000000            373     417
ACLO  = 000010            233#   5173
ACPUOP= 000000            373     388
ADDW0 = 000000            373
ADDW1 = 000000            373
ADDW10= 000000            373
ADDW11= 000000            373
ADDW12= 000000            373
ADDW13= 000000            373
ADDW14= 000000            373
ADDW15= 000000            373
ADDW2 = 000000            373
ADDW3 = 000000            373
ADDW4 = 000000            373
ADDW5 = 000000            373
ADDW6 = 000000            373
ADDW7 = 000000            373
ADDW8 = 000000            373
ADDW9 = 000000            373
ADEVCT= 000000            373     379
ADEVM = 000000            373     415
AENV  = 000000            373     384
AENVM = 000000            373     385
AFATAL= 000000            373     376
AMADR1= 000000            373     401
AMADR2= 000000            373     405
AMADR3= 000000            373     408
AMADR4= 000000            373     411
AMAMS1= 000000            373     395
AMAMS2= 000000            373     403
AMAMS3= 000000            373     406
AMAMS4= 000000            373     409
AMSGAD= 000000            373     381
AMSGLG= 000000            373     382
AMSGTY= 000000            373     375
AMTYP1= 000000            373     396
AMTYP2= 000000            373     404
AMTYP3= 000000            373     407
AMTYP4= 000000            373     410
APASS = 000000            373     378
APRIOR= 000005            137#    373
APTCSU= 000040           6601#   6764
APTENV= 000001           6557    6599#   6633    6757
APTSIZ= 000200           1602    6598#
APTSPO= 000100           6559    6600#   6759
ASWREG= 000000            373     386
ATESTN= 000000            373     377
AUNIT = 000000            373     380
AUSWR = 000000            373     387
AVECT1= 120210            136#    373     412
AVECT2= 000000            373     413
BAI   = 000020            196#
BA16  = 000400            181#
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SA17   = 001000          182#
BIT0   = 000001          118#   179    211    230    3407   3463   3593   3640   3683   3732   3865
BIT00  = 000001          108#   118
BIT01  = 000002          107#   117
BIT02  = 000004          106#   116
BIT03  = 000010          105#   115
BIT04  = 000020          104#   114
BIT05  = 000040          103#   113
BIT06  = 000100          102#   112
BIT07  = 000200          101#   111
BIT08  = 000400          100#   110    6425
BIT09  = 001000           99#   109    6443   6644
BIT1   = 000002          117#   212
BIT10  = 002000           98#   183    202    221    254    269    2523   6621
BIT11  = 004000           97#   184    203    222    239    255    270    6450
BIT12  = 010000           96#   186    204    223    256    3437   3438
BIT13  = 020000           95#   187    205    224    240    257    6628
BIT14  = 040000           94#   188    206    225    241    258    6411
BIT15  = 100000           93#   189    190    207    226    242    259    1738   1747   3502   3508   3533   3538
                        3595   3596   3597   3639   3641   3684   3734   3735   3736   3867   3868
BIT2   = 000004          116#   213    232
BIT3   = 000010          115#   195    214    233    6025
BIT4   = 000020          114#   196    215    234    248    263
BIT5   = 000040          113#   197    216    235    249    264
BIT6   = 000100          112#   179    198    217    236    250    265
BIT7   = 000200          111#   180    199    218    237    251    266    2521
BIT8   = 000400          110#   181    200    219    238    252    267
BIT9   = 001000          109#   182    201    220    253    268
BPTVEC = 000014          125#
BSE    = 000200          218#
CCLR   = 100000          190#   1699   1771   1788   1822   1840   1878   1902   1942   1965   1971   2012   2028
                        2075   2091   2138   2154   2194   2212   2243   2261   2298   2319   2366   2382   2429
                        2450   2500   2527   2566   2584   2619   2637   2679   2697   2739   2757   2799   2817
                        2859   2877   2916   2938   2944   2983   3005   3011   3050   3072   3078   3117   3139
                        3145   3184   3206   3212   3251   3273   3279   3311   3333   3339   3380   3435   3490
                        3519   3570   3646   3708   4113   4266   4343   4420   4495   4572   4650   4728   4805
                        4882   4960   5038   5116   5192   5270   5354   5438   5523   5607   5691   5775   5859
                        5943   6082   6164   6243   6282   6297
CDT    = 002000          183#   2424   2432   4132   4139   4183   4535   4551   4613   4629   5400   5416   5569
                        5585   5653   5669   5821   5837   5905   5921   5990   6006
CERR   = 100000          189#   4108   4399   4474   4629   4707   4939   5017   5095   5171   5249   5332   5501
                        5753   5837   5921   6062   6141   6223   6285
CFMT   = 010000          186#   1824   1825   2049   2051   2112   2114   2175   2177   3444   4132   4139   4183
                        5155   5171
CHKPAR   043522          1680   6365#  7245
CKSWR  = 104407          6410   6617   6643   7292#
CLEAR  = 000005          163#   2006   2678   2683   2982   2986   5079   5095
COE    = 001000          220#
CR     = 000015           33#   6803   6813
CRLF   = 000200           34#   1627   6774   6813
CTO    = 004000          184#
CYLIN    004252          1537#  2292*  2300   2311   2341*  2342   2359*  2368   2404   2406*  2423*  2431   2442
                        2472   2474*  2475*  2476   2563*  2616*  2676*  2736*  2796*  2856*  5310*  5394*  5479*
                        5563*  5647*  5731*  5815*  5899*  7316   7322   7347
DCK    = 100000          226#
DDISP  = 177570           40#   346    1590
```

```
SDT    = 000400            238*  4553  4709  5419  5588  5672  5840  5924
DF000    050316           1478  7357*
DF001    050322            439   881   887   893   899   905   911   917   923  7359*
DF002    050356            444   449   454   459  7373*
DF006    050412            464   469   474   479  7387*
DF012    050446            484   489   494   499   504   611   617   629   635   641  7401*
DF017    050502            509   514   519   524   534   539   545   550   555  7415*
DF031    050536            560   565   570   575  7429*
DF035    050572            581   587   593   599   605  7443*
DF050    050626            647   653  7457*
DF052    050662            659   665   671   677   683   689   695   701  7471*
DFC62    050706            707   713   719   753   759   765   771   777   783   800   806   812   825
                           832   863   869   875   929   935   941   947   959   965   971   977   983
                           989   995  1001  1007  1013  1019  1025  1031  1037  1043  1049  1055  1061
                          1067  1073  1079  1085  1091  1097  1103  1109  1115  1121  1127  1133  1139
                          1145  1151  1157  1163  1169  1175  1181  1187  1193  1199  1205  1211  1217
                          1223  1229  1235  1241  1247  1253  1259  1265  1271  1277  1283  1289  1295
                          1349  1355  1361  1367  1373  1379  1385  1391  1397  1403  1409  1415  1421
                          1427  1433  1439  7481*
DF065    050732            726   733   788   838   844  7491*
DF067    050756            740   747   851   857  7501*
DF100    051002            794   818   953  1445  1451  7511*
DF126    051016           7517*
DF224    051042           1301  1307  1313  1319  7527*
DF230    051076           1325  1331  1337  1343  7541*
DF256    051132           1457  1463  1468  1473  7555*
DH000A   051355           7361  7375  7389  7403  7417  7431  7445  7459  7473  7483  7493  7503  7513
                           7519  7529  7543  7557  7594*
DH0008   051373           7363  7377  7391  7405  7419  7433  7447  7461  7475  7485  7495  7505  7515
                           7521  7531  7545  7559  7597*
DH000C   051406           1476  7599*
DH001A   051437           7365  7497  7604*
DH001B   051456           7367  7499  7607*
DH001C   051474           7369  7383  7397  7411  7425  7439  7453  7467  7477  7610*
DH001D   051533           7371  7385  7399  7413  7427  7441  7455  7469  7479  7616*
DH002A   051572           7379  7622*
DH002B   051620           7381  7626*
DH006A   051647           7393  7630*
DH006B   051674           7395  7634*
DH012A   051720           7407  7638*
DH012B   051765           7409  7645*
DH017A   052033           7421  7652*
DH017B   052061           7423  7656*
DH031A   052105           7435  7660*
DH031B   052134           7437  7664*
DH035A   052162           7449  7668*
DH035B   052221           7451  7674*
DH050A   052257           7463  7680*
DH050B   052305           7465  7684*
DH062A   052333           7487  7533  7551  7688*
DH062B   052432           7489  7535  7553  7699*
DH067A   052527           7507  7710*
DH067B   052566           7509  7716*
DH126A   052624           7523  7721*
DH126B   052643           7525  7724*
DH224A   052661           7537  7727*
```

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DH224B  052714          7539    7732*
DH230A  052751          7547    7737*
DH230B  052776          7549    7741*
DH256A  053022          7561    7745*
DH256B  053066          7563    7751*
DI    = 040000           188*
DISPLA  001142           346*   1590*   1598*   6465*   6620*
DISPRE  000174           278*   1598
DLT   = 100000           207*   4109
DMD   = 00004C           249*   1700    1713    1714    1772    1776    1777    1823    1827    1828    1879    1885    1886
                        1944    1956    2013    2016    2017    2076    2079    2080    2139    2142    2143    2195    2199
                        2200    2244    2248    2249    2299    2303    2304    2367    2371    2372    2430    2434    2435
                        2501    2505    2506    2567    2572    2573    2620    2625    2626    2680    2685    2686    2740
                        2745    2746    2800    2805    2806    2860    2865    2866    2917    2929    2984    2996    3051
                        3063    3118    3130    3185    3197    3252    3264    3312    3324    3386    3441    3491    3494
                        3495    3520    3524    3525    3572    3648    3710    3786    3790    3791    3841    3845    3846
                        3871    3872    3896    3897    4129    4134    4135    4149    4150    4175    4176    4218    4223
                        4224    4303    4308    4309    4380    4385    4386    4457    4460    4461    4532    4537    4538
                        4610    4615    4616    4688    4693    4694    4765    4770    4771    4842    4847    4848    4920
                        4925    4926    4998    5003    5004    5076    5081    5082    5154    5157    5158    5230    5235
                        5236    5308    5316    5319    5392    5402    5403    5477    5487    5488    5561    5571    5572
                        5645    5655    5656    5729    5739    5740    5813    5823    5824    5897    5907    5908    5986
                        5992    5993    6043    6048    6049    6121    6124    6125    6206    6209    6210    6287
DRA   = 000001           230*   4244    4246    4324    4401    4553    4631    4705    4786    4863    5335    5419    5504
                        5588    5672    5756    5840    5924
DRDY  = 000200           237*   4244    4246
DROT  = 000040           235*   4863    5504    5588    5924
DRPAR = 000010           214*   5174
DRVCOD  004244          1534*   1765*   1773    1783    1793    1805*   1806    3565*   3571    3573    3582    3590    3591
                        3619*   3620    3637*   3649    3679    3681*   3703*   3709    3712    3721    3729    3730    3758*
                        3759    3780*   3787    3799    3816*   3817    3835*   3842    3856    3864    3905    3922*   3923
                        3940*   3946    3958    3975*   3976    5980*   5989    6007    6024*   6025    7305
DRVMSK= 000007           194*
DRVTYP  004266          1543*   5315*   5399*   5484*   5568*   5652*   5736*   5820*   5904*   7347
DSC   = 040000           241*
DSWR  = 177570            39*    345     1589
DTE   = 010000           223*
DTYE  = 000040           216*   4632    4710
DT000   047662          1477    7301*
DT001   047666           438     880     886     892     898     904     910     916     922    7302*
DT032   047706           443     448     453     458    7305*
DT006   047730           463     468     473     478    7308*
DT012   047752           483     488     493     498     503     610     616     622     623     628     634     640    7311*
DT017   050000           508     513     518     523     528     529     533     538     544     549     554    7316*
DT031   050022           559     564     569     574    7319*
DT035   050044           580     586     592     598     604    7322*
DT050   050070           646     652    7326*
DT052   050112           658     664     670     676     682     688     694     700    7329*
DT062   050126           706     712     718     752     758     764     770     776     782     799     805     811     824
                         831     862     868     874     928     934     940     946     958     964     970     976     982
                         988     994    1000    1006    1012    1018    1024    1030    1036    1042    1048    1054    1060
                        1066    1072    1078    1084    1090    1096    1102    1108    1114    1120    1126    1132    1138
                        1144    1150    1156    1162    1168    1174    1180    1186    1192    1198    1204    1210    1216
                        1222    1228    1234    1240    1246    1252    1258    1264    1270    1276    1282    1288    1294
                        1348    1354    1360    1366    1372    1378    1384    1390    1396    1402    1408    1414    1420
                        1426    1432    1438    7331*
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DT065   050152            725    732    787    837    843   7335*
DT067   050162            739    746    850    856   7337*
DT100   050176            793    817    952   1444   1450   7339*
DT126   050202           7340*
DT224   050212           1300   1306   1312   1318   7342*
DT230   050246           1324   1330   1336   1342   7347*
DT256   050300           1456   1462   1467   1472   7352*
ECCW  = 020000            257*   1957   1959   2930   2932   2997   2999   3064   3066   3131   3133   3198   3200
                         3265   3267   3325   3327
ECH   = 000100            217*
EMTVEC= 000030            128*   1573*  1574*
EMC00   053134           1475   7760*
EMIN    001300            436*   1821*  1838*  1845*  1851*  1855*  2005*  2026*  2036*  2042*  2046*  2068*  2089*
                         2099*  2105*  2109*  2131*  2152*  2162*  2168*  2172*  2193*  2210*  2217*  2223*  2227*
                         2242*  2259*  2266*  2272*  2276*
EM100   053201           1821   7767*
EM101   053267           2005   7777*
EM102   053336           2068   7784*
EM103   053400           2131   7790*
EM104   053454           2193   7798*
EM105   053523           2242   7805*
EM106   053556            441    446    451    456   7810*
EM107   053662            461    466    471    476   7822*
EM108   053757            481    486    491    496    501   7833*
EM109   054057            506    511    516    521    526   7844*
EM110   054132            531    536    542    547    552   7852*
EM111   054207            557    562    567    572   7860*
EM112   054252            578    584    590    596    602   7866*
EM113   054405            608    614    620    626    632    638   7883*
EM114   054517            644    650   7897*
EM115   054562            656    662    668    674   7903*
EM116   054654            680    686    692    698   7913*
EM117   054747            704    710    716    926   7923*
EM118   055064            723    730    737    744    750    756    762    932   7937*
EM119   055177            768    774    780    938   7950*
EM120   055266            785   7960*
EM121   055362            791    797    803    809    815   7970*
EM122   055463            822    829   7981*
EM123   055564            835    841    848    854    860    866    872    944   7992*
EM124   055650            878    884    890    896    902    908    914    920   8001*
EM125   055716            950    956    962    968    974    980   8008*
EM126   056135            986    992    998   1004   8035*
EM127   056202           1010   1016   1022   1028   8042*
EM128   056300           1034   1040   1046   1052   8053*
EM129   056361           1058   1064   1070   1076   8062*
EM130   056426           1082   1088   1094   1100   8069*
EM131   056510           1106   1112   1118   1124   8078*
EM132   056575           1130   1136   1142   1148   8087*
EM133   056634           1154   1160   1166   1172   8093*
EM134   056700           1178   1184   1190   1196   8099*
EM135   056745           1202   1208   1214   1220   8106*
EM136   057011           1226   1232   1238   1244   8113*
EM137   057065           1250   1256   1262   1268   8121*
EM138   057145           1274   1280   1286   1292   8130*
EM139   057255           1298   1304   1310   1316   8143*
EM140   057337           1322   1328   1334   1340   8152*
```

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EM141   057421          1346    1352    1358    1364    8161#
EM142   057475          1370    1376    1382    1388    8169#
EM143   057573          1394    1400    1406    1412    8181#
EM144   057666          1418    1424    1430    1436    8191#
EM145   057[illegible]  1442    1448    8200#
EM146   060034          1454    1460    8209#
EM147   060106          1465    1470    8216#
EM2000  060153           512     537     585     621    1845    2036    2099    2162    2217    2266    8223#
EM2001  060231           452     472     497     522     548     568     573     597     633     645     669     693     769
                        1851    2042    2105    2168    2223    2272    8231#
EM2002  060260           457     477     502     527     553     603     639     651     675     699    1855    2046    2109
                        2172    2227    2276    8235#
EM2003  060307           442     462     482     507     532     558     579     609     705     751     786     861     879
                         963     987    1011    1035    1059    1083    1107    1131    1155    1179    1203    1227    1251
                        1275    1299    1323    1347    1371    1395    1419    1455    1466    1838    2026    2089    2152
                        2210    2259    8239#
EM2004  060352           447     885    8245#
EM2005  060423           467     897    8252#
EM2006  060470           487     615    8259#
EM2007  060517           492     627     909    8263#
EM2008  060567           517     543     591     915    8270#
EM2009  060640           563    8277#
EM2010  060711           657     681     903    8284#
EM2011  060753           663     687     921    8290#
EM2012  061015           711     757     775     823     867     969     993    1017    1041    1065    1089    1113    1137
                        1161    1185    1209    1233    1257    1281    1305    1329    1353    1377    1401    1425    8296#
EM2013  061060           717     763     781     873     975    1005    1029    1053    1077    1101    1125    1149    1173
                        1197    1221    1245    1269    1293    1317    1341    1365    1389    1413    1437    1461    1471
                        8302#
EM2014  061104           724     836    8306#
EM2015  061172           731     842    8315#
EM2016  061264           738     849    8325#
EM2017  061364           745     855    8336#
EM2018  061464           792    8347#
EM2019  061514           798    8351#
EM2020  061577           804    8360#
EM2021  061662           810    8369#
EM2022  061733           816    8376#
EM2023  061774           830    8382#
EM2024  062046           891    8389#
EM2025  062116           927     933     939     945     981     999    1023    1047    1071    1095    1119    1143    1167
                        1191    1215    1239    1263    1287    1311    1335    1359    1383    1407    1431    8396#
EM2026  062156           951    8402#
EM2027  062213           957    8407#
EM2028  062266          1443    8415#
EM2029  062324          1449    8420#
ERRCNT  004242          1533#   1606*   6719*   6722
ERRVEC= 000004           121#   1587    1588*   1599*   6365*   6366*   6378*   6379*   6416    6417*   6419*   6422*
E.ASOF  004176          1507#
E.BA    004164          1502#
E.CS1   004160          1500#   1706*   1707    1720*   1723    1766*   1785    1825*   1836    1873*   1899    1937*   1962
                        2006*   2014    2024    2049    2051*   2069*   2077    2087    2112    2114*   2132*   2140    2150
                        2175    2177*   2197*   2208    2246*   2257    2293*   2316    2361*   2379    2424*   2447    2494*
                        2524    2565*   2581    2618*   2634    2678*   2694    2738*   2754    2798*   2814    2858*   2874
                        2915*   2935    2982*   3002    3049*   3069    3116*   3136    3183*   3203    3250*   3270    3310*
                        3330    3798*   3803    3850*   3851    3878    3904*   3909    3957*   3962    4024*   4027    4097*
```

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                        4108*  4139*  4140   4156   4183*  4187   4234*  4242*  4249   4271*  4275   4322*  4326
                        4348*  4352   4399*  4403   4425*  4429   4474*  4478   4500*  4504   4551*  4555   4577*
                        4581   4629*  4633   4655*  4659   4707*  4711   4733*  4737   4784*  4788   4810*  4814
                        4861*  4865   4887*  4891   4939*  4943   4965*  4969   5017*  5021   5043*  5047   5095*
                        5099   5121*  5125   5171*  5175   5197*  5201   5249*  5253   5275*  5279   5332*  5337
                        5359*  5363   5416*  5421   5443*  5447   5501*  5506   5528*  5532   5585*  5590   5612*
                        5616   5669*  5674   5696*  5700   5753*  5758   5780*  5784   5837*  5842   5864*  5868
                        5921*  5926   5948*  5952   6006*  6011   6062*  6066   6087*  6091   6141*  6144*  6148
                        6169*  6173   6223*  6227   6248*  6252   6283*  6284*  6285*  6291   6300*  6302   7302
                        7305   7308   7311   7316   7319   7322   7331   7335   7340   7342   7347   7352
E.CS2   004170          1504#  3799*  3800*  3806   3905*  3906*  3912   3958*  3959*  3965   4025*  4030   4098*
                        4101   4109*  4110   4184*  4190   4243*  4252   4272*  4278   4323*  4329   4349*  4355
                        4400*  4406   4426*  4432   4475*  4481   4501*  4507   4552*  4558   4578*  4584   4630*
                        4636   4656*  4662   4708*  4714   4734*  4740   4785*  4791   4811*  4817   4862*  4868
                        4888*  4894   4940*  4946   4966*  4972   5018*  5024   5044*  5050   5096*  5102   5122*
                        5128   5172*  5178   5198*  5204   5250*  5256   5276*  5282   5334*  5340   5360*  5366
                        5418*  5424   5444*  5450   5503*  5509   5529*  5535   5587*  5593   5613*  5619   5671*
                        5677   5697*  5703   5755*  5761   5781*  5787   5839*  5845   5865*  5871   5923*  5929
                        5949*  5955   6007*  6008*  6014   6063*  6069   6088*  6094   6145*  6151   6170*  6176
                        6224*  6230   6249*  6255   7331   7342   7347
E.DA    004166          1503#
E.DB    004202          1509#
E.DCYL  004200          1508#
E.DS    004172          1505#  3801*  3812   3907*  3918   3960*  3971   4099*  4185*  4196   4244*  4258   4273*
                        4281   4324*  4332   4350*  4358   4401*  4409   4427*  4435   4476*  4484   4502*  4510
                        4553*  4561   4579*  4587   4631*  4639   4657*  4665   4709*  4717   4735*  4743   4786*
                        4794   4812*  4820   4863*  4871   4889*  4897   4941*  4949   4967*  4975   5019*  5027
                        5045*  5053   5097*  5105   5123*  5131   5173*  5181   5199*  5207   5251*  5259   5277*
                        5285   5335*  5343   5361*  5369   5419*  5427   5445*  5453   5504*  5512   5530*  5538
                        5588*  5596   5614*  5622   5672*  5680   5698*  5706   5756*  5764   5782*  5790   5840*
                        5848   5866*  5874   5924*  5932   5950*  5958   6009*  6017   6064*  6072   6089*  6097
                        6146*  6154   6171*  6179   6225*  6233   6250*  6258   7331   7342   7350
E.ECPS  004212          1513#
E.ECPT  004214          1514#
E.ER    004174          1506#  3802*  3809   3908*  3915   3961*  3968   4026*  4033   4100*  4186*  4193   4245*
                        4255   4274*  4284   4325*  4335   4351*  4361   4402*  4412   4428*  4438   4477*  4487
                        4503*  4513   4554*  4564   4580*  4590   4632*  4642   4658*  4668   4710*  4720   4736*
                        4746   4787*  4797   4813*  4823   4864*  4874   4890*  4900   4942*  4952   4968*  4978
                        5020*  5030   5047   5056   5098*  5108   5124*  5134   5174*  5184   5200*  5210   5252*
                        5262   5278*  5295   5336*  5346   5362*  5372   5420*  5430   5446*  5456   5505*  5515
                        5531*  5541   5559*  5599   5615*  5625   5673*  5683   5699*  5709   5757*  5767   5783*
                        5793   5841*  5851   5867*  5877   5925*  5935   5951*  5961   6010*  6020   6065*  6075
                        6090*  6100*  6147*  6157   6172*  6182   6226*  6236   6251*  6261   6286*  6294   6301*
                        6305   7331   7345   7350   7352
E.MR1   004204          1510#  1955*  1956*  1959*  1968   2929*  2932*  2941   2996*  2999*  3008   3063*  3066*
                        3075   3130*  3133*  3142   3197*  3200*  3209   3264*  3267*  3276   3324*  3327*  3336
                        7311
E.MR2   004206          1511#  1721*  1783*  1798   1834*  1849   1892*  1893*  1894*  1895*  1896*  1897*  1907
                        1912   1960*  1981   2007*  2033   2040   2052*  2070*  2096   2103   2115*  2133*  2159
                        2166   2178*  2206*  2221   2255*  2270   2310*  2334   2378*  2397   2441*  2465   2495*
                        2537   2579*  2594   2632*  2654   2692*  2714   2752*  2774   2812*  2834   2872*  2894
                        2933*  2961   3000*  3028   3067*  3095   3134*  3162   3201*  3229   3268*  3289   3328*
                        3356   3382*  3397   3414*  3437*  3453   3470*  3500*  3516   3531*  3546   3590*  3596*
                        3615   3639*  3675   3683*  3729*  3735*  3754   3868*  3883   4146*  4161   7302   7305
                        7308   7314   7316   7319   7324   7326   7329   7337
E.MR3   004210          1512#  1722*  1784*  1801   1835*  1853   1898*  1915   1961*  1984   2023*  2044   2086*
```

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                    2107    2149*   2170    2207*   2225    2256*   2274    2311*   2312*   2313*   2314*   2315*   2329
                    2337    2360*   2392    2400    2407*   2442*   2443*   2444*   2445*   2446*   2460    2468    2512*
                    2513*   2514*   2515*   2516*   2517*   2518*   2519*   2520*   2523*   2532    2540    2580*   2597
                    2633*   2657    2693*   2717    2753*   2777    2813*   2837    2873*   2897    2934*   2964    3001*
                    3031    3068*   3098    3135*   3165    3202*   3232    3269*   3292    3329*   3359    3384*   3402
                    3407    3415*   3439*   3456    3463    3471*   3501*   3513    3532*   3543    3591*   3597*   3612
                    3640*   3672    3684*   3730*   3736*   3751    3864*   3867*   3888    4145*   4166    7302    7305
                    7308    7314    7316    7319    7324    7326    7329    7337
E.SPAR  004216      1515#
E.WC    004162      1501#
FMTE  = 000020       215#
GNS   = ******  U    277    1626    6336    6343    7284    7285    7286    7287    7288    7290    7292    7293    7294
                    7295    7296    7297    7298
GO    = 000001       178#   4183    4234    4242    4322    4399    4474    4551    4629    4707    4784    4861    4939
                    5017    5095    5171    5249    5332    5416    5501    5585    5669    5753    5837    5921    6006
                    6062    6284
GTSWR = 104406      1621    7290#
HDCODE  004250      1536#   1872*   1881    1893    1919*   1920    5311*   5313    5395*   5397    5480*   5482    5564*
                    5566    5648*   5650    5732*   5734    5816*   5818    5900*   5902    7308    7347
HT    = 000011        31#   6772    6813
HVRC  = 002400       219#
IDAE  = 002000       221#   5252    5336    5505    5757    5841    5925
IE    = 000100       179#   4007    4024    4048
ILF   = 000001       211#   6286
ILLFUN  004270      1544#   6277*   6283    6288    6309*   6310    7352
INTR  = 000300       174#
IOTVEC= 000020       126#   1571*   1572*
IR    = 000100       198#   3800    3906    3959    4025    4098    4109    4184    4243    4272    4323    4349    4400
                    4426    4475    4501    4552    4578    4630    4656    4708    4734    4785    4811    4862    4888
                    4940    4966    5018    5044    5096    5122    5172    5198    5250    5276    5334    5360    5418
                    5444    5503    5529    5587    5613    5671    5697    5755    5781    5839    5865    5923    5949
                    6009    6063    6088    6145    6170    6224    6249
LF    = 000012        32#   6807    6813
MCLK  = 000400       252#   1713    1776    1827    1885    1947    1948    2016    2079    2142    2199    2248    2303
                    2371    2434    2505    2572    2625    2685    2745    2905    2865    2921    2922    2988    2989
                    3055    3056    3122    3123    3189    3190    3256    3257    3316    3317    3391    3392    3447
                    3448    3494    3524    3576    3577    3652    3653    3715    3716    3790    3845    3871    3896
                    4134    4149    4175    4223    4308    4385    4460    4537    4615    4693    4770    4847    4925
                    5003    5081    5157    5235    5318    5402    5487    5571    5655    5739    5823    5907    5992
                    6048    6124    6209
MDS   = 001000       201#
MEMBAS= 172100       134#   6367
MEMERR  043612      6371    6384#
MEMVEC= 000114       133#   6371*   6372*
MERD  = 001000       253#
MESMSK= 000017       246#
MEWD  = 002000       254#   1956    2929    2996    3063    3130    3197    3264    3324
MIND  = 000200       251#
MSGCOD  004246      1535#   1936*   1943    1955    1961    1976    1988*   1989    2914*   2981*   3048*   3115*   3182*
                    3249*   3309*   3638*   3647    3682*   7311
MSP   = 000100       250#
NED   = 010000       204#   6145    6224
NEM   = 004000       203#
NEWPAS  005270      1680#   6359
NXF   = 000004       213#   5098
OFFSET= 000015       167#   2494    2503    3250    3254
```

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OFFVAL  004254          1538#  2493*  2502   2513   2521   2544*  2545   2564*  2617*  2677*  2737*  2797*  2857*
                        7319   7322
OFST  = 000004           232#  4244   4246
OPI   = 020000           224#
OPR001  051156          1630   7567#
OPR002  051205          1633   1644   1661   7571#
OPR003  051213          1640   7573#
OPR004  051243          1652   7578#
OR    = 000200           199#
PACK  = 000003           162#  2132   2618   2623   2915   2919   4923   4939
PARBIT  004260          1540#  3592*  3595*  3600   3607   3641*  3660   3667   3685*  3731*  3734*  3739   3746
PARM    004276           284   1549#
PAR.EN= 000001           135#  6370
PAT   = 000020           248#  3520   3524   3525   3710
PC    =%000007            52#  1680*  6328*  6331*  6353*  6358   6380*  6576*  6593*  6630*  6636*  6733*  6762*
                        6781*  6788*  6795*  6809*  6811*  7011*  7245*
PCA   = 004000           255#
PCD   = 010000           256#
PGE   = 002000           202#
PIP   = 020000           240#  5419
PIRQ  = 177772            38#
PIRQVE= 000240           132#
PR0   = 000000            55#
PR1   = 000040            56#
PR2   = 000100            57#
PR3   = 000140            58#
PR4   = 000200            59#
PR5   = 000240            60#  1528
PR6   = 000300            61#
PR7   = 000340            62#  1558   1681   4001   4013   4050   6366   6372   7229   7242
PS    = 177776            35#    36
PSW   = 177776            36#
PWRVEC= 000024           127#  1577*  1578*  7228*  7229*  7241*  7242*
P.CS1   004220          1519#  4261*  4338*  4415*  4490*  4567*  4645*  4723*  4800*  4877*  4955*  5033*  5111*
                        5187*  5265*  5349*  5433*  5518*  5602*  5686*  5770*  5854*  5938*  6078*  6160*  6239*
                        7345
P.CS2   004222          1520#  4262*  4339*  4416*  4491*  4568*  4646*  4724*  4801*  4878*  4956*  5034*  5112*
                        5188*  5266*  5350*  5434*  5519*  5603*  5687*  5771*  5855*  5939*  6079*  6161*  6240*
                        7345
P.DS    004224          1521#  4263*  4340*  4417*  4492*  4569*  4647*  4725*  4802*  4879*  4957*  5035*  5113*
                        5189*  5267*  5351*  5435*  5520*  5604*  5688*  5772*  5856*  5940*  6080*  6162*  6241*
                        7345
P.ER    004226          1522#  4264*  4341*  4418*  4493*  4570*  4648*  4726*  4803*  4880*  4958*  5036*  5114*
                        5190*  5268*  5352*  5436*  5521*  5605*  5689*  5773*  5857*  5941*  6081*  6163*  6242*
                        7345
RDCHR = 104410          7071   7293#
RDDATA= 000021           169#
RDGATE= 100000           259#
RDHEAD= 000025           171#
RDLIN = 104411          7143   7294#
RDOCT = 104412          1634   1645   1662   7295#
RDY   = 000200           180#  3798   3904   3957   4024   4097   4108   4183   4234   4242   4271   4322   4348
                        4399   4425   4474   4500   4551   4577   4629   4655   4707   4733   4784   4810   4861
                        4887   4939   4965   5017   5043   5095   5121   5171   5197   5249   5275   5332   5359
                        5416   5443   5501   5528   5585   5612   5669   5696   5753   5780   5837   5864   5921
                        5948   6006   6062   6087   6141   6169   6223   6248   6285   6300
```

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RECAL = 000013          166* 2196  2197  2858  2863  3183  3187  5233  5249
RESREG= 104414         6718  7297*
RESTRT  004306          282  1552*
RESVEC= 000010          122*
RKASOF= 000C16          149* 2502* 2569* 2622* 2682* 2742* 2802* 2862*
RKBA  = 000004          144*
RKCS1 = 000000          142* 1699* 1701* 1705  1717  1771* 1774* 1780  1788* 1822* 1824* 1831  1840*
                       1878* 1883* 1889  1902* 1942* 1945* 1951  1965* 1971* 2012* 2014* 2020  2028*
                       2075* 2077* 2083  2091* 2138* 2140* 2146  2154* 2194* 2196* 2203  2212* 2243*
                       2245* 2252  2261* 2298* 2301* 2307  2319* 2366* 2369* 2375  2382* 2429* 2432*
                       2438  2450* 2500* 2503* 2509  2527* 2566* 2570* 2576  2584* 2619* 2623* 2629
                       2637* 2679* 2683* 2689  2697* 2739* 2743* 2749  2757* 2799* 2803* 2809  2817*
                       2859* 2863* 2869  2877* 2916* 2919* 2925  2938* 2944* 2983* 2986* 2992  3005*
                       3011* 3050* 3053* 3059  3072* 3078* 3117* 3120* 3126  3139* 3145* 3184* 3187*
                       3193  3206* 3212* 3251* 3254* 3260  3273* 3279* 3311* 3314* 3320  3333* 3339*
                       3380* 3389* 3435* 3444* 3490* 3492* 3519* 3522* 3570* 3574* 3646* 3650* 3708*
                       3713* 3788* 3794  3843* 3849  3875  3900  3947* 3949  3953  4007* 4009  4021
                       4045* 4048* 4087* 4089  4093  4105  4113* 4132* 4138  4153  4179  4221* 4229
                       4233  4238  4266* 4267  4306* 4314  4318  4343* 4344  4383* 4391  4395  4420*
                       4421  4458* 4466  4470  4495* 4496  4535* 4543  4547  4572* 4573  4613* 4621
                       4625  4650* 4651  4691* 4699  4703  4728* 4729  4768* 4776  4780  4805* 4806
                       4845* 4853  4857  4882* 4883  4923* 4931  4935  4960* 4961  5001* 5009  5013
                       5038* 5039  5079* 5087  5091  5116* 5117  5155* 5163  5167  5192* 5193  5233*
                       5241  5245  5270* 5271  5316* 5324  5328  5354* 5355  5400* 5408  5412  5438*
                       5439  5485* 5493  5497  5523* 5524  5569* 5577  5581  5607* 5608  5653* 5661
                       5665  5691* 5692  5737* 5745  5749  5775* 5776  5821* 5829  5833  5859* 5860
                       5905* 5913  5917  5943* 5944  5990* 5998  6002  6046* 6054  6058  6082* 6083
                       6122* 6130  6137  6164* 6165  6207* 6215  6219  6243* 6244  6282* 6288* 6289
                       6297* 6298
RKCS2 = 000010          146* 1773* 3388* 3573* 3649* 3712* 3785* 3787* 3795  3840* 3842* 3901  3945*
                       3946* 3954  3997* 3998* 4022  4044* 4065* 4084* 4086* 4094  4106  4128* 4180
                       4217* 4239  4268  4302* 4319  4345  4379* 4396  4422  4456* 4471  4497  4531*
                       4548  4574  4609* 4626  4652  4687* 4704  4730  4764* 4781  4807  4841* 4858
                       4884  4919* 4936  4962  4997* 5014  5040  5075* 5092  5118  5153* 5168  5194
                       5229* 5246  5272  5307* 5329  5356  5391* 5413  5440  5476* 5498  5525  5560*
                       5582  5609  5644* 5666  5693  5728* 5750  5777  5812* 5834  5861  5896* 5918
                       5945  5985* 5989* 6003  6042* 6045* 6059  6084  6120* 6138  6166  6205* 6220
                       6245
RKDA  = 000006          145* 1882* 3443* 4131* 4220* 4305* 4382* 4534* 4612* 4690* 4767* 4844* 4922*
                       5000* 5078* 5232* 5314* 5398* 5483* 5567* 5651* 5735* 5819* 5903* 5988*
RKDB  = 000024          151* 4085* 4104
RKDCYL= 000020          150* 2300* 2368* 2431* 2568* 2621* 2681* 2741* 2801* 2861* 3442* 4130* 4219*
                       4304* 4381* 4533* 4611* 4689* 4766* 4843* 4911* 4999* 5077* 5231* 5309* 5393*
                       5478* 5562* 5646* 5730* 5814* 5898* 5987* 6044*
RKDS  = 000012          147* 3796  3902  3955  4095  4181  4240  4269  4320  4346  4397  4423  4472
                       4498  4549  4575  4627  4653  4705  4731  4782  4808  4859  4885  4937  4963
                       5015  5041  5093  5119  5169  5195  5247  5273  5330  5357  5414  5441  5499
                       5526  5583  5610  5667  5694  5751  5778  5835  5862  5919  5946  6004  6060
                       6085  6139  6167  6221  6246
RKECPS= 000030          155*
RKECPT= 000032          156*
RKER  = 000014          148* 3797  3903  3956  4023  4096  4107  4182  4241  4270  4321  4347  4398
                       4424  4473  4499  4550  4576  4628  4654  4706  4732  4783  4809  4860  4886
                       4938  4964  5016  5042  5094  5120  5170  5196  5248  5274  5331  5358  5415
                       5442  5500  5527  5584  5611  5668  5695  5752  5779  5836  5863  5920  5947
                       6005  6061  6086  6140  6168  6222  6247  6290  6299
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RKMR1 = 000026   152# 1700* 1713* 1714* 1772* 1776* 1777* 1823* 1827* 1828* 1879* 1685* 1886*
                1943* 1944* 1947* 1948* 1952  2013* 2016* 2017* 2076* 2079* 2080* 2139* 2142*
                2143* 2195* 2199* 2200* 2244* 2248* 2249* 2299* 2303* 2304* 2367* 2371* 2372*
                2430* 2434* 2435* 2501* 2505* 2506* 2567* 2572* 2573* 2620* 2625* 2626* 2680*
                2685* 2686* 2740* 2745* 2746* 2800* 2805* 2806* 2860* 2865* 2866* 2917* 2921*
                2922* 2926  2984* 2988* 2989* 2993  3051* 3055* 3056* 3060  3118* 3122* 3123*
                3127  3185* 3189* 3190* 3194  3252* 3256* 3257* 3261  3312* 3316* 3317* 3321
                3386* 3391* 3392* 3441* 3447* 3448* 3491* 3494* 3495* 3520* 3524* 3525* 3571*
                3572* 3576* 3577* 3647* 3648* 3652* 3653* 3709* 3710* 3715* 3716* 3786* 3790*
                3791* 3841* 3845* 3846* 3871* 3872* 3896* 3897* 4129* 4134* 4135* 4149* 4150*
                4175* 4176* 4218* 4223* 4224* 4227* 4303* 4308* 4309* 4312* 4380* 4385* 4386*
                4389* 4457* 4460* 4461* 4464* 4532* 4537* 4538* 4541* 4610* 4615* 4616* 4619*
                4688* 4693* 4694* 4697* 4765* 4770* 4771* 4774* 4842* 4847* 4848* 4851* 4920*
                4925* 4926* 4929* 4998* 5003* 5004* 5007* 5076* 5081* 5082* 5085* 5154* 5157*
                5158* 5161* 5230* 5235* 5236* 5239* 5308* 5318* 5319* 5322* 5392* 5402* 5403*
                5406* 5477* 5487* 5488* 5491* 5561* 5571* 5572* 5575* 5645* 5655* 5656* 5659*
                5729* 5739* 5740* 5743* 5813* 5823* 5824* 5827* 5897* 5907* 5908* 5911* 5986*
                5992* 5993* 5996* 6043* 6048* 6049* 6052* 6121* 6124* 6125* 6128* 6206* 6209*
                6210* 6213* 6287*
RKMR2 = 000034    153# 1718  1781  1832  1890  1953  2021  2084  2147  2204  2253  2308  2376
                2439  2510  2577  2630  2690  2750  2810  2870  2927  2994  3061  3128  3195
                3262  3322  3395  3451  3498  3529  3580  3656  3719  3876  4154
RKMR3 = 000036    154# 1719  1782  1833  1891  1954  2022  2085  2148  2205  2254  2309  2377
                2440  2511  2578  2631  2691  2751  2811  2871  2928  2995  3062  3129  3196
                3263  3323  3396  3452  3499  3530  3581  3657  3720  3877  4155
RKPRI   004236   1528# 1678*
RKSPAR= 000022    157#
RKVEC   004234   1527# 1676* 1677* 3999  4036* 4043* 4047* 4066
RKWC  = 000002    143#
RLS   = 000010    195#
R0      =%000000   43# 1702* 1703* 1712* 1715* 1775* 1778* 1826* 1829* 1884* 1887* 1946* 1949*
                2015* 2018* 2078* 2081* 2141* 2144* 2198* 2201* 2247* 2250* 2302* 2305* 2370*
                2373* 2433* 2436* 2504* 2507* 2571* 2574* 2624* 2527* 2684* 2687* 2744* 2747*
                2804* 2807* 2864* 2867* 2920* 2923* 2987* 2990* 3054* 3057* 3121* 3124* 3189*
                3191* 3255* 3258* 3315* 3318* 3390* 3393* 3416* 3446* 3449* 3472* 3493* 3496*
                3523* 3526* 3575* 3578* 3651* 3654* 3714* 3717* 3789* 3792* 3844* 3847* 3858*
                3861* 3865  3870* 3873* 3895* 3898* 3948* 3951* 4008* 4011* 4088* 4091* 4133*
                4136* 4148* 4151* 4174* 4177* 4222* 4225* 4228* 4231* 4307* 4310* 4313* 4316*
                4384* 4387* 4390* 4393* 4459* 4462* 4465* 4468* 4536* 4539* 4542* 4545* 4614*
                4617* 4620* 4623* 4692* 4695* 4698* 4701* 4769* 4772* 4775* 4778* 4846* 4849*
                4852* 4855* 4924* 4927* 4930* 4933* 5002* 5005* 5008* 5011* 5080* 5083* 5086*
                5089* 5156* 5159* 5162* 5165* 5234* 5237* 5240* 5243* 5317* 5320* 5323* 5326*
                5401* 5404* 5407* 5410* 5486* 5489* 5492* 5495* 5570* 5573* 5576* 5579* 5654*
                5657* 5660* 5663* 5738* 5741* 5744* 5747* 5822* 5825* 5828* 5831* 5906* 5909*
                5912* 5915* 5991* 5994* 5997* 6000* 6047* 6050* 6053* 6056* 6123* 6126* 6129*
                6132* 6134* 6135* 6208* 6211* 6214* 6217* 6350* 6353  6553  6561* 6565  6566
                6568* 6569* 6570  6592* 6668* 6669* 6670* 6671* 6672* 6673* 6674* 6675  6680
                6685  6688* 6689  6691  6692  6704  6709  6755  6756* 6761  6766  6769* 6903
                6913* 6917  6933  6934  6947* 7140  7144* 7145  7148  7168* 7171* 7195  7220*
                7261  7262* 7263  7264* 7265* 7266* 7267*
R1      =%000001   44# 3582* 3585* 3721* 3724* 3857* 3862* 3869* 3893* 3999* 4000* 4001* 4066*
                4067* 4068* 4069* 4147* 4171* 6554  6591* 6685* 6697  6904  6917* 6918  6922
                6946* 7141  7146* 7154* 7156* 7158* 7161* 7164  7167* 7196  7219*
R2      =%000002   45# 1698* 1699* 1700* 1701* 1705  1713* 1714* 1717  1718  1719  1764* 1771*
                1772* 1773* 1774* 1776* 1777* 1780  1781  1782  1788* 1820* 1822* 1823* 1824*
                1827* 1828* 1831  1832  1833  1840* 1871* 1878* 1879* 1892* 1883* 1885* 1886*
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1889    1890    1891    1902*   1935*   1942*   1943*   1944*   1945*   1947*   1948*   1951    1952
1953    1954    1965*   1971*   2004*   2012*   2013*   2014*   2016*   2017*   2020    2021    2022
2028*   2067*   2075*   2076*   2077*   2079*   2080*   2083    2084    2085    2091*   2130*   2138*
2139*   2140*   2142*   2143*   2146    2147    2148    2154*   2192*   2194*   2195*   2196*   2199*
2200*   2203    2204    2205    2212*   2241*   2243*   2244*   2245*   2248*   2249*   2252    2253
2254    2261*   2291*   2298*   2299*   2300*   2301*   2303*   2304*   2307    2308    2309    2319*
2358*   2366*   2367*   2368*   2369*   2371*   2372*   2375    2376    2377    2382*   2422*   2429*
2430*   2431*   2432*   2434*   2435*   2438    2439    2440    2450*   2492*   2500*   2501*   2502*
2503*   2505*   2506*   2509    2510    2511    2527*   2562*   2566*   2567*   2568*   2569*   2570*
2572*   2573*   2576    2577    2578    2584*   2615*   2619*   2620*   2621*   2622*   2623*   2625*
2626*   2629    2630    2631    2637*   2675*   2679*   2680*   2681*   2682*   2683*   2685*   2686*
2689    2690    2691    2697*   2735*   2739*   2740*   2741*   2742*   2743*   2745*   2746*   2749
2750    2751    2757*   2795*   2799*   2800*   2801*   2802*   2803*   2805*   2806*   2809    2810
2811    2817*   2855*   2859*   2860*   2861*   2862*   2863*   2865*   2866*   2869    2870    2871
2877*   2913*   2916*   2917*   2919*   2921*   2922*   2925    2926    2927    2928    2938*   2944*
2980*   2983*   2984*   2986*   2988*   2989*   2992    2993    2994    2995    3005*   3011*   3047*
3050*   3051*   3053*   3055*   3056*   3059    3060    3061    3062    3072*   3078*   3114*   3117*
3118*   3120*   3122*   3123*   3126    3127    3128    3129    3139*   3145*   3181*   3184*   3185*
3187*   3189*   3190*   3193    3194    3195    3196    3206*   3212*   3248*   3251*   3252*   3254*
3256*   3257*   3260    3261    3262    3263    3273*   3279*   3308*   3311*   3312*   3314*   3316*
3317*   3320    3321    3322    3323    3333*   3339*   3379*   3380*   3386*   3388*   3389*   3391*
3392*   3395    3396    3434*   3435*   3441*   3442*   3443*   3444*   3447*   3448*   3451    3452
3489*   3490*   3491*   3492*   3494*   3495*   3498    3499    3519*   3520*   3522*   3524*   3525*
3529    3530    3564*   3570*   3571*   3572*   3573*   3574*   3576*   3577*   3580    3581    3636*
3646*   3647*   3648*   3649*   3650*   3652*   3653*   3656    3657    3702*   3708*   3709*   3710*
3712*   3713*   3715*   3716*   3719    3720    3779*   3785*   3786*   3787*   3788*   3790*   3791*
3794    3795    3796    3797    3834*   3840*   3841*   3842*   3843*   3845*   3846*   3849    3871*
3872*   3875    3876    3877    3896*   3897*   3900    3901    3902    3903    3939*   3945*   3946*
3947*   3949    3953    3954    3955    3956    3996*   3997*   3998*   4007*   4009    4021    4022
4023    4044*   4045*   4048*   4065*   4083*   4084*   4085*   4086*   4087*   4089    4093    4094
4095    4096    4104    4105    4106    4107    4113*   4127*   4128*   4129*   4130*   4131*   4132*
4134*   4135*   4138    4149*   4150*   4153    4154    4155    4175*   4176*   4179    4180    4181
4182    4216*   4217*   4218*   4219*   4220*   4221*   4223*   4224*   4227*   4229    4233    4238
4239    4240    4241    4266*   4267    4268    4269    4270    4301*   4302*   4303*   4304*   4305*
4306*   4308*   4309*   4312*   4314    4318    4319    4320    4321    4343*   4344    4345    4346
4347    4378*   4379*   4380*   4381*   4382*   4383*   4385*   4386*   4389*   4391    4395    4396
4397    4398    4420*   4421    4422    4423    4424    4455*   4456*   4457*   4458*   4460*   4461*
4464*   4466    4470    4471    4472    4473    4495*   4496    4497    4498    4499    4530*   4531*
4532*   4533*   4534*   4535*   4537*   4538*   4541*   4543    4547    4548    4549    4550    4572*
4573    4574    4575    4576    4608*   4609*   4610*   4611*   4612*   4613*   4615*   4616*   4619*
4621    4625    4626    4627    4628    4650*   4651    4652    4653    4654    4686*   4687*   4688*
4689*   4690*   4691*   4693*   4694*   4697*   4699    4703    4704    4705    4706    4728*   4729
4730    4731    4732    4763*   4764*   4765*   4766*   4767*   4768*   4770*   4771*   4774*   4776
4780    4781    4782    4783    4805*   4806    4807    4808    4809    4840*   4841*   4842*   4843*
4844*   4845*   4847*   4848*   4851*   4853    4857    4858    4859    4860    4882*   4883    4884
4885    4886    4918*   4919*   4920*   4921*   4922*   4923*   4925*   4926*   4929*   4931    4935
4936    4937    4938    4960*   4961    4962    4963    4964    4996*   4997*   4998*   4999*   5000*
5001*   5003*   5004*   5007*   5009    5013    5014    5015    5016    5038*   5039    5040    5041
5042    5074*   5075*   5076*   5077*   5078*   5079*   5081*   5082*   5085*   5087    5091    5092
5093    5094    5116*   5117    5118    5119    5120    5152*   5153*   5154*   5155*   5157*   5158*
5161*   5163    5167    5168    5169    5170    5192*   5193    5194    5195    5196    5228*   5229*
5230*   5231*   5232*   5233*   5235*   5236*   5239*   5241    5245    5246    5247    5248    5270*
5271    5272    5273    5274    5306*   5307*   5308*   5309*   5314*   5316*   5318*   5319*   5322*
5324    5328    5329    5330    5331    5354*   5355    5356    5357    5358    5390*   5391*   5392*
5393*   5398*   5400*   5402*   5403*   5406*   5408    5412    5413    5414    5415    5438*   5439
5440    5441    5442    5475*   5476*   5477*   5478*   5483*   5485*   5487*   5488*   5491*   5493
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                    5497    5498    5499    5500    5523*   5524    5525    5526    5527    5559*   5560*   5561*   5562*
                    5567*   5569*   5571*   5572*   5575*   5577    5581    5582    5583    5584    5607*   5608    5609
                    5610    5611    5643*   5644*   5645*   5646*   5651*   5653*   5655*   5656*   5659*   5661    5665
                    5666    5667    5668    5691*   5692    5693    5694    5695    5727*   5728*   5723*   5730*   5735*
                    5737*   5739*   5740*   5743*   5745    5749    5750    5751    5752    5775*   5776    5777    5778
                    5779    5811*   5812*   5813*   5814*   5819*   5821*   5823*   5824*   5827*   5829    5833    5834
                    5835    5836    5859*   5860    5861    5862    5863    5835*   5896*   5897*   5898*   5903*   5905*
                    5907*   5908*   5911*   5913    5917    5918    5919    5920    5943*   5944    5945    5946    5947
                    5979*   5985*   5986*   5987*   5988*   5989*   5990*   5992*   5993*   5996*   5998    6002    6003
                    6004    6005    6041*   6042*   6043*   6044*   6045*   6046*   6048*   6049*   6052*   6054    6058
                    6059    6060    6061    6082*   6083    6084    6085    6086    6119*   6120*   6121*   6122*   6124*
                    6125*   6128*   6130    6137    6138    6139    6140    6164*   6165    6166    6167    6168    6204*
                    6205*   6206*   6207*   6209*   6210*   6213*   6215    6219    6220    6221    6222    6243*   6244
                    6245    6246    6247    6282*   6287*   6288*   6289    6290    6297*   6298    6299    6689*   6707*
                    6905    6916*   6920*   6923    6930*   6931*   6932    6937*   6945*   7142    7147*   7155*   7157*
                    7159*   7165    7166*   7197    7218*
R3      =%000003      46#   3583*   3588*   3722*   3727*   3856*   3859*   6367*   6370*   6691*   6693    6699*   6846
                    6855*   6861*   6862*   6865*   6870*   6871*   6872    6881*   6906    6914*   6915*   6929*   6932*
                    6941*   6942*   6944*   7066    7068*   7069    7072*   7073    7080*   7081    7083    7091    7095
                    7097*   7103    7105    7107*   7110*   7198    7217*
R4      =%000004      47#   3584*   3587*   3593    3723*   3726*   3732    6369*   6373*   6687*   6695    6706*   6711
                    6847    6849*   6850*   6851*   6852    6853*   6867    6863*   6877*   6890*   7199    7216*
R5      =%000005      48#   6848    6854*   6856*   6858*   6859*   6860*   6861    6879*   6907    6909*   6911*   6918*
                    6922*   6937    6943*   7200    7215*
R6      =%000006      49#     51    1565*   1566*   1567
R7      =%000007      50#     52
SAVREG= 104413      6667    7296#
SAVSWR  004274      1546#   7227*   7246
SCLR  = 000040       197#   3785    3840    3945    3997    4065    4084    4128    4217    4302    4379    4476    4531
                    4609    4687    4764    4841    4919    4997    5075    5153    5229    5307    5391       6    5560
                    5644    5728    5812    5896    5985    6042    6120    6205
SCOP1 = 104415      1804    1918    1987    2048    2111    2174    2340    2403    2471    2543    3618    3678    3757
                    3815    3921    3974    6023    6308    7298#
SCOP1$  044372      6539#   7298
SEEK  = 000017       168#   2293    2301    2361    2369    2424    2432    3310    3314    3444    4132    4139    4183
                    4221    4234    4242    4306    4322    4383    4399    4535    4551    4613    4629    4691    4707
                    4768    4784    4845    4861    5316    5332    5400    5416    5495    5501    5569    5585    5653
                    5669    5737    5753    5821    5837    5905    5921    5990    6006    6046    6062
SELDRV= 000001       161#   1701    1706    1720    1766    1774    1824    1825    1873    1883    1937    1945    2565
                    2570    3389    3492    3522    3574    3650    3713    3788    3843    3850    3947    4007    4045
                    4087    4458    4474    6122    6207
SFTCNT  004256      1539#   3381*   3417*   3418    3436*   3473*   3474    7326
SKI   = 000002       212#   5020
SP    =%000006        51#   1557*   1558*   1559*   1569*   1587*   1595*   1599    1631*   1635    1641*   1642*   1646
                    1653*   1654*   1655*   1656*   1657*   1658*   1659*   1663    1681*   1682*   1880*   1881*   1882
                    4002*   4003*   4013*   4014*   4020*   4037*   4038*   4050*   4051*   4054*   4058*   4062*   5312*
                    5313*   5314    5396*   5397*   5398    5481*   5482*   5483    5565*   5566*   5567    5649*   5650*
                    5651    5733*   5734*   5735    5817*   5818*   5819    5901*   5902*   5903    6338*   6345*   6377
                    6385    6392*   6416*   6419    6421    6422    6427*   6428*   6430    6432    6433*   6434*   6435*
                    6436    6438    6461    6462    6466*   6543*   6553*   6554*   6561    6562*   6573    6574*   6575*
                    6585    6586*   6591    6592    6625    6646*   6649*   6697*   6729*   6755*   6756    6766*   6768
                    6769    6770*   6772    6774    6776    6782    6784*   6786*   6794*   6798    6802    6803    6807
                    6838*   6839    6840    6841*   6846*   6847*   6848*   6854    6879    6880    6881    6882*   6883*
                    6903*   6904*   6905*   6906*   6907*   6908*   6909    6912*   6925    6927*   6929    6939    6941
                    6943    6944    6945    6946    6947    6949*   6950*   6971*   6972*   6973    6980*   6983*   6984*
                    6988*   6989*   6993    6996*   7000    7002    7004    7005*   7012    7014    7016*   7017    7019*
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                        7020*  7021*  7022*  7023*  7038*  7033*  7042*  7043*  7044   7048*  7049*  7050   7053
                        7055   7057*  7066*  7067*  7072   7075   7079*  7086   7090*  7109   7110   7111*  7112*
                        7113*  7138*  7139*  7140*  7141*  7142*  7144   7148*  7150   7152   7160*  7161   7163
                        7164*  7166   7167   7168   7170   7195*  7196*  7197*  7198*  7199*  7200*  7201*  7202*
                        7203*  7204*  7211*  7212*  7213*  7214*  7215   7216   7217   7218   7219   7220   7243*
                        7261*  7262   7272*  7273*
SPACE2  051265          6701   6713   7582*
SPAR  = 020000           187*  4399   6062   6142   6144
SPDLSS= 000020           234*  4244   4246   4786   4941   5019   5097   5251   5504   5588   5840
SRTFLG  004240          1529*  1549*  1552*  1555*  1628
SRTSPL= 000011           165*  2245   2246   2798   2803   3116   3120   5155   5171
STACK = 001100            26*  1557   1569   6392   6729   7243
STALL   004264          1542*  6134
START   004316           281   1555*
START1  004322          1550   1553   1556*
STKLMT= 177774            37*
SVAL  = 100000           242*  4244   4324   4401   4476   4553   4631   4709   4786   4863   4941   5019   5097
                        5173   5251   5335   5419   5504   5588   5672   5756   5840   5924   6146
SWR     001140           345*  1567   1589*  1591   1597*  1604*  1619   6388   6411   6425   6428   6443   6450
                        6539   6621   6628   6640   6644   6720   6967   7004*  7227   7246*
SWREG   000176           279*  1597   1619   6967   6980
SWD   = 000001            90*
SW00  = 000001            80*    90
SW01  = 000002            79*    89
SW02  = 000004            78*    88
SW03  = 000010            77*    87
SW04  = 000020            76*    86
SW05  = 000040            75*    85
SW06  = 000100            74*    84
SW07  = 000200            73*    83
SW08  = 000400            72*    82
SW09  = 001000            71*    81
SW1   = 000002            89*
SW10  = 002000            70*
SW11  = 004000            69*
SW12  = 010000            68*  6720
SW13  = 020000            67*
SW14  = 040000            66*
SW15  = 100000            65*
SW2   = 000004            88*
SW3   = 000010            87*
SW4   = 000020            86*
SW5   = 000040            85*
SW6   = 000100            84*
SW7   = 000200            83*
SW8   = 000400            82*
SW9   = 001000            81*  6388   6539
S.CLR = 000400           267*  2007   2032   2692   2701   3000   3015
S.FMT = 001000           268*  1834   1843   2032   2052   2095   2115   2158   2178   3437   3438   4145
S.PACK= 004000           270*  2133   2158   2632   2641   2933   2948
S.RECL= 000040           264*  2206   2215   2872   2881   3201   3216
S.RTC = 000200           266*
S.SEEK= 000020           263*  2310   2322   2378   2385   2441   2453   3328   3343   3437   3438   4145
S.STSP= 000100           265*  2255   2264   2812   2821   3134   3149
S.UNLD= 002000           269*  2070   2095   2752   2761   3067   3082
TBITVE= 000014           123*
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TKVEC = 000060            130*
TPVEC = 000064            131*
TRAPPC  004272           1545*   6385*   7301
TRAPVE= 000034            129*   1575*   1576*
TRTVEC= 000014            124*
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TST10   010046           2113    2128*   6477
TST100  042000           6101    6117*   6533
TST101  042442           6183    6202*   6534
TST102  043054           6262    6275*   6535
TST11   010364           2176    2190*   6478
TST12   010630           2213    2219    2226    2239*   6479
TST13   011074           2262    2268    2275    2289*   6480
TST14   011412           2356*   6481
TST15   011722           2405    2420*   6482
TST16   012254           2490*   6483
TST17   012616           2560*   6484
TST2    005612           1710    1726    1748    1762*   6471
TST20   013062           2585    2592    2598    2613*   6485
TST21   013342           2638    2645    2652    2658    2673*   6486
TST22   013622           2698    2705    2712    2718    2733*   6487
TST23   014102           2758    2765    2772    2778    2793*   6488
TST24   014362           2818    2825    2832    2838    2853*   6489
TST25   014642           2878    2885    2892    2898    2911*   6490
TST26   015154           2939    2945    2952    2959    2965    2978*   6491
TST27   015466           3006    3012    3019    3026    3032    3045*   6492
TST3    006072           1818*   6472
TST30   016000           3073    3079    3086    3093    3099    3112*   6493
TST31   016312           3140    3146    3153    3160    3166    3179*   6494
TST32   016624           3207    3213    3220    3227    3233    3246*   6495
TST33   017122           3274    3280    3287    3293    3306*   6496
TST34   017434           3334    3340    3347    3354    3360    3377*   6497
TST35   017672           3400    3405    3432*   6498
TST36   020136           3456    3461    3487*   6499
TST37   020472           3536    3541    3547    3562*   6500
TST4    006336           1841    1847    1854    1869*   6473
TST40   021036           3634*   6501
TST41   021362           3680    3700*   6502
TST42   021726           3777*   6503
TST43   022202           3832*   6504
TST44   022732           3924    3937*   6505
TST45   023172           3994*   6506
TST46   023560           4081*   6507
TST47   024010           4125*   6508
TST5    006650           1933*   6474
TST50   024444           4143    4159    4164    4169    4197    4214*   6509
TST51   025126           4285    4299*   6510
TST52   025560           4362    4376*   6511
TST53   026212           4439    4453*   6512
TST54   026630           4514    4528*   6513
TST55   027262           4591    4606*   6514
TST56   027714           4669    4684*   6515
TST57   030346           4747    4761*   6516
TST6    007212           2002*   6475
TST60   031000           4824    4838*   6517
TST61   031432           4901    4916*   6518
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TST63   032516          5057    5072*   6520
TST64   033150          5135    5150*   6521
TST65   033566          5211    5226*   6522
TST66   034220          5289    5304*   6523
TST67   034702          5373    5388*   6524
TST7    007530          2050    2065*   6476
TST70   035364          5457    5473*   6525
TST71   036046          5542    5557*   6526
TST72   036530          5626    5641*   6527
TST73   037212          5710    5725*   6528
TST74   037674          5794    5809*   6529
TST75   040356          5878    5893*   6530
TST76   041040          5962    5977*   6531
TST77   041352          6039*   6532
TYPDS = 104405          6340    6347    7288*
TYPE  = 104401          1613    1630    1633    1640    1644    1652    1661    6334    6341    6348    6623    6631    6677
                        6678    6682    6683    6690    6701    6703    6713    6714    6716    6724    6777    6873    6948
                        6978    6979    6982    6995    7006    7025    7078    7084    7089    7093    7098    7099    7101
                        7104    7108    7172    7174    7244    7284*
TYPERR  045064          6630    6667*
TYPOC = 104402          1632    1643    1660    6698    6981    7285*
TYPON = 104404          7287*
TYPOS = 104403          7286*
T.ASOF  004136          1488*
T.BA    004124          1483*
T.CS1   004120          1481*   1705*   1707    1717*   1723    1780*   1785    1831*   1836    1889*   1899    1951*   1962
                        2020*   2024    2083*   2087    2146*   2150    2203*   2208    2252*   2257    2307*   2316    2375*
                        2379    2438*   2447    2509*   2524    2576*   2581    2629*   2634    2689*   2694    2749*   2754
                        2809*   2814    2869*   2874    2925*   2935    2992*   3002    3059*   3069    3126*   3136    3193*
                        3203    3260*   3270    3320*   3330    3794*   3803    3849*   3851    3875*   3878    3900*   3909
                        3953*   3962    4021*   4027    4093*   4105*   4138*   4140    4153*   4156    4179*   4187    4233*
                        4238*   4249    4261    4267*   4275    4318*   4326    4338    4344*   4352    4395*   4403    4415
                        4421*   4429    4470*   4478    4490    4496*   4504    4547*   4555    4567    4573*   4581    4625*
                        4633    4645    4651*   4659    4703*   4711    4723    4729*   4737    4780*   4788    4800    4806*
                        4814    4857*   4865    4877    4883*   4891    4935*   4943    4955    4961*   4969    5013*   5021
                        5033    5039*   5047    5091*   5099    5111    5117*   5125    5167*   5175    5187    5193*   5201
                        5245*   5253    5265    5271*   5279    5328*   5337    5349    5355*   5363    5412*   5421    5433
                        5439*   5447    5497*   5506    5518    5524*   5532    5581*   5590    5602    5608*   5616    5665*
                        5674    5686    5692*   5700    5749*   5758    5770    5776*   5784    5833*   5842    5854    5860*
                        5868    5917*   5926    5938    5944*   5952    6002*   6011    6058*   6066    6078    6083*   6091
                        6137*   6142    6148    6160    6165*   6173    6219*   6227    6239    6244*   6252    6289*   6291
                        6298*   6302    7302    7305    7308    7311    7316    7319    7322    7331    7335    7340    7342
                        7347    7352
T.CS2   004130          1485*   3795*   3806    3901*   3912    3954*   3965    4022*   4030    4094*   4101    4106*   4110
                        4180*   4190    4239*   4252    4262    4268*   4278    4319*   4329    4339    4345*   4355    4396*
                        4406    4416    4422*   4432    4471*   4481    4491    4497*   4507    4548*   4558    4568    4574*
                        4584    4626*   4636    4646    4652*   4662    4704*   4714    4724    4730*   4740    4781*   4791
                        4801    4807*   4817    4858*   4868    4878    4884*   4894    4936*   4946    4956    4962*   4972
                        5014*   5024    5034    5040*   5050    5092*   5102    5112    5118*   5128    5168*   5178    5188
                        5194*   5204    5246*   5256    5266    5272*   5282    5329*   5340    5350    5356*   5366    5413*
                        5424    5434    5440*   5450    5498*   5509    5519    5525*   5535    5582*   5593    5603    5609*
                        5619    5666*   5677    5687    5693*   5703    5750*   5761    5771    5777*   5787    5834*   5845
                        5855    5861*   5871    5918*   5929    5939    5945*   5955    6003*   6014    6059*   6069    6079
                        6084*   6094    6138*   6151    6161    6166*   6176    6220*   6230    6240    6245*   6255    7331
                        7342    7347
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T.DA     004126          1484#
T.DB     004142          1490#
T.DCYL   004140          1489#
T.DS     004132          1486#  3796*  3812   3902*  3918   3955*  3971   4095*  4181*  4196   4240*  4246   4258
                         4263   4269*  4281   4320*  4332   4340   4346*  4358   4397*  4409   4417   4423*  4435
                         4472*  4484   4492   4498*  4510   4549*  4561   4569   4575*  4597   4627*  4639   4647
                         4653*  4665   4705*  4717   4725   4731*  4743   4782*  4794   4802   4808*  4820   4859*
                         4871   4879   4885*  4897   4937*  4949   4957   4963*  4975   5015*  5027   5035   5041*
                         5053   5093*  5105   5113   5119*  5131   5169*  5181   5189   5195*  5207   5247*  5259
                         5267   5273*  5285   5330*  5343   5351   5357*  5369   5414*  5427   5435   5441*  5453
                         5499*  5512   5520   5526*  5538   5583*  5596   5604   5610*  5622   5667*  5680   5688
                         5694*  5706   5751*  5764   5772   5778*  5790   5835*  5848   5856   5862*  5874   5919*
                         5932   5940   5946*  5958   6004*  6017   6060*  6072   6080   6085*  6097   6139*  6154
                         6162   6167*  6179   6221*  6233   6241   6246*  6258   7331   7342   7350
T.ECPS   004152          1494#
T.ECPT   004154          1495#
T.ER     004134          1487#  3797*  3809   3903*  3915   3956*  3968   4023*  4033   4096*  4107*  4182*  4193
                         4241*  4255   4264   4270*  4284   4321*  4335   4341   4347*  4361   4398*  4412   4418
                         4424*  4438   4473*  4487   4493   4499*  4513   4550*  4564   4570   4576*  4590   4628*
                         4642   4648   4654*  4668   4706*  4720   4726   4732*  4746   4783*  4797   4803   4809*
                         4823   4860*  4874   4880   4886*  4900   4938*  4952   4958   4964*  4978   5016*  5030
                         5036   5042*  5056   5094*  5108   5114   5120*  5134   5170*  5184   5190   5196*  5210
                         5248*  5262   5268   5274*  5288   5331*  5346   5352   5358*  5372   5415*  5430   5436
                         5442*  5456   5500*  5515   5521   5527*  5541   5584*  5599   5605   5611*  5625   5668*
                         5683   5689   5695*  5709   5752*  5767   5773   5779*  5793   5836*  5851   5857   5863*
                         5877   5920*  5935   5941   5947*  5961   6005*  6020   6061*  6075   6081   6086*  6100
                         6140*  6157   6163   6168*  6182   6222*  6236   6242   6247*  6261   6290*  6294   6299*
                         6305   7331   7345   7350   7352
T.MR1    004144          1491#  1952*  1957   1968   2926*  2930   2941   2993*  2997   3008   3060*  3064   3075
                         3127*  3131   3142   3194*  3198   3209   3261*  3265   3276   3321*  3325   3336   7311
T.MR2    004146          1492#  1718*  1728   1731   1735   1738   1781*  1791   1798   1832*  1843   1849   1890*
                         1905   1912   1953*  1981   2021*  2031   2040   2084*  2094   2103   2147*  2157   2166
                         2204*  2215   2221   2253*  2264   2270   2308*  2322   2334   2376*  2385   2397   2439*
                         2453   2465   2510*  2537   2577*  2594   2630*  2641   2654   2690*  2701   2714   2750*
                         2761   2774   2810*  2821   2834   2870*  2881   2894   2927*  2948   2961   2994*  3015
                         3028   3061*  3082   3095   3128*  3149   3162   3195*  3216   3229   3262*  3289   3322*
                         3343   3356   3395*  3397   3451*  3453   3498*  3508   3516   3529*  3538   3546   3580*
                         3605   3615   3656*  3665   3675   3719*  3744   3754   3876*  3883   4154*  4161   7302
                         7305   7308   7314   7316   7319   7324   7326   7329   7337
T.MR3    004150          1493#  1719*  1741   1744   1747   1782*  1801   1833*  1853   1891*  1915   1954*  1974
                         1984   2022*  2044   2085*  2107   2148*  2170   2205*  2225   2254*  2274   2309*  2327
                         2337   2377*  2390   2400   2440*  2458   2468   2511*  2530   2540   2578*  2588   2597
                         2631*  2648   2657   2691*  2708   2717   2751*  2768   2777   2811*  2828   2837   2871*
                         2888   2897   2928*  2955   2964   2995*  3022   3031   3062*  3089   3098   3129*  3156
                         3165   3196*  3223   3232   3263*  3283   3292   3323*  3350   3359   3396*  3402   3452*
                         3458   3499*  3502   3513   3530*  3533   3543   3581*  3598   3612   3657*  3658   3672
                         3720*  3737   3751   3877*  3888   4155*  4166   7302   7305   7308   7314   7316   7319
                         7324   7326   7329   7337
T.SPAR   004156          1496#
T.WC     004122          1482#
UFE   =  000400           200#
UNLOAD=  000007           164#  2069   2738   2743   3049   3053   5001   5017
UNS   =  040000           225#  5673   5757   5841   5925
UPE   =  020000           205#
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U.MR3    004232          1524#  3385*  3440*  7326
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VV     = 000100          236*   4244   4246
WAITIM  004262          1541*   3948   4008   4088   4228   4313   4390   4465   4542   4620   4698   4775   4852
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                        5997    6053   6129   6214
WCE    = 040000          206*
WLE    = 004000          222*   4942
WRDATA= 000023           170*
WRHEAD= 000027           172*
WRL    = 004000          239*   4244   4246
WRTCHK= 000031           173*
WRTGAT= 040000           258*
$APTHD  001000           305    311*
$ASTAT= ****** U        6579   6594
$ATYC   044442          6550   6552*
$ATY1   044416          6548*
$ATY3   044424          6549*  6762
$ATY4   044434          6551*  6636
$AUTOB  001134           342*  1623*  6975   7124
$BASE   001270           414*  1631   1639*  1698   1764   1820   1871   1935   2004   2067   2130   2192   2241
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                        3114   3181   3248   3308   3379   3434   3489   3564   3636   3702   3779   3834   3939
                        3996   4083   4127   4216   4301   4378   4455   4530   4608   4686   4763   4840   4918
                        4996   5074   5152   5228   5306   5390   5475   5559   5543   5727   5811   5895   5979
                        6041   6119   6204
$BDADR  001122           337*
$BDDAT  001126           339*
$BELL   001204           365*  6623   6656
$CDW1   001274           416*
$CDW2   001276           417*
$CHARC  045624          6779*  6789*  6796   6805*  6810*
$CKSWR  046302          6967*  7292
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$CM3   = 000000           355*
$CM4   = 000010           355*   356*   357*   358*   359*   360*   361*   362*   363*
$CNTLG  047155          6978   7119*
$CNTLU  047150          6995   7093   7118*
$CPUOP  001242           388*
$CRLF   001211           367*  6348   6631   6656   6677   6682   6690   6703   6716   6778   6813   7006   7098
                        7118   7177
$DBLK   046272          6914   6948   6956*
$DEVCT  001224           379*
$DEVM   001272           415*
$DOAGN  043512          6330   6351   6357*
$DTBL   046262          6917   6952*
$ENDAD  043502           291   1611   6353*  6651
$ENDCT  043346          1579   6332*
$ENULL  043516          6360*
$ENV    001234           384*  1617   6557   6581   6633   6757
$ENVM   001235           385*  1602   6559   6759   6764
$EOP    043312          6322*  6730
$EOPCT  043340          1579*  6329*  6333   6728*
$ERFLG  001103           328*  6400   6439   6441   6447*  6469   6541   6618*  6656
$ERMAX  001115           334*  1582*  6441   6464*  6469
$ERROR  044664          1573   6616*
$ERRPC  001116           335*  6625*  6626*  6627   6656   7302   7305   7308   7311   7316   7319   7322   7326
                        7329   7331   7335   7337   7339   7340   7342   7347   7352
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$ERTTL  001112            332#  6345  6349*  6624*  6656
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$ETABL  001234            383#
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$FATAL  001216            376#  6585*
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$FILLC  001156            353#  6782  6813
$FILLS  001155            352#  6813
$GDADR  001120            336#
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$GET42  043472           6350#
$GTSWR  046352           6979#  7290
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$HIBTS  001000            312#
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$INTAG  001135            343#  7007  7124
$ITEMB  001114            333#  6627*  6635  6656  6668
$LF     001212            368#  6656  6813  7108  7118  7177
$LFLG   044661           6589*  6595#
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                         3642*  3704*  3781*  3836*  3941*  5981*  6278*  6393  6445  6462*  6468  6543  6646
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$MSGLG  001232            382#  6570*
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$MSWR   047162           6979   7120#
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$MTYP2  001251            404#
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                         2479#  2481  2548#  2550  2601#  2603  2661#  2663  2721#  2723  2781#  2783  2841#
                         2843   2901#  2903  2968#  2970  3035#  3037  3102#  3104  3169#  3171  3236#  3238
                         3296#  3298  3366#  3368  3421#  3423  3477#  3479  3550#  3552  3623#  3625  3688#
                         3690   3765#  3767  3820#  3822  3927#  3929  3979#  3981  4071#  4073  4115#  4117
                         4202#  4204  4288#  4290  4365#  4367  4442#  4444  4517#  4519  4594#  4596  4672#
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                         5214#  5216  5292#  5294  5376#  5378  5460#  5462  5545#  5547  5629#  5631  5713#
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$OVER   044150          6412    6437    6446    6456    6465#
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$PASTM  001006           315#
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MESSFT    318#  3379  3434
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SPACE    133#
STARS      1#    133#    287     298     300     307     320     369     372    1686    1695    1751    1761    1809    1817
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ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

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RUN-TIME: 77 110 17 SECONDS
RUN-TIME RATIO: 496/206=2.4
CORE USED: 39K (77 PAGES)

E01

Spooler runtime 31 Seconds, 141 KCS, 1052 disk reads, 0 disk writes, 210 pages